Agenda Item SC. 1.0

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

Agenda

---

1. Executive Reports
   - 1.1. Chair's Report (Alejandro Larriera, Charlie Manolis)
   - 1.2. Minutes and Actions from 27th SC meeting, Darwin (Sally Isberg)
   - 1.3. Executive Officer's Report (Sally Isberg)
   - 1.4. Financial Reports (Charlie Manolis)

2. Regional Reports
   - 2.1. East & Southern Africa (Xander Combrink)
   - 2.2. West & Central Africa (Matthew Shirley)
   - 2.3. East & Southeast Asia (Steve Platt)
   - 2.4. Latin America & the Caribbean (Pablo Siroski)
   - 2.5. South Asia & Iran (Anslem de Silva)
   - 2.6. Australia & Oceania (Matt Brien)
   - 2.7. Europe (Fabian Schmidt)
   - 2.8. North America (Thomas Rainwater, Jeb Linscombe)

3. Thematic Group Reports
   - 3.1. Industry (Christy Plott)
   - 3.2. Trade Monitoring (John Caldwell)
   - 3.3. Veterinary Science (Paolo Martelli, Cathy Shilton)
   - 3.4. Zoos (Kent Vliet, Colette Adams)
   - 3.5. Taxonomy (Kent Vliet)
   - 3.6. Legal Affairs (Curt Harbsmeier)
   - 3.7. IUCN Red List (Sally Isberg)

4. Working Group/EAP Reports
   - 4.1. Drone Working Group (Lonnie McCaskill and Carlos Piña)
   - 4.2. Living with Crocodilians Working Group (Simon Pooley)
   - 4.3. Communications EAP and Communications Working Group (Venetia Briggs-Gonzalez)
   - 4.4. Ecotoxicology Working Group (Jeremy Lemaire)
   - 4.5. Fundraising EAP (Christy Plott)
   - 4.6. IUCN SSC Young Professionals Task Force (Phoebe Griffith, Brinky Desai)

5. General Business
   - 5.1. CITES (CoP20) (Alejandro Larriera)

6. 29th CSG Working Meeting (2028)

Crocodile Specialist Group Steering Committee Meeting
Agadir, Morocco
(12 May 2026)

East and Southern Africa

Summary:

Ethiopia

Research and Publications:
Utele, M., Gebeyehu, A. and Kaba, T. (2025). Gastrointestinal helminth of Nile crocodiles (*Crocodylus niloticus*), in Arba Minch Crocodile Ranch, Ethiopia. Scientific Reports 15(1): 3749.

Kenya

Dr. M.N. Mosse reported that one crocodile farm which practices both captive breeding and ranching of crocodiles is operational. Two crocodile ranches closed operations in the course of the last five years. The last egg collection activity along the Tana River was done in 2019 by two crocodile ranches. Human-crocodile conflict is an important area of concern in the conservation and management of Nile crocodiles, the livelihoods of local communities and should be a focal area for research. Some local communities are known to have indigenous and traditional knowledge on human-crocodile co-existence. This is a possible area for research and outreach/ management programme. The impact of the absence of crocodile egg collection along the River Tana since 2020 on the crocodile populations, crocodile habitats and local communities should be an area of interest for researchers and management institutions. Official information indicates that there were 79 human fatalities and 129 human injuries in different parts of Kenya between 2019 and 2024. There is need to determine the extent of loss of livestock to crocodiles. The national wildlife law provides for compensation for human fatalities, human injuries and loss of livestock caused by crocodiles and specific other wild animal species.

Research and Publications:
Mosse, M., Kibue, G. and Odadi, W. (2023). Nile crocodile nesting ecology under varying human disturbance intensities along lower River Tana, Kenya. Current Trends in Natural Sciences 12(24): 110-126.

Mosse, M.N., Odadi, W.O. and Kibue, G.W. (2024). Anthropogenic Threats to Crocodiles, and the Level and Sociodemographic Determinants of their Utilization in Lower River Tana Basin, Kenya. Tropical Conservation Science, 17, 19400829241241457.

South Africa

Kruger National Park: Dr. Sam Ferreira (large mammal ecologist SANParks) reported that no active fieldwork was conducted on Nile crocodiles for the last few years and no crocodile aerial surveys for 2025. Dr. Stefan Woodborne presented a paper at the 14th Oppenheimer Research Conference in October 2025 on how core body temperature of Nile crocodiles as well as changes in the water level in the Olifants Gorge at the time of the pansteatitis pandemic may have contributed to the pansteatitis mortalities. Stefan is planning more fieldwork for 2026 on core body temperature both at commercial farms as well as in Kruger National Park.

Pongolapoort Dam: Rickert Van Der Westhuizen (Ecological Advice Northwest, Ezemvelo KZN Wildlife) reported that 236 crocodiles were counted from a helicopter on 12 November 2025. It is recommended to count crocodiles in winter, but for most of 2025 the dam was at full capacity. When the dam is full, the floodplains are inundated and the shoreline extends into the trees, making it impossible to spot basking crocodiles from the air. The survey only became possible after the release of water by the Department of Water and Sanitation, which lowered the dam level to 81.56% capacity on the day of the count. About a third of all crocodiles counted were sub-adult or juveniles indicating good recruitment, despite extremely high dam and river levels in 2024 and 2025. High river levels could flood nest sites and lead to no recruitment.

Amatikulu Nature Reserve: Since 2013, Nile crocodile nests are counted in the Amatikulu Nature Reserve. Wild populations extend only as far south as the Tugela River in KwaZulu-Natal, thus making the wild population within Amatikulu Nature Reserve a population at its southern most limits of distribution. Crocodiles are confined to the iNyoni River, which runs parallel to the coast for approximately 11 km within the protected area. Only a single active nest was found compared to six in 2014 which was the highest nest count. The management of Amatikulu Nature Reserve have faced significant challenges in recent years. Illegal activities continue unabated with little regard for Ezemvelo and the management of Amatikulu Nature Reserve. The greatest threats faced by the Nile crocodile population at Amatikulu

Nature Reserve are illegal cattle grazing (nest site disturbance), alien invasive plant species (nest site habitat modification), gillnetting (poaching) and arson fires (bush encroachment).

Crocodile Conservation South Africa: Following a three day worship at Loskop Dam in 2024 consisting of crocodile specialists from all conservation agencies in South Africa with Nile crocodile populations, a Non-Profit Company was registered with the Companies and Intellectual Property Commission of South Africa. The next step is to register the NPC as a Public Benefit Organisation so that the organisation will be able to issue tax certificates, allowing donating companies to contribute up to 10% of their annual taxable income to CCSA and claim it back from SARS. Our initial funding strategy will focus on crocodile farms in South Africa. All donations will be used exclusively to support conservation interventions, monitoring and research, practical projects promoting Nile crocodile conservation, management, and human–crocodile conflict mitigation in South Africa and research projects on wild populations or crocodile farms. During a 2023 workshop at Pongolapoort Dam and the 2024 meeting at Loskop Dam Nature Reserve, delegates discussed the development of a South African Nile Crocodile Assessment to evaluate the current conservation status, threats, and management measures for Nile crocodile populations in South Africa. This national assessment will serve as a foundation for the Biodiversity Management Plan for the species and will help identify information gaps that need to be addressed. A workshop is planned at Ndumo Game Reserve in June where discussions on the structure and format of assessments will be held followed by workshops to review some of the initial provincial assessment documents.

Non-Detriment Finding for Nile Crocodile in South Africa: Dr. Jeanetta Selier (Senior Scientist, Scientific Authority & Wildlife Economy Biodiversity Research, Assessments and Monitoring, South African National Biodiversity Institute) reported that the NDF for Nile crocodile in South Africa has been approved by the Scientific Authority and is expected to be gazetted by DFFE in early 2026 for public comment.

HCC and public awareness:

a) In early 2024, a 10-year-old boy was attacked by a crocodile in the Phalala River and disappeared; his remains were never found despite extensive search efforts.
b) In March 2024, a Middelburg man survived a serious crocodile attack while near a river in Mpumalanga Province; he is recovering in hospital after being bitten and dragged by a crocodile.
c) In February 2025, a man was found dead in the Mogalakwena River (Limpopo Province) after a suspected crocodile attack while fishing. His body was recovered with severe mutilations consistent with crocodile predation.
d) In June 2025, a 56-year-old man died in a crocodile attack at Bonamanzi Game Reserve near Hluhluwe, KwaZulu-Natal Province. Local media (The Citizen/Zululand Observer) reported the attack occurred at a dam within the reserve, prompting warnings to be careful near wildlife water sources.
e) Following numerous rumours and videos suggesting the presence of Nile crocodiles at Olifantsnek Dam, Northwest Province, a popular tourist facility including swimming and triathlons, myself and Masters student Fortunate Davhana and Ms. Vasti Botha from the Northwest Province Conservation Agency conducted a spotlight count in November 2025 and managed to capture three juvenile crocodiles. It is unclear how the crocodiles ended up in the dam. More searches will be conducted to see if there are more crocodiles in the dam.
f) In February 2026, a fatal crocodile attack was reported from the Sabie River. A man fetching water from the Sabie River near Kruger National Park was killed by a crocodile, with his body recovered from the riverbank after community members saw the incident unfold.

Research and Publications:

- Pooley, S. (2024). Research and management of the Nile crocodile (*Crocodylus niloticus*) in Ndumo Game Reserve. African Journal of Wildlife Research.
- Zdunek, P., de Wit, T., Toh, A.K.J., Harold, G. and Seah, B. (2024). Predation of an adult Nile monitor (*Varanus niloticus* Linnaeus, 1758) by a Nile crocodile (*Crocodylus niloticus* Laurenti, 1768) in South Africa with other records of interactions between monitor lizards and crocodilians. Biawak 16(1): 20-23.
- Fourie, M., de Freitas, A., Myburgh, A. and Myburgh, H.C. (2025). Automated crocodile detection using deep learning and synthetic data. Ecological Informatics.
- Viljoen, D., Webb, E., Myburgh, J., Truter, C., van Wyk, H. and Myburgh, A. (2025). Thermal profiles associated with nest site selection of Nile crocodiles (*Crocodylus niloticus*) on a commercial crocodile farm. Journal of Thermal Biology (doi: 10.1016/j. jtherbio.2025.104179).
- Davhana, F., Humphries, M., Hunter, G., Seoraj-Pillai, N. and Combrink, X. (2025). Exposure of sub-adult Nile crocodiles (*Crocodylus niloticus*) to extreme lead concentrations: a 48-week experimental study with implications for wild populations. Research Square (doi: https://doi.org/10.21203/rs.3.rs-6966105/v1).
- Soto, D.X., Radloff, F.G.T., Bond, A.L., Hobson, K.A. and Leslie, A.J. (2025). In the quest of isotope equilibrium for trophic discrimination estimation: Diet-tissue dynamics in Nile crocodiles (*Crocodylus niloticus*). Isotopes in Environmental and Health Studies (doi: 10.1080/10256016.2025.2535762).
- Gila, A., Maina, A.N. and Mnisi, C.M. (2025). Utilisation of Nile crocodile (*Crocodylus niloticus*) offal meal waste by-products as a novel protein substrate in the formulation of diets for Jumbo quail. Discover Agriculture 3: 59.
- Rachuene, P., Nemutandani, K.R., Mugwabana, J.T. and Tyasi, T.L. (2025). Prediction of total skin length in Nile crocodiles (*Crocodylus niloticus*) using measurable skin traits. Research Square (doi: https:// doi.org/10.21203/rs.3.rs-6810779/v1).

a) Fortunate Davhana from the Department Nature Conservation of the Tshwane University of Technology has finished her Masters study (Cum laude) with the title "*Experimental study investigating the effect of ingested lead (Pb) in*

captive Nile crocodiles (Crocodylus niloticus): significance for wild Nile crocodiles". She is in the process of registering for a PhD in Nile crocodile ecotoxicology.

b) Prof. Jan Myburgh from the Department of Paraclinical Sciences at the University of Pretoria, based at the Faculty of Veterinary Science (Onderstepoort campus) has retired in 2025. Jan was involved in numerous projects on Nile crocodiles over decades both commercially as well as wild populations and has published extensively through local and international collaborations. Jan also attended numerous CSG working meetings and he will be greatly missed.

Zambia

Paul Reilly reports that Zambia continues to support widespread populations of the Nile crocodiles across major river systems and wetlands, including the Zambezi, Kafue, Luangwa, Chambeshi, Bangweulu, and associated floodplains. At a national scale, populations are considered generally stable, although localized pressures persist in areas experiencing increasing human settlement, fishing activity, and riverine agriculture. No comprehensive national population census was undertaken during the reporting period; assessments remain largely site-specific and observational, based primarily on Department of National Parks and Wildlife (DNPW) records and partner observations.

Human-crocodile conflict remains a significant and ongoing management challenge, particularly along the Luangwa and Zambezi river systems. Incidents are commonly associated with subsistence fishing, domestic water collection, and livestock watering points. DNPW continues to respond through problem animal control, community sensitisation, and targeted removals where necessary. However, financial, logistical, and staffing constraints limit the consistency of response and the consolidation of national-level incident data.

Zambia maintains a small but globally relevant Nile crocodile farming sector operating under national wildlife legislation and CITES requirements. Commercial production is primarily oriented toward the international luxury skin market, with limited domestic utilisation of meat and by-products. During the reporting period, industry focus through the Zambia Crocodile Farmers Association (ZaCFA) has been placed on:

- Continuous optimisation of animal welfare, biosecurity, and traceability systems.
- Maintaining high compliance with CITES, veterinary regulations, and occupational health standards.
- Proactive involvement in crocodile conservation and human crocodile conflict actions in partnership with DNPW.
- Third party certification. 85% of Zambian farms are third party certified or affiliate members currently working toward full certification. Of these, 57% have been certified for several years and 28% are aiming to be certified in 2026. 15% are in the process of winding down so Zambian farms are expected to be 100% certified by 2027.

Zambia remains compliant with its CITES obligations for *Crocodylus niloticus*. Exports are administered through well-established permitting systems, with no compliance breaches reported during the period.

Research on wild crocodilian ecology and population dynamics in Zambia remains limited and largely opportunistic. Funding constraints continue to limit targeted field investigations into the current existence and distribution of the African slender-snouted crocodile (*Mecistops leptorhynchus*) within its historical range in Zambia. While historical records suggest past occurrence within parts of the Congo–Zambezi watershed systems, no systematic surveys were undertaken during the reporting period to confirm persistence or extirpation.

Conservation outcomes are therefore currently driven more by protected area management and law enforcement than by species-specific research programmes. Increased engagement between private crocodile farming operators, regulators, and technical advisors has nevertheless contributed to improved awareness of welfare and sustainability standards, and to strengthened dialogue between conservation, tourism and commercial stakeholders.

Key challenges identified for the coming period include:
- Limited national level crocodilian population monitoring and data consolidation.
- Persistent human crocodile conflict in high-risk riverine communities.
- Capacity and funding constraints within regulatory agencies.
- The need for continued technical support to ensure long-term sustainability, welfare standards, and social licence within the crocodile farming sector.

Priority actions include improved data collection on HCC incidents, targeted community risk-reduction initiatives, and mobilisation of resources to support field surveys for *C. niloticus* and within the historical range of *M. leptorhynchus*.

Tanzania

Research and Publications:
Murhula, G.B., Shadrack, M., Rehema, M.M., Muhamba, F., Mrema, E.M. and Mghase, A.E. (2025). Crocodile bite scalp avulsion and hand extensor tendons injury: A rare case reconstructed in a tertiary hospital, in Tanzania. International Journal of Surgery Case Reports 134(2025): 111721.

Gayo, L. and Ngonyoka, A. (2025). Do wildlife management areas help to mitigate negative human-wildlife interactions? A case of eastern bufferzone of Selous Game Reserve, Tanzania. Tropical Conservation Science (https://doi.org/10.1177/194008292513405).

Zimbabwe

Sue Childes (Executive Manager, CFAZ) reports that CFAZ continue to work closely with the Zimbabwean CITES focal office, the Zimbabwe Parks & Wildlife Management Authority, on the collation of trade data which is submitted to the WCMC/UNEP. Assoc. Prof. Sally Isberg was guest speaker at our annual AGM meeting in Harare in July 2025 and stimulated discussion and research into skin defects. CFAZ have supported veterinary research work on crocodiles through Dr. Norman Mukarati at the Veterinary Faculty, University of Zimbabwe. HCC is a growing concern amongst CFAZ members and ZPWMA and, in an effort to raise awareness, a series of posters and warnings were printed and circulated to sites in known croc conflict areas around the country. The impact of world trade depression and market uncertainty coupled with rising input costs in Zimbabwe has resulted in the closure of one large farm and moth-balling of four other farms. The temporary closure is in the hope that the skin markets will improve soon. The serious knock-on effect of this decreased production is decreased revenue for conservation and local economies, decreased employment and support to schools and clinics in rural communities.

Research and Publications

Utete, B. and Mabika, N. (2025). Evolution of fisheries, aquaculture, and crocodile farming governance in Zimbabwe within the Southern African policy context. Frontiers in Conservation Science 6: 1704218.

Kavhu, B., Mutema, C., Mpakairi, K.S., Gandiwa, E. and Muvengwi, J. (2025). Mapping human fatalities from megafauna to inform coexistence strategies. Scientific Reports 15(1): 33856.

Hungwe, B., Utete, B. and Madamombe, H.K. (2026, in press). Assessing human-crocodile conflicts in fragmented wetlands in an arid area: data on potential human-water-wildlife conflict mitigation strategies. European Journal of Wildlife Research.

Prepared by: Xander Combrink and Christine Lippai, Regional Co-Chairs for East and Southern Africa
Date prepared: 28 February 2026

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

West & Central Africa

The West & Central Africa region (WACA) continues to advance its primary missions of: 1) better understanding crocodiles and their conservation and management needs throughout WACA; and, 2) attracting local personnel/organizations and developing capacity for crocodile work within the region. Since the last CSG working meeting (Darwin, Australia, 2024) we have been productive to these ends. Here we recount some of the events over the last two years.

Addition of Regional Vice Chair: We welcomed Dr. N'dede Michel Ahizi to the regional team as representative for Cote d'Ivoire. Michel undertook research on the efficacy of Cote d'Ivoire's protected areas network for threatened aquatic species, specifically West African slender-snouted crocodiles and West African crocodiles. He has been working on crocodilians since 2014, during which time he has participated in a diverse portfolio of crocodilian research initiatives in Cote d'Ivoire and throughout the region, including in Guinea, Liberia, and Senegal. And, on behalf of CSG, he was also integral to the organization of the 3rd regional meeting (Abidjan, 2015), he participated in the 2016 CSG Working Meeting (Skukuza, South Africa), helped organize the 2024 Dwarf crocodile Red List and Conservation Planning workshop, and he is part of the Red List assessment teams for *Crocodylus suchus*, *Mecistops cataphractus* and *Osteolaemus afzelii*. We look forward to working closely with Michel as part of the regional leadership team.

Red List Assessments: West and Central Africa is one of the most diverse regions for crocodylian species, housing all seven of Africa's crocodylians. Since 2022, our regional leadership team has submitted assessment drafts for the West African Slender-snouted crocodile *M. cataphractus* (CR) and the Central African slender-snouted crocodile *M. leptorhynchus* (EN) - the first ever review for the latter - and are still working to finalize both. We are currently working on the assessment for the West African crocodile *C. suchus* (VU) and aim to have it submitted in 2026. In 2024, we held a Dwarf crocodile Red Listing and Action Planning workshop (November, Abidjan), which involved bringing nearly 20 participants from across Dwarf crocodile range states to evaluate each of the three species. This is the first time that Dwarf crocodiles have been evaluated for the Red List since 1996. We hope to have all three species assessments submitted in 2026. The delays have to do with the availability of the regional leadership team and assessors to move them forward - this is still a region that requires significant support, with few members having implication or visibility on crocodilians outside of their main project sites. We continue to use these assessments as opportunities to train CSG WACA members in Red List assessment methods - which can take considerably longer. We are hopeful that all will be submitted and published in 2026.

Conservation Action Plans: Conservation action plans have been in development for all six crocodylian species in the WACA region. For four of these species - *O. osborni*, *O.* sp. nov. cf. *tetraspis* - West Africa*, M. leptorhynchus*, and *C. suchus* - this is the first time that they will be represented by CSG-produced action plans. And, for five of the six species, this is the first time that the action planning process is being led by range state CSG members working on these species. The workshop mentioned above for Dwarf crocodiles included conservation action planning for all three species, as well as an *ex-situ* management chapter. We were hopeful that they would be available as of 2024, but the work is advancing slowly and anticipate 2026-2027 releases.

Documentaries: One documentary was filmed on African Dwarf crocodiles in Gabon, again focused on the unique population of cave-dwelling crocodiles in the Abanda cave system. This was filmed for the upcoming National Geographic series *Home* and will air in 2026. The release will be accompanied by a print article in the National Geographic magazine, the first time that Dwarf crocodiles have been featured in this prestigious environmental news outlet.

We attach below the reports of some of the people working in these countries on crocodiles. In addition, we are aware of the following projects either burgeoning or underway in this region:

- **Congo:** WCS is implementing a Key Biodiversity Areas (KBA) initiative in Congo and included *Mecistops* and *Osteolaemus* as potentially critical species triggering recognition of KBAs. The results were supposed to be available in 2024 or 2025, but they have not been shared. WCS is also carrying forward work on dwarf crocodiles in Lac Tele Community Reserve, including surveys and support for community-led hunting and harvest reforms. They will present some of this during the working meeting.

- **Gambia:** The NGO Project Wild Gambia continues its work around the country and has documented dwarf crocodiles in several sites that they were previously not known from. There are long term plans for rehabilitation of some of the habitats that favor this species to improve its conservation outlook in the country, as well as to reintroduce to areas

from ex situ stock. In 2025, M. Shirley visited the country with Project Wild Gambia and CSG member Shaun Foggett to assist in surveys of the River Gambia National Park and implement training for project staff. This is the first time the area has been surveyed since 2008 and we are happy to report that *M. cataphractus* is still in the area – though still isolated to a very small stretch around the heavily protected chimpanzee islands. No *Osteolaemus* were detected during the surveys, but their presence was also reconfirmed shortly after. Of concern is that numbers of all three species seem to be declining in the country. Project Wild Gambia also participated in the 2024 Dwarf crocodile workshop in Cote d'Ivoire. Roy Armstrong, formerly of the University of Cumbria, and Caitlin Henderson are the lead points of contact.

- **Ghana:** This information appears in the Ghana country report below, but I want to highlight that Emmanuel Amoah (CSG Regional Vice Chair) and his NGO THRESCOAL have succeeded in gazetting the Tano River Crocodile Sanctuary, a community-based conservation area that falls in the Ghanaian CREMA system. This is, to the best of our knowledge, the first and only dedicated crocodilian protected area in the entirety of Africa, and is designed to conserve one of the largest remaining *M. cataphractus* populations which until now has been entirely outside the scope of a protected area or management system. Congratulations to Emmanuel and team!

- **Liberia:** The German Embassy requested assistance with a small group of *C. suchus* inhabiting their property. CSG members M. Ahizi and C. Kouman travelled to Liberia from Cote d'Ivoire to assist, but were ultimately unable to capture the animals for relocation. We have not had any news since. Additionally, Laurent Chirio reported finding a population of *M. cataphractus* on the St. Paul River, though no surveys were conducted and we do not know how large or threatened the population may be.

Prepared by: Matthew Shirley, West and Central Africa Regional Chair
Date prepared: 29 April 2026

BENIN

Des entreprises des travaux publics dans la conservation des crocodiles au Benin

La conservation des crocodiles concerne tous les secteurs d'activités dont les travaux publics. Les travaux de construction de la route des pêches et de ses bretelles ont suscité des interrogations quant à la présence de crocodiles dans l'une des localités concernées par les ouvrages. Interpelé par les communautés, l'entreprise en charge des travaux a diligenté une prospection par le biais de l'ONG Action Plus pour vérifier la présence effective de ce reptile.

1. Phase de prospection

   Les fouilles se sont avérées positives et conduit à la réalisation d'un dénombrement afin d'apprécier la population de cette faune. Pendant cette prospection, nous avions découvert deux nids (photo 1) dont un avec coquilles d'œufs et donc une éclosion très récente au regard de l'aspect que présente les restes d'œufs.

   En dehors des nids, le crocodile de l'Afrique de l'Ouest (*Crocodylus suchus*) a bel et bien été observé. Ces derniers ont été présenté et discuté au cours d'une séance avec les responsables de l'entreprise, de la mission de contrôle, de l'inspection forestière, de l'ONG Action Plus et les autorités locales. La grande décision était la réalisation d'un dénombrement approuvé par la mission de contrôle et l'entreprise en charge des travaux.

2. Phase de dénombrement

   Au total 33 individus du crocodile de l'Afrique de l'Ouest ont été dénombrés pour 29 observations dans la zone prospectée (tableau 1). Plus de la moitié de la population étaient des juvéniles et donc très vulnérables. Les jeunes représentent 20% de cette population tandis que les adultes et les sub-adultes représentent 25%. Ces résultats sont en adéquation avec ceux de la première prospection de confirmation de la présence de crocodile dans la zone au cours de laquelle des nids de crocodiles avaient été observés dans la zone.

Tableau 1. Répartition de la population en fonction des classes d'âges.

Catégories ou Classes d'âges	**Juvénile (Jv)**	**Jeunes (J)**	**Subadulte (SA)**	**Adulte (A)**	**Total**
Classe de taille	<50 cm	<1 m	≥1 - ≤1.8	>1.8 m	-
Nombre	19	6	3	5	33
% par de catégorie	57.58	18.18	9.09	15.15	
IKA (Zone de présence)	1.65	0.52	0.26	0.43	2.87
IKA (Général)	0.54	0.17	0.09	0.14	0.94

Photo 1. Observation de nid (à gauche) ©Fidèle, 2023 Déplacement en barque dans les mangroves lors de la prospection (au milieu) ©Fidèle, 2023 Crocodile observé au cours de la prospection (à droite) ©Georges, 2023

Il faut remarquer que la zone de concentration des crocodile (figure 3) est plus dense et relativement calme et offrirait une certaine tranquillité aux animaux.

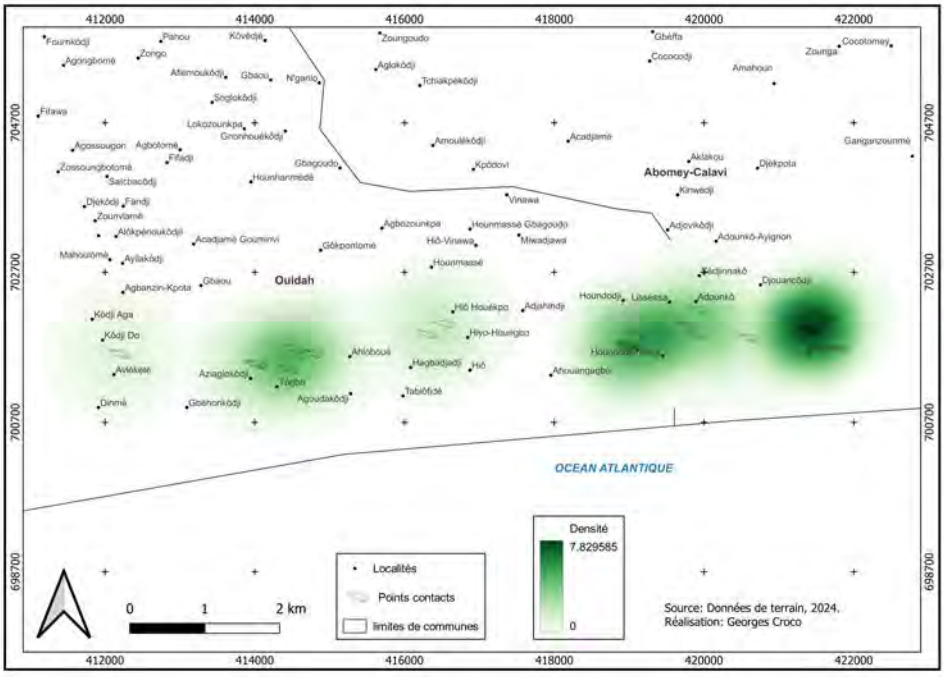


Figure 3. Distribution cartographique des crocodiles dans la zone de dénombrement

Pour l'ensemble des crocodiles, l'indice kilométrique d'abondance (tableau 1) montre que nous avons près de trois (3) individus par kilomètre sur la zone de concentration (les 12 km cités plus haut). Remarquons aussi, cet indice calculé pour les juvéniles, nous renseigne qu'il y a près de deux (2) juvéniles crocodiles observés à chaque kilomètre. Aussi, la présence de ce fort taux de juvénile corrobore avec les nids observés dans la zone.

3. Recommandations

Au nombre des recommandations formulées, nous avons :

- ❖ Organiser un suivi annuel pour mieux apprécier la dynamique de cette population de crocodiles;
- ❖ Elaborer un programme de suivi par balise GPS afin d'améliorer les connaissances sur la mobilité crocodiles dans la zone et contribuer ainsi à la mise en œuvre de la stratégie de leur conservation globale.

Prepared by: HEDEGBETAN Georges C., ADJAHO Fidèle, MADOGOTCHA Josias, LISSAGBE Hermann, et FALADE Valentin
Date prepared: 5 February 2026

A publication was also accepted from Benin:

Bio Ouré R., Kpéra G.N., Djagoun C.A.M.S., Kassa B., Shirley M.H., Djego G., Natta A., Mensah G.A., Sinsin B. (*In preparation*) Population status and habitats suitability for the West African crocodile (*Crocodylus suchus*) in the Northern Biosphere Reserves of Benin. *African Journal of Ecology*

The Pendjari Biosphere Reserve (PBR) - W Transboundary Biosphere Reserve (WTBR) complex (CPWBR) is the most protected area of Benin and a critical refuge for the newly recognized West African crocodile (*Crocodylus suchus*). We determined crocodile population status and habitats suitability using diurnal and nocturnal counts along rivers and ponds. During diurnal counts, we detected population structure to be 44.05% juveniles, 18.45% subadults and 37.50% adults (n= 147 individuals detected). During nocturnal counts in the CPWBR, we encountered crocodiles at a rate of 10.95 crocodiles/km of bank, while we encountered 3.25 crocodiles/ha of pond. A Getis-Ord Gi* hotspot Analysis showed two most populated ponds in PBR (Getis Ord Gi* Z score= 8.08; Confidence= 99%) and WTBR (Getis Ord Gi* Z score= 2.41; Confidence= 95%). Finally, the modelling reveals that highly favorable areas for crocodile during dry season in the CPWBR accounted for about 3%. With a crocodile population size above the minimum viable population size and a growing population structure, the CPWBR exhibits the characteristics of a favorable habitat selected by crocodiles. Maintaining this level of protection for the CPWBR will ensure continuing growth of this crocodile population.

Prepared by: Gnanki Nathalie Kpera and Ridwane Bio Oure
Date prepared: 7 April 2026

BURKINA FASO

Crocodiles and Floating Cage Aquaculture: Ecological Management and Human-Crocodile Conflict Prevention in Three Reservoirs in Burkina Faso

Abstract: The expansion of floating cage aquaculture in Burkina Faso has intensified interactions between crocodiles and fish farming, raising concerns about human–wildlife conflicts and biodiversity conservation. This study aims to assess crocodile abundance and spatial distribution in relation to aquaculture sites in the Bagré, Loumbila, and reservoirs no3 of Ouagadougou. Using direct observation methods, georeferencing, and socio-ecological surveys, the research evaluates ecological interactions, characterizes damage associated with crocodile presence, and analyzes local perceptions. The study will inform evidence-based management strategies for sustainable coexistence between crocodiles and aquaculture activities.

1. Introduction

Human-crocodile conflicts are increasingly reported in freshwater ecosystems where aquaculture development overlaps with crocodile habitats. In Burkina Faso, the rapid growth of floating cage aquaculture in reservoir lakes has created ecological, economic, and social challenges. While aquaculture contributes significantly to food security and local livelihoods, it may also alter habitat use patterns of crocodiles and increase the risk of negative interactions.

Understanding crocodile distribution around aquaculture facilities, assessing associated risks, and integrating local perceptions into management planning are essential for developing sustainable conservation strategies. This study investigates the ecological and social dimensions of crocodile-aquaculture interactions in three major reservoirs (Bagré, Loumbila, and No. 3), with the objective of providing actionable recommendations for mitigating human–crocodile conflicts.

2. Materials and Methods

2.1. Study Area

The study was conducted in three reservoirs in Burkina Faso: Bagre, Loumbila, and reservoirs nº3 of Ouagadougou (Figure 1). These reservoirs host established crocodile populations and floating cage aquaculture operations (Figures 2 and 3). The sites vary in size, aquaculture intensity, and human activity, providing a comparative framework for assessing ecological interactions and conflict dynamics.

2.2. Crocodile Surveys

Crocodile abundance and spatial distribution were assessed using standardized direct observation protocols (Shirley and Eaton 2012). Surveys were conducted in two zones: near aquaculture cages (≤100 m) and in areas beyond 100 m, to evaluate spatial variation relative to aquaculture activity.

Each reservoir was surveyed for a minimum of three hours per session. Systematic shoreline transects and inspections of accessible areas were performed to detect, count, and georeference (GPS) each individual. Observations were carried out during both daytime and nighttime to account for diel activity variations, with spotlight surveys conducted at night to improve detectability.

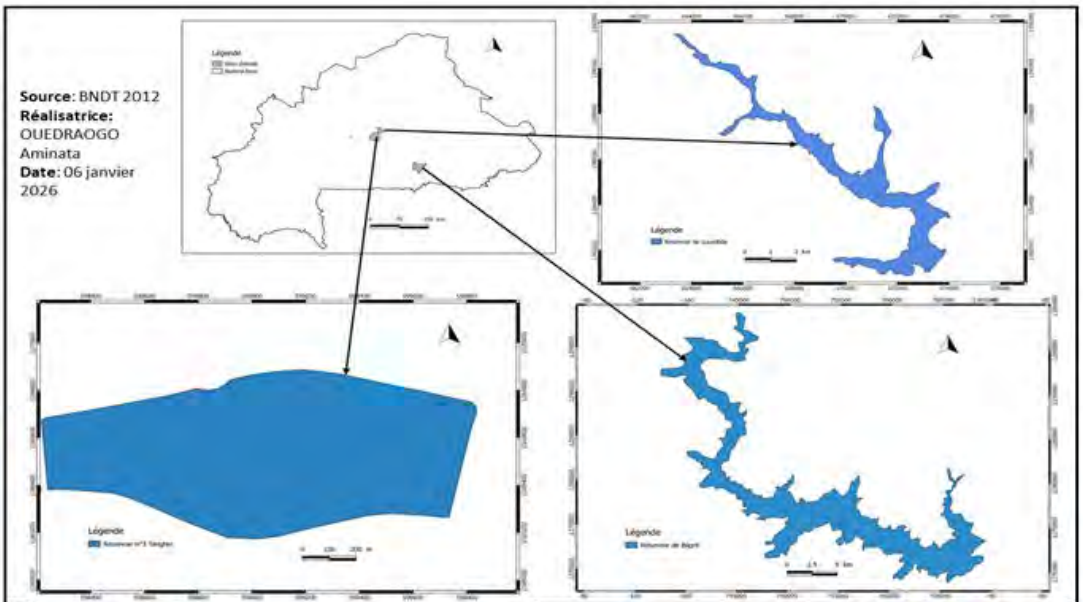


Figure 1: Study reservoirs

Figure 2: Floating cages at the Bagre reservoir. A) Students Conducting Observations on Floating Cages and B) floating cage device

Figure 3: Floating cages at the reservoirs no3 of Ouagadougou

2.3. Spatial and Statistical Analyses

Geographic Information Systems (GIS) were used to map sightings and assess spatial distribution patterns. Kernel density estimation and spatial clustering analyses were applied to identify aggregation patterns. Differences in abundance between zones (≤100 m vs. >100 m) were tested using generalized linear models (GLMs) or generalized linear mixed models (GLMMs) when site-level variability was present. Analyses were performed in R software.

2.4. Socio-Ecological Surveys

Structured questionnaires were administered to fish farmers and local communities at each site to assess perceptions, attitudes, and perceived risks related to crocodile presence. Quantitative data were analyzed using descriptive statistics and inferential tests (e.g., chi-square tests, logistic regression), while qualitative responses were coded and analyzed thematically to identify recurrent patterns related to conflict dynamics and mitigation strategies.

3. Expected Results

This study is ongoing and will continue until September 2026. The expected outcomes include:

- Determination of crocodile abundance and spatial distribution patterns in the three reservoirs;
- Assessment and characterization of damage associated with crocodile presence in aquaculture zones;
- Analysis of fish farmers' and local communities' perceptions and attitudes toward crocodiles;
- Development of evidence-based conservation and management strategies to mitigate human-crocodile conflicts while promoting sustainable coexistence.

Prepared by: OUEDRAOGO Ilassa and OUEDRAOGO Aminata
Date prepared : 5 February 2026

COTE D'IVOIRE

Activity 1: Estimation of home range size of *Mecistops cataphractus* in Taï National Park

We equipped 26 individuals of *M. cataphractus* (13 females and 13 males) belonging to three different size classes (juveniles, subadults and adults) with VHF tags in Taï National Park and radio-tracked them for three years. We found that the home range occupied by the individuals is between 0.16 and 2272 ha. Males occupied larger areas than females while different sized individuals covered areas of almost similar sizes. In addition, individuals mostly exhibit short movements, disperse relatively little and remain in flooded areas adjacent to the watercourses they inhabit.

Activity 2: Habitat selection of *M. cataphractus* in Taï National Park

We described habitat type on each crocodile location during the radio-tracking and discovered that *M. cataphractus* preferred habitats which are tangles of trunks and branches, submerged stilt roots, flooded plantations and forests, submerged overhanging vegetation, seasonally flooded bushes and submerged emergent grasses, which enhance the protection and feeding of individuals. Moreover, juveniles and subadults occupy a greater diversity of microhabitats compared to adults.

Activity 3: Social dynamic interaction of *M. cataphractus*

We evaluated social interactions on both a static and dynamic level. To do that, we first analysed the spatial proximity between neighboring crocodiles. Secondly, we determined the dynamic interactions that quantify the probability of encounters between individuals by accounting spatial and temporal aspects of one animal's influence on another. Individuals demonstrate spatial proximity with degrees of overlap generally greater than 33%. However, neighboring crocodiles develop a strategic use of resources which allows them to coexist without conflict within the shared area. Individuals exhibit less site attachment, characterized by very little overlap in home ranges from one season to the next. This in-depth knowledge of the movement structure, home range and social organization of *M. cataphractus* will make it possible to better guide and support conservation initiatives for this species.

Activity 4: Captive-breeding program in Abidjan Zoo

During 2024 and 2025 breeding seasons, *M. cataphractus* females laid 122 eggs and 136 eggs respectively, of whom 78% were fertile. For both years, we only recorded 5 hatchlings due to multiple electricity issues. We still have 12 individuals from the 2022 and 2023 breeding season.

Prepared by: Michel Ahizi and Christine Kouman
Date prepared: 15 April 2026

GABON

Over the past two years, crocodile-related activities in Gabon have focused on strengthening scientific knowledge of crocodilian species, contributing to regional conservation assessments, and developing innovative tools for data collection and community-based monitoring. Through participation in international scientific workshops, collaboration with

research institutions, and the development of local data collection systems, my work as a volunteer with the NGO Aquatic Species has helped document pressures on crocodile populations and support evidence-based conservation actions.

A major milestone was the participation of Aquatic Species in the CSG workshop held in Abidjan, Côte d'Ivoire (18-22 November 2024), which was dedicated to the evaluation of crocodile conservation status and capacity building in West and Central Africa. This participation led to the development of new projects on opportunistic data collection, database creation, and the preparation of scientific communications on human-crocodile interactions in Gabon.

Below are the main highlights of the projects and activities initiated:

1. **Participation in the CSG Workshop (Abidjan, Côte d'Ivoire)**

   Status: Completed

   Aim: To contribute to the regional evaluation of crocodile conservation status and strengthen scientific capacity on Red List assessment methodologies, with a focus on the African dwarf crocodile (*Osteolaemus tetraspis*).

   Progress: Aquatic Species NGO actively participated in the workshop sessions dedicated to crocodile status assessment and conservation strategies. A scientific presentation was delivered in collaboration with the Smithsonian Institution on the situation of *O. tetraspis* in Gabon (Figure 1), highlighting distribution patterns, pressures, and existing data gaps. The organization also took part in group work on the evaluation of the conservation status of *O. tetraspis* using available regional information, providing national-level data from Gabon.

Figure 1: Overview of scientific presentation realized by Aquatic Species NGO and Smithsonian during workshop in Ivory coast.

2. **Development of an Opportunistic Crocodile Data Collection Project (Estuary Region, Gabon)**

   Status: Ongoing

   Aim: To establish a system for collecting opportunistic data on crocodilian species (alive and dead) in the Estuary region of Gabon, particularly in Kango, in order to document pressures, mortality causes, and distribution trends.

   Progress: A project was developed in 2025 focusing on community-based and opportunistic data collection. A standardized protocol was designed to record observations, including location, date, species, condition (alive or dead), and probable cause of mortality (Figure 2). Initial observations revealed that most recorded individuals were *O. tetraspis* found dead, mainly linked to commercialization and bushmeat trade.

Figure 2: Dwarf crocodile dead observed in landing site (Kango, Gabon).

3. Development of a Data Collection Matrix for a Mobile Application

Status: Ongoing

Aim: To design a standardized digital tool for real-time reporting of crocodile observations by scientists and citizens.

Progress: A data collection matrix was created in preparation for the development of a mobile application that will allow users to report crocodile sightings (alive or dead) and visualize data in real time when internet access is available (Figure 3). The application aims to support citizen science, improve surveillance of crocodile populations, and generate spatial data on species distribution and threats.

Proposed Data Collection Matrix – Crocodile Observation App

Section A. Observer Information

Variable	Description	Type
Observer_ID	Unique observer code	Text / Auto
Observer_Name	Name of observer (optional)	Text
Observer_Type	Scientist / Citizen / Fisher / Ranger / Student	Dropdown
Contact	Phone or email (optional)	Text
Date_Entry	Date of data submission	Date

Section B. Observation Details

Variable	Description	Type
Observation_ID	Unique observation code	Auto
Date_Observation	Date of observation	Date

Figure 3: example section of the data collection matrix

4. Scientific Communication on Human-Crocodile Conflicts in Gabon

Status: Submitted

Aim: To disseminate scientific knowledge on conflicts between artisanal fishers and crocodiles using local ecological knowledge.

Progress: A scientific abstract entitled: “Conflicts of use between artisanal fishers and crocodiles in aquatic systems of the Nyanga River region (Ramsar site of Setté Cama, Gabon): an analysis based on local ecological knowledge” was submitted to an international multidisciplinary conference to be held at Omar Bongo University (Libreville) from 11 to 13 November 2026. This work highlights human-crocodile interactions and supports the integration of social data into conservation planning.

Prepared by: Regis Kema Kema
Date prepared: 24 January 2026

Two Gabonese participated in the Dwarf Crocodile Red Listing & Conservation Planning Workshop in Abidjan, Hotel Belle Côte, in Ivory Coast, November 18-21 2024 for the assessment and planning for the *Osteolaemus* genus for the implementation of effective sustainable management. One physically participated (Regis Kema Kema) and another one virtually (Elie TOBI).

The Smithsonian Gabon Biodiversity Program (GBP) continued supporting biodiversity conservation activities through biodiversity research and monitoring of focal taxa, including hippopotamus, forest elephants and crocodiles in the Gamba Complex of Protected Areas, SW Gabon. Regarding crocodiles, in 2025, GBP conducted structured interviews with local fishers from at least 15 sites to gain a better understanding of local crocodile populations and threats to guide further conservation actions. The project included two activities as follows:

Activity 1: Socio-ecological surveys with fishermen in the southern Gamba Complex of Protected Areas to evaluate the distribution of, and threats to crocodiles, hippos and manatees (McNamara *et al*. 2024). In this report, we only provide the crocodile findings**.**

Three species of crocodile have been identified in the Gamba complex of Protected Areas in the southwestern Gabon: Slender-snouted crocodile (*M. leptorhynchus*): not yet classified by the IUCN Red List, African Dwarf crocodile (*O. tetraspis*): classified as Vulnerable. Nile crocodile (*C. niloticus*): classified as Least Concern.

Spatial distribution
Crocodiles are widespread in the fishing areas of the Gamba complex, but their frequency of observation varies depending on the species and area. The slender-snouted crocodile is the most frequently observed species, with particularly rich areas such as Sounga, Lake Mandza, Malabi, Mafoumi, Mbissi, and Mbigu. The dwarf crocodile was observed in 33 of the 44 geolocated areas, with frequent sightings in Sounga, Setté Cama, Malabi, Mafoumi, and Mbissi, while the Nile crocodile was less frequently observed, mainly in the Nyanga River and at the mouth of Setté Cama.

Frequency of encounters
The slender-snouted crocodile is observed at least once a week by 70% of fishermen, the Dwarf crocodile once a week by 48% of fishermen and the Nile crocodile is observed at least once a week by 20% of fishermen.

Population trends
When asked about changes in crocodile abundance over the past 5 years, most fishermen reported that populations were stable. However, when changes were reported, declines were much more common than increases: 75% said that the Slender-snouted crocodile population was stable, 71% for the Dwarf crocodile population, and 64% for the Nile crocodile population. However, 25% reported a decline in the Slender-snouted crocodile, 35% in the Dwarf crocodile, and 27% in the Nile crocodile.

Threats
The main threats identified are hunting (64% of responses), followed by human disturbance and habitat loss (20% of responses) and the illegal fishing technique locally called “tapé-tapé” (7% of responses).

Accidental capture (Bycatch)
63% of fishermen reported accidentally catching crocodiles in their nets. The Slender-snouted crocodile is most often caught accidentally (92% of cases). Crocodiles caught are generally consumed or sold for their meat (91% of fishermen).

Fishermen's perceptions
Fishermen perception varies between conflicts. 96% of fishermen identified damage to nets as a major problem. However, 78% of fishermen do not consider crocodiles to be a serious problem for fishing. Crocodiles are perceived as useful for tourism (76%) and for cleaning ecosystems by removing dead or diseased fish (84%) and cultural importance (21%), often associated with spiritual beliefs.

Recommendations for conservation
1. Strengthen enforcement of fishing regulations, particularly in sensitive areas such as Sounga, the Nyanga River, Malabi, and Mafoumi.
2. Raise awareness among fishermen about sustainable practices, including avoiding placing nets parallel to the banks to reduce bycatch.
3. Integrate local customs and cultural beliefs into conservation efforts.
4. Develop a crocodile conservation and monitoring program, with a focus on the Slender-snouted crocodile.
5. Invest in additional research to monitor population trends and threats.
6. Examine the crocodile meat trade in detail to understand targeted demand and supply chains.
7. This report highlights the importance of the Gamba Complex of Protected Areas for the conservation of crocodiles and other aquatic species, while emphasizing the challenges and opportunities for sustainable biodiversity management.

Activity 2: Monitoring hippos, manatees and crocodiles in eight localities in the southern concessions of Assala Gabon including Nyanga and Mouambi Rivers (McNamara *et al*. 2025).

Four missions conducted on the Nyanga and Mouambi Rivers in July and September 2024 revealed 4 Nile crocodiles (two for each river) and 6 Slender-snouted crocodiles (2 on the Nyanga River and 4 on the Mouambi River). In 2025, we observed 18 Nile crocodiles on the Nyanga River, and only 2 Nile crocodiles on the Mouambi River. The nidification site where we monitored Nile crocodile nesting on the Mouambi River is very disturbed now by human activities. People settle fishing camps on the nesting site and also collect eggs. These data confirm that the Dwarf crocodile prefer swampy forested areas to rivers. Indeed, an anecdotal observation of Dwarf crocodiles one-week-old hatchlings was made on the Ndougou Lagoon swampy side by a freelance naturalist who sent pictures and GPS position (2º31'47'' S 9º45'42''; Figure 1).

This finding gives us a path where to organize comprehensive research to document the ecology of the *O. tetraspis* in the locality.

Figure 1: *Osteolaemus tetraspis* hatchling on Ndougou Lagoon. Photo: Swan Kyle

References

McNamara, J, Koumba G, Tchignoumba L, and Feistner, A (2024) *Socioeconomic survey of fishers in the southern Gamba Complex of Protected Areas, Gabon.* Unpubl. report, Gabon Biodiversity Program, Smithsonian National Zoo and Conservation Biology Institute.

McNamara, J., Koumba G., Tchignoumba L., and Feistner, A (2025) *Evaluating the distribution of, and threats to, crocodiles, hippos and manatees, through socio-ecological surveys with fishers in the southern Gamba Complex of Protected Areas, Gabon.* Unpubl. report, Gabon Biodiversity Program, Smithsonian National Zoo and Conservation Biology Institute.

Prepared by: Elie TOBI
Date prepared: 28 January 2026

GHANA

Over the past two years, the Ghana Crocodile Team has made substantial progress in advancing crocodile research and conservation across the country. Building on existing foundations, we have strengthened collaborations with key stakeholders while establishing new and equally strategic partnerships to enhance conservation impact at both local and national levels. Under the leadership of the Threatened Species Conservation Alliance (THRESCOAL), a range of targeted conservation interventions have been successfully implemented. These include the rehabilitation of degraded nesting habitats, the delivery of community-based awareness campaigns, the implementation of demand-driven ecological research, and the development of capacity-building programmes for local stakeholders. Collectively, these actions have contributed to improving habitat quality, strengthening community stewardship, and generating critical scientific data to inform conservation planning.

A major milestone was achieved in September 2025 with the establishment of Africa's first crocodile protected area, the Tano River Crocodile Sanctuary, located along the upstream section of the Tano River. The Sanctuary protects a 40-km

stretch of riverine habitat, encompassing approximately 971 acres of riparian buffer, and currently supports the largest known population of the Critically Endangered West African Slender-snouted crocodile (*M. cataphractus*). Beyond its immediate conservation value, the designation of the sanctuary represents a significant step toward safeguarding the broader upstream ecosystem of the Tano River, which extends over 150 km of relatively intact habitat and culturally protected landscapes. This initiative not only strengthens species conservation but also reinforces the integration of traditional knowledge and community governance into formal conservation frameworks. Below are the brief highlights of the projects initiated in the last two years.

1. Establishment of the Tano River Crocodile Sanctuary

Status: completed

Aim: This project aims to secure legal protection of a 40-km stretch of Tano River through the creation of a 40-km riparian buffer to safeguard the habitat of one the known significant populations of the Critically Endangered West African slender-snouted crocodile.

Progress: The habitat was officially gazetted on 24 September 2025 as the Tano River Crocodile Sanctuary, thereby securing formal legal protection for this critical ecosystem. Through this initiative, over 250 landowners who voluntarily contributed land to the protected area have benefited from alternative livelihood programs including sheep farming, snail farming, piggery, and mushroom cultivation providing tangible incentives that strengthen community support for conservation efforts. Boundary demarcation and the installation of signage are currently underway, with the official launch of the Sanctuary scheduled for 17 April 2026.

2. Integrating sustainable agriculture to conserve the West African Slender-snouted crocodile

Status: Ongoing

Aim: This project seeks to build the capacity of landowners that share boundaries with the Tano River Crocodile Sanctuary in sustainable farming practices to improve yields while minimizing their impact on the ecosystem.

Progress: Plans are advanced to train and support over 250 landowners in sustainable agriculture practices**.**

3 Exploratory Surveys of Selected Potential West Africa Dwarf Crocodile Habitats Across Ghana

Status: Ongoing

Aim: This project aims at assessing the population status, threats and habitat suitability of West Africa Dwarf crocodile within potential hotspots in Ghana

Progress: Through the West and Central Africa crocodile research capacity-building programme, initiated by the THRESCOAL in partnership with Project Mecistops, 7 early-career researchers from Ghana, Nigeria, and Cameroon were supported to compile Dwarf crocodile occurrence data and develop preliminary species distribution maps. Building on this foundation, each national team conducted exploratory field surveys to assess the presence of Dwarf crocodiles within priority habitats. In Ghana, these efforts led to the identification of two previously undocumented dwarf crocodile habitats in the Ahafo Region and a new record of a West African crocodile population in the Volta Region. Follow-up surveys are currently being planned to assess population status, distribution, and conservation needs within these newly identified sites.

4. Status survey and conservation of the West African Dwarf Crocodile in the Bono-East Region of Ghana

Status: Ongoing

Aim: This project aims to assess the population status and threats of the West African dwarf crocodile in the Chirehin and Paninamisa community lands in Ghana

Progress: We conducted a field survey in Pannimisa in January 2026, recording a total of 133 direct encounters of the West African dwarf crocodile over a cumulative survey distance of 18 km. The population structure was strongly skewed towards juveniles (n= 50), followed by adults (n= 29), hatchlings (n= 20), sub-adults (n= 18), and individuals recorded as eyes only (EO; n= 16). Major preliminary threats identified including illegal logging of trees and clearing of critical nesting habitat for dry season vegetable farming and the excessive use of synthetic agrochemicals. Plans are underway to survey Chirehin. These two sites are traditionally protected and are currently among the strongholds for the West African dwarf crocodile.

5. Challenges, experiences and lessons from urban in-situ conservation of the vulnerable West African dwarf crocodile in Ghana

Status: Ongoing

Aim: To safeguard the Kwame Nkrumah University of Science and Technology (KNUST) population and its habitat through restoration measures and farmer sensitization campaigns.

Progress: In 2017, we initiated urban conservation programme in Kumasi, Ghana's second-largest city, to identify and protect remnant populations of the Vulnerable West African dwarf crocodile. In 2019, we conducted habitat assessments across six known dwarf crocodile habitats. We found widespread encroachments from infrastructure expansion and other competing land uses and domestic waste pollution across five sites.

However, the Wewe stream within the KNUST campus showed strong potential as an urban refuge with the Botanical Gardens currently holding the highest concentration of dwarf crocodiles and best habitat conditions. To safeguard this critical population and its habitat, restoration measures and farmer sensitization campaigns were initiated planting and nurturing 5500 mixed indigenous tree species.

We share here the challenges, experiences, and lessons from these efforts to guide ongoing management and inform similar urban biodiversity restoration initiatives. We encountered significant challenges, including deliberate destruction of planted seedlings through burning, uprooting, and scalding with hot water by vegetable farmers. These actions are largely driven by land scarcity, complex land tenure arrangements, and the high opportunity cost of land in urban environments.

Despite sustained stakeholder engagement and awareness-raising by project implementers and university authorities, resistance from sections of the farming community remained significant. The findings underscore that awareness creation alone is insufficient to secure local support for urban habitat restoration. Addressing underlying socio-economic drivers, particularly land insecurity and livelihood dependency, is critical.

We recommend integrating alternative livelihood support, participatory land-use planning, and clearer tenure arrangements into urban conservation strategies. Sustainable urban biodiversity conservation will require not only ecological restoration but also inclusive socio-economic solutions that reconcile conservation objectives with local livelihood realities.

Prepared by: Emmanuel Amoah, Clement Sullibie Saagulo Naabeh, Akwasi Anokye and, Daniel Konzin
Date prepared: 27 March 2026

NIGERIA

Two Nigerian conservation scientists, Nnebechukwu John and Abanyam Peter, have received mentorship from Dr. Matt Shirley over the last three years and designed a pilot study to document habitats of *O. tetraspis* in Nigeria. In 2025, a comprehensive desktop study was conducted to collate available *O. tetraspis* georeferenced occurrence data across its range in Nigeria. Data were retrieved from online biodiversity repositories and databases such as iNaturalist and GBIF, as well as scientific and grey literature, social media, and field data from contacted researchers and conservation organizations.

After rigorous data retrieval, wrangling, sorting and cleaning, a total of 141 entries were documented. The data was then used to run a species distribution model (SDM) in Wallace and visualised in QGIS to predict suitable habitats for the species across Nigeria. The model informed the selection of sites for surveys focusing on areas without prior records of the species (Figure 1).

Both ecological and social surveys targeting *O. tetraspis* were conducted in locations in Osun and Kogi states, Nigeria. The survey team confirmed and documented *O. tetraspis* in locations where they were previously not known from within the two states. The study profiled threats, documenting habitat conversion and fragmentation, hunting, insecurity and unsustainable fishing as key challenges for *O. tetra*spis across these sites. Therefore, with high prospects for new locations of crocodile presence in Nigeria, there are plans to survey new sites and repeat surveys in visited sites for both wet and dry seasons. Findings showed that pet and meat trade (as local people captured and kept hatchlings and juvenile *O. tetraspis* at home, hoping that when it grows to adult, they'll kill for meat; Figure 2) is one of the growing threats to *O. tetraspis* in Nigeria. This amplifies the need for urgent *O. tetraspis* conservation action in Nigeria. We recommend a nation-wide research strategy for *O. tetraspis* including community engagement (especially where insecurity is a threat), habitat restoration, sensitisation, habitat protection, and livelihood intervention.

In April 2024, there was reported killing of an adult West African slender-snouted crocodile in Nigeria. The crocodile was killed in a swampy river in Abia state by a local fisherman. This comes after many years of searching for the species with no result. This development presents a glimmer of hope, but with some uncertainty as the record is yet to be verified/confirmed by a third/independent researcher/ investigator.

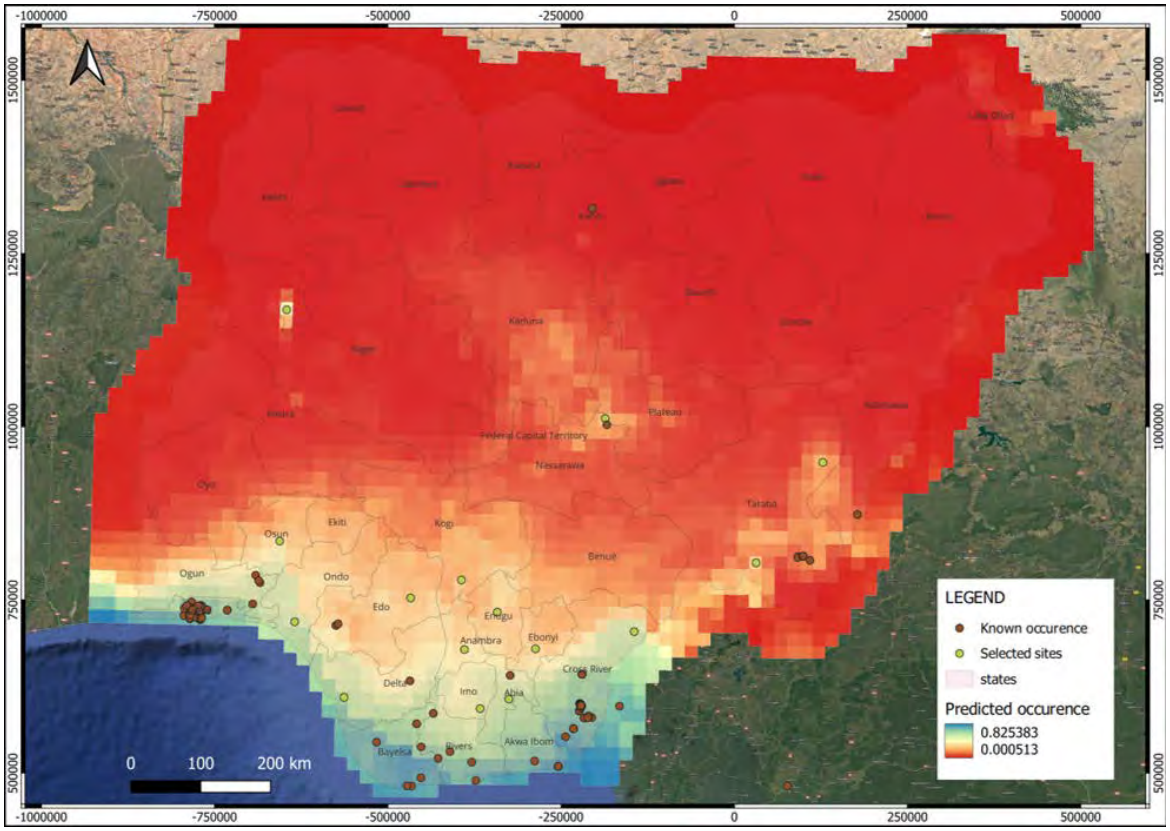


Figure 1: SDM showing available occurrence data and habitat suitability prediction for *Osteolaemus tetraspis* in Nigeria.

Four field assistants have also been trained to assist in the ecological and social *O. tetraspis* survey in 2024.

John and Peter are now well involved in crocodilian species conservation in Nigeria, participated actively in the IUCN assessments and Conservation Action Planning for *O. tetraspis* and are hoping to be admitted into the CSG, ultimately advancing the conservation of crocodiles in Nigeria.

Prepared by: Nnebechukwu John and Abanyam Peter
Date prepared: 24 January 2026

Figure 2: Crocodiles kept in very dirty/ unkept enclosure, and persecuted in Kogi State, Nigeria.

Figure 3: An adult *Osteolaemus tetraspis* killed by a fisherman in Osogbo, Nigeria

---

SIERRA LEONE

In 2025, reports of the presence of crocodiles from most coastal and freshwater communities in the north and southern Sierra Leone were common during opportunistic interviews conducted by staff of the Reptile and Amphibian Program - Sierra Leone (RAP-SL). What remained unresolved from the interviews is the species. Three species of crocodiles including the West African crocodile (*C. suchus*), West African dwarf crocodile (*O.* sp. nov. cf. *tetraspis*) and West African slender-snouted crocodile (*M. cataphractus*) are known to occur (Zug 1987; Okoni-Williams *et al*. 2004; Aruna *et al*. 2013, 2014, 2015). Of the three species, the Dwarf crocodiles occur in a large number at the Mamuta Mayosso Wildlife Sanctuary (Okoni-Williams *et al*. 2004), while the dwarf and the other two species continue to be sparsely distributed in streams, estuaries and other wetland areas in Sierra Leone.

RAP-SL, Conservation Society of Sierra Leone (CSSL), and Save the Crocs Initiative, continue to be the leading CSOs/NGOs campaigning for the protection of crocodilians while government entities including the Wildlife Conservation Department under the Forestry Division at the Ministry of Environment and Climate Change (MoECC) continue to collaboratively provide support against the killing of the species in Sierra Leone.

Due to the conservation effort by both government and conservation NGOs in Sierra Leone, crocodiles are no longer hunted. However, juvenile crocodiles continue to be entangled in local fishing nets. Trapped or strayed juveniles are mostly reported to either the Croc Sanctuary or to RAP-SL for release. This happens because most locals are now aware of laws that prohibit the killing or keeping of the species as pets while few are engaged in the clandestine killing of the species once caught in their fishing nets.

- Aruna, E. (2015) Environmental Impact Assessment of the TIMIS Mining Company, Herpetofauna Species Assessment Report. Page 20, (unpub)
- Aruna, E. *et al.* (2014) Report on the Herpetological Survey in the Western Area Peninsula Forest and Environ. Page 12 (unpub)
- Aruna, E. Johnny, J. and Jalloh, J. (2013): Follow-up Survey of Reptile and Amphibians of Bumbuna H Hydroelectric Project Area. Pages 10, 25 (unpub). (https://www.youtube.com/watch?v=VpiCZgMg-2E).
- Okoni-Williams, A.D., Thompson, H.S., Koroma, A.P. and Wood P. (2004). Important Bird Areas in Sierra Leone: Priorities for biodiversity Conservation. Conservation Society of Sierra Leone and Forestry Division, GOSL.
- Zug, G. (1987) Amphibians and Reptiles of the Outamba-Kilimi Region, Sierra Leone. Journal of Herpetological Association of Africa. 33:1-4.

Prepared by: Edward Aruna

Date prepared: 27 January 2026

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

East & Southeast Asia

Laos

The Wildlife Conservation Society (WCS)-Lao Program monitors Siamese crocodile (*Crocodylus siamensis*) nests, collects and incubates eggs and head-starts young crocodiles in two local communities: Tan Soum and Dongyanong Villages. Our involvement at Tan Soum dates to 2011, with a funding hiatus extending from 2013-2019. The bulk of WCS conservation efforts are being conducted at Tan Soum Village. Most recently (2025), a Visitor and Conservation Education Center was opened in the village. Incubation will be conducted at the center and a small group of larger crocodiles is on display. In 2025, the head-starting facility at Dongyanong was expanded to accommodate more head-started crocodiles. Further expansion is planned for 2026. Currently, the combined holdings of both head-starting facilities is 191 crocodiles: 68 and 56 head-started crocodiles were transitioned into the wild in 2025 and 2026, respectively. Nest monitoring is used to determine crocodile population trends in the Xe Champhone Wetlands; 8 and 9 nests were found in 2024 and 2025, respectively. Based on these data, WCS estimates the population of Siamese crocodiles in the Xe Champhone Wetlands consists of a minimum of 225 individuals.

Lao Conservation Trust for Wildlife (LCTW) has launched an ambitious Siamese crocodile breeding program. LCTW successfully relocated 75 adult, genetically pure (whole genome sequenced) Siamese crocodiles to a new facility, ensuring a secure and well-managed foundation stock for future conservation efforts. During the relocation period, 50 hatchlings from these purebred individuals emerged and are now two years old and ready repatriation into the wild. Furthermore, the captive population produced 400 eggs in 2025 and of these, 75 hatched successfully. The juveniles are being head-started for eventual release into the wild. LCTW is currently working with the Government of Lao to identify a suitable release site. To this end, the Si Phan Don wetland has been tentatively selected as a reintroduction area.

Cambodia

Rising Phoenix (Siem Pang Wildlife Sanctuary) released 10 adult Siamese Crocodiles in April 2024 bringing the total to 51 crocodiles released since 2022. Five nests were monitored from April through July. Of these, one nest produced 14 hatchlings and the remaining four nests were lost to flooding in July. An additional 10 Siamese Crocodiles were released in August 2024 (total released in 2024= 20 crocodiles). In June 2025, 20 adult Siamese Crocodiles were released, all of which were implanted with subcutaneous acoustic trackers to monitor dispersal and habitat use. The most recent releases bring the total to 81 crocodiles (24M, 57F) translocated since 2022. A follow-up survey conducted in October 2025 was able to relocate only five of the crocodiles with attached acoustic transmitters. Nesting by translocated female crocodiles was not recorded during the 2025 nesting season. Lastly, an additional 30 hatchling Siamese Crocodiles were translocated to an artificial wetland adjacent to Siem Pang Forest Lodge in November 2025. This release cohort was produced by genetically pure Siamese Crocodile parent in June 2025 at AWA.

Fauna & Flora (prepared by Vanny Lou)

1. Monitoring key populations and nests: Patrol teams documented both direct and indirect evidence of crocodile presence, including active nesting. Annual nest monitoring, conducted between April and June by the Fauna & Flora (FF) project team and crocodile wardens, combines walking and kayaking surveys to locate newly laid nests. Data collected includes nest location, egg count, fertilization success, and egg size and weight.

    - In 2024, surveys in the Cardamoms found five nests, three of which successfully hatched 60 wild-bred Siamese crocodiles.
    - In June 2025, FF in collaboration with the Forestry Administration of the Ministry of Agriculture, Forestry and Fisheries, the Ministry of Environment, and local community wardens, discovered three additional nests containing 43 eggs, of which 34 were fertile and 26 successfully hatched.

2. Translocation: On 16 March 2024, 50 juvenile Siamese crocodiles (15M, 35F) were released into a the most remote and safest site within Cardamom National Park. The release was attended by H.E. Dith Tina, Minister of Agriculture, Forestry and Fisheries. Of these crocodiles, 25 were fitted with acoustic transmitters to enable post-release monitoring, supported by 8 acoustic receivers deployed at the Steung Khiew site. The event not only advanced scientific monitoring but also underscored strong political commitment to safeguarding this Critically Endangered species.

In January 2025, the project secured the government approval for a new release site in Virachey National Park, complementing the existing site in Cardamom Mountain National Park. This decision followed a process of free, prior, and informed consent with key stakeholders, including Indigenous Peoples and Local Communities.

- In March 2025, 10 Siamese crocodiles (4M, 6F), each fitted with acoustic tags for post-release monitoring, were successfully released into one of the most remote areas of Virachey National Park. The release was carried out with the active participation of national and sub-national government bodies, as well as IPLCs
- In April 2025, an additional 40 Siamese crocodiles (25M, 15F) equipped with acoustic trackers were released into designated natural habitats within Cardamom National Park. All individuals originated directly from our breeding facility, ensuring a reliable and sustainable source for conservation efforts.

3. Protection and crocodile sanctuaries: FF continues to collaborate with 26 community crocodile wardens who patrol key sites in the Cardamom Mountains, including O'Som, Areng, Chhay Reap, Tatai Leu, and Steung Khiew. Using the SMART patrol system, wardens monitor crocodile populations and respond more effectively to threats. In 2024, they covered 3402 km over 290 patrol days, while in 2025 patrols expanded to 318 days, totaling 540 patrols and 4478 km. These efforts strengthen protection against illegal fishing, poaching, and habitat encroachment, while fostering community stewardship of crocodile habitats.

In June 2025, our camera trap recorded a female crocodile close to a nest.

4. Captive breeding program at Phnom Tamao Zoo: Our Siamese crocodile breeding facility at Phnom Tamao Zoological Park, Protected Area and Arboretum is maintained to the highest standards, ensuring that all crocodiles are kept in optimal conditions. Breeding and survival rate improvements:

- Infrastructure expansion: A new dual pond breeding enclosure was built in late 2024, forming a new breeding group of 19 animals (5M, 14F).
- Increased fertility: While the total number of eggs laid in 2025 (554) was nearly identical to 2024 (552), the overall fertility rate improved by approximately 25%. This improvement is attributed to a higher number of mature females.
- Enhanced rearing success: The use of correctly positioned supplemental UV lighting and modified enclosures for better basking has significantly improved hatchling survival rates. In 2024, 158 out of 170 hatched crocodiles survived.
- Incubation capacity: An extra outdoor incubation facility was constructed to handle overflow and provide a backup to electricity-powered incubators.
- 4 new juvenile rearing enclosures were built for yearling care. Currently housing 158 yearlings, that were bred at the zoo end of 2023 and hatched in 2024.

Crocodile stocks in 2024 and 2025.

Crocodile Stock	**2024**	**2025**
Breeding males	17	17
Breeding females	50	56
Sub-adult/Juvenile males	43	82
Sub-adult/Juvenile females	90	
Yearlings	82	156
Eggs produced	552	544
Viable hatchlings	158	170

5. Miscellaneous: In 2024, FF, together with the Ministers of Environment and Agriculture, Forestry and Fisheries, announced the discovery of 5 wild nests containing 60 hatchlings through the joint press release. The finding has attracted global media attention, including coverage by outlets such as BBC, CNN, and The New York Times, and represents a highly positive milestone for the conservation of this species in Cambodia.

In 2024, we produced a 6-minute video documentary highlighting 25 years of Siamese Crocodile conservation in Cambodia, featuring the background of the project, conservation strategy, key conservation impacts and partnership engagement with key government stakeholders including the two Ministers from Ministry of Environment, Ministry of Agriculture, Forestry and Fisheries highlighting the political support for this CR species and local community. The video link: https://www.youtube.com/watch?v=rdFZQEUSXII

FF in partnership with Conservation International has worked closely with the Government of Cambodia (Ministry of Environment) to create its first-ever Crocodile Genetic Conservation Area covering 315 ha, offering critical legal protection for the habitat of one of the world's rarest reptiles - the Critically Endangered Siamese crocodile. The approval of the legal establishment is expected to be declared by the Ministry of Environment within 2026.

In August 2025, FF in collaboration with Cambodia's Ministry of Environment, the Forestry Administration of the Ministry of Agriculture, Forestry and Fisheries, and the Koh Kong Provincial Department of Environment, organized a community outreach event in Tatai Leu Commune, Thmar Bang District, Koh Kong Province. The event aimed to raise awareness and encourage community participation in Siamese crocodile conservation. A total of 96 participants attended, including 40 women, 37 grade 5 and 6 students from the local primary school, 47 community members, technical officials from the Ministry of Environment and the Koh Kong Provincial Department of Environment, the district governor, and a representative from Conservation International.

The program covered topics such as crocodile species and global distribution, ecology, conservation benefits and challenges, and an overview of crocodile conservation in Cambodia. A quiz was held for the students, with winners receiving water bottles printed with conservation messages. All student participants were also given notebooks and pens, while community members received water bottles provided by the project.

FF has been supporting WWF-Cambodia in its plan to release 10 Siamese crocodiles into a new habitat within Srepok Wildlife Sanctuary in 2026. Ten (10) genetically purebred crocodiles for this release would be sourced from Fauna & Flora's breeding facility.

In December 2025, FF signed a Siamese Crocodile project agreement with the Ministry of Environment of Cambodia, strengthening our partnership and advancing further joint conservation efforts to protect the Siamese crocodile from the brink of extinction.

Indonesia (prepared by Herdhanu Jayanto)

- The Green Status of Species (GSS) assessment for Tomistoma is currently underway, led by Herdhanu Jayanto. It begins at the national to global level and will involve assessors across its range. A national assessment for the Siamese crocodile is also planned in parallel. Both processes will involve local students.

- The first movement ecology study of Tomistoma in Berbak National Park has been conducted by Yayasan Konklusi, with CSG support. However, GPS data transmitted via satellite were below expectations. Efforts to salvage the dataset through recapture and tag retrieval are planned for 2027.

- A robust population estimation for *Tomistoma* is being piloted in Berbak National Park in 2026 by Yayasan Konklusi. This work involves two students from Universitas Jambi as research assistants and for their undergraduate theses.

- PT Surya Sawit Sejati-United Plantations (SSS-UP) has committed to Tomistoma conservation in the Arut River, adjacent to their concession area. Spotlight surveys have been ongoing for the past 3 years. In January 2026, PT SSS-UP attempted to capture individuals to deploy three GPS/satellite tags, in collaboration with Yayasan Konklusi.

- Kyle Shaney, in collaboration with Ahmad Khadafi (Universitas Palangka Raya), is collecting Tomistoma genetic samples for ongoing genetic research.

- Ilian Grima, an independent French naturalist, approached BKSDA East Kalimantan, Yayasan Ulin, Steve Platt and Lonnie McCaskill, regarding his interest in establishing a head-starting program and research center for the Siamese crocodile in Mesangat, following his visits from 2025. However, his visa and permits to conduct activities in Indonesia need confirmation.

- A crocodile survey was conducted in the Kao River, Boven Digoel, South Papua Province, by Fadiah Dzahra (IPB University), supervised by Prof. Mirza Kusrini and Herdhanu Jayanto. This area represents the range of Hall's crocodile, which is not recognized by the CSG at this time. However, it has been designated as a distinct species by a Ministry of Marine Affairs and Fisheries decree.

- The CITES Secretariat has issued Notification No. 2026/060 to the Parties, seeking comment/objections to the proposed registration on a captive breeding operation in West Java, based based on Tomistoma. The proposal indicates that the product to be traded would be "live specimens marked with microchips". This represents the first operation to be registered for the species.

- In the past two years (2024-2025), several undergraduate theses on crocodiles have been completed in Indonesia, including:

- Idang Deni Saputra (Forestry Faculty, Universitas Muhammadiyah Sumatera Barat): Relative abundance of Saltwater crocodile in the Batang Kinali River, West Sumatra.
- Suranto (Forestry Faculty, Universitas Jambi): Human-crocodile conflict in Tanjung Jabung Timur, Jambi.
- Resti Puji Lestari (UIN Raden Fatah): "Crocodile Offering Tradition in the Context of Totemism Theory" - a case study from Tambangan Kelekar Village, Muara Enim.

Seeing how sparse these crocodile conservation efforts are in Indonesia - particularly those conducted as undergraduate theses - it would be valuable to build a network and provide support, especially to raise awareness of opportunities such as SRAS, with which many are not familiar. Herdhanu Jayanto and Brian Martin could help facilitate this.

- Yayasan Ulin Lestari continues to promote Siamese crocodile (and Tomistoma) conservation in Mesangat-Suwi, although access to the area is currently challenging. This is demonstrated by its survey efforts in Kutai National Park and Muara Kaman Sedulang Nature Reserve, as reported in the latest update to the CSG from Indonesia.

Thailand (prepared by Yosapong Temsiripong)

The Thai Crocodile Farmers Association (TCFA) has been involved in improving the status of wild Siamese crocodile populations, by continuing to encourage and support all reintroduction programs in Thailand.

In 2025, the Department of National Parks, Wildlife and Plant Conservation, DNP, monitored the release of 23 juveniles in Khao Ang Rue Nai Wildlife Sanctuary. These captive-bred crocodiles were provided by TCFA members.

Sightings of adult Siamese crocodiles were made in historical habitats within six protected areas. Hatchlings with a guarding mother were often observed by officials and/or tourists in Bueng Boraphet Non-hunting Area and Pang Sida National Park.

Public acceptance of young and juvenile crocodiles has been viral online throughout the year, thanks to the original photos and videos published online by the DNP. Many TV and newspapers re-posted and received positive comments.

A public awareness study and wild population surveys are being carried out, thanks to a government-funded project from Office of Natural Resources and Environmental Policy and Planning - ONEP to Kasetsart University and DNP.

The summary of conservation activities in 2025 includes:

1. Selected 60 1.2-1.4 m juveniles from TCFA member, Nakhon Sawan Crocodile Farm, for DNA testing and soft release at Khao Ang Rue Nai Wildlife Sanctuary.
2. Selected 30 1.2-1.4 m juveniles from TCFA member, Wongveerakit Crocodile Farm, for DNA testing and soft release at Khao Ang Rue Nai Wildlife Sanctuary.
3. Aerial survey and radio telemetry found surviving juveniles from the 2024 cohort in Khao Ang Rue Nai Wildlife Sanctuary. A report is currently being prepared by DNP.
4. More evidence was found of wild hatchlings in Bueng Borapet Non-hunting Area and Pangsida National Park.
5. The 2nd Siamese Crocodile Regional Species Meeting was held on 19-20 August 2025 at Kasetsart University.
6. A meeting report was submitted for the development of a national crocodile strategic plan to the government agencies, the Department of Fisheries, and the Department of National Parks, Wildlife and Plant Conservation for consideration and approval.
7. Siamese crocodile conservation project was initiated at Khao Ang Rue Nai Wildlife Sanctuary by Kasetsart University. This project involves the reintroduction of genetically pure Siamese crocodiles, restoration of crocodile habitat, and reduction of potential human-crocodile conflict.

In early 2026, the DNP released two genetically pure female Siamese crocodiles in the head waters of the Petchburi River in Kaeng Krachan National Park. Post-release monitoring is being conducted by DNP rangers and at the time of this writing (mid-April 2026), the crocodiles remain within the release area. The objective of this release is to augment a small existing population on the Petchburi River that consists of <3 crocodiles. This population has been intermittently monitored since being rediscovered in 2001 and successful reproduction has yet to be confirmed.

Peoples Republic of China (prepared by Xiaobing Wu, Tao Pan and Haitao Nie)

The Anhui National Nature Reserve the Chinese alligator has been continuously strengthening the protection and management of its wild population between 2024 and 2025. The combined efforts of habitat modification, wild releases of the Chinese alligators, legislative protection and education, all constantly promotes the recovery of the wild population. The research team at Anhui Normal University has conducted systematic studies on the critically endangered Chinese alligator (*Alligator sinensis*) across multiple disciplines, including genomics, microbiomics, behavioral ecology, habitat

assessment, and conservation management. The team has assembled a high-quality, chromosome-level reference genome, revealing the positive role of captive populations in preserving genetic diversity. They have elucidated the mechanisms by which gut and egg-surface microbiota influence juvenile growth and hatching success, assessed the dual pressures of climate change and human activities on alligator habitats, and proposed specific conservation strategies such as priority ecological corridors and nest site optimization. We also systematically uncovered key regulatory mechanisms governing the reproduction, gut health, and wild adaptation. These findings provide a crucial theoretical foundation for the scientific conservation and population recovery of the Chinese alligator.

1. Strengthen the recovery of the Chinese alligator wild population and the pedigree management of captive populations

   a. The wild population of the Chinese alligator is growing steadily.

   In 2024 and 2025, the restored wild habitat area for the Yangtze alligator reached 41.74 km^2. The wild population of the Chinese alligator is showing a good growth trend (Table 1).

   Table 1. Population and breeding status of wild Chinese alligators, 2024-2025.

Year	Number of nests	Total number of eggs	Number of alligators released in wild	Number of wild alligators surveyed
2024	41	947	210	1620
2025	73	1674	254	1920

Figure 1. Adult and juvenile Chinese alligators in the wild.

   b. Further strengthen the legal protection of the Chinese alligator: Anhui National Nature Reserve of the Chinese alligator Promoted the Intermediate People's Court of Xuanzhou City to issue the first judicial protection order for wildlife in Anhui Province: “the Chinese Alligator Judicial Protection Order”, and establish the first collaborative mechanism in Anhui Province for ecological and resource protection in the national nature reserve with the Xuanzhou City People's Procuratorate and Public Security Bureau. And promoted the introduction of the "Management Measures for the Anhui National Nature Reserve of the Chinese Alligator".

   c. Lineage management of captive-bred populations has been implemented: 3657 alligator eggs were artificially bred and incubated resulting in 1806 juveniles in 2025. The genetic background screening of the Chinese alligator pedigree was steadily carried out, with genetic testing and pairing completed for a total of 192 parent alligators across 16 families. From 2025, the captive population of the Chinese alligator will implement pedigree-based breeding management.

   d. Continuously strengthen popular science and educational campaigns about the Chinese alligator: In 2024, the Anhui National Nature Reserve of the Chinese alligator conducted a total of 26 publicity and education activities, reaching over 13,000 people. It received nearly 140,000 visitors. In 2025, a total of more than 160 reports related

to the Chinese alligator were published in provincial and above-level media (including new media). A total of 41 science popularization and nature education activities were held, reaching more than 20,000 people.

2. Progress of scientific research on the Chinese alligator

   a. Genomics and Genetic Diversity: The team successfully assembled a chromosome-level genome (2.26 Gb) for the Chinese alligator and, based on resequencing data from 244 individuals, systematically evaluated the genetic structure of wild and captive populations. The results indicate that the species has relatively low overall genetic diversity and long runs of homozygosity. However, the captive population exhibits significantly higher heterozygosity and lower inbreeding coefficients than wild individuals, demonstrating the effectiveness of artificial breeding in preserving genetic diversity. The recent effective population size remains only a few dozen individuals, indicating ongoing risks of inbreeding depression. Population history reconstruction reveals a long-term decline, but with the support of artificial protection and reintroduction programs, the wild population has recovered to 773 individuals. Structural variant analysis further revealed genetic differences among individuals. (Pan *et al*. 2025).

   b. Microbiomics: Regarding the gut microbiota of juvenile alligators, the team found that four bacterial genera - *Stenoxybacter*, *Gracilibacteria*, *Absconditabacteriales* (SR1), and *Saccharimonadales* - are positively correlated with body weight. These genera help maintain an anaerobic intestinal environment, promote nutrient degradation and the production of growth factors, and are associated with increased heme biosynthesis in faster-growing individuals (Li *et al*. 2025). In semi-wild environments, juveniles showed significantly lower body length and weight compared to those in artificial settings, along with reduced gut microbial diversity and an increased abundance of *Actinobacteria*, indicating that environmental stress inhibits growth and development by altering the microbial community (Cui *et al.* 2025). Furthermore, the surfaces of successfully hatched eggs were dominated by Actinobacteria and Firmicutes, while eggs that failed to hatch showed significant enrichment of opportunistic pathogens (*Proteobacteria* and *Pseudomonas*), highlighting the importance of microbial management in improving hatching success (Sun *et al.* 2025).

   c. Habitat and Ecological Studies: Climate change models predict that the minimum temperature of the coldest month and precipitation seasonality are the most critical factors influencing Chinese alligator distribution. Suitable habitats are projected to decrease by 3-98% in the future, with a westward shift in the distribution center. Nearly 80% of the current nature reserve area falls outside priority protection zones (Yang *et al*. 2024). In terms of habitat integrity, highly suitable areas account for only 4.62% of the study region and are severely fragmented by farmland and residential areas. The study identified four priority ecological corridors (g Xiadu-Hongxing) and proposed a stepwise habitat restoration approach with a "human-alligator coexistence" corridor design (Sun *et al*. 2025). GPS tracking revealed that the annual home range of Chinese alligators is much smaller than that of other crocodilian species, and forest cover significantly impedes their movement, with the core area carrying capacity estimated at only 147 individuals (Li *et al*. 2025). Regarding nest site selection, alligators strongly avoid high banks and steep slopes, preferring sites with low banks, gentle slopes, and large platform areas, and nest utilization rates varied significantly among regions (Miao *et al*. 2026). Additionally, the team developed an automatic method for measuring canopy density based on an adaptive bimodal threshold segmentation algorithm, which achieved the highest accuracy under cloudy conditions and in areas with low canopy density (Sun *et al*. 2024).

   d. Implications for Conservation Management: Based on the above findings, the research team proposes several conservation recommendations: continuously implement genome-informed breeding to control inbreeding risks; prioritize the construction of four ecological corridors to restore habitat connectivity; optimize food chains in reintroduction sites and improve artificial nest design (low bank, gentle slope, large platform); strictly control temperature and humidity during incubation and monitor microbial dynamics; pay attention to juvenile gut health and screen for potential probiotics; and integrate climate change projections into reserve planning while expanding priority protection areas. These measures address multi-level conservation needs ranging from genes and microorganisms to habitats and climate adaptation.

   e. Effects of Compound Feed on Intestinal Microbiota and Growth Performance: Dietary studies in the Chinese alligator demonstrated that mixed pellet feed, alone or fortified with sodium butyrate or *Bacillus* probiotics, optimized intestinal microbial diversity and markedly improved reproductive metrics (clutch size, fertilization rate, hatching success) relative to conventional frozen animal feed (Wu *et al*. 2025). Furthermore, the study compared the effects of frozen fish meat and compound feed on the diversity of intestinal microbial communities and intestinal development in neonatal Siamese crocodiles. It was found that compound feed could enhance intestinal microbial diversity, optimize functional structure, and potentially have positive effects on intestinal development (Zhang *et al*. 2025*)*.

   f. Reproductive Physiology: Hibernation was confirmed as indispensable for reproductive success: it preserves pre-ovulatory follicles via GABA/glutamine signaling, restrains vitellogenic oocyte recruitment through m^6A RNA methylation, and shapes ovarian reserve (Nie *et al*. 2026). Transcriptomic analyses constructed the first reptilian lncRNA-miRNA-mRNA regulatory network for oogenesis, revealing that early germ cell proliferation depends on cell-cycle and WNT/FGF pathways (Liu *et al*. 2025). Functional assays further identified CDH3 (P-cadherin) as a critical mediator of germ cell nest integrity and primordial follicle assembly, with miRNA-

mediated regulation of CDH3 directly impacting gene expression (Li *et al*. 2025). This study employed ATAC-seq technology to elucidate the dynamic changes in chromatin accessibility during oogenesis in *A. sinensis*. Core transcriptional regulators were to significantly enhance promoter activity by binding to the CCAAT-box element of the AURKB promoter, thereby modulating cell cycle dynamics (Li *et al*. 2026). We employed RNA-seq technology to investigate the sex determination mechanism in *A. sinensis*, innovatively revealing the critical role of the MAEL gene in its sexual differentiation (Wen *et al*. 2024). We provided the characteristics of the BTB gene superfamily in *A. sinensis*. The 170 AsBTB genes are classified into 13 families and are unevenly distributed across 16 chromosomes, with tandem and fragment repeats playing equally important roles in their amplification (Li *et al*. 2024).

g. Study on Microbial Intestinal Adaptation Mechanism in wild adaptation: The study found that host developmental and density stress significantly affect the gut microbiota of *A. sinensis*. With age, the association between intestinal and environmental microorganisms strengthens, and metabolic functions gradually improve, although specific potential pathogenic bacteria exist at different developmental stages (Wang *et al*. 2024). Finally, multi-omics profiling of reintroduced individuals documented a gut microbial shift from *Acinetobacter*- to *Cetobacterium*-dominated communities, reduced pathogenic and antibiotic resistance gene abundance, and a transition from stochastic to deterministic community assembly; concurrent metabolomic reprogramming including elevated neuroprotective enhanced environmental resilience, establishing a microbiome-metabolism axis underlying wild adaptation (Wang *et al*. 2025).

Publications in 2026

Haitao Nie, Fuyong You, Shi Wang, Yunlu Xu, Shaofan Li, Jixiang Zhan, Yuan Zhang, Peng Liu,Yue Wen,Yongkang Zhou, Song Zhang, Xiaobing Wu. The effect of hibernation on reproduction performance of *Alligator sinensis*, Chinese Alligator is not limited to maintenance of matural follicle, but also involves the fundamental resource of germ cells. Animal Reproduction Science, 2026;287:108115.

Peng Liu, Ruiyun Liu, Fuyong You, Yuan Zhang, Shaofan Li, Xinxin Zhang, Xiaobing Wu, Haitao Nie. Integrated Analysis of lncRNA-miRNA-mRNA Networks Reveals Stage-Specific Molecular Regulation of Oogenesis in Chinese Alligator (*Alligator sinensis*). 2026. BMC Genomics. 2026. 26;27(1): 212.

Pengfei Li, Yuting Ni, Yue Wen, Xiaojing Cao, Jin Li, Yongkang Zhou, Pingsi Yi, Xiaobing Wu, Haitao Nie. Transposase-accessible chromatin with high-throughput sequencing (ATAC-seq) revealed that NF-Y transcription factor plays a key role in oogenesis of the Chinese alligator (*Alligator sinensis*). Frontiers in Zoology. Accepted.

Publications in 2025

Pan T, Miao J, Sun K, Nie HT, Luscombe NM, Li W, Zhang S, Yang L, Wang H, Zhou Y, Tu G, Shu Y, Zhang B, Wu X. (2025). Genomic insights and the conservation potential of captive breeding: The case of Chinese alligator. Science Advances, 11(14): eadm7980.

Li M, Sun K, Wang Z, Zhang C, Gao Y, Zhang S, Tu G, Wu X, Pan T. (2025). Extremely limited spatial-and-temporal utilization for wild Chinese alligator (*Alligator sinensis*). Biology Letters, 21: 20250513.

Cui L, Wang Q, Sun S, Li W, Li L, Sun K, Zhou Y, Tu G, Liu R, Li L, Yu Z, Zhang C, Wu X, Pan T. (2025). The role of semi-wild habitats in the physical conditions of juvenile alligators: Implications for conservation. Ecology and Evolution, 15: e72451.

Sun H, Chen M, Chang Q, Zhou Y, Tu G, Yi P, Mei L, Liang J, Pan T, Zhao J. (2025). Microbial diversity and composition on the surface of Chinese alligator eggs with different phenotypes during artificial incubation. Frontiers in Microbiology, 16: 1567353.

Li W, Liu J, Cui L, Sun K, Gao Y, Wang Q, Zhou Y, Mei L, Yi P, Wu X, Yu Z, Pan T. (2025). Size-dependent effects of the intestinal microbiota in juvenile Chinese alligators: implications for species protection. Frontiers in Zoology, 22: 15.

Miao JJ, Sun K, Chen J, Fan GW, Xia TS, Zhou YK, Tu GJ, Yu ZP, Wu XB. Pan T. (2026). Nest-site preference in captive Chinese alligators *Alligator sinensis*. Endangered Species Research, 59: esr01476.

WU Jie, WANG Chong, LU Yi, ZHANG Yu-Qian, ZHOU Yong-Kang, WANG Ying-Chao, WU Xiao-Bing, NIE Hai-Tao Effects of Different Feed Types on the Diversity of Intestinal Microbial Community and Reproductive Performance of *Alligator sinensis*. Chinese Journal of Zoology. 2025, 60(3): 321- 332.

Xinxin Zhang, Jie Wu, Chong Wang, Fuyong You, Peng Liu, Yuan Zhang, Shaofan Li, Yongkang Zhou, Yingchao Wang, Xiaobing Wu, Haitao Nie. Effects of different feed types on intestinal microbial community diversity and intestinal development of newborn Siamese crocodiles. Journal of Zoological and Botanical Gardens. 2025, 7, 1.

Sun K, Li M, Wang Z, Sun S, Yang J, Wu X, Pan T. (2025). Habitat integrity challenges for the Chinese alligator amid land occupation by human: Pathways for protection. Ecology and Evolution, 15: e71113.

Changcheng Li, Yuan Zhang, Yue Wen, Chong Wang, Pengfei Li, Yunlu Xu, Yuqian Zhang, Yongkang Zhou, Xiaobing Wu, Haitao Nie . Expression Profiling and Functional Analysis of CDH3 during Oogenesis in the Chinese Alligator (*Alligator sinensis*). C*urrent Zoology*. 2025. zoaf058, Online.

Wang, Chong; Li, Changcheng; You, Fuyong; Zhou, Yongkang; Tu, Genjun; Liu, Ruoya; Yi, Pingsi; Xiaobing Wu, Haitao Nie. Multi-omics analysis of gut microbiome and host metabolism in different populations of Chinese alligators (*Alligator sinensis*) during various reintroduction phases. Ecology and Evolution, 2025; 15:e71221.

Publications in 2024:

Sun K, Fan G, Zhang Y, Luo J, Wu X, Pan T. (2024). Studies on automatic image segmentation method for canopy density measurement of Chinese alligator (*Alligator sinensis*) habitat. Pakistan Journal of Zoology, 56(4): 1717-1724.

Yang L, Ling J, Lu L, Zang D, Zhu Y, Zhang S, Zhou Y, Yi P, Li E, Pan T, Wu X. (2024). Identification of suitable habitats and priority conservation areas under climate change scenarios for the Chinese alligator (*Alligator sinensis*). Ecology and Evolution, 14: e11477.

Sun K, Li W, Liu J, Cui L, Li L, Wang H, Yang L, Zhang S, Zhou Y, Tu G, Wu X, Pan T. (2024). Ecological networks of allometric growth, feeding behavior and gut microbiota in Chinese alligator hatchlings. Asian Herpetological Research, 15(2): 100-114.

Chong Wang, Changcheng Li, Peng Liu, Song Zhang, Yongkang Zhou, Xuesong Zhang, Yingchao Wang, Xiaobing Wu, Haitao Nie. The impact of host development and density stress on the diversity of microbial communities in the gut and its surrounding environment of the Chinese alligator. Ecology and Evolution, 2024;14: e11667.

Pengfei Li, Peng Liu, Dongsheng Zang, Changcheng Li, Chong Wang, Yunzhen Zhu, Mengqin Liu, Lilei Lu, Xiaobing Wu, Haitao Nie. Genome-wide identification and expression analysis of the BTB gene superfamily provides a basis for sex determination and early gonadal development in *Alligator sinensis*. International Journal of Molecular Sciences. 2024, 25, 10771.

Yue Wen, Lilei Lu, Changcheng Li, Fuyong You, Yunlu Xu, Haitao Nie, Xiaobing Wu. Using lentiviral to investigate the effect of novel candidate gene MAEL identified by RNA-seq on sex differentiation in the Chinese Alligator (*Alligator sinensis*). Aquaculture Reports, 39, 102528.

Malaysia (prepared by Kerisha Kntayya and Izwan Abdul Gani)

High levels Saltwater crocodile attacks continue in the Malaysian States of Sabah and Sarawak. Sarawak is currently developing a new management plan for the species and investigating options for integrating sustainable use with livelihoods and benefits to local communities.

A workshop organised by the Sabah Wildlife Department was held in Kota Kinabalu, Sabah in May 2024 to address the HCC issue in that state. Charlie Manolis and Matt Brien were invited to participate in the workshop. A series of recommendations were developed by workshop participants and submitted to the Sabah Government. In March 2026, a 2-year project aimed at mitigating HCC was launched. It will involve collaboration between the Sabah Wildlife Department and the Danau Girang Field Centre, with funding from Yayasan Hasanah - it will be led by Sai Kerisha Kntayya. The project hopes to take a community-based approach to mitigating HCC while supporting sustainable conservation management. It will prioritise the implementation of physical mitigation measures at high-risk locations (eg Crocodile Exclusion Enclosures), and with an emphasis on community engagement, awareness and education. State-wide crocodile population surveys will also be carried out, to build on surveys last undertaken in 2017-2019, to quantify population trends. The integrated approach aims to reduce conflict in high-interaction areas, improve safety for river-dependent communities and support informed crocodile management across Sabah.

Philippines (prepared by Rainier Manalo and Merlijn van Weerd)

General

- The DENR - Biodiversity Management Bureau conducted a Population Viability Analysis (PVA) Workshop for both *Crocodylus mindorensis* and *Crocodylus porosus*, attended by members of the National Committee on Crocodile Conservation, its Technical Working Group, with other stakeholders, and facilitated by Crocodylus Porosus Philippines Inc.

- The Palawan Council for Sustainable Development officially approved the declaration of the first ever 97-hectare mangrove area in Tagusao River, Quezon, Palawan as Critical Habitat for Saltwater crocodile pursuant to the Philippine Wildlife Resources, Protection and Conservation Act.
-
- Human-Crocodile Conflict management was streamlined in the Disaster Risk and Reduction Management (DRRM) principal action in Palawan Island, Philippines.
-
- The DENR - Biodiversity Management Bureau developed a Communication, Education, and Public Awareness (CEPA) program for the conservation of the two species of crocodiles in the Philippines.

Northern Philippines (Mabuwaya Foundation)

Population size

- In 2025, 55 non-hatchling Philippine crocodiles were counted in the wild in San Mariano in Isabela Province, the core area for the species in Northeast Luzon. This included a minimum of 13 adults. 2025 was not a very good nesting year, as a result of adverse weather conditions, with only 2 successful nests with a total of 20 hatchlings out of a total of 4 discovered nests. 2024 was a better nesting year, with 5 successful nests and a total of 68 hatchlings. The long-term monitoring program (started in 2000) shows a gradual upward trend in the non-hatchling population, with strong annual fluctuations in nesting success and number of hatchlings.

- The continued presence of the Philippine crocodile on Dalupiri Island north of mainland Luzon was confirmed and documented (1 adult). This is a very small population, but local residents mention they have observed juvenile crocodiles in recent years. This would mean there is at least one breeding pair, but the presence of juveniles could not be confirmed in 2025.

- A new, small wild population was found in Rizal in Cagayan Province. This is likely a relict population of the previously contiguous population in Cagayan Valley which also includes the San Mariano population. The Rizal population seems to contain at least a breeding pair as juvenile crocodiles were observed.

Conservation

- All Philippine Crocodile breeding areas in San Mariano are protected in locally declared and managed crocodile sanctuaries, of which two are now being elevated as critical habitat areas under the national protected area system. The Rizal site is currently also undergoing further research and community consultations to be declared as critical habitat area. In 2026, potential crocodile reintroduction sites in Cagayan Valley will be identified. Dalupiri needs more research and conservation attention, but this is complicated by the logistics of visiting the isolated island.

- The Mabuwaya Foundation continues its education and awareness raising program, reaching more than 250,000 school children and adults in 2025 with various communication campaigns.

- A Philippine Crocodile Conservation Center (PCCC) has opened in San Mariano and is further being developed as a hatchling head-start, crocodile rescue, captive breeding and research facility, and as a visitors and education center. The PCCC is jointly managed by the local government of San Mariano, Isabela State University and the Mabuwaya Foundation in partnership with the Department of Environment and Natural Resources. In April 2026, 44 Philippine crocodiles including 3 adults and 41 head-started juveniles were being kept at the center. The juveniles will be released back into the wild in 2026 and 2027.

Prepared by: Steven Platt and Lonnie McCaskill
Date prepared: 16 April 2026

Crocodile Specialist Group Steering Committee Meeting
Agadir, Morocco
(12 May 2026)

Latin America & the Caribbean

The CSG Regional Office for Latin America and the Caribbean (LAC) has carried out its activities continuously for more than 19 years in the Province of Santa Fe, Argentina, playing a fundamental role in regional coordination and in supporting the activities of the CSG.

During the reporting period, one of the main lines of work was the ongoing management and updating of the regional database, built from information generated by CSG contacts and members and maintained in permanent communication with the CSG Executive Office. This tool is essential for facilitating internal communication, strengthening information exchange, and providing support in matters related to SRAS funding, among other administrative and technical tasks.

The Regional Office also carried out significant scientific dissemination activities through the distribution of publications received from various authors. An updated database of studies and reports on different crocodilian species and a wide range of topics is maintained, organized by year of publication and by species, and is available to any interested party.

Additionally, regional contacts were regularly informed about activities conducted at both regional and global levels, including courses, workshops, meetings, congresses, symposia, and other relevant events. This action contributed to promoting the active participation of researchers, technicians, students, and other stakeholders involved in CSG activities. Under the CSG contact category, numerous individuals actively involved in crocodilian-related activities have been identified through recommendations, many of whom are now CSG members. The continuous updating of non-member contacts seeks to ensure efficient and sustained information exchange with diverse stakeholders across the region.

Within this framework, the Regional Office aims to establish a network of veterinary professionals specialized in crocodilians in Latin America, with the objective of strengthening collaboration, technical exchange, and capacity building among veterinarians working in research, conservation, management, and animal health. To date, approximately 57 individuals have responded to the "Veterinary Actions" form, nine of whom are current CSG members. One of the most positive and strategic aspects of this emerging network is the inclusion of professionals who are not currently formal members of the CSG, which will broaden participation, improve regional representation, facilitate knowledge exchange, and generate opportunities such as joint project development, training initiatives, and coordinated responses to health challenges related to crocodilians. A first virtual meeting is planned, and the CSG Veterinary Working Group will be informed in order to coordinate joint strategies on how to proceed in these cases.

Institutional and Academic Cooperation
The CSG Regional Office for Latin America and the Caribbean actively facilitates cooperation among academic institutions, scientific bodies, non-governmental organizations, and other entities. It provides information and support to specialists, researchers, government officials, and undergraduate and graduate students across Latin America and the Caribbean, promoting knowledge exchange and capacity strengthening in the region. The Office also encourages all contacts and members to share their activities and outputs with the broader regional community through the coordination of the Regional Office.

Regional Workshop - El Salvador, September 2025
During the reporting period, the Regional Office, together with the Regional Chair, actively participated in the organization of the CSG Regional Workshop in San Salvador, El Salvador. The event brought together 61 participants from 10 countries, strengthening regional coordination and technical exchange on crocodilian conservation and management.

Activities included national status reports, identification of regional conservation priorities through exercises coordinated by international specialists, and 35 scientific presentations addressing research, management, health, and human-crocodilian interactions. The workshop was attended by environmental authorities from El Salvador, providing strong institutional support to the event.

As a highlighted activity, the First Women in Crocodilian Conservation Roundtable was held, promoting the visibility of female membership within the CSG and encouraging inclusive and participatory conservation approaches. Overall, the workshop contributed to updating the regional status assessment, consolidating cooperative networks among countries, and laying the groundwork for future joint actions in Latin America and the Caribbean. A summary of the event was published in Newsletter 44(4) - 2025.

Social Media
The active presence of the Regional Office on social media, particularly Instagram and Facebook, is reflected in a sustained increase in followers. However, the challenge remains for individuals interested in crocodilians to independently identify the official LAC channels, although gradual improvement is observed in this regard. Every 15 days, the accounts reach approximately 161 profiles, of which 51% are followers and 49% are non-followers. Currently, the Instagram account averages approximately 3500 monthly post views and has 752 followers.

The Facebook account currently has 1325 followers; however, the average number of interactions per post does not exceed 100, reflecting trends consistent with the current dynamics of this platform. In contrast, Instagram currently shows greater dynamism and visibility potential, especially for visual and environmental content, highlighting the need to prioritize differentiated communication strategies according to each social media platform.

Prepared by: Pablo Siroski and Lucía Fernández

Argentina

- Applied Molecular Ecology Laboratory (LEMA-ICiVet-UNL). Information provided by Pablo Siroski
LEMA-ICiVet-UNL is consolidating its position as a regional reference center in crocodilian physiology, immunology, ecotoxicology, and forensic genetics in South America, with primary focus on *Caiman yacare* and *Caiman latirostris*. The laboratory integrates molecular biology, comparative physiology, functional ecology, and adaptive management tools to support science-based conservation and sustainable use policies.

Since the last Steering Committee meeting, the following has been achieved.

Publications

Samuel Hilevski, Charlie Manolis, Pablo Siroski. A true facultative carnivore? Effects of replacing ground chicken carcasses with soybean meal on the growth of captive broad-snouted caiman (Caiman latirostris) and its economics implications. J Anim Physiol Anim Nutr. 2024;1–8. DOI: 10.1111/jpn.13958

Pereyra, Eugenia, Paula Bona, Pablo Siroski, Anusuya Chinsamy. María. Ontogenetic and interelemental study of appendicular bones of Caiman latirostris Daudin, 1802 sheds light on osteohistological variability in crocodylians J. Morphol. 2024;285:e21687. https://doi.org/10.1002/jmor.21687

Siroski, P.A.; Ciocan, H.; Hilevski, S.; Larriera, A. Increasing Population Status of Broad-Snouted Caiman (Caiman latirostris) Based on Sustainable Use Strategies in a Managed Protected Area in Santa Fe, Argentina. Animals 2024,14,1288. https:// doi.org/10.3390/ani14091288

Chacón, C.F., Parachú Marcó, M.V., Poletta, G., Siroski, P. 2024. Lipid metabolism in crocodilians: a field with promising applications in the field of ecotoxicology. Environmental Research, 252(4)119017. doi.org/10.1016/j.envres.2024.119017.

Cainelli, J., Cordero, T., Parachú Marcó, M.V., Hilevski, S.; Siroski, P.A. 2025. Egg windowing and plastic culture system in Caiman latirostris embryos, improving hatching success and offer potential management applications. Zoo Biology, 1-5, https://doi.org/10.1002/zoo.21892

Chacón, C.F., Parachú Marcó, M.V., Siroski, P.A., Poletta, G.L. 2025. Identification and tissue-specific expression of genes involved in lipid metabolism in broad-snouted caiman. Journal of Zoology, https://doi.org/10.1111/jzo.70071

Pacheco-Sierra, G.; Amavet, P.; Siroski, P.; Piña, C.; Patrón-Rivero, C.; Yáñez-Arenas, C. 2025. "Hybridization patterns and evolutionary clues in broad-snouted caiman and yacare caiman: Insights from phylogeographic and ecological analysis". Journal of Zoology. doi:10.1111/jzo.70013.

Mestre, A.P., Leiva, P.M.L., Iungman, J.L., Viotto, E.; Amavet, P.; Lábaque, M.C.; Piña, C.I.; González, M.A.; Simoncini, M.A. 2025. Flaxseeds and thymol feed as dietary supplementation for Caiman latirostris: effects on immune status, meat quality and intestinal morphology. Trop Anim Health Prod 57, 378. https://doi.org/10.1007/s11250-025-04626-x

Martin, P.; Pacheco-Sierra, G.; Mestre, A.P.; Siroski, P; Amavet, P. 2025. "Identifying caimans (Crocodilia: Alligatoridae) of Argentina using barcodes." Journal of Experimental Zoology part A. Ecological and Integrative Physiology, 1–9, https://doi.org/10.1002/jez.70060.

Ortíz, R.N., Zamboni, P., Tentor, F., Larriera, A., Siroski, P.A., Parachú Marcó, M.V. 2026. Long-Term assessment of reproductive parameters on broad-snout caiman populations in agroecosystem areas of Central-Northern Santa Fe, Argentina. Journal of Zoology

PhD Students
- Camila Felisa Chacón, PhD candidate in Veterinary Sciences at the National University of the Litoral. **Topic:** Evaluation of environmental contaminant exposure on lipid metabolism in the broad-snouted caiman (*Caiman latirostris*), its potential reproductive impact, and the implications for sustainable use programs.
- Ramiro Ortiz, PhD candidate in Veterinary Sciences. **Topic:** Evaluation of strategies adopted by the broad-snouted caiman (*Caiman latirostris*) in response to climate change.

Postdoctoral Students
- Samuel Hilevski. **Topic:** Study of the composition and function of the digestive system microbiome in juvenile *Caiman latirostris* fed different diets.

Undergraduate Thesis

- Irupé Casse. **Title:** Conjunctivitis and dermatitis in captive-reared broad-snouted caimans (*Caiman latirostris*) and their relationship with skin coloration.
- Nicole Agustina Beznosko. **Title:** From Breweries to Caimans: Incorporation of Brewer's Yeast (*Saccharomyces cerevisiae*) and Enzymes as Dietary Supplements in the Ex Situ Feeding of the Broad-Snouted Caiman (*Caiman latirostris*).

Master's Thesis

- Jordi Humberto Segura Yanes. **Title:** The American Crocodile (*Crocodylus acutus*) and Its Contribution to Tourism in the Barra de Santiago Ramsar Site, El Salvador.

PhD Dissertations

- Trinidad de los Ángeles Cordero Gil. **Topic:** Immunogenetic study of the broad-snouted caiman (*Caiman latirostris*) aimed at identifying potential components for diagnostic and therapeutic applications.

Ongoing Projects

- Comprehensive evaluation of the impact of environmental contamination caused by agricultural waste on the native species *Caiman latirostris*.
- Immunogenetic study of the innate and adaptive immune system of caimans as a tool for identifying potential components for diagnostic and therapeutic applications.
- The broad-snouted caiman (*Caiman latirostris*) as a bioindicator of disturbance generated by agricultural production systems.
- Evaluation of reproductive parameters in the broad-snouted caiman (*Caiman latirostris*) under a climate change scenario.

- Laboratorio de Ecología Aplicada (Centro de Investigación Científica y de Transferencia Tecnológica a la Producción, CICYTTP - CONICET). Information provided by Melina Simoncini

It should be noted that during these two years there has been no funding from the Argentine Government for scientific research; therefore, many of the activities carried out were conducted on a low budget, financed with the researchers' own funds, or supported by resources already available from previous years.

Summary of Research Conducted to Date: During this period, we worked on the modeling of body condition data from wild female *Ca. latirostris*, with the aim of distinguishing reproductive from non-reproductive individuals. We recorded and published the observation of maned wolves (*Chrysocyon brachyurus*) preying on *Ca. latirostris* nests using camera traps. In another study, we proposed that caiman nests function as microhabitats and play an ecological role of varying importance depending on the degree of environmental disturbance. We also published a report on phallic malformations and abnormalities in crocodilians.

In a scientific publication, we proposed stable isotope analysis as a tool to certify the origin (captive or wild) of skins or leathers (tanned and untanned) in *Ca. latirostris,* which could also be applied to other species. For *Caiman yacare,* we evaluated dietary patterns in the wild and showed that, although individuals increase in body size and incorporate larger prey, they continue to feed on small prey such as invertebrates. In contrast, in captive *Ca. latirostris* individuals, we supplemented their usual diet (chicken and dry commercial feed) with ground flaxseed and thymol (an antioxidant), resulting in positive effects on the immune system, meat quality, and even intestinal morphology. Improvements were observed not only in a product such as meat, but also in the overall health and welfare of the animals in captivity.

In collaboration with researchers from Brazil, we published a theoretically based study in which we proposed how the sustainable use of wildlife can affect behavioral, ecological, and evolutionary processes, using crocodilians as a model. In addition, a book published by FEALQ (Pernambuco, Brazil) is currently in press, to which we contributed a chapter on the nutrition of South American crocodilians.

In November 2025, in San Cristóbal de las Casas, Mexico, we participated in the 16th CIMFAUNA (International Congress on Wildlife Management in the Amazon and Latin America), organized by COMFAUNA (Community for Wildlife Management in the Amazon and Latin America), which brought together approximately 360 participants. A particularly noteworthy event was the symposium entitled *"Conservation and Use of Crocodilians in Latin America: A Look at the Present, Reflections on the Future"* (Coordinator: Javier Benítez Moreno). The symposium, which included 16 oral presentations and attracted a substantial audience, was highly successful. Speakers presented research on crocodilians covering a wide range of topics, including the application and adaptation of new technologies for crocodilian monitoring, their role as indicators of ecosystem health, sustainable use and management, conservation initiatives led by the private sector, and strategies aimed at promoting coexistence between crocodilians and human populations.

In addition, the symposium featured the participation of a group of female conservation scientists who addressed myths and realities surrounding crocodilians, with a particular focus on women in science and their contributions to crocodilian conservation. Their presentations provided valuable perspectives on both the progress achieved and the challenges that remain in their professional development within this field.

During the concluding session and the question-and-answer period, participants raised questions, shared suggestions, and discussed potential improvements that could be incorporated into ongoing and future projects. This exchange fulfilled the primary objective of the symposium: to promote knowledge sharing on crocodilian conservation, strengthen professional ties, foster collaborative networks, and present future perspectives for crocodilian research and conservation in Latin America.

Overall, the symposium generated very positive impressions. We highlight the importance of, and express our appreciation for, these types of collaborative spaces, which are supported by organizations such as the CSG, COMFAUNA, and other institutions involved in nature conservation.

An important aspect to emphasize is that COMFAUNA is currently chaired by Dr. Simoncini, and that several other CSG members serve on COMFAUNA's board of directors and participate actively in its activities. This strong institutional overlap significantly enhances coordination between both groups, reinforces their linkages, and creates concrete opportunities for collaboration. Such integration is expected to strengthen partnerships, expand opportunities for interdisciplinary project development, increase the visibility of research teams, and contribute to the consolidation of scientific and management networks that are robust and sustainable over time. Indeed, during the CIMFAUNA, Lonnie McCaskill and Carlos Piña presented a workshop on drones and wildlife.

Future and ongoing work: We will continue our research activities along several complementary projects. At present, we are preparing contributions for the Morocco meeting (CSG 2026), including studies on temperature-dependent sex determination and the effects of constant versus fluctuating incubation temperatures. We are also investigating how maternal investment in hormones and fatty acids deposited in eggs may influence the sex of *Ca. latirostris* hatchlings incubated at temperatures that produce mixed sex ratios. In addition, we are exploring potential applications and uses of caiman eggshells.

We are continuing field-based monitoring of caiman populations using camera traps, drones, and the application of artificial intelligence, as well as evaluating different dietary supplementation strategies for captive rearing. Furthermore, we will pursue ongoing research on female reproduction, maternal behavior, interactions with nest predators and visitors, and the effects of extreme climatic events (droughts and floods) associated with climate change.

Theses completed during 2024-2026 period

Pierini, Sofía E. (2025). Nesting behavior of the broad-snouted caiman (*Caiman latirostris*) in environments with different degrees of anthropization, and the influence of climatic variables on the onset of nest construction and clutch success. PhD dissertation, Universidad Nacional de Córdoba (Córdoba), Argentina.

Valli, Florencia E. (2026). Maternal influence and its interaction with climatic variables in the sex determination of *Caiman latirostris.* PhD dissertation, Universidad Nacional del Litoral (Santa Fe), Argentina.

Post-fire demographic responses, reproductive dynamics, and range shifts in *Caiman yacare* and *Caiman latirostris.* Gerardo Gabriel Vega (Argentina). Information provided by Gerardo Vega

During early 2022, Corrientes Province experienced extensive wildfires that affected more than 10,000 km², including large portions of the Iberá wetland system, one of the most important strongholds for *Ca. yacare* and *Ca. latirostris* in Argentina. These fires, associated with prolonged drought and extreme climatic conditions, represent one of the most significant recent disturbance events in the region and provide an opportunity to assess crocodilian demographic responses to large-scale habitat alteration.

Post-fire monitoring during the 2023 reproductive season included 23 days of fieldwork across six lagoons with contrasting fire histories (double-burn, single-burn, and unburned sites). Standardized nocturnal spotlight surveys were conducted and body condition was categorized. Maximum counts per lagoon were used as indices of relative density. Apparent densities were higher in double-burn lagoons (432.2 ± 139.7 ind. km^{-1}), followed by single-burn (162.4 ± 15.5 ind. km^{-1}) and unburned lagoons (149.1 ± 56.1 ind. km^{-1}). However, 71 percent of assessed individuals were classified as thin or emaciated, and unburned lagoons showed a higher proportion of individuals in good body condition. The elevated counts in burned areas are interpreted as aggregation and increased detectability resulting from vegetation loss, reduced refuge availability, and altered trophic structure rather than actual population growth. These findings suggest short-term redistribution and nutritional stress following disturbance.

Reproductive output was markedly affected. Intensive nest surveys conducted in 2023 and 2024, including ground searches and drone-based monitoring, detected no active nests, indicating temporary reproductive suppression consistent with habitat degradation and environmental stress. From a demographic perspective, this represents a cohort gap that may influence age structure and future recruitment. In 2025, reproductive activity resumed, with fourteen nests recorded within a 2.29 km² area, including confirmed nests of both species. This recovery of nesting activity suggests early ecosystem resilience and the reestablishment of recruitment processes.

Additionally, confirmed nesting and successful hatching of *Ca. latirostris* were documented in April 2024 in Gualeguaychú, Entre Ríos Province, representing verified reproduction in the southern portion of the species' regional distribution. This record may reflect ongoing range adjustments under changing environmental conditions.

Collectively, these observations highlight the sensitivity of crocodilian demographic parameters to extreme climatic events, while also demonstrating adaptive capacity and early signs of recovery under favorable post-disturbance conditions.

Trade structure and export dynamics for *Caiman yacare* and *Caiman latirostris* - Information provided by Walter Prado

Current export activity involving Argentine crocodilian products remains limited and highly concentrated. At present, there is a single authorized exporter of *Ca. yacare*. In recent years, commercial operations have included the importation of raw skins of *Ca. c. fuscus* for domestic processing and subsequent re-export as finished leather components, primarily cuts intended for boot manufacturing. These operations are conducted under applicable CITES provisions governing import, processing, and re-export of Appendix-II specimens, with corresponding documentation and traceability requirements.

With respect to *Ca. latirostris*, exports are restricted to finished leather goods, principally handbags, and are likewise managed by a single exporter. No export of raw or semi-processed skins of this species is currently reported. The trade structure is therefore characterized by low diversification in terms of operators and product categories, with limited industrial scale and a focus on value-added manufactured goods rather than bulk raw material exports.

From a governance perspective, this concentrated export structure facilitates administrative oversight and traceability, although it also reflects the reduced scale of commercial activity compared to historical periods of higher production. Trade volumes remain aligned with national regulatory frameworks and CITES requirements, and current operations are conducted within established legal parameters.

Continued monitoring of production, processing, and export dynamics remains relevant to ensure compliance, maintain traceability standards, and evaluate the role of sustainable use within broader conservation strategies for both species.

Skin Exports								
Year	**Species**	**Raw**	**Tanned**	**Manufacture**	**Total**	**EU**	**Mexico**	**Colombia**
2024	***C. latirostris***	0	702	131	833	131	702	0
2024	*C. yacare*	1	0	3720*	3721	3720	0	1
2025	***C. latirostris***	0	0	110	110	110	0	0
2025	*C. yacare*	0	0	2325*	2325	2325	0	0
* *En su gran mayoría cortes para la confección de pares de botas. (mostly for boots)*								

Belize

The following update on Belize is provided by several authors in regard to current research, population status, and human-crocodile interactions.

Ambergris Caye. Prepared by: ACES Wildlife Rescue

Human-Crocodile Interactions Patient Intakes: 52 (33.1%) of intakes were American Crocodile

- 1 Dead on Arrival
- 1 Euthanasia (police assistance and permission from Belize Forest Department)
- 40 released
- 10 dead (recovered eggs from nest destruction, eggs no longer viable)

Reasons for Admission:

- 10 relocation and release
- 7 entrapments (entrapped by barriers during natural movement, more development of natural pathways)
- 1 displaced by habitat loss
- 2 physical trauma (human cause)
- 2 incidents of nest destruction (same nest site 2 years in a row. First yielded 19 hatchlings released, second year nest disrupted week after laying. 10 eggs recovered but no longer viable)
- 4 intakes due to illegal activity

- 1 DOA natural causes
- 1 Euthanasia (by police support and permission from Belize Forest Department)

Hotline Reports
- 100 conflict calls (crocodiles under homes, in yards, nearby, taking pets...)
- 12 calls reporting illegal activity (feeding, harassment)
- 2 calls reporting nest disturbance (same site, Benny's construction sand pile. 2 years in a row)
- 2 calls displaced by habitat loss
- 3 calls inappropriate human intervention (captured and brought home)
- 3 reports of nesting crocs
- 21 calls were advice given only
- 8 reports of entanglement or entrapment (plastic bags, fishing gear, or caught by physical barriers)
- 2 reports physical trauma
- 3 reports of observed deceased croc

Population Survey by Ciaran O'Mordha: 199 American Crocodiles Observed
- 59 (30%) eyeshines
- 44 (32%) hatchling/yearling
- 32 (23%) juvenile
- 20 (14%) sub-adult
- 44 (31%) adult

To add to this general summary, we have seen an increase in conflict caused by an unprecedented amount of habitat loss and destruction. Lagoons are being filled, mangroves cut down, dredging in protected areas, trash, and human development continues to move into crocodile habitat. Calls to action by stakeholders to authorities are ignored.

Poor practices by bar establishments at Secret Beach involve improper trash disposal, and food scraps being tossed in the area causing an increase of calls in that area as crocs are drawn to food sources. There has been an increase in inappropriate human interaction by residents and tourists, observed through social media. More residences have been built in croc habitat leading to conflict as residents fear for safety, pets are taken or crocodiles end up in yards.

We have worked extensively to provide education and support to residents, regarding peaceful coexistence. Another conflict we have struggled with is support from law enforcement. There are no forestry officers on the cayes, and our attempts to have enforcement support has not taken place. We have had support by local police, but there is a lack of knowledge of wildlife law, and officers who have supported us often don't understand why they are there, and sometimes are part of the problem.

Hybridization in Belize. Prepared by: Helen Sung
Hybridization presents both a conservation challenge and an evolutionary opportunity - particularly where natural hybrid zones intersect with human-modified landscapes. Recent advances in genomics have reshaped our understanding of hybridization, revealing its role in facilitating adaptation and diversification, especially in dynamic environments. For her PhD dissertation, Helen investigated the evolutionary and conservation implications of naturally occurring hybridization between two Mesoamerican crocodile species in Belize: *C. acutus* (American crocodile) and *C. moreletii* (Morelet's crocodile). Analyses revealed widespread admixture, the presence of two genetically distinct *C. acutus* lineages in Belize, and evidence of both ancient and ongoing hybridization. Salinity tolerance - a key ecological trait delineating species boundaries - was investigated using genome-wide association scans and two candidate loci were identified, including a previously uncharacterized sodium channel gene (*SCN5A*-like) in archosaurs. These findings suggest that introgressed variants may contribute to physiological adaptation in hybrid populations. Finally, the role of adaptive introgression in shaping hybrid genomes was assessed and genomic regions under selection linked to environmental stress response, osmoregulation, and metabolism where identified. Notably, introgression patterns were asymmetric, with directional gene flow shaping distinct genomic regions through historical versus recent admixture. Together, these findings suggest that hybridization in crocodylians is not merely a consequence of anthropogenic disturbance but may serve as a mechanism of evolutionary innovation. This work deepens our understanding of hybridization in long-lived vertebrates and underscores the importance of recognizing hybrids as valuable contributors to biodiversity. By integrating genomic and ecological perspectives, these findings aim to inform conservation strategies for species affected by hybridization, particularly those subject to uneven legal protections and complex evolutionary trajectories.

Comparison of morphology to genetics of *C. acutus* and *C. moreletii.* Prepared by: Theo Bousseau
This study evaluates whether skull and body morphometrics can reliably identify *C. acutus*, *C. moreletii* and their hybrids in Belize in the absence of genetic data. We analyzed three datasets: field measurements from 890 live individuals; linear and geometric morphometric data from 25 museum/field skulls (CRC, BWRC, The Belize Zoo, ACES); and a matched set of 273 live individuals with both morphology and genomic data. Field sampling and taxonomic assignments were conducted by the original teams in collaboration with the Crocodile Research Coalition (CRC). Analyses across datasets show that morphological differences are most pronounced in adults and remain detectable, though less distinct, in younger specimens. Among the variables examined, the most consistently larger in CA are Snout Length (SL), Head Length (HL), Snout-to-Orbit (SVL), and Total Width (TW). In contrast, Maximum Head Width (MAX W) normalized by size (MAX W/Total Length or MAX W/HL) is typically higher in CM, reflecting a broader, less elongate head. Therefore, a compact

key can discriminate *C. acutus* between *C. moreletii* using one pro-CM width ratio (like MAX W/TL) plus two pro- *C. acutus* elongation metrics (like SL/TL or HL/TL). Hybrid morphometrics often closely match (and sometimes overlap) those of either *C. moreletii* or *C. acutus* and only rarely present an intermediate phenotype. In practice, *C. acutus* and *C. moreletii* can be differentiated by measuring Maximum Head Width together with two of the parameters that are consistently larger in *C. acutus*.

Additionally, comparisons between genetic and morphological data indicate four genetic classes: genetically "pure" *C. moreletii* and *C. acutus*, plus two hybrid groups. One hybrid group is genetically close to *C. moreletii* and cannot be distinguished from *C. moreletii* by morphology alone, whereas the other is genetically closer to *C. acutus*, though not to the same degree as the "pure" groups. Certain width-related metrics such as Premaxilla W and MAX W/TL can flag candidates in this hybrid group because they tend to be higher, but they do not provide definitive evidence on their own. Overall, morphology aligns with genomics for species-level identification (especially in adults), while genetic data remain necessary for confident hybrid classification.

Some additional traits not monitored in this study offer a consistent way to preliminarily assess an individual's genetic class such as the presence of a preorbital ridge, the shape of the premaxillary suture, or scutellation patterns, which can indicate whether a specimen aligns more with *C. acutus* or *C. moreletii*, or exhibits atypical features suggestive of hybridization.

Effects of Heavy Metals and Water Contaminants in Juvenile and Adult *C. moreletii* in various waterways in Belize. Prepared by: Andrea Torzone (student)

I conducted a study investigating how heavy metals and water contaminants affect the immune health of juvenile and adult *C. moreletii* across six waterways in Belize. From July to August 2025, we captured 43 crocodiles during standardized nocturnal surveys, recorded morphometrics and body condition scores, and collected blood samples for hematological and immunological analyses, along with scute samples for heavy metal testing. Each crocodile was microchipped and safely released at its capture site. Preliminary blood chemistry and hematocrit results show site-specific differences in health, with crocodiles from the suspected polluted New River Lagoon exhibiting lower body condition scores and irregular hematological profiles compared to individuals from less impacted systems. These early findings suggest contaminant-related stress may already be affecting immune function, with additional immunological assays currently underway. In the New River Lagoon specifically, I frequently observed signs of poor health in the field, including emaciation, visible fight wounds, areas of necrotic tissue, and more lethargic or wary behaviour during capture. These physical and behavioural indicators further support the concern that environmental degradation may be negatively impacting crocodile health in this system.

Summary of crocodile surveys throughout Belize. Prepared by: Jonathan Triminio

From April 2024 through 30 December 2025, countrywide crocodile monitoring surveys were conducted across Belize to assess populations of the American crocodile (*C. acutus*) and Morelet's crocodile (*C. moreletii*). Surveys consisted of nocturnal eyeshine surveys (NES) to estimate relative abundance and encounter rates, as well as capture surveys to support population assessments and individual-level data collection. Survey effort and results are summarized by district below.

In the Corozal District, two nocturnal eyeshine surveys were conducted, during which a total of 43 crocodiles were observed. This corresponded to an average encounter rate of 0.77 crocodiles per kilometer surveyed. One capture survey was conducted in this district, resulting in the capture of 10 individual crocodiles.

In the Orange Walk District, four nocturnal eyeshine surveys were completed, yielding a total of 208 crocodile observations and an average encounter rate of 1.96 crocodiles per kilometer. A total of 11 capture surveys were conducted, during which 49 individual crocodiles were captured.

In the Belize District, eight nocturnal eyeshine surveys were conducted, with 273 crocodiles observed. This district exhibited the highest average encounter rate at 3.25 crocodiles per kilometer surveyed. Four capture surveys were carried out, resulting in the capture of eight individual crocodiles.

In the Stann Creek District, 14 nocturnal eyeshine surveys were conducted, during which a total of 38 crocodiles were observed. The average encounter rate was 0.58 crocodiles per kilometer. Capture effort in this district was comparatively high, with 31 capture surveys conducted and 60 individual crocodiles captured.

In the Toledo District, three nocturnal eyeshine surveys were conducted, resulting in 26 crocodile observations and an average encounter rate of 1.3 crocodiles per kilometer. Six capture surveys were conducted, during which 15 individual crocodiles were captured.

No nocturnal eyeshine or capture surveys were conducted in the Cayo District during the reporting period. Across all districts, a total of 31 nocturnal eyeshine surveys were conducted, during which 588 crocodiles were observed. In addition, 53 capture surveys were completed countrywide, resulting in the capture of 142 individual crocodiles. These results demonstrate substantial spatial variation in crocodile abundance and encounter rates across Belize, while highlighting the value of combined nocturnal eyeshine and capture survey approaches for long-term population monitoring and management.

Prepared by: Marisa Tellez

Bolivia

The National Program for the Conservation and Sustainable Use of the Yacare Caiman (*Ca. yacare*) continues to operate at a very low level of implementation, with limited harvest levels primarily focused on meat utilization.

On 10 July 2025, an expert workshop was convened to conduct an "Analysis of the current status of Yacare Caiman management in Bolivia: Technical recommendations." The event brought together governmental authorities, specialists, and institutions involved in the conservation and sustainable use of the species.

This initiative was motivated by discussions with the General Directorate of Biodiversity and Protected Areas, in response to the need to consolidate the experience of all stakeholders involved in caiman management in Bolivia. The objective is to integrate technical criteria into a consolidated expert opinion to be reflected in a formal publication and a policy brief, with the aim of establishing clear management guidelines for *Ca. yacare* in the country.

The discussions were structured around a series of key thematic areas, ranging from social dimensions to illegal trade and market dynamics. Core topics included the leather market, illegal trafficking, compliance with CITES requirements, and the meat trade. Additional discussions addressed the current management framework, which was considered outdated and in need of revision, as well as the incorporation of recent genetic data, which has revealed a more complex population structure than previously understood.

The intention is to compile all contributions and recommendations into a consolidated technical document. It is important to note that the discussions focused specifically on *Caiman yacare* and did not formally include other species such as the black caiman (*Melanosuchus niger*), although potential implications related to trafficking and meat trade were acknowledged.

Prepared by: Alfonso Llobet

Bonaire

In October 2024, an American crocodile (*C. acutus*) was recorded on Bonaire, specifically in the Sorobon-Lac Bay area on the southeastern coast of the island. The animal was first observed on 8 October in a highly frequented coastal zone, prompting local authorities to close Lac Bay and Sorobon to the public as a precautionary safety measure. This event attracted considerable local attention because crocodiles are not part of the island's commonly recognized fauna and the sighting represented a highly unusual occurrence for Bonaire. Subsequent scientific interpretation treated the event as the first documented record of *C. acutus* for the island, within a broader context of regional range re-expansion by the species in the southern Caribbean.

Following the initial sighting, local authorities and STINAPA Bonaire carried out an intensive search and monitoring effort. According to local news coverage, the animal repeatedly used the mangrove-lined margins of Lac Bay, which made tracking and capture difficult. Search efforts reportedly involved drones, nets, kayaks, boats, and direct visual surveillance. The crocodile was eventually captured on 26 October 2024 and moved to a temporary secure location. Press reports described the individual as a young male American crocodile measuring approximately 2.34 m in length.

Shortly after capture, the animal died. Initial public communications indicated that stress associated with capture and transfer was suspected as the principal cause. Later reporting based on the necropsy findings indicated that the crocodile most likely died from capture myopathy, a stress-related pathological condition associated with prolonged pursuit, restraint, handling, or transport. The necropsy reportedly found the animal to be in good nutritional condition and without evidence of prior disease or major trauma, reinforcing the interpretation that the fatal outcome was linked primarily to the capture event itself.

From a regional perspective, the Bonaire record is important for two reasons. First, it provides evidence that *C. acutus* are capable of reaching islands of the southern Dutch Caribbean, most likely through natural marine dispersal and assuming that it was not deliberately introduced or escaped as an illegal pet. Second, it illustrates the institutional and operational challenges that can arise when large crocodilians appear in insular territories with little recent experience in managing them. The scientific paper that later analyzed the case placed the Bonaire occurrence within a wider pattern of recovery and redistribution of coastal populations in northern South America and emphasized the need for clearer protocols, public communication strategies, and preparedness measures for future crocodile appearances on Caribbean islands.

Prepared by Pablo Siroski

Brazil

1. **North Region**

The Mamirauá Institute was established in April 1999. It is a social organization funded and supervised by the Brazilian Ministry of Science, Technology, and Innovation, that carries out its activities through programs focused on research, natural resource management, and social development, primarily in the Middle Solimões region, in the state of Amazonas. The objectives of the Mamirauá Institute include conducting applied science and fostering innovation in the adoption of strategies and public policies for the conservation and sustainable use of Amazonian biodiversity. The Fauna Management Program of the Mamirauá Institute, created in 2020, develops technical and scientific activities to enable management systems for culturally exploited wildlife species in the Amazon, especially within the Mamirauá Reserve, in the state of Amazonas. The Program is coordinated by Diogo de Lima (Animal Scientist), with a team composed of Fernanda Silva (Biologist), Joice Maciel (Animal Scientist), André Coelho (Biologist), and João Carvalho (traditional knowledge specialist).

Annual activities include monitoring nesting areas and conducting population surveys in two sectors of the Mamirauá Reserve: the Jarauá sector and the Aranapu sector. Both areas have a long history of sustainable natural resource use, particularly fisheries, and have shown average densities close to 100 caimans per kilometer of riverbank, indicating the feasibility of sustainable management. In March 2025, a preliminary management plan model for the Jarauá sector was presented, discussed, and approved by local managers, and subsequently presented to the Deliberative Council of the Mamirauá Reserve. After being updated, the plan will be submitted to IBAMA for capture authorization. Considering annual averages of around 5000 caimans counted, the sector has the legal potential to harvest approximately 500 black caimans (*M. niger*) per year. However, due to the small capacity of the local slaughter facility (30 caimans/day) and the still limited knowledge of the regional market, an agreement between the managers' association and the technical advisory team of the Mamirauá Institute established that annual quotas will be gradually increased until reaching the maximum feasible level. Thus, also considering the five-year gap since the last harvest (28 black caimans in 2020), a small-scale harvest of approximately 100 sub-adult individuals is planned for the second half of 2026.

Since 2021, meetings have been held with the Amazonas Environmental Protection Institute (IPAAM) and IBAMA to discuss the exemption from environmental licensing and from registration in the Federal Technical Registry (CTF) for the floating caiman slaughter facility (PLANTAR), due to its small scale, high seasonality, and use by traditional communities. In November 2025, IPAAM and the Government of the State of Amazonas granted the environmental licensing exemption for PLANTAR, the first exemption granted to a slaughter facility in Amazonas based on state environmental legislation (Law No. 3785/2012). This exemption now allows the continuation of the development of caiman management plans in the Jarauá sector of Mamirauá Reserve, enabling new harvests in 2026 with lower costs and a more streamlined bureaucratic process.

The Mamirauá sector, another area of interest, has a history of tourism activities and densities above 50 caimans per kilometer, demonstrating potential for caiman-based scientific tourism. Negotiations and pilot activities toward this objective have been carried out since 2024.

Finally, in an effort to meet the growing demand related to caiman management in the Amazon, the Mamirauá Institute has adopted a capacity-building strategy focused on training multipliers. Since 2019, it has provided professionals with basic tools for the design, monitoring, and evaluation of community-based caiman management projects in protected areas in the Amazon. In 2025, the 4th course was held, with the participation of 14 individuals from community associations, fisheries agreements and colonies, and public licensing and regulatory agencies.

Reported by: Diogo Lima

Researchers from the Laboratory for the Characterization of Environmental Impacts (LCIA) at the Federal University of Tocantins (UFT), Northern Brazil, have been conducting studies on crocodilians in the state of Tocantins and surrounding regions. Projects carried out by LCIA/UFT aim not only to expand ecological and biological knowledge of crocodilians, but also to assess environmental impacts associated with land-use change, human presence, and contaminant exposure on these species.

Between 2021 and 2024, more than 60 water bodies - including rivers, streams, and inland lakes - were surveyed within the Araguaia National Park (PARNA) and the Cantão State Park (PEC), an important high-biodiversity ecological corridor located in the Cerrado-Amazon ecotone. Through active searches in the study areas, more than 30 nests of *M. niger* (Black caiman) were recorded, based on a sampling effort exceeding 1000 km traveled from field bases to aquatic habitats. Throughout this period, basic information on the reproductive biology of the black caiman was collected, including nest density, egg morphometrics, clutch size, hatching success, and incubation temperature, among other parameters. These studies are part of research projects coordinated by Prof. Thiago C.G. Portelinha (UFT) and of the Masters thesis defended in 2025 by Barthira R. Oliveira. In her Masters thesis, Barthira presented data on the reproductive ecology and nesting habitat characteristics of *M. niger* in the northern portion of PARNA.

In addition to reproductive studies, *M. niger* populations in the same region have been monitored since 2023 in the Javaés and Coco Rivers, with the objective of relating caiman population density to human presence, particularly during the dry

season (May-October), when beach tourism intensifies. These studies are ongoing and are part of a project funded by the Tocantins Foundation for Scientific and Technological Support (FAPT), through the FAPT/Naturatins call.

In Palmas, the capital of Tocantins, LCIA/UFT researchers are also conducting studies on urban crocodilians. The biologist and master's student Maria Júlia Meneses Dias (PPGCiamb) and the undergraduate student in Biological Sciences Marco Antonio Rodrigues Lima, both supervised by Prof. Thiago C.G. Portelinha, are developing their research in urban streams that cross the city of Palmas. These studies focus on the effects of urbanization on demographic (ie abundance, density, and sex ratio) and reproductive patterns of *Paleosuchus palpebrosus* (Dwarf caiman) and *Ca. crocodilus* (Spectacled caiman).

Reported by: Thiago C.G. Portelinha

2. Northeastern Region

In 2025, the Projeto Jacaré, affiliated with the Interdisciplinary Laboratory of Reptiles and Amphibians (LIAR.) at the Federal Rural University of Pernambuco (UFRPE), coordinated by Dr. Jozelia Maria de Sousa Correia and researchers Dr. Ednilza Maranhão dos Santos and Dr. Rafael Sá Leitão Barboza, became affiliated with the Laboratory of Ecology, Conservation and Movement of Vertebrates (ECOMOV) at the Federal University of Pernambuco (UFPE), coordinated by Dr. Paulo Braga Mascarenhas Junior.

Research on crocodilians in Northeastern Brazil has been conducted since 2014, with the objective of deepening the biological and ecological understanding of Atlantic Forest species. These studies investigate aspects related to abundance, spatial distribution, reproductive ecology, health, diet, ethnoherpetology, ethology, bioacoustics, and population genetics of wild populations of the broad-snouted caiman (*Ca. latirostris*) and the dwarf caiman (*P. palpebrosus*). In addition to conservation-oriented research, the project also promotes scientific outreach and popularization in schools and local communities, as well as academic training and capacity building of environmental agents for best practices in the capture, handling, and safe release of caimans in urban areas.

In 2025, Projeto Jacaré conducted field research involving nocturnal spotlight surveys, captures, biometric measurements, marking, and biological sampling in its main study areas: the Aldeia-Beberibe Environmental Protection Area (APA) and its surroundings (-7.975685° S; -34.952857° W), the largest Atlantic Forest fragment embedded within an urban matrix in the Recife metropolitan region, Pernambuco state; the Tapacurá Reservoir (-8.041770°; -35.193090°), a large water body located in the municipality of São Lourenço da Mata, approximately 60 km from Recife; and the urban stretch of the Capibaribe River within the city of Recife. Research is also conducted on caimans rescued from the metropolitan region in partnership with the Wildlife Screening Center (CETRAS-Tangará), linked to the Pernambuco state environmental agency.

Research activities have focused on the systematic monitoring of the reproductive ecology of *Ca. latirostris* since 2015. These efforts have ensured the continuity of long-term reproductive datasets, which are essential for understanding the species' ecology in Northeastern Brazil and for supporting studies on reproductive success, nest mortality, sex ratios, environmental impacts, and the evaluation of new research methodologies aimed at addressing additional guiding questions.

Regarding bioacoustics, studies describing the vocal repertoire of *Ca. latirostris* hatchlings are in their final stages prior to publication. Recordings of hatchlings under different behavioural contexts and of adults are being archived in a robust database. A small working group has been established with Brazilian researchers interested in crocodilian bioacoustics, studying different species, to promote mutual collaboration, develop shared databases, and advance thematic research demands. Initial efforts have also been made toward the creation of a global crocodilian bioacoustic database, currently involving researchers from Brazil, Thailand, and the United States, with plans to expand and organize these data with broader international collaboration.

Research focusing on the ethnozoology and ethology of caimans has been expanded to include urban caiman populations in neighborhoods of Recife. Dialogue has already begun with local residents surrounding the Apipucos reservoir to conduct research related to caiman behaviour, as well as to understand the relationships between fishers, residents, and caimans in this urban environment.

Research partnerships were strengthened throughout 2025, including collaborations with the Mamirauá Institute (IMD) during the 77th Annual Meeting of the Brazilian Society for the Advancement of Science (SBPC), and with the Caiman Program of the Instituto Marcos Daniel (IMD) in Itaúnas, Espírito Santo.

Below are the results achieved and activities currently underway (2025):

Postdoctoral project

1. Rafael Sá Leitão Barboza: Reproductive dynamics of the broad-snouted caiman (*Caiman latirostris*) in the Atlantic Forest: a long-term study in Pernambuco.

Graduate projects

1. Rafael Sá Leitão Barboza: From reproductive ecology to local ecological knowledge of a crocodilian, the broad-snouted caiman (*Caiman latirostris*). (UFRPE/PPGBio. Defense in February 2025, with CSG support)
2. Carlos Fernando Rodrigues Neto: Parasitic ecology and ecotoxicology of *Caiman latirostris* (Daudin, 1802) in the Capibaribe River Basin. (UFRPE/PPGBio. Defense in July 2025, with CSG support)
3. Gabriela Lima de Barros Lucena: Comparative analysis of non-lethal methods for sex identification in hatchlings of *Caiman latirostris* (Daudin, 1802) in a natural Atlantic Forest population of Pernambuco. (UFRPE/PPGBio. Started August 2025)
4. Gabriel Brandão de Mello Netto: Urban caimans: influence of urbanization on the distribution and abundance of *Caiman latirostris* (Daudin, 1801) in the urban area of Recife, Pernambuco. (UFPE/PPGBA. Started August 2025, with CSG support)

Undergraduate projects

1. Malu Caminha: Fauna associated with nests of the broad-snouted caiman (*Caiman latirostris*) at the Tapacurá Ecological Station. UFRPE - Undergraduate research.
2. Italo Moraes da Silva: (1) Agonistic interactions in the broad-snouted caiman (*Caiman latirostris*) in the Recife metropolitan region; (2) Diet of the broad-snouted caiman *Caiman latirostris* in the Capibaribe River, Recife, Pernambuco. UFRPE.
3. Daniela Pedrosa Barreto: Educational books as pedagogical tools for caiman conservation. UFRPE.
4. Douglas Vinícius Xavier de Santana: Description of the vocal repertoire of Atlantic Forest caimans from Pernambuco. UFRPE.
5. Mayara Yasmin de Souza Bezerra: Diagnosis of the urban caiman population in the Apipucos reservoir, Recife, Pernambuco. UFRPE.
6. Maria Júlia de Oliveira Galvão: Linear morphometrics associated with sex identification of the broad-snouted caiman (*Caiman latirostris*) in a natural Atlantic Forest population of Pernambuco. UFRPE.
7. Laila Cristine da Mota Aragão: Floristic and phytophysiognomic characterization of reproductive sites of the broad-snouted caiman (*Caiman latirostris*) in an Atlantic Forest fragment in Pernambuco. Internship - UPE.
8. Isabela Araújo: Behavioral patterns of the broad-snouted caiman under intense urbanization in the Apipucos reservoir, Recife, Pernambuco. UFRPE.
9. Kelvin dos Santos Bezerra: Between the urban and the wild: local relations, perceptions, and knowledge about caimans in the Apipucos reservoir, Recife, Pernambuco. UFRPE.

Communications/published articles

1. Barboza, R. S. L., Silva, M. G. N., Souza Neto, C. F. R. de, Mascarenhas-Junior, P. B., Caminha, M. M., Santos, E. M. dos, & Correia, J. M. de S. (2025). First record of twin hatchlings in *Caiman latirostris* (Daudin, 1802) in the Atlantic Forest, Brazil. Journal of Environmental Analysis and Progress, 10(3), 176-180. https://doi.org/10.24221/jeap.10.3.2025.6916.176-180
2. Mascarenhas-Junior PB, Simões, Pedro Ivo, Anjos, Haggy Rodrigues, Barboza, Rafael Sá Leitão, Santos, Ednilza Maranhão & Correia, Jozelia Maria de Sousa Correia (2025). Temporal fluctuations in the sex ratio of a broad-snouted caiman (*Caiman latirostris*) population in a highly impacted Atlantic Forest of Brazil. Wildlife Research 52, WR25066. doi:10.1071/WR25066
3. Barboza RSL, Brandão G, Mascarenhas-Junior PB, Santos EM, Correia JMC. Methods for capturing hatchling crocodylians in mound nests. Studies on Neotropical Fauna and Environment. (No prelo).
4. Barboza RSL, Correia JMS, Souto A, Diniz GTN, Schiel N. "Are there caimans here?" Influence of multiple drivers on local ecological knowledge about an apex predator. Frontiers in Amphibian and Reptile Science. (No prelo).
5. Silva IM, Barboza RSL, Santos EM, Correia JMS. *Caiman latirostris* (Broad-snouted Caiman). Nest mortality. Herpetological Review. (No prelo).

Congresses / symposia / scientific meetings

1. 7th Annual Meeting of the Brazilian Society for the Advancement of Science (SBPC), July 2025, Recife, Pernambuco – Round table held in partnership with the Mamirauá Institute (IMDS) and the Interdisciplinary Laboratory of Amphibians and Reptiles (L.I.A.R - UFRPE).
Research, outreach, and conservation at the human-wildlife interface (Diogo Lima, Rafael Barboza, and Jozelia Correia).

2. XI Brazilian Congress of Herpetology, August 2025, Manaus, Amazonas

a. Symposium:

- Crocodilians in Brazil – from rarity to abundance: use, conflict, opportunity, science, and education for conservation.
- Invited talk: Female leadership in caiman research and knowledge in Brazil (Jozelia Correia).

b. Abstracts presented:

1. Assessment of body condition scores in populations of *Caiman latirostris* in the Atlantic Forest of Pernambuco (Richard Moura, Paulo Mascarenhas Junior, Rafael Barboza, Ednilza Santos, Jozelia Correia).
2. Diet of the broad-snouted caiman, *Caiman latirostris* (Daudin, 1802), in the Capibaribe River, Recife, Pernambuco (Ítalo Silva, Jozelia Correia).
3. Parental behavior of females at nests of the broad-snouted caiman, *Caiman latirostris*, in the Tapacurá Ecological Station, Pernambuco (Malu Caminha; Rafael Barboza; Gabriela Lucena; Gabriel Brandão Netto; Nicola Schiel; Antônio Souto; Ednilza Santos; Jozelia Correia).

4. Methods for capturing hatchling crocodilians in mound nests (Rafael Barboza, Gabriel Netto, Ednilza Santos, Paulo Mascarenhas Junior, Jozelia Correia).
5. Systematic review of molecular techniques used to assess genetic diversity in crocodilians (Gabriel Netto; Jozelia Correia; Paulo Eleutério Souza).
6. Morphological traits associated with sexual dimorphism in hatchlings of *Caiman latirostris* in a natural Atlantic Forest population from Pernambuco (Gabriela Lucena, Rafael Barboza, Paulo Duarte Neto, Fabrício Sá, Jozelia Correia).
7. GPS telemetry as a tool for evaluating maternal care behavior in female broad-snouted caiman (*Caiman latirostris*) in Northeastern Brazil (Paulo Mascarenhas Junior, Rafael Barboza, Malu Caminha, Gabriela Lucena, Carlos Rodrigues, Pedro Simões, Jozelia Correia).
8. "Are there caimans here?" How age and education level influence local ecological knowledge about an apex predator (Rafael Barboza, Jozelia Correia, Antonio Souto, George Diniz, Nicola Schiel).
9. Two in one: the first record of free-ranging twin hatchlings of *Caiman latirostris* in Brazil (Malu Caminha; Rafael Barboza; Mayara Negromonte; Carlos Neto; Paulo Mascarenhas Junior; Ednilza Santos; Jozelia Correia).
10. Small calls, major functions: characterizing the vocal repertoire of broad-snouted caiman (*Caiman latirostris*) hatchlings (Rafael Barboza, Jozelia Correia, Antonio Souto, Larissa Sugai, Nicola Schiel).
11. Parasitological assessment of the broad-snouted caiman (*Caiman latirostris*) in Northeastern Brazil (Carlos Neto, Jozelia Correia, Jaqueline Oliveira).

Courses/educational activities

Within the scope of university outreach and environmental education, activities were developed through projects funded by the Ministry of Science, Technology and Innovation (MCTI/CNPq), particularly the project "Life in Water, Life on Land: science connecting oceans, biodiversity, health, and climate change in my country - Pernambuco". These initiatives promoted the integration of science, environmental education, and society, engaging local communities and schools surrounding the study areas.

The traveling and interactive exhibition "The Incredible World of Atlantic Forest Amphibians and Reptiles" continued to be presented in local schools and during the 30th edition of SBPC Jovem 2025. This event was part of the 7th Annual Meeting of the Brazilian Society for the Advancement of Science (SBPC) and aimed to stimulate interest in science, technology, and innovation among primary and secondary school students, fostering direct interaction with researchers and discussions on the role of science in social transformation.

Theoretical and practical training was provided to environmental agents of the Municipal Civil Guard of Vitória de Santo Antão (Pernambuco), focusing on best practices for the capture, handling, and safe release of caimans in urban environments.

Reported by Jozélia Correia

Since 2025, a new research group has been studying urban crocodilian populations across the northeastern Atlantic Forest of Brazil. The Vertebrate Ecology, Conservation and Movement Laboratory (ECOMOV), based at the Federal University of Pernambuco, is coordinated by Associate Professor Dr. Paulo Braga Mascarenhas Júnior.

During its first year of activities, the ECOMOV team focused on three main study areas: the protected Atlantic Forest fragment of *Mata do Buraquinho* in João Pessoa (Paraíba state); the municipality of Ilha de Itamaracá, located on the northern coast of Pernambuco; and the urban stretch of the Capibaribe River basin in Recife (Pernambuco state). At *Mata do Buraquinho*, an urban Atlantic Forest remnant, research focuses on understanding the distribution and population parameters of broad-snouted caimans (*Ca. latirostris*) and dwarf caimans (*P. palpebrosus*). This area represents a critical refuge for crocodilians within a highly urbanized matrix. Studies conducted there go beyond population surveys, adopting an integrative approach that involves local governmental agencies and military police to emphasize the importance of protecting this area for caiman persistence, as well as to mitigate human-crocodilian conflicts and illegal hunting previously documented in the region.

Research in the municipality of Ilha de Itamaracá focuses on remnant populations of broad-snouted caimans inhabiting an extremely degraded environment. Rapid urban expansion has led to the destruction of wetlands, leaving only a few remaining water bodies, such as small channels and ponds, mainly in the eastern portion of the island. Additionally, reports of caiman poaching persist in the area. With support from the local government, the project aims to assess caiman distribution and develop strategies to reduce the impacts of urbanization on these populations.

The third study area, and arguably the most complex, is the Capibaribe River basin in Recife. Broad-snouted caimans occur throughout the basin, from upstream to downstream sections, often in areas with little riparian vegetation and intense human disturbance. This study is conducted in partnership with the Interdisciplinary Laboratory of Amphibians and Reptiles (L.I.A.R.) of the Federal Rural University of Pernambuco, coordinated by Dr. Jozelia Correia. The project involves multiple conservation stakeholders, including local fishing communities, environmental protection agencies, and research groups in universities. Its main objectives are to understand patterns of caiman distribution and health in a highly polluted and degraded urban environment, as well as to mitigate human-crocodilian conflicts.

Reported by: Paulo Braga Mascarenhas Jr.

Crocodilians of the state of Ceará

Since 2022, I have been mapping crocodilian records in the state of Ceará using data from the scientific literature, social media, local news outlets, and field expeditions. Three crocodilian species occur in the state of Ceará, northeastern Brazil: *Ca. crocodilus*, *Ca. latirostris*, and *P. palpebrosus*.

Caiman crocodilus was previously recorded in the municipalities of Trairi, Caucaia, and Crateús, within the Parnaíba and Metropolitan River basins (Roberto & Loebmann, 2016); however, the record from Trairi was erroneous. Based on preliminary results, I have updated the distribution of *Ca. crocodilus*, which is now confirmed for the Parnaíba, Acaraú, Coreaú, Curu, Metropolitan, and Lower Jaguaribe river basins. Some populations found in the Lower Jaguaribe River Basin and in the Metropolitan Region of Fortaleza - specifically in the municipalities of Horizonte, Palhano, Beberibe, and Itaitinga, may represent introduced populations and require further investigation.

New expeditions to these areas are planned to conduct interviews with local communities and collect DNA samples in order to determine the origin of these populations. There are indications of illegal captivity of caimans in some areas of Ceará, as well as intentional introductions into ponds by local residents to reduce fish stocks on their properties.

P. palpebrosus was recorded in the Parnaíba River Basin and in the Litoral Basin along the western coast of Ceará, in the municipalities of Trairi, Itapipoca, and Amontada. In the Litoral Basin, I have initiated a new project to estimate the species' distribution, habitat use, population density, threats, and local community perceptions. New occurrence records were identified in the municipalities of Amontada, Itapipoca, and Trairi. In these areas, *P. palpebrosus* inhabits gallery forests and forested streams near the coast (Figure 1), often close to coconut plantations and sand dunes. Local residents hunt the species for food and also use its skin for medicinal purposes. Nests are constructed at the beginning of the rainy season. Local people also collect eggs and maintain them in captivity until hatching (Figure 2); some respondents reported that individuals may be traded in exchange for other goods.

Figure 1. A - nest of *P. palpebrosus*, near a stream in a gallery forest in the municipality of Itapipoca, Ceará; B juvenile individual of *P. palpebrosus* captured by local people in a fish hook; C - egg of *P. palpebrosus*; D - rescued female *P. palpebrosus* from Mundaú beach, in the municipality of Trairi, state of Ceará.

Figure 2. A - Hatchlings of *P. palpebrosus* from eggs collected by local people; B- captured female in the same locality, in the municipality of Itapipoca, state of Ceará.

Caiman latirostris was recorded for the first time in the state of Ceará in 2022 (Barreto-Lima *et al*. 2022). That publication reported an individual rescued in the Lower Jaguaribe River Basin, in the municipality of Tabuleiro do Norte. To investigate the occurrence of the species in the region, I initiated a project in 2024 with an undergraduate student from the Universidade Estadual do Ceará. We conducted field surveys and interviews with local residents along the Jaguaribe and Banabuiú rivers. The results were presented at the Brazilian Congress of Herpetology in Manaus in July 2025. We found new records of *Ca. latirostris* in the region, in the municipalities of Morada Nova, Russas, Icó and Quixeramobim, and traced a possible origin of the species to an illegal breeding facility operating in 2009; following an exceptionally rainy season, flooding allowed some individuals to escape. No evidence of nests or juveniles was found, and field surveys failed to detect any individuals in the surveyed areas. Additional surveys are still needed to verify whether other individuals persist in the region; however, there is currently no evidence of established populations (Roberto *et al*. 2025).

In 2025, the Ceará Red List was published. Two crocodilian species were assessed: *Ca. crocodilus* was classified as Least Concern, and *P. palpebrosus* as Vulnerable (Guilhon *et al*. 2025).

Related references:

ROBERTO, I.J; LIMA, M.; SILVA, A.R.A.; MACIEL, M.W.L.; SILVA, P.G.M.; ROCHA, I.S.; AMORIM, J.W.P.; MOREIRA, T.S. EM BUSCA DO JACARÉ-DO-PAPO-AMARELO (*Caiman latirostris*) NA REGIÃO DO BAIXO VALE DO JAGUARIBE, CEARÁ. In: XI Congresso Brasileiro de Herpetologia, 2025, Manaus. Anais do XI Congresso Brasileiro de Herpetologia, 2025.

GUILHON, B.F; SANTOS, T.C.; LIMA, L.S.; BORGES-NOJOSA, D.M.; MELO, A.C.B.; BEZERRA, C.H.; KOCHHANN, D.; MACHADO, D.A.N.; LOEBMANN, D.; CASTRO, D.P.; ARAÚJO, F.L.; ROBERTO, I.J.; ARAÚJO, K.C.; CAVALCANTI, L.B.Q.; BORGES-LEITE, M.J.; SOUZA, P.F.M.; MACIEL, R.P.; GONZALEZ, R. C.; BENÍCIO, R.A.; RIBEIRO, S.C.; QUIRINO, T.F.; CASSIANO-LIMA, D.; FERNANDES-FERREIRA, H.; ÁVILA, R.W. *Paleosuchus palpebrosus*. In: Livro Vermelho dos Animais Ameaçados de Extinção do Ceará : Vol. 2 : Répteis e Anfíbios. - Fortaleza, C.E.: Ed. dos Autores, 2025. p. 72-78.

Systematics and taxonomy of the genus *caiman* (crocodylia, alligatoridae);

Goals: Review the taxonomy of the *Ca. crocodilus/yacare* complex using an integrative taxonomy framework

Results: We had finished the genomic species delimitation analysis, and delimited four putative species in the complex: *Ca. crocodilus*, *Ca. yacare, Ca. c. fuscus* and *Ca*. sp. in the western Amazon. The results were presented at the Brazilian Herpetology Congress, in Manaus, in July 2025. We are now writing the final drafts of the manuscript, including scale counts, geometric morphometrics and species delimitation analysis. We plan to submit the manuscript in March 2026.

ROBERTO, I. J; POLO, E.; HERNANDEZ-RANGEL, S.M.; FARIAS, I.P.; Hrbek, T. DELIMITAÇÃO DAS ESPÉCIES DO COMPLEXO *Caiman crocodilus/yacare*: UMA ABORDAGEM GENÔMICA. In: XI Congresso Brasileiro de Herpetologia, 2025, Manaus. Anais do XI Congresso Brasileiro de Herpetologia, 2025.

Other activities and related publications:

I also have been working in the CSG Taxonomy group and in the Brazilian Fauna Catalogue, in the Crocodylia section:

Zaher H, Nascimento PM, Toledo DGP, Roberto IJ, Morato SAA 2025. Caimaninae in Catálogo Taxonômico da Fauna do Brasil. Disponível em: <http://fauna.jbrj.gov.br/fauna/faunadobrasil/28579>. Acesso em: 29 dez. 2025

Other Publications 2024-2025:

AUBERT, C.; MOGUEDEC, G.L.; VELASCO, A.; COMBRINK, X.; LANG, J.; GRIFFITH, P.; PACHECO-SIERRA, G.; PEREZ, E.; CHARRUAU, P.; VILLAMARIN, F.; ROBERTO, I.J.; MARIONI, B.; COLBERT, J.E.; MOBARAKI, A.; WOODWARD, A.R.; SOMAWEERA, R; TELLEZ, M.; BRIEN, M.; SHIRLEY, M.H. Estimating Total Length of Partially Submerged Crocodylians from Drone Imagery. Drones, v. 8, p. 115-137, 2024.

VLIET, K.; SHIRLEY, M.H.; ROSS, P.; ROBERTO, I.J. Living crocodylians of the world. CROCODILE SPECIALIST GROUP NEWSLETTER, v. 43, p. 15-22, 2024.

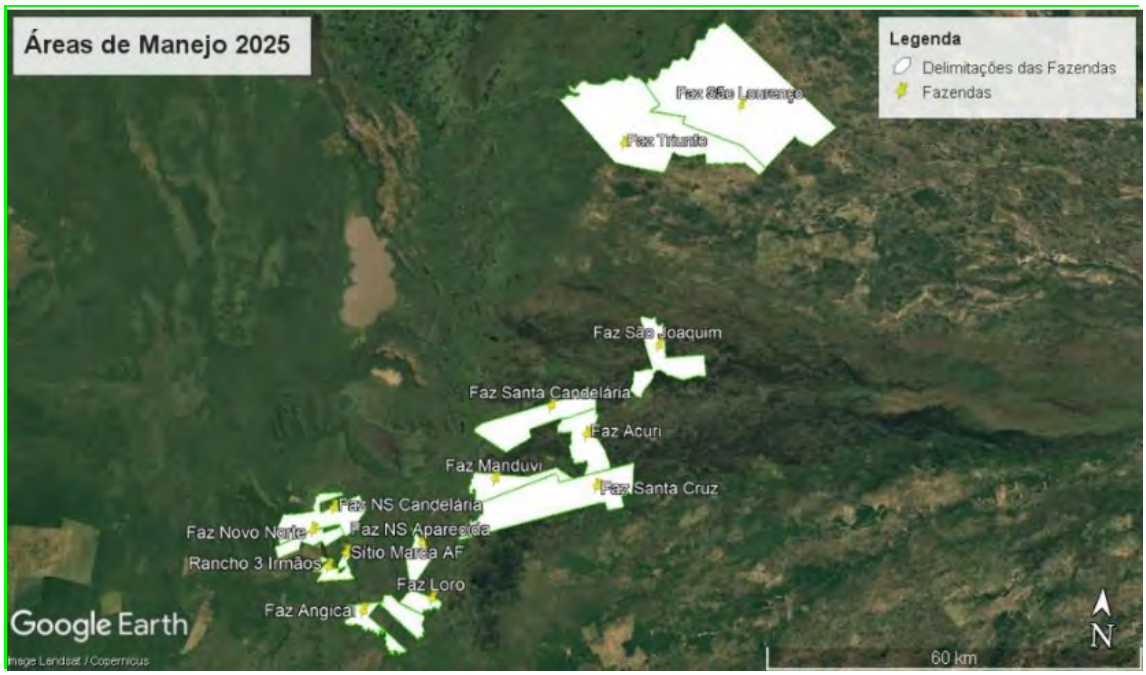
Reported by: Igor Joventino Roberto

3. Midwest region

Pantanal region

Location of monitored areas and areas subjected to nest collection.

The farms associated with the Caimasul Project, where *Ca. yacare* populations are monitored and nests are subsequently collected, are located in sub-areas of Paraguai, Castelo, and Paraguai Mirim, in the municipality of Corumbá-MS, Brazil.



Environmental Variables

The Ladário limnimetric gauge is used to express the water dynamics of the area used in management. This data, provided by the Brazilian Navy, are used to monitor habitat availability and water dynamics, which help define predictive relationships between flood levels and the reproductive potential of alligator populations.

Wildfires are part of the natural cycle of the Pantanal, playing an important ecological role. During the dry season (May to September), the biome becomes more susceptible, especially in years of severe drought, such as those caused by El Niño. These fires can be natural, caused by lightning, and help in the regeneration of vegetation, nutrient recycling, and the creation of diverse habitats.

Impacts 2024: There was an increase in the number of fires caused by the dry season and also by human factors, caused by deforestation, requiring prevention policies and environmental management to ensure the sustainability of the Pantanal. Proper fire management and the preservation of traditional practices, such as egg collection, are fundamental pillars for ensuring the sustainability of the Pantanal. These conservation initiatives not only respect the natural cycles of the biome but also promote a balanced coexistence between human needs and environmental preservation.

In 2025, an improvement in river water levels and a decrease in fires were observed. In regions commonly affected by fire, significant recovery of degraded areas was observed. The more intensive action of regulatory bodies, coupled with existing legal penalties for infractions related to the use of fire for control, pasture renewal, and deforestation, has accelerated the regeneration time of habitats, especially in managed areas.

Population Survey 2025

As required by regulations, the following elements are detailed: date and time of inventories, farms, corresponding sub-regions and sub-areas, geographic coordinates, air and water temperatures (initial and final), area covered, water level, number of caiman observed, and estimated density per hectare. In 2025, air temperatures range from 21.4°C to 30°C and water temperatures range from 23°C to 29.9°C, respectively. During the censuses, flashlights were used, allowing the

observation of animals at an estimated distance of up to 250 m from the boat. Based on the distance traveled, it was possible to calculate the sampled area, which in the same year varied from 25 to 123 ha. The number of caimans observed ranged from 16 to 843 individuals per census, totaling 1994 caimans, resulting in densities ranging from 0.28 to 9.05 caimans per hectare. The population structure recorded in 2025 was characterized based on the observation of 1994 caimans, distributed across 13 farms located in 3 sub-areas of the Pantanal in 15 independent censuses.

Class I individuals represented 0.3% of the total observed, while classes II, III, and IV corresponded to 18.6%, 34.1%, and 36.2%, respectively. Considering that individuals in classes III and IV are reproductive adults, they totaled 70.2% of the observed population. Approximately 10.8% of the total observed individuals were registered without a defined class. Calculations to predict the total number of nests are based on the population census, the size structure and sex ratio of the population, as well as temperature data and the availability of aquatic environments during the period of minimum water level recorded in the year. As stipulated in IBAMA Normative Instruction No. 7, of 30 April 2015, collection is limited to a maximum of 40% of the total number of nests predicted for each farm. In the 13 farms, totaling an area of 93,481 hectares, of which 63,936 ha are wetlands, 31,469 m were covered, corresponding to a sampled area of 880 ha. In this survey, 1,994 animals were observed, resulting in a density of 2.27 individuals per hectare and a total estimate of 117,586 caimans in the region. Of this total, 79,359 are classified in classes III and IV, considered reproductive adults, with 39% being females. Estimating that only 30% of these females are capable of nesting, a total of 13,543 nests is predicted. With the maximum quota of 40% allowed for collection, the established limit would be 5417 nests.

Ranching

Year	# Caimans observed	Harvested area (ha)	Nest quota authorized	Nest quota requested	Nests Collected	Eggs Collected
2017	143,169	38,378	9,702	2.451	747	21,338/21.628
2018	135,856	55,349	8,233	3.810	1.336	32,270
2019	145,628	42,319	4,617	2,7305	1,374/ 1.777	35,453
2020	129,172		8,199	2.000	379	9,257
2021	6,857	64,244	28.887	2.000	442	10,902
2022				1.835	1,002	24,595
2023				1.824	1.173	29,498
2024				3.553	1.359	39,270
2025	843	51.889	2000	1.400	857	24,634

Caimasul is also expanding its farming project, with the number of eggs collected growing each year.

Reported by: Eduardo Borges

4. **Southeast Region**

PROJETO JACARÉS MINEIROS - Research and conservation actions on the broad-snouted caiman (*Caiman latirostris*) in Minas Gerais, southeastern Brazil.
Ca. latirostris is widely distributed in South America and plays a key ecological role in freshwater ecosystems. In Brazil, despite the species being currently classified as Least Concern, local populations may be affected by habitat alteration, pollution, illegal hunting, and increasing human pressure. Minas Gerais state occupies a central portion of the species' distribution and represents an important area of connectivity between southern and northeastern populations.

Here, I present the main research and conservation actions developed in Minas Gerais through the Jacarés Mineiros Project, a long-term initiative coordinated by myself (André Yves), and focused on understanding population ecology, conservation genetics and investigating the trophic interactions involving *Ca. latirostris* and its functional role in regulating aquatic community structure. The project is primarily conducted in the Rio Doce State Park, one of the largest continuous remnants of Atlantic Forest in southeastern Brazil and a key refuge for crocodilians in the region. Research activities include population monitoring based on standardized nocturnal surveys, capture-mark-recapture protocols, assessments of population structure and sex ratio, and the investigation of trophic ecology using stable isotopes of carbon and nitrogen. Additional approaches include bioacoustic monitoring, telemetry studies and the evaluation of environmental contamination, aiming to build an integrated understanding of the species' ecology across multiple lagoons within the park.

Beyond research, the project actively collaborates with protected area managers, governmental agencies and local stakeholders, providing scientific data to support conservation planning and environmental awareness initiatives. By combining long-term monitoring, integrative methodologies, and close interaction with management authorities, the Jacarés Mineiros Project has been contributing to the development of a practical and theoretical framework for crocodilian population monitoring in Brazil.

These actions highlight the importance of protected areas in maintaining viable populations of *Ca. latirostris* and reinforce the role of integrative, long-term research as a foundation for crocodilian conservation in human-modified landscapes. Important steps have been taken, but much work still lies ahead.

Reported by: André Yves

The Caiman Program - Atlantic Forest Caimans is a well-established research and conservation initiative focused on the Broad-snouted Caiman (*Ca. latirostris*), and is recognized as a key program for crocodilian conservation in Brazil.

Using the caiman as a flagship species, the program aims to promote integrated conservation of crocodilians and the Atlantic Forest ecosystems through six strategic pillars:

1. **Transformative Environmental Education:** Environmental Education is one of the central pillars of the program, as it directly connects society to the socio-environmental conflicts associated with crocodilian conservation. It is understood as a continuous process aimed at transforming individual and collective values, skills, and attitudes toward nature conservation. In 2025, the Caiman Program directly benefited 697,714 people through Environmental Education initiatives. Program activities emphasize that the environment is a shared space among all living beings, encouraging the overcoming of strictly anthropocentric perspectives and fostering a more balanced, ethical, and respectful relationship between humans and nature.

2. **Ecological Research and Monitoring:** In 2025, the Caiman Program conducted ecological monitoring of crocodilian populations in river basins located in the states of Espírito Santo, Minas Gerais, and Mato Grosso, Brazil. This resulted in a total of 13 academic outputs including: 1 Master's dissertation; 2 PhD theses; 3 Undergraduate research projects and scientific works. These outputs reinforce the program's role as a center for applied scientific knowledge generation for crocodilian conservation.

3. **Wildlife Rescue and Rehabilitation**: In 2025, 28 *Ca. latirostris* were rescued and rehabilitated after being found in conflict situations, at risk, or presenting clinical impairment. The program achieved a 100% rehabilitation success rate, demonstrating the effectiveness of the technical protocols adopted for handling, veterinary care, rehabilitation, and post-recovery management.

4. **Public Policies for Nature Conservation:** The Caiman Program actively contributed to environmental governance processes by participating in seven environmental councils at international, national, and state levels, representing organized civil society. This engagement strengthens the integration of crocodilian conservation into policy-making processes and promotes evidence-based environmental decision-making.

5. **Training of Young Researchers:** In 2025, the program trained 18 students from three different countries: Brazil, Portugal and Paraguay. Capacity-building activities included technical and scientific training, fieldwork experience, academic production, and international exchange.

6. **Conservation Communication:** In 2025, the Caiman Program achieved 142 spontaneous media insertions in national and international media outlets. All media coverage focused on the conservation of Brazilian crocodilians and their habitats, significantly expanding public outreach, raising awareness.

The outcomes achieved in 2025 reaffirm the Caiman Program as a strategic initiative for the conservation of crocodilians and the Atlantic Forest. By integrating science, education, public policy, communication, and social engagement, the program makes a significant contribution to regional conservation efforts and to the global objectives of the CSG.

Reported by: Yhuri Nóbrega

Brazilian crocodilians research groups

In Brazil, several scientific studies have contributed to the understanding of the biology, ecology, and conservation of crocodilians, resulting, for example, in advances in sustainable management, habitat rehabilitation, and the formulation of public policies. During a presentation at the 11th Brazilian Congress of Herpetology, held in August 2025 in the city of Manaus, Brazil, Prof. Thiago C.G. Portelinha addressed the importance of crocodilian research, highlighting the benefits generated by accumulated scientific knowledge. He also presented an overview of the main research groups affiliated with universities, NGOs, and governmental agencies, emphasizing their lines of research, interinstitutional collaborations, and expected trends for future crocodilian research in Brazil.

Through searches in indexed scientific databases (ie Scopus and Web of Science), social media platforms (ie Instagram), and an online form widely disseminated through multiple channels, information was collected on researchers (ie academic background, institutional affiliation, and years of experience), research groups (ie institutional links, duration, and areas of activity), geographic scope (ie biome, state, and region), target species, and fields of knowledge. A total of 23 research groups were identified as actively working with crocodilians in different regions of Brazil. Most of these groups were affiliated with universities - mainly public institutions - and were coordinated by researchers holding a tertiary degree. The majority of the groups had been conducting research for more than 10 years, mainly in the Southeast, Northeast, and Northern regions of the country.

Among the six crocodilian species occurring in Brazil, most research groups focused their studies on *Ca. latirostris*. The main difficulties reported by these groups included lack of financial resources, logistical constraints for fieldwork execution, challenges in establishing partnerships and institutional support, and the absence of systematically collected data.

This synthesis demonstrated that mapping research groups working with crocodilians was essential for understanding current research coverage, thematic trends, and regional gaps, as well as the structural and logistical challenges faced by researchers. Such assessments provided a strategic basis for strengthening collaborations, guiding funding priorities, and improving long-term conservation and management of crocodilian populations in Brazil.

Reported by: Thiago C.G. Portelinha

Crocodylia Brasil - CrocBR
The symposium and roundtable on Brazilian crocodilians, organized by Crocodylia Brasil during the Brazilian Herpetology Congress (2025), provided a comprehensive and forward-looking assessment of the conservation, management, and future prospects of these species in Brazil. The sessions highlighted the successful recovery of caiman populations, while emphasizing the new challenges this success poses for coexistence, management, and public perception. Key themes included the growing role of female scientific leadership, the central importance of environmental education, and the effectiveness of sustainable management models such as farming and ranching in reducing poaching, supporting research, and engaging local communities.

The discussions also underscored the importance of advanced scientific approaches, particularly genetics and genomics, to guide conservation strategies and public policies. Case studies from the Pantanal and the Amazon demonstrated how community-based and socio-bioeconomic models can align sustainable use with species recovery, including the black caiman. Comparative reflections on national and international conservation strategies raised critical questions about balancing protection with socio-economic development. Overall, the events marked a milestone for Brazilian crocodilian research by fostering unprecedented dialogue, inclusion, and collaboration among regional groups. They reflected the maturity of the field and reinforced the consensus that the future of crocodilian conservation in Brazil depends on integrated science, education, sustainable management, and active community participation.

Reported by: Ronis Da Silveira, Thiago G.C. Portelinha, Robinson Botero-Arias, Pablo Siroski and Luís Bassetti

Prepared by: Luís Bassetti

Colombia

During the 2024-2025 reporting period, various research, monitoring, conservation, and capacity-building activities were carried out in Colombia across different areas related to crocodilians. These actions were implemented by independent researchers and professionals linked to academic projects, technical consultancies, and institutional and community coordination processes.

Research and Conservation Advances
Catalina Pinzón Barrera served as a consultant for WCS - Colombia Program, conducting activities focused on locating, counting, and differentiating wild and reintroduced populations of the Orinoco crocodile (*Crocodylus intermedius*) in the Tomo River and Caño Terecay, Vichada Department. In parallel, she supported awareness processes and data collection on human-Orinoco crocodile interactions as input for coexistence planning with communities surrounding El Tuparro National Natural Park.

Together with Camila Durán-Prieto, Catalina developed the first comprehensive Human-Orinoco Crocodile Contingency Response Protocol for the Tomo River and Caño Terecay, as an outcome of a diploma course developed by colleagues from Mexico in 2024. Additionally, she updated the SMART database design for crocodilians, consolidating monitoring information collected during 2024-2025 for the four species present in this protected area.

Simultaneously, Catalina provided technical advisory support to the Ciénaga Grande de Santa Marta Flora and Fauna Sanctuary in updating the monitoring methodology for the *C. acutus*, and supported park rangers in successfully renewing this species as a Conservation Object Value (VOC) in 2025. She also participated in the consolidation of the Colombian Network for Research, Outreach, and Conservation of Crocodilians (CROColombia), serving on the coordinating team of the first Crocodilian Symposium held during the Colombian Herpetology Congress (1-5 December, Santa Marta). She is currently working on publications derived from these conservation projects.

Researcher Clara Sierra supervised an undergraduate thesis focused on the population dynamics of *C. acutus* and *Ca. c. fuscus* in Cispatá Bay, San Antero Municipality, Córdoba Department. At the time of reporting, the environmental authority had not advanced in formulating or implementing a management plan for *C. acutus*, and therefore the sustainable use strategy has not been enacted. A call is made to the Ministry of Environment and Sustainable Development and to Colombia's CITES Scientific Authority to advance this strategy in accordance with international commitments.

Juan Salvador Mendoza completed his master's thesis at Universidad del Norte on *C. acutus* populations along the coastal edge of the Sierra Nevada de Santa Marta, including nesting monitoring. A protocol for managing human-crocodile interactions was implemented, along with zoning measures to prevent accidents in areas heavily visited by national and international tourists. He is currently conducting remote nest monitoring using camera traps to study parental behavior and predation by natural predators and introduced species such as feral dogs.

Since 2021, the National University of Colombia, through the Roberto Franco Tropical Biology Station, has conducted genetic studies of the *ex situ* population of *C. intermedius* under its custody and one of the two remaining *in situ* populations in the Arauca Department. Results demonstrated that the *ex situ* population constitutes a genetic reservoir that should be used to establish *de novo in situ* populations. They also allowed the organization of breeding stock to maximize genetic diversity and define the management purpose of the approximately 500 individuals maintained *ex situ*. Low effective population size and intermediate genetic diversity were identified in the *in situ* population, supporting egg ranching as a short-term conservation strategy.

Based on this information, 11 individuals of *C. intermedius* were released in the Tomo River (Vichada) to establish the first of five *de novo* population in the Colombian Orinoquia. In 2024, this population was reinforced with 14 additional individuals, and monitoring of previously released individuals was conducted.

Parallel to this, under an agreement between the Faculty of Veterinary Medicine and Animal Science and the Regional Autonomous Corporation of Cundinamarca (CAR), population studies of *C. acutus* were conducted (2023-2025) in the Magdalena, Negro, and Bogotá rivers within CAR's jurisdiction. The study aims to assess biological and genetic conservation status, characterize human–crocodile interactions, and implement environmental education actions.

John Jairo Gómez González is developing conservation actions for *C. acutus* and *Ca. c. fuscus* along the Colombian Caribbean coast, particularly in La Guajira and northern Bolívar. Activities include population assessments, reproductive ecology studies, and human-crocodilian risk management with community participation.

Felipe Hernández has led research and applied management processes for *C. acutus* in Cundinamarca, integrating genetics, ecology, and socio-environmental components. His master's thesis validated microsatellite markers that identified eight management units, revealing alarmingly low genetic diversity and a scenario consistent with an extinction vortex. Populations in the Bogotá and Negro rivers show signs of recovery but remain fragile due to hunting pressure. In the Magdalena River, no stable population was identified, only dispersing individuals, with high levels of conflict reported with fishermen. Environmental education initiatives were implemented, including the booklet "Lena, the Magdalena Crocodile" and outreach talks. Preparations were also made at the Confiscated Wildlife Care and Research Center (CAIMAINC) to support CAR and train first responders in managing "problem" individuals.

Ex-situ management included genetic analysis of breeding individuals in a commercial facility to evaluate inbreeding, conservation value, and release recommendations. Satellite tracking of six relocated individuals and ecotoxicology studies are ongoing to improve coexistence strategies.

Animal Welfare in Captive Crocodilians
Ayazo-Toscano *et al*. conducted a systematic review under PRISMA methodology on animal welfare in captive crocodilians. Of 429 records identified, 49 met eligibility criteria. Most studies were from Oceania (33%) and North America (31%), while South America represented only 8%. *C. porosus* and *C. niloticus* were the most studied species. The review highlighted significant knowledge gaps in South America, representing an opportunity for further research.

Genetic Markers and Traceability
An interdisciplinary study genotyped breeding stocks of *C. acutus* using defined genetic markers to implement a traceability system ensuring the origin of skins produced in farms. This system will allow genetic verification of skins or derived products, strengthening control and legality in species utilization.

Congenital Malformations in *Crocodylus acutus*
A study conducted by Colombian and Portuguese researchers identified 42 types of congenital anomalies in eggs from a captive breeding facility in Turbaná, Bolívar. Limb and tail malformations represented approximately 29% of anomalies observed, highlighting the importance of reproductive and health monitoring in *ex situ* management systems.

Trade
The crocodilian production sector in Colombia has historically focused on *Ca. c. fuscus* and *C. acutus*. Since 2007, the number of operational farms has declined significantly. *C. acutus* farms decreased from 17 to 9, while *Ca. c. fuscus* farms decreased from 48 to 29. Annual exports of *Ca. crocodilus* skins remain stable at approximately 400,000 skins. For *C. acutus*, exports increased from approximately 900 to 4800 skins in 2024-2025, primarily due to the release of accumulated stocks rather than increased production capacity.

Final Considerations
Activities during 2024-2025 demonstrate important advances in research, monitoring, conservation, and institutional coordination for crocodilians in Colombia. However, challenges remain regarding the implementation of management plans and sustainable use strategies, which require strengthened institutional commitment and continuity in future reporting periods.

Prepared by: John A. Calderon Mateus

Costa Rica

The National System of Conservation Areas (SINAC), the governmental authority responsible for wildlife management in Costa Rica, has not yet officially approved standardized protocols and procedures for managing human-crocodile interactions. Although protocols were drafted in 2020, they were not formally adopted. Subsequent revised versions were also prepared but remain unofficial. As a result, interaction cases continue to be addressed individually without a standardized operational framework.

The only officially adopted instrument is the "Joint Operational Protocol between the different police forces under the Ministry of Public Security and the National System of Conservation Areas for the use of lethal force in emergency situations involving humans and crocodilians." This protocol essentially authorizes law enforcement agencies to kill crocodiles in cases of attacks or imminent threat.

During the last reporting year, only one non-fatal attack by *C. acutus* was documented. Consequently, public concern has remained relatively low, and there has been limited political or social pressure regarding perceived overpopulation or proposals to authorize hunting.

Within the Legislative Assembly, Bill No. 24752, titled "Law for the Control of Crocodiles and Caimans in Costa Rica," is currently under discussion. The bill was introduced in December 2024 and reviewed by the Environmental Commission in February 2025. It has received comments and critiques from multiple organizations that have identified substantive weaknesses in its content. As of the reporting period, the Bill has not advanced further in the legislative process.

The project "Management of Human-Crocodilian Interactions in Costa Rica: The Case of the Nicoya Region" has been actively training government officials and community members in the northern Pacific region of the country on coexistence strategies and management of human-crocodile interactions.

Additionally, the project "Use of Remotely Piloted Aircraft Systems (RPAS) as a Tool for Monitoring Crocodilian Populations and Their Habitat" is currently being implemented. The initiative aims to develop a standardized protocol for counting and monitoring crocodilians using drone-based methodologies.

Reported by: Laura Patricia Porras Murillo

Cuba

Crocodile conservation in Cuba includes *in situ* management through three breeding facilities dedicated to *C. rhombifer* and seven dedicated to *C. acutus*. These institutions prioritize conservation and research objectives, with particular emphasis on ranching and release programs within the natural distribution range of each species. However, these programs face several constraints that limit expected outcomes. Currently, the infrastructure of these breeding centers requires renovation, as well as reorganization of the captive populations. The Cuban Crocodile Specialist Group (GECC) has undertaken actions to strengthen technical capacity and has provided information on the development of projects with external funding. One such action was a meeting held within the framework of the Environmental Convention conducted in Havana in July. This event provided an opportunity to bring together representatives from all Cuban breeding facilities and specialists from zoos in the United States. The meeting also included the participation of CSG Co-Chair Alejandro Larriera.

Work on *ex situ* populations focuses on the two species of the genus *Crocodylus* occurring in the Cuban archipelago. Currently, the only wild population of *C. rhombifer* is restricted to the southwestern region of the Zapata Peninsula, where it occurs in sympatry with *C. acutus*, with which it hybridizes extensively both in captivity and in the wild. The principal threats currently identified for *C. rhombifer* include: (a) illegal hunting associated with the meat market; (b) habitat modification and loss; (c) loss of genetic identity due to hybridization; and (d) human exploitation of prey species that form part of the diet of juvenile and adult individuals.

The main actions currently being implemented include: strengthening environmental education and awareness campaigns directed at local communities and tourists visiting the Zapata Swamp; maintaining systematic sampling of wild populations and incorporating molecular analyses of captured individuals to estimate population size of *C. rhombifer* and update assessments of hybridization levels within the core area of the wild Cuban crocodile population; implementing assisted reproduction techniques to maximize genetic diversity in captivity using genotypes adapted to current ecosystem conditions in the Zapata Swamp; maintaining the genetic identity of *C. rhombifer* in captivity through systematic genetic characterization of individuals incorporated into the Zapata breeding stock; continuing release actions of *C. rhombifer* individuals from the Zapata breeding facility into protected areas within the Zapata Swamp Protected Area of Managed

Resources (APRM); and strengthening ecosystem health in habitats supporting *C. rhombifer* to enhance resilience to climate change.

C. acutus in the Cuban archipelago occupies an estimated distribution of approximately 128 km² within fragmented habitats. The species prefers brackish aquatic ecosystems but can also inhabit rivers, lagoons, and freshwater reservoirs. Approximately 30 nesting localities have been reported in Cuba, with the most significant areas including the Guanahacabibes Peninsula, Zapata Swamp, southern Camagüey, southern Las Tunas and Granma provinces, and the Isle of Youth. This species faces several threats, including: (a) illegal hunting associated with the meat market; (b) habitat transformation and loss; and (c) hybridization with *C. rhombifer*, particularly in the Zapata Swamp. Ongoing research is focused on assessing the impact of hybridization on the genetic integrity of both species.

Current priority actions include: systematic sampling of natural populations to update distribution range and current population estimates within the Cuban archipelago; molecular studies of individuals captured across all reported localities to confirm the species' true distribution; strengthening ecosystem health in habitats supporting *C. acutus* to enhance resilience to climate change; developing new management options aimed at improving animal welfare in captive *C. acutus* populations while contributing to conservation of wild populations; and environmental education initiatives to increase awareness among communities living near *C. acutus* habitats.

Prepared by: Gustavo Sosa Rodríguez

Dominican Republic

In May 2024, a new integrated conservation initiative took shape at Lago Enriquillo, Dominican Republic, combining head-starting, field-based research, and community outreach to advance the recovery of *C. acutus*. The program was initiated with the collection of the first head-start cohort in May 2024, coinciding with a technical workshop hosted by the Dominican Ministry of Environment and Natural Resources at Lago Enriquillo. The workshop brought together representatives from the El Salvadorian Ministry of Environment and Natural Resources, the Crocodile Research Coalition, and Clemson University, and focused on population monitoring techniques, applied conservation strategies, and research approaches for crocodile populations, strengthening regional capacity and collaboration.

The first cohort of head-started crocodiles was successfully released in February 2025, followed by the collection of a second cohort in May 2025 to ensure continuity of the program. Post-release monitoring began in May-June 2025, when individuals from the first head-start cohort were recaptured to collect morphometrics, assess body condition, conduct gastric lavage, and deploy satellite transmitters on three crocodiles. To enable direct comparison of post-release performance, wild crocodiles from the same cohort were also captured and sampled using identical protocols, including satellite telemetry.

Follow-up capture events in August and November 2025 extended post-release monitoring, with both head-started and wild crocodiles from the same cohort assessed for growth, and body condition, to support seasonal and temporal comparisons of post-release success.

During the 2025 nesting season at Lago Enriquillo, egg laying began in early February and hatchings extended through June, with a total of 39 nests and 659 eggs recorded across six of the nine known nesting beaches. La Charca was the most important nesting site, accounting for the highest number of nests and eggs, although it exhibited one of the lowest hatching success rates, suggesting the influence of environmental or disturbance-related factors. Hatching success, clutch size, and egg dimensions varied among nesting sites, reflecting differences in female condition and local environmental conditions affecting incubation.

Additional research efforts have focused on population monitoring and ecological assessment of crocodiles in Lago Enriquillo. Two systematic boat surveys conducted in May and June of 2024 and 2025 provided baseline data for population size estimation. Ongoing capture surveys allow for repeated collection of morphometrics, body condition data, and biological samples, including blood and scute tissue for ecotoxicology analyses. Fecal samples are collected to investigate microplastic ingestion, while stomach content analyses contribute to diet research. Complementary biodiversity surveys at the field site document the presence of sympatric species, providing context for ecosystem interactions and informing conservation strategies for the American crocodile and its habitat.

Poaching and illegal removal of crocodiles were documented in recent years, underscoring ongoing threats to the Lago Enriquillo population. In 2024, marked crocodiles originating from the lake were seized by authorities in Santo Domingo, indicating illegal capture and transport beyond the study area. In 2025, multiple crocodiles were unlawfully removed from Lago Enriquillo and relocated to a concealed sewage pond in a nearby town. During the same year, one crocodile equipped with a satellite transmitter was illegally taken; the transmitter was deliberately cut off and left behind. Access to the lake was further obstructed when individuals blocked a primary entry route by cutting trees and cacti and setting them on fire, apparently to prevent researcher access to the site. On 6 June 2025, a male American crocodile was accidentally captured in an artisanal trap; fortunately, it was discovered by park rangers and safely released. These

incidents highlight persistent anthropogenic pressures on the population and emphasize the importance of continued monitoring, enforcement, and community engagement to support effective conservation outcomes.

Concurrently, an educational outreach program was implemented in local schools near the field site during May–June 2025 to promote conservation awareness and community engagement. These efforts expanded to a national audience with the inaugural World Crocodile Day event held at the Dominican National Museum of Natural History in June 2025, increasing public visibility and support for crocodile conservation in Lago Enriquillo.

Reported by: Ramon Joel Espinal

Ecuador

Information about Black Caiman in the Lower Ecuadorian Amazon: Evidence of increasing survey difficulty and likely hunting pressure

Long-term monitoring of *M. niger* in the Ecuadorian Amazon reveals a concerning shift: what was once a relatively straightforward species to survey in lowland blackwater systems has become increasingly difficult to detect, identify, and approach. Recent fieldwork conducted in August 2024 along the Cocaya River, and in December 2024 and January 2026 along the Lagartococha River (at the southern and eastern boundaries of the Cuyabeno Wildlife Production Reserve) highlights a marked decline in detectability and a pronounced change in animal behavior. While environmental factors such as water level and precipitation influence detection probability, the available evidence strongly suggests that hunting pressure, particularly illegal cross-border (Ecuador-Peru) hunting, is the primary driver of these changes. The implications are serious, both for population monitoring and for the conservation status of Black caiman in Ecuador.

Historical context: From detectable to elusive

Black caiman populations across the Amazon basin were heavily depleted during the early 20th century due to commercial hunting for skins. In Ecuador, populations are largely restricted to blackwater wetlands in the provinces of Napo, Orellana, and Sucumbíos. Since 2017, standardized nocturnal spotlight surveys have been implemented to monitor populations in areas such as Cocaya and Lagartococha rivers. Earlier surveys, particularly those conducted in Lagartococha in 2017, demonstrated that black caiman were relatively easy to detect and approach. Encounter rates averaged approximately 1.1 detections/km (CI 95% ± 0.2), and observers were typically able to approach individuals closely enough to confirm species identity and estimate body size. These conditions allowed for robust application of hierarchical N-mixture models (Naveda-Rodríguez *et al.* 2020) and meaningful comparisons over time. In contrast, the most recent surveys in the Cocaya and Lagartococha rivers show a dramatic departure from these earlier conditions.

Key findings from the latest surveys (August 2024, December 2024, January 2026)

Fieldwork has been conducted over 12 nights, covering more than 100 km of river transects. A total of 28 caiman detections were recorded. However, only four individuals could be identified to species level (including both Black caiman and Spectacled caiman), while the remaining 85% of detections consisted solely of eyeshine observations without taxonomic confirmation. The most striking observation was behavioral: Caimans exhibited highly evasive and cryptic behavior. Individuals submerged or retreated before the survey team could approach. Standard protocols, such as turning off the motor and approaching quietly by paddle, were ineffective in most cases. As a result, it was impossible to obtain reliable data on species identity, size structure, or abundance. The dataset could not be analyzed using the established statistical framework, effectively rendering the survey unsuitable for population estimation or trend analysis.

Environmental factors *vs.* hunting pressure

High water levels during the survey period likely contributed to reduced detection rates. When rivers and lagoons flood, caimans can disperse into inundated forests, where dense vegetation obstructs visibility. This effect is well documented and can significantly lower encounter rates. However, environmental conditions alone do not explain the magnitude of the observed changes. Previous surveys conducted under similar hydrological and climatic conditions yielded much higher detection rates and allowed for close approaches to individuals. The critical difference appears to be behavioral avoidance. The consistent inability to approach caimans indicates a strong learned response to human presence. This type of behavior is widely associated with sustained hunting pressure. Although no direct evidence of hunting was recorded during the survey, multiple reports from local people indicate a persistent presence of illegal hunters, particularly from Peru. Given the location of the Cocaya and Lagartococha Rivers; very close to the Peruvian border (Cocaya), and along the Peruvian border (Lagartococha), it is highly plausible that this area is subject to regular illegal hunting incursions.

There is little doubt that hunting is the main factor explaining both the reduced detectability and the pronounced behavioral changes observed in black caiman populations in the Cocaya and Lagartococha rivers. Key lines of evidence include: A sharp decline in identifiable detections compared to historical surveys, strong evasive behavior preventing close approach, inability to apply standard monitoring methods due to lack of reliable observations, and local reports of ongoing illegal hunting activity. Large crocodilians are known to rapidly develop avoidance behavior in response to hunting and other human activities (*e.g.* Ron *et al.* 1998, Ahizi *et al.* 2021, Portelinha *et al.* 2022). Over time, this can lead not only to reduced detectability but also to local population declines, particularly when hunting is unregulated.

Implications for monitoring and conservation
The increasing difficulty of surveying Black caiman has two major implications. First, standardized spotlight surveys rely on the ability to detect and approach individuals. When caimans become too evasive, this method fails, preventing accurate estimation of population size and trends. This undermines long-term monitoring efforts and limits the ability to assess conservation status. Second, behavioral changes of this magnitude are strong indicators of human pressure. Even in the absence of direct evidence, the observed patterns suggest that Black caiman populations in the lower Ecuadorian Amazon may be under significant threat from illegal hunting.

To address this situation, immediate action is needed: i) Strengthen control and surveillance to deter illegal hunting; ii) Enhance cross-border coordination to address transboundary poaching; iii) Adapt monitoring methods and explore complementary approaches (eg drones, environmental DNA) that are less dependent on close encounters; iv) Engage local communities to implement community-based monitoring and reporting of illegal activities; and/or, v) develop a sustainable harvesting management plan with appropriate regulatory mechanisms that sets non-detrimental harvest limits. The behavioral shift described here not only complicates population monitoring but also raises serious concerns about the medium- to long-term conservation status of the species in the region. Without urgent intervention to control or at least manage, illegal hunting, both the population and our ability to monitor it effectively will continue to decline.

Literature cited
Ahizi, M.N., C.Y. Kouman, A. Ouattara, N.P. Kouamé, A. Dede, E. Fairet & M.H. Shirley. 2021. Detectability and impact of repetitive surveys on threatened West African crocodylians. *Ecology and Evolution*, 11(21): 15062-15076.
Naveda-Rodríguez, A., V. Utreras B. & G. Zapata-Ríos. 2020. A standardised monitoring protocol for the black caiman (*Melanosuchus niger*). *Wildlife Research*, 47(4): 317–325.
Portelinha, T.C.G., L.M. Verdade & C.I. Piña. 2022. Detectability of *Caiman latirostris* (Crocodylia: Alligatoridae) in night count surveys. *South American Journal of Herpetology*, 23(1): 25–31.
Ron, S.R., A. Vallejo & E. Asanza. 1998. Human influence on the wariness of *Melanosuchus niger* and *Caiman crocodilus* in Cuyabeno, Ecuador. *Journal of Herpetology*, 32(3): 320-324.

***Crocodylus acutus* populations** (Information provided by Francisco Villamarin)
A project focusing on *C. acutus* populations in southern Ecuador aims to evaluate mercury biomagnification patterns across trophic levels and to investigate the phylogenetic relationships between Ecuadorian and Peruvian populations. The study is being developed collaboratively by the Universidad Regional Amazónica Ikiam and the Escuela Politécnica Nacional del Ecuador, with the goal of generating baseline information relevant to the conservation, ecological assessment, and regional management of this species.

Reported by: Galo Zapata-Ríos& Robinson Botero-Arias

El Salvador

The National Program for the Conservation of Crocodilians (PNCCC) is a strategic initiative of the Government of El Salvador aimed at safeguarding *Ca. crocodilus* and *C. acutus*. These species play a critical role in maintaining the ecological balance of aquatic ecosystems but face ongoing threats from habitat loss and illegal hunting. The program implements monitoring, rescue, environmental education, and international cooperation actions aimed at population recovery.

Key Results (2024)
During 2024, the program focused on expanding territorial knowledge and improving management techniques:
- Discovery of populations**:** Two new caiman populations were identified in the eastern region of the country, where no previous official records existed.
- Reproductive success and nest management**:** Monitoring efforts led to the detection of 16 crocodile nests (11 *ex situ* and 5 *in situ*) and 6 caiman nests. Of the 385 eggs transferred to the Zapatero Canal nursery facility, 319 hatchlings successfully emerged, were marked, and subsequently released into their natural habitats.
- Technical strengthening**:** New capture equipment was developed to enhance safe handling procedures, and additional monitoring routes were established in both western and eastern regions of the country.
- International cooperation**:** Technical staff participated in exchange programs in the Dominican Republic (Lake Enriquillo National Park) and Mexico (Nayarit) to receive specialized training in human-crocodile conflict management and advanced monitoring methodologies.

Key Results (2025)
In 2025, efforts were characterized by consolidation of human-wildlife conflict management and enhanced public outreach:
- Conflict management**:** Successful removal and relocation operations of *C. acutus* individuals were conducted in high public-use areas, including Playa Km 59 and Playa Amatecampo, mitigating risks of negative human-crocodile interactions.
- Monitoring and nest protection**:** Ten *in situ* caiman nests were monitored within Natural Protected Areas (NPAs),

ensuring nest integrity against predation and anthropogenic threats.

- Strategic transfer**:** The program supported the transfer of individuals from the former National Zoo to FURESA under strict animal welfare protocols.
- Education and signage**:** In collaboration with the University of El Salvador (UES), preventive signage was designed for habitats with crocodilian presence. Additionally, 15 environmental education workshops were delivered, reaching approximately 500 students across five schools.
- Regional leadership**:** El Salvador hosted the CSG Regional Workshop, positioning the country as a regional reference in crocodilian management and monitoring under international standards.

General Conclusions for the CSG

The PNCCC has demonstrated increasing capacity in collecting critical biostatistical data and implementing adaptive management strategies for both species. The integration of local communities, academic institutions, and international organizations has been fundamental in strengthening environmental governance in key sites such as the Barra de Santiago Ramsar Site and the Los Cóbanos Conservation Area. The results achieved over the past two years provide a solid foundation for informed decision-making aimed at ensuring the long-term survival of crocodilians in El Salvador.

Prepared by: Jordi Humberto Segura Yanez

French Guiana

Caiman Species in French Guiana

French Guiana hosts four crocodilian species: *M. niger*, *Ca. crocodilus*, *Paleosuchus palpebrosus*, and *P. trigonatus*. These species occupy rivers, wetlands, floodplains, and forest streams across the territory, but their levels of scientific knowledge and conservation concern differ significantly.

Ca. crocodilus is the most widespread and well-documented species. It occurs in a broad range of habitats, including disturbed environments, and is frequently recorded. Its population status is relatively well understood compared to other species.

The two dwarf caimans, *P. palpebrosus* and *P. trigonatus*, are associated with forested freshwater systems, especially small streams. Their cryptic behavior and low detectability result in limited records. Consequently, their distribution and population status in French Guiana remain poorly quantified.

M. niger (black caiman) is the species of highest conservation concern. It is classified as Near Threatened in French Guiana and occurs in isolated populations at the northeastern limit of its range. Available information is fragmented and largely based on localized observations rather than systematic surveys. Key areas of occurrence include the Kaw-Roura wetlands, the Mahury River, and the Approuague-Oiapoque region, but quantitative data on abundance are lacking. These populations are considered ecologically significant due to their isolation and potential genetic uniqueness.

Across all species, a major limitation is the lack of comprehensive monitoring in remote wetland habitats, leading to significant spatial gaps in knowledge.

Illegal gold mining represents the main emerging threat to aquatic ecosystems in French Guiana. The use of mercury in gold extraction leads to contamination of river systems, where it is converted to methylmercury and accumulates within aquatic food webs. Evidence from regional investigations indicates high levels of contamination in fish and associated health impacts in human populations, particularly in indigenous communities.

Caimans are likely highly exposed to mercury due to their trophic position as predators feeding on fish. Bioaccumulation and biomagnification processes suggest that all four species may be affected, although direct measurements are lacking. Potential impacts include neurological impairment, reduced reproductive success, and chronic physiological stress.

The risk is particularly relevant for *M. niger*, given its isolated populations and uncertain status. For *Paleosuchus* species, the lack of baseline ecological data limits the ability to assess impacts. Even for *Ca. crocodilus*, long-term exposure may have sublethal population effects.

Quantitative information on caiman abundance in French Guiana is very limited and uneven among species. The only species with site-based estimates is *M. niger*, for which local studies in Kaw-Roura report densities of around 11 individuals per kilometer in optimal wetland habitats, although such values are not representative of the wider region, where populations are likely patchy and lower in density. For *Ca. crocodilus*, despite being widespread and frequently observed, no standardized density estimates are available for the territory. Similarly, for *P. palpebrosus* and *P. trigonatus*, there are no quantitative abundance data, mainly due to low detectability and limited field studies. Overall, the lack of robust, territory-wide estimates reflects a major knowledge gap rather than true population scarcity.

Caiman conservation in French Guiana is constrained by limited data and increasing environmental pressure. Priority actions include improving population assessments, focusing on key regions, and evaluating mercury contamination in crocodilian tissues to better understand risks and inform conservation strategies.

Reported by: Benioit Thoisy and Robinson Botero-Arias

Guatemala

Crocodile research in Guatemala has progressed in recent years. In 2013, the most recent nationwide survey of *C. moreletii* was conducted across 10 different water bodies, confirming presence in the study sites and concluding that populations had remained relatively stable (Corado *et al*. 2020), based on comparisons of encounter rates with earlier studies conducted by Lara (1990), Castañeda (1998), and Lara, Queral-Regil and Castañeda (2000).

In 2021, an additional study focused on *Crocodylus acutus* in three rivers of Izabal Department (Río Dulce, Río Sarstún, and Río Polochic), providing updated information on its distribution and status in eastern Guatemala.

In 2022, a new study of *C. moreletii* was conducted in Petén in response to human-crocodile conflict at Lake Petén Itzá, at the request of the National Council of Protected Areas (CONAP). As part of this project, a management plan for the conservation of *C. moreletii* in Lake Petén Itzá was developed. This document serves as a practical tool for governmental and non-governmental organizations in managing public safety risks associated with crocodiles and provides a framework for evaluating and preparing strategies, actions, and policies by key institutions responsible for wildlife management in the Petén region.

Subsequently, in 2024, nocturnal surveys were conducted along Guatemala's southern Pacific coast (Retalhuleu, Suchitepéquez, Escuintla, Santa Rosa, and Jutiapa) to determine sites of presence of *C. acutus*. Among the monitored areas, presence was confirmed at three sites: (i) Río Nahualate, Suchitepéquez (incidental observation), (ii) a private African oil palm plantation within the same department, and (iii) a shrimp farm in Jutiapa. In the latter two sites, higher numbers of crocodiles were recorded compared to state-protected areas. These findings suggest significant anthropogenic pressure on the species and limited tolerance for its presence throughout much of the southern coastal region. The study also documented areas of presence of *Ca. crocodilus*, as well as illegal consumption and sale of meat and live individuals in municipal and local markets.

Currently, monitoring is being conducted along the Motagua River in Izabal and in additional areas not previously covered in the 2021 project, with the objective of surveying the entire department. Alta Verapaz has also been included, where the presence of *C. acutus* has already been confirmed and both fatal and non-fatal human-crocodile incidents have been reported.

It is important to highlight that the 2024-2025-2026 monitoring efforts have been made possible through collaboration with CrocDocs (University of Florida) and financial support from CrocFest and the Rufford Foundation (2021-2025).

Prepared by: Valerie García

Jamaica

Crocodylus acutus in Jamaica faces numerous threats including illegal hunting, habitat loss, illegal capture and possession. Although typically shy and docile, misconceptions about the species' behaviour have fuelled fear and negative human-crocodile interactions. Over the past six years, however, there has been significant progress in strengthening conservation and research efforts for the species at a national scale.

The first island-wide crocodile assessment in Jamaica was completed in 2022, and this has since guided future conservation priorities. This was a collaborative project between the National Environment and Planning Agency (NEPA), the University of the West Indies (UWI), Mona Campus, and the University of Florida (UF) Croc Docs, spearheaded by Treya Picking. One hundred and five spotlight surveys were conducted across 35 habitats over a two-year period (2020-2022), and 1974 geolocations were compiled from historical and current data. The results confirm crocodile presence across the historical south coast range, with small, scattered populations on the North Coast. Crocodiles were found in both artificial and natural habitats, demonstrating their ability to adapt and persist in a changing environment. Seven Crocodile Conservation Units (CCU) were identified as high-priority habitats for the long-term conservation of *C. acutus* in Jamaica. This research will be published in April 2026.

The National Environment and Planning Agency, which has the mandate to ensure the conservation of *C. acutus* under both national laws and international agreements, has increased efforts to support wildlife rescue efforts for protected species. This has included increased financial support to rescue facilities such as Hope Zoo and the Holland Bay Crocodile Sanctuary, as well as the expansion of its Game Warden network, who voluntarily respond to wildlife incidents including

those involving *C. acutus*. Enforcement of the Wildlife Protection Act (the local legislation that protects the species) has also received a significant boost, with substantial increases to the maximum fines and prison terms for violations. Penalties have risen from a maximum of JMD$100,000 or one year of imprisonment to a maximum of JMD$3,000,000 or three years of imprisonment.

The JamCROC Initiative (Jamaica Crocodile Research, Outreach and Conservation Initiative) founded and spearheaded by Treya Picking, recently produced new educational materials, including a pamphlet, poster, and single page infographic. A radio advertisement was also developed to share key information on crocodiles and promote safe coexistence through the 'JamCroc Wise Rules'. This initiative works closely with environmental organisations, Game Wardens, communities and law enforcement to strengthen research, outreach and capacity building for wildlife response and monitoring. Its key partner is NEPA. Since 2024, NEPA and the JamCROC Initiative have partnered to conduct field surveys and outreach activities. Long-term monitoring is underway across key crocodile habitats and outreach has been conducted in schools, workplaces, communities, public events and through media engagement.

Leighton Mamdeen (NEPA), Treya Picking (JamCROC Initiative) and Joey Brown (Hope Zoo) have partnered to carry out multiple American crocodile training workshops. To date, over 50 participants from various entities and communities have received hands on training in crocodile ecology, incident response and safe handling protocols. These sessions are helping to build national capacity and improve wildlife response.

The Holland Bay Crocodile Sanctuary, run by Lawrence Henriques, continues to play a critical role in rescue, rehabilitation and education. Its headstart program is contributing to the recovery of the depleted population around the Holland Bay wetlands. The annual headstart health screens also provide an opportunity to train biologists and veterinarians from various organizations.

Building on findings from the first island-wide survey, which documented crocodile use of both natural and artificial wetlands, a serious management challenge emerged on 22 April 2025, when multiple dead crocodiles were discovered at the Greater Portmore Sewage Ponds. This government-operated water treatment facility consists of 21 large artificial ponds that historically support a resident crocodile population. Responding to an initial report, NEPA, the JamCROC Initiative, and Hope Zoo rescued a severely emaciated 12-foot male trapped in a dried pond; however, further inspection revealed 12 additional crocodiles (8 adults and 4 juveniles) that had died after becoming trapped in empty ponds for several weeks. The steep, plastic-lined sides of the ponds created an inescapable barrier once water levels receded. Necropsies were conducted, and a full assessment of the incident will be presented by Joey Brown at the 28th CSG Working Meeting in Morocco.

On 28 October 2025, Jamaica suffered a direct hit by Hurricane Melissa, a record-breaking Category 5 hurricane and the strongest recorded hurricane to make landfall on the island. Melissa caused catastrophic destruction across Jamaica, from which communities and infrastructure will take years to recover. There were reports of crocodiles being displaced by the floodwaters, however, telecommunications outages across central and western Jamaica limited reporting in the immediate aftermath. Although Kingston and other eastern areas were spared from the worst destruction, Hope Zoo sustained minor infrastructural damage and lost electricity and water for over three weeks. Many colleagues and facilities in the United States quickly provided much-needed support for the zoo and ongoing recovery efforts. Much thanks is given to Gatorland Global, CrocFest, Fort Worth Zoo, Zoo Miami, and Greater Good Charities. The Holland Bay Sanctuary also sustained minor infrastructural damage and received assistance. Re:wild established a fundraiser to support Game Wardens and Environmental community groups in their long-term recovery, managed locally by the JamCROC Initiative. NEPA and the JamCROC Initiative have been conducting crocodile surveys in key habitats, particularly in western areas that were heavily impacted.

Prepared by: Treya Picking

Mexico

1. Research and new information

Researcher	Project
Pierre Charruau	Genomic insights into saltwater crocodile adaptation and speciation: conservation implications for the Caribbean islands. SMRT Conserve Grant 2024, PacBio.
Ojeda Adame, Ricardo Adrián	Donde la arena es negra: Relatos de criaturas del mar y del pantano. Programa de Estímulo a la Creación y Desarrollo Artístico, Categoría Investigación y Divulgación. Patrimonio Cultural 2025-2026.
Giovany Arturo González Desales	Condición corporal de crocodilianos en ambientes antropizados de la costa de Chiapas. Procedimiento PO-211-04 Investigación científica, DGIP-UNACH. Clave 07/VET/RPR/043/24
Juan Carlos A. Sandoval-Rivera; Universidad Veracruzana	Collaborative environmental education for biodiversity conservation in Veracruz: Towards a living pedagogy of the wetland territories for the care of people and crocodiles. Research in progress (2026-2028).

Asela Marisol Buenfil-Rojas	Integrated assessment of chemical pollution and its impacts in Mexican crocodiles. Research in progress (2021-2027).
Benjamín Castillo Elías, Universidad Autónoma de Guerrero	Vulnerability and risk due to the presence of the American crocodile by hydrometeorological phenomena in the coastal zone of the municipality of Acapulco, Guerrero, Mexico. Research in progress (2025-2027).
Jerónimo Domínguez Laso/COMAFFAS AC	**Abril 2023 a septiembre 2024.** Proyecto de Monitoreo del Cocodrilo de Pantano (*Crocodylus moreletii*) y Cocodrilo de Río (*Crocodylus acutus*) en el Sistema Lagunar Nichupté.
Jerónimo Domínguez Laso/COMAFFAS AC	**Marzo, 2025.** Proyecto para el Conocimiento y Conservación de las Poblaciones Silvestres de Cocodrilo *(Crocodylus acutus)* en el Río Grijalva. "Sumidero Croc". Investigación en curso.
Jerónimo Domínguez Laso/COMAFFAS AC	**Diciembre de 2025.** Receptor del premio "*The Crespo Conservation Award*" y de una beca otorgada por la Fundación de la Universidad de Florida (IFAS).

2. Management and conservation actions

Leader	Project
CONABIO GEC-MX	The Mexican Crocodilian Specialist Group (GEC-MX) adopted its work plan for 2025-2026, which resulted in nine working groups, highlighting the following: ranching of *C. moreletii* and *C. acutus*, use of wild specimens, traceability of skins, human-crocodile interactions and non-extractive use of specimens.
Second National SOS Cocodrilo Mexico Meeting	In 2025, the Second National SOS Cocodrilo México Meeting was held as a national coordination platform that brought together specialists, academics, government authorities, conservation organizations, and interested stakeholders from different regions of the country. The meeting aimed to strengthen the exchange of experiences and the joint development of strategies for the conservation of crocodilians and their habitats, as well as to promote harmonious coexistence between human communities and this protected species, which holds significant ecological, cultural, and socioeconomic value. This national meeting represented a collaborative, multi-stakeholder effort to foster synergies among key actors, raise environmental awareness, and highlight the importance of respectful and sustainable coexistence with wildlife in Mexico.
Jerónimo Domínguez Laso/COMAFFAS AC	**Marzo de 2024.** Curso de Capacitación Individual Especializado en Manejo de Cocodrilianos en Cautiverio. Dirigido a miembro del sector privado empresarial.
Jerónimo Domínguez Laso & Liliana Berenice García Reyes/COMAFFAS AC	**Agosto de 2024.** Participación como instructores invitados con la temática "Conociendo y Cuidando a los Cocodrilos" en el Curso de Verano organizado por nuestros amigos de la CPAMP Centro de Capacitación.
Jerónimo Domínguez Laso/COMAFFAS AC	**25 al 27 de octubre de 2024.** Curso de Capacitación Internacional: Manejo de Cocodrilianos Mexicanos y Experiencias en la Crianza y Estudio del Cocodrilo Cubano (*Crocodylus rhombifer*).
Jerónimo Domínguez Laso & Liliana Berenice García Reyes/COMAFFAS AC	Proyecto: Centro de Rescate y Rehabilitación de Fauna Silvestre "Mundo Cocodrilo", Suchiapa, Chiapas, México. **Desde abril de 2024 hasta diciembre de 2025** hemos atendido 88 especímenes entre 30 cm y 4 m de longitud de las especies *C. acutus, C. moreletii* y *C. crocodilus* de situaciones de interacción humano-cocodrilo como decomisos, localización en zonas urbanas y cuerpos de agua rodeados de asentamientos humanos; maltrato animal y abandono; entregas voluntarias, fugas de mascotas, entre otras. Actividades coordinadas con la autoridad ambiental mexicana, la PROFEPA. Los cocodrilianos atendidos, han recibido refugio, atención médica y algunos son reintegrados a la naturaleza o se mantienen en cautiverio dependiendo de cada caso y su situación social.
Jerónimo Domínguez Laso/COMAFFAS AC	**Enero de 2025.** Curso de Capacitación Individual Internacional Especializado en Manejo de Cocodrilianos en Cautiverio.
Jerónimo Domínguez Laso & Liliana Berenice García Reyes/COMAFFAS AC	**19 al 22 de febrero de 2025.** Taller Internacional de Capacitación Teórico y Práctico "Manejo y Conservación de los Crocodylia en Latinoamérica". Presencial y en línea. Suchiapa, Chiapas. Contando con la participación de 4 instructores nacionales y 6 instructores internacionales.
Jerónimo Domínguez Laso/COMAFFAS AC	**Mayo de 2025.** Curso Especializado: Conocimiento, Legislación, Manejo Adecuado, Contención y Traslocación de Cocodrilos y Caimanes en Vida Silvestre. Dirigido a personal del sector privado de rescate de fauna a cargo de la obra del Tren Interoceánico en Chiapas.
Jerónimo Domínguez Laso & Liliana Berenice García Reyes/COMAFFAS AC	**10 de agosto de 2025.** CrocoKermés Solidaria. Evento con causa para recaudar fondos para el proyecto de conservación de Cocodrilos y Caimanes de Centro de Rescate y Rehabilitación de Fauna Silvestre.
Jerónimo Domínguez Laso & Liliana Berenice García Reyes/COMAFFAS AC	**20 al 23 de agosto de 2025.** Participantes como instructores invitados en el 3° Curso-Taller de Manejo Especializado en Cocodrilianos del Pacífico. San Blas, Nayarit en el Marco del 2° Festival del Cocodrilo en Nayarit. San Blas, Nayarit.

Jerónimo Domínguez Laso & Liliana Berenice García Reyes/COMAFFAS AC	**07 de diciembre de 2025.** 2da edición de la CrocoKermés Solidaria. Evento con causa para recaudar fondos para el proyecto de conservación de Cocodrilos y Caimanes de Centro de Rescate y Rehabilitación de Fauna Silvestre.
Grupo SOS Cocodrilo México	**21 al 25 de julio.** Curso de verano infantil UACAM. San Francisco, Campeche.
Grupo SOS Cocodrilo México	**Junio 2025.** Curso-Taller de atención integral para primera respuesta a la interacción humano-cocodrilo. Tampico, Tamaulipas
César Cedillo	**Mayo 2025.** Taller de conservación y manejo sustentable de cocodrilos ante los retos del cambio climático. La Ventanilla, Oaxaca
César Cedillo	**Mayo 2025.** Taller de capacitación sobre el manejo de cocodrilos para atender contingencias humano-cocodrilo. SEMABICCE. Escárcega, Campeche
César Cedillo	**23 y 24 de octubre de 2024.** 4to. Encuentro infantil de arte, educación ambiental e interculturalidad. La Ventanilla, Oaxaca
César Cedillo	**29 de agosto de 2024.** Protocolo de atención a contingencias humano-crocodilianos y medidas preventivas en el manejo de cocodrilos. Curso
César Cedillo	**Abril a agosto 2025.** Diplomado de Atención Integral de Contingencias Humano-Fauna Silvestre
César Cedillo	**13 de junio de 2024.** Taller de capacitación sobre el manejo de cocodrilos para atender contingencias humano-cocodrilo. SEMABICCE. Carmen, Campeche
César Cedillo	**Mayo 2024.** Taller integral de conservación y aprovechamiento para la sustentabilidad de los cocodrilos mexicanos, La Ventanilla, Oaxaca

3. Production and trade

The farm "Cocodrilos Maya" marketed a total of 3545 crocodiles during the period from April 2024 to January 2026. The resulting products were as follows:

- 1844 salted skins were exported to the European market.
- 1701 salted skins were sold in the domestic market.
- 8000 kg of meat by-products for consumption in the domestic market.

4. International implementation

During 2024, according to the CITES Trade Database, Mexico reported four export events of Crocodylia. One involved export of specimens of *C. moreletii* to Japan for scientific purposes from the wild; and the other three cases involved export of leather products to the USA, Honduras and Guatemala for trade purposes, originating as bred in captivity (source code C).

For the same year, Mexico reported 53 re-export events of Crocodylia: 16 *Alligator mississippiensis,* 19 *Ca. crocodilus,* 17 *C. niloticus*, and one *C. porosus.* These re-export events were also for leather, skins and bones, all for trade purposes. Source codes did vary, 21 events report bred in captivity (C), 13 ranched (R) and 17 of wild origins (W).

Mexico also reported 135 import events, mostly involving importing leather and skin products from the species *A. mississippiensis, Ca. crocodilus, C. niloticus,* and *C. porosus.* Source codes varied, 49 events report wild origins, 31 ranched, 39 captive-bred, 9 events reported as Appendix-I animals bred in captivity, and 4 events reported as animals born in captivity (F).

It is worth noting that the trade information for the year 2025 may have not been captured in the CITES database yet. For that reason, the CITES Management Authority of Mexico (DGVS-SEMARNAT) was consulted. In 2025, they granted 98 CITES authorizations for exports of *C. moreletii*, 97 of them were reported as bred in captivity and one of them was a skin reported from wild origins. 96 were leather and skin products for the USA and one for Germany, the specimen from wild origin was also exported to Germany. DGVS granted four export permits for *C. acutus* reported as wild origin (W) for scientific purposes to the USA.

Regarding the imports for 2025, the Management Authority of Mexico reported 188 imports from Colombia (179), Guatemala (2), Guayana (1), Czech Republic (1) Venezuela (2) and Panama (3). 186 of them for the species *Ca. c. fuscus* with different source codes; 177 reported as bred in captivity, three reported it as Appendix-I animals bred in captivity, three reported as wild origins, and three of them reported as animals born in captivity (F). The other two were for the species *C. acutus* reported as Appendix-I animal coming from the wild (I-W) and for scientific purposes. The Management Authority also reported four re-export events for *Ca. c. fuscus*. All of them were leather and skin products and reported as bred in captivity. They came from Colombia and were re-exported to the USA.

5. Publications

Book chapters:

Chávez-Dagostino, R.M., Ojeda-Adame, R.A., & Bravo-Olivas, M.L. (2025). Fishermen-Crocodile interactions in a Mexican tourist context. En C. Monterrubio (Ed.), Human-Animal Relations in Tourism, Leisure and Development: Perspectives from Latin America (pp. 12–22). CAB International. https://doi.org/10.1079/9781800626829.0002

Cedeño-Vázquez, J.R., González-Jáuregui, M., Buenfil-Rojas, A.M., Alvarez-Legorreta, T. (2025). El cocodrilo: presencia saludable para la Laguna de Bacalar. En E.B. Palafox-Juárez, M.E. Callejas-Jiménez (Coords.), Laguna de Bacalar: Equilibrio y vulnerabilidad entre siete colores. El Colegio de la Frontera Sur (pp. 113-127).

Scientific papers:

Buenfil-Rojas AM, Alvarez-Legorreta T, Cedeño-Vázquez JR. 2026. Tissue-specific metal accumulation in two *Crocodylus moreletii* from southeastern Mexico: A case-based assessment. *Bulletin of Environmental Contamination and Toxicology* 116 (19):1-6. https://doi.org/10.1007/s00128-025-04160-4

Ávila-Cervantes J, Charruau P, Cedeño-Vázquez JR, Bui H-N, Venegas-Anaya M, Vargas M, López-Luna MA, González-Cortés H, Macías-Díaz DA, Pérez-Flores JS, Barrios-Quiroz G, Salazar JM, McMillan WO, Larsson HCE. 2025. Novel island species elucidate a species complex of Neotropical crocodiles. *Molecular Phylogenetics and Evolution* 207:108341. https://doi.org/10.1016/j.ympev.2025.108341

Buenfil-Rojas AM, Alvarez-Legorreta T, González-Jáuregui M. 2025. Influence of temporal growth variation on blood plasma concentrations of metals and metallothioneins in Morelet's crocodiles (*Crocodylus moreletii*) from Quintana Roo, Mexico. *Archives of Environmental Contamination and Toxicology* https://rdcu.be/eL422

Buenfil-Rojas AM, González-Jáuregui M, Ochiai M, Iwata H. 2025. Developing an efficient protocol for RNA extraction from Morelet's crocodile caudal scute biopsies. *MethodsX*, 14:103315 https://doi.org/10.1016/j.mex.2025.103315

Castillo-Contreras, A., M. González-Jáuregui, D. Lázaro-Bello et al. 2025. Parasites of *Crocodylus moreletii* (Reptilia: Crocodylidae) across habitats with different levels of anthropogenic disturbance in Southeastern Mexico. EcoHealth. https://doi.org/10.1007/s10393-025-01759-1

González-Desales GA, GJ Soria-Ortiz, O Monroy-Vilchis, Z Zarco-González, P Charruau. 2025. Prevalence of injuries in a *Caiman crocodilus chiapasius* (Bocourt 1876) population from the South Pacific coast of Mexico. *Studies on Neotropical Fauna and Environment* 60(1): 25-33. https://doi.org/10.1080/01650521.2024.2380162

Arriaga-Mayorga A, DN Castelblanco-Martínez*, ID Aguilera-Miranda, J Velarde-Lemus, CA Niño-Torres, MP Blanco-Parra, P Charruau, V Islas-Villanueva. 2024. Romeo and Juliet: A forbidden love story? A review of hybridization in keystone, aquatic megafauna. *Animal Biodiversity and Conservation* 47(2): 209-225. https://doi.org/10.32800/abc.2024.47.0209

Aubert C, G Le Moguédec, A Velasco, X Combrink, JW Lang, P Griffith, G Pacheco-Sierra, E Pérez, P Charruau, F Villamarín, IJ Roberto, B Marioni, JE Colbert, A Mobaraki, AR Woodward, R Somaweera, M Tellez, M Brien, MH Shirley. 2024. Estimating total length of partially submerged crocodylians from drone imagery. *Drones* 8, 115. https://doi.org/10.3390/drones8030115

Cedillo-Leal C.N., Barrios-Quiroz G., Padilla-Paz S. 2025. Details of a non-fatal human-crocodile interaction in the Laguna del Carpintero, Tampico, México. Neotropical Biology and Conservation 20(2): 115-123.

Herrera-Moreno, M.N., Valenzuela-Quiñonez, W., Mohedano-López, F., Castañeda de los Santos, G., Gerardo-Kautzman, V. H., Flores-Flores, F.A., Luna-Lachica, K., Chávez-Medina, J.A., Pérez-González, E., Ley-Quiñonez, C.P., & Salomón-Soto, V.M. (2025). Educación ambiental para estudiantes de nivel básico y percepción de la población adulta rural sobre Crocodylus acutus (Cuvier, 1807) (Crocodylia: Crocodylidae) en Sinaloa, México [Report original]. Acta Zoológica Mexicana (nueva serie), 41, 1-18. https://doi.org/10.21829/azm.2025.4112704.

López-Espinoza, J.U., Peinado-Guevara, L.I., Rodríguez-Sala, B.G.-G., & Campista-León, S. (2025). Age and anatomical site shape the gastrointestinal bacterial communities of captive American crocodiles (Crocodylus acutus). Folia Microbiologica. https://doi.org/10.1007/s12223-025-01385-y.

Pérez-González, E., Quintero-Borquez, I.P., Herrera-Moreno, M.N., Ley-Quiñónez, C.P., Polanco-Torres, A., González-Ocampo, H.A., Llanes-Cárdenas, O., & Salomón-Soto, V.M. (2024). Detection of organochlorine pesticides in infertile eggs of *Crocodylus acutus* from Sinaloa. Environmental Science and Pollution Research, 32(6), 3160-3173. https://doi.org/10.1007/s11356-024-32147-x

Salomón-Soto, V.M., Camarena-Armenta, J.Á., & Rocha-Cabanillas, R. (2024). Distribución histórica y actual de Crocodylus acutus (Cuvier, 1807) en la costa de Sinaloa [Artículo de Investigación]. Acta Biológica Mexicana, Enero-Junio(1), 7-17. https://revistas.uas.edu.mx/index.php/ACBIOMEX/article/view/456

Briggs-Gonzalez, V.; Balaguera-Reina, S; Corado-Garcia, V; Picking T; Domínguez -Laso, J.; Rodríguez-Cordero, A.; Herrera-Pachon, G. y Mazzotti, F. 2025. 40 years of Croc Docs Crocodylian collaborations in Latinamerica and the Caribbean. Memorias de la 26th Working meeting of the CSG del 24 al 26 de Septiembre de 2025.

Theses:

2025. Stefany Reyes Hernández. Endoparásitos de los Crocodylia de la costa de Chiapas. Licenciatura en Medicina Veterinaria Zootecnista, Universidad Autónoma de Chiapas, Tuxtla Gutiérrez, Chiapas, México.

Agosto de 2024. Marco Antonio Vázquez Cigarroa. Estimación y dinámica poblacional de *Caiman crocodilus* en los cuerpos de agua del Ejido La Polka del Municipio de Tonalá, Chiapas. Beneficiario del Student Research Assistance Scheme (SRAS) del CSG. Director de Tesis: Biól. Jerónimo Domínguez Laso.

Magazines:

Charruau P, M Hernández-Chávez. 2024. Draw your crocodile: studying children´s perspectives on crocodiles. Crocodile Specialist Group Newsletter 43(1):13-15.

Domínguez-Laso, J. and García-Reyes, B. and Sosa-Rodríguez, G. (2025). 10 Years Contributing to the Training of Cocodrileros. 43 (4): 12-13.

Domínguez-Laso, J. and García-Reyes, B. and Sosa-Rodríguez, G. International Workshop on Management and Conservation of Crocodylia in Latin America, Chiapas, Mexico. 44(1) 14-15. * *La imagen seleccionada para la portada de esta edición está directamente relacionada con el evento abordado en el artículo.*

García-Reyes, B. and Domínguez-Laso, J. (2025). "Crocokermes Solidaria": An Event to Promote Appreciation and Conservation of Crocodilians. 44(3): 5-9

Talks:

Pierre Charruau. 2025. Ecología de anidación del cocodrilo americano (*Crocodylus acutus*) en La Ventanilla, Oaxaca. XVII Reunión Nacional de Herpetología, México. Ponencia-Ponente invitado.

Pierre Charruau. 2024. Estudios de cocodrilos y caimanes en México. Conferencia organizada por la Fundación de Parques y Museos de Cozumel, Cozumel, Q. Roo, México. 24 de junio.

Ojeda Adame, Ricardo Adrián. 2024. Cocodrilos ¿Sirven para algo? Conferencia organizada por la Junta Intermunicipal de Medio Ambiente de la Costa Sur. Online, 31 enero.

Ojeda Adame, Ricardo Adrián. 2025. Entre redes y colmillos: Historias de pesca, conflictos y conservación del cocodrilo. Conferencia organizada por la Sociedad de Científicos Anónimos Colima. Colima, México. 13 junio.

Mañon-González J.R., González-Desales G.A, Charruau P. y Mandujano-Camacho H.O. Aprovechamiento de recursos disponibles en el hábitat de *Caiman crocodilus chiapasius* en México. VII Congreso Nacional de la Asociación para la Investigación y Conservación de Anfibios y Reptiles. Puerto Escondido, Oaxaca. 30 de septiembre a 04 de octubre de 2024.

Giovany A. González Desales, Stefany Reyes Hernández, Pierre Charruau, Mario Hidalgo Ruiz, Hernán O. Mandujano Camacho. Parásitos de *Caiman crocodilus chiapasius* y *Crocodylus acutus* en la costa de Chiapas, México. XVI Congreso Internacional de Manejo de Fauna Silvestre en la Amazonía y Latinoamérica. San Cristobal de las Casas, Chiapas. 14 de noviembre de 2025.

Giovany A. González Desales, J. Rodolfo Mañón González, Zuleyma Zarco González, Ernesto E. Perera Trejo, Pierre Charruau, Hernán O. Mandujano Camacho, Octavio Monroy Vilchis. Estado poblacional y pérdida del hábitat de *Caiman crocodilus chiapasius*. XVI Congreso Internacional de Manejo de Fauna Silvestre en la Amazonía y Latinoamérica. San Cristobal de las Casas, Chiapas. 14 de noviembre de 2025.

Giovany A. González Desales. Estudios de cocodrilos y caimanes en México. Conferencia organizada por la Fundación de Parques y Museos de Cozumel, Cozumel, Q. Roo, México. 24 de junio de 2024.

Jerónimo Domínguez-Laso. 25 de abril de 2024. "Conociendo a los Cocodrilianos". Conferencia organizada por la Universidad de Ciencias y Artes de Chiapas (UNICACH) en la materia de Cordados de la Licenciatura en Biología.

Jerónimo Domínguez-Laso. 16 de octubre de 2024. Conferencia Magistral: Conociendo Nuestra Biodiversidad: Cocodrilos. Organizada por la Preparatoria No.1 de Tuxtla Gutiérrez.

Jerónimo Domínguez-Laso. 4 de noviembre de 2024. Conferencia Magistral y Prácticas: Los Cocodrilos de Chiapas y proyectos de investigación enfocados en su conservación. Evento organizado por la Universidad Autónoma Chapingo.

Jerónimo Domínguez-Laso. 24 de enero de 2025. Conferencia Magistral en Línea: "Los Cocodrilos de Chiapas". En el marco de la Semana de la Biología y del 25 Aniverdario de la UMA Reptilario Cipactli.

Jerónimo Domínguez-Laso. 29 de marzo de 2025. Conferencia Magistral y Prácticas: Experiencias de Medicina Veterinaria en Cocodrilianos. Evento organizado por la Universidad Juárez Autónoma de Tabasco.

Jerónimo Domínguez-Laso. Marzo de 2025. "Metodologías de Estudio en Cocodrilianos". Conferencia organizada por la Universidad de Ciencias y Artes de Chiapas (UNICACH) en la materia de Cordados de la Licenciatura en Biología.

Liliana Berenice García-Reyes & Jerónimo Domínguez-Laso. Agosto, 2025. Rescate y Conservación de Cocodrilianos. Estrategias de Acción Aplicadas en Chiapas. 2° Simposio Nacional de Cocodrilianos del Pacífico. San Blas, Nayarit.

Jerónimo Domínguez-Laso. Agosto, 2025. Los Crocodylia de México. Agosto, 2025. 2° Simposio Nacional de Cocodrilianos del Pacífico y 3° Curso-Taller de Manejo Especializado en Cocodrilianos del Pacífico. San Blas, Nayarit.

Liliana Berenice García-Reyes & Jerónimo Domínguez-Laso & Familia del Dr. Miguel Álvarez del Toro. Herencia y Legado en la Historia de los Cocodrilianos Mexicanos. Agosto, 2025. 2° Festival del Cocodrilo en Nayarit. San Blas, Nayarit.

Jerónimo Domínguez-Laso. 3 de noviembre de 2025. Conferencia Magistral y Prácticas: Métodos de estudio y acciones de conservación de cocodrilianos en Chiapas. Evento organizado por la Universidad Autónoma Chapingo.

Posters:

2025. DataMares, P Charruau. dataPóster: Cocodrilo americano *Crocodylus acutus*. https://datamares.org/preview/dp_cocodrilo-americano/?lang=es&fbclid=IwY2xjawNHqjtleHRuA2FlbQIxMABicmlkETBYdTc0aE5IN2dnSW93RENyAR7AmqEYsAe994T0vzTe-zDyT_1eRypny8lSEoyT4HwrrB09lzWwQa_jZJ48zQ_aem_Cn57hit1wxVs17B5nPv1Sg

Castillo Contreras J.A., Cedillo Leal C.N., López Luna M.A., Osiris Rivas Eguía P.J., Alfaro de la Torre M.C., Ilizaliturri Hernández C.A., Espinosa Reyes G. 2025. Estado poblacional del cocodrilo de pantano (*Crocodylus moreletii*) en la Ciénega de Tamasopo, México y el primer acercamiento a la interacción humano-cocodrilo. XVI CIMFAUNA, San Cristóbal de las Casas, Chiapas, 10 al 14 de noviembre de 2025.

Cedillo-Leal C.N. 2025. Acciones de los grupos S.O.S. Cocodrilo en México: caso Tampico. Taller del Grupo de Especialistas en Cocodrilos (CSG/UICN) para América Central y las Islas del Caribe. San Salvador, El Salvador, 24 al 26 de septiembre de 2025.

Cedillo Leal C.N. y Padilla-Paz S.E. 2025. Evaluación de las interacciones humano-cocodrilo en una zona urbana de Tamaulipas, México. XVI CIMFAUNA, San Cristóbal de las Casas, Chiapas, 10 al 14 de noviembre de 2025.

Castillo-Contreras A.J., Jáuregui M., Paredes-Trujillo A., Padilla-Paz S.E., Cedillo-Leal C.N. y León L. 2025. Parásitos que infectan a *Crocodylus moreletii* en hábitats con distinto grado de impacto humano. Taller del Grupo de Especialistas en Cocodrilos (CSG/UICN) para América Central y las Islas del Caribe. San Salvador, El Salvador, 24 al 26 de septiembre de 2025.

Sáez-Euan R.A., González-Jáuregui M., Padilla-Paz S.E., Castillo-Contreras A.J., León-Comelio L.L. y Cedillo-Leal C.N. 2025. La forma de la cabeza de cocodrilos silvestres en la costa atlántica mexicana. Taller del Grupo de Especialistas en Cocodrilos (CSG/UICN) para América Central y las Islas del Caribe. San Salvador, El Salvador, 24 al 26 de septiembre de 2025.

Padilla-Paz S.E., Cedillo-Leal C.N. and González-Jáuregui M. 2025. Managing human-crocodile interactions en Campeche, México. Taller del Grupo de Especialistas en Cocodrilos (CSG/UICN) para América Central y las Islas del Caribe. San Salvador, El Salvador, 24 al 26 de septiembre de 2025.

López-Luna M.A., González-Jáuregui M**.,** Cedillo-Leal C.N., Cruz-Morales G., Padilla-Paz S., Charruau-Pierre A. y Barrios-Quiroz G. 2025. Técnicas básicas para el estudio en campo de Crocodilianos. XVII Reunión Nacional de Herpetología. Mérida, Yucatán, 27-31 de enero de 2025.

Castillo-Contreras A., Padilla-Paz S., González-Jáuregui M., Cedillo-Leal C. y Paredes-Trujillo A. 2025. Detección y evaluación de la infección por hemoparásitos en el genero Crocodylus con distribución natural en México. XVII Reunión Nacional de Herpetología. Mérida, Yucatán, 27-31 de enero de 2025.

Cedillo-Leal C.N., Escobedo-Galván A.H. y González-Jauregui M. 2024. Contaminación de metales en poblaciones de *Crocodylus moreletii* en zonas impactadas de Tamaulipas. VII Congreso sobre la Investigación y Conservación de Anfibios y Reptiles. Puerto Escondido, Oaxaca 30 sept-4 oct.

Cedillo-Leal C.N., Padilla-Paz S.E. y Barrios-Quiroz G. 2024. Interacciones negativas humano-cocodrilo en el estado de Tamaulipas, México. VII Congreso sobre la Investigación y Conservación de Anfibios y Reptiles. Puerto Escondido, Oaxaca 30 sept-4 oct.

Cedillo-Leal C.N. 2024**.** Análisis de interacciones humano-cocodrilo en México. Primera Reunión Nacional de Grupos SOS Cocodrilo México. Bahía de Banderas, Nayarit, 29 feb – 2 de marzo.

Cedillo-Leal C.N. 2024. Evaluación integral de las interacciones humano-cocodrilo mediante una coordinación interinstitucional. Primera Reunión Nacional de Grupos SOS Cocodrilo México. Bahía de Banderas, Nayarit, 29 feb – 2 de marzo.

Mañon-González J.R, González-Desales G.A, Charruau P. y Mandujano-Camacho H.O. Tendencia Poblacional de *Crocodylus acutus* en el estado de Chiapas. VII Congreso Nacional de la Asociación para la Investigación y Conservación de Anfibios y Reptiles. Puerto Escondido, Oaxaca. 30 de septiembre a 04 de octubre de 2024.

Mañon-González J.R., González-Desales G.A,Charruau P. y Mandujano-Camacho H.O. Primeros datos de hábitos alimenticios de *Crocodylus acutus* en Cozumel. VII Congreso Nacional de la Asociación para la Investigación y Conservación de Anfibios y Reptiles. Puerto Escondido, Oaxaca. 30 de septiembre a 04 de octubre de 2024.

4. Other issues

Leaders	***Activities***
Two virtual meetings of the GEC-MX, 23 July and 8 October 2025.	During 2025, two virtual meetings of the Mexican Crocodilian Crocodilian Specialist Group (GEC-MX) (GEC-MX) were held on 23 July and 8 October, to discuss the progress and next steps of each working group. The first meeting had 43 participants, and the second had 42 participants. Both meetings covered reviewed topics of interest, including progress in the monitoring of Mexican species, ranching practices, skin traceability, SOS crocodile groups, human-crocodile interaction, and planning for the group's next formal meeting.
Pierre Charruau	2025. Coorganizador, Simposio Estado de conocimiento, conservación y aprovechamiento sostenible del cocodrilo americano (*Crocodylus acutus*) en México. XVII Reunión Nacional de Herpetología, México.
Pierre Charruau	2024. Coorganizador, Simposio Crocodilia, VII Congreso Nacional AICAR, Puerto Escondido, México
Pierre Charruau, José Avila-Cervantes, Hans Larsson	2025. Entrevista con Mongabay Latam. https://es.mongabay.com/2025/10/descubrimiento-cocodrilos-caribe-mexicano-nuevas-especies/. 11 octubre.
Pierre Charruau	2025. Nueva especie de cocodrilo. Entrevista Youtube. Serie Cocodrilos del mundo. Río Verde. https://www.youtube.com/watch?v=aS-Nzw-ASA8. 13 diciembre.
Ojeda Adame, Ricardo Adrián	2025. Dia del cocodrilo. Entrevista de Radio. Radio Conexión 98.1FM. Colima, México. 26 agosto.
Benjamín Castillo Elías, Universidad Autónoma de Guerrero	2025. Plática a la autoridad del estado de Guerrero referente a la integración de grupo SOS-Humano cocodrilo en Acapulco, Guerrero, México.
Benjamín Castillo Elías, Universidad Autónoma de Guerrero	2025. Apoyo técnico en predio rustico (Cocodrilario Acutus) en el manejo de cocodrilos del municipio de Acapulco, Guerrero.
Benjamín Castillo Elías, Universidad Autónoma de Guerrero	2025. Participación en taller en La Ventanilla Oaxaca con la ponencia magistral de "Efectos del Cambio Climático en la Conservación de los Cocodrilos mexicanos, la Afectación en su Condición Física y Hábitat por la presencia de Huracanes: Estudio de caso: Huracán John en Acapulco, Guerrero"
Jerónimo Domínguez Laso	**10 de septiembre de 2024.** "Experiencias de rescate de Cocodrilos en Chiapas" Programa Digital de Radio Ciudadanía Divergente.
Jerónimo Domínguez Laso	**17 de septiembre de 2024.** Entrevista: "La importancia de la capacitación sobre cocodrilianos". Transmisión Digital de Medios de Comunicación Unidos de Chiapas.

Nicaragua

This report not only compiles research activities conducted during the reporting period but also incorporates historical data, given that over the past 20 years formal studies on crocodilians in Nicaragua have been limited or nearly absent since the work of Buitrago (2001) on the distribution, abundance, and population trends of crocodiles in Nicaragua (Thesis: Utilization of Crocodylia in Nicaragua).

Within the 2024-2025 period, no state-level or academic conservation programs have been identified for *C. acutus* or *Ca. crocodilus*. However, relocation and translocation efforts are known to occur when individuals approach human settlements. The Ministry of Environment and Natural Resources (MARENA) has successfully relocated individuals to wetlands and mangrove areas protected under the National System of Protected Areas (SINAP).

Under Nicaraguan environmental legislation, *C. acutus* (commonly known as "lagarto real") is under an indefinite nationwide hunting ban due to its endangered status, with prohibition of hunting, transport, and trade. For *Ca. crocodilus* ("caimán" or "cuajipal"), harvest is restricted, with hunting, transport, and commercialization prohibited annually from 1 July to 30 September.

Since Buitrago's 2001 study, no formally published research is known at the governmental, NGO, or independent research levels. However, unpublished assessments were reportedly conducted in the lower basin of the Río Grande de Matagalpa in 2015 to meet environmental certification requirements. More recently, in 2025, population estimates of *Ca. crocodilus* were conducted in the San Juan River basin, although specific results have not been made publicly available.

After reviewing these antecedents, it is important to highlight Reserva Natura Managua, is a privately protected area that includes two artificial lakes covering a combined surface area of 55 hectares and storing approximately 3.6 million cubic meters of rainwater, used to irrigate sugarcane during the dry season (Rueda *et al*. 2012). This site represents the only location in Nicaragua where monthly monitoring of *C. acutus* populations is conducted. Monitoring has been carried out since 2021, with published results through 2023, and was resumed in 2024 and continues to date. An average of eight individuals of *C. acutus* are recorded across both lakes. Monitoring consists of nocturnal spotlight surveys, identifying eye shine and approaching individuals to estimate size, while recording geographic coordinates to determine areas of concentration within the conservation area.

At the national level, crocodilians are known to occur in the following areas: Río Coco; Northern Caribbean coastal lagoons; Laguna de Perlas; Bluefields Bay; Lake Managua; La Flor Wildlife Refuge; Salinas Grandes; Puerto Sandino; Estero Real; and the San Juan River basin, including Los Guatuzos Wildlife Refuge and Solentiname Archipelago National Park.

Figure 1: Map of observation sites for *Crocodylus acutus* in Nicaragua. Source: GBIF, 2026.

Reported by: Ariel Salinas

Panama

In recent years, Panama has experienced a marked increase in reported human-crocodilian interactions, particularly along the Pacific coast and in peri-urban environments associated with rapid coastal development. A substantial proportion of

the country's urban infrastructure and tourism activities are concentrated along shoreline areas, resulting in increasing spatial overlap between human settlements and crocodilian habitats. Natural dispersal movements, including those along the Panama Canal watershed connecting Caribbean and Pacific drainages, frequently bring large individuals into highly visible urban settings.

While field observations suggest that crocodilian populations have increased in certain areas and expanded into peri-urban zones, the perception of conflict has been significantly amplified by social media exposure. Repeated circulation of videos and images has contributed to heightened public concern, often exceeding documented incident rates. Public behaviors such as intentional feeding, harassment, or close approach further exacerbate risk.

Over the past four years, the Ministry of Environment, in collaboration with national research institutions, has conducted rapid assessments and systematic surveys along the Pacific region to generate updated information on habitat status and population density. Building upon this scientific foundation, the Ministry of Environment and the Technological University of Panama have initiated a pilot project focused on Panama Bay. The project aims to identify conflict hotspots, assess specific high-risk individuals, and implement targeted management actions. Where relocation is not feasible, regulated control measures are being considered within a formal legal framework currently under administrative review. This pilot initiative is intended to inform the development of a comprehensive management plan for the Pacific region. The approach emphasizes evidence-based decision-making, legal compliance, and avoidance of indiscriminate removals. Concurrently, there is renewed interest in strengthening regulated captive breeding and ranching initiatives, including educational facilities, as part of a broader strategy integrating conservation, conflict mitigation, and sustainable use.

A forthcoming technical publication on habitat condition and population density in the Eastern Tropical Pacific region of Panama is expected to provide additional guidance for adaptive management and regional coordination.

Prepared by: Miryam Venegas-Anaya

Paraguay

A fines de 2024 se inició un monitoreo de caimanes en el Departamento de Presidente Hayes (Bajo Chaco) que incluyó las siguientes estancias ganaderas: Aurora, Rancho Aparte y Aguadita.

Las estancias Aurora y Rancho Aparte se encuentran ubicadas en el municipio de Pozo Colorado. y están dentro de la Ecorregión del Chaco Húmedo. Esta enfrenta grandes amenazas como la deforestación, y sequías pronunciadas entre otras, que impactan directamente en los hábitats acuáticos. Además, el Chaco Húmedo es la ecorregión que, en proporción, cuenta con menor presencia dentro de las áreas protegidas del Paraguay. El primer muestreo en estas dos estancias se realizó de diciembre de 2024 cuando había una sequía extrema, y el segundo muestreo en junio de 2025, en época de aguas muy alta con desborde de algunos ríos.

El conteo de yacarés en Estancia Aguadita se realizó en noviembre de 2025. Esta se encuentra localizada en la Zona Cabo Cano, municipio de Teniente Esteban Martínez, que también se encuentra dentro de la ecorregión del Chaco Húmedo. Sin embargo, la vegetación observada cuenta tanto de bosque húmedo del Bajo Chaco, pero también de bosque xerófito semicaducifolio. Según expresiones de los encargados de la estancia se observaron muy pocos caimanes en esta temporada por el aumento de las aguas, afirmando que con las inundaciones los individuos se trasladan a otros lugares inundados y con más vegetación para resguardarse.

En el año 2026 se seguirán realizando los monitoreos en las estancias citadas y posiblemente en otras zonas del país. Esto proporcionará una línea de base más reciente para los estudios sobre caimanes a fin de contribuir al manejo sostenible y a la conservación de los caimanes. Hasta el momento en los tres sitios muestreados solo se observaron individuos de *Caiman yacaré*, no así de *Caiman latirostris*.

Reported by: Martha Motte and Frederick Bauer

Peru

Significant progress has been made in the conservation and management of *C. acutus* in northern Peru, particularly in the Tumbes region. An assessment guide for the species in northern Peru is currently in the final validation stage and under review by the competent authorities. This technical document will establish standardized guidelines for population monitoring, habitat assessment, threat identification, and priority management actions, serving as a key tool for adaptive conservation planning.

In parallel, AIDER, under its management agreement with the National Service of Natural Protected Areas (SERNANP), is implementing a dedicated monitoring protocol for the "Tumbes crocodile" within Tumbes National Reserve. Field surveys are conducted in coordination with park rangers across Tumbes National Reserve, Cerros de Amotape National

Park, and El Angolo Hunting Reserve. To date, at least three active nesting areas have been identified, followed by reports of juvenile individuals in nearby locations, indicating recent reproductive activity and ongoing local recruitment.

Within this framework, a National Conservation Plan for the Tumbes crocodile is currently under development. The plan aims to integrate interinstitutional efforts, strengthen long-term monitoring, improve habitat management, and define threat mitigation strategies. As part of this comprehensive approach, a pilot rewilding program is being designed, involving the strategic release of individuals originating from the Tumbes breeding facility. Releases will follow strict genetic and ecological criteria, with the objective of reinforcing population nuclei and promoting recovery within the species' historical range.

Additionally, the first Peruvian herpetology congress featured dedicated presentations on crocodilians, marking a milestone in the scientific visibility of *C. acutus* in Peru. This event contributed to strengthening the emerging national research community focused on crocodilian conservation.

Collectively, these initiatives reflect a transition toward a more structured and strategic conservation framework for the American crocodile in Peru, integrating scientific monitoring, national-level planning, and population restoration efforts.

Reported by: Pablo Siroski, Armando Escobedo and Angel Llompart

---

Suriname

Caiman Species in Suriname

Suriname hosts four crocodilian species typical of the Guiana Shield: *Ca. crocodilus, P. palpebrosus, P. trigonatus*, and potentially *M. niger*, although the latter lacks confirmed, well-documented populations and is mainly reported anecdotally in border regions. Among these, *Ca. crocodilus* is the most widespread and commonly observed species, while the two *Paleosuchus* species remain poorly documented due to their cryptic behavior and association with remote forest habitats.

Scientific knowledge on caiman populations in Suriname is limited, with no robust estimates of abundance or distribution for any species. Most available information is based on opportunistic observations rather than systematic surveys, resulting in significant knowledge gaps.

Caimans in Suriname are also subject to local use and informal trade. In rural and riverine communities, caimans may be hunted opportunistically for subsistence consumption, particularly in areas where alternative protein sources are limited. Additionally, small-scale capture of juveniles for the pet trade has been reported in the region, although this activity is generally informal and poorly documented. These uses are typically local rather than part of large, organized commercial markets, but may still exert pressure on populations, especially in easily accessible areas.

Environmental pressures such as gold mining further affect caiman habitats through river degradation and increased human presence in remote areas. Together, limited ecological knowledge, localized use, and expanding anthropogenic pressures highlight the need for baseline studies and monitoring to better understand and manage caiman populations in Suriname.

Reported by: Paul Ouboter and Robinson Botero-Arias

Venezuela

1. ***Caiman crocodilus* wild harvest**

   In 2024 and 2025, no wild specimens were harvested, mainly due to low demand for flanks in the international market. Three companies that market Venezuelan flanks maintain a stock in the country of salted and refrigerated skins totaling 112,000 flanks.

2. ***Crocodylus intermedius* conservation program**

   In 2024, 350 Orinoco crocodiles were released and in 2025 another 403 individuals were raised. Unfortunately, the "Back to the Llanos" project, supported by CrocFest, which would have sent 28 *C. intermedius* specimens born in the USA to Venezuela for release was ultimately unsuccessful. These specimens were instead relocated to various zoos in the USA.

   Given the situation in Venezuela, some (not all) international organizations that fund conservation projects are not supporting any Venezuelan institutions, which has directly affected our fieldwork monitoring of released Orinoco crocodiles in their natural habitat, as well as continuing the national census in new locations.

Thanks to the support of the Krokodille Zoo, especially Rene Hedegaard, supporting captive breeding at the Masaguaral Ranch, in 2025 we collected more than 650 individuals of *C. intermedius* between the Cojedes River, with the support of the Dallas World Aquarium, and the Capanaparo River.

Between Masaguaral Ranch and the Leslie Pantin Zoo, we are breeding approximately 500 Orinoco crocodiles for release and donating about 140 to the breeding center run by the Ministry of Ecosocialism.

The Herpetofauna Foundation supported us in the maintenance our truck, boat and outboard motor during 2024 and 2025.

In October 2024, with the support of The Mohamed bin Zayed Species Conservation Found, in Masaguaral Ranch, located in Corozo Pando town, Guarico State, Venezuela, it was done the XIII Course in Ecology and Conservation of the Crocodylia of Venezuela with the participation of 11 park rangers, 3 professionals from the Biological Diversity Office of the Ministry of Ecosocialism, 7 zookeepers from 2 zoos and 1 Orinoco crocodile private farm. This course is totally free of charge to all participants.

3. Other information

In August 2025, the Chairman of the Venezuelan Crocodile Specialist Group participated in the 7th Annual European Croc Networking Meeting in Berlin, Germany, presenting an update on the Orinoco crocodile conservation program in Venezuela.

Unofficially, there are reports of a shipment, with CITES permits, of 38 live *Ca. crocodilus* and 12 *C. intermedius* specimens to a zoo in India. This shipment does not appear on the CITES website.

Prepared by Alvaro Velasco B.

Agenda Item: SC. 2.5.

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

South Asia & Iran

INDIA

2025 marked a milestone for Indian crocodilian conservationists and biologists, celebrating 50 years of India's efforts to conserve its crocodilian species. Consequently, every Indian state, along with experienced and emerging crocodilian biologists, scientists, state forest department officials, and naturalists, commemorated the success of crocodilians and raised awareness about the threats facing all three Indian crocodilian species. The current status of crocodilians in India results from projects launched 50 years ago by the Indian Government with technical support from UNDP/FAO (1975) under the 'Grow, Headstart, Release and Restocking' program. Additional developments include the establishment of the 'Central Crocodile Breeding & Management Training Institute (CCBMTI)' in Hyderabad in 1978, for Capacity Building. In 1976, a crocodilian-related organization with similar goals was established with support from WWF, called the Madras Crocodile Bank Trust (MCBT), and the Center for Herpetology, aiming to conserve endangered crocodilian species and promote reptile and amphibian conservation in India.

Therefore, whatever we observe in the Indian landscape, especially the three Indian crocodilian species, are safe and protected, thanks to the efforts of pioneering institutions, projects, crocodilian biologists, their research teams, state forest departments, and their staff from the grassroots level to top government policymakers, and many unsung heroes who have finally accepted crocodilians in their waters. The current status and account of three crocodilian species in India are as follows, based on collaborative efforts by CSG members, various state governments and their forest departments, and numerous NGOs and NGIs.

Gharial (*Gavialis gangeticus*)

- Estimation of Wild Gharial Population: 3500+ animals of various sizes surviving in the Chambal, Katarniaghat, Beas, Hastinapur, Gandak, Corbett National Park, Ken and Son Rivers, with other populations distributed across the Ganges, Hugli, and Mahanadi.

- Captive Stock: Over 1000 sub-adult and adult animals (in 38 captive facilities: CZA, 31 March 2025, and various Gharial rearing centers in different states)

- Distribution: Across India, including Chambal, Son, Ken, Gandak, Geruwas, Kosi, Sarda, Ramganga, the main streams of the Ganga and Mahanadi Rivers

- Survey & Ongoing Activity

  Gharial Survey in Upper Ghaghra: A Gharial survey was conducted by Dr. Shailendra Singh of the Turtle Survival Alliance Foundation - India, Lucknow, UP, along with his research team in the upper Ghaghra River, covering a 110-km stretch up to Ayodhya. This is an important habitat for the Gharial, and more than 150 Gharials were observed, including 50 adults. The important finding was the recording of a Gharial nesting site in the Bahraich district. Also, the lower section (400 km+) has smaller populations, as confirmed by Dr. Tarun Nair (in personal communication), possibly due to high fishing pressure. However, it is estimated that there are more than 50 adults along that stretch. The Uttar Pradesh Forest Department has released over 800 Gharials in the upper reaches of the Ghaghra over the last 11 years (2014-2025). TSA Foundation-India assisted them with soft-release exercises in 2014 and 2015, and radio-tagged 10 juveniles. One of the animals released in 2014 was sighted near the Ghaghra-Ganga confluence post-monsoon that same year.

  The Geruwa-Ghaghra system has experienced an unprecedented decline in water levels in recent years, possibly due to an upstream dam in Nepal. Due to altered flow conditions, certain Gharial populations have shifted into both Katerniaghat (Geruwa) and the Ghaghra systems. The team members have been recording high levels of strandings of Gharials in canals, possibly due to the reduced population near the barrage gates, which are at the deepest points. To that end, Dr. Singh has initiated a community monitoring network to report on and rescue Gharials and other megafauna. Alongside Bahraich town, they have been conducting awareness and education programs along Shradha and the upper stretches of Ghaghra for Gharials and other aquatic animals.

Gharial Survey in Brahmaputra River: A Gharial survey was carried out by Dr. Shailendra Singh from the TSA Foundation - India, Lucknow, in collaboration with the Assam Forest Department and his research team over a 160-km stretch of the river from Kaliabhomora bridge to west Komolabari ghat. The detailed study information and results are available in CSG Newsletter 43(2): 25-27.

Gharial Survey in the Ganga Basin: A detailed study was conducted focusing on understanding population trends, habitat preferences, breeding patterns, and threats to the species by a research team of the Wildlife Institute of India (WII), in collaboration with the National Mission for Clean Ganga (NMCG), with financial help from the Ministry of Jal Shakti (MoJS). This study determined the population status of Gharial in the Ganga Basin. Field surveys were conducted in rivers that fall within the Gharial's historical and current ranges in the Basin. Boat-based visual encounter surveys were conducted between November 2020 and March 2023, covering 7680 km across 22 rivers in 7 states. The basin-wide population survey recorded 3037 Gharial individuals in 13 out of the 22 surveyed rivers. The Chambal River supports the largest population (n = 2097), followed by the Ghaghra River (n= 463) and the Girwa River (n= 158). The highest encounter rate observed in the Girwa River (mean ± SEM) was 7.9 ± 4.95, followed by the Chambal River (5.11 ± 0.51) and Kauriala River (1.8 ± 1.8). The lowest encounter rates were observed in the Kosi River (0.02 ± 0.02) and the Ganga River (0.02 ± 0.01). More detailed, state- and river-wise results are available in the reports (WII-GACMC 2025).

Ex-Situ Activities: The species is now being bred regularly in 7-8 zoos and other captive facilities in India. These captive-bred and reared Gharials are being released into the wild through reintroduction programs regulated by the Central Zoo Authority (CZA) of the Ministry of Environment and Forest, as part of the *ex-situ* and *in-situ* integrated conservation policy.

- Gharial Re-introduction Program in India

Prof. BC Choudhury participated in a consultation organized by the MoEFCC, Government of India, to help develop the proposal for the New Gharial Project, declared by the Prime Minister in March 2025. The proposal includes refocusing project activities to shift the Gharial from the Critically Endangered category to the Endangered category. This will involve revisiting all Gharial reintroduction sites in the Ganges, Mahanadi and Indus Rivers and expanding reintroduction of Gharial into the Brahmaputra River system. The new Gharial project activities would be coordinated by the Wildlife Institute of India, led by Dr. Bivas Pandav and Dr. Abhijit Das. Also, as part of the reintroduction program and future of species, a new conservation genetics study of the Gharial has been initiated by WWF India and scientists at the Wildlife Institute of India.

In February 2026, Prof. B.C. Choudhury took part in a discussion forum to form a Gharial conservation coalition involving various NGOs, including WWF India, Aranyak, and WTI, to advance the Gharial reintroduction in the Brahmaputra River in Assam. He also initiated dialogue with the Field Director of Kaziranga National Park, Assam, and visited a potential Gharial reintroduction site on the Brahmaputra River within the renowned Protected Area.

- Restocking Activities

The restocking and reintroduction programs are progressing well, and monitoring activities for the species continue at Hastinapur Wildlife Sanctuary (Uttar Pradesh), Beas Conservation Reserve (Punjab), and the Lower Ganga Basin, carried out by the relevant state forest departments with assistance from WWF-India under the supervision and guidance of Prof. B.C. Choudhury.

Hastinapur Wildlife Sanctuary, Uttar Pradesh: B.C. Choudhury continued supervising and spearheading the Gharial reintroduction and monitoring work of WWF India projects in Hastinapur Wildlife Sanctuary, involving the mainstream of the Ganges, and a report entitled "A decade of Gharial Reintroduction in State Animal Barasingha Sanctuary: Key Lessons and Way Forward" was published in June 2024.

Beas Conservation Reserve, Punjab**:** Monitoring of released Gharials in the reserve continued, with the latest survey completed in winter 2025. The survey showed that almost 33% of the released Gharials were directly sighted, and some individuals migrated into Pakistani territory within the Indus River basin. A further release of adult male Gharials into the Beas River in Punjab is under consideration.

Lower Ganges, West Bengal: WWF-India has expanded its Gharial conservation efforts into the lower Ganges in West Bengal and has completed a rapid survey of the species' occurrence. This was followed by the release of captive-reared gharials into the lower Ganges. The report on this is being provided separately by CSG member Mohd Shahnawaj.

Gandak Gharial Project, Bihar: The Gandak Gharial Project in Bihar, implemented by the Wildlife Trust of India and led by B.C. Choudhury as the Principal Investigator, has marked its 12th year of operation. The most recent survey, completed in February 2026, documented direct sightings of 433 Gharials and 12 Mugger crocodiles, indicating a healthy breeding adults 67 Gharials. To date, 53 Gharial nests have been successfully protected by the project, and over 800 hatchlings have been safely relocated from the nests to the river. An interpretation, incubation and rearing center for Gharials and other aquatic fauna is being planned at Valmiki Nagar, possibly with support from the Los Angeles Zoo.

Ganga Lower Basin Area: The Gharial reintroduction conservation program of WWF-India started in 2024. The program began with careful planning, including developing scientific protocols, consulting with communities, and selecting sites through a thorough process. During this time, ecological and social suitability assessments were jointly conducted by Mohd Shahnawaj and the West Bengal Forest Department. As part of this effort, a joint WBFD-WWF-India team surveyed 13 rivers (over approximately 674 km) in West Bengal to find suitable sites for Gharial reintroduction. Based on these assessments, the first reintroduction took place on 24 February 2024, with the release of 37 juvenile Gharials into a suitable section of the Ganga River in Murshidabad District.

Alongside these ecological efforts, community engagement has been a key part of the program from the beginning. Before and after the release, joint teams from the West Bengal Forest Directorate and WWF-India conducted extensive awareness and outreach activities in villages both upstream and downstream of the release sites. These efforts, through community meetings and open discussions, aimed to explain the goals of the reintroduction program, address concerns, and encourage local involvement.

Early challenges arose; in March 2024, three Gharials became entangled in ghost nets in the Ganga River. In response, efforts were made to remove these nets, and no further deaths have been reported since. The second phase occurred on 20 January 2026, involving the release of 10 captive-bred juvenile Gharials into the Fulahr River at Nakkati Bridge in Malda District. Overall, these efforts mark an important step towards restoring the species in the eastern part of its historical range and improving long-term conservation success in the lower Ganga basin.

Mahanadi Gharial Project, Odisha: Media reported that the Mahanadi Gharial project of the Odisha Forest Department, led by Shri Sudarshan Maharana, and assisted by a team of field researchers, has released 7 sub-adult and juvenile Gharials fitted with VHF and GPS tags into the Mahanadi River in Odisha's Satkosia Tiger Reserve. These releases took place during the winter of 2025-26, and a large-scale effort involving riparian villagers through education and awareness campaigns is in progress. Additionally, the research team continues to monitor the hatchlings from the 2025 nesting season in the wild using modern technologies.

- **Gharial Ecology Project (GEP): Updates from 2024-2026 (**Jailabdeen Ajjim, Gharial Ecology Project & Madras Crocodile Bank Trust).

Fast Track - Reimagining 'Head-Starting': GEP is now in its 18th year since a mass die-off in the National Chambal Sanctuary - the last and most critical stronghold of wild Gharials. Effective conservation efforts depend on detailed knowledge of how the target species lives in the wild. Since the 1980s, Gharial conservation has focused on traditional head-starting, such as egg collection, rearing young in captivity, and releasing juveniles at 2-4 years old. This method requires costly infrastructure and intensive management. Routine post-release monitoring was not conducted to assess survival rates. However, post-release tracking has revealed that these older, smaller, inexperienced captives have poor survival rates and short residency periods.

Meanwhile, field research shows that wild hatchlings begin feeding actively on live fish, leading to rapid growth in just 4-6 months to sizes comparable to those of 2-4-year-old captive juveniles at release. In the wild, hatchlings quickly become skilled at catching prey and avoiding predators. Taking an innovative, new approach, GEP launched FAST TRACK head-starting. In partnership with the Rajasthan Forest Department and supported by funding from the Astral Foundation, we developed new protocols for feeding live fish and maintaining warm conditions, which promote rapid growth. Once released at 4-6 months of age, FAST TRACK juveniles will be closely monitored for growth, residency, and survival in the wild. FAST TRACK head-starting offers a less costly, more efficient, and highly effective conservation strategy, grounded in GEP's field research. In short, our approach leverages conservation science - understanding gharial ecology and behavior - to guide and enhance conservation efforts.

River Watch & Local Community Engagement: GEP has focused on integrating traditional ecological knowledge with modern scientific methods. Since 2008, the GEP field team has monitored Gharials across the entire Chambal River. Key differences are now evident between the upper Chambal and the downstream sections of Dholpur. Compared to the downriver areas with more meanders and extensive sandbanks, the upper reaches are fast-flowing and rocky, with only pockets of sand. The upper section, which holds just a third of Chambal's Gharials, faces intense human pressures, including large-scale sand mining and illegal fishing. In response, we partnered with the

Madhya Pradesh Forest Department and the Astral Foundation to develop community-led monitoring and protection of the limited nesting sites. In a 14-km stretch, local community members are employed to safeguard sand shorelines where Gharials nest. This pilot program, called River Watch, has led to significant conservation gains, showing a 30% annual increase in nesting. Once proven effective, River Watch will be expanded throughout the upper Chambal and extended to key downstream nesting sites. Long-term engagement with local communities remains crucial for protecting and maintaining vital gharial river habitats.

Saltwater Crocodile (*Crocodylus porosus*)

- Estimation of wild population: 3000-4000 at three locations, namely - Andamans (archipelago), Sundarbans (West Bengal), and Bhitarkanika (Orissa)

- Captive Stock: 500+ animals of various ages/sizes across captive facilities in India, including zoos of West Bengal, Orissa, Andhra Pradesh, MCBT, Tamil Nadu and Andaman & Nicobar

- Distribution: East coast of India, from Orissa to Sundarbans, West Bengal and Andaman-Nicobar

- Survey & Ongoing Activity

  Bhitarkanika National Park, Odisha: Based on information provided by a retired former Senior Research Officer Dr. Sudhakar Kar, a winter census was carried out by the forest department in January 2026 in the river systems of Bhitarkanika National Park/Wildlife Sanctuary. A total of 1858 crocodiles were counted [531 hatchlings (28.6%); 442 yearlings (23.8%); 365 juveniles (19.6%); 167 sub-adults (9.0%); 353 adults (19.0%)]. There is an increase of 32 crocodiles over the January 2025 count of 1826 crocodiles. There has been an 18-fold increase compared to the first census carried out in the winter of 1976 (96 individuals). Besides, this habitat provides shelter for a small population (16 individuals) of partially white crocodiles (local name ‘Sankhua'), which is noteworthy.

  Sunderban Salty Survey: Between December 2024 and February 2025, the West Bengal Forest Department assessed the population status of *C. porosus* in the Sundarban Biosphere Reserve This initiative focuses on understanding population trends, habitat preferences, breeding patterns, and threats to the species in this unique estuarine ecosystem. Direct sightings along the 1168-km transect totaled 213 individuals of various sizes. The population in the Indian Sundarbans is estimated at 220-242 individuals. The detailed report is available from the Department of Forests, Government of Bengal (2025).

  Andaman & Nicobar Islands Survey: Dr. Abhijit Das (WII) and a team of researchers conducted a detailed survey of the island groups in the Andaman & Nicobar Islands during the early months of 2026, following the forest staff training program. The Wildlife Institute of India, Dehradun, Uttarakhand, is leading the project "Conservation and Management Plan of Saltwater Crocodile in the Andaman and Nicobar Islands". The project aims to estimate crocodile populations, their distribution, nesting sites, movement ecology, and genetic structure. As part of this project, an island-wide estimate of Saltwater crocodiles was carried out in 176 creeks across 9 forest divisions, with support from 480 forest staff and 13 researchers and scientists from WII. The census was conducted in three phases, between 8-12 February and 9-10 March 2026. The survey results are currently under analysis. Additionally, exploratory surveys using questionnaires, camera traps, and eDNA were conducted to identify crocodile presence. Furthermore, 21 crocodiles had already been marked at Chidiyatapu Biological Park in the Andaman Islands with assistance from the forest department.

  Training and Capacity Building: Dr. Abhijit Das (WII) conducted a training program in collaboration with the Andaman and Nicobar Forest Department. The training program for staff at various levels to conduct a Saltwater Crocodile population survey took place during February-March 2025; the detailed results are not yet finalized.

  Research Activity: Since December 2025, Ms. Aryaki Banerjee, MSc student in Wildlife Science (Ornithology) at SACON, Coimbatore, in academic collaboration with the Central University of Tamil Nadu (CUTN), has been working on the Saltwater crocodile in the Sundarbans for her dissertation ("Factors affecting the habitat use by the saltwater crocodile (Crocodylus porosus) in the India Sundarbans). Objectives are: to assess ecological parameters along with prey availability and aquatic biodiversity, that may influence habitat use and creek preference in Saltwater crocodiles; and, to evaluate the impacts of anthropogenic disturbances on ecological conditions and their subsequent influence on the distribution and habitat use of Saltwater crocodiles in Indian Sundarbans. Her study area includes the National Park East and Basirhat ranges, Raidighi and Sajnekhali Wildlife Sanctuary, and the border shared with Bangladesh. Aryaki has been interacting with the local community, forest officials, and fishermen, and also collecting data on water and biodiversity.

Mugger Crocodile (*Crocodylus palustris*)

- Estimation of Wild Population: 10,000 to over 12,000, various-aged/sized animals distributed across most Indian States.

- Captive Stock: 2400+ (in various captive facilities, including MCBT: Annual Inventory of Animals in Indian Zoo, CZA, 2025)

- Distribution: Andhra Pradesh, Bihar, Chhattisgarh, Goa, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand, West Bengal

- Survey Activities

  State Forest Departments of Gujarat, Chhattisgarh, Madhya Pradesh, some local NGOs, and some individuals, PhD Scholars/Programmers have initiated surveys to estimate wild Mugger populations, conduct habitat assessments, raise citizen awareness, and run training programs.

  Charotar Crocodile Count: The program was established in 2013 as a citizen science initiative to bring together diverse participants worldwide to monitor the crocodile population in the Charotar region of Gujarat, India. Mugger Crocodile Count, January 2025, and again in 2026, recorded 287 individuals in the most recent count in January 2026 across 25-30 villages, by Anirudh Vasava, Dhaval Patel, Vishal Mistry, and volunteers of VNC (Voluntary Nature Conservancy, Vidyanagar, Gujarat), as part of the Citizen Science incentives. A count of 255 Muggers of all sizes was recorded in 25 waterbodies across the non-urban landscape of Charotar's Region, Gujarat.

  Vishwamitri River Mugger Count: Gujarat Ecological Education and Research (GEER) Foundation (Gandhinagar, Gujarat) carried out a survey of a 25-km river stretch in Vadodara city as part of a flood mitigation project, with Vadodara Municipal Corporation, Vadodara. The survey was conducted by scientists, volunteers from local NGOs, and staff from the state forest department. The GEER Foundation's report shows that 442 Muggers were sighted. In 2026, the same stretch of the river was surveyed by a scholar from M.S. University, Vadodara, as part of their PhD work, resulting in a count of 412 Muggers across various age/size classes.

  Kotmi Sonar, Jangir-Champa District, Chhattisgarh: A survey was carried out by the state forest department with the help of volunteers of Nova Nature Welfare Society. The survey covered 20 waterbodies in the Kotmi-Sonar area from December 2024 to March 2025, as part of a citizen science initiative that used drones for direct day and aerial counts. The survey results show that over 200 Muggers of various sizes were inhabiting the area.

  Shivpui Waterbody, Madhya Pradesh: Mugger population was monitored by students of Prof. R.J. Rao, Jiwaji University, Gwalior, MP. Details of the study report are being finalized.

  Rapar, Kutch Mugger Survey: A survey was conducted by Mr. Yasendu Joshi, PhD scholar, in the eastern dry region of Kutch, known as Wagad, Gujarat. The survey reported 52 Muggers of various sizes across 20 man-made waterbodies. About 82% of the observed individuals were over 2 m long, indicating that sub-adult and adult crocodiles are the main age groups in the surveyed habitats. No juveniles or hatchlings were observed, which may be due to the lower detectability of smaller individuals, a lack of suitable nesting and nursery habitats in the area, or reduced reproductive success resulting from harsh environmental conditions. These artificial water sources, mainly used for irrigation during the dry season, seem to provide crucial refuges, although on a small scale, where one or two individuals can persist in a pond.

  Ongoing Research Activity

  - MSc on "Factors influencing Habitat Usage of Mugger Crocodile" was conducted from December 2025 to June 2026, by Mr. Bryan Rana Thompson, under the supervision of Prof. G.V. Gopi at the Wildlife Institute of India. The research was carried out in and around the Sathyamangalam Tiger Reserve, Mudumalai Tiger Reserve, and in Coimbatore and Erode districts of Tamil Nadu, India.

  - The following 'Multipronged approach towards conservation of the freshwater Mugger crocodiles across different habitats within India'. A number of research studies are carried out by Dr. Ratna Ghosal, Biological and Life Sciences, Ahmedabad University, Ahmedabad, Gujarat, with the help of his students and in collaboration with various organizations.

    1. Developing an Android-based application: The application for biometric identification: Created a deep learning algorithm to recognize individual mugger crocodiles by their dorsal scute patterns. The algorithm

is now being deployed and optimized on mobile devices, which reduces the computational load for on-field identification of focal crocodiles.

2. Behavioral biology: a) We identified the mating repertoire of Mugger crocodiles and characterized signature behaviours that males and females exhibit during their dyadic interactions. Additionally, we described the aggressive behaviours displayed by females during the breeding season. Furthermore, we are continuing to investigate the acoustic structure of calls produced by courting males, and work is ongoing to understand variations in call patterns across populations to explore local adaptation profiles. Data on reproductive behaviours were collected in collaboration with the Madras Crocodile Bank Trust, Chennai, and data on acoustic patterns are being analyzed in collaboration with Dr. Raghav Rajan, IISER-Pune. b) Thermoregulation is essential for ectotherms. We are monitoring the thermoregulatory patterns of Mugger crocodiles across different habitats in Gujarat, including both basking and nighttime thermoregulation to understand cooling-off patterns. We have also created a framework that connects microclimates to a heat-balance model and behavioural rules to predict when Mugger crocodiles should bask or return to water, thereby identifying the optimal basking strategy in terms of duration and frequency under ideal conditions. Any deviations from the simulated basking behaviours are linked to human-induced disturbances in the habitat.

3. Conservation physiology: Physiology is closely connected to the health and survival of living organisms. Our research group monitors reproductive hormone metabolites, stress-related hormones, and nutrition-linked hormone dynamics in Mugger crocodiles. We have validated all hormone measurements and demonstrated that hormone dynamics differ not only between populations but also between breeding and non-breeding seasons.

4. Physical well-being: Assessing the growth and physical condition of free-ranging animals is a logistical challenge. We are currently developing body condition scores for wild Muggers using a photogrammetric method based on UAV imagery. Our research is being conducted across different populations in India, where individuals experience diverse local environments, from resource-rich to resource-scarce conditions.

- The non-profit Voluntary Nature Conservancy-India (VNC), led by Anirudh Vasava, Dhaval Patel and Vishal Mistry, has worked to conserve crocodiles and reduce human-crocodile conflicts in Gujarat. VNC has equally focused on research and education. Recently, the organisation celebrated the 'Children Crocodile Festival 2025,' a community-based conservation initiative designed to encourage the local community, especially children living alongside crocodiles in this region, to emphasise their relationship with reptile species. This event is a celebration of Crocodile Conservation through fun and games aimed to: promote wildlife conservation education in the Charotar Region, Gujarat, India; and to promote awareness among children as the next generation of Mugger preservationists/guardians in the area.

Human-Crocodile Conflict

Direct and indirect instances of Human-Crocodile Conflict (HCC) have been recorded in Gujarat, Odisha, Uttar Pradesh, Uttarakhand, Karnataka, West Bengal, and Tamil Nadu. Therefore, a state-level action plan will identify these areas of concern for immediate attention.

- Mr. Baijuraj M.V., Director of the Conservation Project at Wildlife SOS (WSOS), collaborated with the Uttar Pradesh Forest Department to address human-animal conflict mitigation in the state from January 2024 to January 2026 across several districts. Fourteen (14) Mugger crocodiles of different sizes were rescued from human habitats in Firozabad and Agra Districts, U.P., and released back into their natural environment to prevent or reduce HCC. The Wildlife SOS Report mentioned three mysterious deaths of Muggers and included a postmortem. The water canal where crocodile sightings have been reported connects to Gopalpur Jhal - another canal that links to the Upper Ganga Canal, which is known to support a healthy crocodile population. Due to the potential presence of crocodiles, local Forest Department officials were alerted, and assistance was requested from the Wildlife SOS team based in Agra. Following an intensive 3-day search operation by the National Disaster Response Force (NDRF) and State Disaster Response Force (SDRF), the crocodiles were safely recovered from the canal.

- Mr. Romulus Whitaker, founder of Madras Crocodile Bank in Chennai, Tamil Nadu, has helped compile and update crocodile attack data for India, including the Andaman Islands, Sunderbans (West Bengal), Bhitarkanika (Odisha), and other locations on the mainland, for the CrocATTACK project with Mr. Brandon Sideleau, who manages the worldwide crocodile attack database.

In General: Zoo - Captive Crocodilians

- Awareness Activities, Saurashtra: Mr. Pranav Vaghashiya actively contributed to crocodile conservation, rescue, rehabilitation, and public awareness activities in the Saurashtra region in collaboration with the Vasundhara

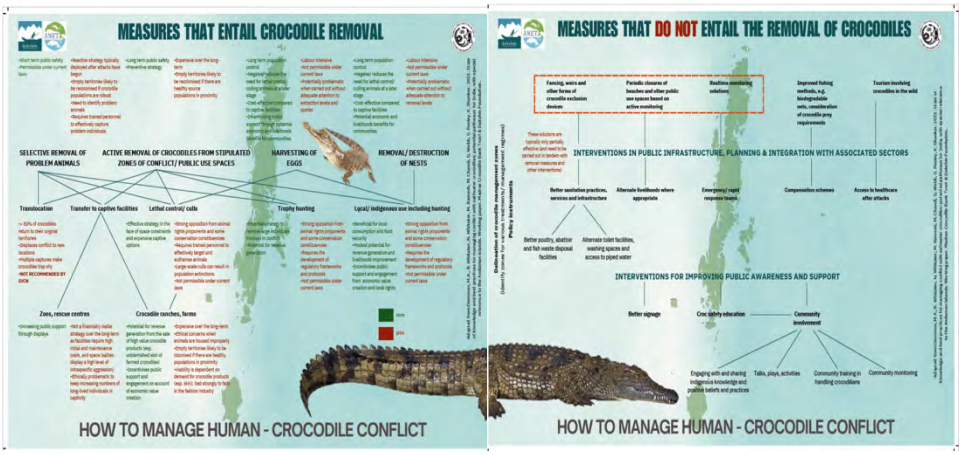
Nature Club in Junagadh and the State Forest Department, Gujarat: on the occasion of World Crocodile Day 17 June 2025; Crocodile: Conservation and Ecology 29 June 2025; Reptile Rescue and Rehabilitation Program for Forest Department 23 August 2025; Basic Protocols and Basic Training of Technical Rescue for Wildlife Division Sasan Gir on 25 February 2025 for ground level staff of forest.

- Awareness Activities, Kutch: Dr. Brinky Desai, in collaboration with Mahim Pandhi Wildlife Foundation in Kutch, Gujarat, conducts research, records, and studies the behaviour of regional wildlife, including Mugger crocodiles, to inform region-specific nature education programs and promote human-wildlife coexistence. She also designs and implements capacity-building initiatives to mitigate human-Mugger conflict in the Kutch region and has worked extensively with underprivileged schools and colleges to deliver education programs that also raise awareness about mugger habitats and encourage coexistence between local communities and wildlife. She was appointed as the focal point, along with Dr. Phoebe Griffith, for the IUCN SSC Young Professionals Task Force (YPTF), which has given her the opportunity to participate in CSG Steering Committee meetings. She actively works for the Early Career Crocodile Network (ECCN). The network was established to connect early-career individuals working with crocodilians across research, conservation, and education, providing a supportive and collaborative platform. The network that started in Southeast Asia has now gone global after receiving requests from early-career researchers worldwide. Through regular online meetings, expert talks, workshops, and peer-to-peer interactions, ECCN facilitates knowledge exchange, mentorship, and global networking opportunities, helping bridge the gap between emerging researchers and established experts in the field.

- **MCBT Report & Activities**

Survey of Kollidam River, Tamil Nadu: A study was conducted by Dr. Nikhil Whitaker and staff of Madras Crocodile Bank Trust (MCBT), from February to October 2025. This collaborative study assessed Mugger crocodiles along 186 km of the river. Using spotlight surveys and GIS analysis, they estimated 131-143 individuals in summer (0.77/km) and 91-101 during the monsoon (0.54/km). Crocodiles were concentrated in deeper pools during summer and dispersed as water levels rose during the monsoon. Preferred habitats included sandy banks, slow-moving pools, and gentle slopes used for basking and nesting. The ichthyofaunal survey recorded 26 fish species across 10 families, with Cyprinidae, Bagridae, and Cichlidae being dominant. Anaikkarai's population highlights the regional importance of Mugger crocodile conservation, with recommendations for eco-tourism, tagging, and rescue training.

Andaman Crocodile Conflict & Action: Mr. Romulus Whitaker, created a poster on 'HOW TO MANAGE HUMAN-CROCODILE CONFLICT' for the Andaman Islands to address awareness and reduce attacks from Saltwater crocodiles (see below and here). The project included a productive meeting at the ANET field station in the Andamans with a group of collaborating organizations, including the Madras Crocodile Bank/Centre for Herpetology, the Dakshin Foundation's ANET field station, and others (Meera Anna Oommen, Nikhil Whitaker, Madhuri Ramesh, Manish Chandi, Grahame Webb, Simon Pooley, Kartik Shanker). They conjointly produced a working document titled "State of Knowledge and Best Practices for Managing Conflict with Saltwater Crocodiles: Potential Pathways for India" (Oommen *et al*. 2021), which focused on the Andaman Islands.



Celebration: 50 years of India's Efforts to Conserve Crocodiles

- On 17 June 2025, all CSG members from Gujarat State, after celebrating events, recommended to the Principal Conservator of Forest (PCCF) and Wildlife Warden, Gujarat, to include 'Crocodile Watch Location in Gujarat' on the tourist map of Gujarat. This suggestion aimed to commemorate the 50th anniversary of crocodile conservation in India, led by Prof. B.C. Choudhury. The recommendation is currently pending at the PCCF office for further review.

- Prof B.C. Choudhury facilitated the organization of several “50 years of Crocodile Conservation in India” through various state-level events in Bhubaneswar, State Forest Department, Odisha; 4th National Conference on lesser-known species of Central Indian Landscape, SNHC, Bhopal, Madhya Pradesh; Gujarat Institute of Desert Ecology (GIDE), Bhuj; and Charotar, Voluntary Nature Conservancy-India, Gujarat. Further events were organized in Kolkata and Hyderabad, where talks on 50 years of crocodile conservation in India.

- Dr. Raju Vyas delivered a presentation on 50 years of Crocodile Conservation in India and Crocodile Conservation Awareness during Wildlife Week in October 2025 at Gujarat Institute of Desert Ecology (GIDE), Bhuj, Gujarat, and at the Charotar Crocodile Count in January 2026, organized by Voluntary Nature Conservancy-India, Gujarat.

- Dr. Rajeev Chauhan celebrated 50 years of the Crocodile Conservation Project in India on World Crocodile Day, 17 June 2025. It featured a joint effort by the Forest Department and the Society for Conservation of Nature (SCON), Etawa, Uttar Pradesh. The Society for Conservation of Nature, Etawah, plays a vital role in raising awareness and educating local communities about the importance of protecting these species in the Yamuna and Chambal Rivers. Through nature walks, awareness campaigns, and school programs, the society encourages people to coexist peacefully with wildlife and recognize their ecological importance.

Publications

Abedin I, Singha H, Singh S, Mukherjee T, Kim H.-W, Kundu S, 2025. Riverine Realities: Evaluating Climate Change Impacts on Habitat Dynamics of the Critically Endangered Gharial (*Gavialis gangeticus*) in the Indian Landscape. *Animals 15:* 896. https://doi.org/10.3390/ani15060896

Banerjee D, Bauri P, Bhutia A, Danda AA, Kar MK, Khan MS, Ray D, Sen A, 2025. Reintroduction of Gharials (*Gavialis gangeticus*) in the Lower Ganga River, Murshidabad, West Bengal, India. Reptiles & Amphibians 32: e23010 https://doi.org/10.17161/randa.v32i1.23010

Department of Forests, Government of Bengal, 2025. Population Assessment & Habitat Ecology Study of Saltwater Crocodiles in Sundarbans, 2025, Sundarban Biosphere Reserve, Department of Forests, Government of West Bengal. Pp. 55.

Desai B, Bhowmik T, Srinivasan R, Whitaker N, Ghosal R, 2024. Monitoring stress physiology of free-ranging mugger crocodiles (*Crocodylus palustris*) across diverse habitats within central Gujarat, India. *Conservation Physiology*, 12(1), coae035.

Desai B, Bhowmik T, Wadekar A, Bhatt U, Ghosal R, 2025. Investigating reproductive biology of female mugger crocodiles (*Crocodylus palustris*) by using behaviour and endocrine measures. *Applied Animal Behaviour Science,* 292, 106832.

Erfani M, Elham A, Mobaraki A, Haji GK, Pandi D, Stevenson C, Ziegler T, Rödder D, De Silva A, Whitaker N, Le MD, Samarasinghe D, Vasava A, Karunarathna S, 2025. Nuchal scalation patterns in Iranian Mugger crocodiles (*Crocodylus palustris* Lesson, 1831) point to an overlooked conservation unit, *Journal of Wildlife and Biodiversity* 9(4): 153–167. https://doi.org/10.5281/zenodo.18222676

Parida SN, Tripathy PS, Kumar N, Rout AK, Panda A, Dobriyal MJ, Parida PK, Behera BK, 2025. The evaluation of prospects for human and saltwater crocodile (*Crocodylus porosus*) conflict: the case of coastal Bhitarkanika National Park, India. *Front. Amphib. Reptile Sci*. 3:1639071. https://doi.org/10.3389/famrs.2025.1639071

Rath LP, Dash SK, Mohapatra RK, Patnaik A, Khan A, Maharana S, 2025. Exploring the human dimensions of gharial conservation in the Mahanadi River, India. *Wildlife Research* 52: WR24088. https://doi.org/10.1071/WR24088

Rao RJ, Sharma RK, 2026. A Bibliographic Compendium of Wildlife Conservation and Research in the National Chambal Sanctuary, India.

Singh LAK, 2025. Crocodile Conservation: 50-years in Odisha, India, with a selected Bibliography. *Cheetal* 62(2) (2025): 74–85.

Sharma SP, Katdare S, Badola R, Hussain SA, 2025. Unraveling Population Trend of a Critically Endangered Freshwater Crocodylian, Gharial (*Gavialis gangeticus*) in the National Chambal Sanctuary, India. *Ecology and Evolution* 15: e72643. https://doi.org/10.1002/ece3.72643

Stevenson C, De Silva A, Vyas R, Mobaraki A, 2025. Crocodiles. Status Survey and Conservation Action Plan: Mugger Crocodile *Crocodylus palustris,* Fourth Edition, ed. by S.C. Manolis & C. Stevenson. CSG: Darwin.www.iucncsg.org/365_docs/attachments/ protarea/1b50c4af9119656246f593e34497385e.pdf

Vaghashiya P, Chauhan D, Vyas R. 2025. Nesting and Parental Care by a Disabled Mugger Crocodile (*Crocodylus palustris*) and a Record of a Congenital Defect in a Hatchling from Junagadh, Gujarat, India. *IRCF Reptiles & Amphibians* 32: e22290. https://doi.org/10.17161/randa.v32i1.22290

Vyas R, Chauhan D, Vaghashiya P, Patel H, 2024. Noteworthy observations on food and feeding behaviors of mugger crocodiles (*Crocodylus palustris* Lesson) at Lal Dhori, Girnar Wildlife Sanctuary, Gujarat, India. *Journal of Animal Diversity* 6 (1): http://jad.lu.ac.ir/article-1-432-en.html

Whitaker N, 2025. A preliminary survey of the mugger crocodile (*Crocodylus palustris*) at Baghdarrah Lake, Udaipur, Rajasthan, India. *CSG Newsletter* 44 (2):10-13.

Whitaker N, 2025. A second survey of Baghdarrah Crocodile Conservation Reserve, Udaipur, Rajasthan. Report to Madras Crocodile Bank Trust. Pp. 12. (Unpublished).

Whitaker N, Lakshmanan R, Samuel A, Krishnamoorthy B, 2025. Husbandry and Veterinary Protocols for Reptiles in Captivity. *Indian Zoo Yearbook* 10: 131-147.

WII-GACMC, 2025. Population Status and Conservation Action Plan for Critically endangered
Gharial (*Gavialis gangeticus*) in the Ganga River Basin. Ganga Aqualife Conservation Monitoring Centre, National Centre for River Research, Wildlife Institute of India, Dehra Dun, Uttarakhand,
India. Pp. 80.

Whitaker N, Jesudasan A, Muthiah G, Ahmed S, Tiruvarur V., 2026. Population studies on the mugger crocodile (*Crocodylus palustris*) on the Cauvery River, Tamil Nadu. A report submitted to the Tamil Nadu Forest Department. Pp. 122. (Unpublished).

CSG members reveal: A bibliographic compendium of Wildlife Conservation and Research in the National Chambal Sanctuary, India. Compilation by R.J. Rao and R.K. Sharma (2026). Report submitted to Madhya Pradesh Forest Department, Bhopal, India, on the occasion of the 50-year celebration of the Indian Crocodile Project.

Country Report prepared by: Raju Vyas and B.C. Choudhury, with valuable inputs from R.K. Sharma; Sudhakar Kar (Orissa Forest Department); Anirudh Vasava, Dhaval Patel and Vishal Mistry (Voluntary Nature Conservancy, Gujarat); Brinky Desai (Mahim Pandhi Wildlife Foundation in Kutch, Gujarat); R.J. Rao (Gwalior, Madya Pradesh); Shailendra Singh (Turtle Survival Alliance Foundation - India, Lucknow, UP); Baijuraj M.V. (Wildlife SOS, Agra, U.P.); Pranav Vaghasiya (Vasundhara Nature Club, Junagadh); Jeffrey Lang (U. North Dakota, Senior Scientific Adviser, GEP & MCBT) and Jailabdeen Ajjim (Gharial Ecology Project & Madras Crocodile Bank Trust); Ratna Ghosal (Biological and Life Sciences School of Arts and Sciences, Ahmedabad University, Ahmedabad, Gujarat); Mohd Shahnawaj (Lead-Aquatic Species & Habitats, WWF-India); Yeshendu Joshi (National Centre for Biological Sciences (NCBS), Bangalore); Rajeev Chauhan (Conservation of Nature (SCON), Etawa, Uttar Pradesh); Abhijit Das

(Wildlife Institute India); Nikhil Whitaker (Madras Crocodile Bank Trust, Tamil Nadu) and Romulus Whitaker (Madras Crocodile Bank Trust/Centre for Herpetology, Chennai, Tamil Nadu).

NEPAL

In Nepal, the two species of freshwater crocodiles, Mugger (*Crocodylus palustris*) and Gharial (*Gavialis gangeticus*), occur primarily in major rivers and wetlands in southern lowland Terai region.

Gharial (*Gavialis gangeticus*)

Distribution*:* In Nepal, Gharials occur primarily in the Chitwan National Park (Narayani-Rapti River system) and Bardiya National Park (Karnali and Babai Rivers). Two former populations of Gharials in Koshi and Mahakali have become extinct. Reintroduction efforts have been initiated to re-establish the Gharial populations with release of captive-raised animals from Gharial Conservation Breeding Center (Kasara, Chitwan). In Koshi River, 95 Gharials released between 1981 and 2010 (DNPWC 2018) and additional 20 Gharials were released in Koshi in 2022, with no evidence of survival. Similarly, 10 Gharials (5M, 5F) were released in West Rapti River (Banke National Park) in 2023, with report of a few Gharials in following years too. Similarly, 25 Gharials (3M, 22F) were reintroduced in 2024 in Chaudar River, a tributary of Mahakali River, in Shuklaphanta National Park (DNPWC 2024). However, their status is not known and believed to be washed by the flood in the following season as no reports of Gharials in following years.

Population:

a. Wild Gharial: Recent population survey in Chitwan shows 366 Gharials (9 adult males) in Rapti (231) and Narayani (135) Rivers (CNP 2026). Details of the population structure is not available from the recent survey. The following table shows the population structure based on survey in 2018/2019.

Location	River	Adult	Sub-adult	Juvenile & yearling	Total	Remarks
Chtiwan NP	Rapti	36	12	70	**118**	Poudyal *et al.* (2018)
	Narayani	31	54	16	**101**	
Bardiya NP	Babai	10	6	3	**19**	Bashyal *et al.* (2021). Irregular movement of adult Gharial into the Karnali and Mohana, often outside of census season, from the downstream Katerniaghat National Park are reported annually, with a small number of nests in both rivers 2023-2025.
	Karnali	1	0	0	**1**	
	Mohana	NA	NA	NA	**NA**	Some Gharials are reported in this river with no population estimate information available
Koshi Tappu WR	Koshi	NA	NA	NA	**NA**	20 released in 2022
Banke NP	West-Rapti	NA	NA	NA	**NA**	10 released in 2023
Shuklaphanta NP	Chaudhar	NA	NA	NA	**NA**	Planned for release of 20 Gharials in 2024

Average (min-max) of Gharial surveys by Khadka *et al.* (2024), from 2018-2022, indicated an increasing Gharial population of at least 234 by 2022.

River	Adults	Sub-adults	Juveniles	Hatchlings	Total
Rapti	27 (17-38)	65 (35-104)	5 (0-11)	0	97 (64-131
Narayani	33 (25-40)	65 (41-84)	3 (0-10)	3 (0-9)	104 (84-120)

b. Captive Gharial: There are over 600 individuals at Gharial Conservation Breeding Center, Kasara, Chitwan NP. Similarly, the Gharial Breeding Center in Bardia has ~100 Gharials.

Conservation measures: Gharials are legally protected in Nepal by the 'National Parks and Wildlife Conservation Act 2073'. Gharial Conservation Breeding Center was established in 1978, in Chitwan National Park (Kasara) and another breeding center has been established in Bardia National Park. Over 2000 Gharials raised in these breeding centers have been released in the various rivers. Nepal formulated and implemented the Gharial Conservation Action Plan (2018-2022). Revision of the Action Plan is currently ongoing. Management plans of Chitwan and Bardia has also prioritized Gharial conservation. Various initiatives by community and conservation organizations for Gharial conservation has

been initiated to ensure long-term survival of Gharial in Nepal. Awareness and community engagement programs in Nepal, especially in Chitwan, have been led by individuals and organisations, such as the Gharial Conservation Fair by Care for Nature and collaborators, most recently in December 2023.

Mugger (*Crocodylus palustris)*

Distribution: Mugger crocodile has a wider distribution than Gharials. They occur in the rivers and lakes of Koshi Tappu WR, Chitwan NP, Banke NP, Bardiya NP, Shuklaphanta NP. Outside of the PA system, Muggers are also recorded in Ghodaghodi Lake, a Ramsar site in western Nepal.

Population: Population surveys of Mugger crocodile are not conducted on a regular basis, thus, comprehensive information is not available. Survey of Muggers in Chitwan's lakes and ponds showed 245 Muggers in 2014 (Khadka *et al.* 2014). In Koshi, 35 Muggers were reported in 2022 (Bhattarai *et al.* 2022). Basyal *et al.* (2021) reported sighting of 65 Muggers in Bardia during survey of Gharials in 2019. In Ghodaghodi Lake, 26 Muggers were reported by (Lamichhane *et al*. 2022). A survey in Chitwan's largest rivers (Narayani, Rapti, Dhungre and Budhi Rapti) had a minimum count of 120 Muggers (90 adults) in 2021 (Khadka 2022).

References

Bashyal, A., Shrestha, S., Luitel, K. P., Yadav, B. P., Khadka, B., Lang, J. W., & Densmore, L. D. (2021). Gharials (*Gavialis gangeticus*) in Bardiya National Park, Nepal: population, habitat and threats. Aquatic Conservation: Marine and Freshwater Ecosystems 31(9): 2594-2602.

Bhattarai, D., Lamichhane, S., Pandeya, P., Bhattarai, S., Gautam, J., Kandel, R.C. and Pokheral, C.P. (2022). Status, distribution and habitat use by Mugger crocodile (*Crocodylus palustris*) in and around Koshi Tappu Wildlife Reserve, Nepal. Heliyon 8(8).

CNP. (2026). Press Release of Gharial Survey in Rapti and Naryani Rivers. Chitwan National Park Office, Kasara, Chitwan.

DNPWC. (2018). Gharial Conservation Action Plan for Nepal (2018-2022). Department of National Parks and Wildlife Conservation, Kathmandu, Nepal.

DNPWC. (2024). Annual Report 2023/2024. Department of National Parks and Wildlife Conservation, Kathmandu, Nepal.

Khadka, B.B. (2022). Habitat Assessment of the Rapti and Narayani Rivers and their Tributaries in Chitwan National Park. WWF Nepal: Nepal.

Khadka, B.B., Bashyal, A. and Griffith, P. (2024). Population changes in gharial (*Gavialis gangeticus*) vary spatially in Chitwan National Park, Nepal. Reptiles & Amphibians 31.1 (2024): e21018-e21018.

Khadka, B.B., Maharjan, A., Thapalia, B.P. and Lamichhane, B.R. (2014). Population status of the mugger in Chitwan National Park, Nepal. Crocodile Specialist Group Newsletter 33(3): 9-12.

Lamichhane, S., Bhattarai, D., Karki, J.B., Gautam, A.P., Pandeya, P., Tripathi, S. and Mahat, N. (2022). Population status, habitat occupancy and conservation threats to Mugger crocodile (*Crocodylus palustris*) in Ghodaghodi lake complex, Nepal. Global Ecology and Conservation 33: e01977.

Poudyal, L.P., Dahal, B., Lamichhane, B.R., Giri, S.R., Rayamajhi, B., Shrestha, P., Khadka, B.B. and Shrestha, P. (2018). Population Status and Distribution of Gharial in Rivers of Chitwan National Park. Chitwan National Park Office: Kasara, Chitwan.

Country Report prepared by: Babu Ram Lamichhane, with input by Phoebe Griffith

---

SRI LANKA

Currently, we are conducting the following programs on crocodiles:

1. Population and Distribution: A population count of Saltwater crocodiles (*Crocodylus porosus*) in Sri Lanka has been completed. This objective of this work was to collect data on population density and distribution status across

the island. This data will be used to minimise conflicts between crocodiles and humans. These data sets are currently being analysed.

2. Human-Crocodile Conflict (HCC) and Ecotourism: Reports of conflict between crocodiles and humans in the wet zone of Sri Lanka are rising, particularly in the Nilwala River. To address this, awareness programs have been launched alongside the development of a crocodile-based ecotourism industry. Currently, about 10 boats are operating in this sector. 'Crocodile Watching Tours' are becoming increasingly popular among both local and foreign tourists. The primary objective is to generate a source of income for the local community through crocodile conservation. We are currently conducting follow-up assessments, tourism attraction activities, and awareness sessions.

3. Public Complaint Analysis and Mitigation: There is a noticeable growth in the crocodile population, especially in the wet zone. Consequently, reports of HCC and complaints regarding potential crocodile threats are increasing. As a remedy, an analysis of public complaints was conducted, and the "Kelani" and "Kalu River Basin" were identified as two major regions (in addition to the Nilwala River) where such conflicts were likely to arise by 2023. To manage these situations, 22 awareness programs have already been completed across the wet zone, specifically targeting government field officers.

4. Conservation and Management Research: In collaboration with the Department of Wildlife Conservation (DWC), a study is currently being conducted regarding the conservation and management of Saltwater crocodiles in the wet zone. This research focuses on their distribution, population growth, and migration in the new environments (including the underlying causes) for the management of conflicts between high human population density and crocodiles, as well as the specific environmental characteristics of areas where these conflicts occur.

Publications

de Silva, A. (2024). Crocodiles of Sri Lanka: a Monograph. WILDLANKA 12(2): 246-391.

Proctor, T.L., Rathnasiri, P. and Honarvar, S. (2025). Preliminary data on saltwater crocodiles, *Crocodylus porosus* Schneider, 1801, and an updated assessment of threats in the Nilwala River, Matara, Sri Lanka. Herpetology Notes 18: 361-363.

Country Report prepared by: Predeep Rathnasiri, Trevor Proctor and Anslem de Silva

---

Assembled by: Anslem de Silva, CSG Regional Chair, South Asia & Iran.
Date: 4 April 2026

Crocodile Specialist Group Steering Committee Meeting
Agadir, Morocco
(12 May 2026)

Australia and Oceania

Three species of crocodilian are endemic to the Australia & Oceania region; *Crocodylus porosus*, *C. novaeguineae* (Papua New Guinea only) and *C. johnstoni* (Australia only). *Crocodylus halli* (Papua New Guinea) has not been recognised by the CSG, pending further DNA analysis to confirmation its validity as a species.

Australia
In late-2021, the Department of Climate Change, Energy, the Environment and Water (DCCEEW), initiated a process to review the *Code of Practice on the Humane Treatment of Wild and Farmed Australian Crocodiles* ("the Code") in conjunction with the relevant State/Territory Governments (Western Australia, Northern Territory, Queensland). The Code, endorsed by the Natural Resource Management Ministerial Council (NRMMC) in 2009, sets out the framework and standards for the humane capture, restraining and housing of both wild and farmed crocodiles in Australia. While the intention was for the Code to be reviewed after 10 years, this has not occurred and given recent advances in science, technology, and husbandry practices, it was broadly accepted by the relevant State/Territory Governments and industry stakeholders that a review was merited. In July 2023, an independent review of the Code began, to ensure the Australian crocodile farming industry continues to be managed to world class standards. Key stakeholder consultation commenced in 2024 with the review process completed by early 2025. It is believed that the updated Code has yet to be endorsed by the Federal Minister for DCCEEW.

Northern Territory
The *C. porosus* population in the Northern Territory has increased since intensive unregulated hunting (1945-1971) and is now estimated at around 102,000 non-hatchlings, with 15% of the crocodile population currently between 2.7 m and 3.0 m in length (Fukuda and McLeod 2025). Monitoring of the population has consistently occurred since 1975, with only minor gaps in the record (see Fukuda *et al*. 2021). Results have been consistent with recent trends, showing either stable (believed to have reached an asymptote) or increases in both numbers and in biomass (more larger crocodiles observed) (Fukuda and McLeod 2025).

The risks to humans associated with *C. porosus* in the Northern Territory are managed under the "Northern Territory Saltwater Crocodile (*Crocodylus porosus*) Risk Management Framework 2021-2026" which is currently under review. The number of problem crocodiles removed for public safety and to protect stock in pastoral areas has been increasing over the last two decades, in line with the increasing crocodile population (Fukuda and McLeod 2025). In 2023-2024, 239 problem *C. porosus* (74.5% males) were removed from the wild with the majority (66.5%) from Darwin Harbour, and 93.7% from the Greater Darwin Region (Fukuda and McLeod 2025).

In 2024, the latest edition of the Management Program for the Saltwater Crocodile in the Northern Territory (2024-2034) was released. Previous programs had a 5-year lifespan, but this program will be in place for a 10-year period. Its purpose is to ensure the "*protection, conservation, sustainable use, control and management"* of *C. porosus* in accordance with the *Territory Parks and Wildlife Conservation Act 1976*. Its objectives are to maintain crocodile populations at accepted densities, enable a robust and profitable crocodile industry, enhance Aboriginal livelihoods, enhance public safety, and improve community awareness.

The year 2025 marked the review, approval and release of the latest edition of the "Wildlife Trade Management Plan (WTMP) for the *C. porosus* in the Northern Territory of Australia 2026-2030". The purpose of this document is to ensure the sustainability of commercially harvested Saltwater crocodiles in the Northern Territory, and specifically to fulfill the requirements under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The objective of the WTMP is to balance sustainability with industry growth, maximizing economic benefits to all stakeholders whilst promoting long-term species conservation.

In the Northern Territory, there are annual harvest ceilings of 90,000 viable eggs and 1200 non-hatchling Saltwater crocodiles that can lawfully be removed from the wild. These eggs and a proportion of these crocodiles are used to supply the crocodile farming industry. Live crocodiles that do not supply the farming industry are removed either by departmental staff, or under permit to reduce risk to humans. In 2023-2024, 46,078 viable eggs were collected and 36 non-hatchlings (+239 problem crocodiles) were removed (Fukuda and McLeod 2025). There are currently 14 facilities in the Northern Territory with permits to farm crocodiles. It is estimated the Northern Territory's crocodile industry will contribute

$AUD151 million to the local economy and support 335 direct and indirect jobs each year, with $AUD46 million of annual revenue generated directly by crocodile farms.

Recent research involving *C. porosus* in the Northern Territory includes population genetic assignments to identify the natal origin of problem crocodiles captured in Darwin Harbour (Fukuda *et al.* 2024), evaluating insignificant influences of crocodile density on the rate of attacks (Baker *et al*. 2024), exploring possible effects of jumping crocodile tours on the increase in crocodile abundance and biomass (Baker *et al*. 2025), and quantifying the ecological role of Saltwater crocodiles by estimating energy requirements and nutrient contributions over the last 50-year population recovery (Campbell *et al*. 2025).

Monitoring of two *C. johnstoni* populations (Mary River, Daly River) in 2025 suggest that both populations continue to decline, possibly due to upstream movement of *C. porosus,* but mainly as a result of ingestion of cane toads. However, *C. johnstoni* are commonly observed in waterways.

Queensland
Unlike in the Northern Territory, Saltwater crocodile monitoring in Queensland has been sporadic and inconsistent over time, with comprehensive state-wide monitoring only occurring in the late 1980s, late 1990s/early 2000s and again in 2016-2019. A summary report of the 2016-2019 survey results and historical analyses (1985-2019) was released by the Department of Environment and Science in mid-2021. The results revealed a current population of 20,000-30,000 non-hatchlings at an average density of 1 crocodile/km, which has increased since the 1980s. However, recovery has been relatively slow and highly variable across the state at around 2% on average each year (Taplin *et al.* 2020). While numbers in some rivers appear to have stabilized as early as the 1980s (eg Wenlock River, northwestern Cape York), in other rivers (eg Norman River, Gulf of Carpentaria) numbers continue to increase. Saltwater crocodiles occupy a diverse range of habitat types in Queensland (13 defined crocodile bioregions), most of which are considered marginal or sub-optimal for crocodiles. The population is also largely riverine with the majority (>90%) found below 20 m elevation.

Saltwater crocodiles in Queensland are managed under the *Queensland Crocodile Management Plan*. Because of increasing crocodile and human populations, especially along the populated east coast between Cooktown and Ayr, there has been increasing human-crocodile conflict in Queensland over the last two decades. Since 1975, there have been 60 crocodile attacks (21 fatal, as of February 2026) on humans, with 6 fatal attacks recorded in the last 5 years. In response to the increasing conflict, the department has removed a record number of problem crocodiles (>450 total, mostly >2 m in size) over the last decade largely from the populated east coast (Cooktown-Ayr; Taplin *et al.* 2020), and an additional 353 crocodiles between 2020 and 2025. While the average size of crocodile has been increasing throughout the state, it has decreased along the populated east coast and this is believed to be a consequence of the removal program. Australian Freshwater crocodiles pose little threat to humans with attacks rare.

In 2025, the Katter Australian Party proposed a Bill to establish a Queensland Crocodile Authority to manage crocodiles in Queensland, which included culling and safari-style hunting. This was met with strong opposition from scientists, conservationists, and local councils, and was rejected. A threshold harvest model was also developed for Queensland (L. Taplin, unpubl.), should the state require a significant increase in removal, to reduce human-crocodile risk. Queensland released an updated Crocodile Management Program late in December 2025. Changes from the previous management plan were of little consequence and included simplification of management zones and inclusion of some peripheral areas of habitat.

Historically, the commercial utilization of *C. porosus* in Queensland has been restricted to captive-bred animals, problem crocodiles received through the management program, and eggs and stock imported from the Northern Territory. It only became lawful to harvest wild *C. porosus* eggs in Queensland in 2018 under the *Nature Conservation (Estuarine Crocodile) Conservation Plan 2018*, with only one group currently permitted to collect in northern Cape York Peninsula. Currently eight crocodile farms are operating in Queensland, with one new facility established in 2024.

Given the increase in human-crocodile interactions, the Queensland Government has continued to invest heavily in research to reduce the likelihood of attacks and improve detection. Ongoing research into projects developing automated mobile crocodile detection units, and the development of a sonar detection buoy are both under prototype development and testing. The intent of these systems is to provide timely localized alerts, to assist the public in assessing crocodile risk, as well as supporting crocodile management decision making. Additional work has been invested in recent years into eDNA detection of *C. porosus* from water samples, as a monitoring tool to detect cryptic individuals across the species Australian distribution (likely global - untested). The assay development led by researchers at the University of Canberra is sensitive for *C. porosus* across its global distribution, however discounts *C. johnstoni* as closest local relative. The assay has not yet been tested on other crocodilian species.

Recent genetic research found that the Saltwater crocodile population in Queensland is broadly divided into six populations with ~90% of crocodiles dispersing less than 50 km from their place of birth (Lloyd-Jones *et al*. 2023). This genetic understanding led to satellite tracking of crocodiles in the Proserpine River due to significant density of very large crocodiles, yet apparent genetic isolation of the system. Satellite telemetry data is currently under analysis against coastal surface water movements, to understand future risk to the surrounding tourist area of Airlie Beach and the Whitsunday

Islands. Additionally, significant research into the Fitzroy River *C. porosus* population, as the most southern population globally. With increasing concern of potential human interaction, planning is underway to test *in situ* translocation and satellite tracking of crocodiles within the catchment, as well as ongoing assessment of nesting and recruitment into the population. Aversive conditioning (Booth *et al.* 2020) continues to be investigated as a management tool, in areas such as national parks away from densely populated areas.

Populations of *C. johnstoni* in Queensland are considered to be secure and abundant.

Western Australia
Regular monitoring of the Saltwater crocodile population in the Cambridge Gulf region (Ord River, West Arm) occurred through aerial daytime surveys between 1992 and 2012, with spotlight surveys occurring sporadically. Currently, population monitoring is restricted to an annual spotlight survey of the King River, which has been surveyed consistently since 1989 (1989-1990, 1992-2015, 2017-2020, 2023-2024). The Ord River is surveyed less frequently (every 5 years), with the latest survey being carried out in 2024. Results for both areas indicate that the *C. porosus* population continues to increase at a relatively high rate (3-7% p.a.), with no sign of stabilizing yet. Cattle grazing remains a potential threat to some nesting habitats.

The increasing *C. porosus* population has led to increasing HCC which prompted authorities to implement a public safety program, like the "Be Crocwise" program in the Northern Territory and Queensland. Legal harvesting of juveniles, sub-adults, adults and eggs was undertaken in West Arm between 1989 and 1994 to provide stock for crocodile farms, however only one farm is currently in operation, in Broome, and it is based solely on captive breeding.

The available data suggest that *C. johnstoni* in Western Australia have not been impacted in the same manner by cane toads as have populations in the Northern Territory, where high mortalities in some areas were reported. Saltwater crocodiles have a much higher tolerance of cane toad toxin than *C. johnstoni*, and colonisation the toads is not expected to have a direct negative impact on the former. Freshwater crocodile populations in Western Australia, particularly in Lake Argyle and Lake Kununurra are large and secure.

Palau
Palau has a small stable *C. porosus* population estimated at less than 1000 individuals (Joshua Eberdong, pers. comm.). Crocodiles are not currently protected by law, and are sometimes killed and eaten, but at a rate not considered detrimental to their conservation.

Papua New Guinea
The latest report published by the Conservation and Environment Protection Authority (CEPA) indicated a fluctuating but stable Saltwater crocodile population within the area surveyed in 2020. Degradation of habitat by introduced fish species and burning during dry years continues to affect nesting habitats, although nest monitoring indicates positive trends for both *C. porosus* and *C. novaeguineae*. Due to financial constraints, the CEPA has not been able to conduct nest count surveys for *C. novaeguineae* or *C. porosus* since March 2020.

In 2024 and 2025, the annual wild *C. porosus* egg harvest in the Middle Sepik River, organized by Mainland Holdings Ltd and in collaboration with the NGO Sepik Wetlands Management Initiative, managed to harvest a combined 15,664 fertile wild *C. porosus* eggs. In 2024, 87 resources owners (from 19 villages) supplied 8899 fertile eggs and in 2025, 61 suppliers from 14 villages participated in the harvest (6765 fertile eggs harvested). Despite the many business challenges and the high inflation affecting the PNG economy, Mainland Holdings Ltd continues to support the crocodile conservation program in PNG with its annual wild crocodile eggs harvest in the Middle Sepik River that has the full backing of the local communities.

As previously reported, the quantity of wild skins exported from PNG is still experiencing a downward trend. Since the Covid-19 pandemic, Mainland Holdings Ltd is now the only remaining exporter of wild crocodile skins from PNG. This is mainly due to a combination of low prices, the prohibitive cost of domestic transport and often challenging logistical difficulties to travel in PNG and, of course, the ever-stricter grading standards imposed by the industry, making it often uneconomical for the local hunters living in the remote areas to sell and deliver their croc skins. Starting in early 2025, at the request of its customer because of low demand by the manufacturers of crocodilian leather products and the general low quality of the wild skins, the company also stopped purchasing *C. novaeguineae* from local hunters. The increasing number of crocodile attacks in major coastal tributaries has also been attributed to a reduction in wild hunting by landowners due to the tighter grading and people venturing into alternative businesses that have greater returns on effort.

Brandon Sideleau (Charles Darwin University) completed fieldwork for his PhD work, dealing with HCC throughout PNG. Surveys involved interviews with residents and community leaders, and police/medical presence was absent in most areas, so secondary verification was impossible. Most incidents were reported from the East Sepik, followed by West New Britain, Western Province, and Gulf Province over the 2015-2024 period. Most victims were male, and most attacks occurred during fishing or activities related to deficiencies in Water, Sanitation and Hygiene (WASH) infrastructure. No significant change in overall attack frequency was detected over the study period, except for a significant increase in non-fatal attacks in East Sepik Province; this absence of temporal trend may reflect inaccuracies

in residents' recall of incident dates or may indicate that attacks have been a persistent problem in PNG for many decades with little change. Brandon was supported by Jerry Wana (Sepik Wetlands Management Initiative) who conducted the East Sepik surveys, and Prof. Ralph Mana who did Central and Manus. Results of this study will be reported at the Working Meeting.

The drafting of an Amendments Bill to amend the Crocodile Trade (Protection) Act 1974 was announced by the Managing Director for Conservation and Environment Protection Authority in June 2021. The process was completed with the involvement and review of the current legislation and a series of consultations to assess the needs and priorities of PNG's crocodile skin trade. The Amendments Bill had some structural issues and was returned to CEPA by the Department of Justice and Attorney General (DJAG) - Office of the State Solicitor, on 28 October 2024: the Bill had to be tidied up to reflect the indention behind the proposed provisions; certain provision of the bill were obsolete or did not exist; and, it had to repeal and replace the entire legislation as opposed to trying to fit into new concepts of the existing law. The matrix was sent to CEPA towards the end of 2024, and in 2025 changes were made to that effect to respond to the matrix sent by DJAG. At this stage, the Bill is still with CEPA, and although it has been finalized, it has not yet been sent to DJAG. Once DJAG is satisfied with all the structural issues of the Bill, the submission will then go to the Legislative Counsel for endorsement to Parliament.

Timor-Leste

The Government of the Northern Territory of Australia (NTG) was recently asked to form a partnership with the Timor-Leste Government (GoTL) to explore the first steps in developing a Saltwater crocodile management program. The program would aim at reducing the risk to humans as there is a growing interest in marketing Timor-Leste as an international destination for tourists interested in scenic beaches and water-based activities. Five NTG staff (Griffiths, McLeod, Fukuda, Jacobson and Ewin) visited Timor-Leste in October and November 2025, to open dialogue with GoTL officials, politicians and on-ground staff which indicated support for the development of a crocodile management program. A workshop was held where multiple GoTL departments were represented, and potential strategies presented. Preliminary field surveys aimed at upskilling staff in survey techniques were also conducted near Baucau and Lospalos (Lake Ira Lalaro). Given the cultural significance of *C. porosus* in Timor-Leste, cost-effective management could integrate stakeholder groups, especially traditional elders and local knowledge holders (Brackhane *et al.* 2019, 2024).

In response to crocodile attacks, the GoTL has established warning signs at known crocodile spots and is regularly visiting affected communities to raise public awareness. Government has also constructed a crocodile enclosure in Hera, near Dili, to facilitate the housing of problem crocodiles. Community-based monitoring has been conducted in various communities in Lautem and Viqueque to assess data on crocodile habitat and attacks, integrating the knowledge of local stakeholders (Brackhane *et al.* 2019, 2024).

DNA analysis of *C. porosus* samples collected from across both north and south coasts showed no genetic connectivity between Timor-Leste and Australia. Genetically, the Timorese *C. porosus* were much closer to populations from other Asian countries than to those from Australia.

Solomon Islands

The Saltwater crocodile population in SI has recovered significantly, leading to increasing conflict, including attacks. Activities since 2024 include:

- Implementation of a national management plan (2023-2027) via Ministry of Environment Climate Change Disaster Management (MECDM) and Meteorology and Environment and Conservation Division (ECD) annual workplans and MFMR work programs.
- Reviewing of proposal with the CITES Management Authority (ECD) to lift the Fisheries ban regulation.
- Awareness activities: materials, international-day events, school engagement, radio talk-back shows.
- Ongoing monitoring and data collection (including crocodile attacks).

Prepared by: Matthew Brien, with input from Brandon Sideleau, Yusuke Fukuda, Josef Hurutarau, Eric Langelet, Charlie Manolis, Godfrid Solmu and Robbie McCloud
Date prepared: 2 March 2026

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

Europe

Zoos
Within the European Association for Zoos & Aquaria's (EAZA) Reptile Taxon Advisory Group, a crocodylian subgroup is led by Fabian Schmidt (Zoo Basel, Basel, Switzerland). Samuel Martin (La Ferme aux Crocodiles, Pierrelatte, France) serves as the veterinary advisor for this group. It oversees all 9 currently existing managed breeding programs in Europe. In the future, plans include splitting the existing Reptile TAG into four independent TAGs, with crocodylians having their own TAG. Preparations for this change are in progress.

Meanwhile, the necessary bureaucratic procedures to upgrade the European StudBooks (ESBs) to European Ex-situ Programs (EEPs) were completed and finally approved for the still outstanding programs for the Chinese alligator, Cuban crocodile, African slender-snouted crocodiles, and Gharial.

Since the last CSG Working meeting, the EAZA Reptile TAG has met in person four times: 23 May 2024 in Valencia (Spain); 9 October 2024 in Leipzig (Germany); 14 May 2025 in Allwetterzoo Münster (Germany); and, 10 September 2025 in Lodz (Poland). Topics discussed included updates on the EEPs for Chinese alligators by Norbert Fritsch, Siamese crocodiles by Gonzalo Fernandez Hoyo, African dwarf crocodiles by Franziska Franke-Gerth, and African slender-snouted crocodiles by Francois-Pierre Huyghe. There were more detailed reports on the history of Cuban crocodiles in the EAZA regions and future conservation challenges by Ivan Rehak. Michel Ansermet also presented the planned conservation project on West African crocodiles (*Crocodylus suchus*) in Morocco. A new enclosure for Gharials in Biotropica Val-de-Reuil (France) was presented by Francois-Pierre Huyghe.

Otherwise, a large focus of the crocodylian subgroup in the EAZA Reptile TAG was the sustainable use and conservation of crocodylia: Several lectures and discussions were held during the meetings. The reason is that some educational labels in many zoos still suggest that the trading of crocodile skins for the leather industry is the major problem in crocodile conservation. This assumption was contradicted, the history of crocodylian conservation was explained, successful examples of sustainable-use conservation projects were shown, relevant literature was cited, and zoos were asked to revise these education panels accordingly. Such lectures were also given outside the EAZA Reptile TAG, including in the AZA Herp TAG meeting, the conservation working group of VdZ (Verband der Zoologischen Gärten; Association of zoos in German-speaking countries), and the European Croc Networking Meeting.

Cologne Zoo, with CSG members Thomas Ziegler and Anna Rauhaus, continued the vital work on the breeding and release of Philippine crocodiles. In 2025, an animal was also sent to Australia to support its breeding program. The Cologne-hatched crocodiles that were flown back to the Philippines in previous years, initially to the Philippine Crocodile Research and Education Center (PCREC) run by the cooperation partners at Crocodylus Porosus Philippines Inc. (CPPI) in Barangay Jaboy, Pilar, thrive in the Siargao Island Protected Landscape and Seascape (SIPLAS). The center is adjacent to the habitat - "Paghungawan Marsh" - so that direct release into the wild is possible whenever the cooperation partners wish. Cologne Zoo continued supporting the Mabuwaya Foundation in the Philippines in 2025, which is also committed to the conservation of Philippine crocodiles; the foundation visited Cologne Zoo in autumn 2025. The conservation work was also spread in the media and can be seen on YouTube: https://youtu.be/MlETcRFgYlQ.

The main achievement within the Siamese crocodile EEP has been an administrative, but important one: the establishment of a Species Committee to support the program's goals. The addition of Shaun Foggett as Assistant EEP Coordinator with editing rights on the studbook is particularly welcomed. There was no breeding within the EEP during 2025. The Siamese crocodile EEP faces several challenges, which Gonzalo Fernandez Hoyo, as EEP coordinator, is working to address: 1. **Genetics**: Many Siamese crocodiles in farms are potentially hybrids. These animals have been the source stock for European Zoos and some hybrids have already been identified in the European zoo population and phased out of the program. Franziska Franke-Gerth from Leipzig University is currently testing the 7 untested specimens in the program. Samples collected in the past by Prof. Jan Robovsky from the University of South Bohemia will prevent the need for recapturing and resampling certain individuals. 2. **Lack of Interest in the Species**: Several EAZA institutions have expressed their intention to discontinue keeping the species. 3. **Small Population**: Only 9 European EAZA institutions currently keep the species. Asian EAZA members such as Singapore (with a large group) and Taipei (with specimens confiscated from illegal trade) do keep it and may serve as partners in *in-situ* conservation efforts.

The EEP coordinator, Gonzalo Fernandez Hoyo, has been in contact with numerous *ex-situ* and *in-situ* conservation organizations in the USA, Australia, Laos, and Cambodia to learn about the species' status in the wild. Most notably, he attended the Siamese Crocodile Regional Meeting in Bangkok, Thailand, in August 2025. Siamese crocodile conservation and reintroduction efforts in the country are mainly led by passionate members of the farming and leather industries, but

progress is slow with the Thai Government concerned about reintroducing due to the potentially dangerous nature of the species, attitudes of local communities as well as the purebred and disease status of the animals to be reintroduced. Some EAZA institutions have recently been involved in direct conservation actions in the Cardamom Mountains and Phnom Tamao Wildlife Sanctuary in Cambodia. The plan is to involve EEP holders in *in-situ* actions, ideally organized by the EEP itself. The EEP coordinator is also currently exploring the possibility of incorporating some initiatives into the EAZA Wetlands Campaign.

Colin Stevenson and Clare Wilkie (Crocodiles of the World, Brize Norton, UK) are writing a "Crocodilian Husbandry Course" and continue to develop a crocodile husbandry resource. Crocodiles of the World continues data collection on the behaviour of its *Crocodylus siamensis* family group as part of standard practice, due to the significant welfare benefits they observe. The behavioural data will be used to produce a case study to inform practice, as other zoos may want to facilitate crocodylian family groups in line with EAZA Reptile TAG recommendations.

Colin Stevenson and Clare Wilkie contributed to an article titled "Breeding the Dwarf Crocodile in Captivity". The article was published in Exotics Keeper magazine in May 2025 (https://exoticskeeper.com/blog/breeding-dwarf-crocodile-in-captivity/).

Clare Wilkie, as a new Research Liaison for Reptilian and Amphibian Working Group, spoke at the February 2026 RAWG conference on "Putting Zoo Research into Action". She discussed zoo case studies, data dissemination methods, BIAZA (British and Irish Association of Zoos and Aquariums) resources for supporting zoo and aquarium research, and provided a BIAZA Research Committee update, of which she's an active member. Clare is currently working on a crocodylian body-score document - feedback and edits will be provided by other CSG members at Crocodiles of the World and the BIAZA RAWG. It will be available for BIAZA-accredited zoos to start using, but will be shared with wider networks as needed.

Jérémy Lemaire and Rosanna Mangione conducted practical training sessions on veterinary procedures at the “Zoo de Guyane” in French Guiana for local veterinarians and veterinary assistants (2025).

Research

Shaun Foggett, Colin Stevenson, and Clare Wilkie were working together with Sally Isberg on a paper documenting baseline Vitamin D levels in wild and captive crocodiles within their home range. They also started a study on crocodylian nutrition, which is still in its very early stages. Furthermore, Colin Stevenson, with the help of Charlie Manolis, completed the Mugger Action Plan and continues to finalize the Mugger Red List assessment with Sally Isberg. He participated in the CSG Communications Working Group and the Living With Crocodilians Working Group. He gave various college, university, and public talks on crocodiles and their conservation, including “Human Crocodile Conflicts” at the BIAZA Conservation Conference in October 2025.

Crocodiles of the World has further supported crocodylian-related research projects over the past year, including:

- “Learning from nature: crocodylian surface structures as models for low-wear, high-traction engineering surfaces,” a project that uses 3D scanning of the skin surface over osteoderms to design and engineer a Mars rover tire (Primary researcher - Sunil Dhillon, University of Warwick);
- “Microstructural and crystallographic evolution of eggshells”, a project that aims to investigate the microstructures of crocodylian eggshells to determine their relationship with birds and dinosaurs (Primary researcher - Seung Choi, Seoul National University);
- “Vanishing giants: understanding the ecological and evolutionary impacts of losing the largest crocodylians through biomechanical analyses”. This project uses CT scanning to investigate crocodylian skull structure (Primary researcher: Patrick Hennessey, University College London); and,
- “Crocodilian locomotion,” with multiple projects at both professional and student levels, including investigations into how reptiles use their limbs during walking and running, and the spinal muscles involved in supporting locomotion (Primary researcher: John Hutchinson, Royal Veterinary College).

In May 2025, Jérémy Lemaire and Rosanna Mangione presented the results of their long-term ecotoxicology study on the four caiman species and the use of caimans as bioindicators of environmental mercury contamination to local government agencies in French Guiana. Jérémy Lemaire also received funding from the Austrian Science Fund (FWF), securing a fully funded PhD position and ensuring the continuation of the ongoing project until at least 2030. Additionally, Rosanna Mangione and Jérémy Lemaire were (co-)beneficiaries of Winter CrocFest 2024 for their Black caiman population study and health assessment in French Guiana. The funds were shared with the Siamese Crocodile Conservation Project in Laos (Steven Platt & Lonnie McCaskill). At this CrocFest, the $US1 million milestone for funds raised since CrocFest began was surpassed.

Meetings, workshops and outreach

The European Croc Networking Meeting 2025 in Berlin was organized by Phoebe Griffith along with the ECNM organizing committee and CSG members Sarah Carpentier and James Szewczyk. The meeting was hosted by the Berlin Zoo and Aquarium and the Leibniz Institute of Freshwater Ecology and Inland Fisheries. This meeting had 58 attendees from 16 countries, representing all career stages, from newcomers to those with decades of experience. Talks and workshops reflected the international collaborations of work based in Europe, covering research, conservation, management, husbandry, and education. Sarah Carpentier will lead the organization of the next meeting, scheduled for spring of 2027.

The Wetlands and Integrated Study of Ecology (WISE) Lab, and the Clemson University Belle W. Baruch Institute of Coastal Ecology and Forest Science (BICEFS), in collaboration with the European Croc Network, will host a five-day hands-on workshop in April 2026 in South Carolina, covering an array of topics of wild alligator research and management. This workshop will host 8 early-career researchers based in Europe and will address the importance of avoiding parachute science when seeking to work with crocodylians elsewhere.

In 2025, Jérémy Lemaire and Rosanna Mangione began collaborating with "Passagers des Sciences", a French educational initiative that raises awareness about environmental issues and sustainable development by creating educational materials broadcast throughout the school year and accessible through teacher registration. So far, 200 French classes (6000 students) have signed up for the program. Students of all grade levels are introduced to neotropical caimans and their ecological role, ASGM-related heavy metal contamination and its pathways, and the effects of mercury contamination at various levels, from the individual to the population.

Simon Pooley (Birkbeck, University of London, UK) continues to campaign for the removal of illegal farming, fishing, and grazing on the Phongolo floodplain inside Ndumo Game Reserve, a Ramsar site provincial game reserve in KwaZulu-Natal Province, South Africa. The section of the floodplain inside the reserve is the only protected section of the country's most diverse river floodplain and was formerly the ancestral breeding ground for crocodiles. His fathers, Tony's, experimental crocodile restocking station was located here. He also advised on various student and other projects, including Antonia Sophie Geibel's study of HCC in Uganda, and Bobby Cross's HCC poster.

Talks related to crocodylians

Jailabdeen Ajji (Gharial Ecology Project, Madras Crocodile Bank Trust, India): Gharial Conservation: revisiting translocations and reimagining headstarting (online). 1 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Michel Ansermet (Aquatis Lausanne, Schweiz): *Crocodylus suchus* in Morocco. 14 May 2025 at Reptile TAG Mid-year Meeting, Münster

Miriam Boucher (Clemson University, USA): Life in Plastic: Recovery and Characterization of Alligator-ingested Microplastic. 2 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Gonzalo Fernandez Hoyo (Zoom Torino, Italy): Siamese Crocodile EEP update. 9 October 2024 at EAZA Annual Conference, Leipzig and 10 September 2025 at EAZA Annual Conference, Lodz

Camille Francois (European College of Zoological Medicine): Skin diseases in crocodilians. 2 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Franziska Franke-Gerth (Zoo & Universität Leipzig): EEP update on African dwarf crocodiles (Osteolaemus). 9 October 2024 at EAZA Annual Conference, Leipzig

Norbert Fritsch (Neunkirchen Zoo, Germany): Chinese alligator EEP update. 23 May 2024 at Reptile TAG Mid-year Meeting, Valencia

Axelle Gardin (PALEVOPRIM, UMR 7262 CNRS & Université de Poitiers, France): Habitat Shifts in Crocodilians in Changing Paleoenvironments: A δ18O perspective from the Shungura Formation (Ethiopia). 1 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Bobby Greco (Clemson University (WISE Lab), USA, and the Crocodile Research Coalition, Belize): Assessing post-release success of head-started American crocodiles (*Crocodylus acutus*) in Lago Enriquillo, Dominican Republic (online). 1 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Phoebe Griffith (Leibniz Institute of Freshwater Ecology and Inland Fisheries, Germany): A short introduction to cultural dimensions in crocodilian research and conservation. 2 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Patrick Hennessey (University College London, UK): Workshop on using modern technology to study crocodilian skulls. 1 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

René Honegger (retired Curator of Reptiles Zoo Zurich): Das verschollene Memorandum von 1956 zum internationalen Schutz von Krokodilen – eine unbefriedigende Spurensuche. 20 April 2024 at Jahrestagung der Arbeitsgemeinschaft Literatur und Geschichte der Herpetologie und Terrarienkunde, Deutsche Gesellschaft für Herpetologie und Terrarienkunde, Münster

René Honegger (retired Curator of Reptiles Zoo Zurich): Beitrag zur Kulturgeschichte der Krokodile – Dokumente aus meinem Fundus. 17 May 2025 at Jahrestagung der Arbeitsgemeinschaft Literatur und Geschichte der Herpetologie und Terrarienkunde, Deutsche Gesellschaft für Herpetologie und Terrarienkunde, Stuttgart

Francois-Pierre Huyghe (Biotropica): Update on EEP for slender-snouted crocodiles. 10 September 2025 at EAZA Annual Conference, Lodz

Francois-Pierre Huyghe (Biotropica): New Facility for Indian gharials at Biotropica. 10 September 2025 at EAZA Annual Conference, Lodz

Emma Jarlbeck (Lund University, Sweden, Krokodile Zoo, Denmark and The Mabuwaya Foundation Inc, Philippines): Assessing public perception and its impact on the conservation of the Philippine crocodile. 1 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Lona Lalic (Lund University): Investigating Vicarious Trial and Error in the American Alligator: implications for the evolution of planning and simulation. 1 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Jérémy Lemaire (University of Vienna): A Challenging Environment: How mercury disrupts caiman stress response. 1 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Jérémy Lemaire (University of Vienna, Austria): Effects of mercury on the stress response of wild caiman. 16 July 2025 at the Annual conference of the Society of Behavioral Endocrinology, University of British Columbia UBC, Vancouver, Canada

Rosanna Mangione (University of Vienna, Austria): Decrease of corticosterone baseline levels in a mercury-contaminated apex predator, 16 July 2025 at the Annual conference of the Society of Behavioral Endocrinology, University of British Columbia UBC, Vancouver, Canada

Alexander Meurer (DGHT AG Krokodile): Chinese alligator breeding. 2 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Antonio Nogueira (Wildtrack by ATS): Wildtrack by Advanced Telemetry Systems: our platinum supporter 2025. 1 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Cristian Pizzigalli (University of Porto and the University of Exeter): The Crocodile's Maze: navigating a human-made world. 2 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Dietrich Pohl (Ambassador, Embassy of the Federal Republic of Germany Bamako): Man and crocodile in the Sahel. 2 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Anna Rauhaus (Cologne Zoo, Germany): Together for the Philippine Crocodile- a One Plan Approach initiative linking European Zoos with conservation in the Philippines. 1 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Stephan Reber (Lund University, Sweden): Crocodilian cognition as they key to understand the evolution of decision making. 2 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Stephan Reber (University of Lund, Sweden): Cognitive evolution in tetrapod dinosaurs - inferences from extant archosaurs. 10 November 2025, invited speaker at the Behavior & Cognition Seminar, University of Vienna, Austria.

Ivan Rehak (Zoo Prague): The story of the Cuban crocodile (*Crocodylus rhombifer*): A challenge for conservation and *ex situ* management. 10 September 2025 at EAZA Annual Conference, Lodz

Ivan Rehak & Veronika Zahradnickova (Zoo Prague): Cuban crocodile (*Crocodylus rhombifer*) in EAZA. 10 September 2025 at EAZA Annual Conference, Lodz

Mason Scarpa (University of Vienna, Austria): Investigation of the contribution of host-associated and environmental microbiomes to the mercury detoxification strategies of two caiman species in French Guiana. 1 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Fabian Schmidt (Zoo Basel): How a crocodile can contribute as handbag to conservation, 23 May 2024 at Reptile TAG Mid-year Meeting, Valencia, 9 October 2024 at EAZA Annual Conference, Leipzig, 25 April 2025 at Association of Zoos & Aquariums (AZA) Herpetology Taxon Advisory Group (TAG), Denver, 16 May 2025 at VdZ (Verband der Zoologischen Gärten) AG Artenschutz, Augsburg, 1 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Alvaro Velasco (Chairman of Venezuela Crocodile Specialist Group (GECV) and Associated researcher of FUDECI, Venezuela): Orinoco crocodile (*Crocodylus intermedius*) conservation program in Venezuela: Our Reality. 1 August 2025 at 7th Annual European Croc Networking Meeting, Leibniz-Institut für Gewässerökologie & Binnenfischerei und Zoo Berlin

Clare Wilkie presented on *Alligator mississippiensis* grouping behaviour at a BIAZA 'ECTO' conference in 2025, which focuses on quantifying hatchling group cohesion, parental attendance, and the potential effects of visitor presence. The publication is currently under review for publication at JZAR journal.

Publications

Brackhane, S., Fukuda, Y., Xavier, F. M., de Araujo, V., Gusmao, M., Trindade, J., ... & Webb, G. (2024). Wildlife conservation through traditional values: alarming numbers of crocodile attacks reported from Timor-Leste. *Oryx*, *58*(3), 347-350.

Caron Delbosc, N., Thévenet, J., Grosjean, N., Méès, L., Boyer, N., Schneider, M., ... & Mathevon, N. (2025). Temporal integration and decision-making in crocodiles. *Biology Open*, *14*(5), bio061844.

Caron-Delbosc, N., Boyer, N., Mathevon, N., & Grimault, N. (2025). Crocodile mothers' response to hatching calls. *Animal Behaviour*, *220*, 123040.

Delbosc, N. C., Boyer, N., Mathevon, N., & Grimault, N. (2024). Sound and vibration control crocodile hatching. *Behaviour*, *161*(10), 769-795.

Dittrich, C., Mangione, R., Marquis, O., Ringler, E., & Lemaire, J. (2025). Ecological and Behavioral Implications of Multiple Paternity in the Smooth-Fronted Caiman in French Guiana. *Ecology and Evolution*, *15*(4), e71337.

Ferrara, C.R., Jorgewich-Cohen, G., Sousa-Lima, R., Doody, S., & Reber, S.A. (2025). The Diversity and Evolution of Vocal Communication in Nonavian Reptiles. *Annual Review of Ecology, Evolution, and Systematics*, 56, 521-542. https://doi.org/10.1146/annurev-ecolsys-102723-064223.

Honegger, R.E. (2024). Das verschollene Memorandum von 1956 zum internationalen Schutz von Krokodilen – eine unbefriedigende Spurensuche. Sekretär 24:21-50.

Honegger, R.E. (2025). Alligatoren-Schlachten im Amazonenstrom – Die Dokumentation des Schweizer Herpetologen Gottfried Hagmann. Sekretär 25:26-49.

Jarlbaek, E. B. (2024). Assessing public perception and its impact on the conservation and reintroduction of the critically endangered Philippine crocodile (*Crocodylus mindorensis*). https://lup.lub.lu.se/student-papers/search/publication/9175880

Jensen, T.R., Jacobs, I., Kverková, K., Lalić, L., Polonyiová, A., Stehlík, P., Reber, S.A., & Osvath, M. (2025). T. rex cognition was T. rex-like—A critical outlook on diverging views of the neurocognitive evolution in dinosaurs. *The Anatomical Record*. doi.org/10.1002/ar.70074.

Lemaire, J., Bustamante, P., & Shirley, M. H. (2024). Preliminary assessment of blood mercury contamination in four African crocodile species. *Environment International*, *190*, 108877.

Pooley, S. (2024). Coexisting with Reptiles, special issue of *Current Conservation*, 17.4, Introduction (Simon Pooley) plus five articles. Current Conservation: https://www.currentconservation.org/tag/coexistence-with-reptiles/

Pooley, S. (2025). Research and management of the Nile crocodile (*Crocodylus niloticus*) in Ndumo Game Reserve. *African Journal of Wildlife Research* 55 (sp1), https://doi.org/10.3957/056.055.0142.

Wilkinson, A., Reber, S.A., Root-Gutteridge, H., Dassow, A. & Whiting, M.J. (2025). Cold-blooded culture? Assessing cultural behaviour in reptiles and its potential conservation implications. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 380(1925), https://doi.org/10.1098/rstb.2024.0129

Ziegler, T. & Manalo, R. (2026) IUCN's „One Plan Approach" Philippine Crocodile Conservation Project wins „Reverse the Red" 2025 Species Pledge Video contest. - WAZA (World Association of Zoos and Aquariums) News Issue #1 2025, pp. 24-26.

Prepared by: Fabian Schmidt (Regional Chair, Europe) and Rosanna Mangione (Regional Vice Chair, Europe).
Date prepared: 3 March 2026

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

North America Region

The following states and research entities reported back to a request for updates on their conservation, management, and research programs for the American alligator and the American crocodile:

Alabama - Richard Tharp (Alabama Wildlife and Freshwater Fisheries)

The 2025 Alabama Alligator Program had several changes from the 2024 season per regulation changes. Additional area was added to the West Central and Eufaula Alligator Management Areas (AMAs). This regulation also resulted in a slight decrease in area available in the Southeast AMA. Available permits were increased for all AMAs. 2025 alligator hunts resulted in a total of 150, 75, 75, 30 and 50 permits issued to hunters in the Southwest, Coastal, West Central, Eufaula and Southeast AMAs, respectively. The new regulations provided the opportunity for hunters to purchase a "Bonus" permit in all the AMAs except the Eufaula AMA due to an alligator size limit restriction. Under the new regulations, a size restriction of 6 feet or less exists for the bonus alligator permit. This restriction was enacted to increase hunter opportunity and potentially reduce the number of "nuisance" alligator complaints from the public. Additionally, an extra hunt (Thursday at sundown to Sunday at sunrise) was added to the Southwest, Coastal, West Central and Eufaula AMAs. A manned check station was open for the Eufaula AMA. A regulation change allowed non-residents to register for an alligator harvest permit.

Arkansas - Amanda Bryant (Arkansas Game and Fish Commission)

Since 1984, alligator populations in Arkansas have increased and continue to be stable and in sufficient numbers to support a regulated sport hunt. The Commission's Alligator Management Team currently administers three alligator-related management programs (Alligator Farmer, Nuisance, and Harvest) in Arkansas. The Alligator Farmer Program was established in 1991 and provides for the permitted commercial captive propagation and sale of alligators. Due to a lack of permitted alligator farmers, this program was discontinued in 2025. In 2001, the AGFC initiated the Nuisance Alligator Program to provide improved coordination, response, and documentation of nuisance alligator complaints in Arkansas. This program is now managed by USDA APHIS staff, who respond to nuisance alligator complaints from the public or enforcement agencies by removing alligators that pose a threat to the welfare of the public, pets, livestock, or property. The Alligator Harvest Program was implemented in 2007 to enable the harvest of alligators (>4 feet total length) within specific zones open to alligator hunting. Each permit authorizes the take of one alligator within a specific harvest zone on either public or private lands. Hunting opportunities were initially allowed in two Alligator Management Zones (AMZ 1 and AMZ 3). These two zones represent the highest and most sustainable alligator populations. In 2020, AMZ 2 was opened up to hunting. The remaining AMZs remain closed to alligator harvesting.

A complete analysis of harvest data from the 2025 season has not been finalized at this point. Preliminarily, a total of 205 CITES tags were issued to hunters for tagging harvested alligators. Hunting was still restricted to AMZ 1, AMZ 2 and AMZ 3 with all other zones remaining closed. Overall harvest rate was 100.4% for the 2025 season. The harvest sex ratio was 1.66:1 (M:F) with males making up 62% of the total harvest. The 13' 11.5" male alligator harvested in 2020 on public waters still remains the largest harvested alligator to date. The complete data analysis for 2025 will be made available and presented in the USFWS Annual Report.

In 2025, AGFC staff partnered with Miriam Boucher (Clemson University) to support her work conducting a range-wide survey of American alligator diet and exposure to microplastics, PFAS, and mercury. We were able to collect samples from 24 individuals for these analyses.

Florida - Dwayne Carbonneau, Vincent Deem, Dan Navarro, Matthew Nichols, Gabe Prichard, and Allan Woodward (Florida Fish and Wildlife Conservation Commission)

American alligator *(Alligator mississippiensis)*
Management Overview: The overall Florida population of the American alligator has been relatively stable since 1988, when the statewide alligator harvest and ranching programs were implemented. Significant increases in the population over that period were in the 0.3-2.7 m TL size classes, as indicated by spotlight surveys conducted annually on a sample of areas throughout the state. Populations of the largest (≥2.7 m TL) alligators showed no significant change. Florida has

four alligator harvest programs (nuisance, statewide public waters, statewide super hunt, and private lands), which accounted for an average harvest of 19,633 alligators per year during 2023-2025 (Table 1). In 2025, the Florida Fish and Wildlife Conservation Commission (FWC) received 19,471 complaints about alligators, which resulted in harvest of 9059 alligators (≥1.22 m TL) and translocation of 1818 juvenile alligators (≤1.22 m TL). During 2023-2025, the FWC documented an average of 15 unprovoked alligator bites per year that resulted in moderate to severe injury and four incidents that resulted in fatality. Because of continued low prices for wild alligator skins ($6/foot = $1.15/belly cm), in 2023 the FWC increased the stipend it pays nuisance alligator trappers to remove alligators from $30/alligator to $50/alligator. In 2024, Florida introduced a special opportunity alligator hunt that allows a limited number of selected individuals to harvest two alligators anywhere within the state with legal access.

Table 1. Harvest of wild American alligators and alligator eggs in Florida, 2023-2025. * Note that 2025 figures are not yet final but are not expected to change substantially.

Alligator Harvest	**2023**	**2024**	**2025 ***	**Avg.**
Statewide Hunt	8,068	7,983	9,302	8,451
Super Hunt	N/A	141	161	151
Private Lands	2,393	1,743	1,724	1,953
Nuisance	9,421	8,752	9,059	9,077
Total Wild Harvest	**19,882**	**18,619**	**20,246**	**19,633**
Public Waters Egg	50,404	60,203	54,748	55,118
Private Lands Egg	82,636	121,524	120,606	108,289
Total Eggs	**133,040**	**181,727**	**175,354**	**163,373**

The Florida alligator ranching program includes collections of wild eggs and hatchlings on both public waters and private lands. In 2025, 54,748 eggs were collected on public waters, and 120,606 eggs were collected on private lands. In addition to eggs, a combined total of 4,517 hatchings were collected from both public and private sources in 2025. Farms produced approximately 2,446 viable eggs from closed cycle production. In 2025, 88,851 eggs (all to the state of Georgia) and 36,548 hatchlings (12,382 to Georgia, 17,880 to Louisiana, 6286 to Texas) were transferred to farms in other states for raising. Additionally, 14,601 non-hatchling alligators were transferred to Louisiana farms. Florida farms produced 26,022 skins (avg. 30 cm belly width) for sale in 2024, which sold for a reported $US6.25/cm ($US39/ft) for 1st grade skins. The high frequency of eggs and live alligator exports from Florida to other states reflects an ongoing shift of production from smaller farms to large corporate farms in those states over the past several years.

American crocodile (*Crocodylus acutus*)

Management Overview: The American crocodile was listed as Endangered under the Federal Endangered Species Act in 1975, but since 2007 has been federally designated as Threatened in the United States. This is because the population has experienced considerable rebounding growth as a result of the combined conservation efforts of the Florida Fish and Wildlife Conservation Commission, University of Florida, Florida Power & Light, US National Park Service, US Geological Survey, and US Fish and Wildlife Service, among others. American crocodile sightings have been documented as far north as Cocoa Beach in Brevard County on the east coast of Florida and Lake Tarpon in Pinellas County on the west coast. An increasing crocodile population (currently estimated around 2,000 non-hatchling individuals) paired with a commensurate increase of approximately 3.5 million people in the state over the last decade has led to a logical increase in human-crocodile interactions.

FWC manages these human-crocodile conflicts on a case-by-case basis, prioritizing human safety while also taking the needs of a recovering species into consideration. During 2025, FWC received approximately 360 calls regarding the American crocodile which consisted mainly of complaints and reported sightings. Most of the complaints were resolved by educating the public through telephone calls as well as site visits by members of the Crocodile Response Program. Occasionally, the capture of a crocodile is required for it to be relocated, translocated, or, in exceedingly rare cases, placed in captivity or euthanized. Of the ~360 calls that were recorded, approximately 4.5% resulted in live captures and subsequent translocation, relocation, or placement into captivity. Captured animals ranged from 0.26 m to 3.6 m TL with the average individual measuring 1.9 m. Eight crocodiles were captured and relocated to nearby sites (relocation), thereby removing the crocodile from the immediate situation. Seven individuals were captured and translocated farther from the capture sites and released in suitable habitat (translocation). One individual was caught on two separate occasions during the year, with the second capture resulting in being placed into permanent captivity.

All crocodile captures and handling events follow the guidance found in the *American Crocodile-Human Interaction Response Plan* (2020).

During 2025, staff from FWC, Florida Power & Light, National Park Service, and Crocodile Lake National Wildlife Refuge recovered 16 American crocodile carcasses (4 males, 5 females, and 7 of undetermined sex). Their sizes ranged from 0.27 m to 3.6 m TL. Mortalities were caused by vehicle strikes (9), poaching (1), hatching complications (2), intraspecific conflict (3), and unknown causes (1).

A digital dashboard for illustrating crocodile complaint locations serves as a helpful tool to internal and external partners. This dashboard, though not available to the public, helps facilitate the coordination of management goals between *agencies as it pertains to both outreach and the recovery of the American crocodile.*

Research Overview: A social science study was published in January 2025 on residents living within the range of American crocodiles to ascertain their knowledge and interest about the species, and their opinions on management strategies. Findings showed a large awareness gap among residents living within crocodile range with 23% of respondents being unaware that there are both alligators and crocodiles in Florida. Most respondents want the crocodile population to stay the same (47%) or increase (36%). Seventeen percent of respondents wanted the population to decrease. There was overall disapproval for euthanizing (88% unacceptable or highly unacceptable) or placing a crocodile in captivity (73% unacceptable or highly unacceptable) as a management action to resolve human-crocodile conflict. Most respondents agreed that humans and crocodiles can safely co-exist (69%) while 11% disagreed. The full journal article can be found at https://doi.org/10.1002/jwmg.22672.

Data collection for a tracking study on American crocodiles living in urbanized environments concluded in September 2025. In total, 15 GPS tags were deployed on crocodiles (11 in Miami-Dade County, 2 in Broward County, 1 in Brevard County, 1 in Monroe County). Three tags remain to be deployed so that the total sample size will be 15 crocodiles. This study uses satellite/GPS telemetry to learn about the movements and behaviors of crocodiles in urbanized areas. Specifically, the study aims to understand how human activities affect crocodile movements, factors involved in crocodile road crossings, and habitats that are utilized by crocodiles in urban surroundings. Information gathered from this study will be used by state, federal, and local governments to improve crocodile management decisions by incorporating land management designs and practices that would promote the safe and sustainable coexistence of crocodiles and humans in South Florida.

A new study will be published in the 59th volume of the journal *Endangered Species Research* documenting an apparent case of lead (Pb) toxicosis in an American crocodile. Although the impacts of Pb poisoning are well known for many species, there are few studies on the topic relevant to American crocodiles in Florida. When an American crocodile died during a recent capture event, we conducted a field necropsy and collected relevant samples for analysis. The crocodile displayed clinical signs of Pb toxicosis (i.e., missing teeth) and stomach contents contained 22.42 g of Pb, comprising 23 air-rifle pellets, and one weight used for angling, as well as green iguana (*Iguana iguana*) claws. Liver and scute samples contained Pb concentrations of 78.06 ppm (wet weight basis) and 0.35 ppm (wet weight basis), respectively. We suggest Pb toxicosis contributed to the death of this American crocodile, likely following consumption of a fishing weight as well as at least one green iguana (an invasive species in Florida) that had been shot with Pb pellets; this observation represents the first apparent case of mortality associated with Pb toxicosis for this threatened species, but other individuals are likely being impacted. Additional sampling and monitoring of heavy metal and other contaminant exposure has been started as a result of these findings. The full journal article is open access and can be found at https://doi.org/10.3354/esr01474.

Literature Cited

Deem VR, Cleary M, Steen DA. (2025). Perceptions and tolerance of American crocodiles and their management by South Florida residents. The Journal of Wildlife Management, 89(1), e22672.

Ricketts JB, Brianne D, Letter A, Ford R, Steen DA, Deem VR. (2026) An apparent case of Pb toxicosis in an American crocodile (*Crocodylus acutus*) in South Florida, USA. Endang Species Res 59

South Florida Crocodylian Research - Venetia Briggs-Gonzalez, Sergio Balaguera-Reina, Bryna Daykin, Frank Mazzotti (The CrocDocs at University of Florida)

The CrocDocs continue crocodylian research in South Florida on native American crocodiles (*Crocodylus acutus*) and American alligators (*Alligator mississippiensis*) as indicator species providing performance measures of Everglades restoration, and removal efforts of non-native spectacled caimans (*Caiman crocodilus*) in South Florida.

As a target species, the health of American crocodiles is critical to assessing Everglades restoration impacts. Over the past two years we have continued spotlight surveys and captures of crocodiles in Cape Sable, Flamingo, Northeastern Florida Bay, Biscayne Bay, and Turkey Point. We have continued to monitor nesting effort and success across South Florida, collaborating with several agencies (Florida Power and Light, National Park Service, Florida Department of Environmental Protection, Florida Fish and Wildlife Conservation Commission) for data collection to get the most accurate accounts of nesting activity in Florida. A total of 434 nests was documented within the last two years, with 2024 marking the highest number of total and successful nests (N= 230 nests) ever documented within a single nesting season in Florida. We observed an expansion in nesting locations, including the northwesternmost nest recorded to date (Sanibel Island) and the furthest inland nest ever recorded in Florida (Shark Valley). Cape Sable continued to be the most important location for successful crocodile nests in Florida. The team has continued to investigate microclimate variation within nests in South Florida, following the methodology used by Briggs-Gonzalez et al. (2024). Over the past two years, temperature and volumetric moisture content dataloggers were deployed in a selection of nests at Curcie Lake, Marco Airport, and Everglades National Park. Curcie Lake is an area of interest as it is the most northwestern successful nesting

location in Florida, while nesting females at Marco Airport continue to produce unviable clutches containing abnormally elongated eggs. In Everglades National Park, we are investigating the differences in nests laid within natural coastal habitats vs manmade habitats to enhance our understanding of nesting ecology and assist ongoing conservation and management efforts.

The CrocDocs have continued monitoring American alligators in the Everglades system, examining abundance and body condition along established survey routes. These performance measures have continued to fall below target conditions of Everglades restoration. Previously, we examined body condition under the assumption that there was an isometric relationship between weight and length (allometry coefficient= 3, Fulton's K). However, work done by Balaguera-Reina et al. (2024) found that this assumption is not always true across the Everglades, and that allometric parameters are better to use to define body condition. Through examination of data collected from 1999-2024 on alligators captured in the Greater Everglades, it was found that alligator allometric coefficients are highly variable throughout the Everglades, from hypo-allometric (<3.0) within our northeastern routes to hyper-allometric (>3.0) in our western, southern, and central routes (Balaguera-Reina *et al*. in review). This refinement in the methodology for assessing body condition has allowed us to better inform restoration managers on the status of alligators in the Everglades. Additionally, we have begun efforts to deploy GPS and VHF radio tags on alligators within two different locations of Water Conservation Area 3, comparing the movement of alligators in areas with extreme and mild dry downs during the dry season. Continued monitoring efforts provide the tools to assess responses to Everglades restoration on spatial and temporal scales.

We have continued our removal and monitoring program for spectacled caimans in South Florida, with a focus on areas affected by Everglades restoration projects. Over the past two years we have removed 43 caimans, with lower encounter rates observed in recent years of the project. We discovered a new population within SFWMD Water Conservation Area 3 in 2025, emphasizing the need for continual survey efforts to detect and remove new populations of caimans in South Florida. Investigation into the diet of caimans removed from Broward and Miami-Dade counties revealed evidence of ontogenetic diet changes, with hatchlings preying mostly on insects, juveniles preying frequently on malacostracans and reptiles, and adults predating gastropods and reptiles (Godrey *et al.* 2025). This study also found that adult caimans had a higher dietary diversity and evenness compared to juveniles and hatchlings, that females had a higher diversity and evenness than males, and that animals captured in the dry season (February through May) had a higher diversity and evenness than those captured in the wet season (September through November). In 2026, we deployed GPS and VHF radio tags on two male spectacled caimans captured in Everglades & Francis S. Taylor Wildlife Management Area. This marks the first deployment of radio tags on caimans in South Florida, and we aim to use the resulting data on habitat use during the wet and dry seasons to initiate targeted removal efforts. We plan to deploy additional tags on adult females to help us find caiman nests during the breeding season.

Balaguera-Reina, S.A, B.M. Mason, L.A. Brandt, N.D. Hernandez, B.L. Daykin, K.R. McCaffrey, S.T. Godfrey, & F.J. Mazzotti. (2024). Ecological implications of allometric relationships in American alligators (*Alligator mississippiensis*). *Scientific Reports*, *14*: 6140. 10.1038/s41598-024-56798-5.

Balaguera-Reina, S.A., L.A. Brandt, B.L. Daykin, V. Briggs-Gonzalez, & F.J. Mazzotti. *In review*. Redefining the Body Condition Approach: American Alligators as a Case Study. *Ecosphere*.

Briggs-Gonzalez, V., A. Godahewa, S. Balaguera-Reina, J. Dixon, & F.J. Mazzotti. (2024). American crocodile nesting in sediment-nourished habitats on Crocodile Lake National Wildlife Refuge, Florida, USA. *Amphibia-Reptilia*, 10.1163/15685381-bja10167.

Godfrey, S.T., M.R. Rochford, E.F. Metzger III, W.H. Kern Jr., B.L. Daykin, S.A. Balaguera-Reina, D.L. Russell, J.M. Cole, C.A. Klovanish, & F.J. Mazzotti. (2025). Diet of Spectacled Caimans (*Caiman crocodilus*) Removed from Broward and Miami-Dade Counties, Florida, USA. *Journal of Herpetology*, *59*(2): 48-59. 10.1670/2326823.

Georgia – Kara Nitschke (Georgia Department of Natural Resources)

Policy changes

The Georgia Department of Natural Resources (DNR) alligator program has implemented a notable policy change during this reporting period. A revision of the department's conflict alligator policy has included a provision that allows issuance of alligator removal permits to private landowners. Permits are issued on a case-by-case basis, after careful investigation and determination of a substantial likelihood of injury, endangerment, or damage to property. To date, only 5 permits have been issued statewide.

Health issues

Multiple underweight adult alligators have been removed from the Okefenokee Swamp during this report period. The alligators were observed approaching people, apparently for food, and showing a lack of fear of human interaction. These alligators were euthanized and transported to Southeastern Cooperative Wildlife Disease Study (SCWDS) for full necropsies. To date, we have received results from 2 of the individuals. Both had diagnoses that included emaciation, lead exposure (and possible toxicosis) and pentastomosis (incidental). Unfortunately, the health significance of lead liver

concentrations in American alligators is poorly understood, but it is possible that the degree of exposure in both alligators could have been associated with toxicosis. Both alligators had varied damage to the heart muscle, which is often seen in birds with lead toxicosis (moreover, the lead concentrations were well over those considered toxic to birds). One of the alligators also had numerous metallic fragments of fishing equipment in the stomach, which could have been a (or the) source of lead exposure. This alligator had lead levels that were 3X higher than the other one submitted for necropsy. Other manifestations of lead toxicosis can include neurologic disease, anemia (low red blood cell count, often leading to organ pallor and weakness), and progressive weight loss.

Research initiatives
DNR is collaborating with the University of Georgia Cooperative Fish and Wildlife Unit to validate/recommended changes to current alligator survey and monitoring protocols, estimate alligator population size and structure, and identify key areas of uncertainty in our knowledge of Georgia alligator populations (e.g., age, location, movement) through value of information analysis (VoI). Such identification will help inform the allocation of research efforts to reduce uncertainty and inform optimal decisions for harvest management.

Louisiana - Jeb Linscombe, George Melancon, and Jason Waller (Louisiana Department of Wildlife and Fisheries)

Following the drought conditions that occurred in 2022 and 2023 in some areas, nesting conditions throughout coastal Louisiana have continued to improve. However, due to market demands, egg harvests were down from 453,827 in 2023 to 300,482 in 2024. The table below shows the quantities of estimated coastal nests, ranched eggs, year-end farm inventory, farm hides shipped, farm alligators released to the wild, and alligators harvested in the annual autumn season.

In January 2024, there were 55 licensed farmers in Louisiana with farm inventories totaling 623,598 alligators. Despite improving nesting conditions, egg harvests and farm inventories continued to go down for the second year in a row. During the 2024 tag year (January 2024 through December 2024), an estimated 300,935 farm-raised alligators were harvested, with hides averaging 28.82 cm belly width. The total estimated value of these alligator hides was $US56.4 million and meat was valued at over $US6.3 million. In 2024, 52,419 nests were estimated on the coast-wide survey and farmers collected 300,482 eggs.

Wild alligators have been harvested in Louisiana for over 50 years (since 1972) as part of a sustained use management program. The majority of licenses are commercial licenses, although some recreational “sport” hunting licenses are also issued. In 2024, approximately 35,905 wild alligators were harvested by 4,304 trappers. Alligators harvested averaged 7.7 feet TL, with an estimated value of $US8.45 million for hides and meat. Low demand for wild hides led to a reduced harvest of wild alligators from 2017 to 2021. However, harvest numbers started to go back up in 2022 and 2023, and the 2024 harvest total is the highest since 2016. 2025 harvest numbers are pending with only 80% of issued tags currently reported. The 2025 harvest is expected to surpass 2024. Although meat markets have recently created an increased demand for wild alligator harvests, low market value for wild alligator hides continues to be the number one concern for the alligator industry and management in Louisiana.

Year	Coastal Nest Counts	Eggs Collected	Year-End Farm Inventory	Farm Hides Harvested	Farm Hides Shipped	Farm Release to The Wild	Wild Alligators Harvested	Wild Alligators Shipped
2019	67,935	650,878	998,152	443,245	436,755	38,598	25,076	17,756
2020	60,794	303,883	788,224	390,717	388,349	55,366	16,636	8,732
2021	64,345	461,387	701,591	399,713	371,236	35,803	19,409	5,344
2022	47,529	473,417	713,897	320,804	308,713	19,255	26,766	14,358
2023	50,699	453,827	623,598	371,935	370,216	19,225	31,770	21,808
2024	52,419	300,482	523,776	300,943	291,890	15,994	35,905	20,125
2025	65,173	541,821	614,287	233,654	224,799	11,321	33,234	17,979

Due to low prices for wild alligator hides, we occasionally had trouble maintaining interest and participation of “nuisance” alligator trappers to remove problem alligators that are a safety concern. Previously, the sale of hides and meat was a mechanism of payment for the trapper’s time and effort to provide this service. To help offset their costs (fuel, etc.); the LDWF established a program fund to pay an incentive payment ($US100 since 2022) for each nuisance alligator complaint handled by licensed nuisance alligator trappers to ensure this service is maintained for the state’s citizens. In 2024, the incentive fees paid to nuisance trappers amounted to $US184,200 (1,842 situations handled at $100/situation). The payment program continues to work extremely well.

In 2011, the LDWF and the LSU School of Veterinary Medicine in conjunction with the Louisiana Alligator Farmers and Ranchers Association developed a document entitled "Best Management Practices for Louisiana Alligator Farming". The document details recommended practices to ensure animal welfare of captive-reared alligators in Louisiana, including egg collection, hatching, rearing, release to the wild and slaughter methods. This document was revised in January 2016 and most recently in January 2022 to update changes in temperature regimes and slaughter methods. This document was distributed to all farmers and has been a useful reference for educating persons interested in alligator farming or exhibiting alligators.

In October 2017, LDWF organized an alligator session at the 71st annual conference of the Southeastern Association of Fish and Wildlife Agencies (SEAFWA) held in Louisville, Kentucky to discuss issues relevant to all management programs. The session was well attended by representatives from most southeastern states. Topics discussed included movement of live alligators between states, nuisance alligator programs, issues with marketing and hide prices, and enforcement of various aspects of these programs. Subsequently, a formal "Alligator Working Group" was established within SEAFWA and the group corresponds regularly and meets once or twice a year to discuss common problems and solutions. In 2024 and 2025, the working group met twice and has maintained exemplary representation by all range states. The AWG is currently working on several issues including the creation of "GatorWise" (*www.Gatorwise.org*.), a comprehensive website in which all range states are represented in an effort to give the public a more uniform and cohesive understanding of alligators and how to deal with nuisance issues. In 2025, LDWF rented space on 16 billboards statewide to promote GatorWise in an effort to help create realistic public perceptions about alligators and assist the public in taking appropriate action to minimize conflict.

Since 1 January 2019, LDWF began requiring veterinary certificates of health be obtained prior to our issuing export or import permits for live alligator shipments to/from licensed farmers in other states. Compliance with this new requirement continues to be good.

Disease monitoring for emerging infectious diseases such as *Chlamydia* and *Mycoplasma* were conducted and amplified in 2023 and has continued through 2025. All cohorts of imported alligators are tested for infectious diseases including *Chlamydia* and *Mycoplasma*. Through a federally appropriated grant, Louisiana will continue to test both wild and farm alligators for infectious diseases through 2026. One of the primary objectives is to better understand the distribution and specific identity of the harmful strain of *Chlamydia* associated with alligators.

For the tag years 2020 and 2021, the CITES hide shipping fee was temporarily decreased from $US4 per hide to $US3 per hide. This fee returned to $US4 per hide for 2022-year tags. The $US0.25 severance tax was discontinued for all tag years in November 2021. In addition, the required percentage of alligators to be released to the wild was decreased from 10% of the quantity of eggs hatched to 5%, starting with the 2021-year egg collection permits. For 2023-year tags, the hide shipping fee was again reduced to $US3, but was returned to $US4 for 2024-year tags. The release to the wild rate and hide shipping fee remained at 5% and $US4 respectively during 2025 with no anticipated changes coming in 2026.

LDWF has an active research program in addition to management and administration of our wild harvest, nuisance alligator control program, and commercial farming oversight. Our staff collaborates with university researchers and graduate students on a variety of topics related to alligators (physiology, ecology, food habits, nesting, etc.).

North Carolina - Alicia Wassmer (North Carolina Wildlife Resources Commission)

NCWRC Annual Alligator Spotlight Surveys in North Carolina - 2025 Survey Summary (Year 5)
The objective of these surveys is to detect changes in alligator occupancy and relative abundance as indices of population trends over time (i.e., compare numbers observed over years to detect changes in trends) in the 10 Alligator Management Unit 1 counties (Columbus, Brunswick, New Hanover, Pender, Onslow, Jones, Carteret, Craven, Pamlico, and Hyde; see Map A). It is important to note that these surveys are not going to (and cannot) be used to establish population estimates at the state or county level.

Methods
For survey consistency and maximum efficiency of agency resources, these surveys are conducted by boat. Except Louisiana, this method is used (either alone or with other methods) by all other state agencies within the range of the American alligator to monitor alligator populations.

Surveys are conducted annually during the height of the breeding season (1 May-15 June). A minimum of two survey routes are conducted for each county; for logistical reasons, two routes were split in half and are conducted on separate nights. Each route is surveyed twice, resulting in a total of 44 night-time survey replicates. Each survey is conducted with a minimum of two staff per survey route (1 driver, 1 observer and recorder); if a third person is available to assist, observing and recording duties are split between two people.

Each survey is conducted using a 200,000-candlepower spotlight to detect alligator eyeshine. Surveyors record each alligator observed during the survey and estimate the size in total length (TL) of each alligator whenever possible. Each

observation is recorded in one of 7 available size categories: juvenile (<3 ft), subadult (3-6 ft), small adult (6-9 ft), large adult (>9 ft), unknown juvenile (<6 ft), unknown adult (>6 ft), or unknown.

All surveys are split into 2.5-mile transects. Time, GPS coordinates, air temperature (°F), relative humidity (%), barometric pressure (inHg), wind speed (MPH), cloud cover (>75%, 50-75%, 25-50%, or <25%), width of waterway (less than 10 m, 10-25 m, 26-50 m, 51-100 m, or over 100 m), water salinity (ppt), and water temperature (°F) are recorded at the start and stop of each transect, in addition to any time spent backtracking (in minutes) for each transect. These covariates can be considered as factors that could influence detection probability and/or occupancy in statistical analyses of the survey data. Results of these analyses can be used to improve future survey efforts and to inform future analyses of spotlight survey data.

Surveyors are unable to determine if alligators observed during different replicates of the same route are the same individuals. Therefore, total numbers of alligators observed during all replicates cannot be added together; rather, it must be assumed that, for each route, all alligators observed during the replicate with a lower total could have been observed while conducting the replicate with a higher number of observations. For this reason, only the replicate with the largest number of alligators observed was used for each survey route to determine the minimum number of alligators observed annually across all survey routes during 2021-2025 (see Table A).

Alligator Observations (2021-2025)

The total number of miles of rivers and creeks surveyed across all routes varies between survey years due to inaccessible portions of routes (most often attributed to low water levels or other obstructions) or staff shortages in certain years (e.g., 2024; Table A). The overall average numbers of alligators observed per mile of survey route (APM) decreased from 1.09 in 2021 to 0.91 in 2022 and 0.68 in 2023, then increased to 1.02 in 2024 and 1.25 in 2025. However, it is important to note that these raw numbers are inclusive of all alligator size classes and may be sensitive to annual fluctuations in alligator nesting activity at a small number of survey sites.

Pooling the three immature (<6 ft TL) and three mature (>6 ft TL) size classes into two groups (Figure 1) demonstrates that, while the numbers of mature alligators observed in all subsequent years was less than that of 2021, the comparatively large APM in 2025 (Table A) reflects higher counts of immature alligators (Figure 1). All individuals <6 ft TL are not yet reproductively mature and survival rates of juveniles are expected to be significantly low.

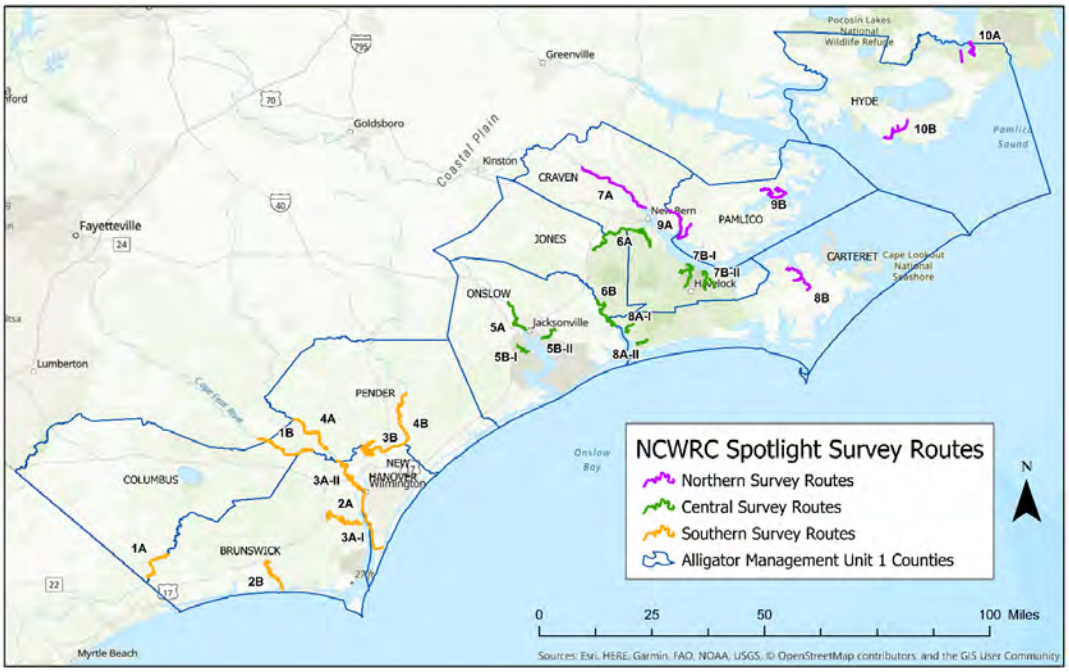
Of the total number of alligators observed across all surveys for each year, surveyors estimated that 12-16% were large enough to be reproductively mature adults. These percentages are expected to be higher than that of the total alligator populations in the state because much of the area surveyed (e.g., open waters) is generally less habitable for juveniles and better suited to adults.

Statistical Analyses (Completed and Planned)

There are many environmental factors (e.g., water and/or air temperature, water salinity) that may affect the probability that alligators will be present along a survey route on a given survey night, as well as additional factors (e.g., wind speed, boat speed) that could affect surveyors' ability to detect alligators that are present. As noted earlier, potential influences of documented environmental factors and survey conditions on numbers of alligators observed can be examined through occupancy and site-specific abundance analyses. Independent (i.e., single-season) analyses of the first 3 years of survey data (2021-2023) indicated that detection probability was significantly affected by some conditions (e.g., boat speed, salinity, water temperature) while no significant correlations were found between detection and other tested covariates (e.g., cloud cover, air temperature) (Wassmer 2025). Results of these initial analyses are being used to improve annual survey protocols and inform dynamic (i.e., multi-year) models that will be employed in future analyses to investigate trends of alligator numbers over time.

Literature Cited

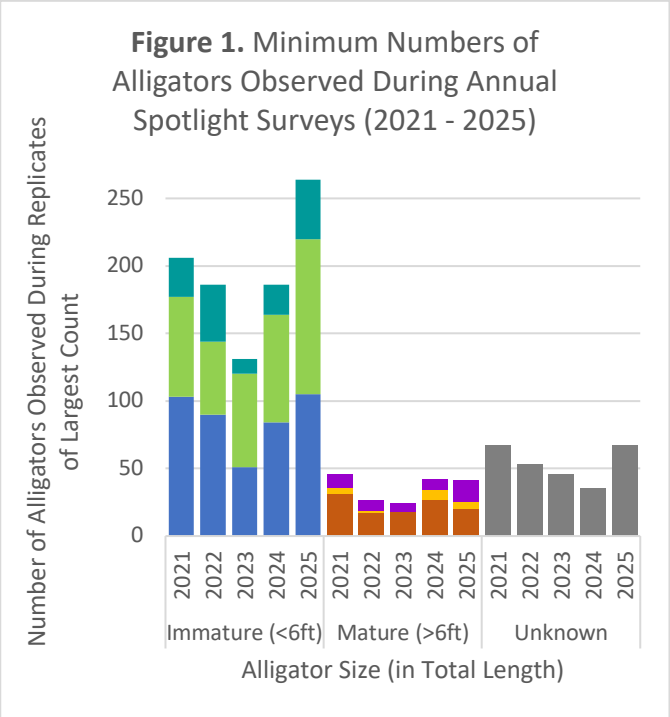
Wassmer, A. (2025). Monitoring American Alligators *(Alligator missisippiensis)* at Their Northern Range Limit: Insights from Spotlight and Mark-Recapture Studies in North Carolina. MSc thesis, North Carolina State University, USA.



Map A. Locations of annual spotlight survey routes in coastal North Carolina.

Table A. Summary of Alligators Observed During Annual Spotlight Surveys in AMU1, North Carolina (2021-2025).

Survey Route	County	Water Bodies	Route Length (mi)	Largest Number of Alligators Observed During One of Two Annual Night-Time Survey Replicates				
				2021	2022	2023	2024	2025
1A	Columbus	Waccamaw River	10	7	2	2	NA	2
1B	Columbus	Cape Fear River	15	7	2	9	9	2
2A	Brunswick	Rice Creek, Town Creek	20	29	29	21	NA	30
2B	Brunswick	Lockwoods Folly River	12.5	4	8	4	10	9
3A-I	New Hanover	Cape Fear River	15	7	8	6	3	10
3A-II	New Hanover	Cape Fear River	15	34	16	19	20	41
3B	New Hanover	NE Cape Fear River and Creeks	17.5	7	12	8	18	14
4A	Pender	Black River	15	4	2	2	2	4
4B	Pender	NE Cape Fear River	20	9	4	6	5	7
5A	Onslow	New River	10	13	18	9	19	23
5B-I & II	Onslow	Southwest and Northeast Creeks	10	50	18	22	22	54
6A	Jones	Brice's Creek, Trent River	15	5	2	1	2	2
6B	Jones	White Oak River	15	22	11	8	10	23
7A	Craven	Neuse River	17.5	5	5	2	1	3
7B-I	Craven	Slocum Creek	12.5	8	28	10	51	45
7B-II	Craven	Hancock Creek	10	59	52	42	57	73
8A-I & II	Carteret	Hadnot and Pettiford Creeks	10	2	4	2	NA	2
8B	Carteret	South River	12.5	3	4	3	2	1
9A	Pamlico	Upper Broad Creek, Goose Creek	15	2	2	1	0	2
9B	Pamlico	Bay River, Bear Creek	12.5	0	0	0	0	0
10A	Hyde	Alligator River NWR	10	39	33	23	28	20
10B	Hyde	Swanquarter NWR	10	3	6	1	4	5
Minimum Number of Alligators Observed Across All Survey Routes				319	266	201	263	372
Total Miles of Rivers and Creeks Surveyed Across All Routes				294	293	294	257	298
Overall Average Number of Alligators Observed Per Mile of Survey Route (APM)				**1.09**	**0.91**	**0.68**	**1.02**	**1.25**



Oklahoma - Bill Dinkines (Oklahoma Department of Wildlife Conservation)

The state of Oklahoma has a small population of American alligators in the far southeast corner of our state. There is no alligator hunting season in the state. Currently, we are completing two research projects to help us better understand alligator abundance and distribution. Some of the preliminary results are as follows:

- Population estimate is 99 alligators (± 15) based on 3 years of surveys and mark recapture data from our Wildlife Management Area.
- Outside of the Wildlife Management Area across 6 southeast counties, alligator surveys were conducted on 40 waterbodies. 19 Alligators were detected at 7 locations, with a density estimate of 0.09 alligators per kilometer (very low density).
- Nesting and juvenile tagging and tracking revealed predation and freeze events cause the most mortality of young alligators.
- River otters and great blue herons account for most of the juvenile predation.
- Nest failure due to predation (primarily raccoons) is also a contributing factor.
- Nest failure was also confirmed from water level inundation and fire ant predation.
- Juvenile mortality decreases when alligators reach age 2-3 and body size increases to protect from most predation.

South Carolina - Morgan Hart (South Carolina Department of Natural Resources)

Alligator populations in South Carolina still appear to be stable. Removal numbers have not changed much since the legal harvest started, and population surveys are ongoing. There is limited evidence that the number of largest males (over 10 ft) has decreased (Fig. 1), although data are still sparce. All harvest is recreational, and export of hides remains a small portion of hide disposition.

Public Lands Hunt: The public hunting season consists of 4 hunt units in the coastal plain of South Carolina with 1000 harvest tags available (250 in each hunt unit). In 2014, harvest tags were reduced from 1200 (300 per hunt unit) to 1000 (250 per hunt unit). Hunters are chosen in a computerized lottery drawing with a preference system to ensure all hunters that continue to apply annually will eventually be chosen. The public hunt season runs from the second Saturday in September until the second Saturday in October (Fig. 2).

In 2025, 400 limited size harvest tags (4-8 ft only) were added to the hunt to allow more resource use, while partially protecting the largest males.

In late 2018, hunting was disallowed on the two SC Department of Natural Resources Wildlife Management Area (WMA) properties. Prior to 2018, those properties had limited alligator hunting and were included as a separate computerized drawing with a maximum of 32 alligators taken per year.

Private Lands Hunt: In the Private Lands Program, landowners with significant amounts of alligator habitat can apply for harvest tags that are issued for use only on their specific property. Private Lands tags cannot be used on public waters. The Private Lands season runs from 1 September to 31 May the following year (Fig, 2).

Nuisance Program: The nuisance alligator program allows permitting of individuals for removal of a specific animal on their property that poses a threat to people (Fig, 2).

Other: Alligator propagation (farming) legislation was passed in 2014, and subsequent regulations were promulgated in 2015. To date, we still have not received any applications for a permit.

Yearly nightlight surveys are conducted in statewide alligator habitat. Ongoing mark-recapture efforts along with satellite tagging adult alligators is providing population and movement information. Clemson University also has multiple long term research studies on state properties.

	Harvest		
Year	**Public**	**Private**	**Nuisance**
2008	362	249	-
2009	452	224	-
2010	473	228	382
2011	472	219	426
2012	483	296	370
2013	452	377	467
2014	325	350	355
2015	333	228	294
2016	396	375	251
2017	352	374	327
2018	333	372	319
2019	336	389	336
2020	253	403	322
2021	311	450	361
2022	321	404	350
2023	380	424	368
2024	395	445	389

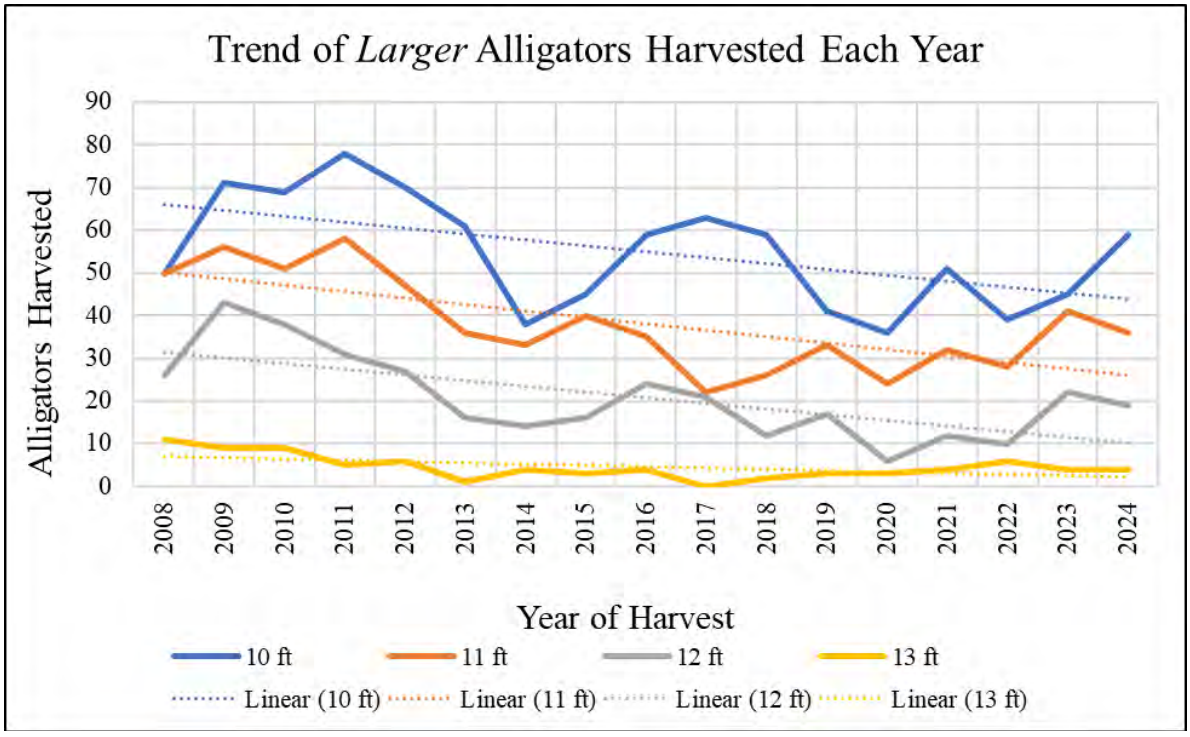


Figure 1: Yearly totals of the largest alligators (10-13 ft) harvested each year since 2008, South Carolina. Trend lines (linear) represent trajectory of harvest numbers over time.

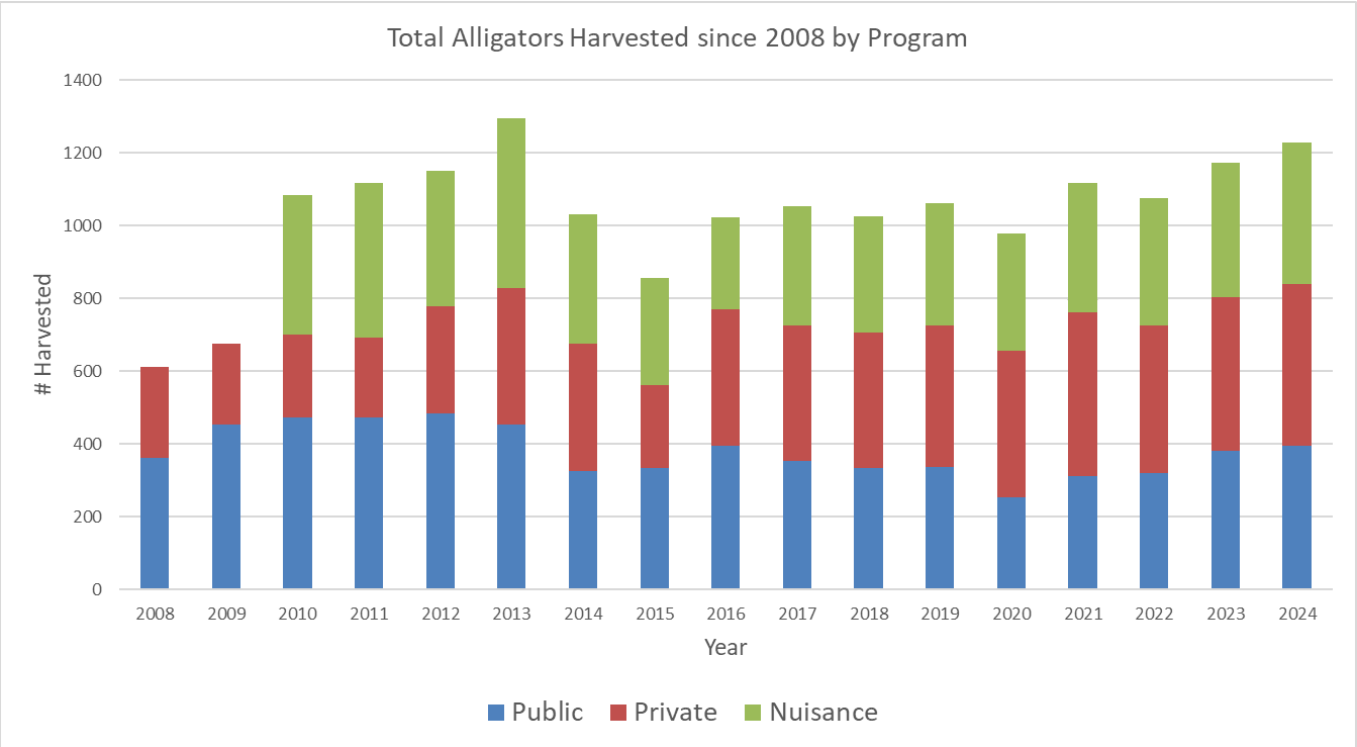


Figure 2: Yearly totals of alligators harvested each year by program since 2008, South Carolina.

Alligator Research in South Carolina (Thomas Rainwater)

- Range wide survey of American alligator diet and exposure to microplastics, PFAS, and mercury (Miriam Boucher, Clemson University)
- Influence of human disturbance on frequency of raccoon predation of American alligator nests (Clarissa Tuten, Coastal Carolina University)
- Effects of natural incubation temperature on American alligator hatchling size, growth, and survival (Chris Smaga, University of Georgia)
- Nest attendance of American alligators in coastal South Carolina (Yawkey Wildlife Center)
- Faunal associates of American alligator nests in coastal South Carolina (Yawkey Wildlife Center)
- Impact of human disturbance on American alligator behaviour in human-dominated landscapes (Anje Kidd-Weaver, Clemson University)
- Size- and age-related fertility, nesting frequency, and nest site fidelity of adult female American Alligators in coastal South Carolina (Phil Wilkinson, Yawkey Wildlife Center)
- Linking American alligator nutritional subsidies, food webs, and ecosystem functions in coastal South Carolina (Clemson University STRIVE Lab)

Texas - Jonathan Warner (Texas Parks and Wildlife Department)

Texas currently has one alligator farm that propagates hides for commercial export. The farm produced 13,481 hides in 2024, and 14,200 hides in 2025. Farmed alligator stock are initially obtained from eggs collected in the wild. Texas Parks and Wildlife Department (TPWD) issues nest stamps to commercial egg collectors after geospatial nest data are provided and vetted from airboat and helicopter surveys by collectors on authorized private lands. Generally, TPWD allows egg collection from 50% of counted nests on a property. Due to this 50% cap, TPWD does not require a subset of farmed juveniles to be returned to the wild to offset collection efforts. For both 2024 and 2025, hatchling market price was $US35.00, which reflects a continued declining market trend from a high of $US90.00 per hatchling in 2017.

Texas provides two recreational alligator hunting seasons for its constituents; a “non-core county” spring hunt (1 Apr-30 Jun) for counties falling outside the major distribution and primary habitat of the species, and a traditional autumn “core county” season (10-30 Sept) for 22 southeastern counties that harbor high alligator densities in coastal marsh, rivers and inland lakes. TPWD also oversees the harvest of nuisance alligators for public safety. Texas hunters harvested 3,175 wild alligators for the 2024 season (spring= 222, autumn= 2,953). An additional 423 nuisance alligators were harvested or relocated to permitted facilities by permitted trappers in 2024 under the TPWD Nuisance Alligator Control Program. For 2025, 3,581 alligators were harvested during hunting seasons (spring= 210, autumn= 3371) and an additional 451 nuisance alligators were removed from the wild. Low market value for wild alligator hides, which is reflected in continued lower

wild harvest numbers, continues to be a primary concern for the alligator industry and the future of sound sustainable use management practices in Texas. In August 2026, the TPWD Alligator Program will propose regulation changes to lengthen the current autumn alligator hunting season (10-30 Sept) to 61 days (1 Sept-31 Oct), in addition to allowing expanded means of take and potential night hunting on private lands. If adopted by the TPW Commission after public comment, these regulations will go into effect for the 2027 autumn alligator hunting season.

Standardized annual aerial nest surveys and night-count data (spotlight surveys) indicate stable or increasing alligator populations across suitable ecoregions in Texas, especially in coastal marsh habitats along the upper and middle Gulf Coast, and portions of East and South Texas. Texas has only one natural lake, but many of the larger artificial impoundments across the state continue to see increases in their respective alligator populations to the extent that targeted management (culling) has been mandated by TPWD in a limited number of these waterbodies that exist to support diverse recreational public activities (e.g., fishing, boating, swimming). For the most notable of these efforts, in 2024 TPWD staff initiated the targeted removal of alligators greater than 6 feet in length at Lake Raven in Huntsville State Park (a heavily trafficked State Park north of Houston) after several alligator bites occurred at a designated swimming area. Fifty-two adult alligators have been removed from Lake Raven to date, but the overall efficacy of this management practice remains to be seen due to the subsequent immigration of adult alligators from other waterbodies in Walker County.

TPWD supports wildlife research in Texas and is actively collaborating with multiple universities to better understand alligator ecology and population dynamics in the state. Current collaborative projects include research on alligator reproductive ecology through analyzing bellowing patterns with autonomous recording units, efficacy of nest detection using thermal drones, microplastic ingestion, spatial ecology of nesting females at inland waterbodies, and lead (Pb) surveillance and monitoring for alligators at recreational fishing areas.

Prepared by: Thomas Rainwater, Jeb Linscombe, Venetia Briggs-Gonzalez and George Melancon, Regional Co-Chairs and Vice-Chairs, North America Region

Date prepared: 26 February 2026

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

Industry Report

The crocodilian industry continues to stand as one of the clearest examples of conservation through sustainable use working at scale. This is not theoretical. It is a functioning system that ties together habitat protection, species recovery, and economic value across multiple continents.

In many range states, the ability to generate value from crocodilian species remains the foundation of conservation success. Governments rely on it to fund management and enforcement. Landowners rely on it to justify maintaining wetlands and habitat. Rural communities depend on it for income. When the market is strong, conservation outcomes follow. When the market weakens, those incentives begin to erode.

The CSG remains unique within IUCN in formally including industry as part of its structure. That is not incidental. It reflects the reality that conservation and commerce in this space are directly linked. Removing one from the equation undermines the other.

Market Overview
The global crocodilian market is still adjusting to structural changes that began before COVID and accelerated through it. Crocodilian leather remains one of the most exclusive materials used in luxury goods. However, demand is now more concentrated and more controlled. Large luxury groups have consolidated purchasing power and increasingly manage supply chains internally. This has shifted the market toward consistency, traceability, and long-term supplier alignment.

At the same time, a number of traditional retail channels that historically supported exotic leather have either disappeared or reduced exposure. Some brands have stepped away from exotics, often driven by perception rather than conservation science or verified data.

The result is a market that is smaller in volume, more selective, and more dependent on a limited number of buyers. This has created pressure across the supply chain, particularly for wild skins, which remain essential to conservation programs but are not always positioned effectively in the current luxury landscape.

Trade Data and Market Trends
The most recent IACTS report provides important context for where the industry stands today. Between 2021 and 2023, approximately 4.3 million crocodilian skins were reported in international trade. While this reflects recovery from the sharp contraction in 2020, it does not represent a return to previous market conditions (Table 1).

Looking more broadly, global trade from 2014 to 2023 averaged approximately 1.41 million skins annually, with a general downward trend over that period. The decline is not uniform across species or regions, but the direction is consistent.

The data also highlights a shift in the composition of the market:

- American alligator (*Alligator mississippiensis*) has remained relatively stable, averaging close to 500,000 skins annually over the past decade
- Nile crocodile (*Crocodylus niloticus*) continues to be a major contributor, averaging roughly 250,000 skins annually
- Caiman trade, once the largest driver of volume, has declined significantly as the market moves toward higher-value materials
- Siamese crocodile (*Crocodylus siamensis*) showed a sharp increase in 2022 driven largely by exports from Viet Nam, illustrating how production from a single country can influence global volumes

Over the 10-year period, "classic" crocodilian skins averaged approximately 929,000 annually, while caiman skins averaged approximately 483,000. What this tells us is straightforward. The industry is not simply shrinking. It is changing. The move away from high-volume, lower-value production toward lower-volume, higher-value skins reflects both market demand and economic reality. Luxury brands are prioritizing quality, consistency, and traceability. That shift has implications for how different species and production systems are valued.

It is also important to acknowledge the limitations of the data itself. The IACTS report notes ongoing issues with incomplete reporting, inconsistencies between exporting and importing countries, and the use of permits rather than actual

trade in some cases. These factors can distort short-term interpretation and reinforce the need for continued improvement in reporting and traceability.

Table 1. Direct, commercial global exports for skins from the main taxa, 2014-2023 (as per Table 2 from Caldwell, 2025)

Taxon	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Alligator mississippiensis	485,884	428,521	553,371	463,466	596,258	507,496	472,822	449,191	552,259	464,455
Crocodylus acutus	2,262	3,353	3,233	5,040	5,295	8,187	2,291	1,697	5,671	894
Crocodylus moreletii	2,031	1,291	1,640	3,000	4,088	421	0	200	2,062	170
Crocodylus niloticus	282,859	278,094	317,121	250,150	230,312	260,239	159,967	238,473	230,314	219,638
Crocodylus novaeguineae	24,982	39,070	14,022	7,649	8,790	8,023	2,192	2,445	1,408	1,972
Crocodylus porosus	67,979	69,470	102,759	72,171	75,774	67,510	42,913	50,752	58,047	64,078
Crocodylus siamensis	48,557	58,558	33,349	35,407	55,825	19,761	48,495	70,830	432,241	209,281
Subtotal of 'classic' skins	914,554	878,357	1,025,495	836,883	976,342	871,637	728,680	813,588	1,282,002	960,488
Caiman crocodilus crocodilus	35,196	30,594	22,328	41,402	41,071	17,251	6,732	3,788	8,186	5,990
Caiman crocodilus fuscus	738,401	530,357	368,515	315,338	370,807	365,957	244,569	316,230	477,909	299,891
Caiman latirostris	8,893	8,610	5,525	3,652	2,811	3,909	10,356	2	4	0
Caiman yacare	94,456	128,203	52,709	65,243	31,953	43,956	13,509	22,227	69,705	21,379
Melanosuchus niger	290	584	0	0	1,044	0	0	0	0	528
Subtotal of caiman skins	877,236	698,348	449,077	425,635	447,686	431,073	275,166	342,247	555,804	327,788
Grand total	1,791,790	1,576,705	1,474,572	1,262,518	1,424,028	1,302,710	1,003,846	1,155,835	1,837,806	1,288,276

Policy and Trade Environment

The operating environment for the crocodilian industry remains highly sensitive to regulatory decisions.

The California ban and its subsequent reversal demonstrated that science-based arguments and documented conservation success can prevail when clearly presented. At the same time, the CITES trade suspension on Mexico in 2023 showed how quickly disruption can occur and how broadly it can impact supply chains, even when most participants are fully compliant.

These events reinforce a key point. The industry cannot afford to be passive in policy discussions. Engagement must be consistent, informed, and proactive.

Role and Engagement of the CSG Industry Group

The Industry Group plays a critical role in ensuring that conservation discussions remain grounded in real-world application. Its value lies in the fact that its members are directly involved in the legal management, production, and trade of crocodilian species. This includes farming, wild harvest, processing, manufacturing, and distribution. Collectively, the group represents decades of practical experience operating within CITES and national regulatory frameworks, with direct accountability to both compliance systems and market realities.

This perspective is essential. Much of the success seen in crocodilian conservation today is the result of systems that have been implemented, tested, and refined over time through this intersection of science, policy, and industry.

The Industry Group is positioned to contribute in several meaningful ways. First, there is a clear role in policy and position development. The group can help articulate how regulated systems such as wild harvest, ranching, and farming actually function, and why they deliver conservation outcomes. This includes providing clarity around distinctions between production systems and helping ensure that discussions at the CSG level reflect operational realities, not just theoretical frameworks.

Second, the group has an important role in improving trade literacy and regulatory understanding. CITES is often misunderstood, even among well-informed stakeholders. Industry participants are uniquely positioned to explain how permitting, tagging, non-detriment findings, and compliance systems work in practice. Developing clear, accessible

guidance in this area would benefit not only policymakers but also researchers, enforcement agencies, and conservation partners.

Third, there is an opportunity to contribute more actively to traceability and best practices. Industry operates within structured chain-of-custody systems that are already among the most robust in wildlife trade. Sharing this expertise more broadly, including updates to best practices in animal welfare, environmental management, and recordkeeping, would strengthen alignment across range states and production systems.

The group also has a role beyond commercially traded species. There is value in supporting non-commercial species conservation, whether through sharing lessons learned, contributing to species action plans, or helping connect technical expertise across regions.

Finally, one of the most important roles is translation and communication. The systems that underpin crocodilian conservation are complex. If they are not clearly explained, they are easily misunderstood. The Industry Group can help bridge that gap by translating technical frameworks into language that policymakers, brands, and the public can understand.

Despite this potential, there is a clear need for greater engagement within the group.

At present, participation is uneven. A relatively small number of members are consistently contributing to discussions, initiatives, and outputs. Expanding that participation is essential. The strength of the Industry Group depends on the diversity and depth of experience within it. This includes:

- More active sharing of data, case studies, and regional perspectives
- Greater involvement in developing guidance documents and position papers
- Increased participation in CITES and policy-related discussions
- Stronger coordination around communication and messaging

The Industry Group is not intended to represent individual businesses or commercial interests, but rather to contribute individual expertise in support of broader conservation goals. That distinction is important, and it reinforces the credibility of the group within the CSG structure.

There is a clear opportunity to build on this foundation. With stronger engagement and more structured output, the Industry Group can play a more influential role in shaping both policy and perception, while continuing to support the conservation outcomes that define this sector.

Communication and Outreach

One of the most important developments since the last report has been a shift toward more intentional and visible communication. At CITES COP20 in Uzbekistan, the side event “Scales of Success: How CITES Saved the American Alligator” provided a strong example of what effective communication can look like at a global level. The event featured a screening of the documentary film followed by remarks from Dr. Grahame Webb, ex-Chair of CSG, and Dr. Alejandro Larriera, current Co-Chair. Both speakers reinforced a central message. The recovery of the American alligator is not an isolated case. It is a model that works and can be applied elsewhere when supported by science, regulation, and market value. The response to the event made it clear that there is strong interest in these stories when they are presented clearly and credibly. It also highlighted a gap. Many of the most successful conservation programs in the world are not well understood outside of a small group of experts. Closing that gap is now a priority. In addition to the film, there has been increased engagement with media, brands, and partner organizations to ensure that information about crocodilian conservation and trade is accurate and accessible. This includes collaboration with groups such as Origins Foundation, ICFA, and IUCN SULi, as well as direct outreach to journalists and industry stakeholders.

CSG Co-Chair Alejandro Larriera, Past Chair Grahame Webb, and Industry Chair Christy Gilmore presenting on crocodilian conservation at CITES COP20 in Uzbekistan, 2025, alongside Ms. Ivonne Higuero, CITES Secretary-General; Mathias Lörtscher, former Chair of the CITES Animals Committee; Mr. Ron Schindler of the U.S. Fish and Wildlife Service; and Mr. Buddy Baker of the Association of Fish and Wildlife Agencies.

Opportunities and Priorities
Despite these challenges, there are clear opportunities. Wild harvest programs, in particular, have an opportunity to be repositioned as premium, conservation-driven materials. These programs deliver measurable environmental benefits and should be recognized as such in the marketplace. There is also an opportunity to strengthen direct relationships with brands. Better understanding at the brand level leads to better decision-making and more stable demand. Improving traceability and transparency will continue to be important, not only for compliance but also for building confidence with both regulators and consumers. Finally, there is a need to continue investing in communication. The industry must be able to explain what it does, why it matters, and how it contributes to conservation in a way that is clear and credible.

Prepared by: Christy Gilmore, Chair of Industry Group
Date prepared: 4 April 2026

Agenda Item: SC. 3.2

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

Trade Monitoring

Currently, data on world trade in crocodilians are obtained from CITES annual reports and the reports from the Crocodile Farmers Association of Zimbabwe. Annual reports to CITES should be submitted by 31 October of the year following that in which the trade occurred and therefore 2024 is the most recent year for which we have reasonably complete data. The deadline for 2024 reports is long past but as usual, some crocodilian producer countries have failed to submit their reports. Although problematic, this is not necessarily disastrous as the data from an exporting country may be recorded in the annual reports of importing countries. The real problem occurs when both ends of the trade route fail to report adequately.

Since the 27th Working Meeting in Darwin, Australia, skin trade data for 2022 and 2023 has been collated for the IACTS reports for the years up to 2024 (here). A further IACTS report is scheduled for completion in June 2026 covering the triennium 2022-2024.

At the time of the initial analysis for the most recent IACTS report (February 2025), several CITES annual reports that might have contained important crocodilian data had not been received by the CITES Secretariat. These included Australia (2022 and 2023), Brazil (2021), Madagascar (2021), Malawi (2021), Venezuela (2021 and 2023) and Viet Nam (2022).

Important missing reports that have now been received include Australia (2020), Mexico (2022), Suriname (2021), USA (2021 and 2022) and Viet Nam (2022 and 2023), and their data have been input to the CITES Trade Database.

A further IACTS report is scheduled for completion in June 2026 covering the triennium 2022-2024.

At the 27th CSG Working Meeting, it was noted that China had reported importing over 400,000 *Crocodylus siamensis* skins from Viet Nam in 2022. In the absence of an annual report from the exporting country it was thought that this may have been an error in the CITES Trade Database. However, subsequent analysis, including annual reports from Viet Nam, has shown that this figure was real, and that further large quantities of skins were exported in both 2023 and 2024.

Prepared by: John Caldwell, Vice Chair, Industry and Trade
Date prepared: 8 March 2026

Agenda Item: SC. 3.3.

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

Veterinary Science

"The CSG Veterinary Science Group provides a platform for the exchange of and access to crocodile specific veterinary knowledge and advises the CSG on veterinary matters relating to crocodilian conservation and farming.
The CSG Veterinary Science Group contributes to advancing crocodile veterinary science and medicine.
The CSG Veterinary Science Group provides support to animals under human care, including farms, zoological or educational institutions, Biologists and researchers, Non-governmental and Government organizations investigating in-situ mortalities and population health status"

1. **Continuation of the Fritz Huchzermeyer Veterinary Science Student Research Assistance Scheme**

   There were 4 recipients of the FHVS-SRAS of $US1000 from 4 countries with one still under review at the time of writing this report.
   - **2024:** Ryan Johnston, Australia: Application of chimeric antigens to paper-based diagnostics for detection of WNV in *Crocodylus porosus*.
   - **2025:** Jose Santiago Pérez-Galvis, Columbia: Hematological/biochemical reference intervals and morphological blood cell characterization of *Crocodylus acutus* in Colombian captive populations.
   - **2025:** Andrea Torzone, USA: Effects of water pollution on the immune system of sub-adult and adult *Crocodylus moreletii* in rivers in Belize.
   - **2026:** Usman Olatunji, Nigeria: Genetic characterisation of herpes virus in African Nile crocodile in Oyo State, Nigeria.
   - **2026:** Adewole Yinka, Zambia: Sero-prevalence of West Nile Virus in captive Nile crocodiles in southwestern Nigeria.

2. **CSG Veterinary Science Group mailing list**

   The veterinary list usage continues to decline, probably suggesting the format of the platform is no longer corresponding to user preferences. In Darwin, we suggested that perhaps a re-structure of the CSG Veterinary Science group was needed to revitalize it although no pathway has yet been identified. There are currently 62 persons on the Veterinary Science e-mail list.

3. **Others**

   We have received and accepted veterinarians' requests to join the mailing list of the CSG. Of particular importance, the addition of:
   - Erin A. Graham, DVM, DACVP, Assistant Professor, Veterinary Pathologist, Tifton Veterinary Diagnostic and Investigational Laboratory, University of Georgia College of Veterinary Medicine, USA
   - Dr. Charmaine Mutswiri, Veterinarian Padenga Agribusiness Pvt Ltd, Sep 2018 - Present Kariba, Zimbabwe

4. **Website updates** http://www.iucncsg.org/pages/Resources-provided-by-the-CSG-Veterinary-Science-Group.html

   The updates concern the lectures presented at the Darwin 2024 CSG Vet workshop (see below).

5. **Darwin CSG Veterinary Workshop (14 April 2024)**

   The workshop was held at Crocodylus Park following the usual format of presentations in the morning and workshop activities in the afternoon. The workshop saw a very good attendance.

   Presentations included: Anaesthesia (Annabelle Olsson), Surgery (case presentation, Steve Cutter), Skin Blemishes (Sally Isberg), Diagnostic Imaging (Paolo Martelli) and Necropsy/lesion recognition/sampling (Cathy Shilton).

   For the workshop component, there were 11 carcases of problem crocodiles available for study. The carcasses were used for necropsy (small groups of participants performing necropsies assisted by roaming instructors) and surgical technique as well as imaging demonstrations. There was also a station for skin blemish analysis (light table).

Prepared by: Paolo Martelli, Cathy Shilton and Gowri Mallapur
Date: 8 April 2026

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

Zoo Thematic Group

USA

Gatorland Global

- $95,976 raised for conservation projects in 2025
- $50,395 distributed to conservation projects around the globe. This includes:
  - $12,950 spent rescuing 15 American alligators (*Alligator mississippiensis*) from euthanasia
  - $15,500 to Holland Bay Crocodile Sanctuary for the conservation of *Crocodylus acutus*. These funds helped improve daily care for rescued and displaced American crocodiles, strengthen community education and outreach, and build long-term stability
  - $9140 for Hurricane Melissa relief in Jamaica: Funds provided clean drinking water for the zoo and nearby families, supported animal caretakers across western Jamaica with food and essential supplies, and enabled Hope Zoo in Kingston to take in displaced and injured wildlife
  - $8000 to Criadero de Cocodrilos Research Center in Cuba for the conservation of *Crocodylus rhombifer*. Funded crocodile rescues, new pools for Cuban crocodile head-start programs, and strengthened breeding, genetic conservation, and long-term survival for *C. rhombifer*
  - $1500 donation to Winter Crocfest 2025 to support the Gharial Ecology Project
  - $1000 to Conservation Florida to protect the Florida Wildlife Corridor and the native species that live there
- Sharing conservation content with 2.3M followers across social media platforms
- Other conservation efforts include:
  - Community-based engagement in Suai Loro, Timor-Leste, centered on *Crocodylus porosus*
  - Partnership with Phoenix Herpetological Society to promote conservation and preservation of native and non-native reptiles through education, rehabilitation, rescue, and relocation. This partnership included sending two Siamese crocodiles (*Crocodylus siamensis*) to Gatorland. Their arrival represents an important opportunity for learning, education, and collaboration. Additionally, we financially helped Phoenix Herpetological Society to set up pools for incoming Indian Gharial from Madras to help further education and awareness.

CrocFest

CrocFest was held at ZooTampa and Wild Florida Adventure Park (Florida, USA) in 2024 and Crocodile Encounter and St. Augustine Alligator Farm Zoological Park (Texas and Florida, USA respectively) in 2025. Taken together, these zoos conservatively donated $US14,000 hosting the events, paying staff overtime and forfeiting sales at the front gate in favor of CrocFest admissions.

Since May of 2024, CrocFest supported conservation and research programs for *C. rhombifer* and *C. acutus* (Cuba), *C. siamensis* (Laos), *Melanosuchus niger* (French Guiana), *Tomistoma schlegelli* (Borneo), and *Gavialis gangeticus* (India and Nepal). The total amount raised over four events was $US188,000, of which $US45,649 (24.3%) was contributed in cash by USA zoos.

In December 2024, CrocFest surpassed $US1M raised for program support.

JAMAICA

Hope Zoo

The American crocodile (*C. acutus*) is the only crocodilian species native to Jamaica and is classified as Endangered and protected by law. Although crocodiles inhabit many of the natural wetlands along the coast, there is a resident population in the urban, human-dominated landscape around Kingston Harbor and downtown Kingston - resulting in numerous human-crocodile conflicts throughout the year.

The Jamaican Government lacks key support, manpower, and expertise when dealing with human-crocodile conflicts and rescue efforts. Accordingly, Hope Zoo plays a vital role in the following:

- Operates as a non-profit and government-permitted rescue & rehabilitation facility. Hope Zoo is the primary facility (1 of only 2) on the island dealing with crocodile rescues & rehabilitation. Its zoo veterinarian is the only vet on the island trained for dealing with crocodiles.
- Responds to government requests to resolve human-crocodile conflicts and associated relocation efforts.

- Hosts two annual crocodile workshops at the zoo in an effort to build up expertise around crocodile rescues and fieldwork on the island. The workshops involve various key government agencies, NGOs, military and police.
- Leads various community outreach activities with schools to help minimize poaching and indiscriminate killings.
- Conducts annual health screening at the Holland Bay Crocodile Sanctuary, from which head-started crocodiles are then released into the wild.
- Assists with various fieldwork (population surveys, tracking studies) in Jamaica as well as providing mentorship to students involved with crocodile research.
- Conducts necropsies of wild crocodiles, and over the last five years has accumulated interesting results for an upcoming publication.

Hurricane Melissa and Crocodile Issues

On 28 October 2025, Jamaica suffered a direct hit by Hurricane Melissa, a record-breaking Category 5 hurricane and the strongest recorded hurricane to make landfall on the island. Melissa caused heartbreaking catastrophic destruction from which communities and infrastructure will take years to recover.

Although Kingston and other areas on the eastern side of Jamaica were fortunately spared from the worst destruction caused by Melissa, Hope Zoo suffered some minor damage to infrastructure but lost all electricity and had no water for nearly four weeks following. Thankfully, many colleagues and facilities from the US quickly stepped up to provide much need support to the zoo and ongoing recovery efforts - notably, much thanks is given to Gatorland Global, CrocFest, Fort Worth Zoo, Zoo Miami, and Greater Good Charities.

On the western side of the island where both communities and mangrove wetlands got completely destroyed, numerous large crocodiles were displaced in the weeks following Melissa, ending up in local communities and agriculture areas. Support funds from U.S. zoos were used to provide two well-trained game wardens in the region with supplies for crocodile captures and tagging as well as food and basic supplies.

Population surveys for post-hurricane impacts are still ongoing so a reliable assessment will not be available for some time. Surveys began in February 2026 since most of the fishermen with access to various wetlands had their boats destroyed in the hurricane.

EUROPE

Fabian Schmidt of Zoo Basel and Rosanna Mangione presented a comprehensive summary of zoo accomplishments in their Europe report. Of particular note is the focus of the European Association of Zoos & Aquaria (EAZA) Reptile Taxon Advisory Group regarding the promotion - through education of zoo industry professionals and zoo guests - of sustainable use in the conservation of crocodilians.

The Cologne Zoo supports initiatives for *C. mindorensis* both through Crocodylus Porosus Philippines, Inc (CPPI) and the Mabuwaya Foundation and has provided Cologne-hatched offspring for head-starting and release within the Siargao Island Protected Landscape and Seascape.

The directors of Spain's Zoologico de Fuengirola in Spain and Crocodiles of the World in the UK head up a Species Committee to support the program goals of the Siamese crocodile EEP. Some EAZA zoos have recently gotten involved in direct conservation action on behalf of the species. Crocodiles of the World continues to collect data on its family group of *C. siamensis*, with behavioral data collected intended to inform zoo crocodile managers regarding the welfare benefits observed.

A Crocs of the World Crocodilian Husbandry Course is being written by Colin Stevenson and Claire Wilkie. Claire Wilkie is working on a crocodilian body score document with feedback from other CSG members from Crocodiles of the World and the BIAZA Reptile & Amphibian Working Group.

HONG KONG

Ocean Park Hong Kong received a 35 kg, 1.9 m crocodile in 2023 that was discovered in Lin Fa Tei village, Yuen Long and then transported to their facility by the Agriculture, Fisheries and Conservation Department. Estimated to be 2-3 years old at time of receipt, DNA testing revealed the animal was a Siamese x Cuban hybrid. Named "Passion," this animal now is on exhibit at the Ocean Park. She serves as an educational ambassador whose story highlights the dangers of invasive species to local ecosystems, promotes responsible pet ownership and highlighting the risks associated with the trade in exotic wildlife.

AUSTRALIA

Zoos Victoria, Parkville, Victoria

Zoos Victoria (ZV) continues its longstanding conservation partnership with the Mabuwaya Foundation Inc. in northeast Philippines, with a primary focus on the Critically Endangered Philippine crocodile, *Crocodylus mindorensis*. The species remains the most threatened species of crocodile in the world, with an estimated 120 adults in the wild. There are two

remaining known breeding populations, in Mindanao Island in the south and northeast Luzon Island in the north. Mabuwaya works on the north Luzon population. 2026 marks the 23rd year of the ZV-MFI partnership.

This partnership includes annual funding that assists with quarterly monitoring of wild crocodiles throughout Isabela and Cagayan Provinces. The total count in 2024/25 of 125 individuals (including hatchlings), which was the highest since conservation activities started in San Mariano in 2000.

In March 2024, Melbourne Zoo's Life Science Manager for Herpetology visited the Philippine Crocodile Conservation Centre (PCCC) at the San Mariano campus of Isabela State University to train Mabuwaya staff on crocodile introduction. Mating subsequently occurred and eggs were laid but they were infertile. The primary goal of the PCCC is to breed locally-sourced crocodiles and release young crocodiles at community-managed sites in Isabela and Cagayan Provinces.

A female Philippine crocodile was imported from Cologne Zoo in July 2025 to pair with the adult male at Melbourne Zoo. She has settled in well and was transferred to the Reptile House following completion of post-arrival quarantine. The two crocodiles are in separate exhibits and will be introduced at the appropriate time.

ZV provided additional funds in late 2024 to assist MFI support for communities hard hit by six successive typhoons that struck Cagayan Province between 20 October and 18 November. The full impacts of these on the crocodile population will not be known for some time.

Australia Zoo, Beerwah, Queensland

Australia Zoo remains engaged in the largest and longest running telemetry study ever undertaken globally on any species. Research objectives: Investigating movement, distribution, abundance and diet to support the management of threatened riverine predators.

This research has been a collaboration between Australia Zoo and The University of Queensland since 2008, with research led by Professor Craig Franklin. Currently, 296 individual *C. porosus* are entered in this acoustic telemetry study, supplemented with targeted GPS tracking of select individuals which allows tracking outside of the acoustic receiver array. Technology developed around this research now includes acoustic tracking devices with a 7-10 year battery life and GPS tracking tags designed specifically for crocodilians, which use in-built solar recharging technology to extend data collection capabilities. GPS tracking systems are now accurate to within 1 metre.

The research extends far beyond movement tracking data, incorporating morphometrics, DNA analysis, body temperature monitoring via acoustic tag data, and stable isotope analysis. This comprehensive approach helps us better understand the growth and development, movement and known range occupation of relevant life stages, diet, and genetic representation of the current research cohort throughout the Wenlock River and its surrounding tributaries.

We have conclusively identified the territory residence of large adult male *C. porosus* by utilizing acoustic and GPS data with Google maps overlay. We now have nearly 20 years of data on certain individuals and their territory defence/roaming over this period. By utilizing built-in solenoid technology on GPS tags, this research has been able to clarify the breath hold capability of *C. porosus* above 7 hours. There is also significant data on female nesting behaviour and their preference for nest-site philopatry.

Research has been conducted on other riverine predators in the Wenlock and Ducie Rivers extending past Port Musgrave and into the Gulf of Carpentaria. The Wenlock River boasts the highest fish biodiversity in Australia and is an important breeding ground for several threatened and endangered elasmobranchs such as Freshwater rays, Sawfish, and Spear-toothed sharks. Research conducted on the Wenlock River and the discovery of its functionality in maintaining healthy breeding grounds for some of its Critically Endangered residents has been integral to legislative changes in commercial fishing practices in Queensland's Northern River systems.

Crocodile Husbandry & Conservation Workshop in early 2027

The Reptile TAG of the Zoo & Aquarium Association (Australasia) is planning a Crocodile Husbandry & Conservation Workshop for early 2027. The venue is yet to be decided, and details will be announced on the ZAA website (https://www.zooaquarium.org.au/) when finalized.

FUTURE ENDEAVORS OF THE ZOOS THEMATIC GROUP

With the understanding that the efforts of zoos listed herein likely excludes more zoos worldwide than those mentioned, future efforts will focus on making contact with more parks and aquaria working with crocodilians, especially those engaging in the support of in-situ crocodile conservation and research.

Prepared by: Colette Adams and Kent Vliet, Co-Chairs of Zoos Thematic Group
Date prepared: 16 April 2026

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

Legal Affairs

Report on Activities

1. I am pleased to report that the CSG has not been a party to any litigation nor has the CSG been called as an expert in any formal legal proceedings since our prior report in Darwin, Australia, on 15 April 2024.

2. CSG members continue to provide evidence and expert advice for governmental agencies associated with regulation of crocodilians. Examples include:

   a. **Australia**: The Federal Department of Climate Change, Energy, the Environment and Water (DCCEEW) initiated a process to review and update the Code of Practice on the Humane Treatment of Wild and Farmed Australian Crocodiles ("the Code") in conjunction with the relevant State/Territory Governments (Western Australia, Northern Territory, Queensland), stakeholders and crocodile specialists from 2023-2025. These regulations set forth standards for the humane capture, restraint and housing of both wild and farmed crocodiles in Australia and ensure the Australian crocodile farming industry continues meet a minimum set of best practice standards.

   The "Northern Territory Saltwater Crocodile (*Crocodylus porosus*) Risk Management Framework 2021-2026" is currently under review.

   In 2024, the latest edition of the Management Program for the Saltwater Crocodile in the Northern Territory (2024-2034) was released. Its purpose is to ensure the "protection, conservation, sustainable use, control and management" of *C. porosus* in accordance with the Territory Parks and Wildlife Conservation Act 1976. Its objectives are to maintain crocodile populations at accepted densities, enable a robust and profitable crocodile industry, enhance Aboriginal livelihoods, enhance public safety, and improve community awareness.

   2025 marked the review, approval and release of the latest edition of the "Wildlife Trade Management Plan (WTMP) for *C. porosus* in the Northern Territory of Australia 2026-2030". The purpose of this document is to ensure the sustainability of commercially harvested Saltwater crocodiles in the Northern Territory, and specifically to fulfill the requirements under the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and CITES.

   Crocodile specialists provided expert advice on the Queensland, Australia Crocodile Control and Conservation Bill 2025. Ultimately, the bill was unsuccessful in the legislature.

   b. **Timor-Leste**: The Government of the Northern Territory of Australia (NTG) is working with the Timor-Leste Government to explore the first steps in developing a Saltwater crocodile management program. The program would, among other things, aim to reduce HCC.

   c. **Malaysia**: Sarawak is currently developing a new management plan for saltwater crocodiles with assistance from crocodile specialists. Recently, a 2-year project aimed at mitigating HCC was launched in collaboration between the Sabah Wildlife Department and the Danau Girang Field Centre. The project will take a community-based approach to mitigating HCC while supporting sustainable conservation management.

   d. **South Africa**: The Scientific Authority & Wildlife Economy Biodiversity Research, Assessments and Monitoring, South African National Biodiversity Institute has reported that a Non-Detriment Finding for Nile crocodiles in South Africa has been approved by the Scientific Authority and is expected to be published in early 2026 for public comment.

   e. **Brazil**: In northern Brazil, the Mamirauá Institute is a social organization funded and supervised by the Brazilian Ministry of Science, Technology, and Innovation. It conducts research, natural resource management, and social development, primarily in the Middle Solimões region, in the state of Amazonas. The objectives of the Mamirauá Institute include conducting applied science and fostering innovation in the adoption of strategies and public policies for the conservation and sustainable use of Amazonian biodiversity. In March 2025, a preliminary management plan model for the Jarauá sector was presented, discussed, and approved by local managers, and subsequently presented to the Deliberative Council of the Mamirauá Reserve. After being

updated, the plan will be submitted to the Brazilian Institute of Environment and Renewable Natural resources (IBAMA) for sustainable harvest of *Melanosuchus niger*.

f. **Peru**: Crocodile specialists and governmental officials have been working on the conservation and management of *Crocodylus acutus* in northern Peru. An assessment guide for the species is currently under review. It will establish standardized guidelines for population monitoring, habitat assessment, threat identification, and priority management actions.

g. **Panama**: The Ministry of Environment, in collaboration with national research institutions, has conducted rapid assessments and systematic surveys along the Pacific coast to update information on habitat status and population density of *C. acutus*. The project aims to identify conflict hotspots, assess specific high-risk individuals, and implement targeted management actions. Concurrently, there is renewed interest in strengthening regulated captive breeding and ranching initiatives, including educational facilities, as part of a broader strategy integrating conservation, conflict mitigation, and sustainable use.

h. **Bolivia**: Crocodile specialists are working with the General Directorate of Biodiversity and Protected Areas, to develop a caiman management plan with clear guidelines for *Caiman yacare* in the country.

i. **Guatemala**: Since 2022, new surveys/studies of *C. moreletii* and *C. acutus* have been conducted in response to human-crocodile conflict at the request of the National Council of Protected Areas (CONAP). Management plans for the conservation of these species are being developed to assist governmental and non-governmental organizations in managing public safety risks associated with crocodiles and provide framework for actions and policies by key institutions responsible for wildlife management.

j. **El Salvador**: The National Program for the Conservation of Crocodilians (PNCCC) is a strategic initiative of the Government of El Salvador aimed at safeguarding *Ca. crocodilus* and *C. acutus*. The program implements monitoring, rescue, environmental education, and international cooperation actions aimed at population recovery.

k. **Costa Rica**: Within the Legislative Assembly, Bill No. 24752, titled "Law for the Control of Crocodiles and Caimans in Costa Rica," is currently under discussion. The bill was introduced in December 2024 and reviewed by the Environmental Commission in February 2025. It has received comments and critiques from multiple conservation organizations. As yet, the Bill has not advanced further in the legislative process.

l. **USA**: The Florida Fish and Wildlife Conservation Commission (FWC) is currently considering new procedures and/or administrative rule revisions to clarify the legal possession, transfer, and transport of *C. acutus* within the State of Florida.

m. **Zimbabwe**: The Crocodile Farmers Association of Zimbabwe (CFAZ) continues to work closely with the Zimbabwean CITES office and the Zimbabwe Parks & Wildlife Management Authority (ZPWMA), on the collation of trade data which is submitted to the WCMC/UNEP. CFAZ has supported veterinary research on crocodiles. HCC is a growing concern amongst CFAZ members and the ZPWMA. In an effort to raise awareness, a series of posters and warnings were printed and circulated to sites in known crocodile conflict areas around the country.

3. Caiman farmers and Industry prevailed against the State of California (USA)

Recall that Plaintiffs, various businesses and industry members engaged in the distribution and sale of products made from alligator and crocodile parts, mounted their legal challenge against the Attorney General of California and the Director of the California Department of Fish and Wildlife, in December 2019. They sued to enjoin the enforcement of provisions of California Penal Code sections 653o and 653p, which were scheduled to take effect on 1 January 2020. Those provisions criminalized the sale and possession for sale of alligator and crocodile parts in California. Plaintiffs claimed, inter alia, that the California law was preempted by federal law (the ESA and CITES), which regulated and permitted those activities. Moreover, on the issue of consumptive utilization of crocodilians, California totally ignored the very real conservation issues (sustained utilization) in favor of creating moral outrage.

Chief United States District Judge Kimberly Mueller ruled on 13 October 2020, that Defendants were enjoined from enforcing California Penal Code Section 653o and 653r in connection with the importation, possession, or sale of American alligator bodies, parts, or products thereof, and of the bodies, parts, or products of CITES Appendix II-listed Saltwater and Nile crocodiles, until the final disposition of the case.

In March 2023, the California Court issued its final opinion, holding that Under the Supremacy Clause of the United State Constitution, California Penal Code Sections 653o and 653r were unenforceable and unconstitutional as applied to the importation, possession or sale of American alligator bodies, parts, or products thereof, and of the bodies, parts or products of saltwater crocodiles and Nile crocodiles subject to 50 C.F.R. s. 17.42. The State of California did not appeal. Accordingly, it remains legal to sell and trade American alligator, Saltwater crocodile and Nile crocodile products in the state of California.

Plaintiffs then sought to exclude certain caiman species from the California ban as well. On 26 March 2024, the same U.S. District Court Judge held that under the Supremacy Clause of the United States Constitution (Article VI, Clause 2), California Penal Code Sections 653o and 653r were declared unenforceable and unconstitutional as applied to the importation, possession or sale of the bodies, parts or products of broad-snouted caimans, brown caimans, common caimans, and Yacare caimans subject to 50 C.F.R. § 17.42.

Prepared by: Curt Harbsmeier, Chair Legal Affairs
Date prepared: 4 April 2026

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

IUCN Red List Authority

Only one Red List (RL; Table 1) has been published since the last Steering Committee (SC) meeting, which was the re-assessment of *Melanosuchus niger* finding that it remains as 'Least concern' (LC). We are grateful for the efforts of all the assessor/authors (R. Botero-Arias, M. Hernández-Rangel, J. Thorbjarnarson, W. Magnusson and R. Da Silveira) and the other CSG members who contributed to, or reviewed, this assessment before submission to the IUCN Red List unit.

Drafts for six African species, including *Crocodylus suchus*, *Osteolaemus* spp*., Mecistops cataphractus* and *M. leptorhynchus* are at various stages of completion with Matt Shirley as project lead. As part of the *Osteolaemus* spp. workshop hosted by Matt Shirley in Cote d'Ivoire in November 2024, the CSG supported Sally Isberg to attend as the Red List Authority Co-ordinator (RLAc) to provide training and support to the assigned assessment teams.

The Action Plan for *C. palustris* was finalised in 2025 and has been used to draft the global RL re-assessment document lead by Colin Stevenson. Once completed, an assessment team for *C. palustris w*ill be formally appointed with anticipated completion by the end of 2026.

Claire Wilkie has joined the RL team and has been assigned to lead the *C. mindorensis* re-assessment. Claire has begun to draft the required documents after which an assessment team *C. mindorensis w*ill be formally appointed.

Recently, the largest limitation which has hampered the progression of RL assessments has been the lack of mapping capacity within the CSG RL team. Due to work and other commitments, our resident mapping experts were not able to assist as readily since the last report. Numerous other avenues were explored including requesting options from and having meetings with the IUCN Red List unit, IUCN Global Reptile Assessment Lead, Reptile Species Survival Specialist at Albuquerque Zoo as well as trying to find private contractors. No private contractor with the necessary skills could be identified. Of the IUCN contacts, the common response was that mapping for Red List assessments is the known bottleneck for RLAs yet no viable options to assist were identified other than training someone. Colin Stevenson and I began learning GIS skills but recognising that not everyone can be skilful at everything, we are very happy to announce that Sergio Balaguera-Reina is back on the team and available to assist. However, this has made us recognise that we need to upskill more people with an interest in, or having existing skills with, GIS so please get in contact if you can help.

In early 2026, Sergio Balaguera-Reina was invited to become the Deputy RLAc. This is a newly defined role which will assist with the progression of our RL obligations to the IUCN SSC as well as provide a succession plan for Red Listing within the CSG. So, the team now consists of Sally Isberg, Sergio Balaguera-Reina, Colin Stevenson and Claire Wilkie. Anyone who would like to become involved in the RL team, please let me know.

A Green Status assessment for *Gavialis gangeticus* was published by Jailabdeen Ajji M., Babu Ram Lamichhane, Phoebe Griffith and Jeff Lang in 2025 to accompany the existing Red List assessment. Thank you to this team who undertook this onerous task. Sally Isberg is currently undergoing Green Status training as organised by the IUCN SSC Australian Species Specialist Group. Once accredited, Sally will work with the appointed *C. mindorensis* RL assessment team to update the Green Status concurrently and become familiar with this process.

In a recent press release, Collective Fashion Justice accused the CSG of receiving payments from crocodilian skin industry donors for favourable global Red List assessments for certain crocodilian species. To clarify, and as evidenced in the current (Agenda item 1.4) and previous IACS financial statements, no payments have ever been made to the Red List co-ordinators, assessors, reviewers or contributors to undertake RL assessments. The CSG has twice supported the travel of the RLAc to attend workshops (2019 and 2024) as well as paid Robinson Botero-Arias, as a post-graduate student, to enter references into the RL SIS database system. Further, the IUCN provides no support, financial or otherwise, to the CSG RLA team including when asked for assistance on mandatory items such as mapping. All CSG Red List assessments, including the CSG RLAc and team, are done on a voluntary basis either as individuals or as representatives of the organisations they are employed by. This accusation, while baseless and misleading, has nonetheless been taken very seriously and to ensure more transparent governance over this process, a declaration statement will be required to be completed by each individual involved in all future assessments declaring any perceived or real conflicts of interest as well as if they agree (or not) with the final RL category determination to be submitted to the IUCN Red List unit.

Prepared by: Sally Isberg, CSG Red List Authority Co-ordinator
Date prepared: 25 March 2026

Table 1. Current status of Red List and Green Status of currently recognised crocodilian taxa.

	Global Red List				Green Status		
Species	**Assessed as**	**Assessed**	**Published**	**Actions**	**Assessed as**	**Assessed**	**Actions**
Alligator mississippiensis	LC	2018	2019	Current			TBA
Alligator sinensis	CR A1b, B1ab(11v)+2ab(ii.v), C1+2a(i)	2017	2018	Current			TBA
Caiman crocodilus	LC	2016	2019	Current			TBA
Caiman latirostris	LC	2019	2020	Current			TBA
Caiman yacare	LC	2019	2020	Current			TBA
Crocodylus acutus	VU A2cd	2020	2022	Current			TBA
Crocodylus intermedius	CR A2bcd, C2a(i)	2017	2018	Current			TBA
Crocodylus johnstoni	LC	2016	2017	Current			TBA
Crocodylus mindorensis	CR A2cd	2012	2016	Plan enacted	CD	2021	Current
Crocodylus moreletii	LC	2020	2023	Current			TBA
Crocodylus niloticus	LC	2017	2019	Current			TBA
Crocodylus novaeguineae	LC	2018	2019	Current			TBA
Crocodylus palustris	VU A2cd	2009	2013	Plan enacted			TBA
Crocodylus porosus	LC	2019	2021	Current			TBA
Crocodylus rhombifer	CR A2cde	2022	2022	Current			TBA
Crocodylus siamensis	CR A2cd	2012	2012	Due			TBA
Crocodylus suchus	Not yet been assessed			Draft almost complete; map required			TBA
Gavialis gangeticus	CR A2bce	2017	2019	Current	CD	2025	Current
Mecistops cataphractus	CR A2acde+3cde+4acde	2013	2014	Map required to complete assessment			TBA
Mecistops leptorhynchus	Not yet been assessed			Map required to complete assessment			TBA
Melanosuchus niger	LC	2023	2025	Current			TBA
Osteolaemus tetraspis	VU A2cd	1996	1996	Drafts advancing; maps required			TBA
Paleosuchus palpebrosus	LC	2018	2019	Current			TBA
Paleosuchus trigonatus	LC	2018	2019	Current			TBA
Tomistoma schlegelii	EN C2a(i)	2022	2023	Current			TBA

Red List codes: LC= Least Concern, VU= Vulnerable, EN= Endangered, CR= Critically Endangered

Green Status codes: FR= Fully Recovered, ND= Non-Depleted, SD= Slightly Depleted, MD= Moderately Depleted, LD= Largely Depleted, CD= Critically Depleted, ID= Indeterminate.

TBA= ‘to be advised’

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

Drone Working Group

Activities

During November 2025, we organized a drone training course at CIMFAUNA, held in San Cristóbal de las Casas, Chiapas, Mexico. There were 25 participants, including CSG members.

Through 2025, we collaborated in the organization of the Global Conservation Tech and Drone Forum in Nairobi, Kenya. On 1-6 March 2026, Lonnie McCaskill participated in the event. There were over 700 total attendees over the 5 days of the meeting.

In Argentina, in partnership with Predelta National Park, we are currently testing strategies to monitor crocodiles using thermal cameras at different times of day.

Publications

Aubert, C.; Le Moguédec, G.; Velasco, A.; Combrink, X.; Lang, J.W.; Griffith, P.; Pacheco-Sierra, G.; Pérez, E.; Charruau, P.; Villamarín, F.; et al. 2024. Estimating total length of partially submerged Crocodylians from drone imagery. Drones 8: 115.

Thapa GJ, Thapa K, Poudel S, Pun DBP, Shrestha S, Poudel P, et al. 2025. Eyes in the sky: Drone monitoring of the largest gharial and mugger populations in the East Rapti River, Chitwan National Park. PLoS One 20(8): e0330350.

Kpatchia E.J. and Armel Nago S.G. 2025. Advancing crocodiles conservation through aerial ecological monitoring with drones in West Africa. Journal of Entomology and Zoology Studies 13(5): 55-62.

Prepared by: Lonnie McCaskill and Carlos Piña, Co-Chairs Drone Working Group
Date: 7 April 2026

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

Living with Crocodilians Working Group

Background and membership
Following the 27th CSG Working Meeting, the CSG Executive supported the establishment of the Living with Crocodilians Working Group (LWCWG; previously Human-Crocodile Conflict WG), chaired by Simon Pooley. A team was recruited (Table 1) aiming to balance geographic coverage insofar as possible, with links to active HCC work or relevant organisations, and key HCC species in mind. The group has met monthly since inception, except for June/July 2025 and early 2026, and have captured four member videos on HCC in their regions so far.

LWC WG Projects

1. Questionnaire

The initial project was to put together a global questionnaire survey to gather preliminary information as a basis for providing guidance on HCC management measures for the CSG and all interested parties. WG members contributed to several drafts, which was ready to go by late 2024. This was then entered into KoboToolbox and tested, before being launched in February 2025. It was shared through the CSG membership as well as specifically requesting regional chairs to share the link and encourage relevant persons in their networks to complete the survey. We publicised it further through various social media platforms, and through a Working Group/Project website hosted by Birkbeck University of London (here). We also did a lot of work translating the English version into Bahasa Indonesian (thanks to Jan van der Ploeg) and South American Spanish (thanks to Paulino Ponce Campos and Laura Porras). These were also launched in 2025.

Unfortunately, while many members are enthusiastic about discussing HCC, it is another matter entirely to persuade them to contribute work towards projects focused on addressing it. I am grateful to the 49 CSG members who responded to the English survey, and 4 Spanish respondents, but while we will draw on this information (summarised in a precis report to the Executive in November 2025), given that it is from motivated and experienced individuals, it cannot be said to be representative of HCC across our regions.

Based on this first small sample, we can conclude that safety awareness and education, sending representatives to attacks sites to report and talk to locals, and monitoring crocodilans, are those actions believed most effective. Translocation was almost universally believed to be ineffective. Some strategies more common in human-wildlife conflict work on other species seem to be little tried (according to our limited sample) in crocodilian issues management, notably compensation (of any kind), and livelihoods-related changes (not referring to sustainable use). Least evaluated are providing community benefits, improving infrastructure, and changing (human) behaviour. Overall, it seems a clear challenge that many listed methods are not implemented, or if they have been, have not been evaluated.

Emerging from WG discussions, there is strong interest in outreach and awareness materials, and we decided in the first instance to prepare a media card with advice on reporting crocodilian attacks (see below). There is also strong interest in considering synergies with other projects targeting infrastructure, livelihoods, etc., in rural areas, where actions will directly improve safety around crocodiles (eg provision of water in safe places, toilets, etc.). Guidance on doing so would be useful we feel (locals may appreciate such actions but not connect it with protecting crocs). Crocodile Exclusion Enclosures (CEEs) have already emerged as a focus for more research and design work, and evaluation.

2. Literature review

With the above in mind, I decided to undertake literature reviews of the CSG regions based on my biannually published bibliography of Human-Croc Interactions, Croc Digest. I generated these as AI summaries of only the uploaded documents for each region listed in Croc Digest, edited by myself and distributed to WG members from that region or country for comment, to be integrated by myself. We have completed those for the USA (treated separately), Mexico (treated separately), Central America and Caribbean, and South America. My thanks to Morgan Hart, Paulino Ponce Campos, Lauro Porras Murillo and Ronis Da Silveira for the input on these. I have completed the same for our African regions, but would prefer external checks on these. We should have these completed with an overview to present at the Morocco meeting.

3. Media

We have prepared a brief guidance document on how to (and not to) discuss crocodilian attacks in the media. A draft was sent to Matt Brien in February 2026, and will also be presented in Morocco. We also updated text for the CSG HCC-related pages, and are thinking about content for the relevant page on the new CSG website when it arrives.

Other WG activities

As Chair of the group, I have been busy with other smaller HCC and CSG tasks, including reviewing funding applications to the CSG, and academic papers, and supporting students studying HCC most recently Antonia Geibel's MSc project on HCC in Murchison National Park, Uganda. I reviewed a funding application for a PhD applicant hoping to work on HCC in Tanzania, which would be welcome.

In January 2025, I had discussions with Pablo Siroski and Robinson Botero Arias about ongoing HCC-related work in Colombia. Laura Porras presented on HCC and our work at the El Salvador CSG regional workshop.

I helped Bobby Cross develop some poster illustrations for mitigating HCC in African countries, although we are unclear of whether they have been distributed and who has ownership of the copyright.

Prepared by: Simon Pooley, Chair of CSG Living with Crocodilians Working Group
Date prepared: 27 February 2026

Table 1. Current members of LWCWG.

Member	Affiliation	Region
Ronis Da Silveira	Instituto de Ciências Biológicas, Universidade Federal do Amazonas, Brazil	Brazilian Amazonia
Yusuke Fukuda	Department of Environment, Parks and Water Security, Northern Territory Government	Australia (NT)
Mohd Izwan Zulaini Abdul Gani	Sarawak Forestry	Sarawak, Malaysia
Morgan Hart	S. Carolina Department of Natural Resources, USA	SE states of the USA
Rainier Manalo	Crocodylus Porosus Philippines Inc.	Philippines (Southeast Asia)
Laura Patricia Porras Murillo	Wildlife Management and Conservation International Institute, National University, Costa Rica	Costa Rica, Southeast Mexico
Paulino Ponce-Campos	Bosque Tropical Investigación para la Conservación de la Naturaleza. A. C., México	México and Latin America
Brandon Sideleau	Charles Darwin University, Northern Territory, Australia/CrocAttack	Indonesia, Papua New Guinea, Timor-Leste
Colin Stevenson	Crocodiles of the World, UK	South Asia & Iran, Europe
Jan van der Ploeg	Van Hall Larenstein University of Applied Sciences, Netherlands	Philippines, Solomon Islands, Indonesia

Agenda Item: SC. 4.3.

Crocodile Specialist Group Steering Committee Meeting
Agadir, Morocco
(12 May 2026)

Communications EAP and Communications Working Group

The Communications EAP developed a Communication Strategy to reflect the mission and goals of the CSG and serve the needs of target audiences in a constantly evolving world. The strategy was also intended to provide appropriate platforms to share current events, news, and other relevant information. Communicating CSG activities has the potential to influence the status of crocodylian conservation.

The draft strategy was sent to all Steering Committee members, and their feedback was incorporated as appropriate into the final document. The Strategy went into effect in May 2025 and is effective through 2029.

Following the endorsement of the Communications Strategy, the Communications EAP developed an action plan to deliver the strategy. From the Communications Action Plan, Terms of Reference were drafted for a Communications Working Group (CWG) which was endorsed in October 2025.

The first objective of the CWG was to redesign the CSG website to ensure functionality, improve attractiveness and increase readership. Of that, Action Item 1.1 was to establish a Website Committee which presently includes Sally Isberg, Jen Brueggen, Colin Stevenson and Venetia Briggs-Gonzalez as Chair. Meetings have been regular and productive and Action Items 1.1 through 1.3 have been completed.

A new website road map has been designed, and a mock-up was presented to the Executive Committee for approval to proceed. Jen Brueggen has been engaged as the web designer to deliver the project.

The next steps for the CWG are to identify individuals to write the content for each page of the website based on their expertise (e.g. Red List Authority, Taxonomy Working Group, etc.). for this we will be relying heavily on the input from Steering Committee members. The final content will be approved by the Executive Committee.

The timeline to deliver the new website is 12 months from Terms of Reference endorsement (October 2026) but we are expecting to deliver before this time.

Prepared by: Venetia Briggs-Gonzalez
Date prepared: 27 March 2026

Agenda Item: SC. 4.4

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

Ecotoxicology Working Group

The CSG's Ecotoxicology Working Group (EWG) was formally established following the endorsement of its Terms of Reference by the CSG Executive Committee on 19 January 2026. The EWG has identified three principal objectives:

- Objective 1: Establish a network of ecotoxicology and toxicology specialists with expertise in Crocodylia to provide support to CSG members.

- Objective 2: Develop standardised protocols and practical guides to support sample collection, preservation and analysis techniques relevant to crocodilians.

- Objective 3: Develop protocols for assessing the impact of crocodilian population and their health.

After the approval of the Terms of Reference, a call for expressions of interest was conducted from 4 February to 18 February 2026. Twenty-three (23) individuals submitted interest in joining the EWG. Following a review undertaken in consultation with the CSG Executive Officer, 17 applicants were selected. The six applicants who were not selected were invited to contribute to the work of the EWG through the review of draft documents.

The inaugural meeting of the EWG was convened on 13 March 2026, with 14 participants in attendance. This meeting marked the formal initiation of the EWG's activities, during which key organizational and operational matters were deliberated. The EWG further agreed to convene a dedicated working session at the 28th CSG Working Meeting in Morocco.

Members of the EWG have commenced the development of a comprehensive inventory of available expertise and equipment, with the objective of supporting CSG members engaged in ecotoxicological research in crocodilians.

Prepared by: Jérémy Lemaire, Chair of the Ecotoxicology Working Group
Date prepared: 14 April 2026

Agenda Item: SC. 4.7.

Crocodile Specialist Group Steering Committee Meeting
Sofitel Royal Bay Hotel, Agadir, Morocco
(12 May 2026)

Young Professionals Task Force

The IUCN SSC Young Professionals Task Force (YPTF) aims to "engage, support, and develop young professionals' expertise in research, policy-making, conservation planning, and implementation of multilateral environmental agreements in Red List Authorities and Taxonomic Groups", as well as to implement the IUCN Youth Strategy (2022-2030). According to the IUCN Youth Strategy, Young Professionals need to be embedded in every level of decision making and be found working in every commission. Thus, the YPTF seeks to ensure that young professionals build capacity for functioning in taxonomic groups.

Definitions: Young Professionals are people aged between 18-35 years. This is related to the general concept within the IUCN of "young people", which would also include youth, who are people aged between 15-24 years. Both are considered in the IUCN Youth Strategy (2022-2030), which seeks to "amplify young voices and actions that will determine much about the natural world they inherit from current generations".

Priority actions from Youth Strategy: Of the short-term priority actions of the Youth Strategy, Commission Goal 1.1 is to "enhance the role of young professionals in Commissions by improving their representation in thematic/specialist groups, by creating roles at the leadership level as well as by nominating young professional focal points". Commission Goal 1.2 is to "offer capacity building (formal/informal) for young professionals on policy, procedures, strategic planning, etc. within the Union, including through two-way mentoring".

For the CSG, the goal of nominating young professional focal points has been achieved by the nomination of Brinky Desai and Phoebe Griffith, who are the focal points on the Steering Committee, as well as part of the team of the YPTF. To maintain that such a role provides both representation for Young Professionals, as well as a capacity building opportunity for the focal points, they propose that this is a time-limited role, with an approximately 4-year tenure. They propose that replacements should be nominated and role handed over before the Steering Committee Meeting in 2030.

More broadly, the CSG already has a considerable membership of Young Professionals and has in the past had its own YPTF-like initiative with the "Future Leaders Program". This program was dissolved at the 27th Steering Committee Meeting having met its goals and many of the program's participants now in CSG leadership roles. However, these members are now outside of the "young professionals" age category meaning that representation of Young Professionals in senior or leadership roles is again limited. Consequently, with respect to the Youth Strategy Commission Goals 1.1 and 1.2, it would be good to establish an accessible method for communication of (or where necessary, establish) the processes within the CSG for:

(a) Identification of CSG member Young Professionals to the focal points, to facilitate additional opportunities and feedback to the YPTF and CSG;
(b) Young Professionals to build capacity to eventually step into leadership roles, including as Regional Chairs and within Thematic Groups; and,
(c) Young Professionals to take part in capacity building, but also to provide capacity, for CSG and CSG-led activities. This could include IUCN actions such as Red Listing, as well as linked activities such as CITES involvement or report production.

Of the short-term priority actions of the Youth Strategy, Commission Goal 2.1-2.3 generally apply more broadly at the Commission level, and can be summarised as promoting intergenerational partnerships, knowledge sharing and culture of collaboration, networking and knowledge sharing events and intergenerational dialogues, and support and opportunities for young people.

The CSG already has multiple mechanisms for including Young Professionals at a pre-membership and 'first steps' career stage. These involve the Student Research Assistance Scheme (SRAS), which provides financial, mentoring and networking support to students. In addition, the YPTF focal points have set up the Early Career Croc Network (ECCN). This is an informal group that meet online for networking, capacity building, and for webinars with experts in the field, many of whom are typically CSG members. Feedback from Young Professionals in the CSG and ECCN has highlighted there is an active and supportive network provided by the CSG membership, supported by the Executive and Steering Committees. Ongoing support includes mentorship, advice, professional contacts, training opportunities, and funding initiatives such as SRAS. Several members noted that participation in CSG activities and meetings helped them advance their careers, publish their work, and gain international exposure. Additionally, members of the ECCN (of which ~50% are CSG members) emphasized that ECCN has provided a welcoming and supportive global community where young professionals can exchange ideas, discuss research challenges, and learn from experienced crocodilian specialists. The

regular seminars and discussions were frequently mentioned as valuable opportunities to gain knowledge, inspiration, and receive practical guidance. Members also appreciated the networking opportunities offered by ECCN, which have helped them connect with peers and senior researchers, develop research ideas, and in some cases, establish collaborations. Greater intergenerational dialogues, perhaps as part of a future working meeting, to facilitate learning from more experienced and senior CSG members in a structured way could be an excellent way to ensure both intergenerational and international knowledge exchange. Furthermore, the contribution of senior CSG members to ECCN webinars has been hugely valuable in 2022-2026, and future sessions with more CSG members are warmly invited. Overall, Young Professional CSG and ECCN members expressed strong appreciation for both the CSG and associated ECCN remarking that these platforms have significantly contributed to building capacity, fostering collaboration, and strengthening the global community of early-career crocodilian researchers and conservationists.

A major limiting challenge identified by Young Professionals in the CSG, as well as those members of the ECCN who would like to join the CSG in future, is the financial difficulty of attending CSG working meetings. For example, the costs of registration for the 2026 meeting have\ been highlighted as a prohibitive cost by multiple Young Professional (current and aspiring CSG members) who are therefore unable to attend. Specific calls for financial support for Young Professionals to apply to, especially for regional attendees (ie the current meeting is in Africa, so for African Young Professionals), have been suggested as a beneficial way to enhance inclusion. Reduced fees for Young Professionals (i.e. not only students), especially from low- or middle-income countries may be mechanisms to facilitate inclusive access to early career crocodilian professionals.

Feedback highlighted additional future hopes for increasing practical opportunities and accessibility for Early-Career and Young Professionals. These included the potential for additional support to acquire funding such as small grants, and expanded training opportunities through workshops, field courses, and hands-on experiences such as capture techniques, tagging, monitoring, and field survey methods. Practical training opportunities with crocodilians are unevenly distributed geographically, and many Young Professionals highlight the difficulties of obtaining the practical skills necessary for crocodilian work in underrepresented regions. An additional suggestion was the creation of a formalized system of one-on-one mentorship with senior experts (separate from the SRAS mentoring offered in the application) that could help Young Professionals to plan their careers and develop strong research skills to advance crocodilian conservation. It was suggested that additional mechanisms for communication of opportunities could be beneficial, including a section on the website for the sharing of job vacancies, grants, internships, and research collaborations.

Greater regional networking, facilitated by both virtual and in-person meetings, was highlighted as a regionally-led activity that would be welcomed by, and could be supported by capacity from, Young Professionals.

In summary, increased financial support for attending meetings, structured mentorship, and improved access to opportunities, especially those in practical training, are identified as important ways to support the next generation of crocodilian researchers and conservation practitioners, and could enhance the already excellent opportunities the CSG provides.

Actions of CSG members to build capacity and experience of Young Professionals: We report here on collaborative activities by CSG members that seek to improve early-career opportunities for Young Professionals starting in a career with crocodiles. Activities directly led by the CSG or focal points (ie SRAS and ECCN) are not included.

- The European Croc Networking Meeting took place in 2026 in Berlin, hosted by the IGB and Berlin Zoo and Aquarium. Details are given in the Europe regional report. Specifically related to Young Professionals, the meeting provided three free places to Young Professionals, and offered two grants to support attendance.
- The Wetlands and Integrated Study of Ecology (WISE) Lab, and the Clemson University Belle W. Baruch Institute of Coastal Ecology and Forest Science (BICEFS), in collaboration with the European Croc Network, will host a five-day hands-on workshop in April 2026 to provide capacity building opportunities for Young Professionals and early career students and researchers based in Europe.

Reports of Young Professionals current crocodilian projects: we attach a short list of Young Professionals currently working on crocodilian projects. We include a representative list from both CSG and ECCN members to highlight the breadth of Young Professional-led projects currently ongoing.

Updates from current Young Professionals and/or early career CSG members:

- **Herdhanu Jayanto - East and Southeast Asia.** Conducted the first GPS/satellite tracking of wild Tomistoma in Indonesia. Studied adult home ranges while involving students and stakeholders.
- **Miriam Boucher - North America**. Studying contaminants such as microplastics and PFAS in American alligators. Using alligators as biomonitors of environmental health. Previous and current CSG SRAS recipient.
- **María Catalina Pinzón Barrera - Latin America and the Caribbean.** Monitoring Orinoco crocodiles and human interactions. Developing coexistence protocols and national databases. Previous CSG SRAS recipient.
- **Meljory D. Corvera - East and Southeast Asia.** Participates in crocodile surveys and training programs in the Philippines. Maintains the national human-crocodile conflict database.
- **Brian Martin - East and Southeast Asia.** Developing crocodilian research projects and seeking funding. Preparing for future fieldwork and conservation activities.

- **Charles Edward - West and Central Africa.** Conducted surveys on African dwarf crocodiles in Sapo National Park. Assessed distribution and conservation needs.
- **Jailabdeen A - South Asia and Iran.** Leading long-term ecological research on gharials in the Chambal River. Working with forest departments on conservation actions. Previous CSG SRAS recipient.
- **Simon Booth - Australia and Oceania.** Working on eDNA detection of saltwater crocodiles. Research includes contaminants, conflict mitigation, and monitoring technologies.
- **James Szewczyk - Europe.** Co-organising the European Crocodile Networking Meeting and field workshops. Developing and testing innovative crocodile capture methods.
- **Bilal Mustafa - South Asia and Iran.** Studying historical distribution and cultural importance of gharials. Developed extinction timelines across the Indus Basin.
- **Gaurav Vashistha - South Asia and Iran.** Working on gharial and saltwater crocodile conservation projects in India. Involved in monitoring and management initiatives. Previous CSG SRAS recipient.
- **Kasahun Delene Deyassa - East and Southern Africa.** Working on Nile crocodile conservation at Arba Minch Crocodile Ranch. Supporting long-term management activities. Previous CSG SRAS recipient.
- **Bobby Greco - North America.** Conservation and research on *Crocodylus acutus* in the Dominican Republic (full report to Regional Chair). Previous and current CSG SRAS recipient.
- **Paulo Braga Mascarenhas Junior - Latin America and the Caribbean.** Researching caiman population dynamics and urbanisation effects. Studying human–crocodile conflicts in coastal habitats.
- **Divya Bhattarai - South Asia and Iran.** Continuing mugger research projects in Nepal. Working on follow-up studies in Koshi Tappu Wildlife Reserve.
- **Patrick Hennessey - Europe.** PhD research on giant crocodile biology using museum collections. Studying skull morphology and evolutionary patterns.
- **Cristian Pizzigalli - West and Central Africa.** Researching *Crocodylus suchus* populations using molecular ecology. Studying genetic diversity and connectivity across desert regions. Previous CSG SRAS recipient.

Updates from current Young Professional and/or early career ECCN members:

- **Bishal Prasad Neupane - South Asia and Iran.** Working on crocodilian research and awareness programs in Nepal. Promotes conservation and tourism linked to Gharials and Muggers.
- **Mehul Singh Tomar - South Asia and Iran.** Conducting ecological studies on crocodilian populations. Using field-based methods to improve understanding of species ecology.
- **Megha Khanduri - South Asia and Iran/Europe.** Completed doctoral research on light pollution impacts on gharials. Studied behavioural responses and habitat-level light exposure in the Ganga Basin.
- **Ranjana Bhatta - South Asia and Iran.** Monitoring Gharial reproduction in Narayani-Rapti and Karnali Rivers. Conducting community-based conservation activities.
- **Josh Dregalla - North America.** Developing a crocodilian parasite database. Studying evolutionary relationships of crocodilian parasites
- **Sabina Shakya - South Asia and Iran.** Conducting Gharial and Mugger conservation and coexistence research. Leading awareness and community outreach programs. Current CSG SRAS recipient.
- **Hayley Sprawling - Europe.** Working in crocodilian husbandry and enclosure design. Managing Tomistoma and caiman species in zoological facilities.
- **Ashaharraza Khan Zakir Khan - South Asia and Iran.** Building experience in crocodile and Gharial surveys and field protocols. Developing research and monitoring skills.
- **Shricharan Desai - South Asia and Iran.** Monitoring Mugger crocodile populations in Goa and nearby regions. Studying human-crocodile interaction patterns.
- **Milena Bors - South Asia and Iran/West and Central Africa.** Working on genetic diversity and connectivity of mugger crocodiles in India. Planning habitat conservation research in West Africa.

Prepared by: Brinky Desai and Phoebe Griffith, IUCN SSC Young Professionals Task Force Focal Points
Date prepared: 27 February 2026