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INTRODUCTION

Asian Waterbird Census

Asian Waterbird Census (AWC) is part of global census for migratory birds searching for temporary shelter to wetlands and coastal areas of Africa, America and Asia to escape winter months (Echeminada, 2010). The activity is part of the annual event of Department of Environment and Natural Resources and takes place every 2nd and 3rd week of January. AWC originated on 1987 specifically in Indian subcontinent. This was later replicated by other countries. AWC is coordinated by Wetlands International. This runs in simultaneous with other international census of waterbirds in Africa, Europe and Neotropics under the International Waterbird Census (DENR-BMB, 2016).

Significance of Waterbird Census

Waterbird census is not only held on natural features (rivers, lakes, ponds, freshwater swamps, mangroves, mudflats, coral reefs) but also, to man-made environment (rice fields, reservoirs and sewage farms) (Mundkur, *et.al.* 2017). Lee *et.al.* (2018) has listed a number of reasons why waterbirds are good indicators of health and status of wetlands. These include: 1) "Waterbirds are easy to identify and count", 2) "Waterbirds are well documented", 3) "Information on population are available across the flyway for comparison", and 4) "References on waterbirds are available."

Waterbirds are key part of the ecosystem. Their presence, numbers and trends at site can determine the health and quality of a wetland. Changes in their population may indicate changes of the environment because many of their species sit above the tropic level in the wetland ecosystem. The information on waterbird census is essential in the formulation and implementation of programs/ activities/ projects related to conservation, management and protection of their species and wetlands.

Objectives of Annual Asian Waterbird Census 2022

The Annual Asian Waterbird Census 2022 sought to:

1. Obtain information on waterbird and other avian species in Naujan Lake National Park (NLNP);
2. Document new record of avifauna (if any);
3. Monitor the status/ condition of NLNP as wetland area; and
4. Institutionalize the conduct of waterbird census as basis for conservation, management and protection of NLNP.

Scopes and Limitations

This census focused solely on birds found in Naujan Lake. All waterbirds found on the western side of the lake were considered as the fundamental unit of analysis. Waterbirds are key indicators of status and health of a wetland. Avians other than waterbirds were also recorded because they likewise play a part on the ecosystem. All birds species sighted during transect cruise (boat survey) through basic visual assessment were accounted to identify and estimate bird population.

The site is a marshland area that serves as important feeding ground for various indigenous and migratory birds. The route is also the Biodiversity Monitoring System (BMS) observation area of NLNP – Protected Area Management Office (PAMO) personnel. The information gathered on census will serve as basis for the conservation, management and protection of birds and NLNP.

METHODOLOGY

Description of the Study Site

Naujan Lake is the 5th largest lake in the Philippines (DENR, 2015). It is bounded by the Municipality of Naujan in the north, Municipality of Pola in the east, Municipality of Socorro in the South and Municipality of Victoria in the west. It serves as catchment area for the four (4) principal rivers in the province namely Borbocolon River, Malbog River, Malayas River and Subaan River. The water drains in Butas River going to the Verde Island Passage (VIP).

Naujan Lake was declared as national park on March 27, 1956 in virtue of Presidential Proclamation No. 282. It was referred as *Naujan Lake National Park*, with an aggregate area of 21,655 hectares inclusive of the adjacent land area. This is in recognition to the unique geological and biological features as well as the ecosystem services it provided to the nearby communities. Then, on September 29, 1961, certain areas were excluded through Presidential Proclamation No. 793. Thus, the remaining area became 1,966 hectares inclusive only the lake and marsh areas. However, the signing of Presidential Proclamation No. 335 on January 25, 1968 has reverted the said protected area (PA) back to its original area.

The topography of NLNP is generally flat to relatively rolling. Majority of the areas belong to slope class 0-18%. About 11,138 ha (49%) of the northwest part of NLNP have elevation <100 m above sea level (masl). On the other hand, the eastern and western part of NLNP have an elevation range of 400-500 m above sea level (masl).

Currently, NLNP is an initial component of National Integrated Protected Areas System (NIPAS) Act of 1992 (Republic Act No. 7586) as amended by Expanded National Integrated Protected Areas Systems (ENIPAS) Act of 2017 (Republic Act 11038). It is recognized as Conservation Priority Area (CPA), Important Bird Area (IBA), Key Biodiversity Area (KBA),

Philippine flyway site of East Asia Australasian Flyway Site (EAAF062), and 1008th Wetland of International Importance to the Ramsar List.

Despite the history of amendment, Naujan Lake National Park still holds unique features which provides a number of ecosystem services to its dependents. The lake is volcanic in origin (BMB, n.d.). Water comes from the four (4) principal rivers of the province and drains to the biodiversity-rich VIP. The unique set of features give rise to a variety of habitat.

As per the latest Protected Area Suitability Assessment conducted by DENR-CENRO Socorro Personnel in 2018, the NLNP has lowland forest, freshwater swamp forest, parang vegetation, marshes and lake ecosystem. The lake served as natural habitat for 14 species of fish (5 are migratory), vulnerable Philippine Duck (*Anas luzonica*), endemic freshwater crocodile (*Crocodylus mindorensis*), and various indigenous terrestrial and aquatic fauna. Furthermore, about 319 species of vascular plants belonging to 88 families are found herein. It also provides refuge for the migratory birds escaping the winter season of their country (Ramsar, 1999).

The weather during the conduct of activity was cloudy with partial light rain showers. The Weather Channel application and website forecasted thunderstorms ending at noon of the day. The cloud cover was 89%, with UV index of 0 of 10. The temperature ranged from 24-28° C, with heat index of 24° C. The rain amount was 0.1 mm, and humidity was 86%. The wind blew 5 km/h northwest (see Figures 1-4).

The census was initially scheduled to 5:30 am in consonance with the feeding time of the birds. However, torrential rain fell down which affected the safety and visibility. The team resumed the activity around 7:00 am by the time the rain showered lightly. The whole census lasted for approximately 3 hours.

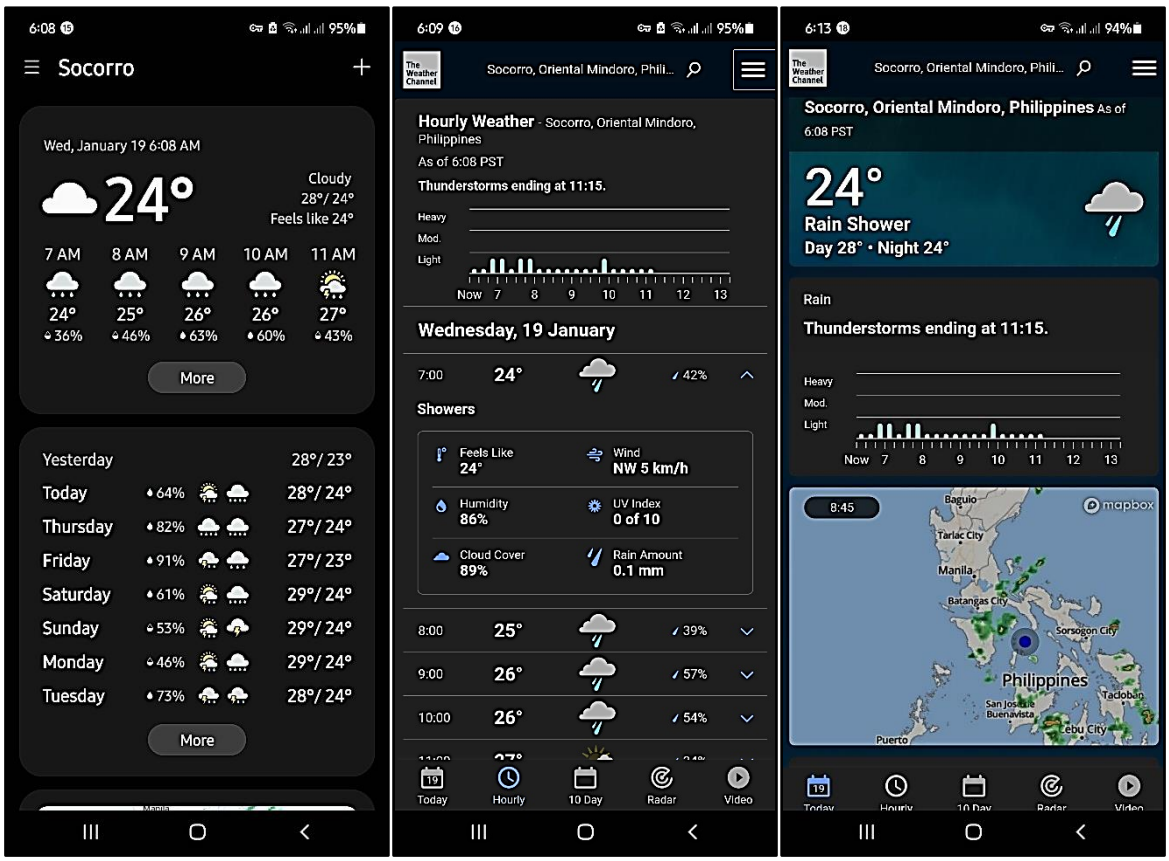


Figure 1. Weather forecast on January 19, 2022.

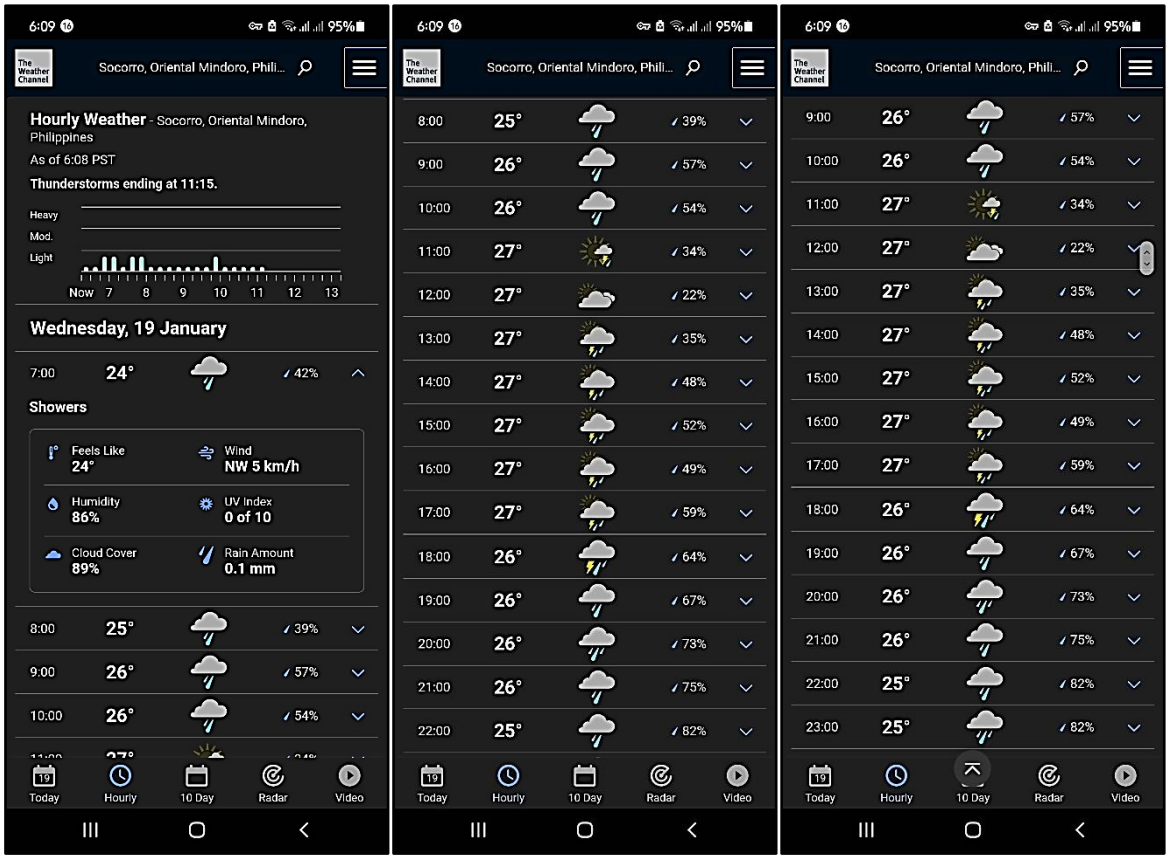


Figure 2. Hourly weather forecast on January 19, 2022.

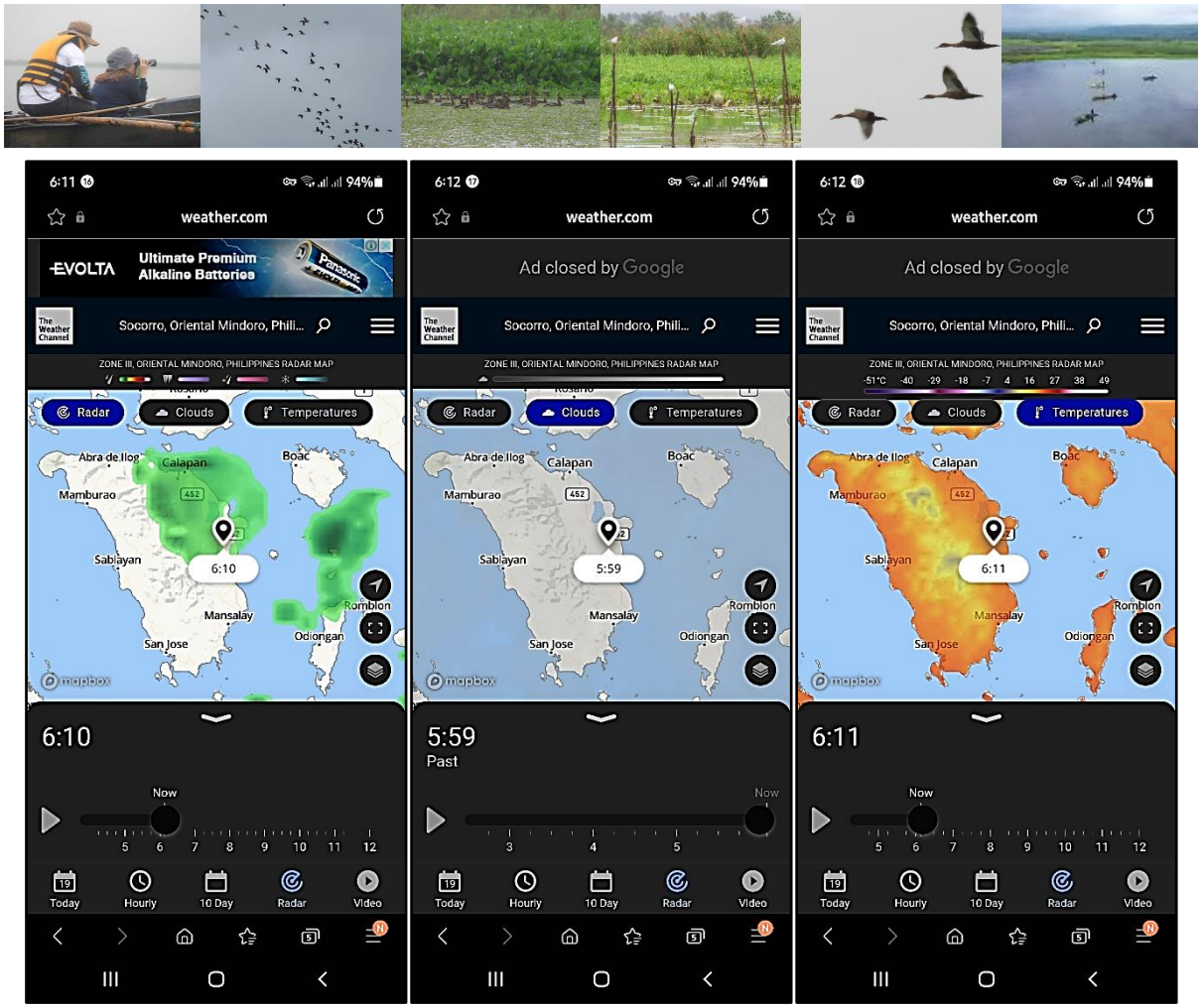


Figure 3. Satellite image of weather forecast during AWC 2022.

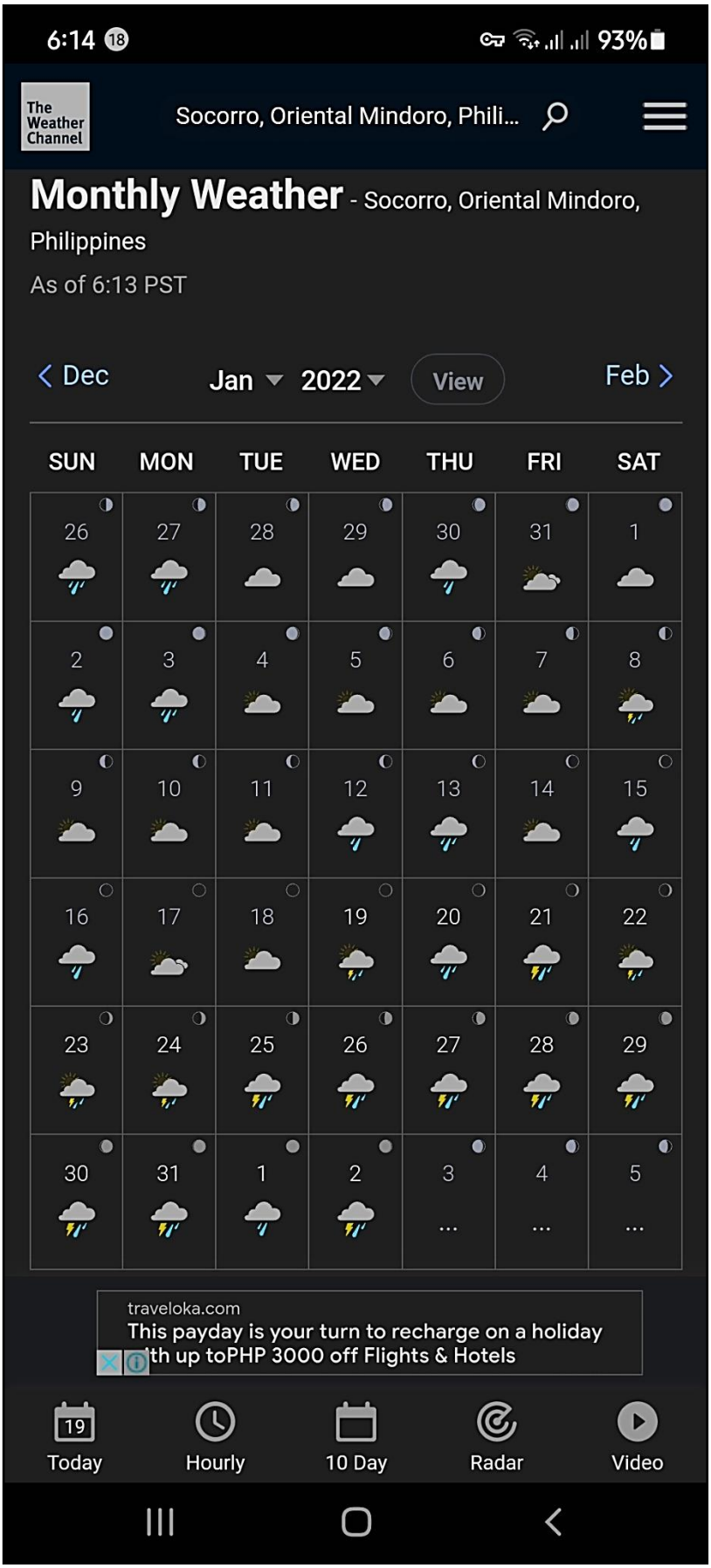


Figure 4. Weather forecast for the month of January 2022.

Data Collection and Analysis

The team used transect cruise and basic visual assessment method for the census. All birds sighted within the range of binoculars were accounted. A rough estimation was used to appraise the population of aggregating birds.

The team was divided into six (6) groups (see Table 1). About four (4) groups were designated to identify and count birds. The 5th group served as photographer/ documenter, while the remaining group (6th) was tasked to assist in other activities (drone survey and tracking).

Table 1. Task assignment on AWC 2022.

Group	ID and Counter	Recorder and other Activities
1	Rayson C. Alfante	Mackaley P. Martinez
2	Jose Maria M. Fontanilla	Charity A. Linatoc
3	Bea Natasha R. Fortu	Nestor G. Mira, Jr.
4	Leo G. Capon	John Emmanuel Merhan
Group	**Photographer and Documenter**	
5	Jezreel John M. Matre	Adrian V. Catud
Group	**Drone Operator**	**Tracking and Other Support Activities**
6	Michael Anjelo A. Acuzar	Eric Gito Macario B. Magsaca, Jr.

The team during the conduct of census was composed of representatives from DENR-PENRO Oriental Mindoro, DENR-CENRO Socorro and Mindoro State University. Despite not being present physically in the AWC due to travel restrictions brought by the prevailing Alert Level 3 pandemic, the Philippines Biodiversity Conservation Foundation, Inc. (PBCFI) and Mindoro Biodiversity Conservation Foundation, Inc. (MBCFI) attended via Zoom for the orientation and technical assistance in analysing the data. There was also representative from Barangay Silonay, Calapan City, Oriental Mindoro because a bird count is going to be scheduled in their area.

After the event, the data per group were collated, compared and analysed. Depending on the information of the groups, the final count was based on the accuracy and precision of data per group.

Materials and Methods

Participants were given laminated bird guide to serve as basis of identification during the census. The said material contains the common bird species found in NLNP. Moreover, participants were provided references featuring the avifauna of Asia.

Waterbirds and other avian species sighted during the transect cruise through boat survey were recorded. The data were recorded in Asian Waterbird Census (Southeast Asia) Form from Wetlands International (see Figure 6-7 and Table 2). Binoculars was used to identify bird species and count population. Cameras were used to aid in the identification of birds as well as to document the said activity (see Figure 5).

Figure 5. Materials used on AWC 2022.

Asian Waterbird Census (Southeast Asia)

WETLANDS INTERNATIONAL

Please return to your National Co-ordinator or Wetland International, 3A39, Kelana Centre Point, No. 3, Jalan SS7/19, Kelana Jaya 47301, MALAYSIA (before March)

Country: PHILIPPINES

Name of Site: NAUJAN LAKE NATIONAL PARK

Date: JANUARY 19, 2022

Province/State/Prefecture: ORIENTAL MINDORO

Nearest Large Town: NAUJAN

Site Code (only for official use): EAAF062

Type: A - Aerial, F - On foot, (B) - By boat, M - Mixed

Coverage: (V-25%, W-25-50%, X-50-75%, Y-75-99%, Z-100%

Has the site been counted before? Yes ☑ No ☐

Waterfowl Counts

39	Little Grebe *Tachybaptus ruficollis*
	CORMORANTS & DARTERS
	Great Cormorant *Phalacrocorax carbo*
	Indian Shag *P. fuscicollis*
	Little Cormorant *P. niger*
	Unidentified cormorants
	Oriental Darter *Anhinga melanogaster*
	HERONS & EGRETS
	Great Bittern *Botaurus stellaris*
21	Yellow Bittern *Ixobrychus sinensis*
	Schrenck's Bittern *I. eurhythmus*
1	Cinnamon Bittern *I. cinnamomeus*
	Black Bittern *I. flavicollis*
	Japanese Night Heron *Gorsachius goisagi*
	Malayan Night Heron (Tiger Bittern) *G. melanolophus*
2	Black-crowned Night Heron *Nycticorax nycticorax*
	Rufous Night Heron *N. caledonicus*
	Indian Pond Heron *Ardeola grayii*
	Chinese Pond Heron *A. bacchus*
14	Javan Pond Heron *A. speciosa*
3	Cattle Egret *Bubulcus ibis*
	Striated (Little Green) Heron *Butorides striatus*
	Eastern Reef Egret *Egretta sacra*
	Chinese (Swinhoe's) Egret *E. eulophotes*
28	Little Egret *E. garzetta*
37	Intermediate Egret *E. intermedia*
83	Great Egret *E. alba*
28	Purple Heron *Ardea purpurea*
4	Grey Heron *A. cinerea*
	Great-billed Heron *A. sumatrana*
200	Unidentified herons and egrets
	STORKS
	Milky Stork *Mycteria cinerea*
	Painted Stork *M. leucocephala*
	Asian Openbill *Anastomus oscitans*
	Black Stork *Ciconia nigra*
	Wooly-necked Stork *C. episcopus*
	Storm's Stork *C. stormi*
	Black-necked Stork *Ephippiorhynchus asiaticus*
	Lesser Adjutant *Leptoptilos javanicus*
	Greater Adjutant *L. dubius*
	Unidentified storks
	IBISES & SPOONBILLS
	Black-headed (White) Ibis *Threskiornis melanocephalus*
	White-shouldered Ibis *Pseudibis davisoni*
	Giant Ibis *Thaumatibis gigantea*
	Glossy Ibis *Plegadis falcinellus*
	White Spoonbill *Platalea leucorodia*
	Black-faced Spoonbill *P. minor*
	Unidentified Spoonbills

	GEESE & DUCKS
	Spotted Whistling Duck *Dendrocygna guttata*
	Fulvous (Large) Whistling Duck *D. bicolor*
535	Wandering Whistling Duck *D. arcuata*
	Lesser Whistling Duck (Lesser Tree Duck) *D. javanica*
	Greylag Goose *Anser anser*
	Bar-headed Goose *A. indicus*
	Ruddy Shelduck *Tadorna ferruginea*
	Common Shelduck *T. tadorna*
	White-winged Wood Duck *Cairina scutulata*
	Comb Duck *Sarkidiornis melanotos*
	Indian Cotton Teal *Nettapus coromandelianus*
	Eurasian Wigeon *Anas penelope*
	Falcated Teal *A. falcata*
	Gadwall *A. strepera*
	Common (Green-winged) Teal *A. crecca*
	Grey Teal *A. gibberifrons*
	Mallard *A. platyrhynchos*
	Spot-billed Duck *A. poecilorhyncha*
19	Philippine Duck *A. luzonica*
	Northern Pintail *A. acuta*
6	Garganey *A. querquedula*
	Northern Shoveler *A. clypeata*
	Red-crested Pochard *Netta rufina*
	Common Pochard *Aythya ferina*
	Baer's Pochard *A. baeri*
	Ferruginous Duck *A. nyroca*
453	Tufted Duck *A. fuligula*
	Goosander *M. merganser*
	Unidentified ducks
	CRANES
	Common Crane *Grus grus*
	Sarus Crane *G. antigone*
	RAILS, GALLINULES & COOTS
	Water Rail *Rallus aquaticus*
	Slaty-breasted Rail *R. striatus*
	Banded Rail *R. philippensis*
	Barred Rail *R. torquatus*
	Red-legged Crake *Rallina fasciata*
	Slaty-legged Crake *R. eurizonoides*
	Baillon's Crake *Porzana pusilla*
	Ruddy Crake *P. fusca*
	Band-bellied Crake *P. paykullii*
	Spotless Crake *P. tabuensis*
	White-browed Crake *P. Cinereus (Poliolimnas cinereus)*
	Brown Crake *Amaurornis akool*
	Bush-Hen *A. olivacea*
	White-breasted Waterhen *A. phoenicurus*
	Watercock *Gallicrex cinerea*

Figure 6. Asian Waterbird Census (Southeast Asia) Form (Page 1).

93	Moorhen *Gallinula chloropus*		Grey-tailed (Grey-rumped) Tattler *Heteroscelus brevipes*
	Purple Swamphen *Porphyrio porphyrio*		Ruddy Turnstone *Arenaria interpres*
	Common Coot *Fulica atra*		Red-necked Phalarope *Phalaropus lobatus*
	FINFOOT & JACANAS		Eurasian Woodcock *Scolopax rusticola*
	Masked Finfoot *Heliopais personata*		Pintail Snipe *Gallinago stenura*
	Comb-crested Jacana *Irediparra gallinacea*		Swinhoe's Snipe *G. megala*
	Pheasant-tailed Jacana *Hydrophasianus chirurgus*		Common Snipe *G. gallinago*
	Bronze-winged Jacana *Metopidius indicus*		Asiatic Dowitcher *Limnodromus semipalmatus*
	SHOREBIRDS- WADERS		Red Knot *Calidris canutus*
	Painted Snipe *Rostratula benghalensis*		Great Knot *C. tenuirostris*
	Crab Plover *Dromas ardeola*		Sanderling *C. alba*
	Black-winged Stilt *Himantopus himantopus*		Red-necked (Rufous-necked) Stint *C. ruficollis*
	Australian (White-headed) Stilt *H. leucocephalus*		Temminck's Stint *C. temminckii*
	Avocet *Recurvirostra avosetta*		Long-toed Stint *C. subminuta*
	Great Thick-knee *Esacus recurvirostris*		Sharp-tailed Sandpiper *C. acuminata*
	Beach Thick-knee *E. magnirostris*		Dunlin *C. alpina*
	Oriental Pratincole *Glareola maldivarum*		Curlew Sandpiper *C. ferruginea*
	Little Pratincole *G. lactea*		Spoon-billed Sandpiper *Eurynorhynchus pygmeus*
	Northern Lapwing *Vanellus vanellus*		Broad-billed Sandpiper *Limicola falcinellus*
	River Lapwing *V. duvaucelii*		Unidentified shorebirds
	Grey-headed Lapwing *V. cinereus*		*GULLS, TERNS & SKIMMERS*
	Red-wattled Lapwing *V. indicus*		Herring Gull *Larus argentatus*
	Pacific Golden Plover *Pluvialis fulva*		Brown-headed Gull *L. brunnicephalus*
	Grey Plover *P. squatarola*	6	Black-headed Gull *L. ridibundus*
	Long-billed Plover *Charadrius placidus*		Saunders' Gull *L. saundersi*
	Little Ringed Plover *C. dubius*		Unidentified gulls
	Kentish Plover *C. alexandrinus*	653	Whiskered Tern *Childonias hybridus*
	Malaysian Plover *C. peronii*		White-winged Black Tern *C. leucopterus*
	Mongolian Plover *C. mongolus*		Gull-billed Tern *Gelochelidon nilotica*
	Greater Sand Plover *C. leschenaultii*		Caspian Tern *Hydroprogne caspia*
	Oriental Plover *C. veredus*		Indian River Tern *Sterna aurantia*
	Black-tailed Godwit *Limosa limosa*		Common Tern *S. hirundo*
	Bar-tailed Godwit *L. lapponica*		Black-naped Tern *S. sumatrana*
	Little Curlew *Numenius minutus*		Black-bellied Tern *S. melanogaster*
	Whimbrel *N. phaeopus*		Little Tern *S. albifrons*
	Eurasian Curlew *N. arquata*		Great Crested Tern *S. bergii*
	Far Eastern Curlew *N. madagascariensis*		Lesser Crested Tern *S. bengalensis*
	Spotted Redshank *Tringa erythropus*		Unidentified terns
	Redshank *T. totanus*		Indian Skimmer *Rynchops albicollis*
	Marsh Sandpiper *T. stagnatilis*		
	Greenshank *T. nebularia*		*ADDITIONAL SPECIES*
	Nordmann's Greenshank *T. guttifer*	1. Black winged Stilt - 72	7. White-Breasted Waterhen - 1
	Green Sandpiper *T. ochropus*	2. Eurasian coot - 12	8. raptor (unidentified) - 1
	Wood Sandpiper *T. glareola*	3. Brahminy Kite - 4	
	Terek Sandpiper *Xenus cinereus*	4. common Kingfisher - 3	
	Common Sandpiper *Actitis hypoleucos*	5. Philippine Swamphen - 2	
		6. Eastern Marsh Harrier - 1	

USEFUL SITE INFORMATION: (please circle the relevant figures)

CONDITION OF WETLAND: (1. Wet (water present)) 2 Totally dry, 3. Totally frozen

PROTECTION - PRESENCE OF PROTECTED AREA MANAGEMENT OFFICE AND DENR-CENRO SOCORRO, ORIENTAL MINDORO

THREATS AND USES: 0 Unknown, 1 None, 2 Sedimentation, 3 Excessive overgrowth of vegetation, (4) Cutting/clearance of vegetation, 5 Eutrophication, (6) Agriculture along drying margins, 7 Excessive cattle grazing, Pollution by: 8 domestic sewage, (9) solid waste, A industrial waste, B oil, C pesticides, D fertilizers, E Mining, F Hunting/trapping/poaching of birds, G Little fishing, H Large scale fishing, I Partial reclamation, J Complete reclamation, K Dam/barrage construction, L Tourism/recreation

TIME OF COUNT: START 07:00 (am)/pm FINISH 10:00 (am)/pm

PARTICIPANT(S) NAME (S) AND ADDRESS(ES):

Figure 7. Asian Waterbird Census (Southeast Asia) Form (Page 2).

Table 2. Attachment for the Asian Waterbird Census (Southeast Asia) Form.

No.	Name of Participants	Address
1	Rayson C. Alfante	Victoria, Oriental Mindoro
2	Mackaley P. Martinez	Victoria, Oriental Mindoro
3	Jose Maria M. Fontanilla	Socorro, Oriental Mindoro
4	Charity A. Linatoc	Socorro, Oriental Mindoro
5	Bea Natasha R. Fortu	Calapan City, Oriental Mindoro
6	Nestor G. Mira, Jr.	Calapan City, Oriental Mindoro
7	Leo G. Capon	Socorro, Oriental Mindoro
8	John Emmanuel Merhan	Victoria, Oriental Mindoro
9	Jezreel John M. Matre	Calapan City, Oriental Mindoro
10	Adrian V. Catud	Socorro, Oriental Mindoro
11	Michael Anjelo A. Acuzar	Socorro, Oriental Mindoro
12	Eric C. Gito	Victoria, Oriental Mindoro
13	Macario B. Magsaca, Jr.	Victoria, Oriental Mindoro

Activities and Timeframe

The 1st and 2nd week of January 2022 was allotted for preparatory activities. Documents, communication letters, scheduling, tools and equipment were organized and planned for the execution of AWC 2022. The weeks were also allotted for distribution of invitation and letters to inform the concerned Offices about the census. Then, January 18-19, 2022 were devoted for the actual census.

A series of lecture and discussion were done on the 1st day to capacitate the participants on AWC, bird identification and methods (see Figure 8). The actual census was held on the 2nd day of AWC (see Figure 9). Data analysis and database management, and presentation of results and consultation were conducted after the census (see Figure 10). After the AWC 2022, the report were finalized and submitted to the Regional Office through the DENR-PENRO Oriental Mindoro (see Table 3).

Table 3. Gantt chart of AWC 2022.

MILESTONES	CY 2022									
	1st Week					2nd Week				
	3	4	5	6	7	10	11	12	13	14
I. Organization and Planning										
II. Coordination with NGAs, LGUs, CSOs and volunteers										
III. Annual Asian Waterbird Census 2022										
IV. Data Analysis and Database Management										
V. Presentation of Results and Consultation										
VI. Finalization of Report										

Table 3. Gantt chart of AWC 2022 (continuation).

MILESTONES	CY 2022									
	3rd Week					4th Week				
	17	18	19	20	21	24	25	26	27	28
I. Organization and Planning										
II. Coordination with NGAs, LGUs, CSOs and volunteers										
III. Annual Asian Waterbird Census 2022										
IV. Data Analysis and Database Management										
V. Presentation of Results and Consultation										
VI. Finalization of Report										

Figure 8. Orientation, lecture and discussion on the 1st day of AWC 2022.

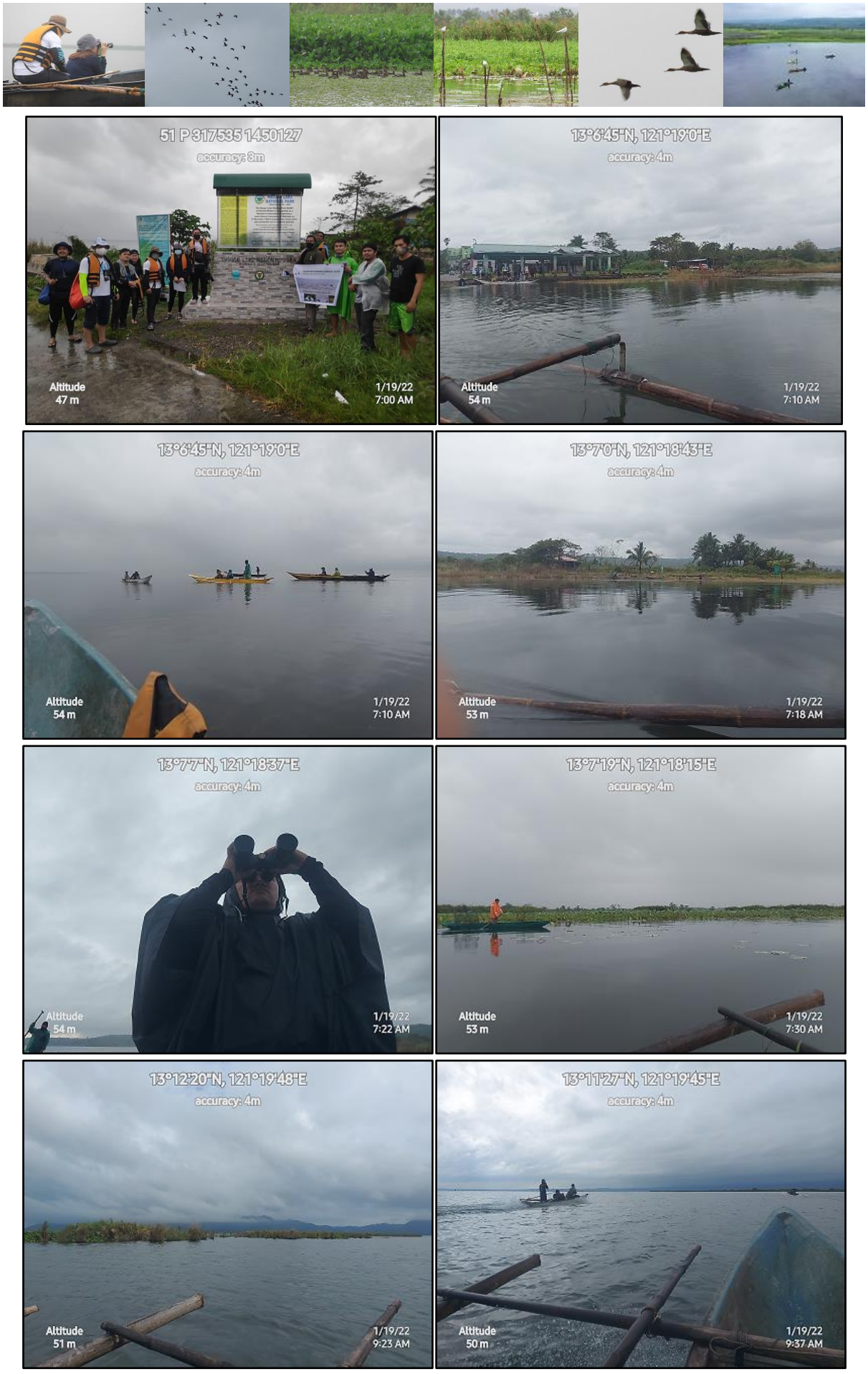


Figure 9. Waterbird Census on the 2nd day of AWC 2022.

Figure 10. Data collation and analysis on the 2nd day of AWC 2022.

RESULTS AND DISCUSSION

Annual Asian Waterbird Census 2022

Based on the results of AWC 2022, the team counted a total of 2,316 individual waterbirds with 27 species (2 are unidentified) coming from 8 family (see Table 4 and Figure 11). Whiskered Tern (*Chlidonias hybrida*) has the most number of population with 653 individuals. This accounts to 28% of all the waterbirds counted. This is followed by Wandering Whistling Duck (*Dendrocygna arcuata*) with 535 individuals (23%), Tufted Duck (*Aythya fuligula*) with 453 individuals (20%), Egret (Unidentified) with 200 individuals (9%) and Common Moorhen (*Gallinula chloropus*) with 93 individuals (4%).

One (1) out of 4 groups suspected that the unidentified species of Egrets are probably Great Egrets. However, it was not adjourned during the collation and analysis of data because the remaining groups classified it as unidentified.

The team failed to identify the Egrets because the species is too far to be sighted clearly. Further, the other factors that affected the proper identification of birds was the poor visibility due to rain shower. The species were found foraging on distant rice field.

Table 4. Population of waterbirds during AWC 2022 in NLNP.

NO.	COMMON NAME	SCIENTIFIC NAME	FAMILY NAME	DISTRIBUTION STATUS	CONSERVATION STATUS	POPULATION TREND	COUNT	PERCENTAGE
1	Whiskered Tern	*Chlidonias hybrida*	Laridae	Resident	LC	Stable	653	28.1952
2	Wandering Whistling Duck	*Dendrocygna arcuata*	Anatidae	Resident	LC	Decreasing	535	23.1002
3	Tufted Duck	*Aythya fuligula*	Anatidae	Migratory	LC	Stable	453	19.5596
4	Egret (Unidentified)		Ardeidae	-	-	-	200	8.6356
5	Common Moorhen	*Gallinula chloropus*	Rallidae	Resident	LC	Stable	93	4.0155
6	Great Egret	*Ardea alba*	Ardeidae	Resident	LC	Unknown	83	3.5838
7	Black-winged Stilt	*Himantopus himantopus*	Recurvirostridae	Resident	LC	Increasing	72	3.1088
8	Intermediate Egret	*Ardea intermedia*	Ardeidae	Migratory	LC	Decreasing	37	1.5976
9	Little Grebe	*Tachybaptus ruficollis*	Podicipedidae	Resident	LC	Decreasing	34	1.4680
10	Purple Heron	*Ardea purpurea*	Ardeidae	Resident	LC	Decreasing	28	1.2090
11	Little Egret	*Ergetta garzetta*	Ardeidae	Resident	LC	Increasing	28	1.2090
12	Yellow Bittern	*Ixobrychus sinensis*	Ardeidae	Resident	LC	Unknown	21	0.9067
13	Philippine Duck	*Anas luzonica*	Anatidae	Resident (Endemic)	VU	Decreasing	19	0.8204
14	Javan Pond Heron	*Ardeola speciosa*	Ardeidae	Resident	LC	Unknown	14	0.6045
15	Eurasian Coot	*Fulica atra*	Rallidae	Migratory	LC	Increasing	12	0.5181
17	Black-headed Gull	*Chroicocephalus ridibundus*	Laridae	Resident	LC	Unknown	6	0.2591
16	Garganey	*Spatula querquedula*	Anatidae	Migratory	LC	Decreasing	6	0.2591
19	Brahminy Kite	*Haliastur indus*	Accipitridae	Resident	LC	Decreasing	4	0.1727
18	Grey Heron	*Ardea cinerea*	Ardeidae	Resident	LC	Unknown	4	0.1727
21	Common Kingfisher	*Alcedo atthis*	Alcedinidae	Resident	LC	Unknown	3	0.1295
20	Eastern Cattle Egret	*Bubulcus coromandus*	Ardeidae	Resident	LC	Unknown	3	0.1295
22	Black-crowned Night Heron	*Nycticorax nycticorax*	Ardeidae	Resident	LC	Decreasing	2	0.0864

NO.	COMMON NAME	SCIENTIFIC NAME	FAMILY NAME	DISTRIBUTION STATUS	CONSERVATION STATUS	POPULATION TREND	COUNT	PERCENTAGE
23	Philippine Swamphen	*Porphyrio pulverulentus*	Rallidae	Resident	NE (LC)	Unknown	2	0.0864
24	Cinnamon Bittern	*Ixobrychus cinnamomeus*	Ardeidae	Resident	LC	Stable	1	0.0432
25	Eastern Marsh Harrier	*Circus spilonotus*	Accipitridae	Migratory	LC	Stable	1	0.0432
26	Raptor (Unidentified)		Accipitridae	-	-	-	1	0.0432
27	White-breasted Waterhen	*Amaurornis phoenicurus*	Rallidae	Resident	LC	Unknown	1	0.0432
TOTAL							2,316	100.0000

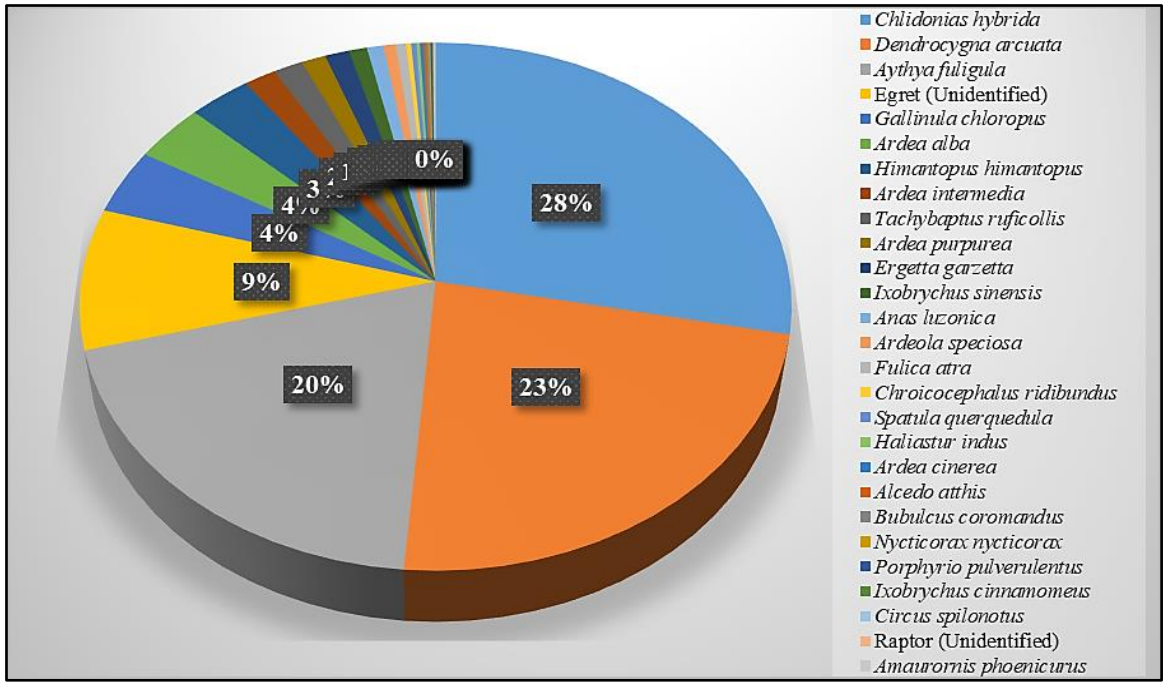


Figure 11. Population of waterbirds during AWC 2022 in NLNP in percent.

The distribution status, conservation status and population trend of waterbirds are presented in the following table based on the publications of International Union for Conservation of Nature (IUCN) (2016-2021), Lee *et.al.* (2018) and Tañedo *et.al.* (2015). As per the distribution status, about 74% or 20 of the listed 27 waterbird species are classified as resident, while 19% or 5 species are migratory. There were two (2) species with unknown status (7%) because the team failed to identify the species (see Table 5).

Table 5 . Distribution status of waterbirds identified in AWC 2022.

Distribution Status	Count	Percentage
Resident	20	74.0741
Migratory	5	18.5185
Unknown	2	7.4074
Total	27	100.0000

Majority of the resident (18 or 90%) and migratory (5 or 100%) waterbirds as per the respective conservation status are classified by IUCN and other publications as least concern (LC) (see Table 6). Further, one (1) resident waterbird species is categorized as not evaluated (NE) with remarks of LC. There is one (1) species classified as vulnerable (VU) status protected by law per the *Republic Act No. 9147: Wildlife Resources Conservation and Protection Ac*t and *DENR Administrative Order No. 2019-09 Updated National List of Threatened Philippine Fauna and their Categories*. This species is the Philippine Duck (*Anas luzonica*).

Table 6 . Conservation status of resident and migratory waterbirds identified in AWC 2022.

Resident		
Conservation Status	**Count**	**Percentage**
Least Concern	18	90.0000
Not Evaluated (Least Concern)	1	5.0000
Vulnerable	1	5.0000
Total	20	100.0000
Migratory		
Conservation Status	**Count**	**Percentage**
Least Concern	5	100.0000
Total	5	100.0000

About 45% or 9 of the 20 resident waterbird species are classified by IUCN to have an unknown population trend (see Table 7). About 30% (6) of resident waterbird species are decreasing. The remaining percentage is in stable and increasing population trend, with 15% and 10%, respectively. As the case of migratory waterbird species, bulk of the species either have decreasing or stable population trend (both have 2 counts or 40%).

Table 7. Population trend of resident and migratory waterbirds identified in AWC 2022.

Resident		
Population Trend	**Count**	**Percentage**
Increasing	2	10.0000
Stable	3	15.0000
Decreasing	6	30.0000
Unknown	9	45.0000
Total	20	100.0000
Migratory		
Population Trend	**Count**	**Percentage**
Increasing	1	20.0000
Stable	2	40.0000
Decreasing	2	40.0000
Unknown	0	0.0000
Total	5	100.0000

Other Avian Species

The team also accounted the population of other avian species encountered during the AWC 2022. Based on the results, the team counted a total of 144 individual other avifauna species, with 10 species (2 are unidentified) coming from eight (8) family (see Table 8 and Figure 12).

Barn Swallow (*Hirudo rustica*) has the most number of population with 61 individuals comprising 42% of other avian species population. This is followed by Chestnut Munia (*Lonchura atricapilla*) with 23 individuals (16%), Rock Dove (*Columba livia*) with 19 individuals (13%), Swiftlet (unidentified) with 11 individuals (8%) and Eurasian Tree Sparrow (*Passer montanus*) with 9 individuals (6%).

Like the case of waterbirds, there were two (2) species unidentified by the team because of the adverse weather condition, and limited equipment and technical skills.

Table 8. Population of other avian species during AWC 2022 in NLNP.

NO.	COMMON NAME	SCIENTIFIC NAME	FAMILY NAME	DISTRIBUTION STATUS	CONSERVATION STATUS	POPULATION TREND	COUNT	PERCENTAGE
1	Barn Swallow	*Hirundo rustica*	Hirundinidae	Resident	LC	Decreasing	61	42.3611
2	Chestnut Munia	*Lonchura atricapilla*	Estrildidae	Resident	LC	Stable	23	15.9722
3	Rock Dove	*Columba livia*	Columbidae	Migratory	LC	Decreasing	19	13.1944
4	Swiftlet (unidentified)		Apodidae	-	-	-	11	7.6389
5	Eurasian Tree Sparrow	*Passer montanus*	Passeridae	Resident (Introduced)	LC	Decreasing	9	6.2500
6	Spotted Dove	*Spilopelia chinensis*	Columbidae	Resident	LC	Increasing	8	5.5556
7	Red Turtle Dove	*Streptopelia tranquebarica*	Columbidae	Resident	LC	Decreasing	7	4.8611
8	Cisticola (Unidentified)		Cisticolidae	-	-	-	2	1.3889
9	Large-billed Crow	*Corvus macrorhynchos*	Corvidae	Resident	LC	Stable	2	1.3889
10	Pied Fantail	*Rhipidura javanica*	Rhipiduridae	Migratory	LC	Stable	2	1.3889
TOTAL							144	100.0000

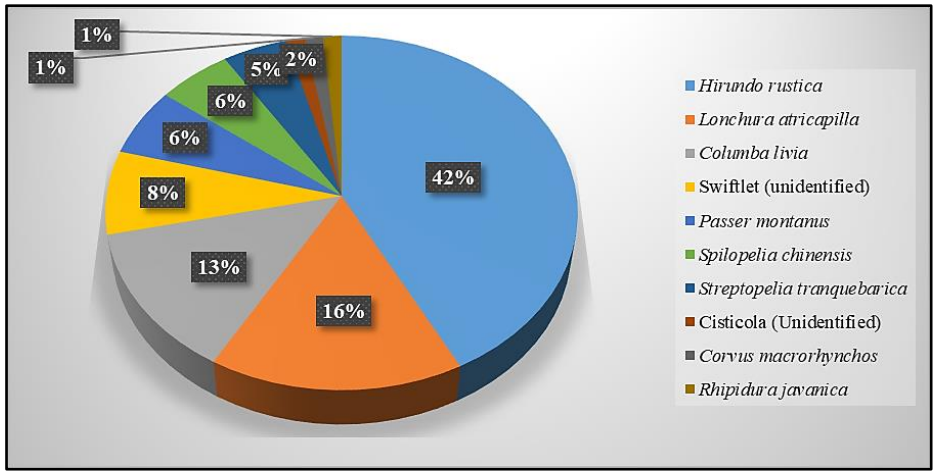


Figure 12. Population of other avian species during AWC 2022 in NLNP in percent.

The distribution status, conservation status and population trend of other avian species are presented below. As per the distribution status, about 60% or 6 of the listed 10 other avian species are classified as resident, while 20% or 2 species are migratory. There were two (2) species with unknown status (20%) because of the limitations of the census (see Table 9).

Table 9. Distribution status of other avian species identified in AWC 2022.

Distribution Status	Count	Percentage
Resident	6	60.0000
Migratory	2	20.0000
Unknown	2	20.0000
Total	10	100.0000

Majority of the resident (6 or 100%) and migratory (2 or 100%) other avian species as per the respective conservation status are classified by IUCN as least concern (LC) (see Table 10).

Table 10 . Conservation status of resident and migratory other avian species identified in AWC 2022.

Resident		
Conservation Status	**Count**	**Percentage**
Least Concern	6	100.0000
Total	6	100.0000
Migratory		
Conservation Status	**Count**	**Percentage**
Least Concern	2	100.0000
Total	2	100.0000

Half (50% or 3) of the resident avifauna other than waterbirds are classified by IUCN and other literatures to have a decreasing population trend. Then, about 33% (2) are stable while the remaining percentage (17% or 1) is in increasing trend (see Table 11).

As the case of migratory waterbird species, half of the species (50% or 1) is stable while the remaining (50% or 1) is in decreasing trend.

Table 11. Population trend of resident and migratory avian species identified in AWC 2022.

Resident		
Population Trend	**Count**	**Percentage**
Increasing	1	16.6667
Stable	2	33.3333
Decreasing	3	50.0000
Unknown	0	0.0000
Total	6	100.0000
Migratory		
Population Trend	**Count**	**Percentage**
Increasing	0	0.0000
Stable	1	50.0000
Decreasing	1	50.0000
Unknown	0	0.0000
Total	2	100.0000

Waterbird and Other Avian Species in the Past Years

The data on AWC from 2018-2021 (census conducted through transect cruise, basic visual assessment and boat survey) were collated for the analysis. The said years conducted the same methodology which was transect cruise and basic visual assessment through boat survey.

The record of waterbird for this year has dropped by 57% from the 5,451 record on 2021. Additionally, it is the lowest from 2018. The AWC in 2018 has the most number of waterbirds documented, with 5,523 individuals coming from 35 waterbird species. This is followed by the AWC in 2021 with 5,451 individuals, AWC in 2020 with 2,808 individuals and AWC in 2019 with 2,665 individuals (see Table 12 and Figure 13).

In terms of ranking per species, the AWC in 2020 logged to have the most variety of waterbird species (36). This is followed by AWC in 2018 with 35 species, AWC in 2020 with 31 species, AWC in 2019 with 28 species and lastly by AWC in 2022 with 27 species. From 2018-2022, the DENR-CENRO Socorro personnel noted a total of 55 waterbird species (12 are unidentified) coming from 10 family (see Figures 13-38 and Table 12.

Table 12. Population of waterbirds during AWC in NLNP in the past years.

NO.	COMMON NAME	SCIENTIFIC NAME	FAMILY	YEAR				
				2018	2019	2020	2021	2022
1	Black Bittern	*Ixobrychus flavicollis*	Ardeidae	2	0	0	0	0
2	Black-crowned Night Heron	*Nycticorax nycticorax*	Ardeidae	0	0	0	0	2
3	Black-headed Gull	*Chroicocephalus ridibundus*	Laridae	3	10	21	13	6
4	Black-winged Stilt	*Himantopus himantopus*	Recurvirostridae	0	15	0	0	72
5	Brahminy Kite	*Haliastur indus*	Accipitridae	7	2	1	1	4
6	Brown-brested Kingfisher	*Halcyon gularis*	Alcedinidae	0	0	1	0	0
7	Cattle Egret	*Bubulcus ibis*	Ardeidae	5	2	17	0	0
8	Cinnamon Bittern	*Ixobrychus cinnamomeus*	Ardeidae	7	0	0	0	1
9	Collard Kingfisher	*Todiramphus chloris*	Alcedinidae	3	0	3	3	0
10	Common Coot	*Fulica atra*	Rallidae	12	11	6	0	0
11	Common Greenshank	*Tringa nebularia*	Scolopacidae	0	66	11	3	0
12	Common Kingfisher	*Alcedo atthis*	Alcedinidae	6	4	8	3	3
13	Common Moorhen	*Gallinula chloropus*	Rallidae	82	26	69	30	93
14	Common Pochard	*Aythya farina*	Anatidae	0	0	0	33	0
15	Common Sandpiper	*Actitis hypoleucos*	Scolopacidae	0	0	0	2	0
16	Duck (Unidentified)		Anatidae	275	11	29	2	0
17	Eastern Cattle Egret	*Bubulcus coromandus*	Ardeidae	0	0	0	5	3
18	Eastern Marsh Harrier	*Circus spilonotus*	Accipitridae	0	1	0	0	1
19	Egret (Unidentified)		Ardeidae	286	492	485	426	200
20	Eurasian Coot	*Fulica atra*	Rallidae	0	0	0	3	12
21	Eurasian Wigeon	*Mareca Penelope*	Anatidae	3	0	0	10	0
22	Garganey	*Spatula querquedula*	Anatidae	832	0	6	0	6
23	Great Egret	*Ardea alba*	Ardeidae	16	25	81	61	83
24	Grey Heron	*Ardea cinerea*	Ardeidae	5	6	4	0	4
25	Gull (Unidentified)		Laridae	3	0	0	0	0
26	Heron (Unidentified)		Ardeidae	4	0	1	0	0
27	Intermediate Egret	*Ardea intermedia*	Ardeidae	74	104	31	46	37

NO.	COMMON NAME	SCIENTIFIC NAME	FAMILY	YEAR				
				2018	2019	2020	2021	2022
28	Javan Pond Heron	*Ardeola speciosa*	Ardeidae	6	0	19	15	14
29	Little Egret	*Ergetta garzetta*	Ardeidae	18	22	56	66	28
30	Little Grebe	*Tachybaptus ruficollis*	Podicipedidae	3	27	19	5	34
31	Night Heron (Unidentified)		Ardeidae	1	0	0	2	0
32	Osprey	*Pandion haliaetus*	Accipitridae	0	2	3	0	0
33	Peregrine Falcon	*Falco peregrinus*	Accipitridae	1	0	0	0	0
34	Pheasant-tailed Jacana	*Hydrophasianus chirurgus*	Jacanidae	0	1	1	0	0
35	Philippine Duck	*Anas luzonica*	Anatidae	6	11	16	8	19
36	Philippine Swamphen	*Porphyrio pulverulentus*	Rallidae	0	19	28	4	2
37	Pied Harrier	*Circus melanoleucos*	Accipitridae	0	1	0	0	0
38	Pond Heron (Unidentified)		Ardeidae	2	18	0	0	0
39	Purple Heron	*Ardea purpurea*	Ardeidae	32	19	36	16	28
40	Purple Swamphen	*Porphyrio porphyrio*	Rallidae	18	0	0	0	0
41	Rail (Unidentified)		Rallidae	0	0	1	2	0
42	Raptor (Unidentified)		Accipitridae	1	0	1	0	1
43	Sandpiper (Unidentified)		Scolopacidae	0	0	0	17	0
44	Snipe (Unidentified)		Scolopacidae	0	0	3	0	0
45	Stint (Unidentified)		Scolopacidae	0	0	4	0	0
46	Striated Heron	*Butorides striatus*	Ardeidae	0	0	2	0	0
47	Whiskered Tern	*Chlidonias hybrida*	Laridae	806	1,304	867	964	653
48	Tern (Unidentified)		Laridae	226	0	0	0	0
49	Tufted Duck	*Aythya fuligula*	Anatidae	2,692	58	791	3,621	453
50	Wandering Whistling Duck	*Dendrocygna arcuata*	Anatidae	46	391	144	62	535
51	Watercock	*Gallicrex cinerea*	Rallidae	0	0	5	2	0
52	White-breasted Waterhen	*Amaurornis phoenicurus*	Rallidae	4	0	0	1	1
53	White-browed Crake	*Porzana cinerea*	Rallidae	6	3	4	0	0
54	Wood Sandpiper	*Tringa glareola*	Scolopacidae	0	0	1	2	0
55	Yellow Bittern	*Ixobrychus sinensis*	Ardeidae	30	14	33	23	21
TOTAL NUMBER OF INDIVIDUALS				5,523	2,665	2,808	5,451	2,316
TOTAL NUMBER OF SPECIES				35	28	36	31	27

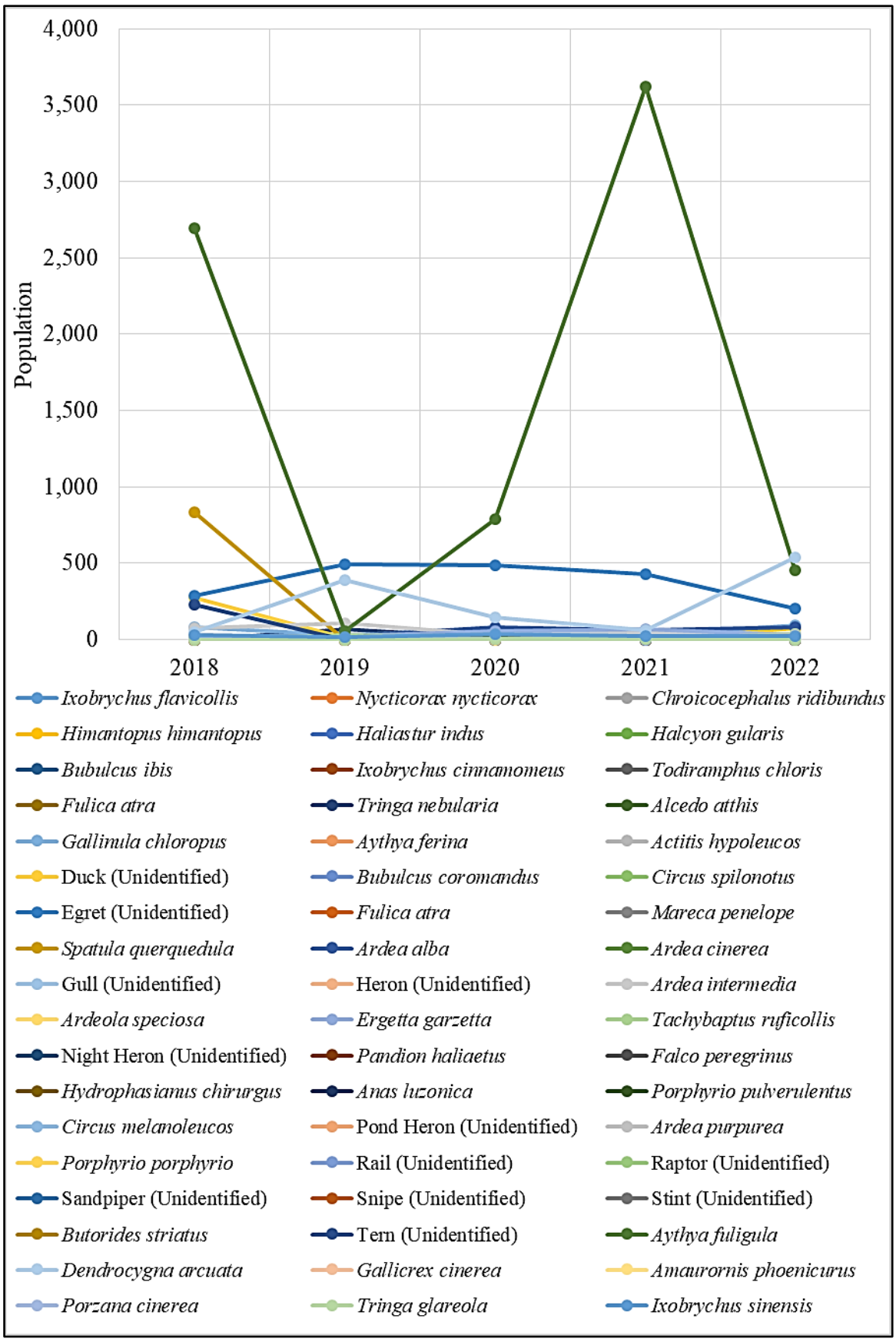


Figure 13. Population of waterbirds during AWC in NLNP in the past years.

The population of other avifauna for this year also dropped by 64% from 397 record last year. The census this 2022 is also the lowest count in the past 5 years, with 144 individuals counted coming from 10 species. Subsequently, the AWC in 2021 has the highest number of record, with 397 individuals. This is followed by the AWC in 2018 with 389 individuals, AWC in 2020 with 352 individuals and AWC in 2019 with 293 individuals (see Table 13 and Figure Figures 14-38).

Nevertheless, the AWC in 2022 ranked 3rd in terms of number of other avian species. This means that despite being the lowest count of individuals, the diversity of species is still varied. The AWC in 2018 has the most number of bird species other than waterbirds, while the AWC in in 2021 has the lowest number. From 2018 up to present, the DENR-CENRO Socorro personnel recorded a total of 24 species of birds other than waterbirds (6 are unidentified) coming from 14 family. The photos of waterbirds and other avifauna are presented in Figures 39-48.

Table 13 . Population of other avian species during AWC in NLNP in the past years.

NO.	COMMON NAME	SCIENTIFIC NAME	FAMILY NAME	YEAR				
				2018	2019	2020	2021	2022
1	Asian Koel	*Eudynamys scolopaceus*	Cuculidae	1	0	0	0	0
2	Barn Swallow	*Hirundo rustica*	Hirundinidae	46	204	160	256	61
3	Blue-tailed Bee-eater	*Merops philippinus*	Meropidae	0	1	1	10	0
4	Brown Shrike	*Lanius cristatus*	Laniidae	2	1	2	0	0
5	Chestnut Munia	*Lonchura atricapilla*	Estrildidae	121	37	116	40	23
6	Cisticola (Unidentified)		Cisticolidae	1	0	0	10	2
7	Clamorous Reed Warbler	*Acrocephalus stentoreus*	Locustellidae	5	6	14	0	0
8	Dove (Unidentified)		Columbidae	2	0	1	0	0
9	Eurasian Tree Sparrow	*Passer montanus*	Passeridae	8	0	8	0	9
10	Golden-bellied Gerygone	*Gerygone sulphurea*	Acanthizidae	1	0	0	0	0
11	Large-billed Crow	*Corvus macrorhynchos*	Corvidae	86	12	3	5	2
12	Munia (Unidentified)		Estrildidae	37	0	0	0	0
13	Pacific Swallow	*Hirundo tahitica*	Hirundinidae	9	0	0	0	0
14	Pied Fantail	*Rhipidura javanica*	Rhipiduridae	0	0	0	0	2
15	Philippine Coucal	*Centropus viridis*	Cuculidae	1	0	1	0	0
16	Red Turtle Dove	*Streptopelia tranquebarica*	Columbidae	2	29	6	0	7
17	Reeb Warbler (Unidentified)		Locustellidae	13	0	0	0	0
18	Rock Dove	*Columba livia*	Columbidae	2	0	2	22	19
19	Spotted Dove	*Spilopelia chinensis*	Columbidae	2	0	4	0	8
20	Striated Grassbird	*Megalurus palustris*	Locustellidae	14	2	6	0	0
21	Swallow (Unidentified)		Hirundinidae	16	0	0	0	0
22	Swiftlet (unidentified)		Apodidae	19	0	22	53	11
23	Yellow-vented Bulbul	*Pycnonotus goiavier*	Pycnonotidae	1	0	1	0	0
24	Zebra Dove	*Geopelia striata*	Columbidae	0	1	5	1	0
TOTAL NUMBER OF INDIVIDUALS				389	293	352	397	144
TOTAL NUMBER OF SPECIES				21	9	16	8	10

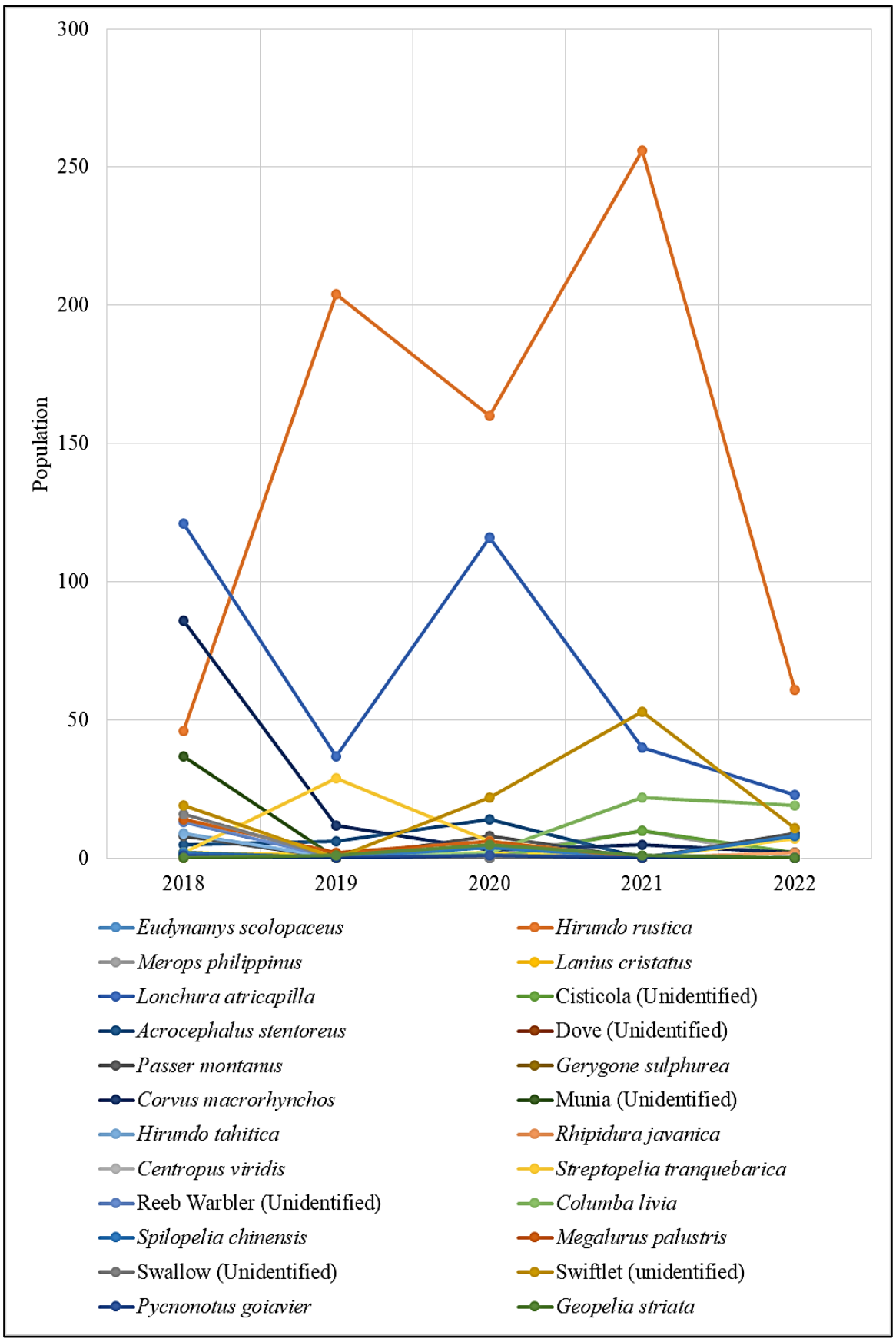


Figure 14. Population of other avian species during AWC in NLNP in the past years.

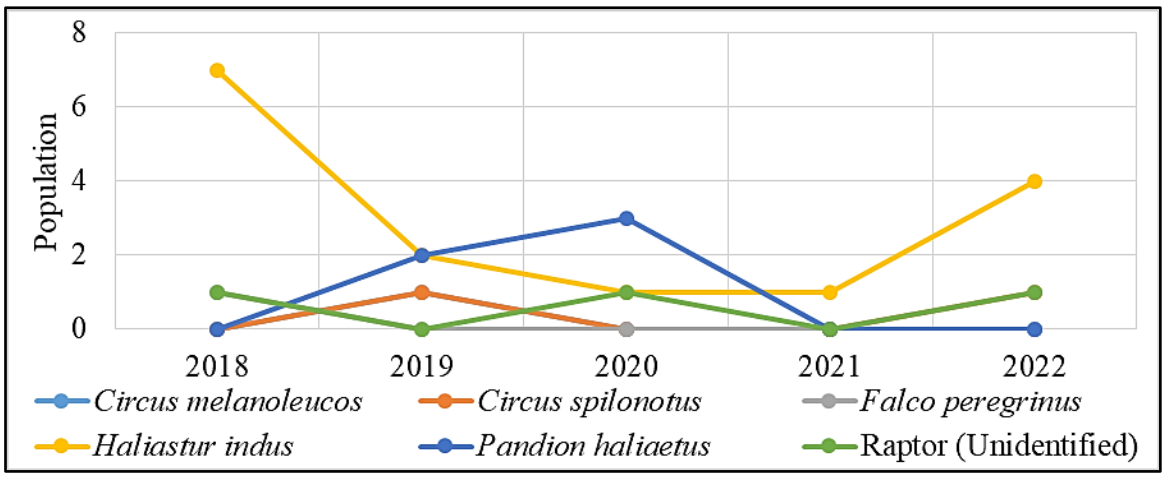


Figure 15. Population of waterbirds belonging to Accipitridae Family (Buzzards, Eagles, Harriers, Hawks and Kites) during AWC in NLNP in the past years.

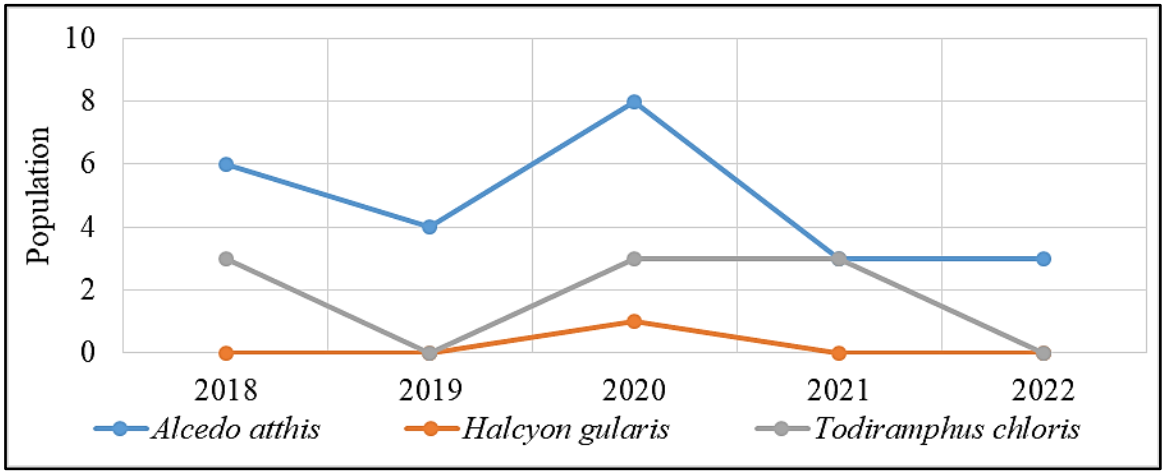


Figure 16. Population of waterbirds belonging to Alcedinidae Family (Kingfishers) during AWC in NLNP in the past years.

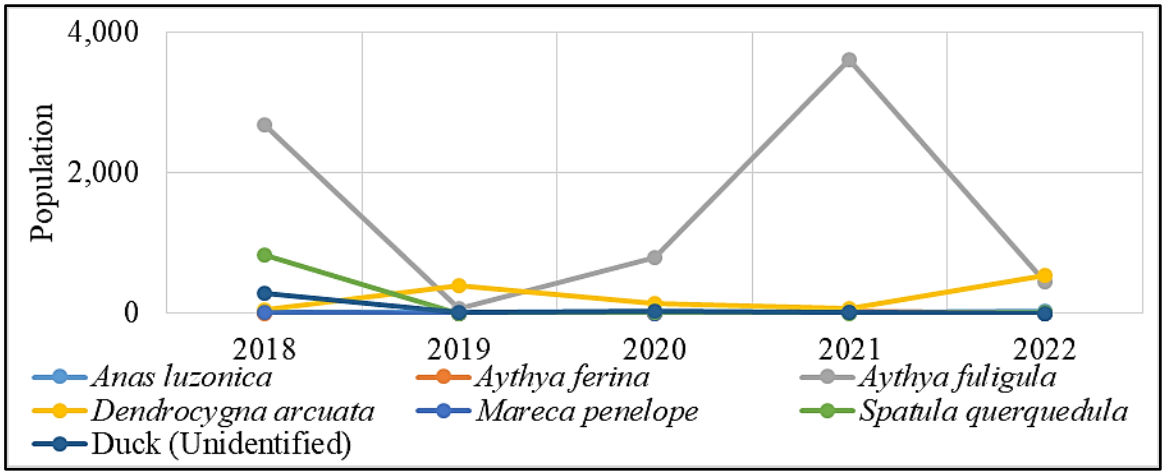


Figure 17. Population of waterbirds belonging to Anatidae Family (Ducks, Geese and Swans) during AWC in NLNP in the past years.

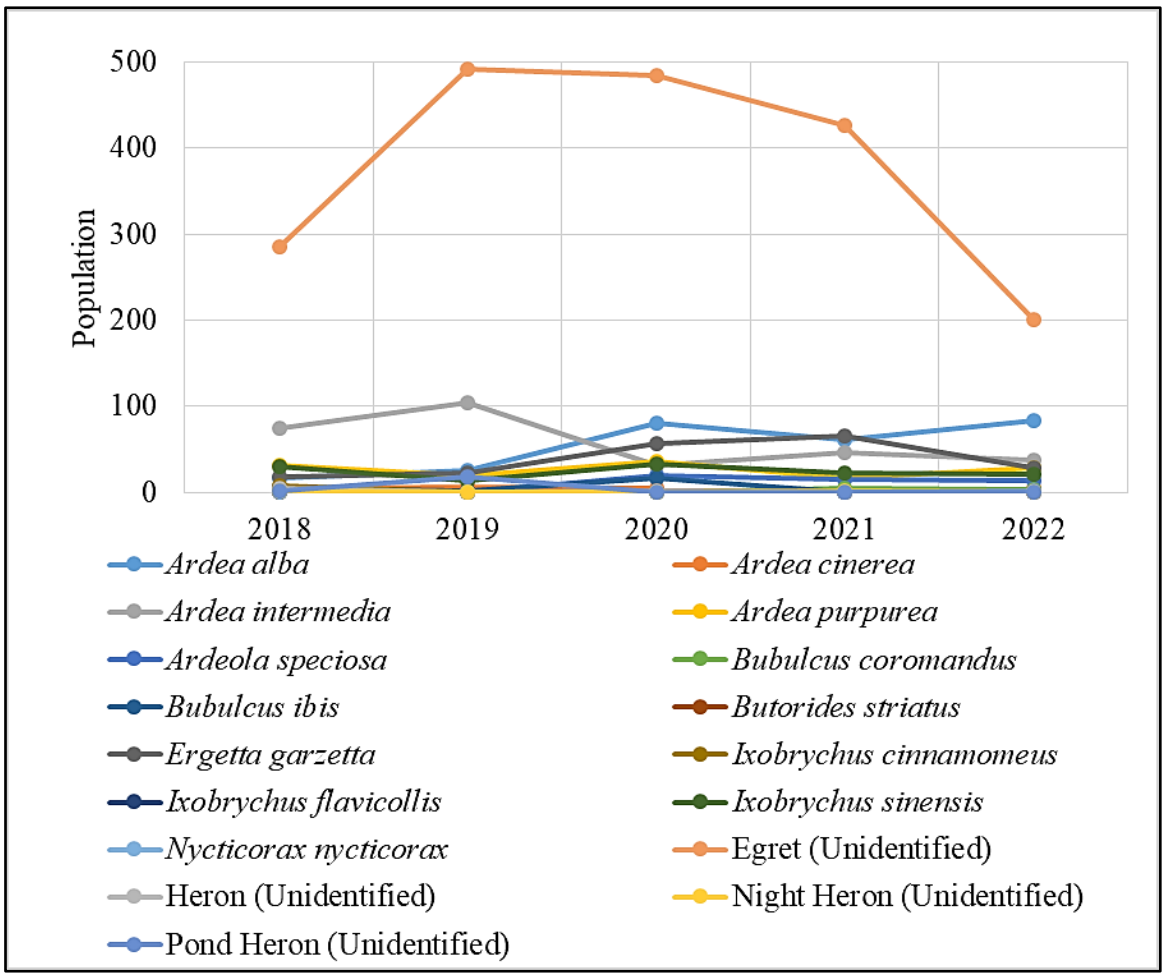


Figure 18. Population of waterbirds belonging to Ardeidae Family (Bitterns, Egrets and Herons) during AWC in NLNP in the past years.

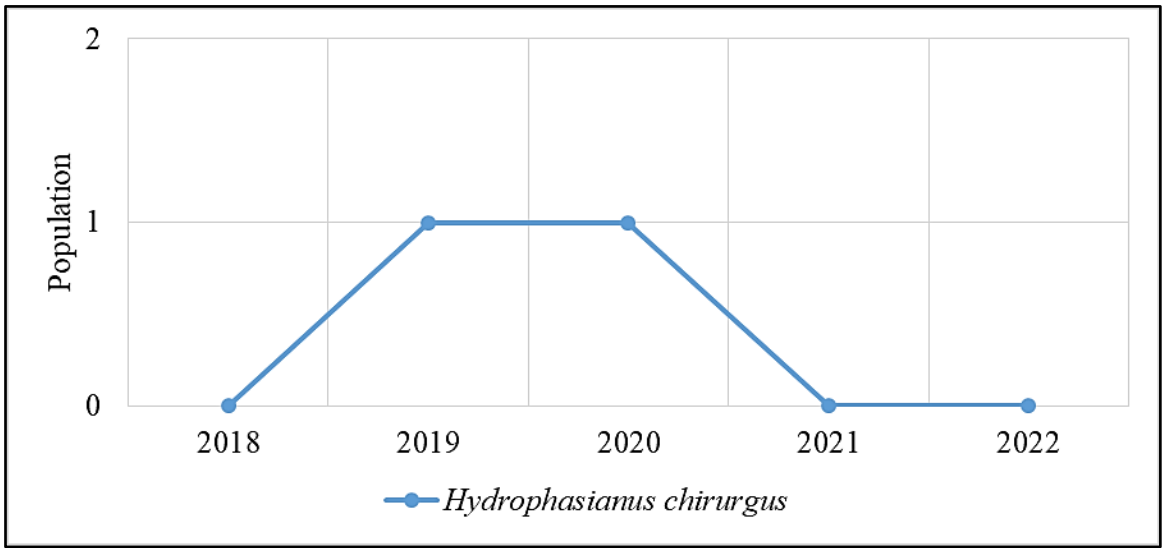


Figure 19. Population of waterbirds belonging to Jacanidae Family (Jacanas) during AWC in NLNP in the past years.

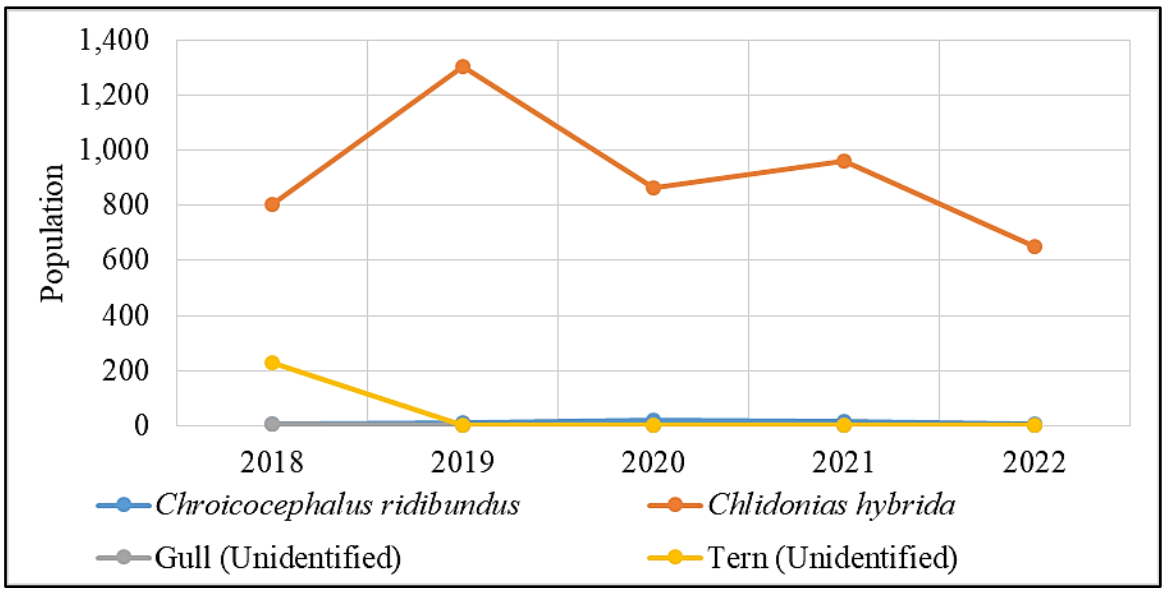


Figure 20. Population of waterbirds belonging to Laridae Family (Gulls and Terns) during AWC in NLNP in the past years.

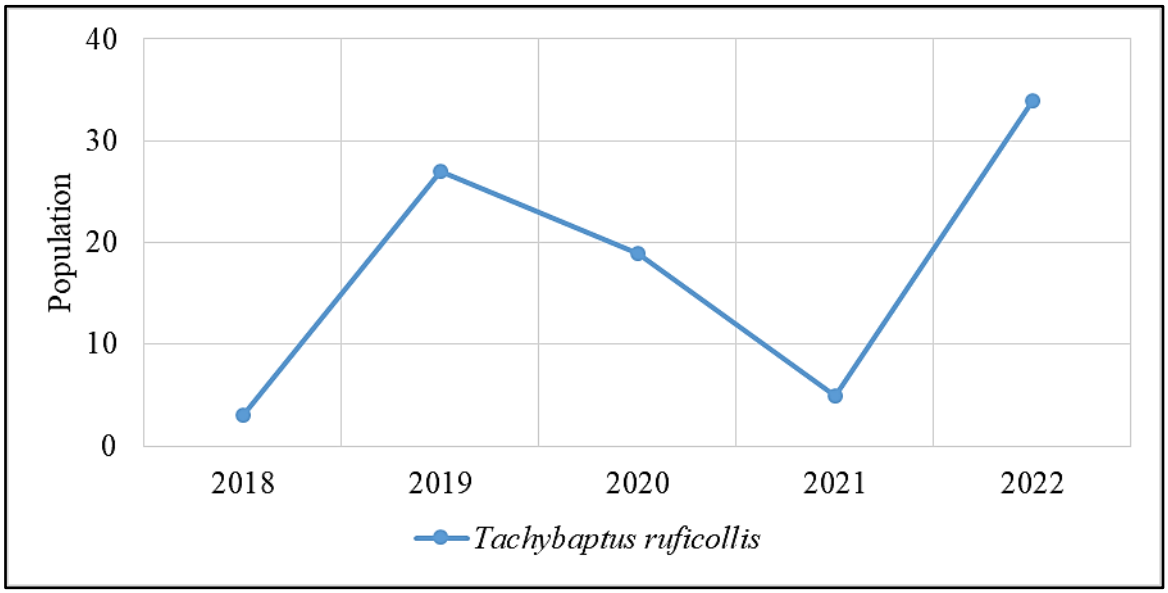


Figure 21. Population of waterbirds belonging to Podicipedidae Family (Grebes) during AWC in NLNP in the past years.

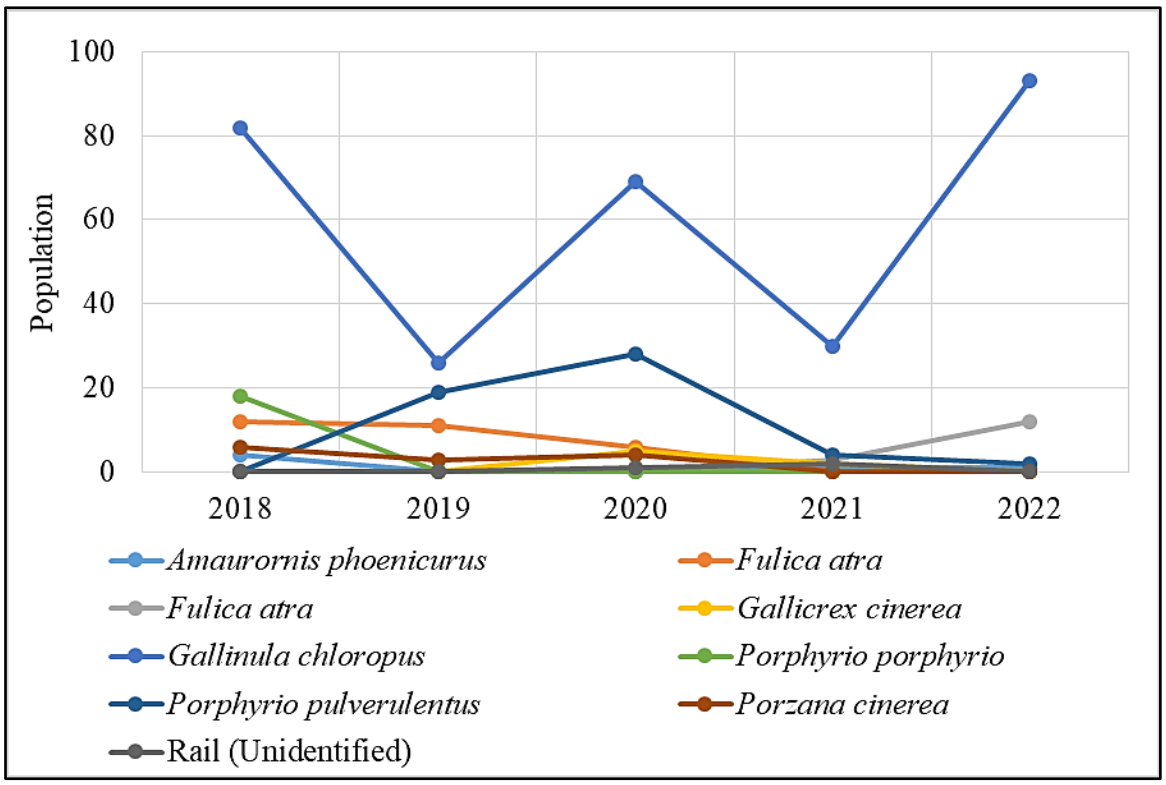


Figure 22. Population of waterbirds belonging to Rallidaee Family (Crakes, Coots, Rails and Waterhens) during AWC in NLNP in the past years.

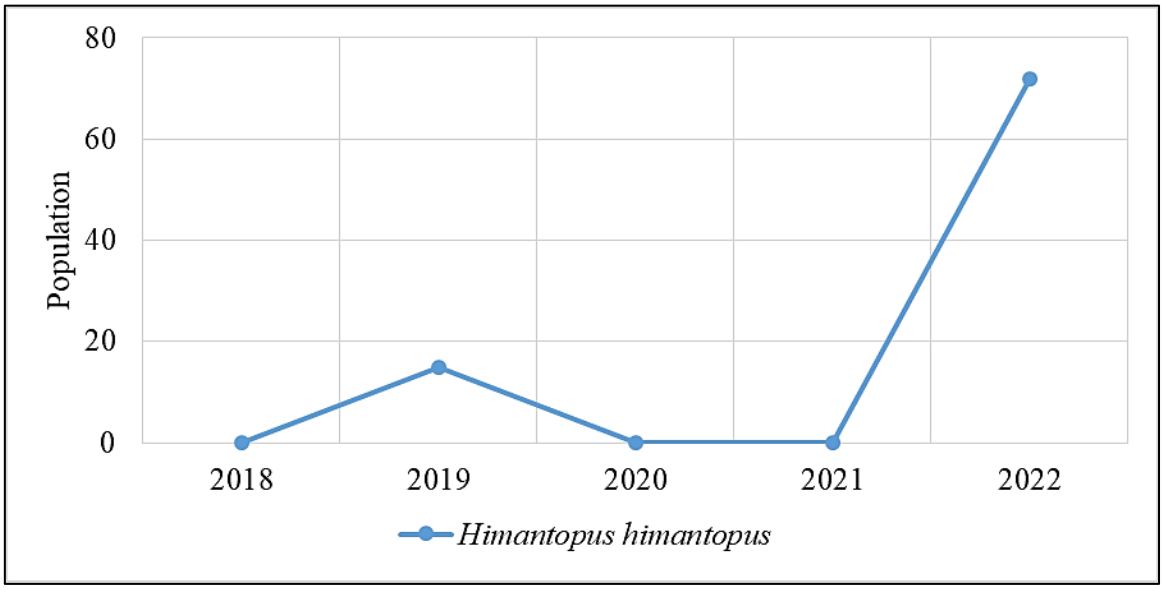


Figure 23. Population of waterbirds belonging to Recurvirostridae Family (Avocets and Stilts) during AWC in NLNP in the past years.

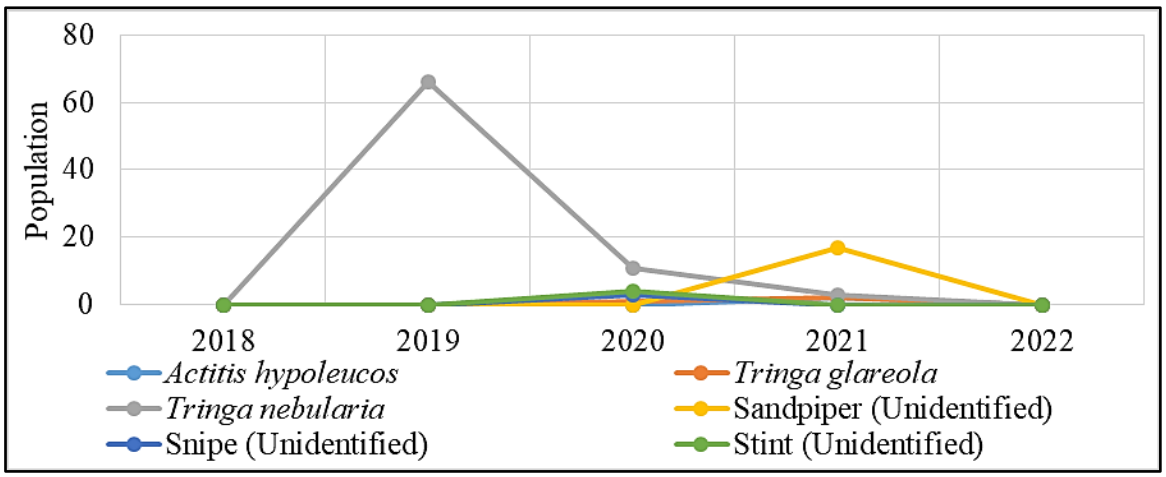


Figure 24. Population of waterbirds belonging to Scolopacidae Family (Curlews, Godwits, Sandpipers and Snipes) during AWC in NLNP in the past years.

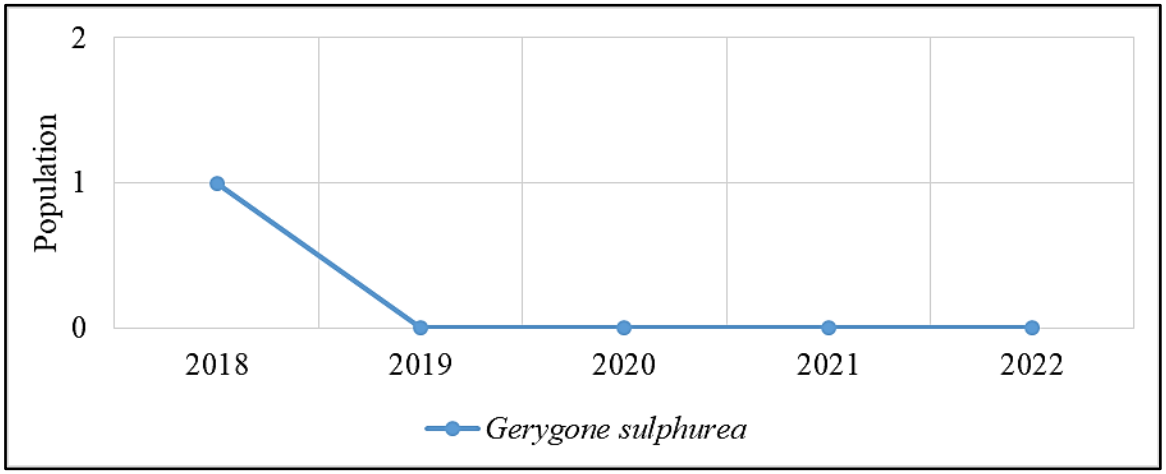


Figure 25. Population of other avian species belonging to Acanthizidae Family (Australasian Warblers) during AWC in NLNP in the past years.

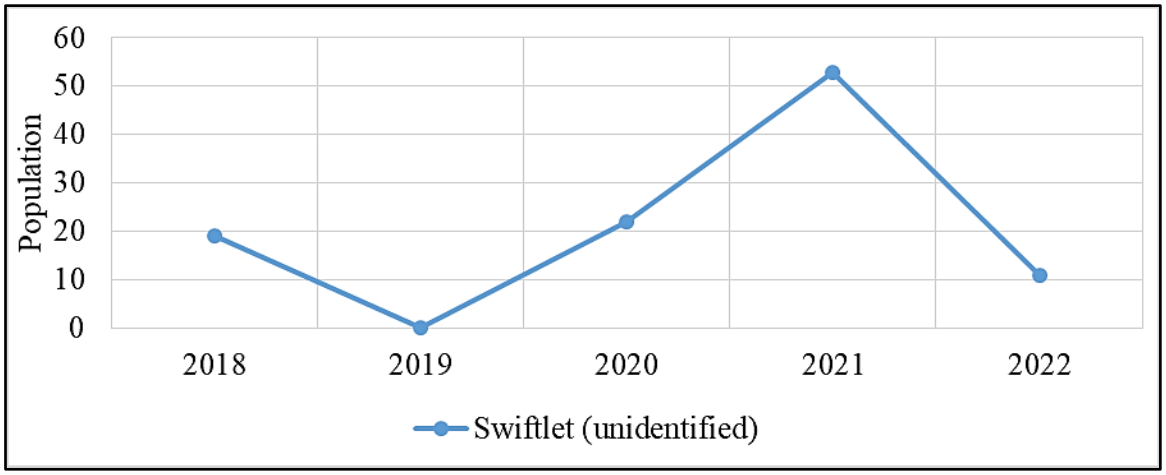


Figure 26. Population of other avian species belonging to Apodidae Family (Swifts and Swiftlets) during AWC in NLNP in the past years.

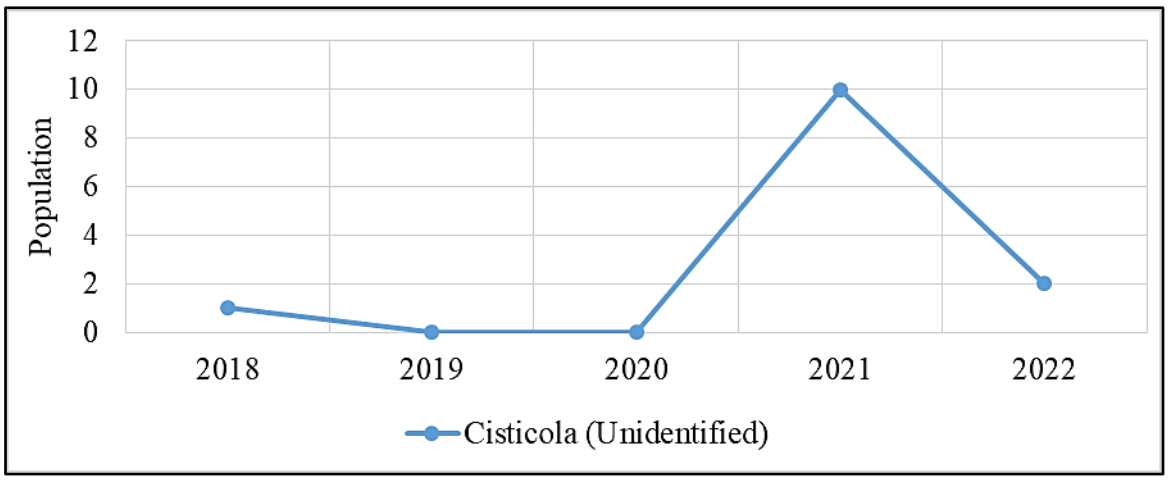


Figure 27. Population of other avian species belonging to Cisticolidae Family (Cisticolas) during AWC in NLNP in the past years.

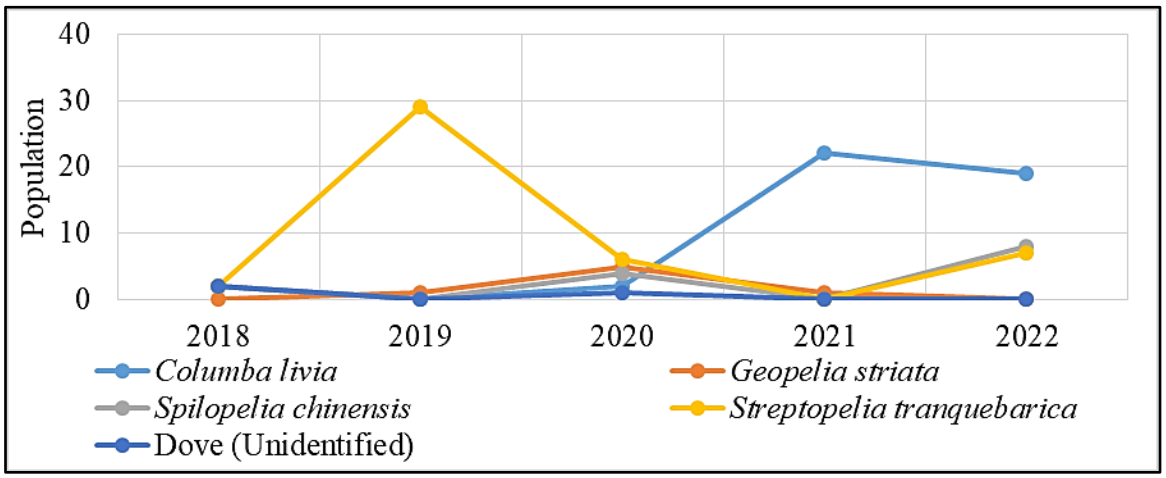


Figure 28. Population of other avian species belonging to Columbidae Family (Doves and Pigeons) during AWC in NLNP in the past years.

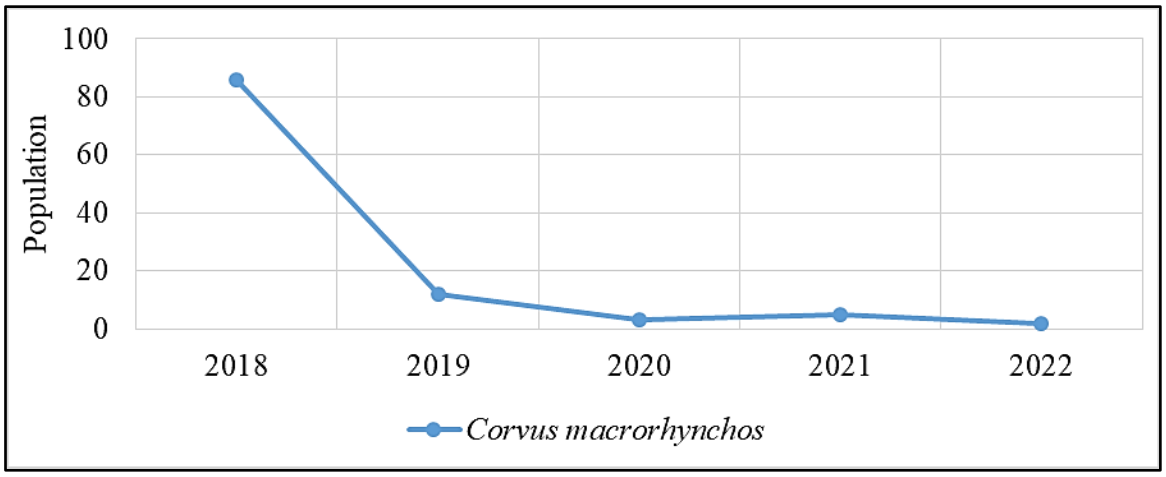


Figure 29. Population of other avian species belonging to Corvidae Family (Crows) during AWC in NLNP in the past years.

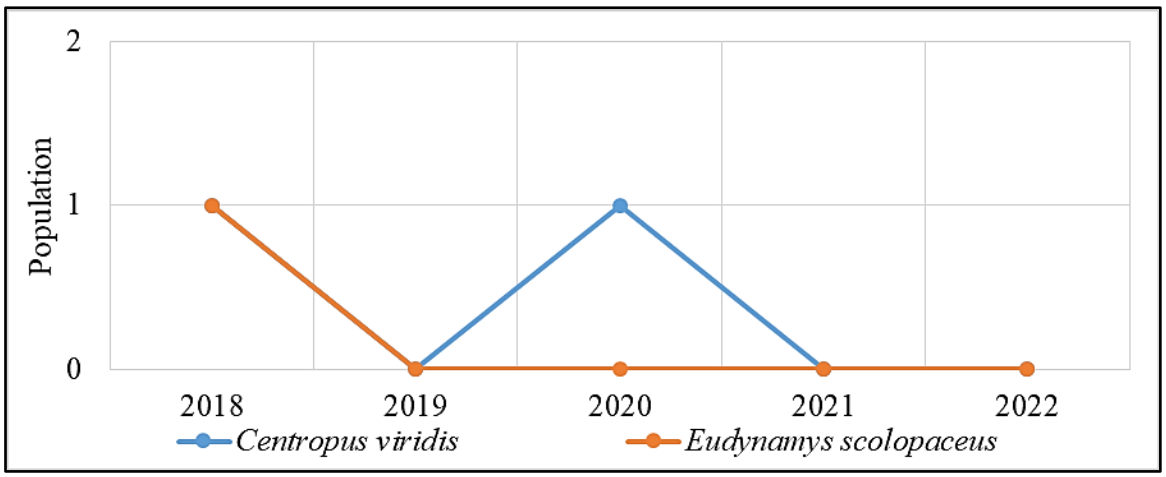


Figure 30. Population of other avian species belonging to Cuculidae Family (Coucals and Cuckoos) during AWC in NLNP in the past years.

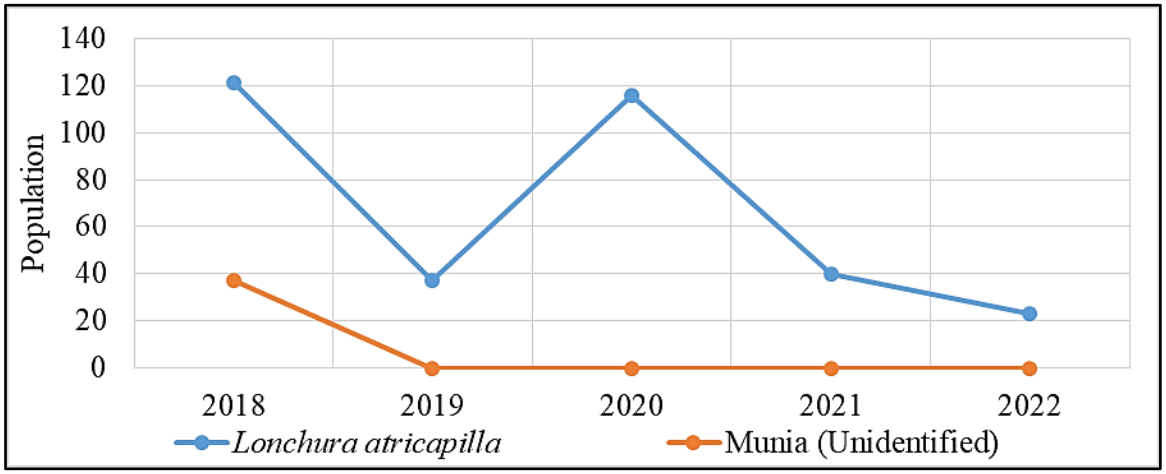


Figure 31. Population of other avian species belonging to Estrildidae Family (Munias, Parrotfinches and Waxbills) during AWC in NLNP in the past years.

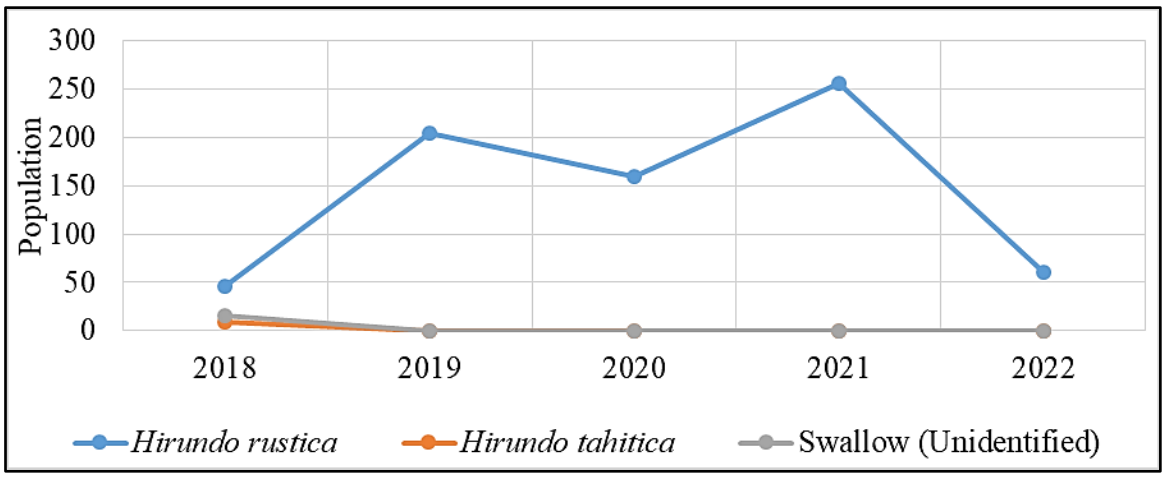


Figure 32. Population of other avian species belonging to Hirundinidae Family (Martins and Swallows) during AWC in NLNP in the past years.

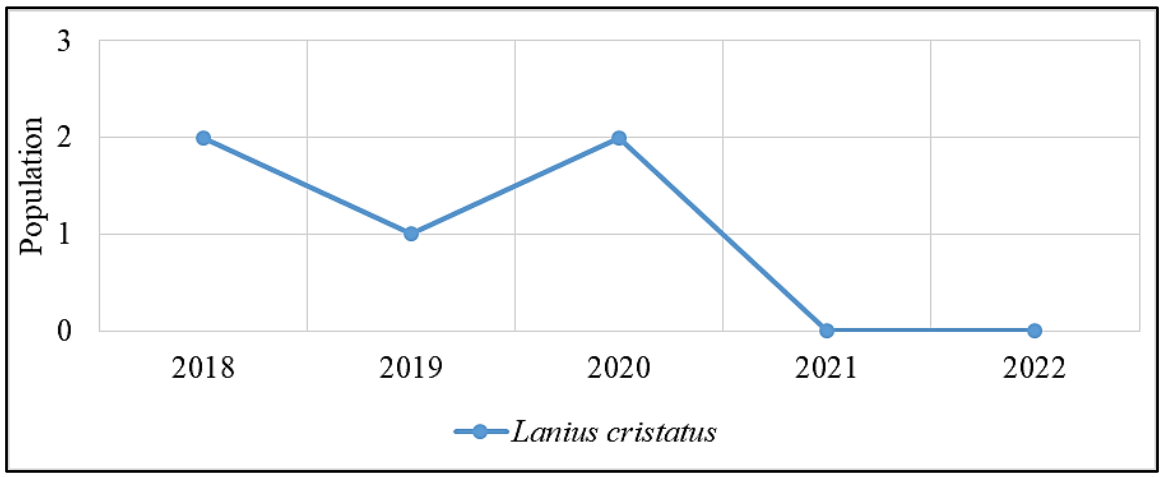


Figure 33. Population of other avian species belonging to Laniidae Family (Shrikes) during AWC in NLNP in the past years.

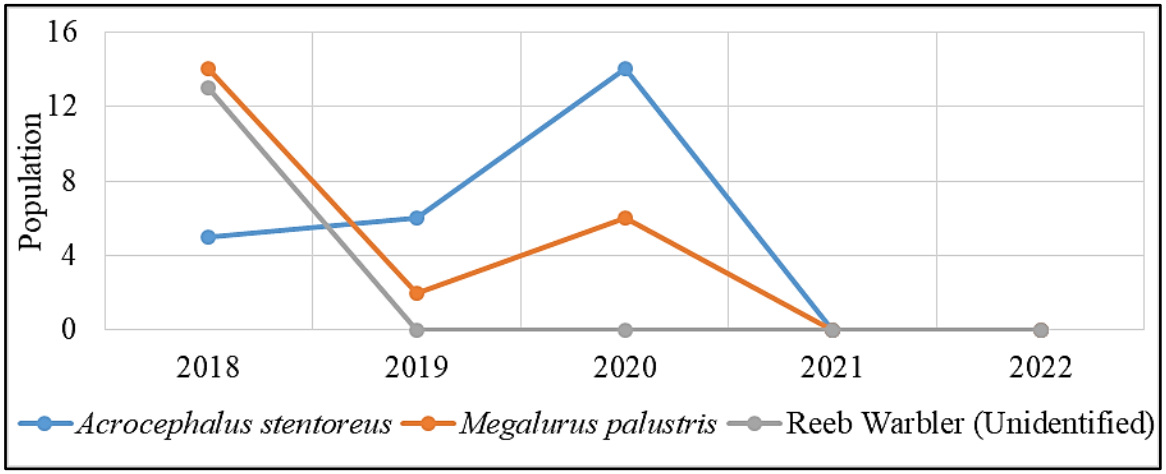


Figure 34. Population of other avian species belonging to Locustellidae Family (Grassbirds and Warblers) during AWC in NLNP in the past years.

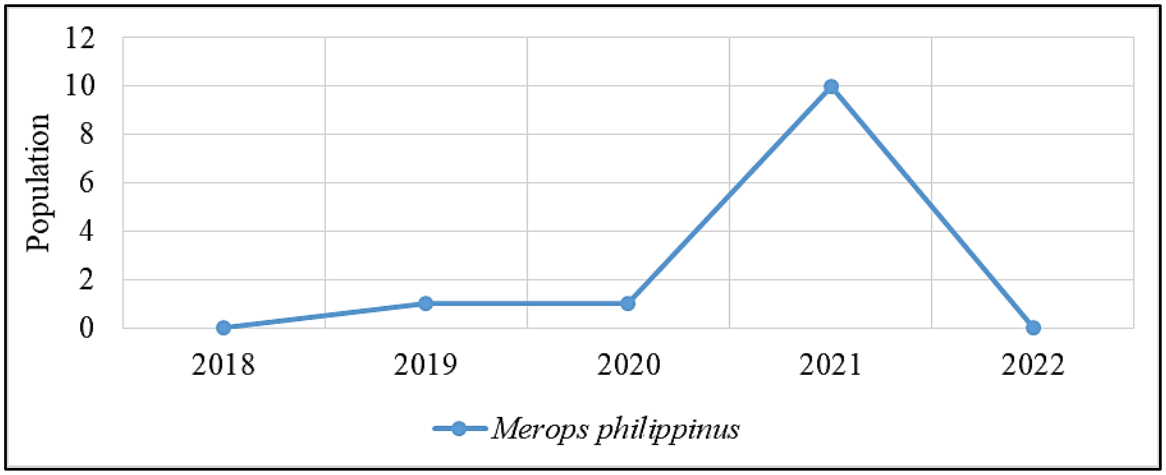


Figure 35. Population of other avian species belonging to Meropidae Family (Bee-eaters) during AWC in NLNP in the past years.

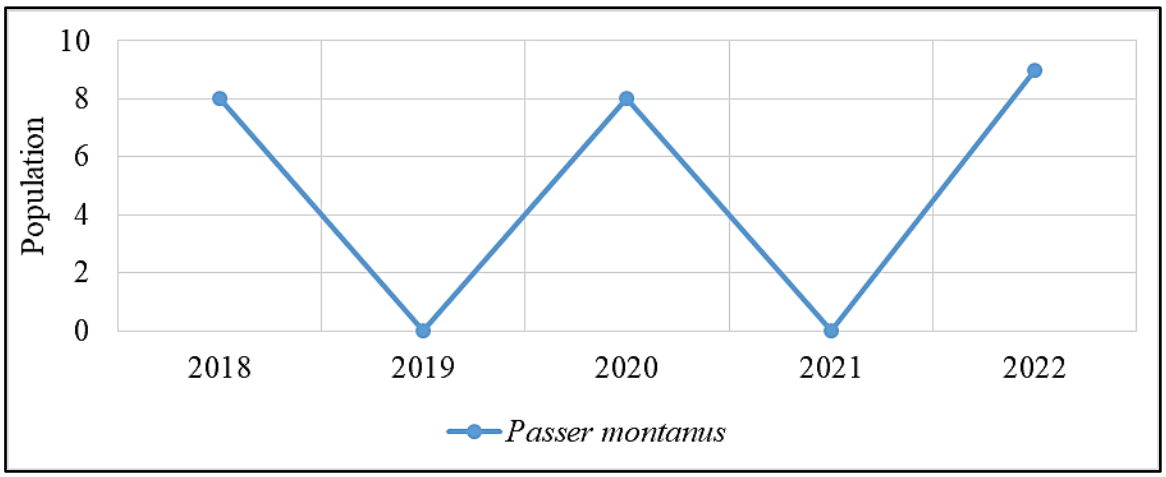


Figure 36. Population of other avian species belonging to Passeridae Family (Old World Sparrows) during AWC in NLNP in the past years.

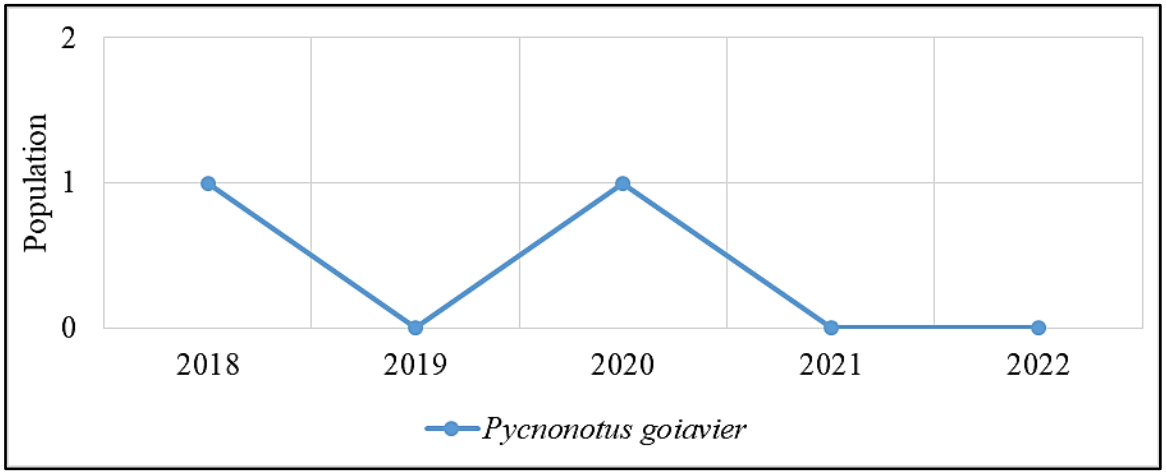


Figure 37. Population of other avian species belonging to Pycnonotidae Family (Bulbuls) during AWC in NLNP in the past years.

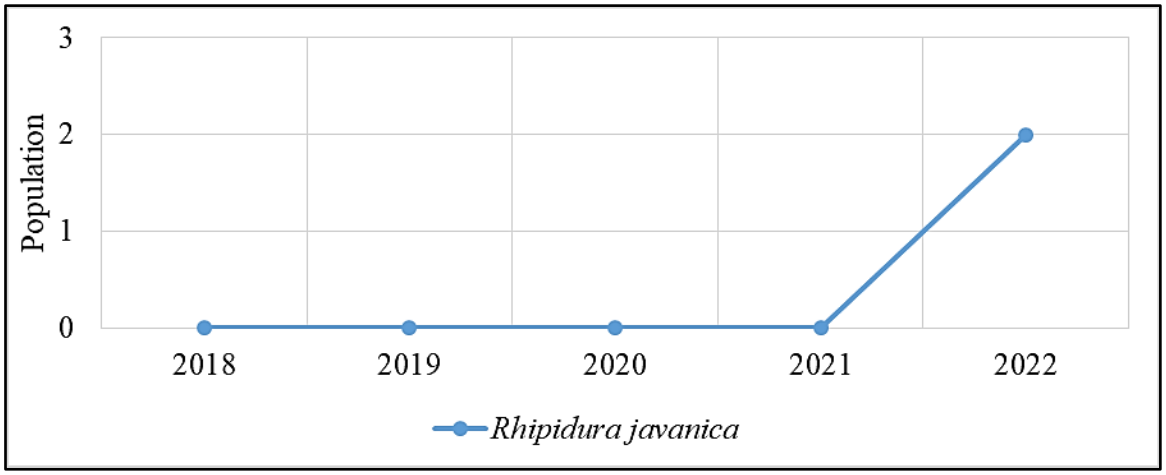


Figure 38. Population of other avian species belonging to Rhipiduridae Family (Fantails and Silktails) during AWC in NLNP in the past years.

Figure 39. Black-headed Gull (*Chroicocephalus ridibundus*) spotted on AWC 2022.

Figure 40. Black-winged Stilts (*Himantopus himantopus*) spotted on AWC 2022.

Figure 41. Great Egret (*Ardea alba*) spotted on AWC 2022.

Figure 42. Intermediate Egret (*Ardea intermedia*) spotted on AWC 2022.

Figure 43. Little Egret (*Ergetta garzetta*) spotted on AWC 2022.

Figure 44. Philippine Duck (*Anas luzonica*) spotted on AWC 2022.

Figure 45. Purple Heron (*Ardea purpurea*) spotted on AWC 2022.

Figure 46. Tufted Duck (*Aythya fuligula*) spotted on AWC 2022.

Figure 47. Wandering Whistling Duck (*Dendrocygna arcuate*) spotted on AWC 2022.

Figure 48. Whiskered Tern (*Chlidonias hybrida*) spotted on AWC 2022.

Despite the low turnout this year, about 13 species of waterbirds and three (3) species of other avian species raised its population count. About 14 species are resident while two (2) species are migratory. The Wandering Whistling Duck (*Dendrocygna arcuata*) has the highest increase in waterbirds (473 individuals), while the Eurasian Tree Sparrow (*Passer montanus*) has the highest increase in other avian species (9). The notable species observed is the presence of Philippine Duck (*Anas luzonica*). The bird count of the said vulnerable species is the highest (19 individuals) in the 5-year data analysis.

The other species that raised in count are Black-crowned Night Heron (*Nycticorax nycticorax*), Black-winged Stilt (*Himantopus himantopus*), Brahminy Kite (*Haliastur indus*), Cinnamon Bittern (*Ixobrychus cinnamomeus*), Common Moorhen (*Gallinula chloropus*), Eurasian Coot (*Fulica atra*), Garganey (*Spatula querquedula*), Great Egret (*Ardea alba*), Grey Heron (*Ardea cinerea*), Little Grebe (*Tachybaptus ruficollis*), Purple Heron (*Ardea purpurea*), Red Turtle Dove (*Streptopelia tranquebarica*) and Spotted Dove (Spilopelia chinensis).

Factors Affecting the Population of Avifauna

a. Inclement Climatic Condition

The COVID-19 pandemic greatly affected the availability, accessibility and mobility of representatives from DENR-Biodiversity Management Bureau, DENR-Regional Office, LGUs (Provincial Government - Environment and Natural Resources Office) and academe (Divine Word College). The event was initially scheduled on the 2nd week of January 2022 but was moved on the 3rd week due to conflicts of schedule of participants and other circumstances. Then, at the time of AWC, some personnel were on quarantine period. Thus, the Office resorted to conduct both face-to-face for those available and virtual meeting through Zoom for those in quarantine and/ or restricted places.

The weather on January 19, 2022 was raining which makes the bird count cumbersome. The team started the census around 7:00 am by the time the rain showered lightly. However, the visibility is still poor.

The rain indefinitely affected the birds. Majority of the species will not face the harsh weather condition. The species that the team encountered were the few avifauna that still continued their feeding and roosting activities. Thus, the census yielded low. It is expected that majority of avians continued their routine on the later time of the census as the weather became fine.

Additionally, the western side of Naujan Lake is under the jurisdiction of the Municipality of Victoria. The said place is frequently visited by rain as compared to nearby municipalities. This is an additional factor that majority of the birds on the AWC route discontinued their activities.

b. Availability of Food Source

The fisherfolks at the docking area and to the boatmen of the activity stated that the waterbirds shifted from the west side (usual route of AWC) to the east side of the lake. The bird count in Naujan Lake is typically conducted at the western side because the place is primarily a marshland area – major feeding ground of birds. Majority of the eastern side are terrestrial ecosystem with patches of marshland. With the rescheduled activity, the birds already consumed their food source on the western side and in turn foraged on what was available on the east side.

The NLNP-PAMO personnel validated the said claim. It was found that the population of birds was also low, with approximately 200 Whiskered Terns (*Chlidonias hybrida*). The statements can be true, but the count is not comparable.

The availability of food can be attributed to the strong typhoons that struck the province last year and the recent adverse weather condition during the conduct of census. Torrential rains negatively affected the availability of food and the quality of the area as habitat, thus making the population low.

Threats Affecting the Population of Avifauna

a. Land Conversion

Despite the presence of republic acts (RA 7586 and RA 10038) and Protected Area Management Board (PAMB), land conversion is always an issue to NLNP. This includes the conversion of the current land cover into agricultural and/ or residential areas. The boatmen reported areas of tree cutting on the Municipality of Victoria during the conduct of census. The mature Bangkal trees were cut for wood purposes and to pave way to construction of houses and/ or conversion to agricultural fields.

Land conversion is diminishing the habitat for the birds and other fauna in the lake. More so, the process decreases the availability of food. The NLNP-PAMO personnel were notified about the issue.

b. Improper Solid Waste Disposal

The presence of communities within the lake means the utilization of resources. With the irresponsible people, solid wastes definitely ended up in the PA. Improper solid waste disposal was observed by the participants. Furthermore, this was annotated in the previous BMS reports of the Office. Solid waste affects the birds and other fauna inside the PA. This causes pollution and death to fauna if ingested. There is a need to improve the waste disposal of barangays surrounding the lake.

c. Illegal Fishing Methods

Electro fishing, *Bayakos*, *Baklad* and *Habing* are the fishing methods included in the previous BMS reports of the Office. This adversely affects the juvenile commercial fish and other aquatic organisms living within the vicinity. With the illegal fishing methods being persistent, the activity

competes and/ or depletes the food source and in turn affects the number and feeding activity of birds.

There are portion in the Municipality of Victoria during the AWC that *Bayakos* and *Baklad* are present. After the conduct of activity, the NLNP-PAMO personnel were informed regarding the matter.

d. Poaching through the use of net (*Sigpaw*)

The last pressure affecting the population of waterbirds and other avian is poaching through the use of net, or locally known as *Sigpaw*. The activity was listed as issue in the BMS report last year. Perpetrators were not captured during the validation. The topic has been raised during the PAMB meeting. It was recommended to regulate the entry of outsiders into the PA.

Factors Affecting the Conduct of Annual Asian Waterbird Census 2022

1. **COVID-19 Pandemic**

As been mentioned, the prevailing COVID-19 pandemic affected the availability, accessibility and mobility of participating people. It was initially set on the 2nd week of January, but because of the issued Alert Level 3, it was rescheduled. The weather on the initial date is fine as compared to the rescheduled date (see Figure 4)

Despite the rescheduling, the technical personnel from PBCFI and MBCFI are in far and/ or restricted areas, while the personnel from PG-ENRO are in quarantine. The absence of representatives from the concerned LGUs and CSOs diminished the capability of the team to further identify birds.

2. **Logistical Capacity Needs Improvement**

There are more powerful binoculars, telescopes and cameras available than the current equipment of the Office. The team will be able to ascertain the unidentified species and document the activities of birds properly if the equipment are powerful and of high quality.

3. **Lack of Capacity Building**

The only personnel from DENR-CENRO Socorro with proper training on bird identification and counting was trained way back 2016. Further, despite the orientation conducted before the AWCs, there are still recording of unidentified species due to limited knowledge, skills and experience of other technical personnel.

4. **Lack of Technical Personnel**

The representatives from PBCFI, MBCFI and LGUs were absent because of travel restrictions. Some of which are in the quarantine period. The Office lost its opportunity to identify all birds encountered during the AWC because of the absence of these assets.

5. **Lack of Volunteers**

There were no volunteers from Municipal and Barangay LGUs during the activity. The AWC was only held by few personnel. Bird count will be much easier if there are many spotting people coming from LGUs.

Post-Event Evaluation Survey

The significance and success of the event in achieving the goal of Annual Asian Waterbird Census 2022 was evaluated through post-event evaluation survey. Out of the 35 total participants (see Figures 61-64), about 16 people from DENR, LGUs, academe and CSOs (core group of waterbird census), took part of the survey (see Figures 49, 50, 65 and 66). The statistics of responses are presented in the succeeding tables and figures.

Majority of the age groups of respondents directly joined the AWC (5 or 31%) came from age groups 26-35 (see Table 14 and Figure 51). About 11 or 69% are male while 5 or 31% are female (see Table 15 and Figure 51). Most of them are college student/ graduate (9 or 56%), while other respondents are masteral student/ graduate (6 or 38%) and doctoral student/ graduate (1 or 6%) (see Table 16 and Figure 51). Lastly, 13 or 81% came from government institution specifically DENR, with representatives from academe (2 or 13%) and CSO (1 or 6%) (see Table 17 and Figure 52).

Table 14. Age-groups of respondents.

Age-Group	Total	Percentage
21-25	2	12.5000
26-30	5	31.2500
31-35	5	31.2500
36-40	0	0.0000
41-45	1	6.2500
46-50	1	6.2500
51-55	1	6.2500
56-60	0	0.0000
61 and above	1	6.2500
Total	16	100.0000

Table. 15. Gender of respondents.

Gender	Total	Percentage
Male	11	68.7500
Female	5	31.2500
Total	16	100.0000

Table 16. Educational attainment of respondents.

Educational Attainment	Total	Percentage
Elementary Student/ Graduate	0	0.0000
High School Student/ Graduate	0	0.0000
College Student/ Graduate	9	56.2500
Masteral Student/ Graduate	6	37.5000
Doctoral Student/ Graduate	1	6.2500
Total	16	100.0000

Table 17. Affiliation of respondents.

Affiliation	Total	Percentage
Government Institution	13	81.2500
Academe	2	12.5000
Civil Service Organization	1	6.2500
Total	16	100.0000

For the 1st question, 15 out of 16 respondents (94%) answered that the topic is very relevant and timely (4 maximum points). However, one (1) person (6%) answered only 3 points to the question (see Table 18 and Figure 52).

Table 18. Responses in relevance and timeliness of the topic.

Relevance and Timely Topic	Total	Percentage
4 (Highest)	15	93.7500
3	1	6.2500
2	0	0.0000
1 (Lowest)	0	0.0000
Total	16	100.0000

For the 2nd question, 14 out of 16 respondents (88%) answered that the topic is complete and accurate (4 maximum points). Nevertheless, two (2) people (13%) answered only 3 points to the question (see Table 19 and Figure 52).

Table 19. Responses in the completeness and accuracy of the topic.

Completeness and Accuracy of the Topic	Total	Percentage
4 (Highest)	14	87.5000
3	2	12.5000
2	0	0.0000
1 (Lowest)	0	0.0000
Total	16	100.0000

For the 3rd question, 14 out of 16 respondents (88%) answered that the learning objectives were met (4 maximum points). Alternatively, two (2) people (13%) answered only 3 points to the question (see Table 20 and Figure 53).

Table 20. Responses in achieving the learning objectives.

Achievement of Leaning Objectives	Total	Percentage
4 (Highest)	14	87.5000
3	2	12.5000
2	0	0.0000
1 (Lowest)	0	0.0000
Total	16	100.0000

For the 4th question, 14 out of 16 respondents (88%) answered that the presentation is complete (4 maximum points). On the contrary, two (2) people (13%) answered only 3 points to the question (see Table 21 and Figure 53).

Table 21. Responses in the rate of presentation.

Rating of Presentation	Total	Percentage
4 (Highest)	14	87.5000
3	2	12.5000
2	0	0.0000
1 (Lowest)	0	0.0000
Total	16	100.0000

For the 5th question, 14 out of 16 respondents (88%) answered that the resource speaker is prepared and organized (4 maximum points). Yet, two (2) people (13%) answered only 3 points to the question (see Table 22 and Figure 53).

Table 22. Responses in the preparedness and organization of the resource speaker.

Preparedness of and Organization of Resource Speaker	Total	Percentage
4 (Highest)	14	87.5000
3	2	12.5000
2	0	0.0000
1 (Lowest)	0	0.0000
Total	16	100.0000

For the 6th question, 15 out of 16 respondents (94%) answered that the speaker is knowledgeable in the topic (4 maximum points), whereas one (1) person (6%) answered only 3 points to the question (see and Table 23 and Figure 54).

Table 23. Responses in the knowledge of resource speaker to the topic.

Knowledge of Resource Speaker to the Topic	Total	Percentage
4 (Highest)	15	93.7500
3	1	6.2500
2	0	0.0000
1 (Lowest)	0	0.0000
Total	16	100.0000

For the 7th question, 14 out of 16 respondents (88%) answered that the terminologies and concepts were completely delivered (4 maximum points). Conversely, two (2) people (13%) answered only 3 points to the question (see Table 24 and Figure 54).

Table 24. Responses in the effectiveness of communicating the terminologies and concepts.

Effectiveness of Communicating the Terminologies and Concepts	Total	Percentage
4 (Highest)	14	87.5000
3	2	12.5000
2	0	0.0000
1 (Lowest)	0	0.0000
Total	16	100.0000

For the 8th question, 15 out of 16 respondents (94%) answered that their queries and/ or clarifications were answered. However, only one (1) person (6%) answered only 3 points to the question (see Table 25 and Figure 54).

Table 25. Responses in answering the queries and/ or clarifications of participants.

Answering the Queries and/ or Clarifications of Participants	Total	Percentage
4 (Highest)	15	93.7500
3	1	6.2500
2	0	0.0000
1 (Lowest)	0	0.0000
Total	16	100.0000

For the 9th question, 14 out of 16 respondents (88%) rated the speaker maximum points (4 maximum points). Nevertheless, two (2) people (13%) answered only 3 points to the question (see Table 26 and Figure 55).

Table 26. Responses in the overall rate of the speaker.

Overall Rate of the Speaker	Total	Percentage
4 (Highest)	14	87.5000
3	2	12.5000
2	0	0.0000
1 (Lowest)	0	0.0000
Total	16	100.0000

For the 10th question, 11 out of 16 respondents (69%) believed that the amount of time is enough for the conduct of waterbird census (4 maximum points). Alternatively, four (4) people (25%) answered only 3 points. Meanwhile, one (1) person (6%) answered 2 points (see Table 27 and Figure 55).

Table 27. Responses in the amount of time for the conduct of waterbird census.

Amount of Time for the Conduct of Waterbird Census	Total	Percentage
4 (Highest)	11	68.7500
3	4	25.0000
2	1	6.2500
1 (Lowest)	0	0.0000
Total	16	100.0000

For the 11th question, 14 out of 16 respondents (88%) are interested in future waterbird census (4 maximum points). Despite of this, two (2) people (13%) answered only 3 points to the question (see Table 28 and Figure 55).

Table 28. Responses in the level of interest of participants in attending future waterbird census.

Level of Interest of Participants in Attending Future Waterbird Census	Total	Percentage
4 (Highest)	14	87.5000
3	2	12.5000
2	0	0.0000
1 (Lowest)	0	0.0000
Total	16	100.0000

For the 12th question, 15 out of 16 respondents (94%) will recommend others to participate in future waterbird census. On the contrary, one (1) person (6%) answered only 3 points to the question (see Table 29 and Figure 56).

Table 29. Responses in recommending others to participate in future waterbird census.

Willingness to Recommend Others to Participate in Other Waterbird Census	Total	Percentage
4 (Highest)	15	93.7500
3	1	6.2500
2	0	0.0000
1 (Lowest)	0	0.0000
Total	16	100.0000

For the last question, 13 out of 16 respondents (81%) rated the AWC 2022 a maximum point for the overall rating. Meanwhile, three (3) people (19%) rated the only 3 points to the question (see Table 30 and Figure 56).

Table 30. Responses in overall rating of Asian Waterbird Census 2022.

Overall Rating	Total	Percentage
4 (Highest)	13	81.2500
3	3	18.7500
2	0	0.0000
1 (Lowest)	0	0.0000
Total	16	100.0000

Fortunately, all respondents (21 or 100%) are willing to participate in the Asian Waterbird Censis next year (see Table 31and Figures 59-60).

Table 31. Responses in the willingness to participate in waterbird count next year.

Willingness to Participate in Next Year's Waterbird Count	Total	Percentage
Yes	21	100.0000
No	0	0.0000
Total	21	100.0000

Hereunder are the list of experience and emotions evoked by the AWC 2022 to the respondents (see Figures 57-58):

1. Interesting;
2. Educational;
3. Great;
4. Comfortable;
5. Fun and exciting;
6. Enjoyable;
7. Success;
8. Awesome;
9. Fruitful;

10. Tiring;
11. Ok but a little bit of confusing; and
12. Not so nice because of the rain.

Majority of the answers (9) of respondents in their experience about AWC are positive, while others got confused, tired and affected by the rain.

To improve the future topics and upcoming webinars, respondents suggested the following (see Figures 56-57):

1. Face-to-face;
2. Improvement of internet connection;
3. Livestream of AWC;
4. More/ frequent bird identification activities/ exercises;
5. More lectures;
6. Seminars;
7. Capacity building on birding;
8. Invite more volunteers;
9. Invite other NGAs, LGUs, private sectors and volunteers to survey the entire area and gather more accurate data; and
10. Include the types of habitats, calls and diets of each species in the discussion to better identify the birds.

In the listed comments/ suggestions/ recommendations, face-to-face meeting were already implemented for available participants while adhering to proper health protocols in this pandemic. The method shall be replicated next year depending on the alert level status of the province.

With regards to inviting NGAs, LGUs, private sectors and volunteers, communications were sent to concerned Offices. Representatives for this year are minimal because of the

prevailing pandemic that affected the accessibility, mobility and availability of participants. To address this, the Office resorted to utilize Zoom platform for the resource speaker and available participants in quarantine and far/ restricted area.

Improvement of internet connection is outside the jurisdiction of Office. It is reliant on the service provider and signal of the internet. More so, internet subscription is dependent on the work and financial plan of the Office per approved General Appropriations Act.

Proper health protocols such as wearing of face mask, social distancing and disinfection of hands were strictly observed during the conduct of activity. Face-to-face meeting was held for the available participants, while virtual meeting through Zoom was conducted to participants in far/ restricted areas and in quarantine.

The recommendations of respondents to make the future AWC better are listed as follows (see Figures 59-60):

1. Face-to-face;
2. Earlier posting of schedule;
3. Enough preparation;
4. More time;
5. More lecture;
6. Seminar;
7. Physical participation of other NGAs and NGOs; and
8. Invite more volunteers and include the entire NLNP.

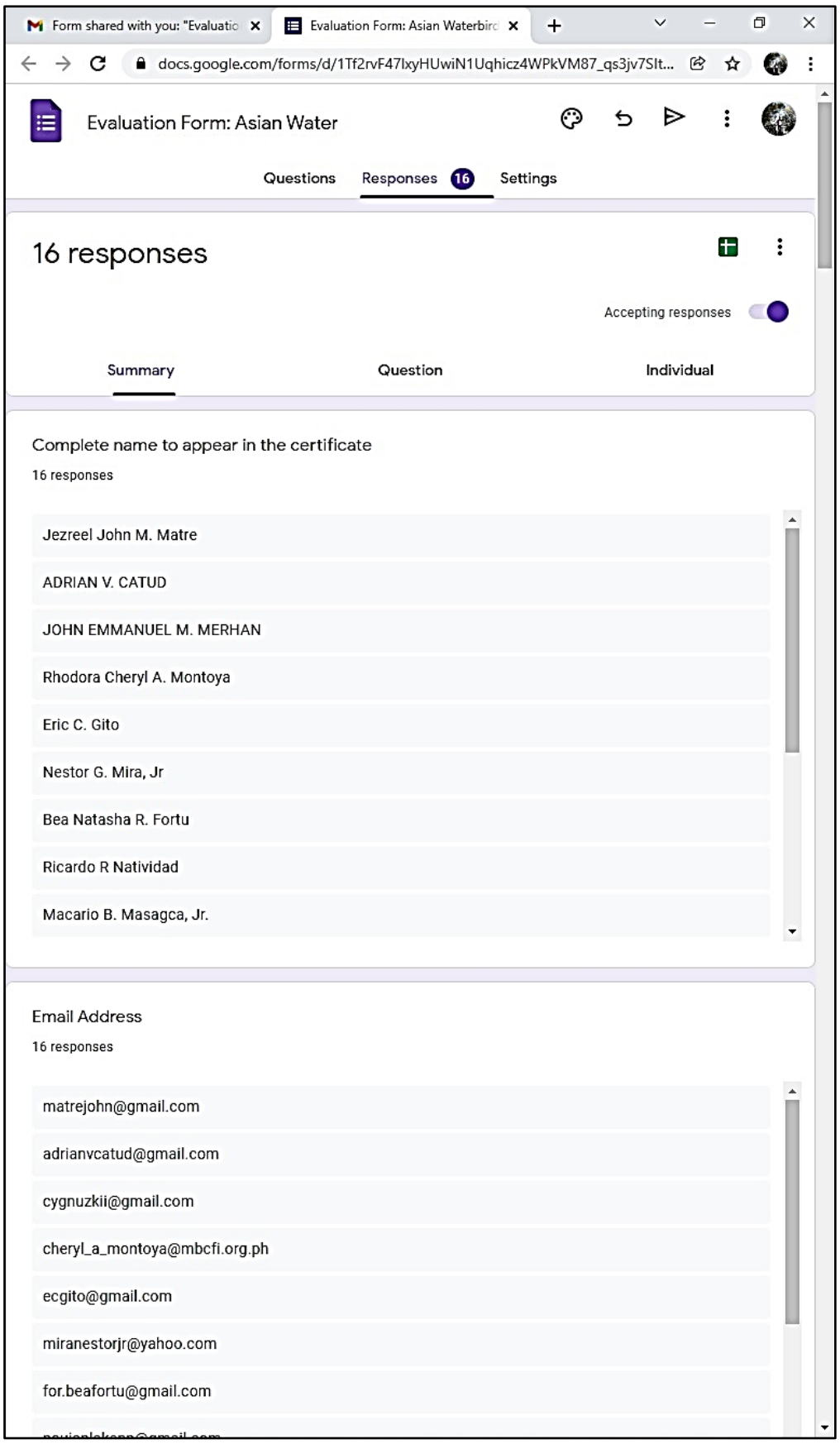


Figure 49. Results of Post-Event Evaluation Survey (Part 1).

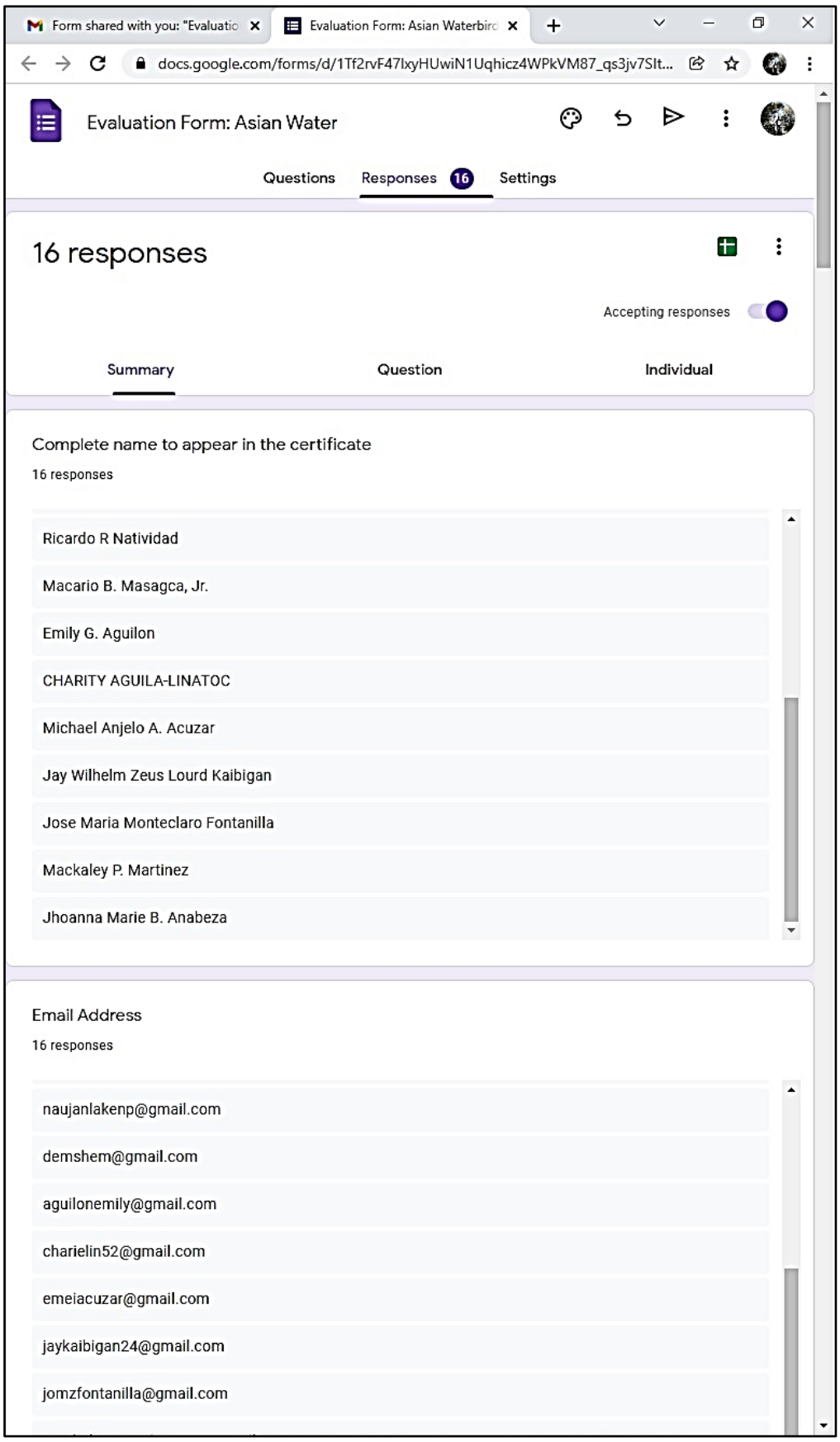


Figure 50. Results of Post-Event Evaluation Survey (Part 2).

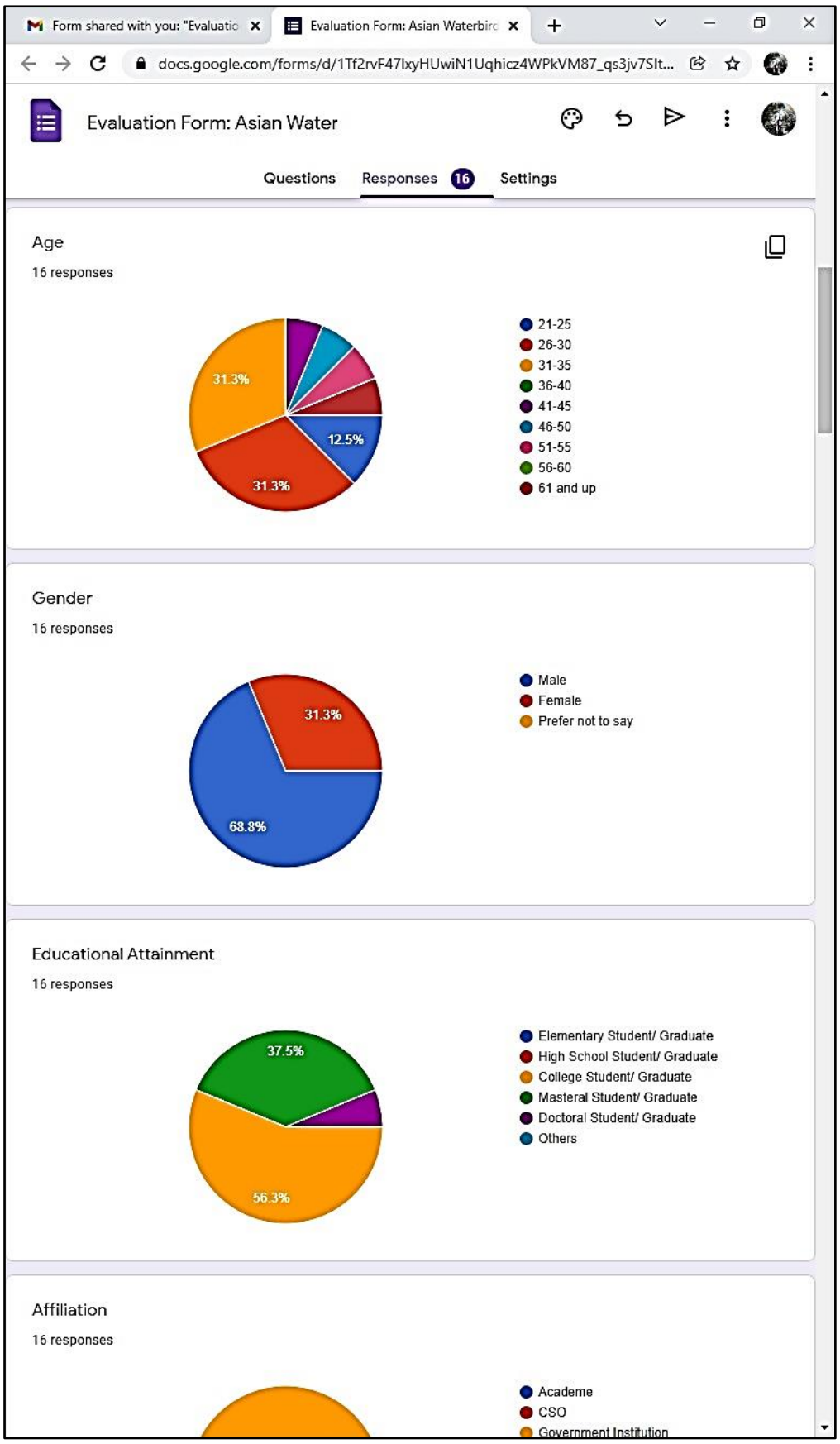


Figure 51. Results of Post-Event Evaluation Survey (Part 3).

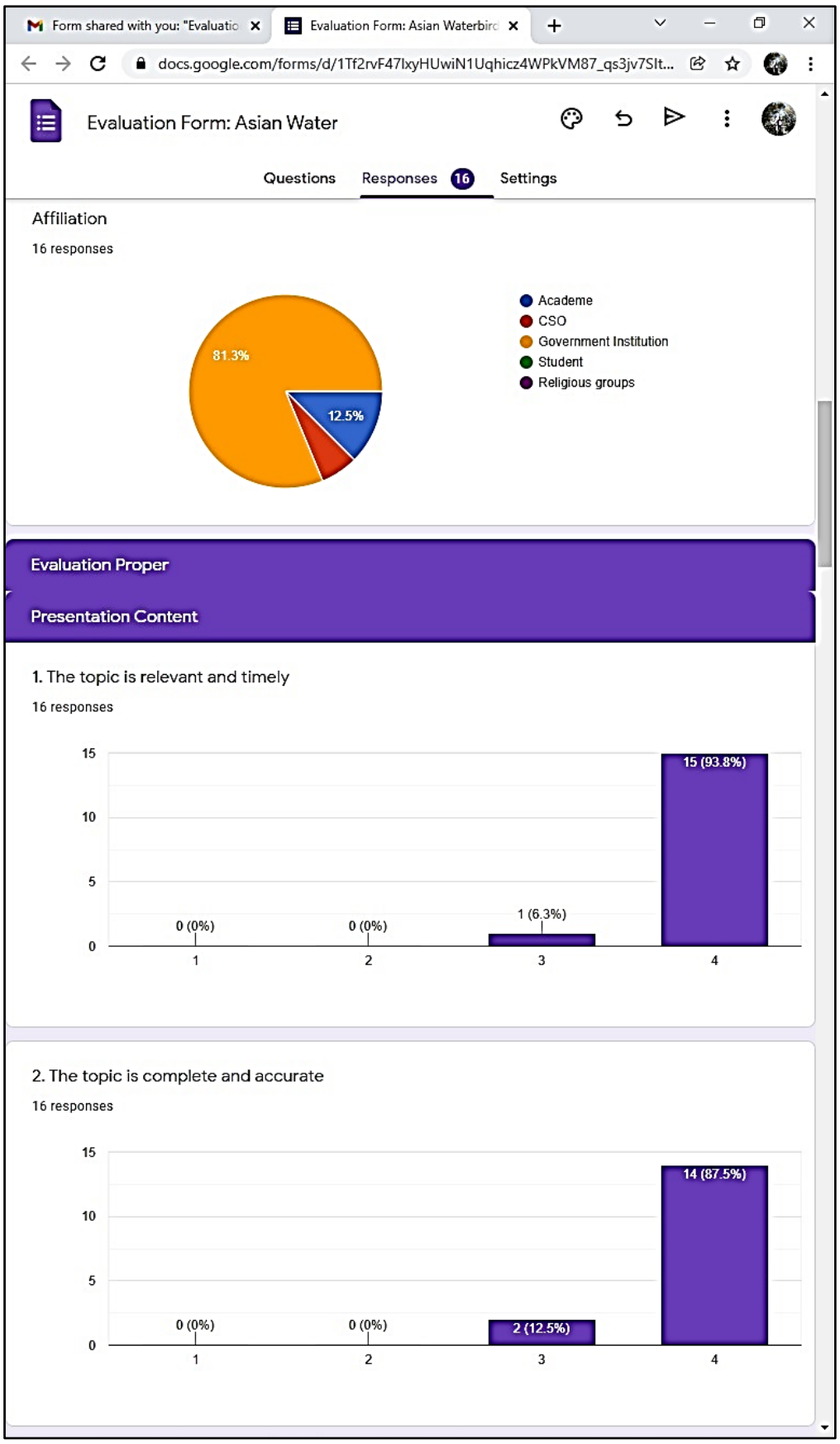


Figure 52. Results of Post-Event Evaluation Survey (Part 4).

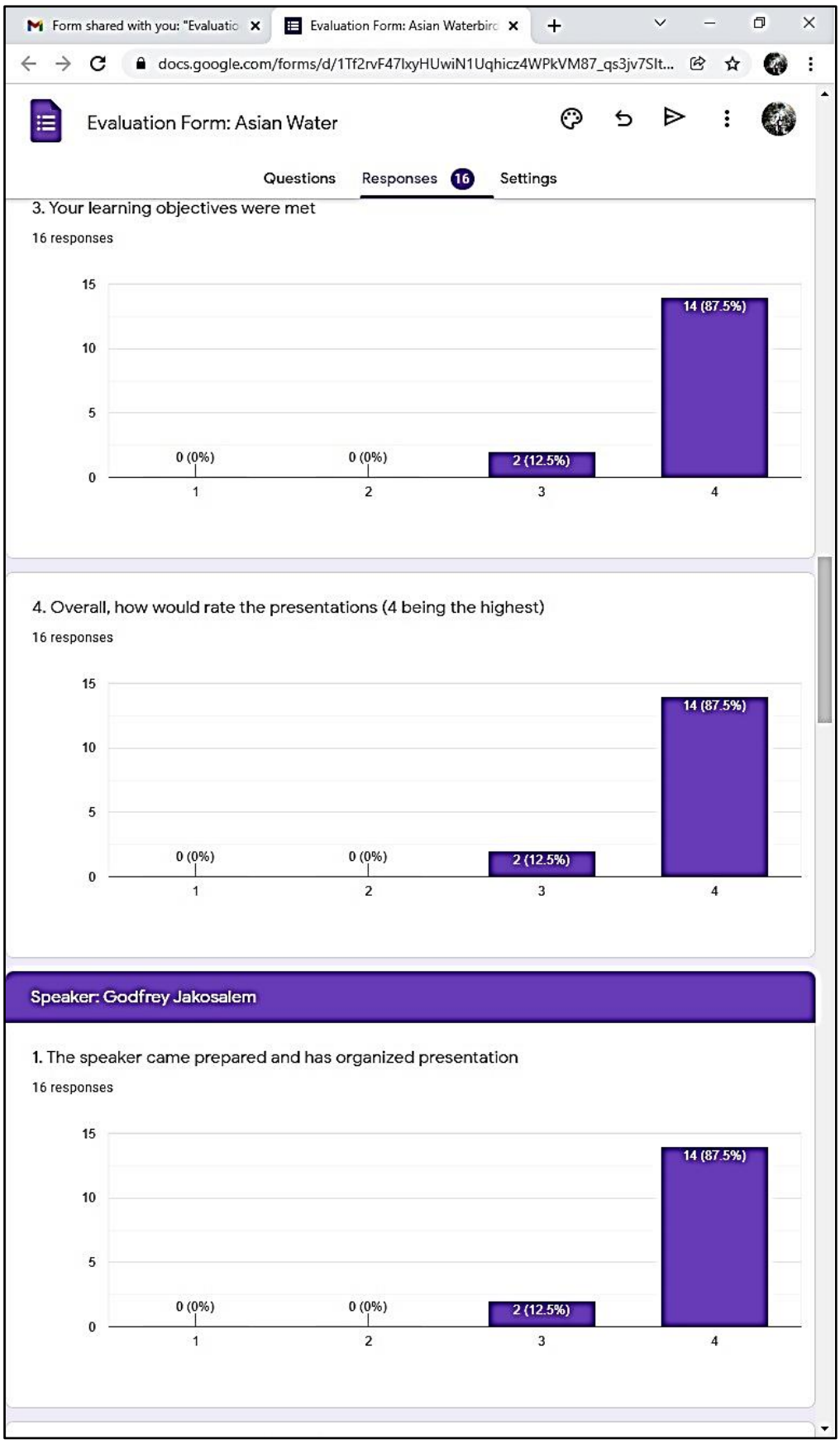


Figure 53. Results of Post-Event Evaluation Survey (Part 5).

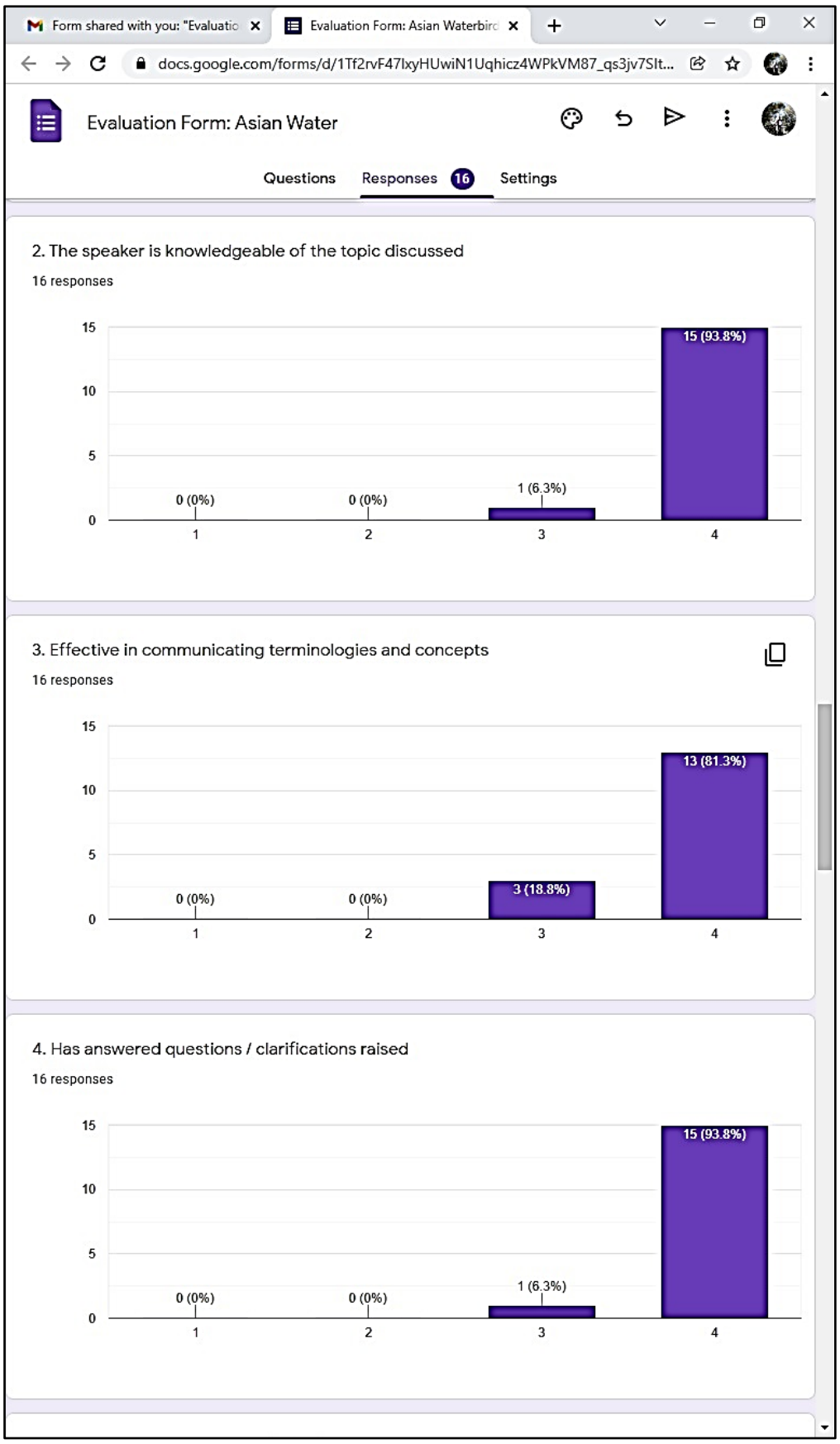
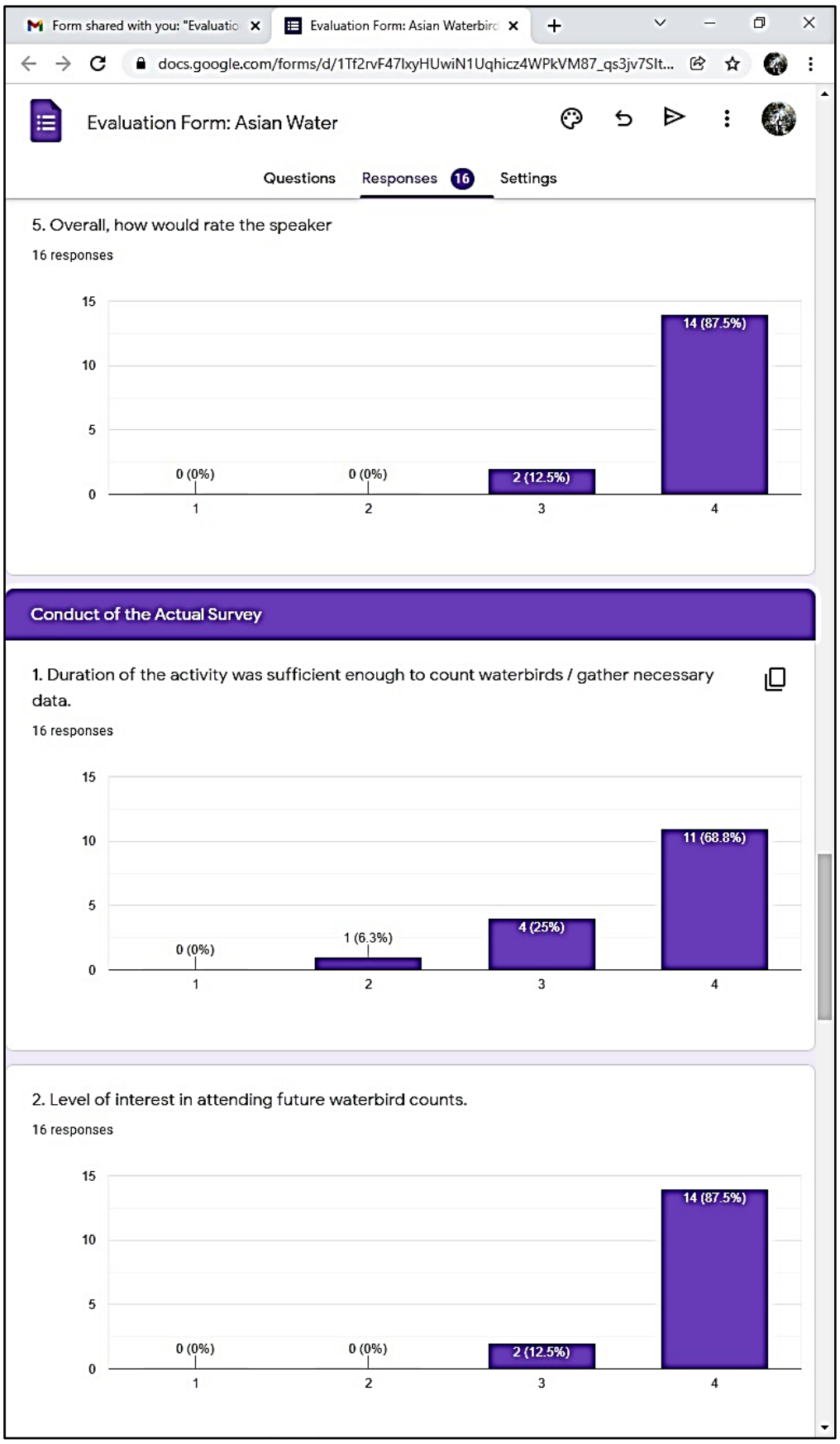


Figure 54. Results of Post-Event Evaluation Survey (Part 6).



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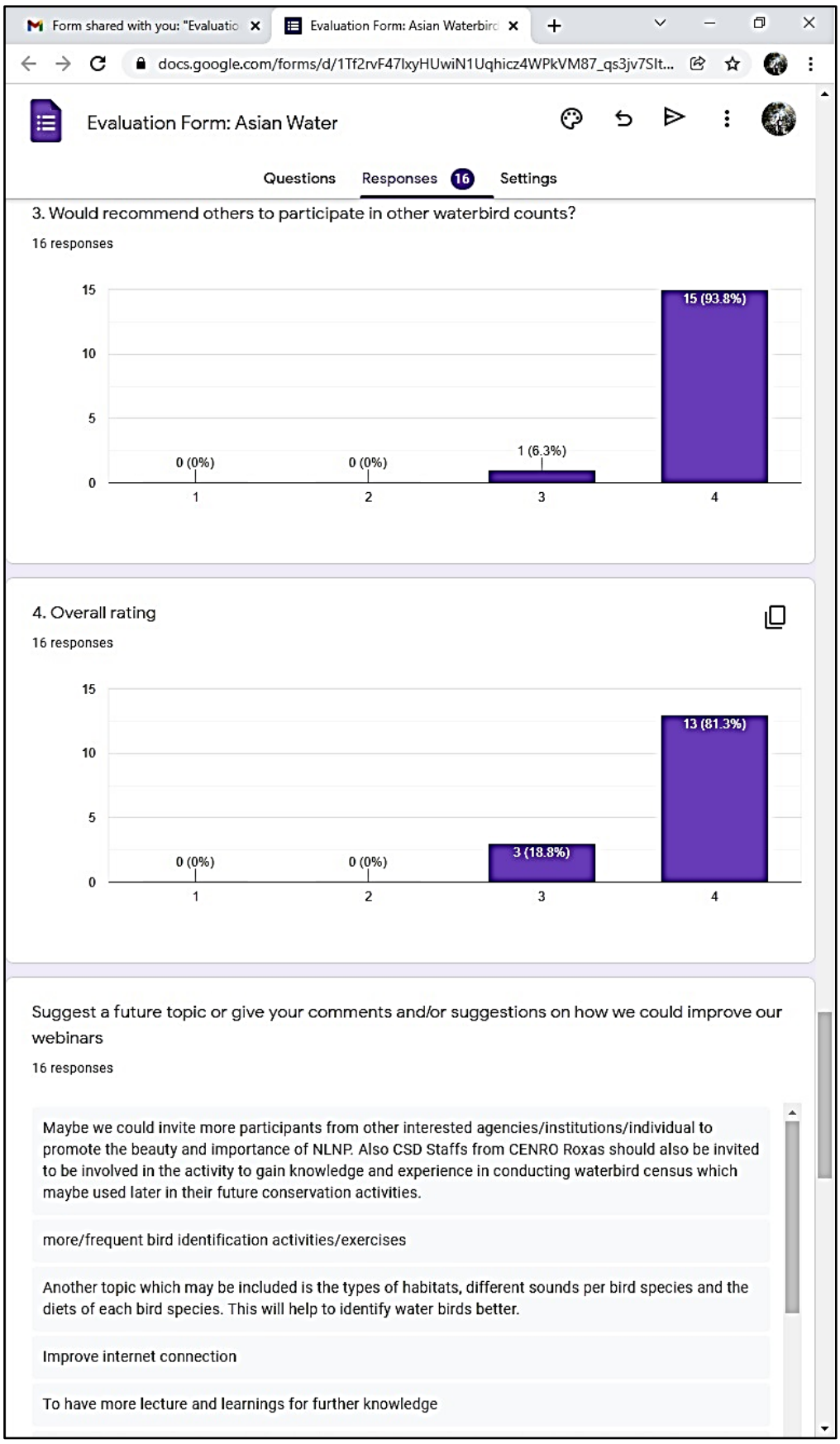

Figure 56. Results of Post-Event Evaluation Survey (Part 8).

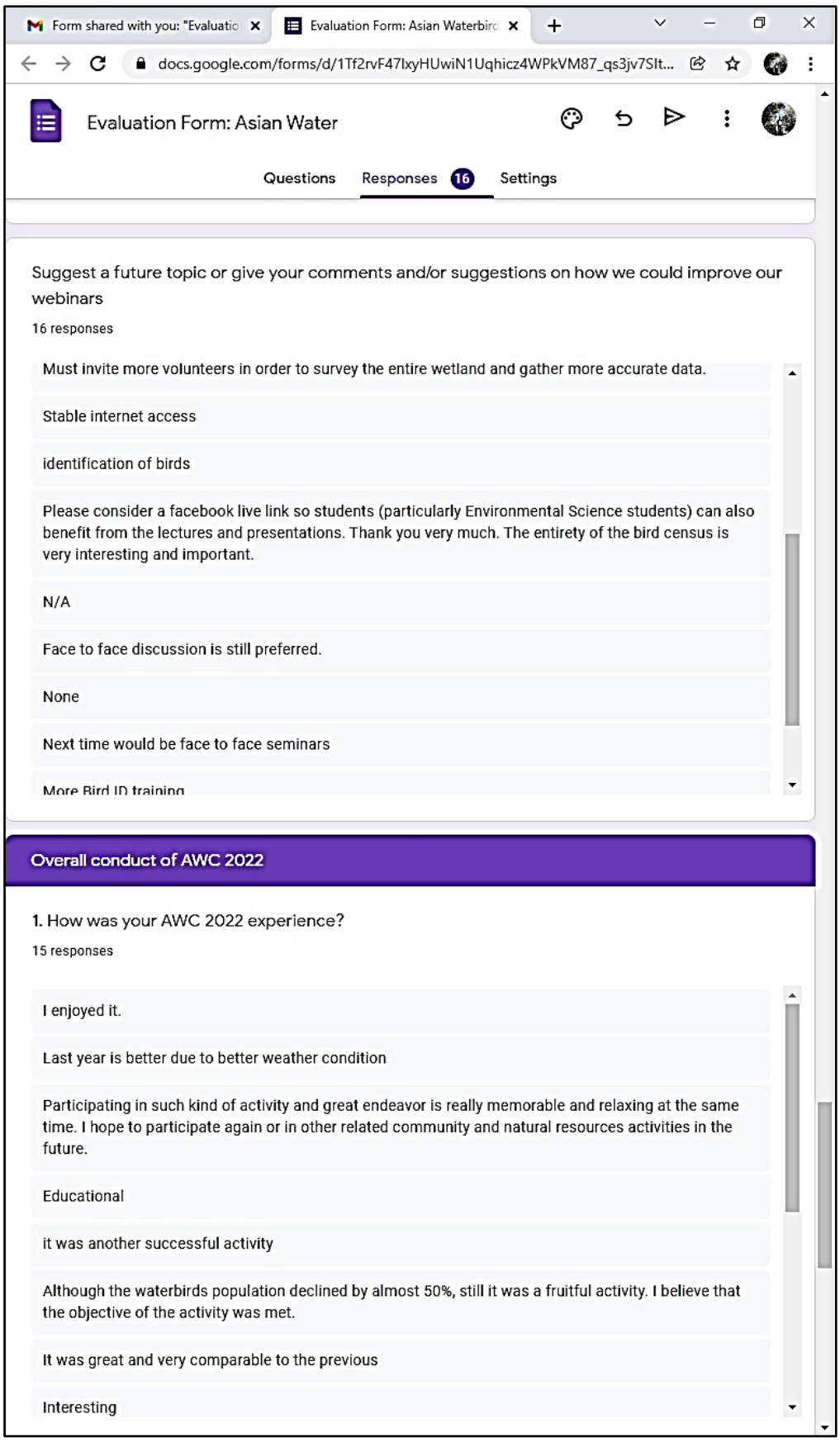

Figure 57. Results of Post-Event Evaluation Survey (Part 9).

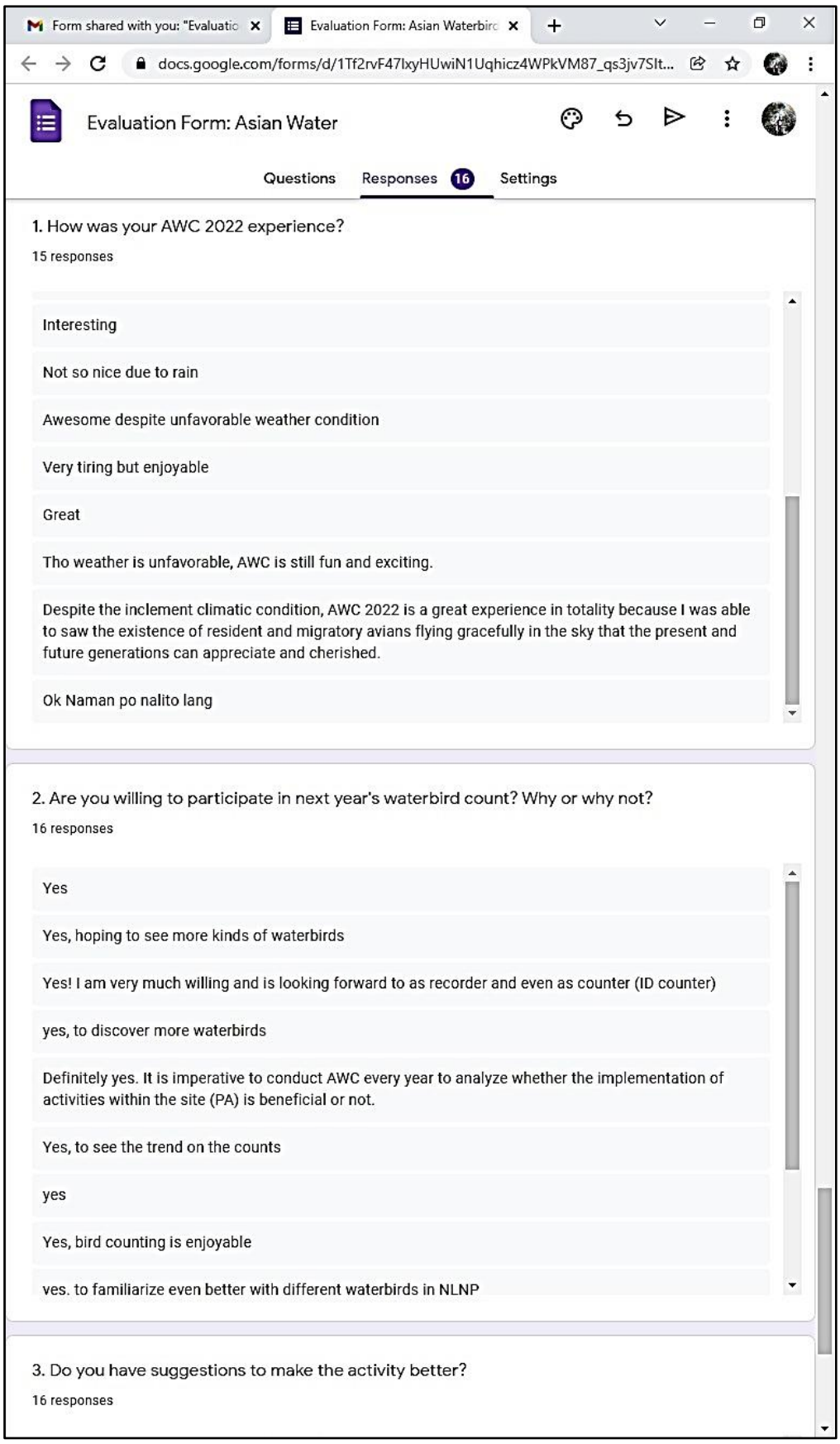

Figure 58. Results of Post-Event Evaluation Survey (Part 10).

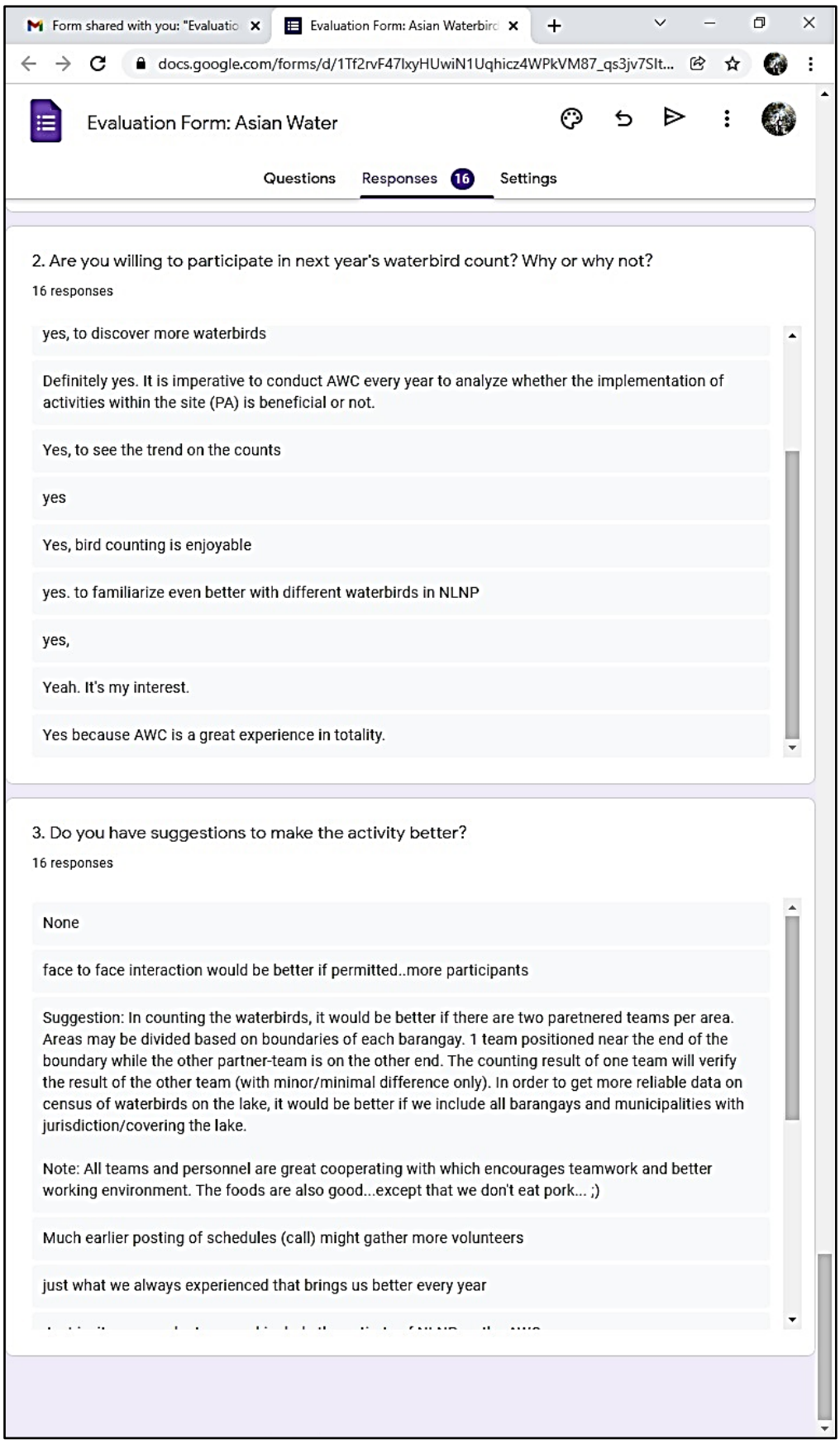

Figure 59. Results of Post-Event Evaluation Survey (Part 11).

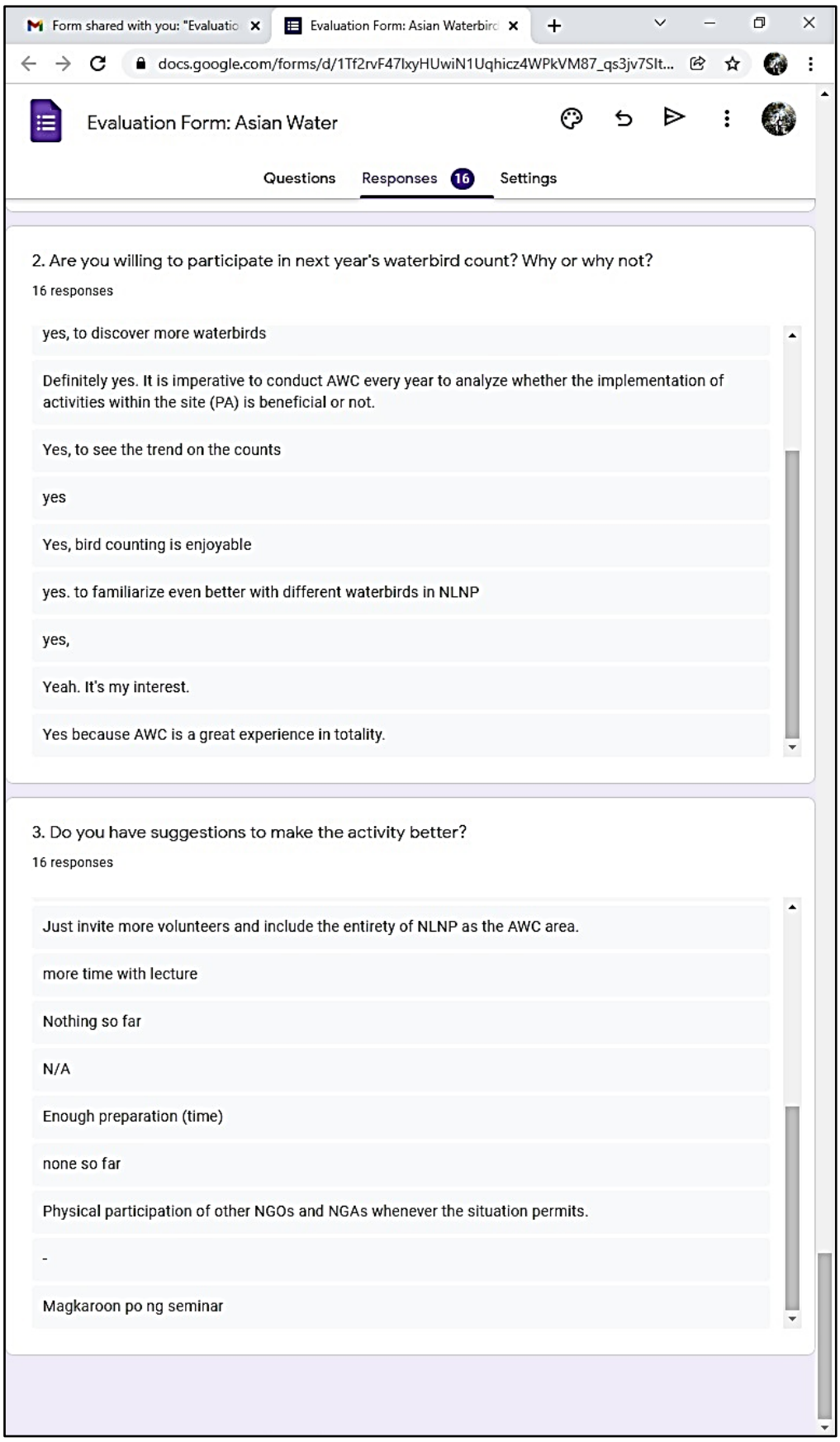

Figure 60. Results of Post-Event Evaluation Survey (Part 12).

Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
Community Environment and Natural Resources Office

EVENT: ASIAN WATERBIRD CENSUS 2022
DATE: JANUARY 18, 2022
VENUE: SOCORRO, ORIENTAL MINDORO

PARTICIPANTS
MALE = 20
FEMALE = 15
TOTAL = 35

NO.	NAME	AGE	SEX	OFFICE	POSITION/ DESIGNATION	CONTACT NUMBER	SIGNATURE
1.	MACKALEY P. MARTINEZ	24	MALE	CENRO SOCORRO	FORESTER I	09102199969	
2	RICARDO P. MATIVERO	61	Male	PENRO SOCCSKSARGEN	DENR		
3.	BEA NATASHA FORTU	26	F	PENRO	FOR I	09178854747	
4.	Nestor C. Mira, Jr.	31	M	PENRO	PO II	09292270207	
5.	Jeck Matre	28	M	PENRO	POI	09175727477	
6.	EMILY G. AGUILOH	55	F	CENRO - Socorro	FIN/CDS chief	09778158529	
7.	CHARM B. CUNTUC	34	F	-do-	FT II		
8.	LEO G. CAPON	59	M	CENRO Socorro	DMO IV	09178874939	
9.	CECILIA S. ROJAS	59	F	CENRO SOCORRO	CO I	09178773285	
10.	VIRGINIA G. VERSOZA	55	F	CENRO SOCORRO	FT II	09098589609	
11.	ANDRES OLIVER ARIAS	56	M	CENRO SOCORRO	LMO II		
12	[illegible]	30	M	"	FT II		
13	Leveliza M. Erlano	29	F	-do-	FR	09173109967	
14	Leonardo Mindoro	40	M	-do-	EN-II		
15.	Reyson C. Ayento	28	M	-do-	Forest I	09163192215	
16.	Maria Alva Neneth A. Culla-Umali	39	F	-do-	CHO II	09172728336	
17.	John Emmanuel Iluchan	32	M	MINSU-VICTORIA	Sci. Research Asst.	09777028460	
18.	MACARIO R. MASAGCA, JR.	42	M	MINSU-MAIN	R&D Director	09562788550	
19.	ADRIAN V. CATUD	29	M	CENRO Socorro	FT I	09174437925	
20	James Anthony D. Guarde	35	M	CENRO Socorro	FI	09260713902	

Barangay Pasi II, Socorro, Oriental Mindoro
Tel. No.: (043) 285 - 7068
Email: cenrosocorro@denr.gov.ph

Figure 61. Attendance on 1st day of AWC 2022.

Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
Community Environment and Natural Resources Office

EVENT: ASIAN WATERBIRD CENSUS 2022
DATE: JANUARY 18, 2022
VENUE: SOCORRO, ORIENTAL MINDORO

NO.	NAME	AGE	SEX	OFFICE	POSITION/ DESIGNATION	CONTACT NUMBER	SIGNATURE
21	Emmanuel Salvador J. Tugade	39	M	CENRO Socorro	FT)	09158400 18)	
22	CHIEKO ELEMENTO	22	F	CENRO SOCORRO	F.E.O.	09550859474	
23	Felix Tomood	57	M	" "	FT1	09658249A	
24	Daisy Bagatsa	28	F	"	Admin Aide		
25	Rodel M. Boyles	46	M	"	CENRO		
26	Marjorie Joyce Andar	35	F	- Au-	AOI	09153482668	
27	JOSE MARIA M. FONTANILLA	26	M	CENRO SOCORRO	ECOMS I	09053348485	
28.	Marvin S. Canaac		M	PASI I	Boatman		
29.	ALLAN A. ILLUSTRE		M	"	"		
30.	Gil Bicaldo		M	"	"		
31.	Kyle Cielo		F	Mindoro BCFI	Research Program manager		
32.	Cheryl Montoya		F	"	MBCFI Personnel		
33.	Godfrey Jakosalem		M	Philippine BCFI	Head, In-situ conservation program	09173113232	
34.	Carmel Eje		F	ASEAN CENTER for Biodiversity	Volunteer		
35.	Jhoanna Marie Ananeza		F	Barangay Logui of Sibunag	Secretary		

Attended through Zoom (see screen shot)

Barangay Pasi II, Socorro, Oriental Mindoro
Tel. No.: (043) 285 - 7068
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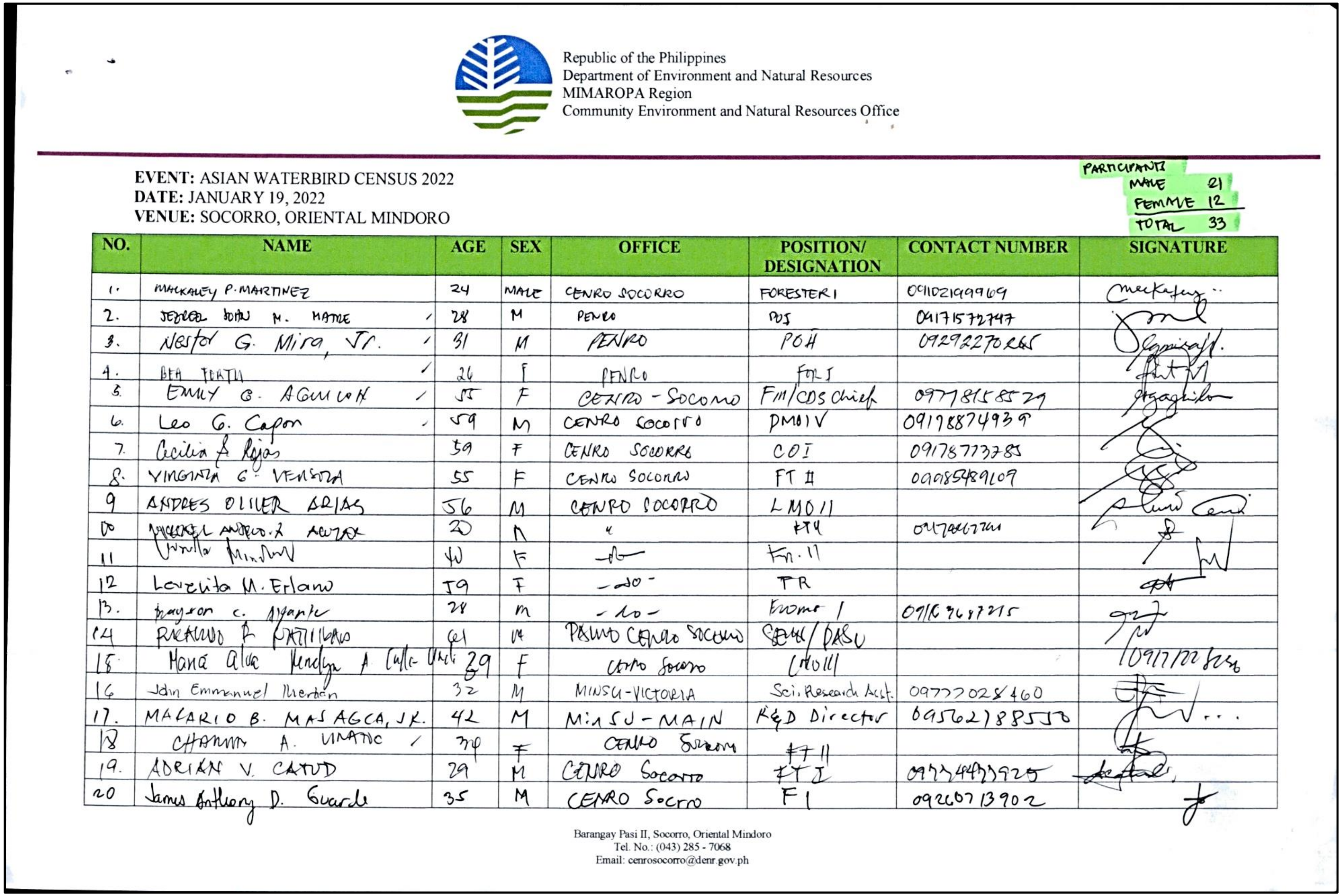
Figure 62. Attendance on 1st day of AWC 2022 (continuation).



Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
Community Environment and Natural Resources Office

EVENT: ASIAN WATERBIRD CENSUS 2022
DATE: JANUARY 19, 2022
VENUE: SOCORRO, ORIENTAL MINDORO

PARTICIPANTS
MALE 21
FEMALE 12
TOTAL 33

NO.	NAME	AGE	SEX	OFFICE	POSITION/ DESIGNATION	CONTACT NUMBER	SIGNATURE
1.	MACKALEY P. MARTINEZ	24	MALE	CENRO SOCORRO	FORESTER I	09102199969	
2.	JERREL JOHN M. MATOE	28	M	PENRO	PDS	09171572747	
3.	Nestor G. Mira, Jr.	31	M	PENRO	POII	09292270865	
4.	BEA TORTA	26	F	PENRO	FOR I		
5.	EMILY G. AGUILON	55	F	CENRO - Socorro	FM/CDS Chief	09778158529	
6.	Leo G. Capon	59	M	CENRO Socorro	DMO IV	09178874939	
7.	Cecilia A. Rojas	59	F	CENRO Socorro	CO I	09178773785	
8.	VIRGINIA G. VENEDA	55	F	CENRO Socorro	FT II	09985489109	
9	ANDRES OLIVER ARIAS	56	M	CENRO SOCORRO	LMO II		
10	[illegible]	20	M	"	FT II	[illegible]	
11	[illegible]	40	F	-do-	FR. II		
12	Lovelita M. Erlano	59	F	-do-	TR		
13.	[illegible] C. [illegible]	28	M	-do-	Forester I	0916 9687215	
14	RICARDO R. [illegible]	61	M	PASWO CENRO SOCORRO	SEMS/ PASU		
15	Maria Alva Kendyn A. [illegible]	29	F	CENRO Socorro	LMO II		
16	John Emmanuel Ilherbon	32	M	MINSU-VICTORIA	Sci. Research Asst.	09772028460	
17.	MACARIO B. MASAGCA, JR.	42	M	MinSU-MAIN	R&D Director	09562188558	
18	CHARMA A. UMATIC	39	F	CENRO Socorro	FT II		
19.	ADRIAN V. CATUD	29	M	CENRO Socorro	FT I	0977449939925	
20	James Anthony D. Guarde	35	M	CENRO Socorro	F I	09260713902	

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Figure 63. Attendance on 2nd day of AWC 2022.

Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
Community Environment and Natural Resources Office

EVENT: ASIAN WATERBIRD CENSUS 2022
DATE: JANUARY 19, 2022
VENUE: SOCORRO, ORIENTAL MINDORO

NO.	NAME	AGE	SEX	OFFICE	POSITION/ DESIGNATION	CONTACT NUMBER	SIGNATURE
21	Emmanuel Salvador J. Tugade	39	M	CENRO - Socorro	FT I	09175890118	
22.	CHIEKO ELEMENTO	22	F	CENRO SOCORRO	F.E.O.	09550859474	
23.	Jeloy Hamad	57	M	"	FT I	09165628994	
24	Daisy Rafalea	28	F	"	Admin Aide		
25	Rodel M. Boyles	96-1	M	"	Comm		
26	Marjorie Joyce Amor	35	F	-A.	AOI	09453482668	
27	JOSE MARIA M. FERNANDEZ	26	M	"	ECMS I	09073248585	
28	Marwin S. Canada		M	Brgy. Pasi I	Boatman		
29.	ALLAN A. ILUSTRE		M	PASI, SOCORRO	"		
30.	Gil Bicaldo		M	"	"		Gbicaldo
31.	Philip Godfrey Jakosalem		M	PBCFI	Head, In-situ conservation Program	09173113232	
32.	Jay Wilhelm Zeus Lourd Kaibigan		M	PENRO ORMIN	IT		
33.	Kyle Cielo		F	Mindoro BCFI	Research Program manager		

Attended through Zoom (See screen shot)

Barangay Pasi II, Socorro, Oriental Mindoro
Tel. No.: (043) 285 - 7068
Email: cenrosocorro@denr.gov.ph

Figure 64. Attendance on 2nd day of AWC 2022 (continuation).

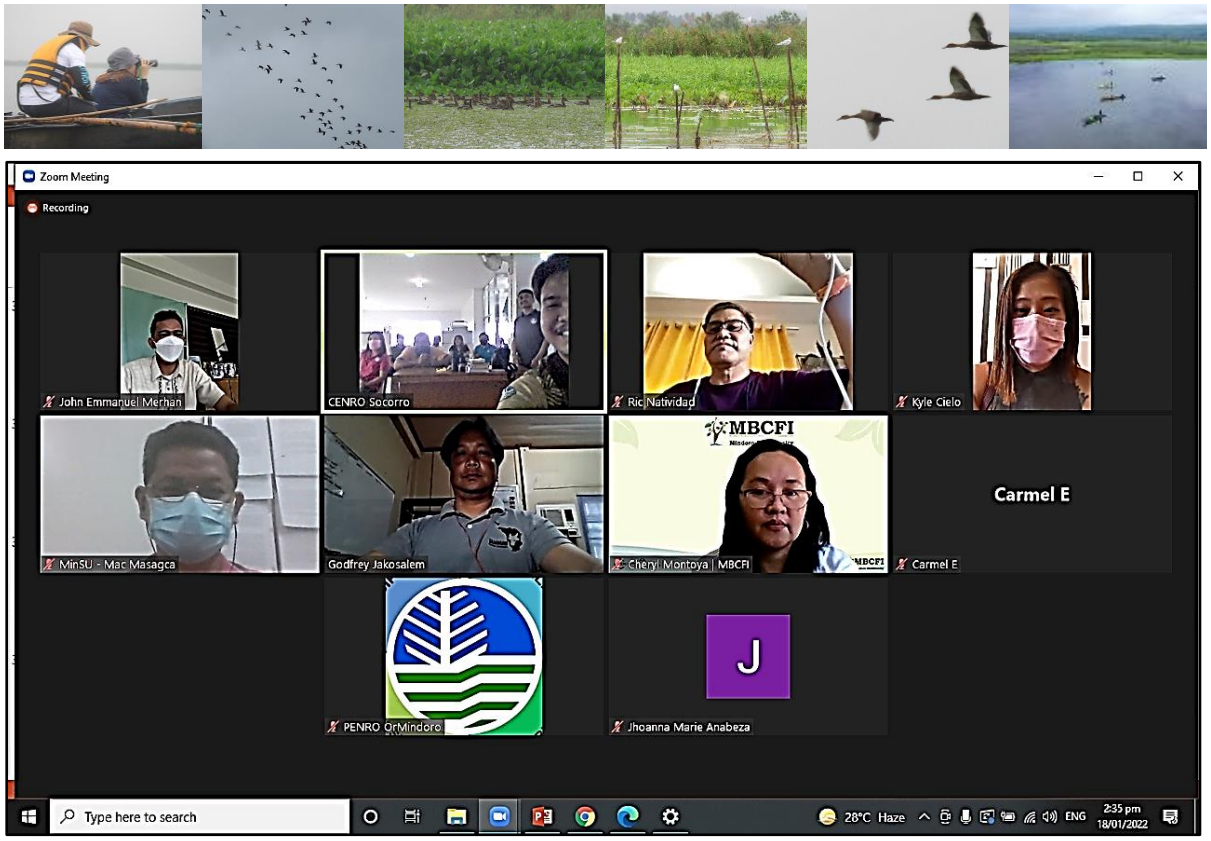

Figure 65. Photo opportunity on 1st day of AWC 2022.

Figure 66. Photo opportunity on 2nd day of AWC 2022.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Based on the results of Annual Asian Waterbird Census (AWC) 2022, the team recorded a total of 2,316 individual waterbirds, with 27 species (2 are unidentified) coming from 8 family. The team also accounted a total of 144 individual other avifauna species, with 10 species (2 are unidentified) coming from eight (8) family. Whiskered Tern (*Chlidonias hybrida*) is the most occurring waterbird (653 or 28%), while Barn Swallow (*Hirundo rustica*) is the most occurring other avian species (61 or 42%).

Majority of the distribution status of identified waterbirds (1,606 individuals or 69%; 20 species or 74%) and other avifauna (110 individuals or 76%; 6 species or 60%) are resident species. At least 90% of identified birds have least concern (LC) conservation status. Unfortunately, 30-50% of which have decreasing trend of population.

The population of waterbirds for this year has dropped by 42% from the 5,451 record in 2021, while the population of other avian species has dropped by 36% from 397 count from last year. The result of Annual AWC 2022 is the lowest in the past 5 years.

The low turnout is attributed to the inclement climatic condition that affected the activities of birds (feeding and roosting) and the conduct of census. The threats to birds observed during the conduct of AWC are land conversion, improper waste disposal and illegal fishing methods (*Bayakos* and *Baklad*). The said natural and anthropogenic factors adversely affected the activities of birds and the availability of their food.

Despite the low count this year, about 13 species of waterbirds and three (3) species of other avian species raised its count. About 14 species of which are resident while two (2) species are migratory. The Wandering Whistling Duck (*Dendrocygna arcuata*) has the highest increase in waterbirds (473 individuals), while the Eurasian Tree Sparrow (*Passer montanus*) has the highest increase in other avian species (9 individuals). The notable species observed is

the presence of Philippine Duck (*Anas luzonica*). The bird count of the said vulnerable species is the highest (19 individuals) in the 5-year data analysis.

The NLNP are habitat of various terrestrial and aquatic fauna, and home of surrounding communities. More so, it serves as refuge to migratory birds escaping the winter months of their country. Natural and anthropogenic factors directly affect the activities of birds, population trend, and status and quality of wetland. Between the two, anthropogenic factors can be addressed and amended with the help of NGAs, LGUs, CSOs, academe and private sectors. The conservation, management and protection of birds as well as NLNP as their habitat shall be the utmost responsibility of everyone for the continuance of ecosystem services it provided for the present and future generations.

In addition to the comments / suggestions/ recommendations of participants during the post-event evaluation survey, the recommendations for the next Annual Asian Waterbird Census are listed as follows:

1. Presentation of results of Annual AWC 2022 to the upcoming PAMB meeting for the 1st quarter of CY 2022 to inform the members of the governing body of NLNP about the bird count and status of NLNP, and to address the threats observed/ interviewed (land conversion, improper solid waste disposal and illegal fishing methods);
2. Continuous conduct of AWC to ascertain and monitor the status waterbirds and NLNP;
3. Survey the entire area of NLNP and standardize the methodology to better account the population of avifauna;
4. Conduct of orientation and data consolidation of AWC through live stream to reach the representatives of different sectors of the society and raise awareness about the conservation, management and protection of birds and NLNP;

5. Further strengthen the linkage with NGAs, LGUs, NGOs, private sectors and volunteers to solicit their active participation and possible programs/ activities/ projects/ funding;
6. Procurement of gears (counter and powerful binoculars, telescopes and cameras) and equipment (raincoat and waterproof cellphone case) to properly identify and document the birds; and
7. Conduct of training on bird identification and counting to capacitate and enhance the knowledge, skills and experience of DENR personnel.

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APPENDICES

Appendix 1. Schedule of Activities for AWC 2022.

Schedule of Activities

Date / Time	Activities	Responsible Person/s
January 18, 2022		
8:00 AM – 12:00 NN	Arrival of participants	Secretariat
12:01 PM- 1:00 PM	Lunch	
1:01 PM – 1:30 PM	Preliminaries • Prayer • Opening Remarks • Messages	Secretariat For. Emily G. Aguilon CENRO Rodel M. Boyles PASu Ricardo R. Natividad
1:31 PM – 2:00 PM	Presentation of AWC 2021 Highlights	EcoMS I Jose Maria M. Fontanilla
2:01 PM – 3:00 PM	Lecture Proper • Overview and Guidelines of Asian Waterbird Census (AWC) • Proper Waterbird Identification and Counting	Mr. Philip Godfrey Jakosalem, PBCFI
3:01 PM- 3:30 PM	Break	
3:31 PM- 4:30 PM	Practice Exercises for Proper Waterbird Identification and Counting	Resource person, Guests and participants
4:31 PM- 5:00 PM	Preparatory Meeting for the Waterbird Survey	Resource person, Guests and participants
January 19, 2022		
5:00 AM	Call Time at PAM Office	
5:30 AM- 10:30 AM	Actual Survey at Naujan Lake	Guests and participants
10:31 AM- 11:45 AM	Consolidation of Report and Post Meeting	Guests and participants
11:46 AM- 12:00 NN	Closing	Guests and participants
12:01PM- 1:30 PM	Lunch Break	
1:31 PM	Home Sweet Home	

Appendix 2. Memorandum for DENR-PENRO Oriental Mindoro dated January 03, 2022 regarding invitation to AWC 2022.

Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
Community Environment and Natural Resources Office

January 3, 2021

DENR-MIMAROPA REGION
PROVINCIAL ENVIRONMENT AND NATURAL RESOURCES OFFICE
RECEIVED BY
JAN 05 2022

MEMORANDUM

FOR : The PENR Officer

FROM : The CENR Officer

SUBJECT : **INVITATION TO THE 2022 ASIAN WATERBIRD CENSUS (AWC) IN NAUJAN LAKE NATIONAL PARK (NLNP) ON JANUARY 12-13, 2022**

Naujan Lake National Park (NLNP) has been an active participant in the annual Asian Waterbird Census (AWC) which is part of the International Waterbird Census (IWC). The data gathered during annual waterbird counts is significant in monitoring of waterbird species in the internationally important sites and also raise local awareness of its conservation and protection.

This year, our Office will be holding AWC on January 12-13, 2022. An orientation will be held in the afternoon of January 12, 2021 and the waterbird count will be held early morning of the succeeding day.

In this regard, we are respectfully inviting participants from the DENR MIMAROPA Regional and PENR Offices to join in this important event. Further, may we request for the assistance during the orientation and documentation of the activity using drone.

Furthermore, health protocols and guidelines set by the IATF in COVID-19 spread prevention will be implemented during the conduct of activity. In this view, participants are requested to have their own birding equipment such as binoculars and cameras to reduce contact with other participants.

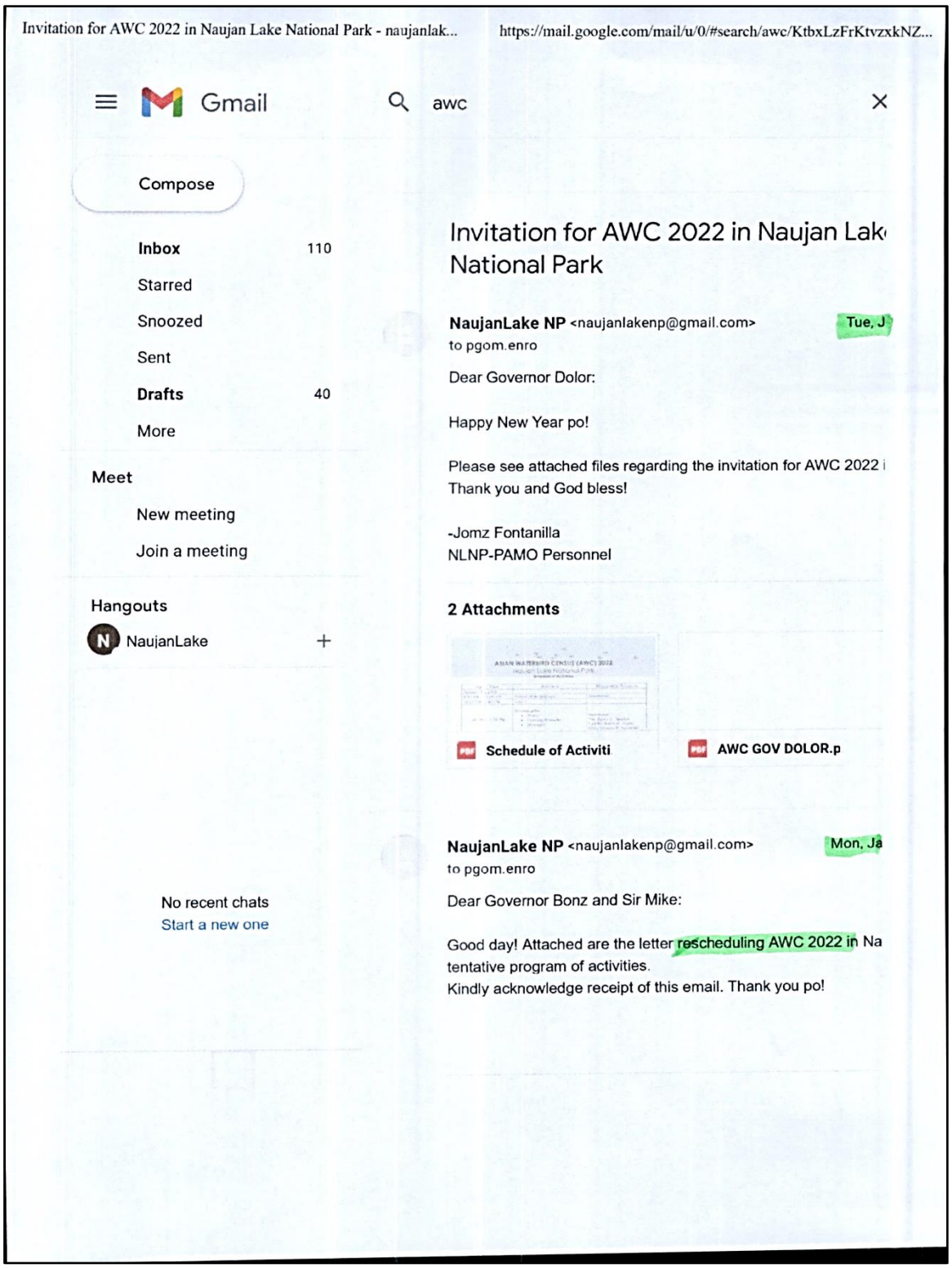
Attached is the program of activities of the event.

For information and record.

RODEL M. BOYLES

Pasi II, Socorro, Oriental Mindoro
cenrosocorro@denr.gov.ph

Appendix 3. Electronic mail to Provincial Government of Oriental Mindoro regarding invitation to AWC 2022.



Appendix 4. Letter to Provincial Government of Oriental Mindoro dated January 07, 2022 regarding invitation to AWC 2022.

Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
Community Environment and Natural Resources Office

January 7, 2022

HON. HUMERLITO A. DOLOR
Provincial Governor
Provincial Capitol Complex, Camilmil
Calapan City, Oriental Mindoro

OFFICE OF THE GOVERNOR
RECEIVED
Date 1/13/2022
Time 11:00 AM
By

Thru : **Mr. MAXIMINO A. JUMIG, JR.**
Chief, PG-ENRO

Dear Governor Dolor,

Good day!

This is to inform you that the Asian Waterbird Census (AWC) 2021 to be conducted in Naujan Lake National Park (NLNP) is rescheduled on January 18-19, 2022. Said postponement is due to the inavailability of Biodiversity Management Bureau (BMB) personnel on the earlier date.

Congruently, the new schedule will be in the afternoon of January 18, 2022 and the waterbird count, early morning of the succeeding day. In addition, we are also inviting you in the Waterbird Count to be conducted in Barangay Silonay, Calapan City on January 20, 2022 at 5:00 PM.

For any concerns and confirmation of your attendance, please feel free to contact EcoMS I Jose Maria M. Fontanilla (0905-334-8455) or e-mail us at cenrosocorro@denr.gov.ph. Thank you for your understanding.

We are looking forward on your warm response and whole-hearted support on this request.

Thank you and God Bless.

In conservation,

RODEL M. BOYLES
CENR Officer

Pasi II, Socorro, Oriental Mindoro
denrcenrosocorro@gmail.com

Appendix 5. Letter to Local Governemnt Unit of Calapan City for the orientation on AWC 2022 and invitation to bird count in Barangay Silonay, Calapan City, Oriental Mindoro.

Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
Community Environment and Natural Resources Office

January 12, 2022

HON. ARNAN C. PANALIGAN
City Mayor, Calapan City
Oriental Mindoro

Thru : **Mr. WILFREDO LANDICHO**
City Environment and Natural Resources Officer /
Chief, Fisheries Management Office

Dear Mayor Panaligan,

A prosperous new year to you!

Naujan Lake National Park (NLNP) has been an active participant in the annual Asian Waterbird Census (AWC) which is part of the International Waterbird Census (IWC). The data gathered during annual waterbird counts is significant in monitoring of waterbird species in the internationally important sites in order to raise local awareness of its conservation and protection.

Naujan Lake is home for numerous endemic and resident waterbird species as well as migratory species which visit annually during this time of the year. For CY 2022, AWC will be held on January 18-19, 2022 within the Protected Area.

Consequent thereto, we will be conducting a Waterbird Count in Barangay Silonay, Calapan City on January 20, 2022 at 5:00 AM together with DENR Biodiversity Management Bureau (BMB) and PENRO Oriental Mindoro representatives. In view of this, we are respectfully inviting participants from your good Office and at the same time requesting assistance by affording the boat to be used during the activity. May we also invite you during an orientation on January 18, 2022 at 1:00 PM via Zoom (*please see attached program of activities*).

Further, health protocols and guidelines set by the IATF in combat with COVID-19 will be implemented during the conduct of activity. In view of this, participants are requested to have their own birding equipment such as binoculars and cameras to reduce contact with other participants.

For any concerns and confirmation of your attendance, please feel free to contact NLNP Assistant PASu Jose Maria M. Fontanilla (0905-334-8455) or e-mail us through cenrosocorro@denr.gov.ph.

We are looking forward on your warm response and whole-hearted support on this request.

Thank you and God Bless.

In conservation,

RODEL M. BOYLES
CENR Officer

OFFICE OF THE CITY MAYOR
RECEIVED
Date: 1-13-2022
Signature:

Pasi II, Socorro, Oriental Mindoro
cenrosocorro@denr.gov.ph

Appendix 6. Letter to Local Government Unit of Barangay Silonay for the orientation on AWC 2022 and invitation to bird count in Barangay Silonay, Calapan City, Oriental Mindoro.

Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
Community Environment and Natural Resources Office

January 12, 2022

HON. FRANCISCO C. FORTU
Barangay Chairperson, Silonay, Calapan City
Oriental Mindoro

Dear Hon. Fortu,

A prosperous new year to you!

Naujan Lake National Park (NLNP) has been an active participant in the annual Asian Waterbird Census (AWC) which is part of the International Waterbird Census (IWC). The data gathered during annual waterbird counts is significant in monitoring of waterbird species in the internationally important sites in order to raise local awareness of its conservation and protection.

Naujan Lake is home for numerous endemic and resident waterbird species as well as migratory species which visit annually during this time of the year. For CY 2022, AWC will be held on January 18-19, 2022 within the Protected Area.

Consequent thereto, we will be conducting a Waterbird Count in your Barangay on January 20, 2022 at 5:00 AM together with DENR Biodiversity Management Bureau (BMB) and PENRO Oriental Mindoro representatives. In view of this, we are respectfully inviting participants from your good Office and at the same time requesting assistance during the activity. May we also invite you during an orientation on January 18, 2022 at 1:00 PM via Zoom (*please see attached program of activities*).

Further, health protocols and guidelines set by the IATF in combat with COVID-19 will be implemented during the conduct of activity. In view of this, participants are requested to have their own birding equipment such as binoculars and cameras to reduce contact with other participants.

For any concerns and confirmation of your attendance, please feel free to contact NLNP Assistant PASu Jose Maria M. Fontanilla (0905-334-8455) or e-mail us through cenrosocorro@denr.gov.ph.

We are looking forward on your warm response and whole-hearted support on this request.

Thank you and God Bless.

In conservation,

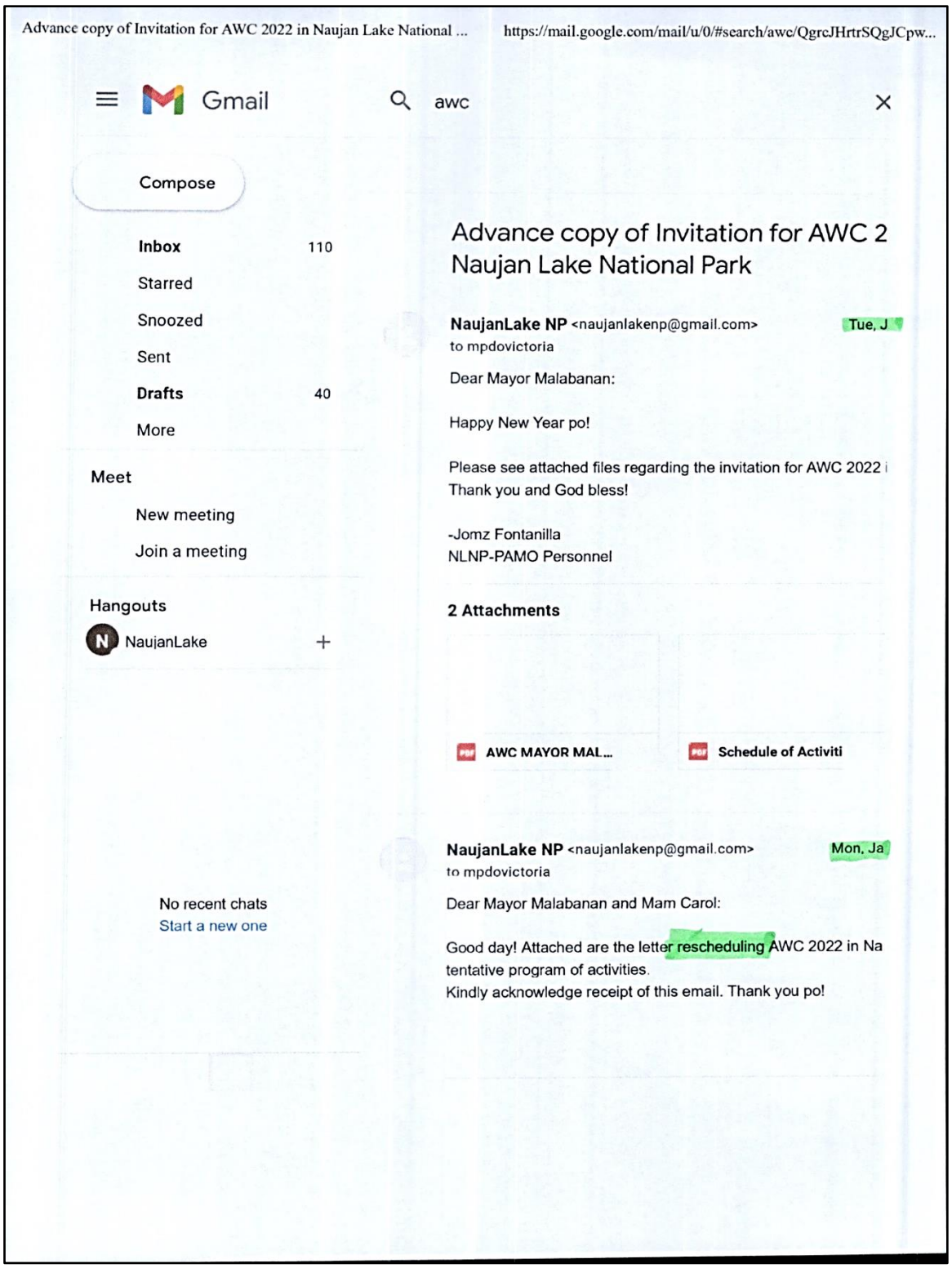
RODEL H. BOYLES
CENR Officer

recieved by
JHOANNA MARIE B. KNABE ZA
BRGY SECRETARY
1-13-22 13:16

09461157684
barangaysilonaycouncil143@gmail.com

Pasi II, Socorro, Oriental Mindoro
cenrosocorro@denr.gov.ph

Appendix 7. Electronic mail to the Municipality of Victoria regarding invitation to AWC 2022.



Appendix 8. Letter to the Municipality of Victoria dated January 07, 2022 regarding invitation to AWC 2022.

Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
Community Environment and Natural Resources Office

January 7, 2022

HON. JOSELITO C. MALABANAN
Municipal Mayor, Victoria
Oriental Mindoro

Thru : **EnP. CAROLINE G. MANUEL**
Municipal Planning and Development Coordinator /
Member, NLNP-PAMB

Dear Governor Dolor,

Good day!

This is to inform you that the Asian Waterbird Census (AWC) 2021 to be conducted in Naujan Lake National Park (NLNP) is rescheduled on January 18-19, 2022. Said postponement was due to the inavailability of Biodiversity Management Bureau (BMB) personnel on the earlier date.

Relatively, we are still inviting participants from your good Office to join us in this relevant activity where orientation will be held in the afternoon of January 18, 2022 and the waterbird count, early morning of the succeeding day.

Further, health protocols and guidelines set by the IATF against spread of COVID-19 will also be implemented during the conduct of activity. Participants are still requested to have their own birding equipment such as binoculars and cameras to reduce contact with other participants.

For any concerns and confirmation of your attendance, please feel free to contact EcoMS I Jose Maria M. Fontanilla (0905-334-8455) or e-mail us at cenrosocorro@denr.gov.ph.

We are looking forward on your warm response and whole-hearted support on this request.

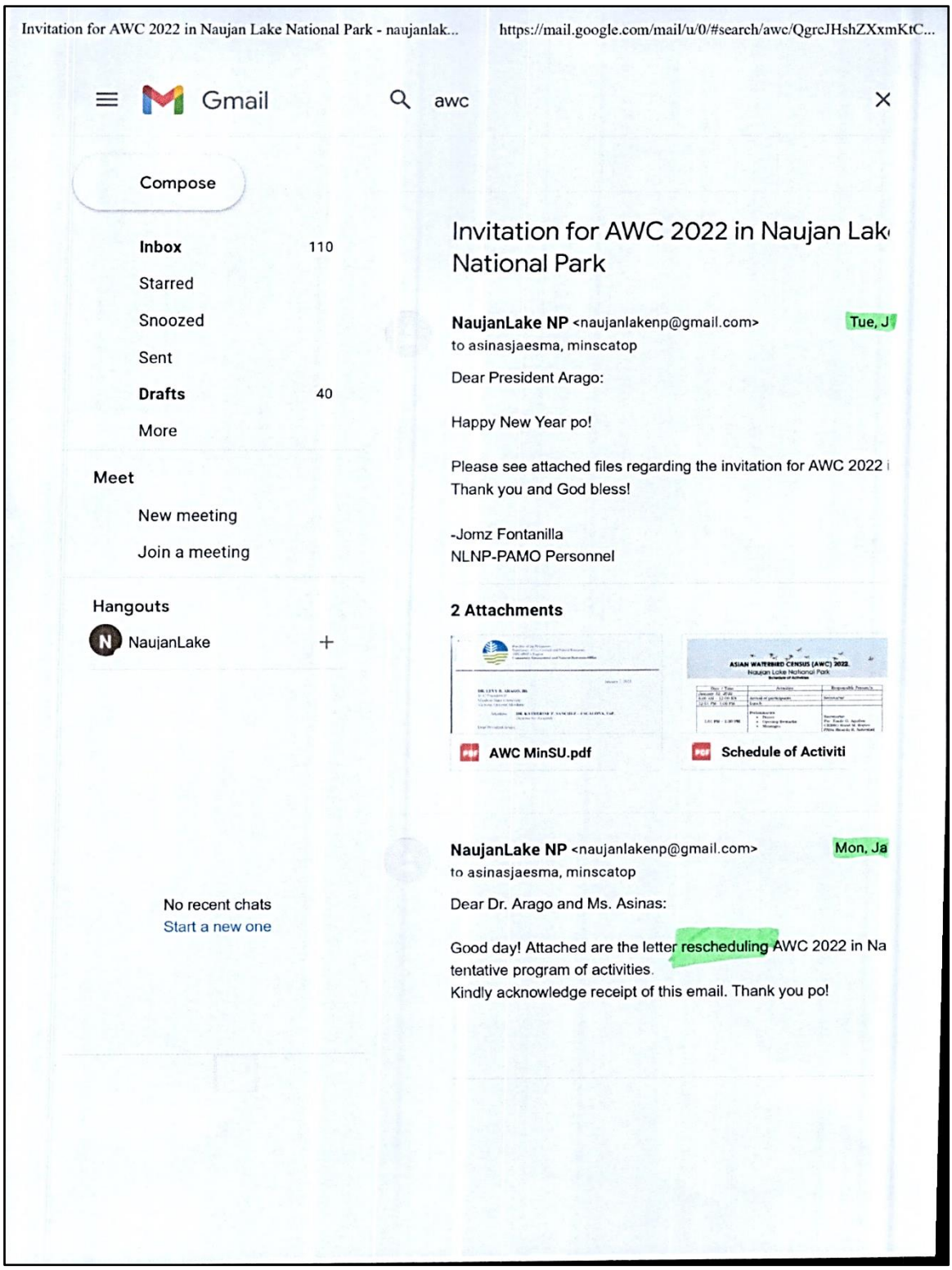
Thank you and God Bless.

In conservation,

RODEL M. BOYLES
CENR Officer

Pasi II, Socorro, Oriental Mindoro
denrcenrosocorro@gmail.com

Appendix 9. Electronic mail to Mindoro State University regarding Invitation to AWC 2022.



Appendix 10. Letter to Mindoro State University dated January 07, 2022 regarding invitation to AWC 2022.

Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
Community Environment and Natural Resources Office

January 7, 2022

DR. LEVY B. ARAGO, JR.
SUC President II
Mindoro State College of Agriculture and Technology
Victoria, Oriental Mindoro

Thru : **DR. KATHERINE P. SANCHEZ – ESCALONA, EnP.**
Director for Research

Dear President Arago,

Good day!

This is to inform you that the Asian Waterbird Census (AWC) 2021 to be conducted in Naujan Lake National Park (NLNP) is rescheduled on January 18-19, 2022. Said postponement was due to the inavailability of Biodiversity Management Bureau (BMB) personnel on the earlier date.

Relatively, we are still inviting participants from your good Office to join us in this relevant activity where orientation will be held in the afternoon of January 18, 2022 and the waterbird count, early morning of the succeeding day.

Further, health protocols and guidelines set by the IATF against spread of COVID-19 will also be implemented during the conduct of activity. Participants are still requested to have their own birding equipment such as binoculars and cameras to reduce contact with other participants.

For any concerns and confirmation of your attendance, please feel free to contact EcoMS I Jose Maria M. Fontanilla (0905-334-8455) or e-mail us at cenrosocorro@denr.gov.ph.

We are looking forward on your warm response and whole-hearted support on this request.

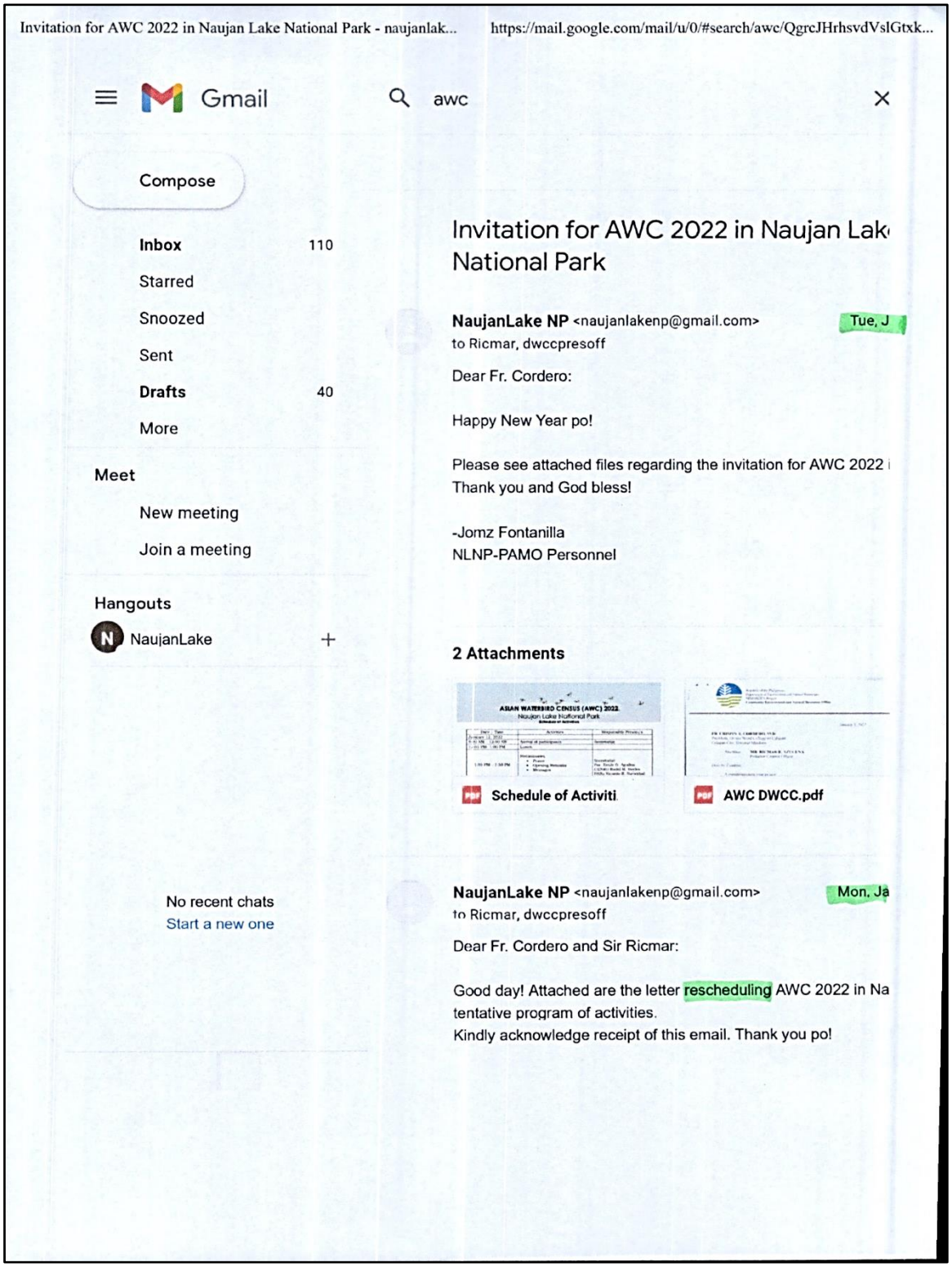
Thank you and God Bless.

In conservation,

RODEL M. BOYLES
CENR Officer

Pasi II, Socorro, Oriental Mindoro
denrcenrosocorro@gmail.com

Appendix 11. Electronic mail to Divine Word Collage regarding invitation to AWC 2022.



Appendix 12. Letter to Divine Word College dated January 07, 2022 regarding invitation to AWC 2022.

Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
Community Environment and Natural Resources Office

January 7, 2022

FR. CRISPIN A. CORDERO, SVD
President, Divine Word College of Calapan
Calapan City, Oriental Mindoro

Attention: **MR. RICMAR B. AZUCENA**
Pollution Control Officer

Dear Fr. Cordero,

Good day!

This is to inform you that the Asian Waterbird Census (AWC) 2021 to be conducted in Naujan Lake National Park (NLNP) is rescheduled on January 18-19, 2022. Said postponement was due to the inavailability of Biodiversity Management Bureau (BMB) personnel on the earlier date.

Relatively, we are still inviting participants from your good Office to join us in this relevant activity where orientation will be held in the afternoon of January 18, 2022 and the waterbird count, early morning of the succeeding day.

Further, health protocols and guidelines set by the IATF against spread of COVID-19 will also be implemented during the conduct of activity. Participants are still requested to have their own birding equipment such as binoculars and cameras to reduce contact with other participants.

For any concerns and confirmation of your attendance, please feel free to contact EcoMS I Jose Maria M. Fontanilla (0905-334-8455) or e-mail us at cenrosocorro@denr.gov.ph.

We are looking forward on your warm response and whole-hearted support on this request.

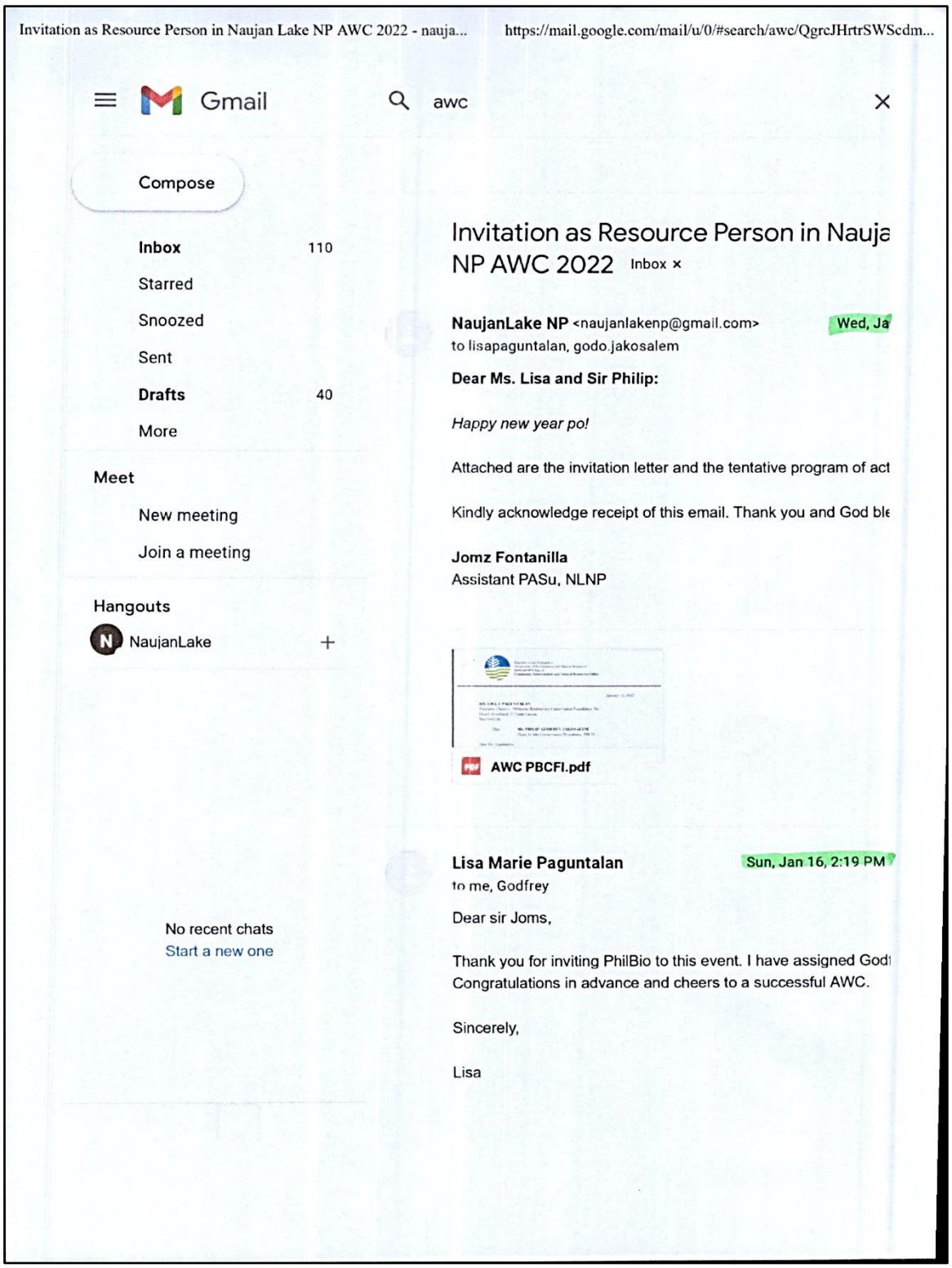
Thank you and God Bless.

In conservation,

RODEL M. BOYLES
CENR Officer

Pasi II, Socorro, Oriental Mindoro
denrcenrosocorro@gmail.com

Appendix 13. Electronic mail to Philippines Biodiversity Conservation Foundation, Inc. regarding invitation to AWC 2022



Appendix 14. Letter to Philippines Biodiversity Conservation Foundation, Inc. dated January 11, 2022 regarding invitation to AWC 2022.

Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
Community Environment and Natural Resources Office

January 11, 2022

MS. LISA J. PAGUNTALAN
Executive Director, Philippine Biodiversity Conservation Foundation, Inc.
Door1, Northland, 12 Sreet-Lacson
Bacolod City

Thru : **Mr. PHILIP GODFREY JAKOSALEM**
Head, In Situ Conservation Programme, PBCFI

Dear Ms. Paguntalan,

A prosperous new year of conservation!

Naujan Lake National Park (NLNP) has been an active participant in the annual Asian Waterbird Census (AWC) which is part of the International Waterbird Census (IWC). The data gathered during annual waterbird counts is significant in monitoring of waterbird species in the internationally important sites in order to raise local awareness of its conservation and protection.

Naujan Lake is home for numerous endemic and resident waterbird species as well as migratory species which visit annually during this time of the year. For CY 2022, AWC will be held on January 18-19, 2022 within the Protected Area.

Relatedly, may we earnestly invite you as a resource person during this event particularly on the orientation of participants which will be held in the afternoon of January 18, 2022 (*please see attached program of activities*) via Zoom. May you please share information on the topics - Overview and Guidelines of Asian Waterbird Census (AWC) and Proper Waterbird Identification and Counting.

The participants are composed of personnel from the Biodiversity Management Bureau (BMB), DENR Regional, Provincial and Community Environment and Natural Resources Offices, Provincial Government – Environment and Natural Resources Office (PG-ENRO), LGU Victoria, and the academe – Mindoro State University (MinSU) and Divine Word College of Calapan (DWCC).

For further details, please feel free to contact NLNP Assistant PASu Jose Maria M. Fontanilla (0905-334-8455) or e-mail us through cenrosocorro@denr.gov.ph.

We are looking forward on your warm response and whole-hearted support on this request.

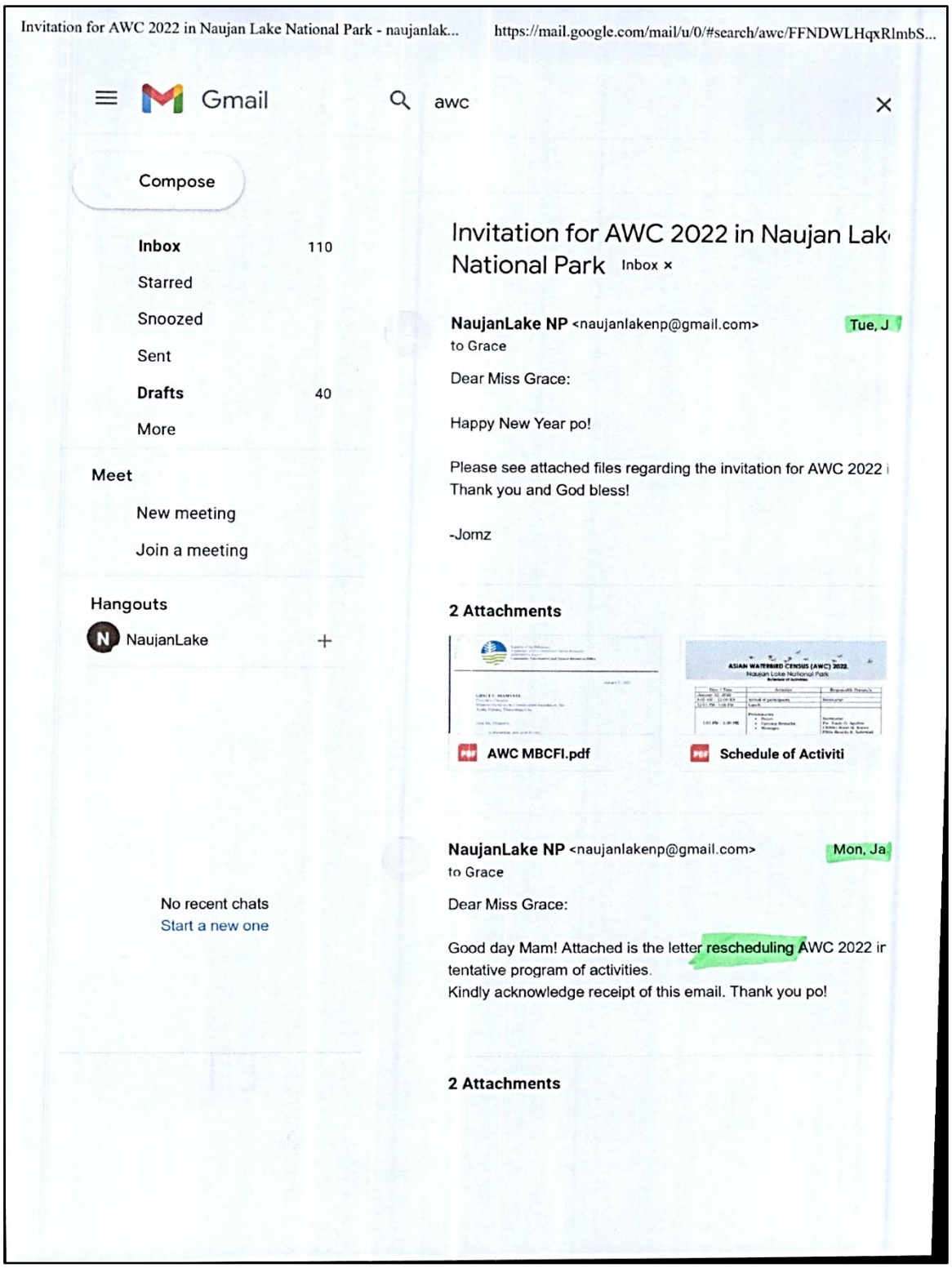
Thank you and God Bless.

In conservation,

RODEL M. BOYLES
CENR Officer

Pasi II, Socorro, Oriental Mindoro
cenrosocorro@denr.gov.ph
(043) 285 7068

Appendix 15. Electronic mail to Mindoro Biodiversity Conservation Foundation, Inc. regarding invitation to AWC 2022.



Appendix 16. Letter to Mindoro Biodiversity Conservation Foundation, Inc. regarding invitation to AWC 2022

Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
Community Environment and Natural Resources Office

January 7, 2022

Ms. GRACE C. DIAMANTE
Executive Director, Mindoro Biodiversity Conservation Foundation, Inc.
Gozar St., Camilmil, Calapan City
Oriental Mindoro

Dear Ms. Diamante,

Good day!

This is to inform you that the Asian Waterbird Census (AWC) 2021 to be conducted in Naujan Lake National Park (NLNP) is rescheduled on January 18-19, 2022. Said postponement was due to the inavailability of Biodiversity Management Bureau (BMB) personnel on the earlier date.

Relatively, we are still inviting participants from your good Office to join us in this relevant activity where orientation will be held in the afternoon of January 18, 2022 and the waterbird count, early morning of the succeeding day.

Further, health protocols and guidelines set by the IATF against spread of COVID-19 will also be implemented during the conduct of activity. Participants are still requested to have their own birding equipment such as binoculars and cameras to reduce contact with other participants.

For any concerns and confirmation of your attendance, please feel free to contact EcoMS I Jose Maria M. Fontanilla (0905-334-8455) or e-mail us at cenrosocorro@denr.gov.ph.

We are looking forward on your warm response and whole-hearted support on this request.

Thank you and God Bless.

In conservation,

RODEL M. BOYLES
CENR Officer

Pasi II, Socorro, Oriental Mindoro
cenrosocorro@denr.gov.ph
(043) 285 7068