

Crocodile Specialist Group Steering Committee Meeting
Double Tree Hilton, Darwin, Australia
(15 April 2024)

Southeast Asia Report

Laos

WCS Laos, January 2022-February 2024

Wildlife Conservation Society (WCS) Laos monitors Siamese crocodile nests, collects eggs and incubates to head start in two local communities: Tan Soum and Dogyanong Villages. We have been working with Tan Soum for almost 10 years (off and on) and recently Dongynong Village constructed a head start rearing facility. Currently, a total of 152 juvenile are being head started 138 at Tan Soum and 14 at Dongynong. Of these 37 are planned to be released in March 2024 into the wetlands adjacent to the Tan Soum Village.

In 2022, 47 juvenile Siamese crocodiles were released, and in 2023, 31 juveniles were released.

The Lao Conservation Trust for Wildlife (LCTW) has had a large group of Siamese crocodiles that they have had for several years. There has been some DNA work done by Cologne Zoo and Thomas Zigler to identify purebred Siamese crocodiles whereby a large percentage were identified as purebred. Many were scute-clipped for identification and are now being established as breeding colonies for reintroduction of offspring. However, over the years, the group has been divided up for management purposes and many of the “marked” animals are hard to clearly identify now.

Unfortunately, LCTW had to relocate to a new location and move the entire zoo collection. With the move to a new location, there is even a stronger interest in better managing these crocodiles and to do follow up genetics testing of the animals with the main goal is to support in situ conservation through captive breeding. This group has the potential to add significant numbers of crocodiles for reintroduction in the future.

LCTW have now successfully bred and donated 9 hatchlings to be released in the Tan Soum wetlands in 2026 to add genetic diversity to this population.

Cambodia

WCS Cambodia, January 2022-February 2024

WCS continues to monitor the area of the Sre Amble River where they have collected, and head-started several juveniles at the Koh Kong Endangered Reptile Center. At the center, they hatch and raise both Siamese crocodiles and *Batagur affinis*. The last release of Siamese crocodiles was in 2023, with 15 1.5-<2 m animals from clutches hatched in 2019-20. Since then, there have been few nests found to only contain infertile eggs, and no nests have been found since 2021 containing only infertile eggs.

Monitoring continues along the Sre Amble and will be incorporating the use of drones to look for additional nests in the surrounding oxbow lakes adjacent to the Sre Amble River

Rising Phoenix has released Siamese crocodiles at two sites in Cambodia:

In Boeng Nava 15 Siamese Crocodiles were released in March 2022 and in May 2022 4 additional crocs were released in the same area for a total of 19, 3 of which were males and 5 of the May release animals had Argos transmitters attached for post-release monitoring. In 2023, 6 nests were located at this location - none were successful.

A release of 10 animals is planned for March 2024 in a designated deep pool of the O’Khampha River, and an additional 30 Siamese crocodiles are proposed to be released into the same sanctuary by the end of 2025. All crocodiles released are scute-clipped and DN-tested prior to release to eliminate hybrids.

Fauna and Flora

Report to CSG: Highlight Report on Fauna & Flora’s Cambodian Crocodile Conservation Project (CCCP), (April 2022-December 2023)

1. Monitoring Key Populations

- Annual monitoring was conducted in five crocodile sanctuaries (O'Som, Areng, Chhay Reap, Tatai Leu and Steung Khiew) in the Cardamom Mountains. Analysis of monitoring data from the last two decades indicates that the population in the Cardamom Mountains is stable overall, with the two sites known to hold the largest populations of the species showing evidence of reproduction, and a stable and growing population, respectively.
- In May 2022, we found one nest with a total of 22 eggs in the release site of Chhay Reap, unfortunately, none were fertile. We also set up two camera traps near the same crocodile nest to monitor any activities, and we captured some great photos and videos of a female crocodile guarding her nest and Monitor lizards preying on the eggs which presents some interesting insight on the ecology of the species.
- In June 2023, we found another nest in Trapeang Peing crocodile sanctuary with 21 eggs (17 fertile, 4 infertile). We moved the fertile eggs to a safe area and guarded them for 24 hours, but these eggs were affected by serious floods in the Cardamom Mountains between July and August.
- Hatchling night surveys were conducted at critical crocodile breeding sites of O'Som, Chhay Reap and Areng between August and October 2022. No hatchlings were seen, but 5 juvenile crocodiles (70-90 cm TL) were sighted during the night surveys in Trapeang Peing of Chhay Reap critical site.

2. Release

- We have successfully released 10 crocodiles (2 males and 8 females) in the upper Stung Kampong Tachey River in a community-protected sanctuary in the Cardamom Mountains in December 2022. All 10 crocodiles released were fitted with acoustic tags and the largest two (202 cm and 205 cm TL) were also fitted with satellite tags. We expect that satellite and acoustic tags will generate vital data to monitor their movements post-release. Since 2012, a total 146 purebred Siamese crocodiles have been released into safety areas of the Cardamom Mountains. In addition to this, we collected eight eDNA samples from the Chhay Reap release site to test the method's potential for crocodile surveys and to identify other wildlife in this area, including prey fish diversity.
- We have continued working with Rising Phoenix, a conservation enterprise that co-manages Siem Pang Wildlife Sanctuary in northern Cambodia, providing technical assistance for the release of Siamese crocodiles in the area.
- We have already sought the release permission from the Ministry of Agriculture, Forestry and Fisheries (MAFF). We plan to release other 50 crocodiles into Cardamom areas in late February 2024.

3. Protection and Crocodile Sanctuaries

- We continue to support and closely work with 26 crocodile community wardens to patrol in O'Som, Areng, Chhay Reap, Tatai Leu and Steung Khiew (Cardamom Mountains). Wardens are using SMART patrols system within their sites to help conduct monitoring, and to evaluate and respond to threats at each site more effectively. In mid-2022, the project staff provided separate intensive two-day trainings on the application of the SMART Mobile App for field and photo-based patrol data collection to crocodile community wardens each site to further strengthen capacity in their patrols. Training included practical use of the app in the field.

4. Captive Breeding Program at Phnom Tamao Wildlife Rescue Center

- The Siamese crocodile conservation breeding facilities at Phnom Tamao Wildlife Rescue Centre (PTWRC) have been maintained up to the highest standards, ensuring all crocodiles kept are in optimal conditions. From 2022 to 2023, our captive breeding program produced 138 hatchlings (60 in 2022 and 78 in 2023), and currently holds a total of 269 Siamese crocodiles (10 breeding males, 43 breeding females, 129 sub-adults and juveniles, and 87 hatchlings) as part of the breeding and release program. All of them are healthy and well cared for by our expert crocodile team.
- From 2022 to 2023, we conducted DNA sampling with 75 crocodiles, and identified 63 of which as purebred Siamese crocodiles and 12 as hybrids.

5. Others

- In July 2022, FFI submitted an official letter to the Ministry of Environment requesting permission for the trial release of 10 satellite-tagged Siamese crocodile into Prek Toal Ramsar Site of the Tonle Sap Biosphere Reserve, to attempt the re-establishment of a wild population in Tonle Sap. FFI obtained the free, prior and informed consent of the local communities in the area, as well as the support from relevant sub-national authorities including the Fisheries Administration. However, the Ministry of Environment advised against the release of crocodiles in the area, given concerns about the safety of the human population living in the lake, and suggested other areas are identified instead.
- In March 2023, we conducted a crocodile survey and habitat assessment in O'Chay and O'Chentong within Virachey National Park (VNP), Siem Pang district, Steung Treng province, but no evidence of Siamese crocodile was found. Habitat assessment of these rivers were not suitable for release crocodiles during this survey; much of rivers were dry and shallow water with only a small number of Anlongs remaining water in dry season. Anlongs were generally small and very shallow, often less than 1 m deep and about 50-150 m long, and thus unsuitable for crocodiles.
- In August 2023, we collaborated with Provincial Department of Environment in Ratanakiri to assess habitat suitability for Siamese crocodile reintroduction/reinforcement in O'Kanhou, Virachey National Park (VNP), Ratanakiri Province; however, habitats were less suitable for crocodiles, especially reproduction, and support

only small population. We plan to conduct the trial release into the habitats of Virachey National Park. We will conduct FPIC process in March 2024.

Indonesia

Some bullet points for Indonesia were provided by Herdanau Jayanto.

- (2022) report *C. halli* in Mappi and Bouven Diguel, South Papua. No ongoing survey so far from BKSDA Papua.
- (2022) Two Tomistoma studies conducted in Sebangau National Park by students from UGM (<https://etd.repository.ugm.ac.id/penelitian/detail/221808>, <https://etd.repository.ugm.ac.id/penelitian/detail/22425>)
- (2023) Progress report published on Tomistoma movement ecology study in Berbak National Park, Jambi (<https://arccg.is/1CjTWX>)
- (2023) Saltwater crocodile was proposed to be downlisted from the protected species list
- (2023) Consortium of Yayasan Ulin-YASIWA just wrapped up their TFCA project, the deliverable is the Mesangat-Suwi symposium, document of analysis of habitat and bioecology of crocodile in Mesangat-Suwi, and document of management guide for crocodile habitat in Mesangat-Suwi. Though we don't have access to those documents
- (2023) First national SOP on wildlife rehabilitation RESCUE OF FOUND, CONFISCATED, AND SEIZED LIVE WILDLIFE AS A RESULT OF LAW ENFORCEMENT by Ministry of Environment and Forestry was published, but still need suggestion and species-specific SOP such as for crocodile
- (2023) 23 Saltwater crocodiles were released to Sembilang National Park, South Sumatera

Thailand

The Thai Crocodile Farm Association (TCFA), formerly the Crocodile Management Association of Thailand (CMAT), was established in 1991. Its main objective is to gather attention from all stakeholders to increase wild Siamese crocodile populations. There have been three release programs implemented since 2000 (two by CMAT & TCFA and a DNP release program). These reintroduction programs had little contribution to the wild stocks in terms of number of viable populations, but the capability has been built up within the relevant government agencies for the successful restocking of the species in the future.

The management authorities of the Siamese crocodile population in Thailand are from two different ministries. The Department of Fisheries (DoF), Ministry of Agriculture and Cooperatives, is responsible for captive population, while the Department of National Parks (DNP), Wildlife and Plant Conservation, Ministry of Natural Resources and Environment is responsible for wild population and their habitats. The main obstacles are the suitable habitats and the multiagency cooperation. Each government agency has its own master plan to manage the habitat and the species.

TCFA has been involved in improving the status of wild Siamese crocodile populations, by continuing to encourage and support any reintroduction programs by government agencies. Recently, DoF has committed to a long-term reintroduction program (see attached concept note). Together with DNP, they planned to release 200 juveniles into six historical habitats and protected areas started in 2023.

Recently, WCS Thailand has published a survey report of wild population status in Kaeng Krachan National Park (KKNP) and has a plan to secure funding for the first reintroduction program soon.

Nation-wide survey ended in 2020 with an estimated number of wild populations less than 100 individuals. No additional survey has been made in 2023 except that of KKNP and Bueng Borapet Reservoir. A few guarding mothers and their hatchlings were often observed by official and tourists.

TCFA is looking forward to reporting the ongoing reintroduction and monitoring programs in 6 protected areas in Thailand as we are not authorized to do it without permission. All protected areas in Thailand are under DNP, who recently has capability to increase wild population with support from DoF, TCFA and academic institution.

China

Since Anhui Chinese alligator National Nature Reserve (ACANNR) focused on the protection of wild population in 2001, the wild population of Chinese alligator has increased year by year. However, due to the small area of suitable habitat for Chinese alligator in the wild, the rejuvenation of wild population has been seriously affected. In the past three years, the ACANNR has formulated a five-year plan for the development of the wild population, which will implement the reintroduction of 1500 Chinese alligators in the field, aiming at recovering the wild population of Chinese alligators. We

are very sorry that we did not submit the annual report of the past two years, so we summarized the protection work in the past three years as 2023 annual report.

1. Implement the recovery plan of wild population of Chinese alligator

1.1. Expanding the suitable habitats of Chinese alligator in ACANNR

The ACANNR is densely populated, and the area of suitable habitat in the reserve was decreasing, which limited the development space of Chinese alligator wild population. Since 2020, with the support of the local government where ACANNR is located, the relocation of 148 original residents' houses in the core habitats of Chinese alligators in five counties, including Changle District, Shuangkeng District, Zhongqiao District, Hongxing District and Gaojingmiao District of ACANNR, has been completed. They have moved out of the core habitats of Chinese alligators in the ACANNR, expanding the living space of Chinese alligators. Governments at all levels invested about \$US66.1 million in land transfer, relocation and resettlement of residents, factories and enterprises, livestock and poultry farms etc. in the ACANNR.



Figure 1. Villages within the core habitat of the protected area have been removed (Left: before removal; Right: after removal, and restored habitat).

1.2. Actively promote the restoration of existing suitable habitats.

The land attribute of the ACANNR is mostly collective ownership land, and the implementation of field population management in the ACANNR is greatly limited. In order to better protect the wild population of Chinese alligators, 956.93 ha of land has been transferred to ACANNR since 2020. At the same time, we put forward the Ecological Restoration Plan of Core Habitat and studied the Technical Procedures for Ecological Restoration of Wild Chinese alligator Habitat. Under this background, ACANNR also carried out restoration and transformation of suitable habitats. In order to better adapt to the survival, reproduction and population expansion of Chinese alligators, and make preparations for the wild release of Chinese alligators. Anhui Provincial Forestry Bureau has invested about \$US2.87 million for the restoration and transformation of suitable habitats, including the construction of the food chain of Chinese alligators.



Figure 2. The transferred farmlands were restored for habitat of Chinese alligators (Left: before restoration; Right: after restoration).

1.3. Implement the reintroduction of Chinese alligators into the wild

In order to better adapt to the wildlife, when the captive Chinese alligators released, ACANNR built a new wild training region with an area of 6.29 ha (94.36 mu) in Gaojingmiao District, Langxi County, to strengthen the wild training before reintroduction, and provide individual alligators for wild reintroduction. Before reintroduction, the ACANNR will organize the demonstration of the suitability of the released habitat and the analysis of the genetic background of the released alligators. Since 2019, large-scale field release of Chinese alligators has been carried out for four consecutive years, with 1300 Chinese alligators released into the field till to 2023. We also continued to carry out scientific research such as “Research on tracking and monitoring of Chinese alligators in the later period of their field release” and “Experiment on the survival ability of Chinese alligators in the natural situation”. The monitoring results show that the released Chinese alligators are in good condition in the wild, with a one-year survival rate of more than 80%.



Figure 3. Releasing Chinese alligator into wild habitat.

2. Implement the Long-term Monitoring Program (LTMP) for the field population of Chinese alligator in the ACANNR

In the past three years, the ACANNR, jointed together with Anhui Normal University and other units, has carried out annual monitoring and investigation of the Chinese alligator wild population. As a result of the monitoring, the wild population of Chinese alligators has grown rapidly. In May 2021, 395 Chinese alligators (excluding those released in the wild that year) were seen in the survey, including 215 adult alligators, 180 sub-adult alligators and young alligators; In May 2022, 698 Chinese alligators (excluding those released in the same year) were seen in the survey, including 599 adults, and 99 sub-adults and juveniles (Fig. 1). The reproduction of wild population also increased year by year. In 2020, 156 eggs in 7 nests, and 78 hatchlings were hatched; In 2021, there were 320 eggs in 14 nests, and 137 hatchlings will be hatched; In 2022, 602 eggs were found in 26 nests and 372 hatchlings were hatched. In 2023, 400 eggs were found in 17 nests and 250 hatchlings were hatched (Due to the dense vegetation in the habitat, many nests are difficult to be found). According to statistics, the number of wild Chinese alligators has reached at least 1200 individuals in the wild (This number will be determined based on next year’s survey results). After the implementation of the recovery plan for the field population of Chinese alligators, the wild populations of the Chinese alligator and the breeding situation in the field has increased rapidly.

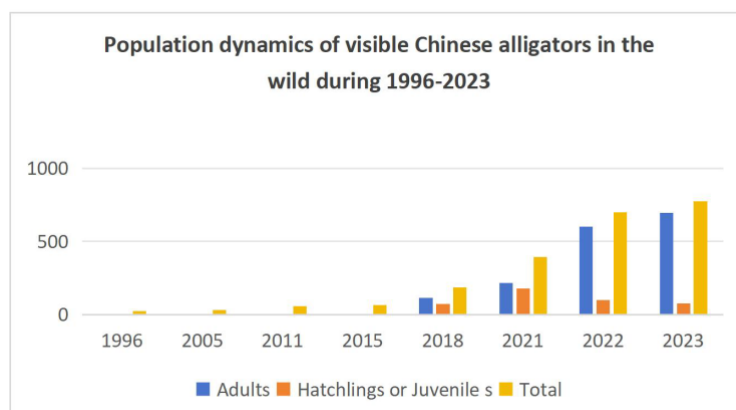


Figure 4. Population dynamics of Chinese alligators seen in the wild during 1996-2023.

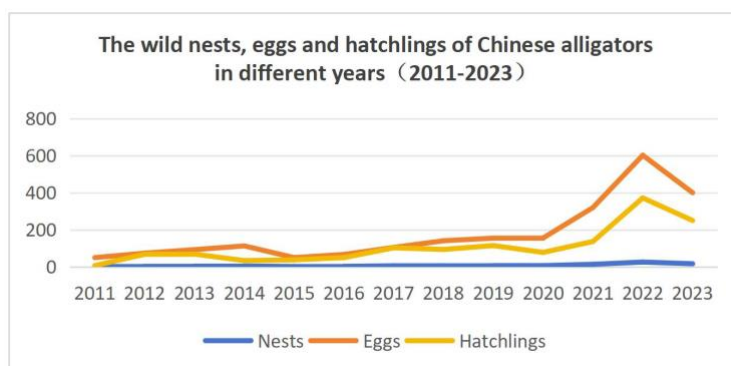


Figure 5. Wild nests, eggs and hatchlings of Chinese alligators in different years (2011-2023).

3. Implement some protection projects in ACANNR

ACANNR Organized and implemented key projects such as “infrastructure construction projects in the Reserve”, “upgrading and reconstruction of Chinese alligator breeding facilities”, with a total investment of more than \$US7.31 million (50 million yuan, RMB). Fully carry out the rejuvenation and ecological restoration of the wild population of Chinese alligators and improve the habitat environment of Chinese alligators in the wild. Artificial breeding technology was improved.

4. Establish a long-term mechanism for the management of ACANNR

- 4.1. Established and improved policies and regulations for the protection of Chinese alligators, and Drafted “the Administrative Measures for ACANNR”.
- 4.2. Continue to deepen the co-management and co-construction of ACANNR and communities.

We Comprehensively implemented the ecological patrol system of ACANNR, selected 23 local residents who are familiar with the situation of the Reserve as ecological patrol officers with full coverage of the protected areas, and carried out regular patrol supervision, and comprehensively strengthen the management of ACANNR.



Figure 6. The ecological patrol officers were carrying out regular patrol supervision.

4.3. Build a joint prevention, control and management mechanism with the local government.

The administrative department in charge of ACANNR, The Forestry Bureau of Anhui Province, together with Xuancheng and Wuhu Municipal Government, formulated the Community Joint Defense, Joint Control and Joint Management Mechanism of ACANNR, and established the joint meeting system for the management of Chinese alligators. The ACANNR regularly carries out “three-level consultation” with the local government, and effectively plays the role of “four platforms” of regular consultation, comprehensive management, joint prevention and control, and community co-management. This joint protection mechanism has played very important role in the protection of wild Chinese alligator population.



Figure 7. Joint meeting system with local government for the management of Chinese alligators.

4.4. Promote science popularization and Natural education

We made the publicity videos on the protection of Chinese alligators, and Open WeChat official account of ACANNR to publicize and display the work and dynamics of the reserve from multiple perspectives. ACANNR also Completed the exhibition arrangement and opening of the Chinese alligator education center, introduce natural education courses, regularly carry out the activities of education to the countryside, and organize the activities of science popularization in the community and campus.

China report prepared by: Xiaobing Wu

Philippines

- The Philippine population of *C. porosus* on Palawan Islands was transferred from Appendix I to Appendix II, with a zero export quota for wild specimens, in accordance with Resolution Conf. 9.24 (Rev. CoP17) during CITES CoP19 in Panama. (November 2022).
- In May 2023, the Philippine Government received three (3) juvenile *C. mindorensis* named “Mutya”, “Mayumi”, and “Ligaya”, as part of the second repatriation from Cologne Zoo (Germany) for future reintroduction programs. These crocodiles will be transferred to the Philippine Crocodile Research and Education Center (PCREC) in Mindanao once completed this June 2024, through the ZGAP grant-aid to CPPI.
- The 3rd Forum on Crocodiles in the Philippines at the University of Santo Tomas, España, Manila, was concluded on 8-10 November 2023, with the theme “*Engaging Communities and Partners Participation Towards Sustainable Conservation.*” It was attended by 80 participants from six countries, representing 25 institutions and organizations.
- The DENR-Biodiversity Management Bureau has consulted the National Committee for Crocodile Conservation (NCCC) and knowledgeably consolidated the estimates of crocodile population, distribution, and threshold level in February 2024 for the DENR Roadmap on Priority Threatened Species. These are as follows:
 1. Philippine Crocodile: Present in 8 cluster regions (40 municipal locations); 251 matured, 339 est. population.
 2. Saltwater Crocodile: Present in 11 cluster regions (70 municipal locations); 5385 matured, 6117 est. population.
- In February 2024, the same national crocodile committee confidently identified 10 priority areas for protection through the establishment of Critical Habitat for crocodiles. This is in support for its commitment in conserving and managing 30% of the Philippines terrestrial and marine ecosystem by 2030. The identified areas were included in the proposed Key Biodiversity Area (KBA) and Other Effective Area-based Conservation Measures (OECM).

Philippine report prepared by: Rainier Manolo

Prepared by: Lonnie McCaskill

Date prepared: March 2024