



Technical Progress Report

September 2017 - June 2018



Wildlife Reserves Singapore Group

Stadtholding Landau in der Pfalz



ZOO HEIDELBERG



Jewelmer



Katala Foundation
INCORPORATED

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Puerto Princesa, Philippines

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TECHNICAL PROGRESS REPORT

COUNTRY: PHILIPPINES

PROJECT TITLE: PHILIPPINE COCKATOO CONSERVATION PROGRAMME
In-situ Conservation Project

PROJECT DURATION: September 2017 – June 2018

PROJECT SITES: Palawan, Philippines

PROJECT COOPERATORS:

Department of Environment and Natural Resources (DENR)
Municipal Government of Narra, Palawan, Philippines
Municipal Government of Dumaran, Palawan, Philippines
Municipal Government of Balabac, Philippines
Bgy. Pandanan Government, Balabac, Palawan, Philippines
Local Protected Area Management Committee (LPAMC)
Protected Area Management Board-RIWS (PAMB-RIWS)
Palawan Council for Sustainable Development Staff (PCSDS)
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EXECUTIVE SUMMARY

Objective 1: Conservation of cockatoo population on Pandanan and Bugsuk Islands, Balabac

- Numbers at roost site increased rapidly throughout May and June, when breeding pairs with offspring and helpers returned to the roost site. Highest counts were reached by end of June with 194 individuals. In the past four years absolute highest counts however were reached only in July. *NB: While compiling, the highest roost count since start of the project has been reported with 297 individuals on July 10!*
- A secondary roost site on the southern tip of Bugsuk Island is only visited temporarily but up to 193 cockatoo individuals could be recorded during extreme weather situation.
- Foraging areas seem to expand and are now covering larger areas of Palawan's southern tip, Bugsuk and several smaller islands in the vicinity of Pandanan.
- Breeding season commenced in December, significantly earlier than in other project sites. Nests were for the first time systematically searched on Bugsuk Island, but due to the large area, not the whole island could be covered.
- Seventeen active cockatoo nests were monitored on Pandanan, with 50 eggs being recorded. Among these were two newly discovered nest trees. Seven eggs did not hatch, partly due to wet conditions during the 2018 breeding season. Of the 43 hatchlings, 35 fledged successfully.
- A replacement clutch with one egg was successful. This is the first time we observed replacement clutch for Philippine Cockatoo, possibly because the loss occurred very early during the incubation period.
- On Bugsuk Island seven nest trees were found. All belong to the emergent tree species *Pometia pinnata*, and all nest tree characteristics were taken by June 2018. Twenty-one eggs were recorded, of which two got lost due to unknown reasons. Of the 19 hatchlings, all fledged successfully.
- Blood sampling was done for the first time with the improved protocol developed during the visit of Dr. Simon Tollington from NEZS.
- Patrols in Pandanan observed rampant illegal cutting and these sites are increasingly found in the closed coastal forest on the eastern portion of the island. While in Bugsok some hunting of Palawan Bearded Pig is also observed.
- Due to the large areas to be covered on Pandanan and the addition of Bugsuk in the nest monitoring efforts, additional personnel is needed to assure adequate nest monitoring.

Objective 2: Conservation of cockatoo population on Rasa Island, Narra

- Number of foraging flocks decreased towards the breeding season in the early months of 2018 with 86 individuals counted in January. This however does not include birds from a newly established roost site with up to 95 birds which do not pass through the counting stations and the breeding pairs and helpers that stay at the nesting tree.
- In the 2018 breeding season 42 nests were occupied. A total of 105 eggs were produced of which 91 hatched. Thirteen eggs did not hatch, probably due to infertility, and one got lost to predators. Eighty-seven hatchlings fledged successfully. Four hatchlings got lost to predators, probably to monitor lizards and an unidentified large snake species. Eight were not banded but fledged successfully due to deepened nest cavities that could not be reached.

- We tried for the first time to experimentally fill up a very deep cavity using wood shavings treated with carbaryl. This was done in the last week of January, and in the third week of February, this nest showed signs of occupation. This nest produced two nestlings which successfully fledged in the first week of June.
- The overall trend of absolute numbers of breeding pairs, as well as eggs, hatchlings and fledglings produced each season is surprisingly still increasing after 20 years of conservation work on Rasa.
- Productivity per pair of eggs and hatchlings is generally decreasing, but average number of fledglings per pair is slightly increasing. The latter could possibly be due to a higher proportion of experienced breeding pairs, presence of helpers, or increasingly effective conservation interventions (prevention of predation, treatment of mites, supplemental feeding). Nestlings rescued from the nest and not rehabilitated on Rasa are not part of this statistics.
- Wardens use the SMART patrolling system already but this needs refinement. In the future it would be desirable to have site-specific data models.
- With support from Wildlife Reserves Singapore a campaign was launched to connect fishery yields to the protection of the Rasa Island and the Philippine Cockatoo. This concept was adapted as its theme for this year's Katala Festival and information campaigns in Narra which reached nearly 2,000 students, teachers and community members within the reporting period.

Objective 3: Conservation of cockatoo population on Dumaran Island, Dumaran

- Four active cockatoo nests were recorded in 2018. Fifteen eggs were produced. One nest cavity was apparently claimed by two cockatoo pairs, and the arising conflict resulted in the loss of three eggs. A replacement clutch in the same cavity did also not prosper, with one egg being destroyed and another one being infertile.
- Of the seven hatchlings, one died for unknown reasons, another one died in advanced nestling stage. Necropsy was conducted and it showed that the bird was generally well-fed. The remaining five hatchlings were successfully banded and blood was sampled.
- Cockatoo numbers on the roost site increased throughout the second half of 2017, reaching a maximum of 23 individuals. The following months the roost was tentatively abandoned due to bad weather conditions. Starting in February, cockatoos returned to the site (maximum of 18 ind. In June), but did not yet reach numbers counted before the storms.
- The observed competition for suitable nest cavity highlights the need for additional breeding sites. Artificial nest boxes are continuously offered, but so far without cockatoo occupation, whereas they are occasionally accepted by Blue-naped Parrots.
- All previously released birds remain connected to the wild flock, with the exception of Wescom 2 which remains by itself in a coastal area close to a settlement. Residents in the area are aware of its presence and are helping protect the bird from any harm. Reports are prompted to the staff on field in case Wescom 2 gets so close to humans.
- Wardens also use the SMART patrol system but still needs more practice in using smart phones and charging is a hassle due to unreliable electricity in the area.
- The Local Protected Area Management Committee has met twice within the period and was able to discuss mainly to ensure the integration of the declared Critical Habitat into the ECAN zonation which is up for revision by the PCSD.

- The 15th Kalabukay Festival in June was highlighted by the show performance of a renowned environmental singer/advocate Joey Ayala in Dumaran and the launching of the Palawan Hornbill as the municipality's flagship species.
- In order to improve the survival rate of collected wildlings, a growth chamber consisting of a bamboo frame and transparent plastic sheets was constructed. Initial results indicate that survival rates improved markedly and are regularly above 80% before seed bags are transferred to the nursery beds.
- A second nursery site has been established. This was necessary since over the past years reforestation sites are situated ever farther away from the existing nursery, resulting in long hauling distances.
- Due to wet weather conditions, the planting season was extended by around five weeks. A total of 14,957 seedlings were planted in the corridor. Plots of 100 m² each were established to monitor survival rates and performance of planted seedlings on each site.
- As of end of the reporting period, 17,048 seedlings are available in the main nursery and an additional 7,984 in the satellite nursery, most of which are ready to be planted out within the ongoing planting season.

Objective 4: Education and research at the Katala Institute

- After a lengthy process, Katala Institutue was finally recognized as quarantine facility, which is a requirement for the export of three cockatoos to Jurong Bird Park for conservation breeding.
- All captive birds were in good condition during the reporting period. Chronic feather plucking continued in three individuals.
- We had three injured/rescued cockatoo turn-overs with the period of which two successfully rehabilitated and released back to the wild while one succumbed to death possibly due to internal injuries.
- The new large deer enclosure was subdivided to gain more flexibility in composition of groups. Dr. Jeff Holland also recommended to further backfill some parts of the enclosure to prevent waterlogging. Both measures were done during the reporting period.
- The pavilion's roofing was replaced with GI sheets; the nursery was expanded and futher backfilled and fenced and fecing the remaining perimeter has started as well.
- We painted the concrete walls of the pangolin exhibit so that it would be more durable than just the untreated concrete wall. We extended the wire and plain sheet structure to ensure that a pangolin cannot escape from the enclosure. We adjusted the drainage system in the enclosure since water did not immediately drain after heavy rain. Dens are still to be built.
- Trails in the arboretum were provided with a layer of gravel and the same is successively done with the loop trail. Landscaping and reforestation continued in KI with selected island plant species from around the world in the island arboretum and native species in the remaining area. Durable metal plant labels were installed.
- A new caretaker house is under construction. It will replace the existing structure and will be elevated to prevent frequent flooding. An education hub is likewise being built. This structure will feature a project office, a small exhibit and a classroom with small library. The latter is financed through the Zootier des Jahres initiative.
- A new pre-release aviary is under construction in the quarantine area to replace the rusted existing one while the main cockatoo aviary was repainted.

Other highlights:

- On Dumaran we had the following successful fledglings within the period: two Brown Hawk Owls; seventeen Blue-naped Parrots and six Palawan Hornbills.
- Indira and Peter in a visit to Mauritius consulted with the Mauritius Wildlife Foundation issues on PBFD, since the parakeet population is affected, and MWF is actively managing this disease. Other topics discussed included intensive management of highly threatened bird species, especially individual monitoring, nest box design, as well as habitat restoration efforts.
- Dr. Simon Tollington visited the PCCP from January 24 to February 1 to assess the feasibility of the development of a field laboratory for PBFD testing. Other objectives were to raise awareness of the potential threat with decision makers and to train techniques for sampling and storing of full blood. A training course in the Palawan Wildlife Rescue and Conservation Center was conducted for staff of this facility, as well as representatives of line agencies involved with biodiversity conservation and disease control.
- We had the opportunity for a meeting with high-ranking representatives of DENR-BMB, PCSDS and DENR—PENRO, where Simon highlighted the urgency of the PBFD issue, and its potential impact on wild parrot populations.
- On October 28, Director Nelson Devanadera together with selected PCSD staff visited Rasa Island and Katala Institute for the first time! The team witnessed the crossing of the Philippine Cockatoo to and from Rasa Island Wildlife Sanctuary.
- A warden refresher course involving PCCP wildlife wardens from all project sites was held from December 15-16, 2017 in Puerto Princesa City.
- In March Indira gave a presentation on Philippine Cockatoo Conservation and food security during the Environmental Laureates Conference in Freiburg i. Br., Germany.
- In April Indira and Peter were invited to participate in the Fraser's Hill Bird Race by the Wild Bird Club of Malaysia. Indira presented the wildlife warden approach of the PCCP during a public lecture session.
- Indira and Peter are co-authors of a global study on parrot hemoparasites. Most of the parrots tested did not show any parasite load in their blood (including Philippine Cockatoo). One reason for this could be that all these species rely on food plants which contain secondary components. Only one species had blood parasites, and this species is not known to feed on such plants (Masello et al., 2018).
- On October 9 Indira received the 2017 Distinguished Alumni Award from the School of Environmental Science and Management at the University of the Philippines Los Baños for wildlife conservation and community empowerment.
- On 19 October KFI was awarded the proceeds of the 15th German Ambassador's cup, an annual golf tournament organized by the German Embassy Manila and the German-Philippine Chamber of Commerce and Industry.
- Due to the extended range of the project site, the project boat on Pandanan needs to be replaced with a larger one for safety reasons. We hope to use fiber glass boats in the future to support anti use of lumber as hulls and also for durability.

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The PCCP is indebted to the real players of the project: the wardens and volunteers from Narra, Dumaran, and Pandanan for their dedication, hard work and commitment. Without them, the project would not have reaped the good harvests.

To the honorable Mayor of Narra, Hon. Lucena Demala and members of the municipal council and officials. Special gratitude goes to PAMB members, RIWS-Narra for their vigilance and ready attention on Rasa Island. We are grateful for the support of Mayor Medwin Publico in Dumaran. We would like to thank Dumaran MPDO Agnes Padul, Municipal Administrator Arnel Caabay and all Dumareños. Special gratitude goes to Mayor Shuaib J. Astami of Balabac and his council, Bgy. Captain Violeta Gabinete and her able council of Bgy. Pandanan, Balabac for their assistance and cooperation. We thank as well the families of wildlife wardens from Pandanan.

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ACRONYMS

BMB	Biodiversity Management Bureau (formerly PAWB)
CE	Conservation Education
CENRO	Community Environment and Natural Resources Office(r)
DENR	Department of Environment and Natural Resources
ELAC	Environmental Legal Assistance Council
ENIPAS	Enhanced National Integrated Protected Area System
IUCN	International Union for the Conservation of Nature and Natural Resources
KEEC	Katala Environmental Education Center
KFI	Katala Foundation, Inc.
KI	Katala Institute
LGU	Local Government Unit
LPAMC	Local Protected Area and Management Committee
LPF	Loro Parque Fundación
MWF	Mauritian Wildlife Foundation
MENRO	Municipal Environment and Natural Resources Officer/Office
MOA	Memorandum of Agreement
NEZS	Northern England Zoological Society
PA	Protected Area
PAMB	Protected Area Management Board
PASu	Protected Area Superintendent
PBFD	Psittacine Beak and Feather Disease
PCCP	Philippine Cockatoo Conservation Program
PCSD(S)	Palawan Council for Sustainable Development (Staff)
PENRO	Provincial Environment and Natural Resources Office
PFTCP	Philippine Freshwater Turtle Conservation Program
PNP	Philippine National Police
PWRCC	Palawan Wildlife Rescue and Conservation Center
RA 9147	Republic Act 9147 otherwise known as the Wildlife Protection Act
RIWS	Rasa Island Wildlife Sanctuary
SDENRO	Special Deputy Environment and Natural Resources Officer
WPU	Western Philippines University
ZGAP	Zoologische Gesellschaft für Arten- und Populationsschutz

INTRODUCTION

The Philippine Cockatoo *Cacatua haematuropygia*

The Philippine Cockatoo or Red-vented Cockatoo *Cacatua haematuropygia* is restricted to lowland forest areas and mangroves in the Philippines. Formerly, it could be found all over the archipelago (Dickinson *et al.* 1991). Only in the last decades a rapid decline set in, which brought the species to the brink of extinction (e.g. Boussekey 2000a; Lambert 1994). The reasons for the decline of the populations are (e.g.; Collar *et al.* 1999; Lambert 1994; Widmann *et al.* 2001):

- Habitat destruction, particularly in respect of nesting and food providing trees.
- Persecution as crop pest.
- Poaching for pet trade.
- Potential diseases caused by the introduction of captive birds in the range of wild populations.
- Tropical storms and typhoons

Habitat destruction and poaching are the most important factors threatening the Philippine Cockatoo.

Since 1888 Katala Foundation Inc. (KFI) implements the PCCP in the Philippines. Comprehensive conservation projects in this phase are currently undertaken in three sites in Palawan (Fig. 1): Rasa Island (Narrra), Dumaran Island (Dumaran), Pandanan and Bugsuk Islands (Balabac). The two former sites contain by now protected areas declared on municipal or higher levels, specifically established to include the cockatoo populations. The Pandanan site is predominantly owned by Jewelmer Corporation, with which KFI has a Memorandum of Agreement for the conservation of the species.

We estimate that between 640–1,120 Philippine Cockatoos exist in the wild (assuming few populations have been overlooked in recent surveys of historical locations, and 100-150 individuals survive in the Sulus, for which only incomplete information is available).

The single-most important Philippine Cockatoo population on Rasa is secured under presidential proclamation as “Rasa Island Wildlife Sanctuary” since February 2006, in addition to local legislations. Highest population count was 317 individuals in 2014. Pandanan, holds possibly the second-most important population with at least 220 birds (up from 80) individuals.

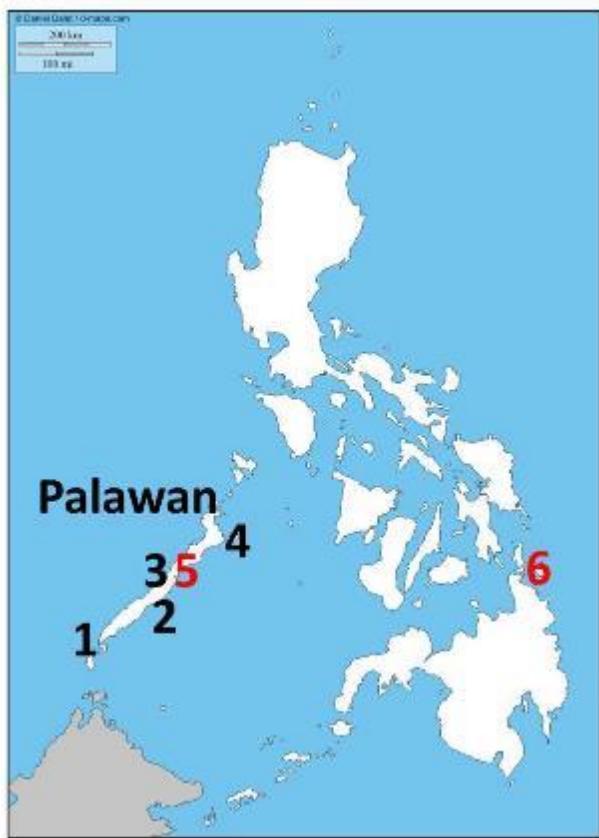
With these three project sites in Palawan, it is estimated that between a third to half of the remaining wild population is currently covered in PCCP projects. Cockatoo populations are stable or increasing in all sites, and improved legal conservation could be achieved (e.g. through creation of cockatoo reserves). However, law enforcement by state agencies remains weak and pressure on these areas is rather increasing (migrant influx to Palawan, mining, planned large-scale projects, like biofuel plantation or coal plant).

Warden schemes remain the single-most important tool to assure the short-term survival and recovery of the species, whereas lobbying, conservation education, habitat restoration and reintroduction, as well as provision of alternative livelihood options are important for the long-term improvement of the frame conditions for cockatoo conservation in the Philippines.

Objective of the Philippine Cockatoo Conservation Program

Conservation and restoration of the most viable subpopulations of the Philippine Cockatoo and their habitats, including associated flora and fauna under involvement of all key stakeholders, resulting in a down-listing of the species from ‘Critical’ to ‘Endangered’ through reversing its population decline and under consideration of the precautionary principle.

Program Strategy



The main strategy of the programme is to conserve *in-situ* the most important subpopulations of the Philippine cockatoo through adopting participative methods.

The general program strategies are:

- Management of local resources in the framework of Philippine law;
- Capacity-building for local decision-makers and key stakeholders to ensure sustainability of the conservation efforts; and,
- Ecosystemic conservation approach with the Philippine cockatoo as flagship species.

Figure 1. Map of the Philippines indicating sites of the Philippine Cockatoo Conservation Program: 1. Pandanan, Balabac; 2. Rasa Island, Narra; 3. Katala Institute, Narra; 4.Omoi and Manambaling Cockatoo Reserves, Dumaran; 5. Iwahig Prison and Penal Farm, Puerto Princesa; 6. Kangbangyo and Poneas Islands, Del Carmen. Black: project sites covered in this report; red: other PCCP sites

Deliverables

Objective 1: Conservation of cockatoo population on Pandanan and Bugsuk Islands, Balabac

- Warden scheme on Pandanan and Bugsuk Island continued and extended to adjacent mainland.
- Monitoring of cockatoo population and habitat on Pandanan and Bugsuk Island continued.
- Conservation education in Pandanan Island and adjacent mainland continued.
- Research on conservation-related aspects of cockatoo biology on Pandanan and Bugsuk continued, with focus on factors influencing breeding success and foraging ecology.

- Advocacy in respect to impacts and perpetrations in cockatoo habitats, particularly networking with local stakeholders, particularly Jewelmer Corporation, the largest private landowner, continued.

Objective 2: Conservation of cockatoo population on Rasa Island, Narra

- Warden and mainland volunteer scheme continued.
- Members of Protected Areas Management Board in the management of the Philippine Cockatoo and Rasa Island Wildlife Sanctuary capacitated and meetings facilitated.
- Conservation education for stakeholders continued.
- Research on conservation-related aspects of cockatoo biology on Rasa continued, with focus on factors influencing breeding success and foraging ecology.
- Advocacy in respect to impacts and perpetrations in cockatoo habitats continued.

Objective 3: Conservation of cockatoo population on Dumaran Island, Dumaran

- Warden scheme continued.
- Members of Local Protected Areas Management Committee in the management of the Philippine cockatoo, as well as Omoi and Manambaling Cockatoo Reserve assisted and capacitated.
- Research on conservation-related aspects of cockatoo biology on Dumaran continued, with focus on factors influencing breeding success and foraging ecology.
- Buffer zone restoration around existing cockatoo reserves continued.
- Creation of forest corridor connecting the two existing cockatoo reserves continued.
- Advocacy in respect to impacts and perpetrations in cockatoo habitats continued.

Objective 4: Education and research at the Katala Institute for Ecology and Biodiversity Conservation

- Captive management of Philippine Cockatoo and other highly threatened species continued through employment and training of zookeepers and volunteers.
- Landscaping with native species propagated in the Katala nursery continued.
- Educational trail, enclosures and visitors facilities upgraded.
- Proposal submission to other potential donors continued.

Description of Project Sites**Rasa Island, Narra, Palawan**

Rasa is a small coral island of 8.34 km² land area situated in the Sulu Sea, just offshore of the Municipality of Narra, Palawan, Philippines (Fig. 2). About 1.75 km² are covered with coastal forest, mangrove (5.60 km²), cultivated areas (predominantly coconut; 0.39 km²), 0.60 km² are barren or sparsely vegetated sand and coral outcrops. In February 2006, the island became a Wildlife Sanctuary through Presidential Proclamation 1000 and since a Protected Area Management Board is functioning as management body for Rasa Island Wildlife Sanctuary (RIWS). In 2008, RIWS was chosen as Top 13 Bird Watching Sites in the Philippines by the Department of Tourism.

The island is the pilot site of the program since 1998. Due to intensive poaching, only 23-25 Philippine cockatoos were left on the island then. Key component of this project site is the warden scheme which involves patrolling and protection of the birds during and outside the breeding season. This scheme has proven to be efficient and lead to dramatic recovery of the Philippine Cockatoo population as of to date. As of 2014, 317 cockatoos have been simultaneously counted on roost sites on Rasa and adjacent mainland.

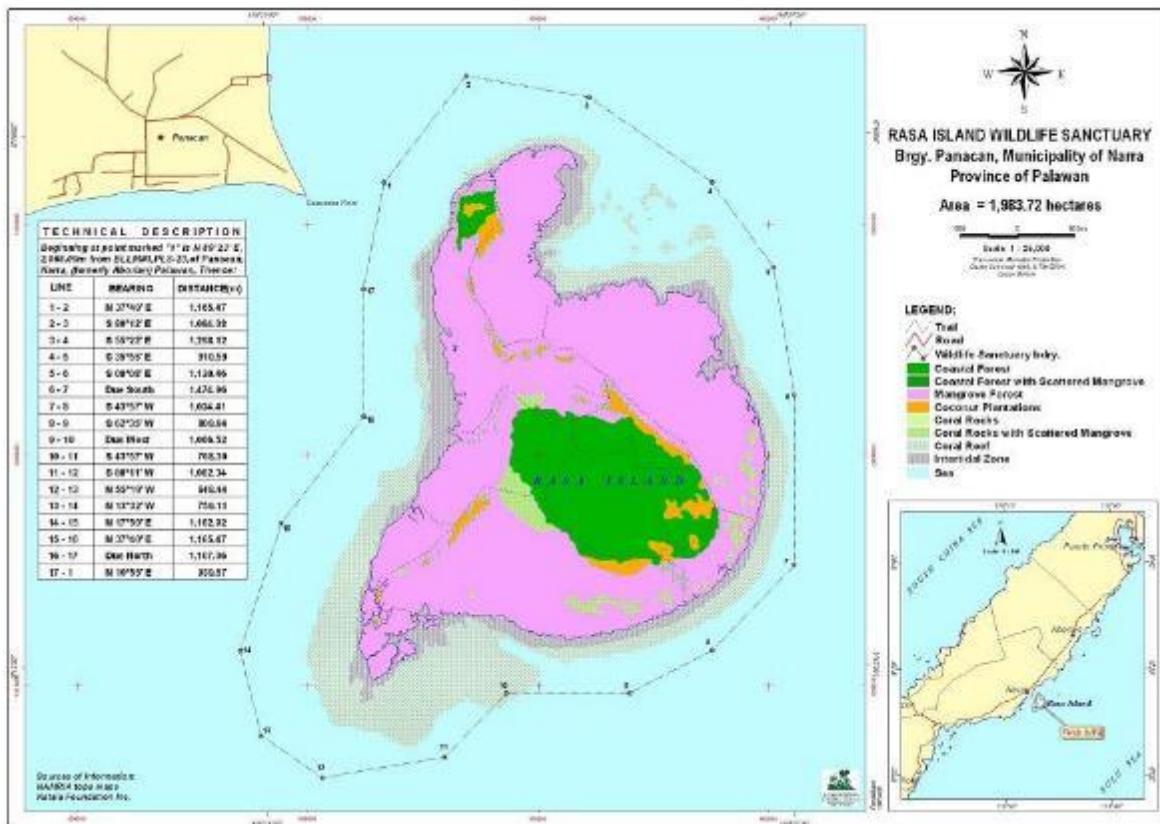


Figure 2. Vegetation cover of Rasa Island Wildlife Sanctuary, Palawan, Philippines

Rasa Island probably therefore holds the highest population density of Philippine Cockatoo that remains in the wild. The world population of Philippine cockatoo was estimated to range between 1,000 to 4,000 individuals (Lambert 1994). More recent estimates put the number of cockatoos remaining in the wild between 640 and 1,120. About 75% of this population is found in Palawan.

Not only Philippine Cockatoos live on the island, but a variety of other species, with an unusual high percentage of globally threatened and near-threatened taxa (IUCN 2015), considering the small size of Rasa. Noteworthy among the 112 recorded bird species are Red-headed Flameback *Chrysocolaptes erythrocephalus* (EN), Grey Imperial-pigeon *Ducula pickeringii* (VU) and Mantanani Scops-owl *Otus mantananensis* (NT).

Dumaran Island, Dumaran, Palawan

Dumaran is situated in north-eastern Palawan between 10°22' and 10°41'N and 119°28' and 119°55'E. Nine Barangays are situated on Palawan mainland, seven on western Dumaran

Island. The island is situated in the Sulu Sea and separated by a ca. seven km wide channel from the mainland.

PCCP currently manages three areas on the island: Omoi and Manambaling Cockatoo Reserves (Fig. 3) and the traditional roosting site in Lagan. A Local Protected Area Management Committee (LPAMC) functions as its management body. Both cockatoo reserves, a buffer zone and a corridor connecting both areas was declared as critical habitat, comprising 1,500 ha.

All natural terrestrial ecosystems in Dumaran are tree-dominated. On Dumaran Island only few small and isolated forest patches remain, none of them larger than 103 ha. The most abundant formation is evergreen and semi-evergreen lowland forest with Ipil *Intsia bijuga*, Amugis *Koordersiodendron pinnatum* being emergent tree species of commercial value.

Ornithological surveys conducted by Katala Foundation so far yielded 136 species from the island. A prominent species of conservation concern is the Philippine cockatoo, which can be found with viable population in the mangroves and forest remnants of Dumaran Island, but apparently not anymore on the mainland. The last remaining forest patches are therefore of global conservation concern. This notion is supported by the recent records of other globally threatened species, particularly the Palawan Forest Turtle *Siebenrockiella leyteensis* (CR).

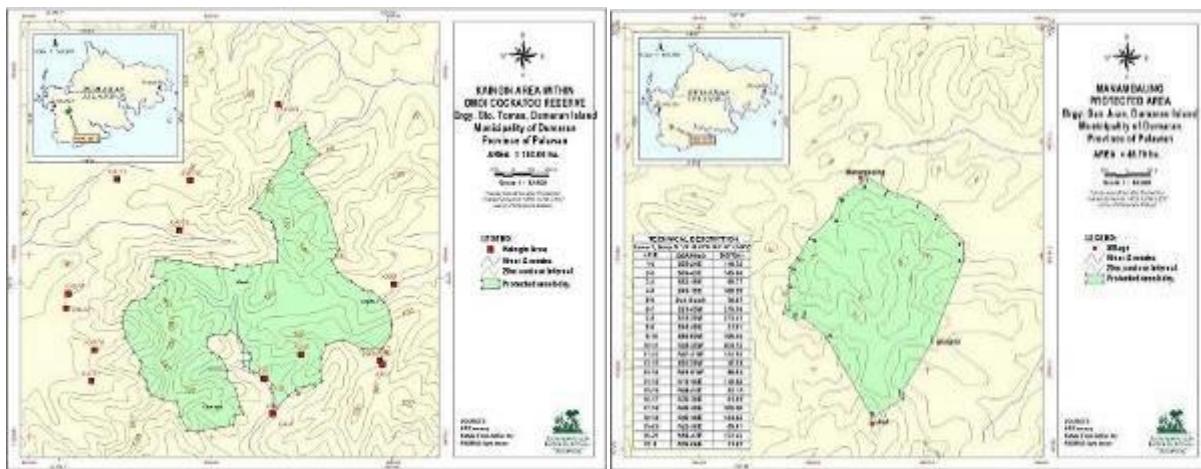


Figure 3. Omoi Cockatoo Reserve (left) and Manambaling Cockatoo Reserve (right) cover the last forest patches on Dumaran Island.

Other species of conservation concern are Palawan Hornbill *Anthracoceros marchei* (VU), Blue-headed Racquet-tail (VU) and Palawan Pencil-tailed Tree-mouse *Chiropodomys calamianensis* (DD).

Habitat degradation and destruction, rather than poaching, remain the biggest challenges for cockatoo conservation in Dumaran. In the current phase ca. five hectares of secondary forest and grassland were purchased with support of the Stadtholding Landau in the course of a carbon-mitigation project. These areas have been rehabilitated and integrated in the buffer zone of the Omoi Cockatoo Reserve.

The Critical Habitat established through PCSD Resolution No. 14-513 connects the two existing cockatoo reserves through a corridor and extends to include remaining forest fragments in the area. This is the first critical habitat established in the Province of Palawan.

Pandan Island, Balabac

Pandan Island in Bgy. Pandanan belongs to the north easternmost municipality of Balabac in Palawan (Fig. 4). Coastal forests are dense and stock on flat limestone originating from elevated coral reefs. Large trees in the coastal forest are mostly deciduous and widely spaced due to water stress during the dry season. The understorey is very dense with abundant vines. Emergent trees comprise the genera *Dipterocarpus*, and *Ficus*. A narrow rim of beach forest with *Erythrina*, *Calophyllum* and *Barringtonia* is present. The dense coastal forest cover is as well protected because the large portion of the island is privately-owned and entries are monitored by private guards. Coconuts are the major crop grown in the coastal areas and shifting cultivation including lowland rice, corn, and root crops inside forested areas are common land use forms. Extensive mangroves are thriving.

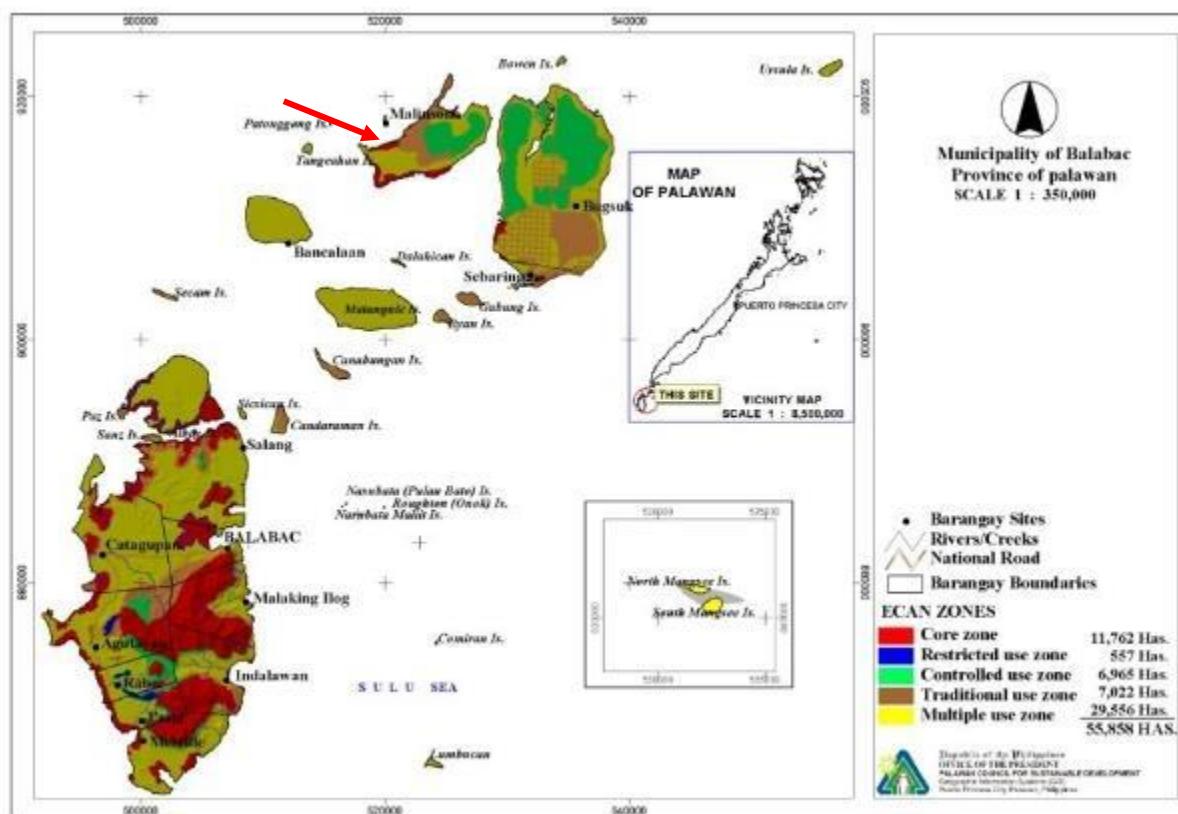


Figure 4. Location map of Pandanan Island indicated by red arrow (Map Source: PCSDS).

So far, 91 bird species have been recorded in Pandanan and adjacent Malinsuno. Among these are six globally threatened and six near-threatened species (IUCN 2015). Of outstanding conservation concern are particularly the larger tree cavity nesters, like Palawan Hornbill, all three parrot species of Palawan, Philippine Cockatoo, Blue-naped Parrot and Blue-headed Racquet-tail, and other conservation relevant species like Grey Imperial-pigeons and Mantanani Scops-owl (Widmann *et al.* 2008). The first and only record for the Philippines of a Fairy Pitta *Pitta nympha* comes from Malinsuno as a result of the conservation project.

The implementation of the warden scheme recruiting cockatoo poachers resulted in significant increases of the cockatoo population in the first years of project implementation, comparable to those of the early stages on Rasa Island. In recent surveys, roosting site is at a coconut plantation in Malinsuno Island just across Pandanan Island.

Methods

The Philippine Cockatoo Conservation Programme (PCCP) employs an ecosystemic and community-based approach to biodiversity conservation using the Philippine cockatoo as its flagship species. The main components of the program are nest protection or warden schemes; scientific researches on feeding, biology and ecology of the Philippine Cockatoo and other threatened species; identification, protection and management of key conservation sites; conservation education; habitat restoration; and capacity building. Researches on the Philippine Cockatoo include distributional surveys, rescue of individual birds, reintroduction and translocation assessments, and captive management for conservation education and conservation breeding for later reintroduction.

Information on the biology and ecology of the cockatoo is gathered mainly through direct observation. On Rasa, movements of the cockatoos can be best observed from a boat, from beaches or coral outcrops. Very dense vegetation on the island considerably hampers visibility on transect walks or point counts. On Dumaran and Pandanan movements are observed through wardens monitoring and patrols at protected areas and roost sites.

Monitoring of the population trend on Rasa, Dumaran and Pandanan is done through counting individuals at a traditional roost site. A traditional roost site is situated in a mangrove area on Rasa and can be observed from a boat while in Dumaran a privately-owned coconut plantation serves as the roost site bordering close to a mangrove area. On Balabac, at least two roosting sites are presently monitored; one in Malinsuno Island and the other on Pandanan Island. Counts are conducted monthly either before sunset on Rasa and Balabac islands and daily on Dumaran. Counts are also conducted during dawn before birds leave the roost site. Whenever possible, counts on Rasa are conducted under similar weather and light conditions.

The core component in all project sites is the warden scheme, employing former poachers as wildlife wardens. Wardens inspect and verify existing and potential nest trees starting end of September. During the breeding season, the nest trees are under permanent surveillance. Trees are climbed and nest holes controlled every ten days during that time. For safety reasons, dead or damaged trees are not climbed. Nest trees are characterized through species identification, tree height, diameter at breast height (DBH), height of nest hole, exposition of nest hole, diameter of hole, and diameter at base and depth of cavity. The geographic location of each nest tree is taken with the help of a GPS and marked in a map.

Presence or absence and condition of adult birds, eggs, nestlings or nest predators are noted. Nestlings are weighed with Pesola spring balances/and or electronic balance and banded with aluminum rings bearing the inscription of the Department of Environment and Natural Resources (DENR), the number and year (e.g. DENR 0001-15).

Volunteers are detailed in monitoring stations at the mainland coasts of Narra within and outside the breeding season. These volunteers record all sightings of cockatoos and other significant wildlife in the area of assignment.

Surveys to find remnant cockatoo populations are based on historical sources or recent information. To initially narrow down the searches, non-formal interviews with key informants (poachers, other forest users, barangay officials, school teachers) are conducted. Surveys aim to identify remnant cockatoo populations or areas which are suitable for translocation.

Herbarium collections are made of key plants in cockatoo habitats, particularly food-providing plants, and nest and roost trees. The physical structures of cockatoo breeding habitats are characterized through forest profiles. Phenological information on fruiting and flowering of food-providing trees are systematically collected on Rasa and Dumaran.

Larger-scale restoration of lowland forest habitat is currently done in Dumaran. Particularly nest- and food-providing plants for cockatoos are systematically tested for their suitability for reforestation. MS Access and excel programs are used for analysis.

Composition of remaining bird communities in project and survey sites is assessed using MacKinnon-Lists and, occasionally, mist-netting. Composition of mammal, reptile and amphibian communities in project sites is assessed through direct observations, mist- and harp-netting, live-trapping (Sherman type and locally-made cage type) and pitfall trapping.

To identify potential cooperators for the projects, livelihood needs, and capacities, stakeholder and SWOT analyses are employed. Participatory planning is done through goal-oriented project planning methodology. Alternative livelihood is provided for key-stakeholders of the cockatoo and the PAs, based on the needs assessments.

Conservation education activities employ the PRIDE approach which uses marketing methodologies to galvanize community support for conservation. The approach conducts pre and post project surveys to assess changes in levels of knowledge, awareness and behavior among target audience by using control groups. Survey Pro is used for analysis on changes over time. Proven marketing vehicles like billboards, posters, fact sheets, puppet shows, school and community visits, festivals and media participation are used to deliver relevant and compelling conservation messages.

Relevant trainings and seminars are conducted to help capacitate local partners in conservation. Cross visits to Rasa and other project sites are encouraged to facilitate exchange of experiences, lessons learned and good practices to boost morale of local partners and reinforce knowledge.

Please refer to each output for particular methodologies used in achieving results.

Results and Progress

Objective 1: Conservation of cockatoo population on Pandanan and Bugsuk Islands, Balabac

Research on conservation-related aspects of cockatoo biology on Pandanan and Bugsuk continued, with focus on factors influencing breeding success and foraging ecology

Roosting

Cockatoo numbers stayed relatively constant at relatively low levels during September until April. This is the time birds start returning to their nest sites, followed by the peak of the breeding season. During these times breeding birds do not sleep at the roost site. Some non-breeders probably also avoided the exposed roost site, particularly during the stormy months of December and January. Numbers increased rapidly throughout May and June, when breeding pairs with offspring and helpers returned to the roost site. Highest counts were reached by end of June with 194 individuals. In the past four years absolute highest counts however were reached only in July.

NB: While compiling, the highest roost count since start of the project has been reported with 297 individuals on July 10!

A secondary roost site on the southern tip of Bugsuk Island is only visited temporarily but up to 193 cockatoo individuals could be recorded during extreme weather situation.

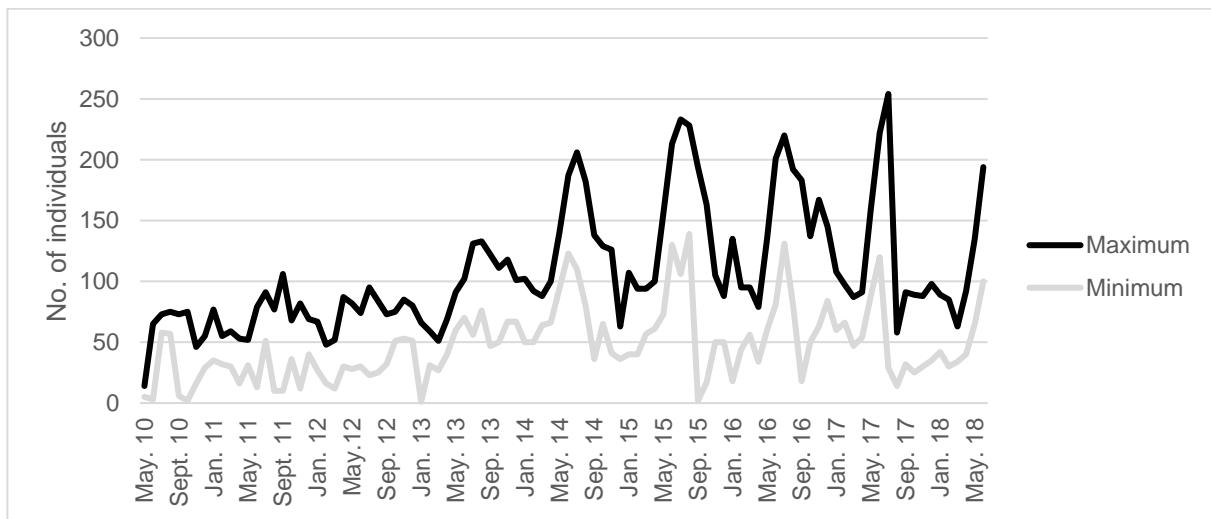


Figure 5. Minimum and maximum numbers of cockatoos roosting on Malinsuno, Balabac, by month

Foraging

With increasing cockatoo population, foraging routes on Pandanan and surrounding islands are getting more complex. Foraging areas seem also to expand and are now covering larger areas of Palawan's southern tip, Bugsuk and several smaller islands in the vicinity of Pandanan. A foraging map was updated by Rene and used to better plan seasonal monitoring of feeding flocks in the area (Fig. 6).

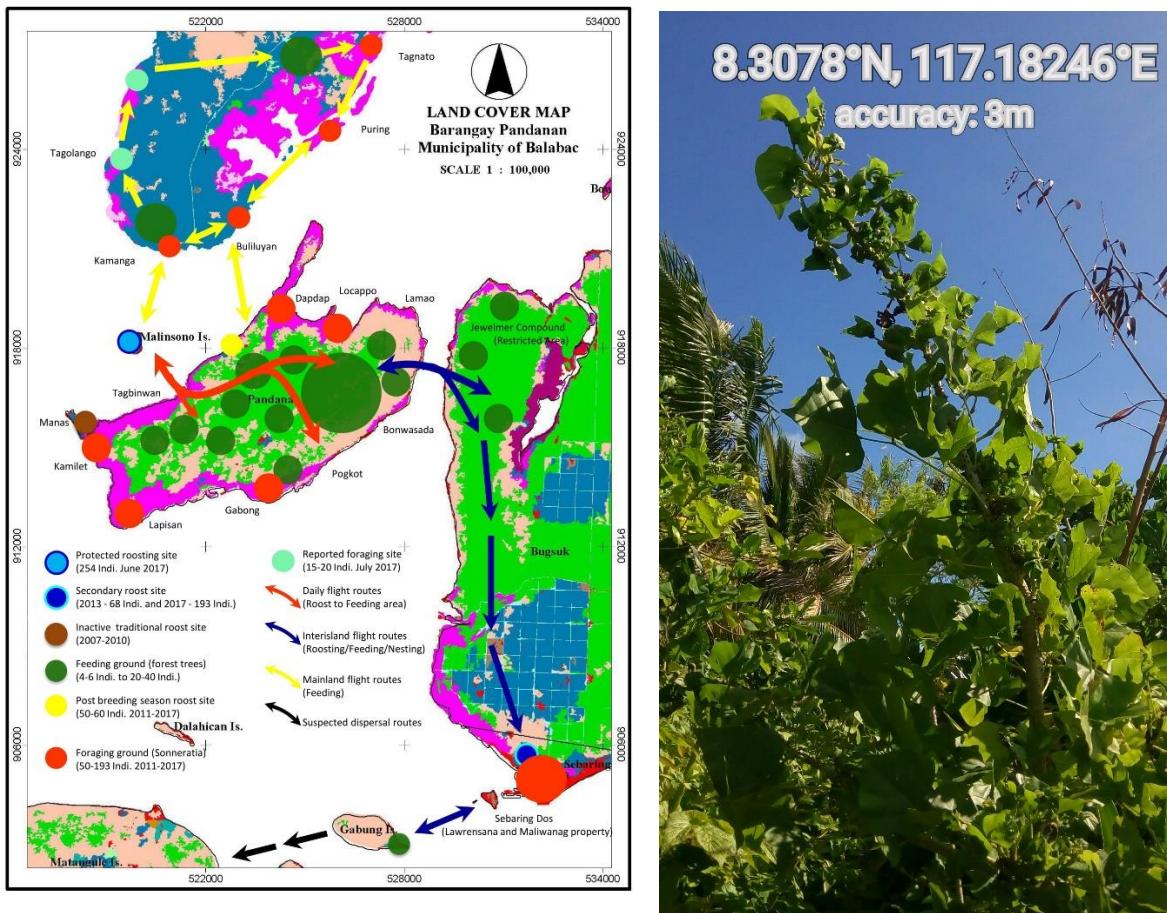


Figure 6. Updated foraging map of Pandanan Island and surroundings (left; map: R. Antonio); The food-providing tree *Erythrina orientalis* was almost wiped out in Palawan due to an infection, but the seedlings planted on Malinsuno are doing well so far (right; Photo: R. Antonio)

Breeding

Cockatoo pairs were observed around nest sites as early as September. Breeding season commenced in December, significantly earlier than in other project sites. Nests were for the first time systematically searched on Bugsuk Island, but due to the large area, not the whole island could be covered.

Seventeen active cockatoo nests were monitored on Pandanan, with 50 eggs being recorded. Among these were two newly discovered nest trees. Seven eggs did not hatch, partly due to wet conditions during the 2018 breeding season. A clutch with three eggs got destroyed by Hill mynas. A replacement clutch with one egg was successful. This is the first time we observed replacement clutch for Philippine Cockatoo, possibly because the loss occurred very early during the incubation period. Of the 43 hatchlings, 35 fledged successfully. Suspected reasons for hatching losses include nest competition, particularly with Blue-naped Parrots and Hill Mynas. Four hatchlings probably died because of attacks from Blue-naped Parrots, two of which had clear bite marks. One hatchling probably succumbed to extreme temperature during a one-week heat wave. Three hatchlings probably

were lost to predation; in one case poaching cannot be excluded, since honey collectors were in the area at the time the hatchling got lost.

As in previous breeding seasons routine activities on nests included regular monitoring climbs, measurement, banding and blood sampling of hatchlings.

On Bugsuk Island seven nest trees were found. All belong to the emergent tree species *Pometia pinnata*, and all nest tree characteristics were taken by June 2018. Twenty-one eggs were recorded, of which two got lost due to unknown reasons. Of the 19 hatchlings, all fledged successfully.



Figure 7. Banding of hatchlings on Pandanan (Photos: R. Antonio)



Figure 8. Monitoring of hatchlings and nest trees on Bugsuk (Photos: R. Antonio)

Blood sampling was done for the first time with the improved protocol developed during the visit of Dr. Simon Tollington from NEZS (see below). Blood is extracted from the wing vein and stored in ethanol. Before blood-filled keels were collected from wing or tail of the hatchlings. No cold storage is required for the full blood samples as long as the ethanol is topped up occasionally.



Figure 9. Cockatoo blood samples from Pandanan and Bugsuk (Photos: R. Antonio)

Warden scheme continued

Patrolling

Wardens conducted regular patrolling on Pandanan, and recorded threats during other activities (e.g. nest monitoring) on this island, as well as on Bugsuk. In the second half of 2017, new shifting cultivation sites were mapped on the former. There is a tendency that these sites are increasingly found in the closed coastal forest on the eastern portion of the island. Illegal cutting of timber was occasionally recorded and reported to Jewelmer personnel and authorities. Following up on our reports, about 1,000 board feet of lumber were confiscated on site by the Philippine Armed forces. Presence of honey collectors is another issue to be monitored regularly, since these groups were also known to raid parrot and myna nests in the past.

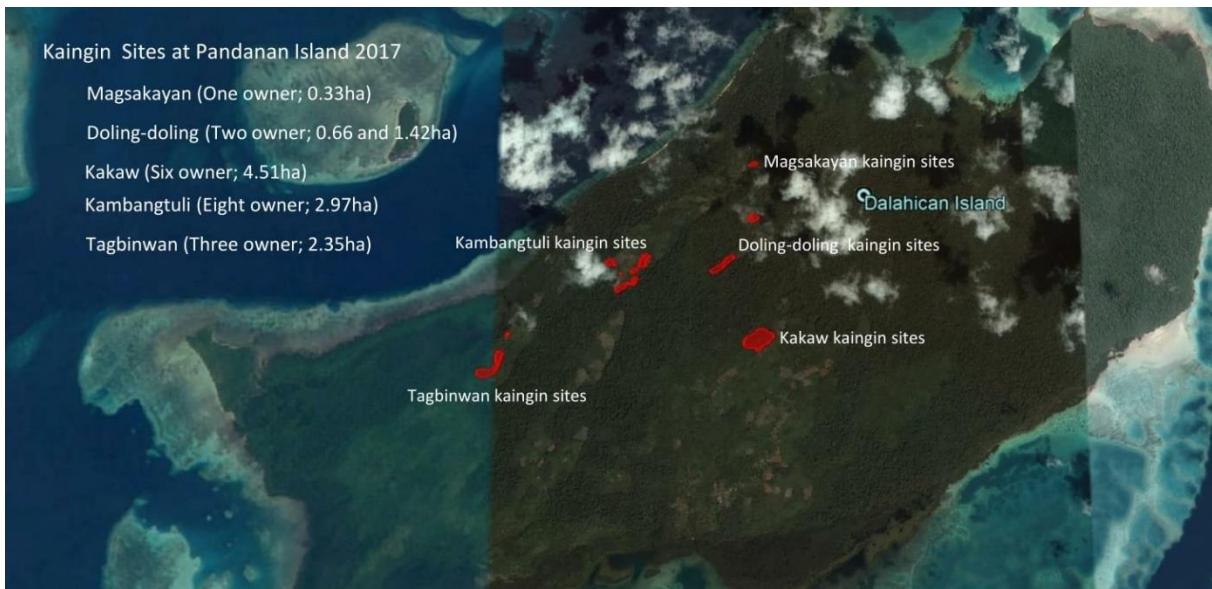


Figure 10. Map of Pandanan showing areas with recent shifting cultivation (Kaingin sites; red) encroaching intact coastal forest (Map: R. Antonio)



Figure 11. Mapping of shifting cultivation plots on Pandanan was finalized within this reporting period
(Photos: KFI)



Figure 12. Illegal logging for timber on Pandanan (Photos: R. Antonio)

Hunting by armed groups was detected on Bugsuk during the period and reported to the Jewelmer Company for appropriate action. We got footage of a heavily injured Palawan Bearded Pig *Sus aheonobarbus* from Bugsuk, which could have been caused by poaching.

Reforestation

Five food-providing and four nest-providing tree species are currently propagated in the tree nursery on Pandanan. From July to November 2017, 997 seedlings were planted in abandoned shifting cultivation sites. The tree nursery was repaired in early 2018, and collection of seeds resumed in April of this year.



Figure 13. Tree nursery on Pandanan (Photos: R. Antonio)

Conservation education

An information campaign was restricted to certain villages that have more members that seem to be new in Pandanan and village officials and some students during the celebration of Bgy. Pandanan's fiesta. More intensive focus group discussions will be carried out after breeding season.

Constraints and measures taken

- Due to the large areas to be covered on Pandanan and the addition of Bugsuk in the nest monitoring efforts, additional personnel is needed to assure adequate nest monitoring and patrolling.
- Security situation on the other hand still does not allow for external project visitors.

Objective 2: Conservation of cockatoo population on Rasa Island, Narra

Research on conservation-related aspects of cockatoo biology on Rasa continued, with focus on factors influencing breeding success and foraging ecology

Roosting and foraging

Number of foraging flocks decreased towards the breeding season in the early months of 2018 with 86 individuals counted in January. This however does not include birds from a newly established roost site with up to 95 birds which do not pass through the counting stations. It also does not include breeding pairs and non-breeding birds which stay on Rasa during the breeding season. Particularly when the breeding season comes to an end, birds disperse widely, and it seems that foraging flocks can be recorded ever further away from Rasa Island. In June 2018 cockatoos have been recorded foraging near a village in the neighboring municipality Aborlan. The direct distance from Rasa Island to this location is close to twenty kilometers. Counts on roost sites remain difficult, since currently seven sites are identified which are only used temporarily. A pattern of use so far is not discernible.

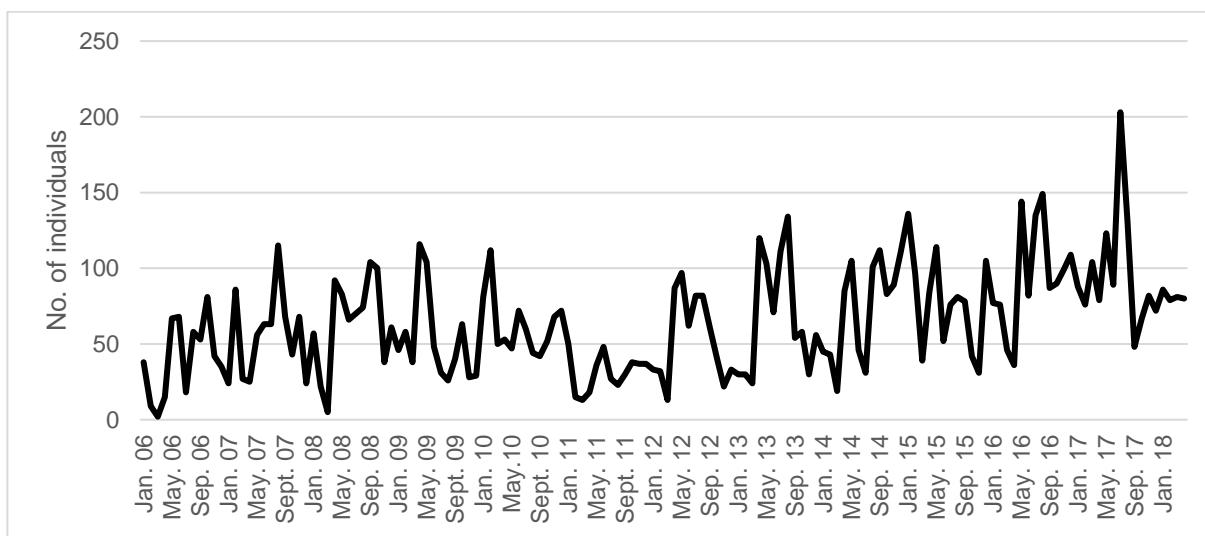


Figure 14. Numbers of cockatoos on simultaneous counts foraging on mainland opposite of Rasa.

Breeding

In the 2018 breeding season 42 nests were occupied. A total of 105 eggs were produced of which 91 hatched. Thirteen eggs did not hatch, probably due to infertility, and one got lost to predators. Eighty-seven hatchlings fledged successfully. Four hatchlings got lost to predators, probably to monitor lizards and an unidentified large snake species.

Nestlings were banded except from eight which could not be reached, since nest cavities were too deep. In this breeding season we tried for the first time to experimentally fill up a very deep cavity using wood shavings treated with carbaryl. This was done in the last week of January, and in the third week of February, this nest showed signs of occupation. This nest produced two nestlings which successfully fledged in the first week of June.

All banded nestlings were measured, and full blood samples were taken.

The overall trend of absolute numbers of breeding pairs, as well as eggs, hatchlings and fledglings produced each season is surprisingly still increasing after 20 years of conservation work on Rasa.

Productivity per pair of eggs and hatchlings is generally decreasing, but average number of fledglings per pair is slightly increasing. The latter could possibly be due to a higher proportion of experienced breeding pairs, presence of helpers, or increasingly effective conservation interventions (prevention of predation, treatment of mites, supplemental feeding). Nestlings rescued from the nest and not rehabilitated on Rasa are not part of this statistics.

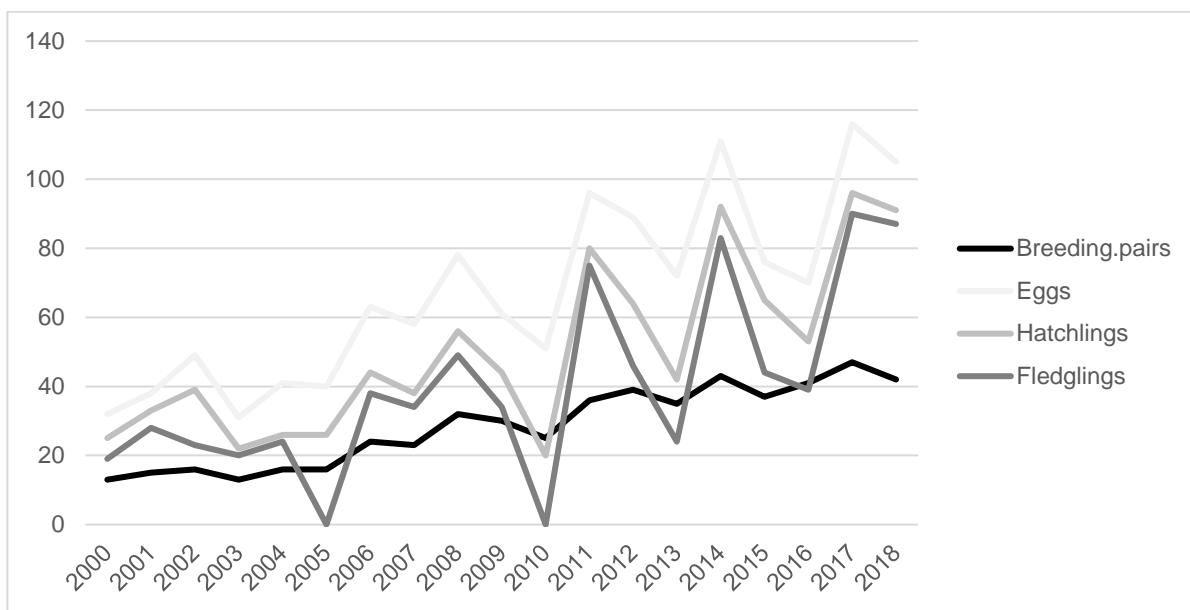


Figure 11. Absolute numbers of cockatoo breeding pairs, eggs, hatchlings and fledglings per breeding season on Rasa Island.

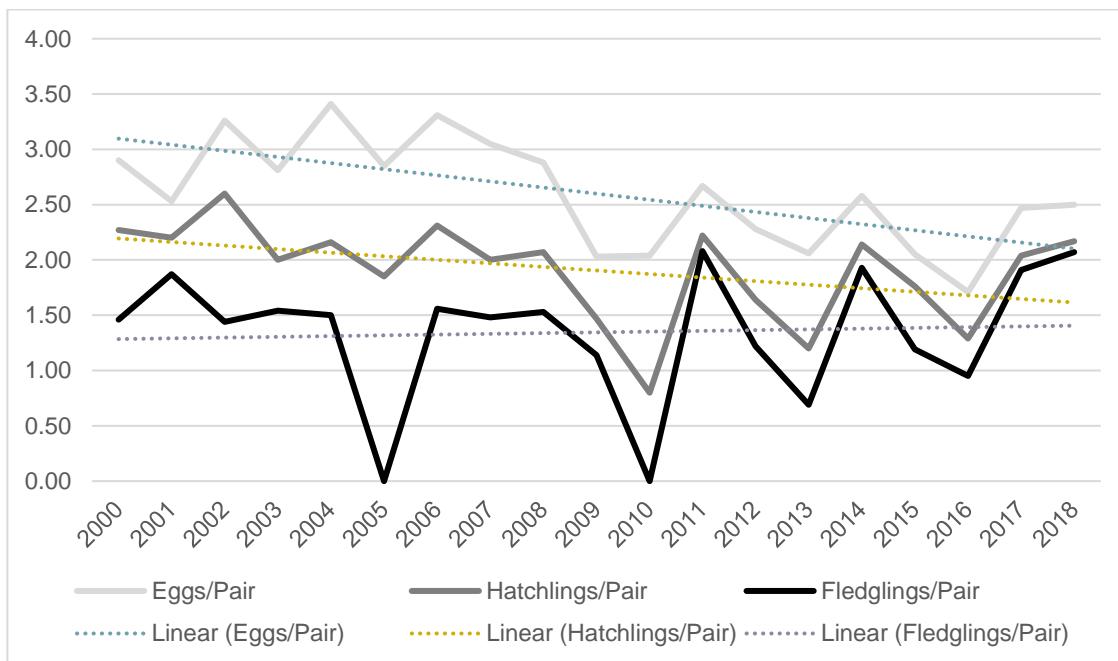


Figure 12. Average number of eggs, hatchlings and fledglings per breeding pair and breeding season



Figure 16. Sacks with coarse wood shavings are treated with carbaryl and used to partially fill up a deepened nest cavity (Photos: P. Widmann)



Figure 17. Wardens restoring cockatoo nest tree by backfilling deepened cavities with wood shavings (Photos: P. Widmann)

Warden and mainland volunteer scheme continued

Patrolling on Rasa Island did not indicate any illegal activities. The SMART patrolling system is further tested and refined. In the future it would be desirable to have site-specific data models.

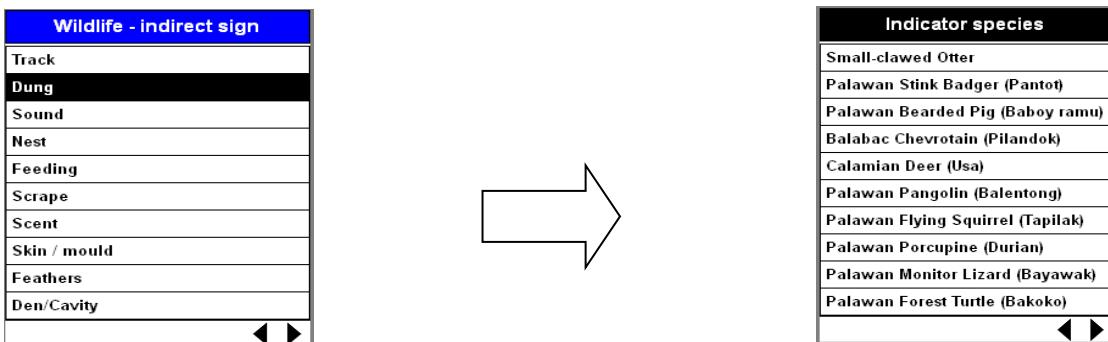


Figure 18. Example of data collected using the SMART patrolling system

The voluntary fish catch monitoring in waters surrounding Rasa is continued. Seven fishermen from three villages voluntarily report their catches and their catch efforts to KFI. With support from Wildlife Reserves Singapore a campaign was launched to connect fishery yields to the protection of the Rasa Island and the Philippine Cockatoo. Fisherfolks which actively participate in catch monitoring will be recipients of improved solar dryers for fish. The existing ones are exposed to rain and flies and consequently produce only poor quality dried fish.



Figure 19. Existing low quality solar driers opposite of Rasa Island (right; Photo: A. Agullo)

Conservation education activities for stakeholders

On September 24 to 26 we participated in workshop for the “Review and Finalization of the General Management Plan Rasa Island Wildlife Sanctuary”. The event was organized by DENR.

Prominent visitors within the reporting period include the family of Akiko Thompson Guevarra, the Filipino Olympiad for swimming in the past years. Her son adopted the last hatchling from this year’s breeding season. We also had feature shoots from BBC and Nigel Hicks within the period.

Conservation education campaigns in schools within foraging areas of cockatoos reached 1,017 students within the reporting period. Awareness among residents remains high as reflected in pre-and post-intervention surveys. Information materials given out during campaigns can be seen on houses and store fronts in the villages covered by campaigns.

On June 28 the 12th Katala Festival was held in Narra. The highlight of the festivity was the launching of the Philippine Cockatoo as flagship species by the Municipality of Narra. This is a result of a province-wide initiative to identify one (preferably endemic and threatened) species per municipality.

Activities included a parade, face-painting and several environmental contests though lesser activities than in the past. A friendly basketball game between members of the local government and KFI team composed of wildlife wardens and religious organizations was narrowly lost by the latter. A bird race was conducted for the first time, and all participants were able to put wild cockatoos on their lists. This gathering was attended by ca. 800 participants mostly students and teachers.

The theme for this year’s festivity was “Narra isulong ang KKK: Katala at Karagatan para sa Kinabukasan” (Narra goes for KKK: Katala and the Seas for the future of the municipality).



Figure 20. School visit in a village within the cockatoo foraging area (left); cockatoo poster on a store front (right; Photos: KFI)



Figure 21. Students during the bird race (left); face painting (right); Below are pictures of the flagship signing of the municipal ordinance by Mayor Demaala in the presence of DENR PENRO Cayatoc and PCSDS Atty. Villena and the crowd during the festivity. (Photos: J. Nunez, P. Widmann)

Constraints and measures taken

- Data models of SMART patrolling systems should be site-specific, particularly for biodiversity and threat parameters. External expertise is needed to adjust the systems.
- At least three nest trees on Rasa Island are too deep to monitor and band nestlings. After the successful experimental restoration of another deepened nest hole with treated wood shavings, these three nests will be rehabilitated as well for the 2019 breeding season.

Objective 3: Conservation of cockatoo population on Dumaran Island, Dumaran

Research on conservation-related aspects of cockatoo biology on Dumaran continued, with focus on factors influencing breeding success and foraging ecology

Roosting

Cockatoo numbers on the roost site increased throughout the second half of 2017, reaching a maximum of 23 individuals. Palawan was set in the path of three tropical storms in the second half of January 2018 which hit in quick succession. Although Dumaran was not directly hit, the roost site was exposed to high winds and was completely abandoned during this period. Starting in February, cockatoos returned to the site (maximum of 18 ind. In June), but did not yet reach numbers counted before the storms. Wardens were looking for dead birds but found none. Nevertheless, we can not exclude that there were cockatoo casualties during these weather events.

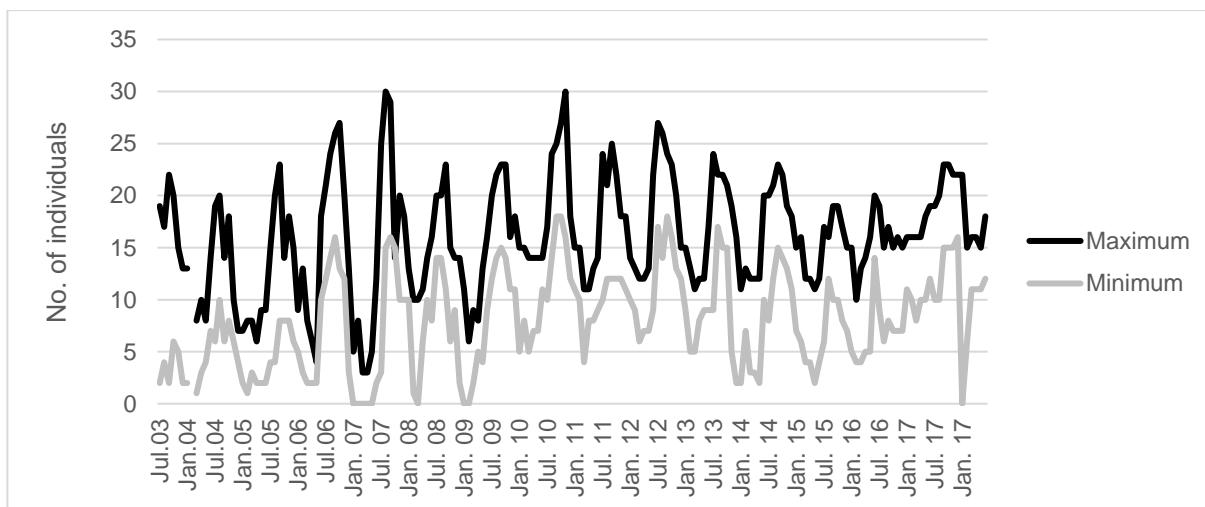


Figure 22. Minimum and maximum numbers of cockatoos counted on the traditional roost site in Lagan, Dumaran per month

Breeding

Four active cockatoo nests were recorded in 2018. Fifteen eggs were produced. One nest cavity was apparently claimed by two cockatoo pairs, and the arising conflict resulted in the loss of three eggs. A replacement clutch in the same cavity did also not prosper, with one egg being destroyed and another one being infertile. Of the seven hatchlings, one died for unknown reasons, another one died in advanced nestling stage. Necropsy was conducted

and it showed that the bird was generally well-fed. The remaining five hatchlings were successfully banded and blood was sampled.

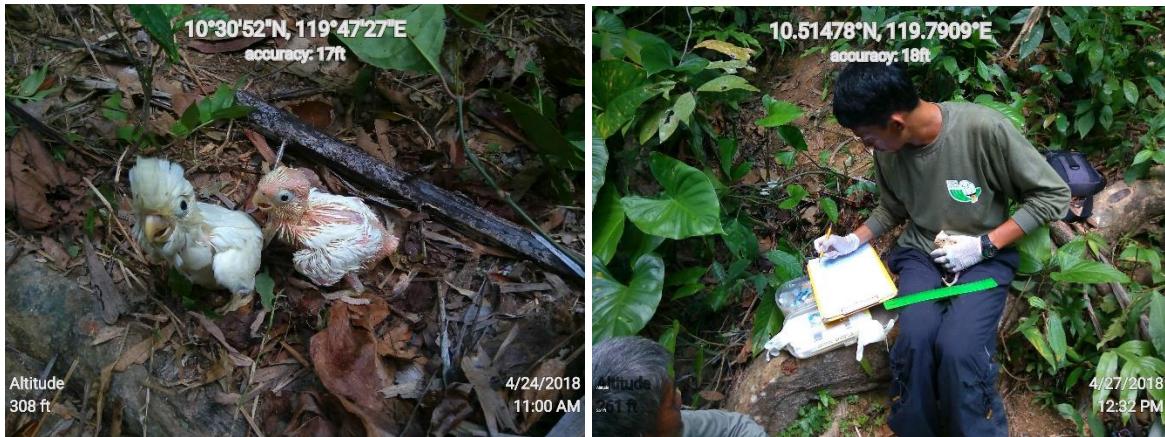


Figure 23. Two healthy cockatoo chicks from the same clutch in different development stages (left); measuring of hatchling (right; Photos: KFI)



Figure 24. Cockatoo hatchling died in advanced nestling stage (left); banding of hatchling (right; Photos: KFI)

Translocated cockatoos

Since it was not necessary or feasible to rescue cockatoo hatchlings in the 2018 breeding season from any site, no supplementation of the existing population has been undertaken within the reporting period. All previously released birds remain connected to the wild flock, with the exception of Wescom 2 which remains by itself in a coastal area close to a settlement. Residents in the area are aware of its presence and are helping protect the bird from any harm. Reports are prompted to the staff on field in case Wescom 2 gets so close to humans.

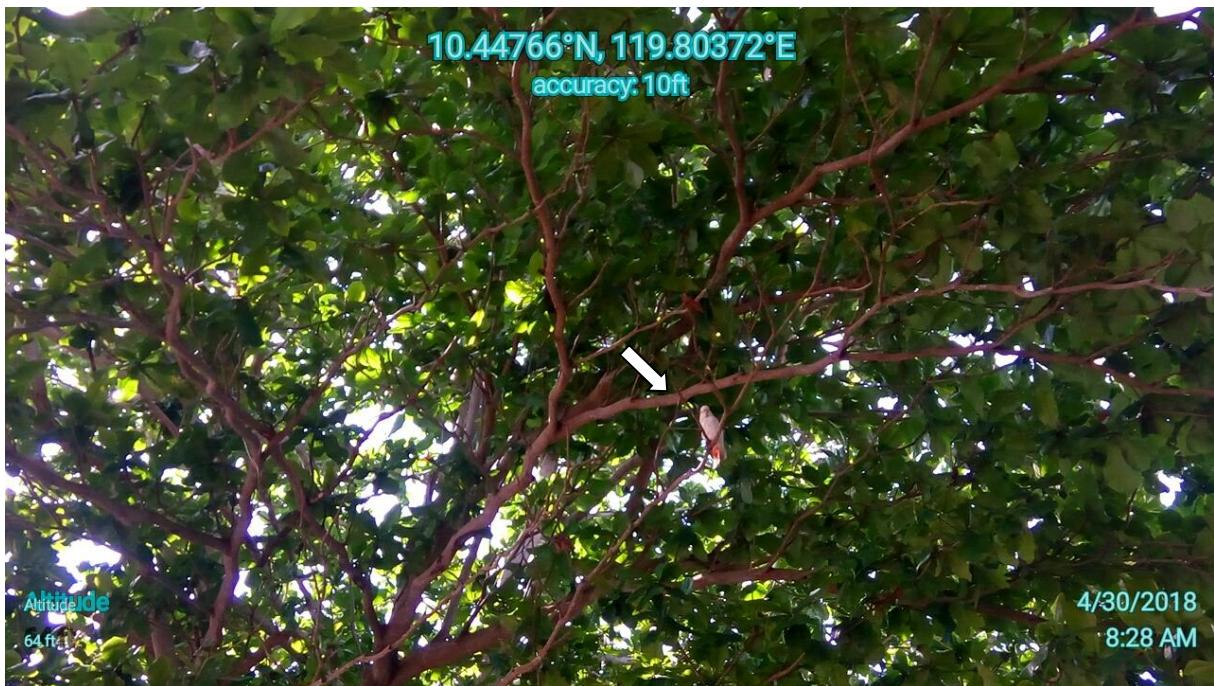


Figure 25. Monitoring of solitary released cockatoo (Photos: M. Plazos)

Warden scheme continued

Wardens combine patrolling with collection of seeds and wildlings. SMART patrolling system was introduced, but wardens still have problems in recording observations with the phones.

A shifting cultivation site was newly established within or close to the Critical Habitat. This matter was discussed with local officials within the LPAMC meeting.

Capacity building for stakeholders and conservation education

LPAMC meetings

Two Local Protected Area Management Committee meetings were conducted within the period. Highlighting these meetings were the preparation for the 15th Kalabukay Festival and the campaign for the flagship species for the municipality. Likewise, we have raised in these meetings the continued protection and integration of the declared Critical Habitat in Dumaran amidst all the revisions of the ECAN zonation that is being put forward by the PCSD within the period. The said CH is the first declared by the PCSDS and adopted by the LGU however, management planning is yet to be completed.



Figure 26. Regular meeting of the Local Protected area Management Committee (left); newly established shifting cultivation plot (right; Photos: KFI)

15th Kalabukay Festival

On June 18-19, the 15th Kalabukay Festival was celebrated in Dumaran. On this occasion KFI solicited an appearance of Joey Ayala, a nationally famous environmental singer/advocate, for the evening performance. This is made possible through the National Commission for the Culture and Arts (NCCA). Activities during the festival included environmental quiz bee, face painting, chanting contests, among others that reached ca 700 participants not only students but locals as well. This year's theme was "Sa 15 anyos, ing tawan ta 'y lugar para mabue" (For 15 years, we shared a place to live!). This year's festivity was also highlighted by the launching of the Palawan Hornbill as Dumaran's flagship species. The species is protected through the PCCP initiatives while it shares the habitat of the Philippine Cockatoo.



Figure 27. Face painting during Kalabukay Festival (above) got help from members of the Palawan's Art on the Move; evening affair with nationally renowned artist Joey Ayala (2nd row right) and launching of the Palawan Hornbill by the Municipal Council members (below); Photos: KFI

Buffer zone restoration around existing cockatoo reserves and creation of forest corridor connecting the two existing cockatoo reserves continued

In order to improve the survival rate of collected wildlings, a growth chamber consisting of a bamboo frame and transparent plastic sheets was constructed. Initial results indicate that survival rates improved markedly and are regularly above 80% before seed bags are transferred to the nursery beds.

A second nursery site has been established. This was necessary since over the past years reforestation sites are situated ever farther away from the existing nursery, resulting in long hauling distances. Nursery beds and sheds have been constructed as well as a shelter for the maintenance staff. A permanent water source is available in the new site.

Due to wet weather conditions, the planting season was extended by around five weeks. A total of 14,957 seedlings were planted in the corridor. Plots of 100 m² each were established to monitor survival rates and performance of planted seedlings on each site. Plants were individually labelled for easy identification in the future.

The 4Ps group on Dumaran Island carried out some of the planting activities in the more accessible reforestation sites within the corridor engaging ca 120 of its members in one barangay.

As of end of the reporting period, 17,048 seedlings are available in the main nursery and an additional 7,984 in the satellite nursery, most of which are ready to be planted out within the ongoing planting season.



Figure 28. Collected wildlings (left); newly constructed growth chamber (right; Photos: M. Plazos)



Figure 29. Shelter in new site (left); Newly established nursery bed (right; Photos: M. Plazos)



Figure 30. Individual marking of planted seedlings (Photos: M. Plazos)



Figure 31. Planting with 4Ps group on Dumaran start with lecture (left) before actual planting (Photos: M. Plazos)

Constraints and measures taken

- The observed competition for suitable nest cavity highlights the need for additional breeding sites. Artificial nest boxes are continuously offered, but so far without cockatoo occupation, whereas they are occasionally accepted by Blue-naped Parrots.
- Wardens still have problems with the SMART patrolling system and require additional training to get familiar with the use of the phones. We are exploring options of using pictures of indicator species instead of names for easier identification by wardens on duty.

Objective 4: Education and research at the Katala Institute

Captive management of Philippine Cockatoo and other highly threatened species continued through employment and training of zookeepers and volunteers

All captive birds were in good condition during the reporting period. Chronic feather plucking continued in three individuals. After a lengthy process, Katala Institutue was finally recognized as quarantine facility, which is a requirement for the export of three cockatoos to Jurong Bird Park for conservation breeding.

On September 10 a bird with severe blood clots was rescued from the coastal village Panacan. It was probably shot with a marble gun. It recovered quickly however and was released back only one week later. Another bird which possibly was shot with a sling shot was rescued on September 27. It was successfully released on November 2. It immediately joined the wild flock at a mainland roosting site.

Another bird was turned over on October 28. It was found heavily entangled in nylon rope. Aside from four broken primaries, no external injuries were visible. It however did not recover and died on November 4, possibly due to internal injuries.



Figure 32. Dead cockatoo which got entangled in nylon rope (left); release of recovered cockatoo near roost site (Photos: KFI)

Educational trail, enclosures and visitors' facilities upgraded

Jeff Holland from the Center for the Conservation of Tropical Ungulates (CCTU) visited Katala Institute (KI) in early March. He appreciated the existing deer enclosure, including the isolation pens. He suggested to subdivide the large enclosure to gain more flexibility in

composition of groups. He also recommended to further backfill some parts of the enclosure to prevent waterlogging. Both measures were done during the reporting period.

Since the grass thatch was showing signs of decay, the roof of the pavilion was replaced with GI sheets. A nursery shed with fine wire mesh was constructed. This is intended for valuable seedlings. It will keep rats and African giant snails out which damaged seedlings in the past. Fencing around the nursery was partly replaced. Part of the nursery was extended and backfilled and serves now as seedling hardening area.

We painted the concrete walls of the pangolin exhibit so that it would be more durable than just the untreated concrete wall. We extended the wire and plain sheet structure to ensure that a pangolin cannot escape from the enclosure. We adjusted the drainage system in the enclosure since water did not immediately drain after heavy rain. Dens are still to be built.

Seven electric posts were installed.

Trails in the arboretum were provided with a layer of gravel and the same is successively done with the loop trail. Construction of a durable perimeter fence was continued.

A new caretaker house is under construction. It will replace the existing structure and will be elevated to prevent frequent flooding. An education hub is likewise being built. This structure will feature a project office, a small exhibit and a classroom with small library. The latter is financed through the Zootier des Jahres initiative.

The main cockatoo aviary was repainted. Some of the turtle enclosures in the breeding facility were repaired.

A new pre-release aviary is under construction in the quarantine area to replace the rusted existing one.

Landscaping and reforestation continued in KI with selected island plant species from around the world in the island arboretum and native species in the remaining area. Durable metal plant labels were installed.



Figure 33. Roofing of pavilion (left); excavation for fence posts (Photos: KFI)



Figure 24. Additional fencing for the deer enclosure (Photos: P. Widmann)



Figure 35. Cycad in KI woodland (left); Golden Cane Palm in the Indian Ocean section of the island arboretum (Photos: P. Widmann)

Constraints and measures taken

- Extensive rainfall almost throughout the reporting period hampered construction. Additional costs arise due to the need of extensive backfilling. Some of the newly planted specimens died of due to the permanent high-water level and need to be replaced.
- Due to the large number of construction projects in the facility there is a shortage of skilled labor in Narra. External labor needed to be recruited.



Figure 36. Flood during tropical depression in early 2018. (Photos: KFI)

Other highlights

Other reported wildlife within the reporting period:

Brown Hawk-owl *Ninox scutulata* (IUCN: least concern)

Two successfully fledged on Dumaran.



Figure 37. Two hatchlings of Brown Hawk-owl (left); A Brown-tailed Racer *Gonyosoma oxycephalum* (right; Photos: M. Plazos)

Blue-naped Parrot *Tanygnathus lucionensis* (IUCN: Near-threatened)

Seventeen fledged successfully on Dumaran.

Blue-headed Racquet-tail *Prioniturus platenae* (IUCN: Vulnerable)

Sixteen successfully fledged on Dumaran.

Palawan Hornbill *Anthracoboceros marchei* (IUCN: Vulnerable)

Six active nests were recorded for the first time on Bugsuk Island. Hornbills there were also caught on camera trap while inspecting active cockatoo nests. Six hornbills successfully fledged from three nests on Dumaran.

Brown-tailed Racer *Gonyosoma oxycephalum* (IUCN: Least Concern)

This snake species was recorded from Dumaran only for the second time. It is a predator of bird eggs and nestlings.

Cooperation and advocacy affecting more than one project site

Visit to the Mauritian Wildlife Foundation MWF)

Mauritius in its history suffered massive extinction of native plant and animal, but at the same time experienced some of the most spectacular and successful species recovery programs, including for the Mauritius Parakeet *Psittacula eques*.

The invitation was a result of a consultation of issues of PBFD, since the parakeet population is affected, and MWF is actively managing this disease. Other topics we experienced shortly first-hand included intensive management of highly threatened bird species, especially individual monitoring, nest box design, as well as habitat restoration efforts. We were invited to visit Iles-aux- Aigrettes, a small coral island with similarities to Rasa, as well as one of the parakeet sites in the Black River Gorges National Park.

We were given the opportunity to introduce the species conservation programs of KFI during a MWF staff meeting, and we also extended our invitation to visit projects in Palawan. We are very grateful to the staff of MWF, particularly to Dr. Vikash Tatayah for giving us the opportunity to witness their outstanding conservation efforts!



Figure 38. Native plant nursery on Iles-aux-Aigrettes (left); due to their important ecological role, extinct giant tortoises have been substitutes with a close relative, the Aldabra tortoise (right; Photos: P. Widmann)



Figure 39. A pair of wild Mauritius Parakeets in Black River Gorges National Park (left); parakeet nest box made of PVC pipe (right; Photos: P. Widmann)

Development of a field laboratory for PBFD testing

As a follow-up of the recent (false positive) testing of some blood samples of cockatoo hatchlings. Dr. Simon Tollington visited the PCCP from January 24 to February 1 to assess the feasibility of the development of a field laboratory for PBFD testing. Other objectives were to raise awareness of the potential threat with decision makers and to train techniques for sampling and storing of full blood.

A training course in the Palawan Wildllife Rescue and Conservation Center was conducted for staff of this facility, as well as representatives of line agencies involved with biodiversity conservation and disease control. Simon gave an overview of PBFD related-issues, mainly based on his experience in Mauritius. Blue-naped Parrots from the facility then were later sampled by participants. A similar training course was conducted for the KFI Staff in Katala Institute. Sampling was practiced with cockatoos.

In the meantime, sampling procedures for cockatoo hatchlings were modified in all project sites. Full blood samples are collected from the wing vein and permanently stored in ethanol. Collection of blood keels has been discontinued.

Simon visited two project sites: Rasa Island and Iwahig Prison and Penal Farm. His main procedural recommendations include:

- Use of antiviral handwash before and after handling birds.
- Separate cloth bags for nestlings for different nests.
- Limited exchange of people and equipment between project sites.
- No exchange of birds for the time being between project sites.
- Stepped up biosecurity in KI.
- Monitoring of wild populations for any abnormality, e.g. feather discolorations.

We had the opportunity for a meeting with high-ranking representatives of DENR-BMB, PCSDS and DENR—PENRO, where Simon highlighted the urgency of the PBFD issue, and its potential impact on wild parrot populations.

Next steps will include the development of a field lab for testing, and the drafting of local ordinances, particularly for Narra, allowing for the monitoring of pet parrots. This program component was funded through a special grant of NEZS, with contributions from the “Zootier des Jahres” initiative.



Figure 40. Practicing blood sampling in PWRCC (left) and Katala Institute (right); Photos: P. Widmann)



Figure 41. Simon demonstrates the sampling process from the wing vein on a cockatoo (Photos: P. Widmann)



Figure 42. Meeting with representatives of DENR and PCSD (left); Simon visits cockatoo conservation site in Iwahig Prison and Penal Farm (right; Photos: P. Widmann)

Other activities

- Several meetings have been attended with fellow NGOs and civil society groups in Palawan covering different topics, including the coal-fired power plant, ECAN zonation, road projects, among others.
- On October 28, Director Nelson Devanadera together with selected PCSD staff visited Rasa Island and Katala Institute for the first time! The team witnessed the crossing of the Philippine Cockatoo to and from Rasa Island Wildlife Sanctuary.
- A warden refresher course involving PCCP wildlife wardens from all project sites was held from December 15-16, 2017 in Puerto Princesa City.
- In March Indira gave a presentation on Philippine Cockatoo Conservation and food security during the Environmental Laureates Conference in Freiburg i. Br., Germany.
- In April Indira and Peter were invited to participate in the Fraser's Hill Bird Race by the Wild Bird Club of Malaysia. Indira presented the wildlife warden approach of the PCCP during a public lecture session.
- In May, Dr. Roger Wilkinson visited two project sites of the PCCP and witnessed the banding of hatchlings.
- In June, a Filipino artist and dressmaker visited Rasa Island to explore the options of making Philippine Cockatoo-inspired gowns and accessories that could be used for fund raising campaigns for the species.

Publications

- Indira and Peter are co-authors of a global study on parrot hemoparasites. Most of the parrots tested did not show any parasite load in their blood (including Philippine Cockatoo). One reason for this could be that all these species rely on food plants which contain secondary components. Only one species had blood parasites, and this species is not known to feed on such plants (Masello et al., 2018).

Awards

- On October 9 Indira received the 2017 Distinguished Alumni Award from the School of Environmental Science and Management at the University of the Philippines Los Baños for wildlife conservation and community empowerment.
- On 19 October KFI was awarded the proceeds of the 15th German Ambassador's cup, an annual golf tournament organized by the German Embassy Manila and the German-Philippine Chamber of Commerce and Industry. A cheque amounting to PhP 200,000.- was handed by the German Ambassador Dr. Gordon Kricke to Indira and Peter. The funds will be used for livelihood training and conservation education activities.



Figure 43. The German Embassy in Manila facilitated a golf tournament with the members of the German-Philippine Chamber of Commerce. The proceeds of 200,000 PhP went to PCCP (left; Photo: I.D.L. Widmann). Indira's Alumni Award in UPLB for wildlife conservation and community empowerment (right; Photo: P. Widmann)

Personnel and equipment status

- Storm damage in the field house on Dumaran Island were repaired. Parts of the solar system need to be replaced. The posts and some of the flooring need immediate workup.
- Due to the extended range of the project site, the project boat on Pandanan needs to be replaced with a larger one for safety reasons. We hope to use fiber glass boats in the future to support anti use of lumber as hulls and also for durability.
- Remaining main equipment is in good working order.

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