

2019-29

**SPECIES
CONSERVATION
STRATEGY AND
ACTION PLAN**

Sulu Hornbill

Anthracoceros montani



We would like to acknowledge, and thank, each and every participant who took part in the workshop:

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A collaboration between the Philippines Biodiversity Conservation Foundation, Inc., Birding Adventure Philippines, Hornbill Research Foundation, the IUCN SSC Hornbill Specialist Group, and the IUCN SSC Conservation Planning Specialist Group.

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Wildlife Reserves Singapore Group





Photo: Nicky Icarangal

CONTENTS

ACKNOWLEDGEMENTS	2
FOREWORDS	3
ACRONYMS AND ABBREVIATIONS	6
EXECUTIVE SUMMARY	8
Introduction	8
Threats	9
Recommended action	9
Implementation	10
STATUS REVIEW	13
Description	13
Reproduction	14
Feeding ecology	14
Historical and current distribution	14
Population size	15
Co-endangered species	15
The socio-political situation	16
Research and conservation efforts to date	16
CONSERVATION STRATEGY AND ACTION PLAN 2019 - 2029	20
Introduction	20
Vision, Goals and Milestones	21
Vision	21
10-Year goals	21
Milestones 1-5 years	22
Milestones 6-10 years	22
Challenges to success	23
OBJECTIVES AND ACTIONS	24
2019 RECOMMENDED POSITION ON <i>EX SITU</i> MANAGEMENT	35
WORKING GROUP NOTES: HABITAT AND SPECIES ISSUES	37
WORKING GROUP NOTES: COMMUNITY ENGAGEMENT (TEAM CANTIK)	41
WORKING GROUP NOTES: GOVERNANCE, LAND ISSUES AND SECURITY	43
APPENDIX I: PLANNING WORKSHOP PARTICIPANTS	46

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Philippines Biodiversity Conservation Foundation, Birding Adventure Philippines, the IUCN Species Survival Commission (SSC) Hornbill Specialist Group, the IUCN SSC Conservation Planning Specialist Group, and the Hornbill Research Foundation (Thailand), were the principal organizers of the Workshop. The Department of Environment and Natural Resources (DENR), LGU Panglima Sugala, District of Tawi-Tawi, University of Philippines, Katala Foundation, Centre for Conservation Innovations, Haribon Foundation, Holistic Education and Development Centre, Avilon Zoo, Mindanao State University (Tawi-Tawi), North Carolina Zoo and Wild Bird Club Philippines, supported representatives to participate in the Workshop. Their names are listed in the appendices and their active participation and contributions are much appreciated. Protect Wildlife Project/ USAID kindly funded the participation of DENR staff from Mindanao and the Sulu Archipelago, which was critical to the success of the Workshop.

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We thank Janhavi Rajan, Nature Conservation Foundation's communications officer for doing a great job in designing this report.

Sincerely,
The Editing Team.

Foreword from BARMM-MENRE, Tawi-Tawi

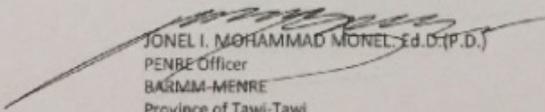
FOREWORD

The unique biodiversity of the Sulu archipelago includes the Critically Endangered Sulu hornbill locally called "Tawsi". The species used to occur in several islands in southern Philippines but currently restricted to the island of Tawi-Tawi and is believed to be locally extinct where it occurred in the past. The remaining forests in the island serve as the last stronghold for the species and a number of endemic and threatened wildlife restricted only to the Sulu archipelago. It is thus imperative to take actions to protect the forests, the watershed, its wildlife and the future of the people of Tawi-Tawi.

It is the mandate of the Ministry of Environment, Natural Resources and Energy (MENRE) of the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) to protect and conserve the unique biodiversity of the region including the Sulu hornbill *Anthracoceros montani*. The long-term sustainability in securing the biodiversity of Tawi-Tawi would depend on the effective, collaborative partnerships and initiatives of the people of Tawi-Tawi with the support of the different partners.

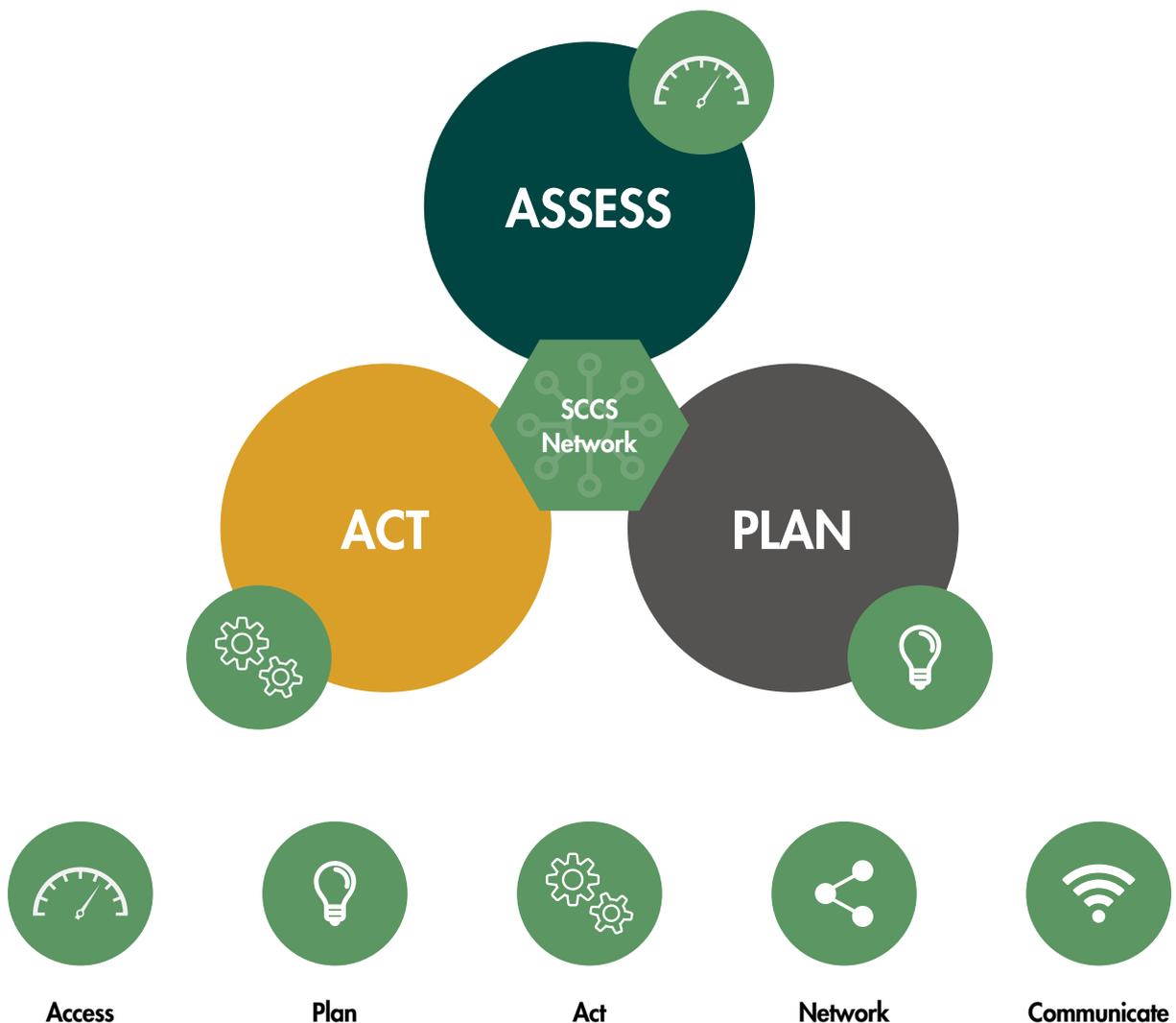
The development of a conservation strategy for the Sulu hornbill initiated by the International Union for the Conservation of Nature Hornbill Species Specialist Group (IUCN HSSG) last March 2019 in Los Baños, Laguna is a welcome development. The Sulu hornbill Conservation Action Plan serves as a common framework where institutions and key individuals can use to contribute to conserving Sulu hornbill.

I thank all involved for their commitment to this species and to furthering progress on saving our endemic hornbill species. I congratulate everyone involved for their hard work and look forward to seeing all the priorities achieved in the future.


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Foreword from the IUCN SSC Chair

The ultimate goal of all we do in the IUCN Species Survival Commission (SSC) is to reverse population declines of fungi, animals and plants, in order to prevent them from going extinct. Our conceptual framework is the Species Conservation Cycle, which has three primary stages – assess, plan, and act – and two crosscutting components – network and communicate.



Species Conservation Cycle

At the center of the Species Conservation Cycle is the network of more than 9,000 experts in 168 countries, distributed in the 161 SSC specialist groups that provide scientific knowledge for the IUCN Red List of Threatened Species. Of the approximately 106,000 species assessed for the red list, 27% of them qualify as threatened, i.e., are listed as Vulnerable, Endangered or Critically Endangered.

Once the scientific assessment is complete, comes the second stage: the data summarized in a red list account informs the design of a plan for its conservation. The ideal process for producing such plans is perfectly exemplified by the Species Conservation Strategy and Action Plan 2019 – 2029: Sulu Hornbill *Anthracoceros montani*.

The Sulu Hornbill was listed Critically Endangered in 1994, primarily due to habitat loss and degradation. It is endemic to the Philippines and restricted to the Sulu archipelago, specifically to one island of Tawi-Tawi, and is believed to be locally extinct on several other islands where it occurred in the past. The population may number as few as 40 individuals. There are many challenges to saving this species, including the difficulty of working across its range due to various conflicts in the area.

A workshop carried out in Manila on 4-5 March 2019 brought together 44 stakeholders from 23 organizations to consider the scientific evidence of the Sulu Hornbill's status and design a plan for its conservation. The key outcome was a prioritized set of objectives, activities and timelines, to guide and inform the implementation of conservation action and thus close the Species Conservation Cycle. We envision this type of inclusive, participatory mechanism as the model for all species planning efforts. For the SSC, an important feature of the process was the integrated support from three SSC groups – Hornbill Specialist Group, Conservation Planning Specialist Group (CPSG), and Asian Species Action Partnership – and one SSC partner, Wildlife Reserves Singapore. This also provides an excellent model for future projects.

Effective communication of all activities within the Species Conservation Cycle is illustrated above as a grey enveloping shade. What we must focus on now is to widely socialize the Sulu Hornbill Action Plan, so that it is adopted as a guide to the restoration of its populations, in turn benefitting other endangered endemic species in its habitat as well.

I am very grateful to everyone involved for their commitment to the conservation of the Sulu Hornbill, and congratulate all for their hard work and creativity. I look forward to reading the next edition of the action plan in 2030, reporting that the species has increased in numbers, populations have been established in other sites, and the following iteration of the Species Conservation Cycle will build on the successful implementation of the previous round. By then, I also look forward to conservation planning as a widespread tool applied by all specialist groups so that CPSG's strategic challenge that every species that needs a plan is covered by an effective plan is achieved.

Jon Paul Rodríguez

Chair, IUCN Species Survival Commission,

ProVita and Instituto Venezolano de Investigaciones Científicas, Caracas, Venezuela.

ACRONYMS AND ABBREVIATIONS

AFP	Armed Forces of the Philippines
ARMM	Autonomous Region of Muslim Mindanao
BARMM	Bangsamoro Autonomous Region of Muslim Mindanao
BAP	Birding Adventure Philippines
BF	Biodiversity Friendly
BFAR	Bureau of Fisheries & Aquatic Resources
BMB	Biodiversity Management Bureau
BMS	Biodiversity Monitoring System
BAMS	Biodiversity Assessment and Monitoring System
CBD	Convention on Biological Diversity
CBFMA	Community-Based Forest Management Agreement
CENRO	Community Environment & Natural Resources Office
CENREO	Community Environment, Natural Resources and Energy Office
CLUP	Comprehensive Land Use Plan
CR	Critically Endangered
DA	Department of Agriculture
DENR	Department of Environment & Natural Resources
DepEd	Department of Education
ERDB	Ecosystems Research and Development Bureau
FGD	Focus Group Discussion
FLUP	Forest Land Use Plan
HSG	Hornbill Specialist Group

HRF	Hornbill Research Foundation (Thailand)
IEC	Information Education and Communication Campaign
IP	Indigenous Peoples
IUCN	International Union for the Conservation of Nature
LGU	Local Government Unit
MNLF	Moro National Liberation Front
MPDO	Municipal Planning and Development Office
MSOU	Maritime Special Operations Unit
MSU	Mindanao State University
MOT	Ministry of Tourism
NGO	Non-Governmental Organization
MENRE	Ministry of Environment, Natural Resources and Energy
MENRO	Municipal Environment and Natural Resources Office
PA	Protected Area
PBCFI	Philippines Biodiversity Conservation Foundation, Inc.
PO	Patrol Police
PWP	Protect Wildlife Project
SSC	Species Survival Commission (of IUCN)
TRAC	Tawi-Tawi Regional Agricultural College
USAID	United States Agency for International Development
WRS	Wildlife Reserves Singapore

EXECUTIVE SUMMARY

Introduction

Since 1994, the Sulu Hornbill or “Tawsi” has been listed as Critically Endangered on the IUCN Red List of Threatened Species. The species is concentrated on the island of Tawi-Tawi, between Languyan, Panglima Sugala and Tandu Bas (See Figure 1). Given that remaining forests are concentrated in Panglima Sugala and the almost total deforestation in Jolo and Sanga-Sanga, the bird may now persist within only 40% of its original distribution range (Paguntalan et al., 2017).

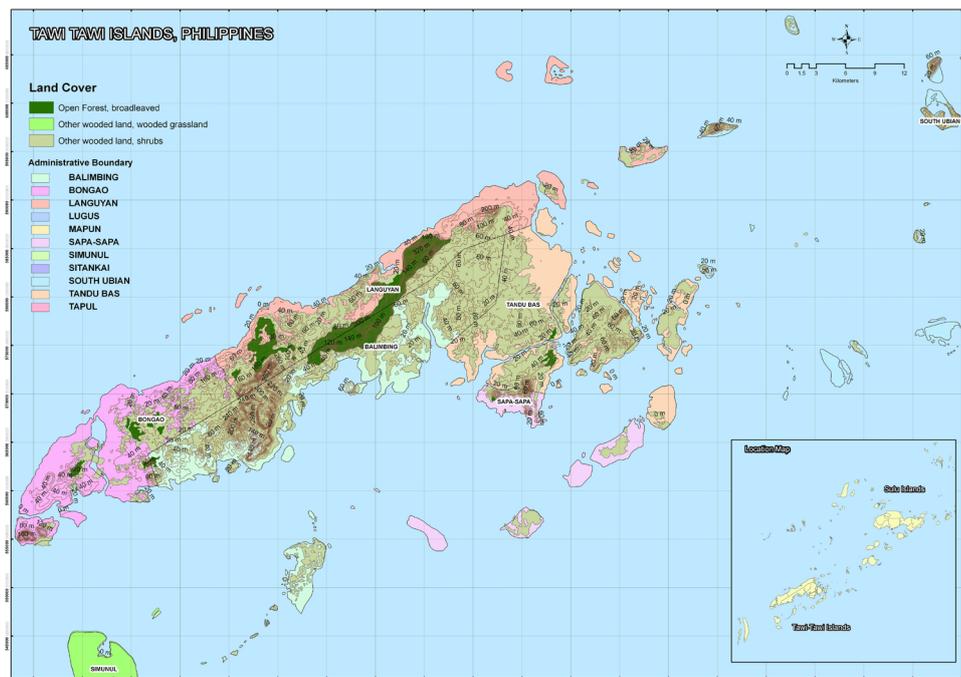
Activities relevant to the conservation of a broad array of species, including the Sulu Hornbill, are underway through the Tawi-Tawi Biodiversity Conservation Project, a joint initiative of the BMB-DENR, DENR Region 9 through the PENRO of Zamboanga Sibugay, PENRO Tawi-Tawi of ARMM, Municipality of Panglima Sugala and the Philippines Biodiversity Conservation Foundation Inc. The Sulu Hornbill Conservation Strategy and Action Plan, 2019-2029, should be read in conjunction with the report on this broader project (see Paguntalan et al., 2017).

The contents of The Sulu Hornbill Conservation Strategy and Action Plan, 2019-2029, are the result of a two-day workshop in Manila, between March 4-5, 2019, which involved 44 participants from 23 organisations, representing government, NGOS, universities and the *ex situ* community.

The workshop was organised by the IUCN SSC HSG and PBCFI with support from Municipal Mayor Rejie Sahali from LGU Panglima Sugala and Colonel Bim Quemado. It was funded by WRS and PWP/USAID and facilitated by the IUCN SSC CPSG.

Recommended milestones: 1-5 years

- Security protocols are established and recognised;
- Surveys and research are completed to:
 - refine estimates of population size;
 - improve understanding of habitat requirements and extent of suitable habitat;
 - understand if and where habitat enhancements are needed.
- Community engagement is advanced:
 - local leadership is developed;
 - community support is increased;
 - clan and family relations are strengthened to support a conservation framework;
- Potential avenues for mitigation of mining threats are explored (a protected area is established);
- Habitat enhancements are implemented.



Map: Haribon Foundation

Threats

The main threats to this species are illegal logging, mining and, if numbers are as low as currently estimated, small population effects. Obstacles to action on these issues include the risks to individuals working in certain areas due to inter-clan conflicts, current gaps in protective regulations and the limited engagement of local communities.

Vision

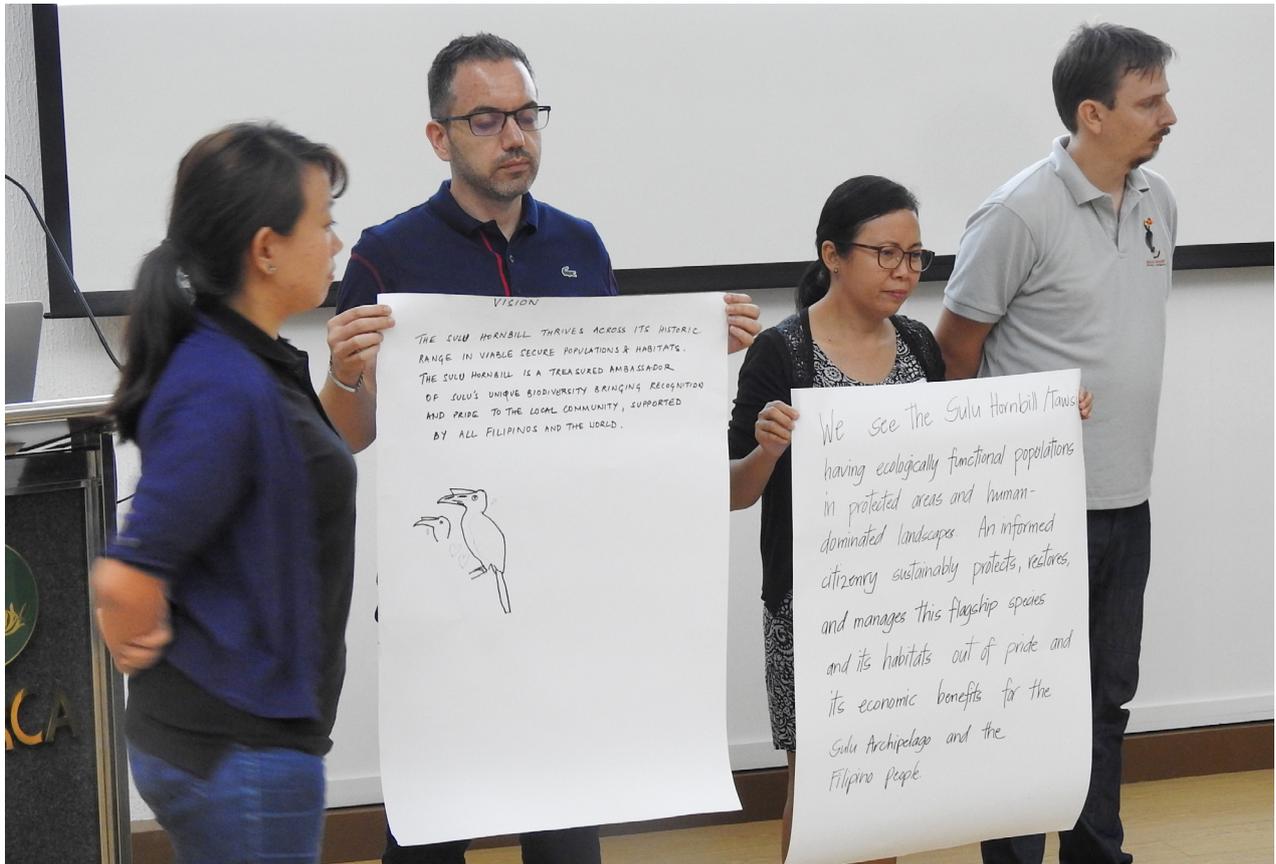
By 2050, the Sulu Hornbill lives in viable populations within its protected historic range, sustainably managed by empowered communities through culturally centered conservation programs that bring pride, ecosystem and socio-economic benefits to the people.

Recommended action

Beneficial changes in regulatory frameworks are already underway and these are described. Surveys are needed urgently, to confirm the status and distribution of the species and its habitat, and to guide future priorities. In advance of this, well-recognised and effective security protocols must be set in place. The extent and severity of the mining threat must be better understood and where

needed, steps taken to mitigate it. Building greater community engagement and ensuring that benefits flow to communities as a result of this is one of the central themes of the plan, which aspires to the adoption of a culturally centered conservation program for the Tawsi. Recommended 5-year project milestones are shown in BOX 1. and the group's Vision for the species is shown in BOX 2.





Photos: Aparajita Datta and Jessica Lee

Implementation

To give this plan the best chance of success it will require a framework for communication and coordination among the various stakeholders. It was not possible to agree to this framework during the workshop due to pending elections and the expected changes to positions associated with this.

As an interim measure and until a permanent home for this project is agreed and established, contact points within DENR-CENRO–Tawi-Tawi, MENRE-CENREO, PBCFI, and IUCN SSC HSG, will act in this capacity.



Photo: Bee Choo Strange

STATUS REVIEW

Of the 32 hornbill species found in Asia, three species are currently considered Critically Endangered with global extinction (IUCN Red List, 2019). Among these, the Sulu Hornbill (*Anthracoceros montani*; "Tawsi" in the local Tausug language) is the rarest and most endangered hornbill in the world. Its distribution range has shrunk with a correlated population decline, and the species is in danger of disappearing altogether. Yet it has received

little coordinated conservation attention until now, despite a growing number of interested stakeholders.

A comprehensive Conservation Strategy and Action Plan was identified as a global priority by the IUCN SSC Hornbill Specialist Group, to halt the decline of this island endemic, occurring only on islands in the Sulu Archipelago between Mindanao and Borneo.

Description

It is the sole hornbill in this area, so confusion with other birds is not possible. Taxonomically it is monotypic, its relationship with congeners, i.e. other *Anthracoceros* hornbills in nearby Palawan and Borneo islands, is uncertain (Kemp, 1995; Poonswad, Kemp & Strange, 2013); it clusters with *albirostris*, *coronatus* and *marchei* (Gonzalez et al., 2013).

It is a medium-sized hornbill (50 cm), all-black except for the white tail. The males are like the females in overall colouration but are smaller. The males have a creamy white iris; whereas the females have a smaller bill and casque and their eyes are dark brown. The bill and casque are black and the casque is a high blade originating

above the forehead and ending abruptly two-thirds of the way along the bills. Their legs and feet are a dull lead colour. Juveniles have smaller casqueless greenish-yellow bills and the skin around their eyes is grey (not black as in adults). A few individuals have dull white tips to some primaries (Kemp, 1995; Poonswad, Kemp & Strange, 2013). The call is described as 'beginning with a series of notes like a common hen but magnified 50-fold and ends with an indescribable combination of cackles and shrieks. It is more generally described as a loud mixture of cackles, clucks and shrieks typical of the genus (Kemp, 1995).

Reproduction

Their breeding ecology is not well-known, but like other Asian hornbill species, the Sulu Hornbill will select a cavity in a growing forest tree of a large diameter, and the female will seal herself inside for the duration of the breeding cycle. The clutch size is reported to be two eggs. Fledglings were seen in May/June indicating that breeding might start in March-April; a pair with an immature was seen in Tawi-Tawi in September (Kemp, 1995).

In May 2015, a local villager reported seeing the nesting cavity of a Sulu Hornbill, with a chick inside, in a large fallen dipterocarp (Paguntalan et al., 2017).

An active nest was located in June 2018, where the chick was heard inside the nest and the male was recorded on a feeding visit by the Tawsi rangers and Nicky Icarangal (BAP). Subsequently, a Tawsi ranger reported that the chick fledged by last week of September. Although the chick was not seen, the sealing was broken and the nest hole was bigger. Given that it had been active earlier, it was assumed to have been a successful fledging (Nicky Icarangal, *pers. comm.*).

Feeding ecology

It is reported to feed on fruits and animal prey such as small lizards and insects; birds have been reported to feed together in tall fruiting trees inside dense original forest, but there is also a report of four birds visiting a fruiting tree over one kilometre

from the nearest forest. The species does not migrate, although it wanders locally in search of fruiting trees (Kemp, 1995).

Historical & current distribution

The Sulu Hornbill was described as widespread and abundant at the time of its discovery in 1880. Since then, the population has crashed. BirdLife International (2001) covers the historic distribution of this species in some detail. A source from 1894 was quoted to say: "Common on the hills back of the town of Sulu (Jolo) and very abundant in Tawi-Tawi where it occurs in dense flocks".

By 1973 it was described as, "still fairly common in dipterocarp forest" for Tawi-Tawi, including the Balabak Forest. Another source from 1993 judged this species to be "probably common in the interior" of Jolo and Tawi-Tawi but this was most likely erroneous. In fact, there is no documented mention of the bird from Jolo since the 1930s, and it is unlikely to occur there today due to deforestation and lack of suitable habitat (BirdLife International, 2001).

There are no historic records from the many other smaller islands in the Sulu Archipelago, so the main focus today is the island of Tawi-Tawi itself. Two individuals were reported from nearby Sanga-Sanga in 1971 and mentioned again in a report from 1988, but since then there have been no sightings from that area. No forests are left in Sanga-Sanga and Jolo has a tiny patch remaining on the steep slopes of Mt. Dahu Natural Park (Paguntalan et al., 2017).

The species was reported from parts of eastern Tawi-Tawi (Dundangan and Baliungan) and nearby Tandubatu Island up until 1995; but these most likely were roaming individuals, and again it is doubtful if there are viable breeding populations there now due to lack of suitable habitat (Kemp, 1995; Mallari et al., 2001).

Currently the species is mostly seen in hilly rainforests on Tawi-Tawi, but that may be due to the greater loss

of lowland forests. Mostly seen in pairs and believed to be sedentary with a small range. Otherwise little is known about its habitat requirements, breeding habits, or ecology in general. Kinnaird & O'Brien (2007) found that out of a range area of 1,405 km² only 226 km² was optimal habitat. According to Poonswad et al. (2013), an estimated 250-300 km² of forest habitat remains on Tawi-Tawi, especially along the main mountain range. The Sulu Hornbill is now concentrated on the island of Tawi-Tawi between Languyan, Panglima Sugala and Tandubas (Paguntalan et al., 2017). The forest patch where the Sulu Hornbill was observed in 2018 is only about 10 km² (Bee Choo Strange, pers. obs.). This forest area is not protected; in fact, there are no nature reserves or national parks in the Tawi-Tawi Province. No other suitable habitat or potential breeding sites occur anywhere else within the original range.

Population size

The species has seen a minimum of a 60% range contraction (Paguntalan et al., 2017) but population estimates vary and there is little consensus amongst experts as to the population size. In 2001, BirdLife International wrote about the population size: "Evidence from the entire Tawitawi group suggests that its population is currently very low, with an estimate of under 20 pairs in the main mountain range". Poonswad et al. (2013) state that there are "perhaps some 20 breeding pairs

left". The latest estimate from BirdLife International (2019) is for a world population of 27 individuals. Biodiversity surveys on Tawi-Tawi were conducted by staff of the Philippines Biodiversity Conservation Foundation from September 30 to October 2, 2017. Some two or three Sulu Hornbills were seen together in various patches of forest on the island, usually a pair together. The maximum sighting this century was 10 birds seen in one area in 2014 (Paguntalan et al., 2017), all mature individuals.

Co-endangered species

The host-specific parasitic louse *Chapinia hoplai* (Elbel, 1967) is thus also Critically co-endangered (Rózsa & Vas, 2015).

The socio-political situation

One of the biggest challenges in Tawi-Tawi island and the Sulu area in general, is that the area is considered unsafe due to Abu Sayeff insurgents operating in this region.

Two European birdwatchers were abducted on Tawi-Tawi in February 2012 while looking to photograph the hornbill. One of them escaped in 2014, but a Dutch national was recently killed (2019).

If the security situation in the area is normalized, this beautiful terrain could potentially be opened up as an eco-tourism site for everyone to visit and enjoy (Collar & Sykes, 2009). Apart from the hornbills, there are some six species and 23 subspecies of birds endemic to the Sulu region, i.e. found nowhere else in the world (Paguntalan et al., 2017)

Research and conservation efforts to date

- Haribon Foundation (2004 -2007) undertook surveys and reported the species for Tawi-Tawi (Paguntalan et al., 2017).
- Surveys by PhilBio: six mature individuals plus 2 individuals heard calling from the opposite ridge of Upper Malum watershed in Panglima Sugala (30 September 2017). At least six individuals were also seen in June 2017 in relatively the same area. No immature birds were sighted. Locals have also reported seeing Sulu Hornbills in forest interior in Tarawakan in Bongao, Sitio Lambug in Parangan, Panglima Sugala; Dungun and in Lubbuk. The largest numbers reported in the last five years was 10 individuals in 2014 in Dungun forest. This is five individuals less than the reported number in 1999 (Allen, 1999). At least two groups of six individuals were regularly observed in two separate locations in Upper Malum. Most records of encounters of the species are of 2-3 individuals. No immature birds were reported.
- Two key and important local authorities (Mayor Rejie Sahali and Colonel Romulo "Bim" Quemado) began working with Philippines authorities to gazette the site as a wildlife sanctuary in 2017. The municipality currently employs sixteen Tawsi rangers from

the villages near the forest to survey and safeguard the local hornbill population.

- To support the study and conservation of the Sulu Hornbill, Dr. Pilai Poonswad and Bee Choo Strange visited Tawi-Tawi in January 2018 together with Nicky Icarangal (Strange, 2018). To visit the Sulu Hornbill habitat on Panglima Sugala, Tawi-Tawi Province, they were helped and supported by the Mayor Rejie Sahali, Colonel Romulo "Bim" Quemado, and the marine soldiers of the Philippines Marine Corps. During their visit,

they located a total of five Sulu Hornbills. One individual was seen leaving a potential nesting hole, most likely a cavity previously excavated by the White-bellied Woodpecker (Strange, 2018). A hornbill expert from the Hornbill Research Foundation in Thailand was later sent to the Philippines to monitor the nest but work on location proved difficult. In June 2018, Nicky Icarangal reported this as an active Sulu Hornbill nest; however, the monitoring of the nesting event was inconclusive. The nest was reported empty during a subsequent visit.

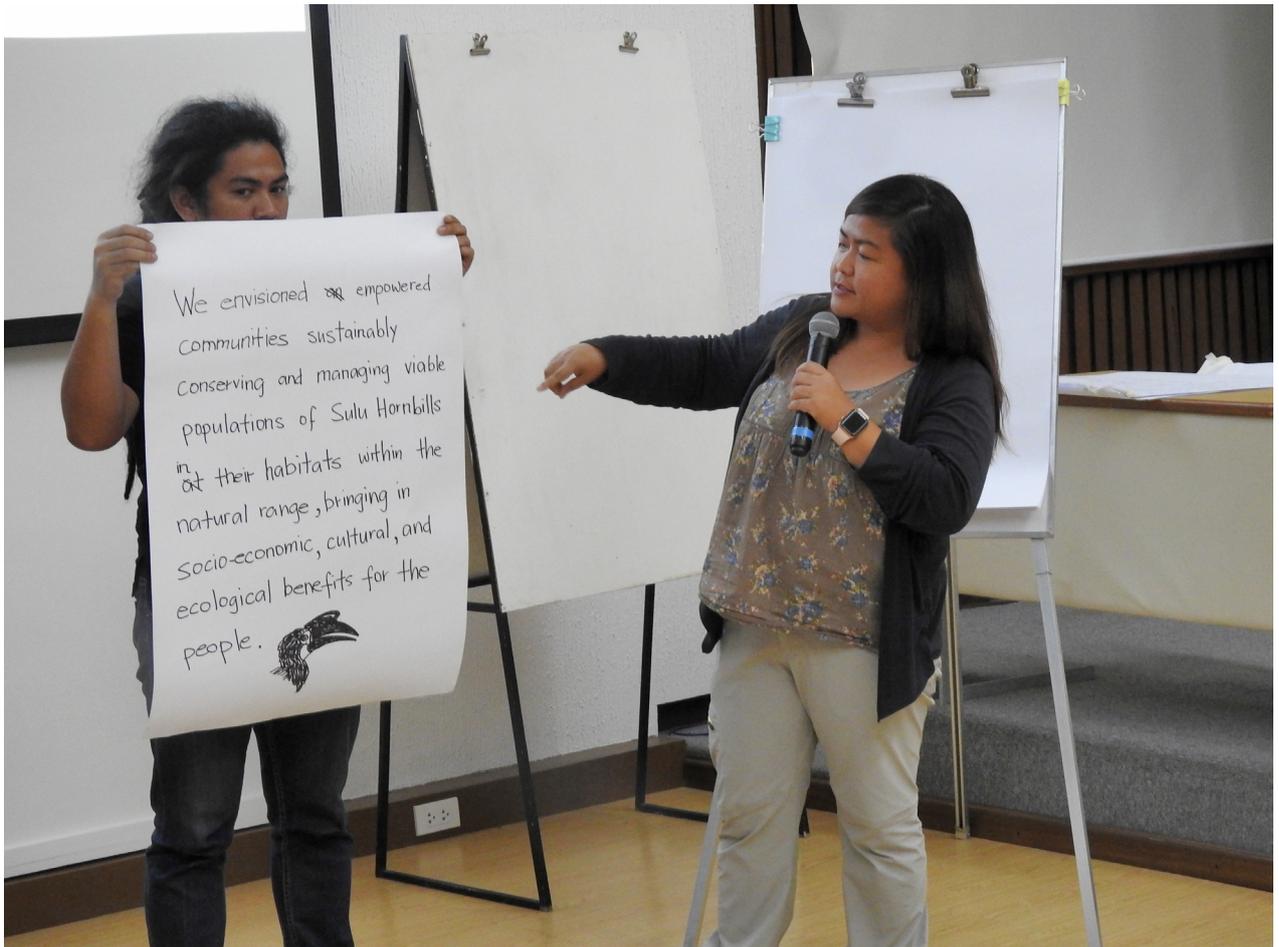
Previous action/recovery plan for the Sulu Hornbill

A one day meeting was held on June 10, 2016, in the BMB conference room, Quezon City to discuss an action plan for the recovery of the Sulu (Tawi-Tawi Hornbill). The meeting was attended by Hon. Rejie Sahali Generale, Col. Bim Quemado, Mr. Pavel Hospodarsky, Mr. Peter Widmann, Ms. Indira Lacerna-Widmann, Mr. Roger Sweeney, Ms. Nikki Dyanne Realubit, Mr. Noel Rafael, Mr. Ivan

Sarenas, Mr. Anson Tagtag and Mr. Ivan Choo Wei Kiat and a few others. A preliminary draft action plan was put together by the group. A timeline was set to complete the action plan in coordination with other stakeholders. However, at that time it was felt that not enough information was available to write the plan. The plan eventually did not get written.

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Photos: Bee Choo Strange and Aparajita Datta

CONSERVATION STRATEGY AND ACTION PLAN

Introduction

During March 4-5, 2019, 44 stakeholders from 23 organisations met for an intensive two-day workshop in Manila, Philippines, to develop a conservation strategy and action plan for the Sulu Hornbill. The organisations represented included: DENR (ARMM, CENRO, Forester, PENRO and Tawi-Tawi); LGU (Panglima Sugala), Zamboanga Sibugay; District and Governor's Office of Tawi-Tawi; research institutions; conservation NGOs and representatives from the *ex situ* conservation community.

The workshop was organised by the IUCN SSC Hornbill Specialist Group in collaboration with PBCFI. Funding support was provided by Wildlife Reserves Singapore and PWP/USAID, and the workshop was facilitated by the IUCN SSC Conservation Planning Specialist Group.

This document summarises the directions and priorities recommended by workshop participants. It is intended for use by:

- workshop participants, as a record of the actions, initiatives and collaborations discussed;
 - government agencies to help guide the development of other plans that may impact on this species;
 - non-governmental conservation organisations and community groups, to guide and inform their priorities and work plans;
 - the IUCN SSC Hornbill Specialist Group, to help track and support progress with the directions and priorities agreed;
 - donor organisations, to guide priorities for funding support.
- In summary, the 2019-2029 Conservation Strategy and Action Plan for Sulu Hornbill includes:
- A long-term VISION for the future of the Sulu Hornbill;
 - A summary of current CHALLENGES to achieving the vision
 - 10-year GOALS that represent achievable progress towards the vision;
 - OBJECTIVES for achieving these goals, and rationales for these
 - ACTION STEPS to be taken in pursuit of these objectives, including recommendations on where and how action should be taken and who would be ideally placed to take it.
 - A summary of the outputs from WORKING GROUP DISCUSSIONS that led to these recommendations are provided in a separate section.
- The content of the vision was agreed by all workshop participants. The strategy and actions

were developed by four themed working groups: 1) Governance, Land Issues and Security; 2) Community Engagement; and 3) Habitat and Species Issues. A fourth group considered the potential role of *ex situ* management in conserving the Sulu Hornbill, and the challenges involved in developing a conservation breeding program for the species should it be needed.

A framework for communication and coordination would provide valuable support to the

implementation of this Plan, which requires collaborative action by many organisations. It was not possible to establish such a framework during the workshop due to pending changes in government. Instead, as an interim measure, contact points within DENR-CENRO–Tawi-Tawi, MENRE-CENREO, PBCFI, and IUCN SSC HSG, will act in this capacity.

Vision, Goals and Milestones

Vision

By 2050, the Sulu Hornbill lives in viable populations within its protected historic range, sustainably managed by empowered communities through culturally centered conservation programs that bring pride, ecosystem and socio-economic benefits to the people.

10-Year goals

- To protect or enhance sufficient habitat to support viable populations of Sulu Hornbills;
- To engage communities in conservation, ensuring mutual benefits;
- To promote systems of governance, land use and security that support conservation success for Sulu Hornbills in Tawi-Tawi.

Milestones 1-5 years

- Recognised security protocols are established.
- Surveys and research are completed to:
 - refine estimates of population size;
 - improve understanding of habitat requirements and extent of suitable habitat;
 - understand if and where habitat enhancements are needed.

- Community engagement is advanced:
 - local leadership is developed;
 - community support is increased;
 - clan and family relations are strengthened to support a conservation framework;
- Potential avenues for mitigation of mining threats are explored (a protected area is established).
- Habitat enhancements are implemented.

Milestones 6-10 years

- Land use plans are approved.
- A culturally-centered conservation program is adopted.
- A positive image of Tawi-Tawi is developed.
- Sustained financial mechanisms are in place.
- *Ex situ* needs are reassessed and, if required, action initiated.



Photos: Aparajita Datta

Challenges to success

The following were identified by participants as either known or potential challenges to the successful recovery and conservation of Sulu Hornbills. These challenges were discussed by working groups and either discarded or prioritised for mitigating action.



Figure 2: Known and possible challenges to the recovery of Sulu Hornbills, identified by participants at the 2019 workshop.

OBJECTIVES & ACTIONS

GOAL 1: To protect or enhance sufficient habitat to support viable populations of Sulu Hornbills

Action	Indicators of achievement	Y1 2019	Y2 2020	Y3 2021	Y4 2022	Y5 2023	>Y5 >2024	Collaborators
1.1	Objective: To inventory the tree stock (standing tree biomass) as baseline data and conduct a forest cover change analysis in order to understand the state of the forest and monitor trends in forest cover change							
1.1.1	Undertake forest cover change analysis across the entire range.	Actual data, maps and reports/ publications	√	√				DENR Tawi-Tawi; academic institutions (MSU, Mindanao State University – Tawi-Tawi Center of Technology and Oceanography (MSU – TCTO), Tawi-Tawi Regional Agricultural College (TRAC)
1.1.2	Undertake vegetation studies and standing tree inventory/biomass.		√	√	√			DENR Tawi-Tawi; academic institutions (MSU, TRAC)
1.2	Objective: To ensure protection of the Sulu Hornbill and its habitat is integrated into the local wildlife and habitat protection laws							
1.2.1	Provide technical advice for the drafting of new wildlife protection laws.	Report on advice given	√	√				DENR, LGU, NGO (PBCFI)
1.2.2	On-ground regular foot patrolling/checkpoints, including community-based patrolling.	Distance patrolled; number of apprehensions; log of seizures	√	√	√	√	√	DENR/LGU/NGO/POs
1.2.3	Co-ordination with police for enforcement.		√	√	√	√	√	DENR/LGU/NGO/POs
1.2.4	Train, deputize and equip forest rangers (logistics support/equipment).		√	√	√	√	√	DENR/LGU/NGO/POs
1.3	Objective: To collect relevant socio-economic data and provide alternative livelihoods to fully mitigate human-wildlife conflict along with conservation commitments and agreements from the community							
1.3.1	Undertake baseline socio-economic surveys & feasibility studies for livelihood.	Pre- and post-intervention data; acknowledgment receipts of inputs; compliance with conservation agreements	√	√				DENR/DA/NGOs/BFAR

Action		Indicators of achievement	Y1 2019	Y2 2020	Y3 2021	Y4 2022	Y5 2023	>Y5 >2024	Collaborators
1.3.2	Consultations and dialogue with communities (FGDs)	Pre- and post-intervention data; acknowledgment receipts of inputs; compliance with conservation agreements	√						DENR/DA/NGOs/ BFAR
1.3.3	Collect data on wildlife damage through interviews.		√						DENR/DA/NGOs/ BFAR
1.3.4	Trainings and capacity-building for livelihoods; provision of livelihood inputs.			√	√				DENR/DA/NGOs/ BFAR
1.3.5	Post-intervention socio-economic and wildlife damage data.				√	√			DENR/DA/NGOs/ BFAR
1.4	Objective. To encourage agroforestry and woodlot plantations for future timber needs, ensuring the Sulu Hornbill is protected								
1.4.1	Identify private land and public land for woodlots	People participation; the woodlot scheme documentation		√					DENR/DA/NGOs/ LGU/Pos MEASURES: Number of woodlots established
1.4.2	Establish the woodlot scheme			√					DENR/DA/NGOs/ LGU/Pos MEASURES: Number of woodlots established
1.5	Objective. Restoration with native species in heavily degraded areas to help ecologically important species								
1.5.1	Establishment of native tree nurseries	Number of plants and planters; training documentation; survival rate; area covered		√					DENR/DA/NGOs/ LGU/POs
1.5.2	Determining sites for restoration			√					DENR/DA/NGOs/ LGU/POs
1.5.3	'Rainforestation' training			√	√	√	√	√	DENR/DA/NGOs/ LGU/POs
1.5.4	Planting, nurturing, and monitoring of trees			√	√	√	√	√	DENR/DA/NGOs/ LGU/POs
1.6	Objective. Address/reduce the human-wildlife conflict due to wild pigs								
1.6.1	Reduce crop losses by establishing fencing/hog wires to prevent crop damage by pigs	Number of HH with effective wire fencing; data showing reduction of crop loss	√	√	√	√	√		To be identified and encouraged by PBCFI

Action	Indicators of achievement	Y1	Y2	Y3	Y4	Y5	>Y5	Collaborators	
		2019	2020	2021	2022	2023	>2024		
1.6.2	Provide alternative fencing materials	Acknowledgment receipts for fencing material; reduced tree felling	√	√	√				To be identified and encouraged by PBCFI
1.7	Objective. Ensure that large-scale plantations do not encroach into the existing forest areas and evaluate the status and details of the proposed plans								
1.7.1	Creation of policy/ guidelines and rules before establishment of large-scale plantations e.g. exclusion of timberland	Pre- and post-monitoring data gathered/ Documentation		√					DENR/DA/LGU/ NGOs
1.7.2	Collect information on the status and details of proposed plans			√					DENR/DA/LGU/ NGOs
1.8	Objective. To review the policy and laws related to mining operations and their compliance/concordance in light of the presence of threatened and endemic species, and identify the impact and extent of mining, including the beneficiaries and the potential environmental impacts								
1.8.1	Desktop review of mining agreements	Review paper	√	√					BARMM/MENRE
1.8.2	Formulate site-specific policy recommendations	Policy document		√	√				BARMM/MENRE
1.8.3	Communicate policy recommendations to relevant mining companies and involve them in conservation efforts.	Agreements with companies; restored mined-out areas; forest areas within concessions set aside for conservation			√	√	√	√	BARMM/MENRE
1.9	Objective. To map the extent of suitable hornbill habitat on the mainland of Tawi-Tawi								
1.9.1	Conduct a Protected Area Suitability Assessment	Maps and assessment reports			√				Balete Conservancy/ Languyan/DENR
1.9.2	Consult stakeholders to maximize coverage of protected areas not currently being proposed (The one in Panglima-Sugala already in process. This is mainly for Languyan which does not have one or even a proposed one)	Documentation of stakeholder consultation; prior informed consent documents			√				Balete Conservancy/ Languyan/DENR

Action	Indicators of achievement	Y1	Y2	Y3	Y4	Y5	>Y5	Collaborators	
		2019	2020	2021	2022	2023	>2024		
1.9.3	Ensure official declaration			√				Balete Conservancy/ Languyan/DENR	
1.10	Objective. To establish protected areas, set-asides or no-go zones, where mining and other development activities will never be undertaken								
1.10.1	Map the extent of suitable hornbill habitat.	Maps and data	√	√				CCI/DENR/Balete Conservancy/ HRF/Development Alternative Inc. (PWP)	
1.10.2	Advocate for the development of a Regional Act for the creation of Protected Areas (consider clan and cultural sensitivities).	Regional and Congressional Acts; Declaration of PAs	√	√				PBCFI, local governments, NGOs	
1.11	Objective. To recalibrate restoration and forest recovery planning in existing mining and mined areas (dialogue with mining companies)								
1.11.1	Initiate dialogue with mining companies on improving restoration efforts.	Meetings/dialogue		√				PBCFI, local governments	
1.11.2	Develop or adopt a recovery plan based on best practices and present to mining companies for integration; Integrate mining audit in the monitoring activities of MENRE.	Improved recovery plan communicated and adopted by mining companies		√	√	√	√	MENRE	
1.12	Objective. To regulate use of marble/PVC guns								
1.12.1	Regulate PVC guns to prohibit shooting of any bird species.	Local ordinances, turned over/ confiscated guns, patrol reports		√	√	√	√	√	LGU/PNP
1.13	Objective. Outreach and awareness against hunting								
1.13.1	Conduct an awareness campaign.	Documentation of awareness outreach events, and number of people reached	√	√	√	√			DENR/LGU/PNP/ NGOs
1.13.2	Do pre and post intervention monitoring.	pre- and post-monitoring data	√	√	√	√	√		DENR/LGU/PNP/ NGOs

Action		Indicators of achievement	Y1 2019	Y2 2020	Y3 2021	Y4 2022	Y5 2023	>Y5 >2024	Collaborators
1.14	Objective. Obtain accurate population estimates and demographic data for the Sulu Hornbill on Tawi-Tawi and other islands within the historical range								
1.14.1	Establish protocols/ methodology for population surveys.	Standardized protocol developed	√	√					PBCFI with IUCN SSC HSG & HRF
1.14.2	Extensive field surveys for population and demographic data (transects/point-counts)	Reliable data on population size and demography		√	√	√			PBCFI, Balete Conservancy
1.15	Objective. To establish a minimum viable population size estimate for the Sulu Hornbill and to create a habitat suitability model to estimate remaining habitat for the species								
1.15.1	Population viability modelling exercise.	Minimum Viable Population Size estimate is developed and documented.			√				PBCFI with IUCN SSC HSG, CPSG
1.15.2	Combine habitat suitability mapping with population density estimates to gain an idea of how many Sulu Hornbills could be supported. Compare with minimum viable population size estimate.	Reliable model developed based on data/model output.			√				PBCFI with IUCN SSC HSG
1.16	Objective. To identify other limiting factors through studies on the ecology, natural history and habitat requirements of the species								
1.16.1	Field studies/collection of data on the species biology (diet, breeding) and habitat requirements.	Studies completed/ publications; biological info from patrol reports.	√	√	√	√			HRF and BAP
1.17	Objective. To identify and document the historical status of the Sulu Hornbill and the key drivers of its decline								
1.17.1	Desktop review of historical data, socio-economic changes along with information from field studies and population estimates.	Document that brings together information/ data and critically evaluates the key drivers		√	√				PBCFI, local or national academic institutions, IUCN SSC HSG (if required)

Action		Indicators of achievement	Y1 2019	Y2 2020	Y3 2021	Y4 2022	Y5 2023	>Y5 >2024	Collaborators
1.18	Objective. To provide and install nest boxes to enhance breeding of the Sulu Hornbill								
1.18.1	Determine and select potential sites/trees for installation.	Number of nest boxes installed and occupied successfully	√						BAP, Hornbill Research Foundation
1.18.2	Build and install nest boxes.		√						BAP, Hornbill Research Foundation
1.18.3	Monitor hornbill activity in nest boxes.		√						BAP, Hornbill Research Foundation
1.19	Objective. To improve co-ordination between both communities (Languyan and Panglima Sugala) and the military to ensure security for outsiders and avoid conflict								
1.19.1	All relevant stakeholders (as mentioned above) to develop Standard Operating Procedures for security of outsiders.	Improved access for outsiders; fewer conflict incidents; improved security	√	√	√	√	√	√	The Army and Govt agencies.
GOAL 2: To engage communities in conservation, ensuring mutual benefits									
2.1	Objective: Provide every person in Tawi-Tawi province an opportunity to acquire knowledge, values and skills to develop commitment towards biodiversity conservation								
2.1.1	Conduct education campaigns to schools, communities, government and other stakeholders Contents: • Importance of Sulu Hornbill; • Ecosystems benefits (Importance to people); • Unique biodiversity of Sulu Archipelago.	Pre- and post- test	√	√	√	√	√		LGU, PBCFI, Academic institutions and volunteers
2.1.2	Provide localized IEC material	IEC materials produce and distributed	√	√	√	√	√		PBCFI & Local translator

Action	Indicators of achievement	Y1	Y2	Y3	Y4	Y5	>Y5	Collaborators
		2019	2020	2021	2022	2023	>2024	
2.1.3	Conduct focus group discussions for hunters, farmers, rangers, and forest occupants	Number of focus group discussions (FGD) conducted	√	√	√	√	√	Tawsi Ranger, Ministry of Environment, Natural Resources and Energy
2.1.4	Design and implement radio programs/ dramas (localized) for general public	Total Number of radio programs aired	√	√				Terri Gonzales and volunteers
2.1.5	Integrate Tawsi in Pattycake Festival	TAWSI integrated during festival (annual)	√					LGU
2.1.6	Integrate biodiversity in DepEd-BARMM curriculum	Number of modules developed for K-12 students	√					PBCFI & Dep-Ed
2.2	Objective. Provide a sustained financial mechanism through annual appropriations to include specific fundraising activity							
2.2.1	Conflict needs assessment for biodiversity friendly livelihood. Lobby with concerned government agencies for livelihood funding	Government budget re-aligned to integrate livelihood funding agencies	√	√				LGU, PBCFI, Academic
2.2.2	Link and network with funding agencies within and outside the Philippines regarding livelihood	Identified BF livelihoods; Identified relevant funding agencies	√	√				Protect Wildlife, USAID, MENRE
2.2.3	Promote the area as an eco-tourism destination <ul style="list-style-type: none"> • Beaches / island hopping • Birdwatching • Nature exposures • Culture immersion • Market day • Festival 	Number of tourist / tour packages; FB shares, tweets and Instagram	√	√				LGU, MOT BARMM

Action	Indicators of achievement	Y1	Y2	Y3	Y4	Y5	>Y5	Collaborators
		2019	2020	2021	2022	2023	>2024	
2.3	Objective. Involve and strengthen clan and family relations towards supporting and implementing the Sulu Hornbill Conservation Framework							
2.3.1	Involve council of elders and religious sectors in conflict resolution	Number of settled issues	√	√	√	√	√	LGU, Ulama (religion)
2.3.2	Lobby / enforce mandated government agencies to resolve conflicts	Number of conflicts resolved	√	√	√	√	√	LGU
2.3.3	Integrate biodiversity conservation in sermons during Friday prayer at mosques	Number of people reached through sermons; Number of families / clans supporting conservation	√	√	√	√	√	Ulama, LGU
2.2.4	Enhance and sustain inter- and intra-communication linkages <ul style="list-style-type: none"> • Conduct sportsfest (volleyball and basketball); • House-to-house visit after Hari Raya (Muslim Festival) 	Number of annual sportsfests conducted (sustain funding)	√	√	√	√	√	LGU
2.4	Objective. Capacity-development for targeted audiences							
2.4.1	Organize volunteer groups (youth, women)	Number of organized volunteer groups	√	√	√	√	√	Terri, Academic institutions (MSU), Protect Wildlife, MENRO
2.4.2	Conduct relevant training: <ul style="list-style-type: none"> • Education activities/ tools • Eco guides /tours • Proposal writing, fund-raising • Biodiversity friendly livelihoods • Citizen science for biodiversity assessment • Biodiversity conservation training (biodiversity monitoring system (BMS) Biodiversity Assessment and Monitoring System (BAMS) • Solid waste management 	Number of trainings conducted; Number of trainees	√	√	√	√	√	PBCFI, LGU, MOT, PWP, Tawsi Rangers, Bayanihan all in One, PNP, AFP, MSOU

Action		Indicators of achievement	Y1 2019	Y2 2020	Y3 2021	Y4 2022	Y5 2023	>Y5 >2024	Leads (Collaborators)
2.4.3	Involve enforcements agencies • PNP • AFP • MSOU	Number of agencies involved in enforcement	√	√	√	√	√		LGU
2.5	Objective: Develop local leadership towards Sulu archipelago conservation								
2.5.1	Develop independent local/community champions for biodiversity	Number of local champions	√	√	√	√	√		Tawsi Rangers, Bim Quemado, MOT, MENRE
2.5.2	Develop a behaviour change campaign targeting policy-makers and other influencers	LGU adaption of conservation framework	√	√	√	√	√		Katala Foundation & PBCFI
2.5.3	Institutionalize and promote the Sulu Hornbill Conservation Framework to sustain measures (tenure of leadership)	Number ordinance enacted	√	√	√	√	√		LGU, Academic institutions, MENRE, Local champions
2.6	Objective: To encourage community support through the spirit of volunteerism for Sulu conservation framework								
2.6.1	Increase number of Tawsi Rangers	Number of organized Tawsi Rangers in different communities or family groups	√	√	√	√	√		MENRO, LGU, MENRE
2.6.2	Streamline the selection process	Selection streamlined and following proper guidelines	√	√	√	√	√		LGU, MENRE
2.6.3	Create Community-Based Forest Management Agreement (CBFMA) between DENR and Tawsi habitat occupants	Number of CBFMAs created and organized	√	√	√	√	√		MENRE

GOAL 3: To promote systems of governance, land use and security that support conservation success for Sulu Hornbills in Tawi-Tawi

	Action	Indicator of achievement	Y1	Y2	Y3	Y4	Y5	>Y5	Leads (Collaborators)
			2019	2020	2021	2022	2023	>2024	
3.1	Objective: To secure the remaining habitat of Sulu Hornbill through an approved legislation (all levels, policy)								
3.1.1	Update and collate all available information on the Sulu Hornbill and its habitat	Municipal and regional reports on the status of the Sulu Hornbill and its habitat	√	√					DENR National, DENR BARMM, LGUs (Barangay to Municipal), NGOs (PBCFI, HSG) USAID, Academia (MSU-TCTO, TRACT), local communities
3.1.2	Conduct surveys and assessments	As above	√	√					DENR National, DENR BARMM, LGUs (Barangay to Municipal), NGOs (PBCFI, HSG) USAID, Academia (MSU-TCTO, TRACT) local communities
3.1.3	Present the reports of the conservation status of the Sulu Hornbill and habitats, to both local and regional legislative bodies	Proposal presented	√	√	√				DENR BARMM, LGU, USAID, NGOs
3.1.4	Advocate for the formulation and approval of laws on the conservation of the Sulu Hornbill	An approved bill			√	√	√	√	DENR BARMM, LGU, USAID, NGOs
3.2	Objective: To integrate threatened species and habitats into DENR BARMM's mandate (administrative)								
	Refer to actions 3.1.1 to 3.1.4. Should all happen simultaneously	Same time-frame as above							
3.3	Objective: Adopt a culturally-centered conservation program								
3.3.1	Create a localised technical working group to lead the implementation (one for each municipality).	Number of working groups			√	√	√		LGUs

	Action	Indicator of achievement	Y1 2019	Y2 2020	Y3 2021	Y4 2022	Y5 2023	>Y5 >2024	Leads (Collaborators)
3.3.2	Consultation meetings across all stakeholders.	Number of meetings Minutes of those meetings			√	√	√		LGUs
3.3.3	Adopt a common 'Conservation Framework' for Sulu Hornbill.	Number of resolution (across levels) adopting the framework			√	√	√		LGUs
3.4	Objective. To have approved land use plans								
3.4.1	Review and revisit existing CLUPs and FLUPs (for each of 8 municipalities).	Existing plans (and content) reviewed and revisited	√	√	√	√	√		DENR BARMM, LGUs, technical working groups
3.4.2	Conduct workshops updating CLUPs and FLUPs (for each municipality).	Number of workshops and drafts	√	√	√	√	√		DENR BARMM, LGUs, technical working groups
3.4.3	Present draft updated CLUPs and FLUPs (for each municipality).	Number of resolutions endorsed	√	√	√	√	√		DENR BARMM, LGUs, technical working groups
3.4.4	Advocate for approval for zoning ordinances.	Number of zoning ordinances approved	√	√	√	√	√		DENR BARMM, LGUs, technical working groups
3.4.5	Approval of CLUPs by the provinces.	Number of approved provincial CLUPs	√	√	√	√	√		DENR BARMM, LGUs, technical working groups
3.5	Objective. To establish a recognised security protocol (Tawi-Tawi)								
3.5.1	Conduct consultation meetings on security protocols at municipal and provincial levels.	Number of meetings and security protocol documents	√	√					LGUs
3.5.2	Adopt the protocol(s) in local legislative resolutions.	Adopted resolution	√	√					LGUs
3.5.3	Regional BARMM affirms security protocol(s).	Protocols are affirmed	√	√					Regional BARMM
3.6	Objective. Develop a positive image of Tawi-Tawi								
3.6.1	Integrate an awareness program into the development agenda of the LGUs.	Number of resolutions adopting the awareness program; number of media outputs			√	√	√	√	LGUs, academia

2019 RECOMMENDED POSITION ON *EX SITU* MANAGEMENT

2019 Recommended position

on the need, role and feasibility of a conservation breeding program

During the Sulu Hornbill Species Conservation Planning Workshop, the *Ex situ* Working Group discussed potential roles & goals for *ex situ* management within a One Plan approach. Feasibility was assessed for different population & management scenarios. The following points lay out the conclusions drawn and the information and assumptions underpinning those conclusions. The potential value of having an *ex situ* program to secure the species against extinction and, if needed, support recovery was recognized.

However:

- Confidence in current estimates of the species' abundance is low, as they are based on limited surveys at few sites. Some participants thought that there were likely to be (many) more birds in the wild than currently estimated, while others thought there could be fewer.
- Some participants thought that the species could be adequately recovered by *in situ* action alone.
- If wild birds were brought under human care for *ex situ* management, it is currently not clear how 'ownership' and governance could be assigned. Therefore, decision-making responsibility for the care, management & welfare of any birds under human care is unclear and would need to be clarified before *ex situ* management could be applied.
- There were serious concerns about the current lack of expertise and resources in Tawi-Tawi, and the situation with regard to different, competing factions, would make it extremely difficult to establish a successful *ex situ* program there.
- There is available *ex situ* management expertise for training and assistance available within the wider Philippines and in the South-East Asia region.
- At this time there is no willingness to send birds outside Tawi-Tawi for *ex situ* management at an established hornbill breeding center.

2019 Recommendations

(to be reviewed and revised with the rest of this plan)

- At this point in time, successful delivery of a conservation breeding program for this species would be unlikely due to the situation on the ground and the current low-level of support for such an initiative.
- For the immediate future, surveying the island to establish clearer population estimates is the main priority. This information is key to supporting future decisions.
- Once revised estimates are available (and depending on what they are) the potential roles and requirements for *ex situ* conservation management may be re-visited.
- Early consideration of applying for CITES listing for Sulu Hornbill is recommended as a precaution, even though no commercial trade has been recorded.
- The *ex situ* program being planned by Katala Foundation for the closely related Palawan hornbill, which could prove to be an important analogue species for potential future *ex situ* management of the Sulu Hornbill, should be carefully monitored. Lessons learned should be shared with those working on Sulu Hornbills.

WORKING GROUP NOTES:

Habitat and Species Issues

Habitat and Species Issues Working Group: Najir Abdurajan, Aparajita Datta (Facilitator), Carmela Española (Recorder), Nicky Icarangal, Abdulhalim Jowak, Abdurakib Lemin, Alkadri Lukman, Jasli Panasali, Col. Bim Quemado, David Quimpo, Ernest Sali, Ivan Sarenas (Translator), Peter Widmann, Jennica, Wyne, Andrew Ross Reintar

Issue 1: Habitat loss

Unregulated tree cutting, habitat conversion for agriculture and large-scale plantations

Description: Forest areas are slowly cleared to pave way for subsistence agriculture and fruit orchards. Farmed products planted includes cash crops or staples e.g. Manihot esculenta or cassava; coconut, fruit trees e.g. marang, lansones, durian, rambutan and mangosteen. Cash crops and fruits from orchards are transported and sold in towns when in season. Added to this, the local people's livelihoods hinge on cutting and selling timber from the forests. A few outsiders cut trees for subsistence or domestic purposes (i.e. boat and house-building) or for commercial use to support livelihoods. There is also opportunistic farming by landless people who resort to slash-and-burn agriculture to clear forest habitat for growing subsistence crops. Oil palm plantations exist in Sibutu and Simunul but there are none in Tawi-Tawi. Human-wildlife conflict was also identified as an issue and people in the group saw indirect links between reduced income from root crop damage by wildlife and increased tree-cutting by affected farmers.

Impact: Loss and fragmentation of hornbill habitat. Loss of the large trees favoured by hornbills for food and cavity-nests as these are targeted by loggers. This reduces the carrying capacity of the environment for hornbills and as a result decreases population size.

Causes: Lack of law enforcement and political will due to humanitarian considerations. No alternative livelihood options. Inadequate mitigation of wild pig damage, which drives more tree cutting by affected farmers. Information gaps: Which forest areas have been agreed as no-touch zones; which areas are included under the management zones; information on the ecology of the Sulu Hornbill; what is the extent of forest loss; socio-economic data on how many households engage in harvesting from the forest, the range of livelihoods and the proportional contribution of tree-cutting to this, extent of kaingin (shifting cultivation).

Discussion notes: No kaingin is allowed in the forest. There is sugarcane plantation in Languyan. Relevant plans are available from DENR. Wild pig damage can be resolved with hog wires however repeated consultations have mentioned

this as an issue and consultations bear out that this has led to loss of income. No quantitative data are available. There is a need for conservation agreements.

Issue 2: Open pit mining

Description: Three companies are operating nickel mining.

Impact: Total loss of tree and vegetation cover for nickel operations.

Causes: Commercial interests that sell to China or internationally

Discussion notes: MPSA—Mineral Production Sharing Agreement. Four municipalities are applying for this: Panglima Sugala, Languyan, Sapa Sapa, Tandubas. Mining companies, those employed and municipal governments (through taxes) are beneficiaries. The scope of the activity is approximately 42,000 Ha (equivalent to seven mining applications) which will cut into the main habitat of the Sulu Hornbill. Other companies that applied for MPSA did not push through because their site was not viable for nickel harvest. Soil is uprooted from up to 10 m depth underground and includes the uprooting of trees. Everything is transported and shipped out, 50,000 tonnes in each shipment, 6-7 shipments, fetching 20 – 38 USD per tonne depending on quality. For the information of the group: Panglima Sugala through Mayor Reijie Sahali has stopped the mining operations in Panglima Sugala since (or maybe earlier than) 2016. There are no active mining operations other than on the political jurisdiction of Languyan. Pax Libera Mining Inc. is

the mother company of MinaVida de Mindanao Corporation, S.R. Languyan Mining Corporation and Dasussalam Mining Co. The S.R. Langutan Mining corporation partnered with ALTawiTawi Nickel Corporation (ANC) and actively mines in Tumabagaan Island in Languyan. This is the only group currently operating in the area on the side of Languyan.

Information gaps: Extent of current and future mining; number of households engaged in mining; who are the beneficiaries; the terms and the processes regarding mining in the BARMM; what has been done so far in terms of restoration efforts; how to restore habitats in mining impacted areas; what measures could be put in place to ensure that the mining operations do not extend to the hornbill habitats.

Discussion notes: Re-visit the mining and wildlife protection policies. They have identified areas for wildlife. Need a representation with the officials of the land to stop mining in these critical areas. Integrate Sulu Hornbill protection and conservation into the social and environmental obligations of mining companies. This would need advocacy work with the new MENRE of BARMM.

Issue 3: Hunting and poaching

Description: Opportunistic hunting.

Impact: The opportunistic hunting in Tawi-Tawi does not result in the killing of many birds.

However, because the population of the hornbill is so small, any off-take can have a large impact.

Causes: Ease with which hornbills can be shot, and unregulated hunting guns. Historically practiced for recreation.

Discussion notes: This issue was disputed in the group and was not resolved. In general hunting is not considered to be a big issue in Panglima Sugala. Locals do not like the dark meat of the Tawsi. Hunting is for recreation and

is opportunistic (i.e. not targeted at the hornbill).

Before the Tawsi boys were organized in

2010, there was a record of hornbill hunting. In

Languyan, mining workers hunt the flying foxes.

Increasing awareness of the hornbill could make

it a target for poachers. Carmela's Jolo Expedition

Report suggests that hunting may have been a

factor in the local extirpation of the Sulu Hornbill in

Jolo.

Information gaps: Quantitative data on the impact of hunting in both Tawi-tawi and Sulu; relative hunting pressure before and after the gun ban.

Issue 4: Poor knowledge of Sulu Hornbill population and potential small population effects

Description: Demographic and population issues that affect the survival of the Sulu Hornbill.

When populations are small and isolated,

they become more vulnerable to decline as a

result of year-to-year variation in environmental

conditions, catastrophic events such as storms,

fires and floods, and to chance-driven extremes in

demographic parameters such as sex-ratio, birth

and death rates. In addition to this, small, isolated

populations are vulnerable to loss of gene diversity

through genetic drift, and to inbreeding, both of

which are associated with lowered birth rates and

increased death rates.

Impact: The combined effect of these risks for small populations can drive them to extinction

even once other threats are removed. As an

endemic species restricted to a few islands, the

Sulu Hornbill may be at risk to these factors.

Causes: Endemic species, restricted to few islands.

Information gaps: Population size, age-structure, distribution, breeding and recruitment rates.

Discussion notes: Explore other islands as candidate areas for species re-introductions. Some of the earlier literature (Bourns & Worcester) described this species as abundant on Tawi-Tawi. Since presently the species is clearly

rare on Tawi-Tawi it can be assumed to have declined dramatically and therefore to be at risk to small population effects (but see information gaps). Some of the 'anecdotal' observations which nevertheless can be highly relevant in

management of the species, are difficult to acquire in short systematic studies but can be collected by rangers and local volunteers over longer periods of time.

Issue 5: Lack of access due to security issues

Description: Presence of clan conflicts and separatist groups with armed camps within hornbill habitats.

Impact: Limited safe access makes capturing data and filling information gaps difficult or impossible.

Causes: Little presence of government forces on the ground. 1996 Peace Agreement between

the government and MNLF camps has not been finalised. Conflicts can flare-up at any time. There are loose firearms around.

Discussion notes: There is always a risk that bandits can strike anywhere. It is assumed that local co-ordination and relationships are good but need to be actively sustained. Kidnap for ransom or to supply demand for brides is a possibility anytime.

WORKING GROUP NOTES:

Community engagement (Team CANTIK)

Group members: Abujari Abtuh, Hermie Asaron (Translator), Gina Fernandez, Terri Gonzales, Roger Irlis, Godo Jakosalem (Facilitator & Recorder), Hasser Mahad, Abdulmukim Maruji (Translator), Nikki Van de Ven, Indira Lacerna-Widmann (Facilitator & Recorder).

Issue 6: Lack of interest, awareness or knowledge

Description: There is apathy among community members, self-exclusion, and a lack of understanding of ecosystem benefits.

Impact: Species and habitat loss.

Causes: Lack of self-motivation (provision of basic services).

Issue 7: Lack of financial support

Description: Financial support here refers to developing alternate livelihood opportunities for the communities.

Impact: There is less or no Tawsi intervention in conservation if there is no clear way of benefiting.

Causes: Area is red-flagged security-wise, which prevents access to private funding opportunities; budget from concerned government agencies is

low; with greater awareness of needs, funding could be made available but a needs assessment is currently lacking. BARMM is well funded based on the revenue allotment from the Philippine Government. If there is good advocacy to ensure conservation is a priority program at the Regional BARMM and even at the local legislative agenda, then this will alleviate some of the financial concerns.

Issue 8: Family and community (KAWMAN) issues

Description: Family and community issues (relatives and neighbours) arise from power dynamics, territorial claims, sources of livelihood; and (mis)communication.

Impact: Habitat loss and disturbance.

Causes: Disunity, no cooperation between community members.

Discussion notes: In Magsaggaw, Panglima Sugala barangay.

Issue 9: Lack of capacity building for locals

Description: Absence of local organization and of local individuals trained to implement conservation.

Impact: No knowledge and no commitment to support Tawsi conservation.

Causes: No training or trainers due to security and funding.

Issue 10: Leadership dependence

Description: Local cultural practice.
Impact: Sustained conservation activity relies on support from community leaders.

Causes: Changes in leadership from pro-conservation to against conservation affects the sustainability and continuity of conservation efforts.

Issue 11: Leadership dependence

Description: The Tawsi ranger selection process prioritizes on-site community members. Given a choice, local people would prefer not to work in the forest doing this high-risk job, they would prefer to do something else to secure a better income.

Impact: Presence of hunting and potential Tawsi hunting.

Causes: Limited budget for ranger scheme.

WORKING GROUP NOTES:

Government, land issues and security

Group members: Lisa J. Paguntalan (Facilitator), Jessica Lee (Recorder), Michael dela Cruz, Ben, Yang, Dr Filemon Romero.

Issue 12: Lack of higher levels of legal protection of all levels

Description: Transition into BARMM delays higher level declaration of Sulu Hornbill habitat.

Cause: Transitional government.

Impact: No higher protection status of hornbill habitat (policy).

Issue 13a: Unclear mandate on the Sulu Hornbill

Description: BARMM has just established the Ministry of Environment Natural Resources and Energy (MENRE) but still has to adopt a regional law for the management and conservation of natural resources and wildlife.

Impact: No protection or no enforcement of protection.

Cause: No regional policy in place.

Issue 13b: Issues of boundary on Sulu Hornbill habitat

Description: Unresolved political boundaries.

Cause: No approved law on boundary or jurisdiction.

Impact: Lack of a clear protective policy associated with Sulu Hornbill.

Issue 13c: Loss of habitat

Description: Conversion of forest land to other uses.

Cause: Large-scale mining.

Impact: Decline in population.

Issue 13d: Tenure

Description: Unauthorised occupation.

Causes: No approved land use plan.

Impact: Disturbance to hornbill habitat.

Issue 14: Security

Description: Jurisdiction issues.

Note: Take into account clan affiliations in all other efforts, e.g. doubling or tripling work across the 2-3 regions (Tawi-Tawi and Sulu).

Impact: Limited on-ground conservation.

Cause: Clan affiliation.

Issue 15: Land-use plans

Description: No updated or approved land use plans.

Causes: Lack of resources

Impact: No legally protected habitat.



Photo: Lorenzo Vinciguerra

APPENDIX 1: Planning workshop participants

No.	First name	Surname	Institution
1	Abdulhalim	Jowak	DENR-CENRO, Tawi-Tawi
2	Abdulmukim J.	Maruji	DENR-CENRO TawiTawi District I
3	Abdurakib T.	Lemin	DENR-Forester (BMS)
4	Abujari A.	Abtuh	LGU-Panglima Sugala
5	Alkadri G.	Lukman	DENR
6	Andrew Ross	Reintar	PBCFI
7	Aparajita	Datta	IUCN HSG/Nature Conservation Foundation
8	Bee Choo	Strange	IUCN HSG/Hornbill Research Foundation
9	Benhar J.	Habe	LGU-Panglima Sugala
10	Bim	Quemado	Armed Forces of the Philippines
11	Carmela	Espanola	University of the Philippines - Diliman
12	Caroline	Lees	IUCN SSC CPSG
13	Dayang Dayang Khadija	Baguinda	Office of the Governor, Tawi-Tawi
14	Emilia	Lastica-Ternura	University of the Philippines - Los Banos
15	Ernest	Sali	DENR Tawi-Tawi
16	Filemon	Romero	Project Wildlife Project, Tawi-Tawi

17	Georgina	Fernandez	DENR-PENRO Zamboanga Sibugay
18	Hasser M.	Lakibul	LGU-Panglima Sugala
19	Hermie	Asaron	LGU-Panglima Sugala
20	Indira D.L.	Widmann	Katala Foundation
21	Ivan	Sarenas	Balete Conservancy
22	Jasli A.	Panasahi	DENR-Forester (BMS)
23	Jennica	Masigan	Centre for Conservation Innovations Inc.
24	Jessica	Lee	Wildlife Reserves Singapore
25	Josiah David	Quimpo	Haribon Foundation
26	Juan Carlos	Gonzalez	University of the Philippines - Los Banos
27	Kahlil Panopio	Panopio	Haribon Foundation
28	Lisa J.	Paguntalan	PBCFI
29	Lucy	Kemp	IUCN HSG/Mabula Ground Hornbill Project
30	Luis Carlos	Neves	Wildlife Reserves Singapore
31	Maria	Theresa Gonzales	District of Tawi-Tawi
32	Matt	Ward	Talarak Foundation
33	Michael dela	Cruz	DENR-PENRO Zamboanga Sibugay
34	Najir H.	Abdurajan	LGU-Panglima Sugala
35	Nicky	Icarangal	Birding Adventure Philippines
36	Nikki Dyanne	van de Ven	Holistic Education Development Centre
37	Noel	Rafael	Avilon Zoo
38	Peter	Widmann	Katala Foundation
39	Philip Godfrey	Jakosalem	PBCFI

40	Pilai	Poonswad	Hornbill Research Foundation
41	Roger	Irilis	Mindanao State University - Tawi-Tawi
42	Roger	Sweeney	North Carolina Zoo
43	Willem	van de Ven	Wild Bird Club of the Philippines
44	Wyne B.	Edano	Centre for Conservation Innovations Inc.



Photo: Bee Choo Strange

