

2023 EAAFP Small Grant Fund (WG/TF) Report Template



CONSERVATION OF SPOON-BILLED SANDPIPERS AT THE GULF OF MOTTAMA, MYANMAR IN
COLLABORATION WITH LOCAL COMMUNITIES AND PROMOTE ECOTOURISM

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DATE OF SUBMISSION (31/03/2024)

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Section 1. Project Overview – This report will be shared on EAAFP website.

1.1 BACKGROUND

Please give a brief and background of your project:

A. Describe about your organization by filling out the table below:

Type of the organization - Government/NGO/Private Sector/Other	NGO
Name(s) of the division and/or position	Conservation Officer
List any contributions that your organizations or yourself might have been involved for the preservation of the migratory waterbirds, their habitats and East – Asian Australasian Flyway below. Nature Conservation Society-Myanmar (NCS), the recognised National Partner of the Spoon-billed Sandpiper Task Force, is well experienced in waterbird monitoring, research, and capacity building for local communities. NCS is also conducting the annual surveys on wintering population of migratory shorebirds in the key wintering sites along the coastal areas of Myanmar. NCS was also taking part in international cooperated activities such as Spoon-billed Sandpipers census in Thailand this winter and in December 2022 and Leizhou Peninsula 2024. NCS is supporting the national government in developing the CEPA national action plan, as a key partner related to migratory bird conservation and wetlands conservation in Myanmar. Moreover, NCS has experiences on advocacy and local stakeholders’ engagement and the development of LCGs in Gulf of Mottama (GoM) and Nanthar Island for Ramsar Site designation and management.	

B. Provide a brief abstract summary of your project. In the summary, please include its objective and its location (Name of Place, City and Country), and explain the significance and relations of the species and its location (in link with [EAAF Key Species](#) and [Flyway Network Site](#)) for your project.

Gulf of Mottama(GoM)(FNS Code; EAAF 117) is one of the seven Ramsar Sites and one of eight Flyway Network Sites(FNS) in Myanmar and supports approximately 100,000 individuals of migratory waterbirds including about 50% of the wintering population of Critically Endangered Spoon-billed Sandpipers(SBS). Nature Conservation Society-Myanmar (NCS) conducted monthly shorebirds monitoring from November 2023 to February 2024 in GoM to estimate the annual wintering population of SBS and other wader species, and to understand the habitat changes in GoM. Total of four survey trips lasted for 5-8 days per trip for bird surveys. During this wintering season(2023-2024), we have focused on both the east and west coasts of GoM, and surveys were conducted during both spring and neap tide to cover the whole GoM and tidal cycles as much as possible. The number of observers is different as two, three, nine and ten for November, December, January and February respectively. Scan and flock count survey method was applied in that observers were separated into different directions from boat anchoring points and conducted the species identification and birds count. A total of 5, 5, 19, and 16 individuals of SBS were observed in different months respectively, and the difference would depend on the number of observers and the extent of the surveyed area. The most representative number of SBS count was assumed to be 19 individuals in January 2024 as it is the bound-count among

four surveys trips in four months, January is the peak month of most migrant wintering birds arrive and most surveyed areas were covered with most number of observers. Then, a total of 35 SBS were estimated to be wintering in the GoM based on 250 flock counts of over 43,156 birds which were extrapolated to an estimated of 77,550 birds of small waders in the surveyed area. Among other globally Endangered species, there were 27 Great Knots (EN), 49 Nordmann's Greenshanks (EN), 2 Steppe Eagle (EN), and 1 Greater Spotted Eagle (VU), respectively. Furthermore, eight globally near-threatened species were also recorded including 434 Black-tailed Godwits, 14 Bar-tailed Godwits, 383 Eurasian Curlews, 27 Asiatic Dowitcher, 3 Red Knots, 4,538 Curlew Sandpipers, 123 Black-headed Ibises, and 19 Painted Storks. Among those observed 50 waterbird species, the most three abundant species were the Lesser Sand Plover (23,614 individuals) followed by the Kentish Plover (7,606 individuals), and the Curlew Sandpiper (4,538 individuals), respectively. These birds were encountered by the team at low tide feeding and widespread across the vast mudflat habitats. The team recorded three Spoon-billed Sandpipers with distinct flag markings on their right legs: one with a White Flag (tag captive breeding bird tag), another with a Yellow Flag (tag in Staging site in China), and the third with a Lime Flag (from the wild in the breeding ground). The surveyors also spotted one Stint marked with a blue flag on its right leg, followed by one Curlew Sandpiper with a flag on its right leg, featuring Blue on the upper part and Green on the lower part was also recorded. Throughout the survey period, a total of 27 wader species, 10 Gull and Tern species along with 8 other wetland-dependent species and 3 raptor species were recorded. Additionally, 14 other terrestrial bird species including 2 individuals of Steppe Eagle (EN) and 1 individual of Spotted Eagle (VU) were observed.

During the project, training on ecotourism practice was provided to the members of the Local Conservation Group(LCG) on 14th November 2023 and a total of 30 participants attended. Basic ecotourism concept, ethics of a tour guide and bird watching were taught, and the potential of ecotourism business opportunities in the GoM was discussed. Moreover, a boat with an engine was donated to the LCG of Koe Tae Su village, Bilin Township in Mon State.

1.2 DETAILS

Please provide a project description of the following:

- A. **Detailed Project Progress:** Describe about process of your project, including methodologies, field work, interview, conference, etc. Please include analysis of your process, if applicable. (Any visual data, including maps, graphs, tables, photos, etc. are strongly preferred)

Monthly shorebirds surveys

Shorebirds monitoring surveys were monthly conducted from November 2023 to February 2024 in GoM to estimate the annual wintering population of SBS and other wader species, and to understand the habitat changes in GoM. Each survey trip lasted from five to eight days. The surveys were timed to cover both the highest spring tide and the lowest neap tide because the boats could access all the intertidal mudflats only during the high spring tide period and shorebirds are likely to be concentrated at spring tides and gather in large flocks, and the survey team can reach to the lower areas during the neap tide. This way we were less likely to miss the large flocks and counted the total number of small shorebirds (Aung et al. 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023)(Figure 1).



Figure 1: Surveyors conducting bird surveys during the low tide(left photo) and surveys approaching the roosting site during the hide tide before departing to the next place

The survey team used shallow-draft fishing boats for transportation and tried to cover many parts of the GoM. The boats, which were grounded on the mud in the intertidal zone at low tide to allow observation of birds from the boat and on foot, moved to the next potential survey area during the high tide. This way, the observers were able to conduct scan surveys throughout the daylight period of tidal cycles and at a wide range of elevations relative to the high and low watermarks. Following a protocol outlined by Aung et al. (2018), the surveyors were separated into many directions based on the anchor points. Surveyors walked across the mudflat during low tide, diverging from the place where the boat was grounded, and viewed birds from the boats, especially when the tide was high.

Participants who were involved in the field trips are listed as below;

Table 1: Name and affiliation of the international participants

Sr. No	Name	Organization
1	Dr. Elena Lappo	BIRD RUSSIA
2	Dr. Anton Lvanov	BIRD RUSSIA
3	Dr.Christoph Zöckler	SBSTF Coordinator, Manfred-Hermesen Stiftung

Table 2: Name and affiliation of Myanmar participants

Sr. No	Name	Organization
1	Pyae Phyo Aung	Nature Conservation Society
2	Saw Moses	Nature Conservation Society
3	Gideon @ Sa Myo Zaw	Nature Conservation Society
4	Ye Min Aung	Nature Conservation Society
5	Nyan Linn	Nature Conservation Society
6	Shane Thu Lwin	Nature Conservation Society
7	Thura Soe Min Htike	Nature Conservation Society
8	Zarni Aung	Nature Conservation Society
9	Ye Wint Phyoe	Nature Conservation Society

Spoon-billed Sandpiper counts and flock counts

Counting Spoon-billed Sandpipers at any wintering site is challenging because they are rare and usually dispersed within large flocks of other small shorebirds, especially the similarly colored and sized, Red-necked Stint (*Calidris ruficollis*). In the GoM, complete direct counts of Spoon-billed sandpipers are not possible because of the large numbers of other small shorebirds that must be checked, the large size of the intertidal area, day-to-day variation in the extent and location of foraging habitats exposed at low tide and frequent changes in the location of high tide roosts. Roosts are often on very soft substrates making it impossible to approach them before the birds leave on the falling tide. Therefore, in order to estimate the total number of Spoon-billed Sandpipers the flock-count method (described below) was applied along with exact counts of true observations. However, the accuracy of these estimates may be impacted by factors such as observer bias, weather conditions, and the behavior of the birds being counted. To minimize the chance of double-counting, observations of the time and observers during the day were shared among the team on their return to the camp.

Each group of observers included surveyors experienced in shorebird identification, scanned flocks of resting and foraging small shorebirds using a telescope. A flock can vary between 30 and 1000 birds. A scan consisted of a search by one observer through a group of small shorebirds, at the end of which the numbers of small shorebirds of each species were recorded, together with the date and time of the record and the location, with a GPS. An individual Spoon-billed Sandpiper was only included in the scan record if it was seen well enough to make sure whether it was a Spoon-billed Sandpiper or not, and the observers were trained to spend enough time for observing each bird so that they could do this accurately.

Shorebird species sighted, in addition to Spoon-billed Sandpipers, were mostly *Calidrid* sandpipers (Curlew Sandpiper *Calidris ferruginea*, Broad-billed Sandpiper *Calidris falcinellus* and Red-necked Stint/ Little Stint) and plovers (Greater Sand plover *Charadrius leschenaultii*, Lesser Sandplover *Charadrius mongolus*, Kentish Plover *Charadrius alexandrinus* and Little Ringed Plover *Charadrius dubius*), Ruddy Turnstone (*Arenaria interpres*) and Terek Sandpiper (*Xenus cinereus*). These species tended to feed and roost in mixed species flocks and were distinguished at a distance on the ground and in flight.

Analysis

The total proportion of small waders was estimated based on the average number of each species within all submitted flocks across all observers. The total number of small shorebird species was then extrapolated based on the estimates of the overall flock size of small waders. As the latter varies between counters and is likely more inaccurate than the actual flock counts, the total number of SBS and other species varies widely according to the range of overall flock size estimates. In 2024 there were considerable agreements on the sizes of the flock of small waders among the surveyors in both months. Further analysis was based on the proportion of the flagged birds across all winter survey sites. This could provide another indicator of the overall population size.

- B. **Problems Encountered/Adjustments:** If there were some changes made, please indicate them and explain (ex. unexpected circumstances, sudden cancellation, etc.)

Although we planned to start the monthly surveys in October 2023, it was rescheduled to start in November so that all migratory birds arrive to the GoM and four survey trips were conducted as planned from November 2023 until February 2024.

- C. Details on any community education and public awareness activities associated with your project.

During the field survey trip in January 2024, three new local youths were invited to join the trip, and we could build the capacities of three local youths and six boat assistants in bird watching and bird identification process.

Throughout the project, a training session on ecotourism practices was conducted for the members of the Local Conservation Group (LCG) on November 14th, 2023, with a total of 30 participants in attendance. The training covered fundamental concepts of ecotourism, tour guide ethics, and bird-watching techniques, while also delving into the potential ecotourism business opportunities available in the GoM. Additionally, a boat equipped with an engine was generously donated to the LCG of Koe Tae Su village, located in Bilin Township, Mon State.

- D. Please include any additional supporters of this project

The survey trips in January and February 2024 were partly funded by the Mangrove Conservation Fund (MCF), Manfred Hermsem Foundation (MHF), East Asian-Australian Flyway Partnership(EAAFP), Wildsounds from Duncan McDonald, Royal Society for the Protection of Birds (RSPB), and the Gulf of Mottama Project(GoMP) funded by The Swiss Agency for Development and Cooperation(SDC).

1.3 RESULT

Explain and evaluate the outcomes and findings of your project (Any visual data, including maps, graphs, tables, photos, etc. are highly preferred).

A cumulative total of 5, 5, 19, and 16 Spoon-billed Sandpipers (SBS) were observed across November, December 2023, and January, February 2024, with discrepancies attributed to the number of observers and the extent of surveyed areas. The most representative count of SBS, totaling 19 individuals in January 2024, reflects the peak period for migrant wintering birds' arrival, coinciding with extensive coverage by a greater number of observers during this pivotal month. Both the eastern and western coasts of the GoM were covered to be surveyed this year(Figure 2).

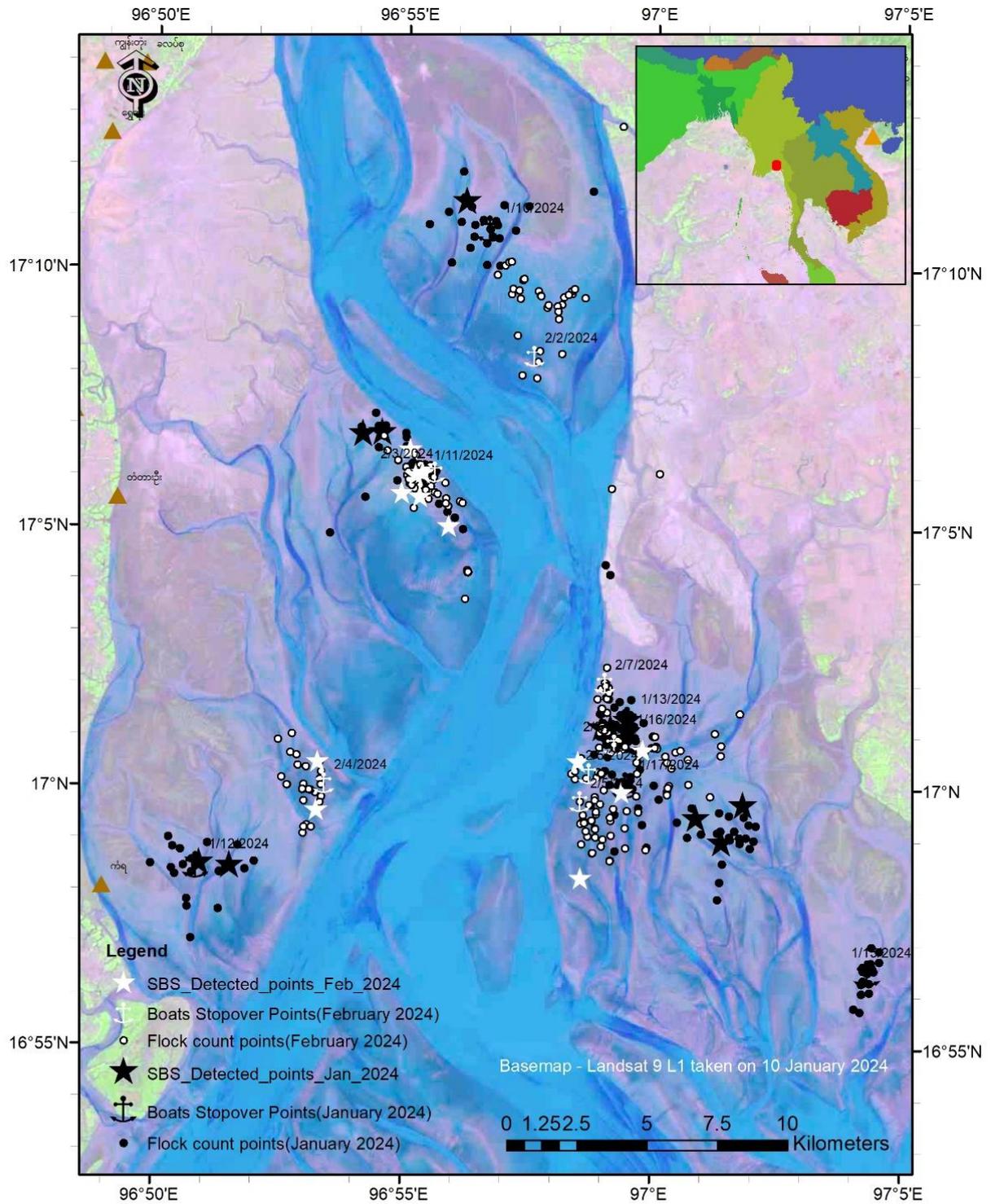


Figure 2: Distribution of Spoon-billed Sandpiper sightings recorded in January and February 2024 in black and white color respectively; the anchors represent campsites or boat anchor points, the dots representing flock count points and stars are the Spoon-billed Sandpipers detecting points. Flock count points in November and December were not included as these are the initial surveys and so that the map could be clearly understandable.

Estimation of SBS and other small wader species in the GoM

During the January survey period, different observers recorded a total of over 43,156 small waders belonging to eight or nine species (where Red-necked Stint and Little Stint were combined as one species group for this estimation) in 250 flocks in the GoM. The average proportion of small waders in these flocks was 0.04% (SBS), as shown in Table 3. Small wader species that occurred in only a few samples were not included in this calculation. Using the proportion generated by the flock count of 0.04% for January 2024, which was higher than the proposition of 0.03% in 2023 but lower than the proportions of 0.05%, 0.07%, 0.19%, and 0.18 % recorded in 2022, 2021, 2020 and 2019, respectively. From these findings, we estimated that the total population of Spoon-billed Sandpipers in the GoM in January 2024 was only 34 individuals out of a total flock of small waders of about 77,550.

During the trip with international surveyors in February 2024, a mark-resighting analysis which is based on Lincoln-Petersen method was practiced to estimate the proportion of birds with individual marks during the scan surveys (Green et al. 2021). Totally, we recorded the SBS with yellow flag for seven times, the one with lime flag for one time and the unmarked individuals for 19 times. Based on the number of the recorded times as eight times for marked and 19 times for unmarked individuals, total number of SBS were estimated as 6.75 individuals. This estimate will be the extremely underestimated and is lower than the estimate of our proportional estimate (22-34 individuals), and could be biased because this method is based on the proportion of resighting on each individual, large sample size ($n > 30$) and due to several resighting of the marked individual (seven times for the individual with yellow flag in this case) and only one sighting for each unmarked individual. The GoM is very rare to see a single Spoon-billed Sandpiper for many times at the foraging site and thus reasons could be effect on the Lincoln-Petersen method.

Table 1: Average flock proportions of small waders in the GoM in January 2024 (n= 250) *, proportional observations for 2019,2020, 2021, 2022, 2023, 2024 (Figures in brackets represent 2023 numbers (Aung et al. 2023))

English Name	Scientific Name	Flock count total*	Mean proportion (* 100%)					
			2024	2023	2022	2021	2020	2019
Spoon-billed Sandpiper	<i>Calidris pygmaea</i>	19	0.04	0.03	0.05	0.07	0.19	0.18
Little /Red necked Stint	<i>Calidris ruficollis/minuta</i>	4441	10.29	15.14	11.85	15.59	18.06	22.37
Curlew Sandpiper	<i>Calidris ferruginea</i>	4538	10.52	7.63	7.74	17.75	16.32	6.55
Broad-billed Sandpiper	<i>Calidris falcinellus</i>	2799	6.49	7.51	2.38	5.30	7.66	5.32
Kentish Plover	<i>Charadrius alexandrinus</i>	7606	17.62	11.74	6.87	18.41	12.53	31.41
Lesser Sand Plover	<i>Charadrius mongolus</i>	23614	54.72	56.26	70.78	42.00	44.17	32.20
Greater Sand Plover	<i>Charadrius leschenaultii</i>	119	0.28	1.67	0.25	2.77	0.69	1.63
Little Ringed Plover	<i>Charadrius dubius</i>	20	0.05	0.03	0.07	2.83	0.39	0.34
Total of all flocks		43156 (32194)						
Total of SBS calculated in flock of 77,550		34 (9)						

Comparisons of 2024 results with previous years

The estimated number of Spoon-billed Sandpipers (SBS) observed and estimated in the GoM over 16 years, from 2009 to 2024 as shown in Figure 4 and Table 4. The observed numbers refer to the actual number of SBS recorded during the surveys, while the total estimated numbers refer to the additional SBS number estimated using its proportion plus the observed number of small waders. **Table 4** shows that in 2024, a total of 19 individuals SBS were observed in the field. In recent years, the highest number of observed SBS in the survey period was in 2015 with 143 individuals, while the highest estimated number was in 2009 with 240 individuals (see Figure 4). This mean, the wintering population of Spoon-billed Sandpipers are dramatically declined.

Table 2: The 2024 total estimated number of SBS compared with previous years in the period between 2009-2024.

	2009	2010	2012	2015	2016	2017	2019	2020	2021	2022	2023	2024
Total estimated number	240	220	100	154	125	100	114	114	42	80	16	34
Observed	71	75	100	143	99	70	76	99	17	17	9	19
Additional Estimated	169	145		11	26	30	38	15	25	63	7	15

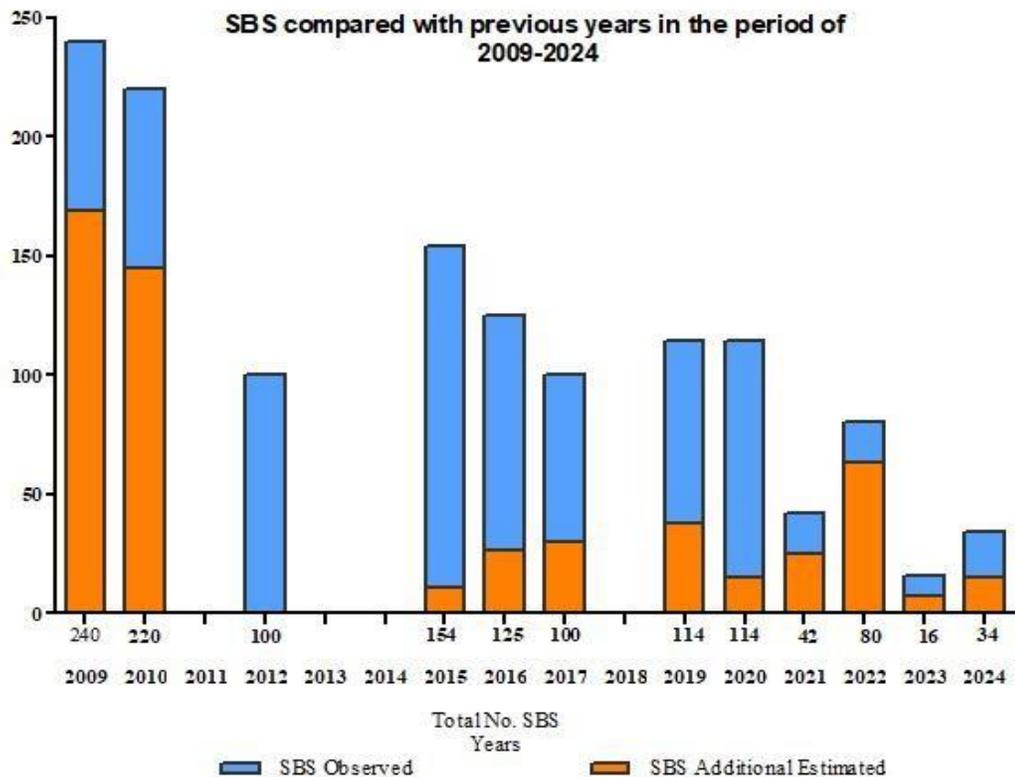


Figure 3: Spoon-billed Sandpiper population estimates in the GoM from 2009-2024, blue reflects the actual observed number, and orange the additional estimated number based on flock counts, the numbers above the labels of years indicating the total number of SBS for each year

Table 3: Summary results of the key common shorebird species during the 2024 mid-winter count period in the GoM in comparison with 2010, 2019, 2020, 2021, 2022, 2023 and 2024 (Zöckler et al. 2014, Aung et al 2019, 2020, 2021, 2022, 2023), increasing species with bold font, declining in Italic, not much change in regular

Species	Scientific name	2024 (Feb)	2024 (Jan)	2023	2022	2021	2020	2019	2018
Lesser Sand Plover	<i>Charadrius mongolicus</i>	18,387	23,614	<i>13,472</i>	24,712	6,340	14,508	16,385	18,032
Red-necked/Little Stint	<i>Calidris ruficollis/minuta</i>	9,611	4,441	4,373	4,138	3,884	4,760	7,690	6,353
Curlew Sandpiper	<i>Calidris ferruginea</i>	2,640	4,538	2,247	2,703	2,235	4,512	3,003	6,762
Kentish Plover	<i>Charadrius alexandrinus</i>	13,621	7,606	3,,705	2,399	7,107	3,727	10,997	8,131
Pallas' Gull	<i>Larus ichthyaetus</i>	15	81	645	149	2,988	2,835	84	2,473
Whiskered/White-winged tern	<i>Chlidonias hybrida /leucoptera</i>	6,673	3,450	1100	1127	5,925	2,435	8,088	10,345
Black-tailed Godwit	<i>Limosa limosa</i>	2,950	434	1,651	3,723	14,392	2,310	5,625	3,405
Broad-billed Sandpiper	<i>Calidris falcinellus</i>	7,404	2,799	2,179	831	856	2,138	1,909	4,000
Common Redshank	<i>Tringa totanus</i>	5,218	<i>1,965</i>	3,739	1,648	5,378	1,331	809	4,617

IUCN Red List Species

Regarding the Red List species of the IUCN, one Critically Endangered species (CR), three Endangered (EN), one Vulnerable (VU), and eight globally Near Threatened (NT) species have been recorded (see Table 6). Among these, the Red List species included the globally Critically Endangered Spoon-billed Sandpiper, which is more discussed in detail as well as the other Endangered species as Great Knot, Nordmann's Greenshank and Steppe eagle.

During the January survey, two Steppe eagles (EN) and one Greater Spotted Eagle (VU) were newly sighted on January 9, 2024, where it also shows a significant decrease from the 16 individuals observed in 2023 for the Greater Spotted Eagle (VU). Red Knot has been recorded again with 3 individuals in January which is a significant decrease from the 21 observed in 2023; it was known from the 2008-2012 period when on average 20-40 birds were observed (Zöckler et al. 2014). However, the feeding habitat is not ideal for this species mainly feeding on small bivalves. The Black-headed Ibis, despite a decrease compared to the previous year (2023), still constituted a notable presence with 123 individuals recorded in January, marking the second-highest count since 2019 surveys. Significantly, Nordmann's Greenshank population is increased within 6 years period from 2019 to 2024. Curlew Sandpiper and Painted Stork while other species were decreasing(See Table 6).

Table 4: Globally threatened species recorded in January and February 2024 survey periods in the GoM compared to 2023, 2022, 2021, 2020 and 2019. *For Spoon-billed Sandpiper a separate more extensive analysis is below. Species with bold fonts were increasing and in italic style decreasing.

Common Name	Scientific name	IUCN Statu	2024 (Feb)	2024 (Jan)	2023	2022	2021	2020	2019
Spoon-billed Sandpiper*	<i>Calidris pygmaea</i>	CR	16	19	9	17	17	99	76
Great Knot	<i>Calidris tenuirostris</i>	EN	46	27	83	165	84	32	153
Nordmann's Greenshank	<i>Tringa guttifer</i>	EN	4	49	15	8	-	-	-
Steppe Eagle	<i>Aquila nipalensis</i>	EN	-	2					
Greater Spotted Eagle	<i>Clanga clanga</i>	VU	-	1	16	-	-	-	-
Black-tailed Godwit	<i>Limosa limosa</i>	NT	2950	434	2040	3,723	14,392	5,625	2310
Bar-tailed Godwit	<i>Limosa lapponica</i>	NT	35	14	91	3	24	4	21
Eurasian Curlew	<i>Numenius arquata</i>	NT	736	383	1072	313	1,264	597	280
Asiatic Dowitcher	<i>Limnodromus semipalmatus</i>	NT	28	27	183	-	2	-	49
Red Knot	<i>Calidris canutus</i>	NT	-	3	21	-	478	-	-
Curlew Sandpiper	<i>Calidris ferruginea</i>	NT	2640	4538	2455	2703	2235	3003	4512
Black-headed Ibis	<i>Threskiornis melanocephalus</i>	NT	-	123	144	12	13	32	-
Painted Stork	<i>Mycteria leucocephala</i>	NT	-	19	4	13	55	1	-

Flagged birds

In the January survey, the team recorded three Spoon-billed Sandpipers with distinct flag markings on their right leg: one with a White Flag, another with a Yellow Flag, and the third with a Lime Flag. The first one with the white flag is the captive breeding individual which was tagged in its head-starting program area in Russia. Another second Spoon-billed Sandpiper with the yellow flag is the individual which flag was tagged at its Staging site in China. The third one with the lime-colored flag is the Spoon-billed Sandpiper which was tagged in the wild in its breeding ground, Russia. One flagged Stint with a blue flag on its right leg was observed and then one Curlew Sandpiper with a flag on its right leg, featuring Blue on the upper part and Green on the lower part was also recorded.

Furthermore, during the February trip with the international team, two Spoon-billed Sandpipers were observed with distinctive flag markings: one with a Yellow Flag on the right tibia and the other with a Lime Flag on the right leg along with a metal ring on the left leg. The Spoon-billed Sandpiper with the yellow flag and "XJ" letters written on the flag is the one which was ringed in Kamchatka 2020 and first resighting in Yangkou, Jiangsu in autumn 2022 and last seen in autumn (2023). The second one with the lime flag on the right leg along with a metal ring on the left leg is the individual which was tagged in the wild in its breeding

ground, Russia. Additionally, one Broad-billed Sandpiper, distinguished by black over white markings on the left leg and blue markings on the right, was recorded.



Figure 4: Photos of the flagged birds; the Spoon-billed Sandpiper with yellow flag on the right leg with written letters “XJ” on the flag (left photo) and the broad-billed Sandpiper with blue flag on the right leg and black over white on the left leg (right photo) (Photo by Ye Min Aung @NCS)

1.4 RECOMMENDATIONS

How might the outcome of your project be applied in future research.

Discuss how this project contributes to the implementation of the [EAAFP Strategic Plan 2019-2028](#).

Our findings, particularly the population estimates of Spoon-billed Sandpipers and other migratory shorebirds in the Gulf of Mottama, serve as crucial foundational data for the management of these threatened species and contribute to the broader effort of estimating their global populations. Monitoring population trends over consecutive years is essential for gaining insights into the future population trend of these species. Given that the Gulf of Mottama represents a critical wintering site accommodating more than 50% of the global wintering population of Spoon-billed Sandpipers, comprehending habitat changes becomes pivotal for identifying key conservation areas and guiding future management strategies, including patrolling and monitoring initiatives.

The training on ecotourism practices aims to enhance the capacities of 30 local individuals by imparting knowledge on fundamental ecotourism principles, effective guiding techniques, bird-watching tourism, and the potential of the ecotourism industry within their local environment. Additionally, supplying a boat to the Local Conservation Group (LCG) not only offers an alternative means of livelihood but also fosters their involvement in future conservation endeavors.

This project has contributed to the implementation of the EAAFP Strategic Plan 2019-2028 by providing the results as follows.

KRA 2.1 The achievement of the elements in the EAAFP CEPA Action Plan (2019- 2024).

This project can contribute to increase the awareness of local communities on the benefit of wetland ecosystems and migratory waterbirds in their socio-economic and environmental sectors. The training

can contribute to achieve the objective of CEPA action plan by promoting the awareness of 30 local participants on the conservation of migratory waterbirds and their habitat.

KRA 3.1 National monitoring systems to assess the status of migratory waterbirds and their habitats are established, maintained and further enhanced.

This project contributes to the annual monitoring on waterbirds population in the GoM, and will also contribute to know the annual wintering population of threatened shorebirds species by providing the annual wintering population estimates of Spoon-billed Sandpipers and other shorebirds species. Moreover, these data can be used as an Asian Water Birds Census manage by Wetlands International.

KRA 3.2 Conservation status reviews for waterbird populations are produced and updated to set and adapt priorities for action.

This project produces reports with the facts and figures of the monthly population surveys and an estimate of the wintering population of Spoon-billed Sandpipers and other threatened birds and provides the wintering population trend of Spoon-billed Sandpipers in the GoM over the last decade until 2024.

KRA 3.3 Updated list of sites of international importance for migratory waterbirds for conservation management and prioritization.

This project updates the situation of the GoM, including its mudflat locations, hunting status and population estimates of the migratory shorebirds.

Finally, the following recommendations have been made;

- Emergency to mitigate resuming of hunting activities in the GoM such as (Evaluation of former ex-hunter's economic status and the new hunters as well).
- Provide alternative support for hunters if necessary and make an agreement to stop hunting
- Reinforce the local patrol efforts in key areas of the GoM
- Should be conducted two tide cycle survey counts (in both Spring and Neap) tide that were recommended in the last year's report (Aung et al 2023) to know the distribution pattern of shorebirds.
- To re-visit the sites where Spoon-billed Sandpipers were recorded in the Yangon region and southern Gulf of Mottama (Ahlal mudflat and Bilu Kyun Island where Spoon-billed Sandpiper recorded) Aung et., al 2017, 2018, due to the dynamic movement of mudflat and food availability.
- To use the proper hi-tech drones for searching high tide roosting sites with the special permission of the Department of Aviation Authority of Myanmar because over the decade of the survey efforts in the GoM, we didn't know exactly the high tide roosting places where we could easily estimate the numbers of shorebirds including the Spoon-billed Sandpipers.
- To investigate the potential mudflat, hydrology, and dynamic situation by using remote sensing techniques for the long-term monitoring approaches of shorebird conservation.
- To conduct further assessments on potential threats including resuming hunting pressures, water pollution, climate change consequences, food availability, etc.

- To continue CEPA for delivering the current population trends and threat levels to different stakeholders (community, private sectors, fishery, government) through global events such as World Wetlands Day, World Migratory Bird Day, Biodiversity Day, local media, newspaper, and mobile education team although education and awareness activities have been conducted over the past 10 years.
- To keep the momentum of LCG participation for long-term conservation efforts as the LCG members are very active to learn the shorebird watching and that is a very positive sign. To provide bird-watching equipment (binoculars, spotting scopes, and more intensive training) to the LCG. To communicate with the Forest Department / Department of Fishery by the LCG for law enforcement within the Ramsar Site through facilitation and support of GoMP.

Section 2. BUDGET REPORT

Please provide a table for the expenditure breakdown:

Equipment: Bird-watching boat & engine (1 item)	1,092.12 USD
Consumable items: Monthly shorebirds population surveys	1,848.34 USD
Travel and accommodation: Boats/vehicles and accommodation during Monthly shorebirds population surveys	2,039.34 USD
Total	4,979.80 USD

Note:

- It is compulsory that recipients of the 2023 EAAFP Small Grant Fund for WG/TFs submit a final report along with a web article within 3 months of the completion of the project.

Appendix

Table A1: Daily counts of birds per species during bird surveys from 15th to 19th November 2023 in the GoM, Myanmar

No	Date		IUCN Status (2017) ver 3.1	15-Nov-23	16-Nov-23	17-Nov-23	18-Nov-23	19-Nov-23
	Aproximate centre of survey - Latitude			17.1803	17.0460	16.9917	16.9569	17.0204
	Aproximate centre of survey - Longitude			96.9682	97.0008	97.0348	97.0671	97.0205
	Survey units			1	2	3	4	5
	Common Name	<i>Scientific Name</i>						
1	Black-tailed Godwit	<i>Limosa limosa</i>	NT	4	40	4200	4000	323
2	Bar-tailed Godwit	<i>Limosa lapponica</i>	NT	3	6	8	3	
3	Whimbrel	<i>Numenius phaeopus</i>	LC		98			155
4	Eurasian Curlew	<i>Numenius arquata</i>	NT	2	95	14	47	43
5	Ruff	<i>Calidris pugnax</i>	LC		4			
6	Terek Sandpiper	<i>Xenus cinereus</i>	LC		3	14	11	
7	Common Sandpiper	<i>Actitis hypoleucos</i>	LC	14			5	3
8	Ruddy Turnstone	<i>Arenaria interpres</i>	LC		1			
9	Spotted Redshank	<i>Tringa erythropus</i>	LC				3	
10	Common Redshank	<i>Tringa totanus</i>	LC	3	274	25	49	63
11	Marsh Sandpiper	<i>Tringa stagnatilis</i>	LC		1	3		3
12	Common Greenshank	<i>Tringa nebularia</i>	LC	30	28	13	9	32
13	Nordmann's Greenshank	<i>Tringa guttifer</i>	EN		2	1	5	4
14	Spoon-billed Sandpiper ¹	<i>Calidris pygmeus</i>	CR		1	4	0	
15	Little Stint/Red-necked Stint			9	350	457	130	138
16	Long-toed Stint	<i>Calidris subminuta</i>	LC	3				
17	Great Knot	<i>Calidris tenuirostris</i>	EN	3	2	9	5	4
18	Red Knot	<i>Calidris canutus</i>	NT				2	
19	Curlew Sandpiper	<i>Calidris ferruginea</i>	NT	20	144	109	161	127
20	Broad-billed Sandpiper	<i>Calidris falcinellus</i>	LC	7	106	35	213	61

No	Date		IUCN Status (2017) ver 3.1	15-Nov-23	16-Nov-23	17-Nov-23	18-Nov-23	19-Nov-23
	Aproximate centre of survey - Latitude			17.1803	17.0460	16.9917	16.9569	17.0204
	Aproximate centre of survey - Longitude			96.9682	97.0008	97.0348	97.0671	97.0205
	Survey units			1	2	3	4	5
	Common Name	Scientific Name						
21	Kentish Plover	<i>Charadrius alexandrinus</i>	LC	303	420	163	118	56
22	Lesser Sand Plover	<i>Charadrius mongolus</i>	LC	429	1672	109	564	81
23	Greater Sand Plover	<i>Charadrius leschenaultii</i>	LC	4	4		5	
24	Pacific Golden Plover	<i>Pluvialis fulva</i>	LC					17
25	Grey Plover	<i>Pluvialis squatarola</i>	LC	7	2	2	4	2
	Total Waders			841	3253	5166	5334	1112
	Estimated total small waders (includes unidentify spp)			1250	3500	1000	1500	300
1	Ruddy Shelduck	<i>Tadorna ferruginea</i>	LC	2				
2	Garganey	<i>Spatula querquedula</i>	LC				7	
	Total Wildfowl			2	0	0	7	0
1	Brown-headed Gull	<i>Larus brunnicephalus</i>	LC	10	78	24	25	25
2	Gull-billed Tern	<i>Gelochelidon nilotica</i>	LC	13	85	30	25	27
3	Caspian Tern	<i>Hydroprogne caspia</i>	LC	2		6	74	8
4	Little Tern	<i>Sterna albifrons</i>	LC	12	17	50	20	18
5	Whiskered Tern	<i>Chlidonias hybrida</i>	LC	25	50	40		11
6	White-winged Tern	<i>Chlidonias leucopterus</i>	LC	30	1050	182	58	250
7	Whiskered/White-winged Tern	<i>all tern species</i>		1500	3000		2000	1500
	Total Gulls and Terns			1592	4280	332	2202	1839
1	Little Egret	<i>Egretta garzetta</i>	LC	4		3	48	8
2	Great Egret	<i>Ardea alba</i>	LC	21	17	7	120	36
3	Cattle Egret	<i>Bubulcus ibis</i>	LC		8			
4	Grey Heron	<i>Ardea cinerea</i>	LC	5	7	2	22	18

No	Date		IUCN Status (2017) ver 3.1	15-Nov-23	16-Nov-23	17-Nov-23	18-Nov-23	19-Nov-23
	Aproximate centre of survey - Latitude			17.1803	17.0460	16.9917	16.9569	17.0204
	Aproximate centre of survey - Longitude			96.9682	97.0008	97.0348	97.0671	97.0205
	Survey units			1	2	3	4	5
	Common Name	<i>Scientific Name</i>						
5	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	LC		7		7	7
6	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	NT				9	
7	Painted Stork	<i>Mycteria leucocephala</i>	NT	21	109	2	16	68
	Total other dependent waterbirds			51	148	14	222	137
1	Peregrine Falcon	<i>Falco peregrinus</i>	LC		2			
2	Eastern Marsh Harrier	<i>Circus spilonotus</i>	LC	1	3	1		3
3	Western Marsh Harrier							
4	Pied Harrier	<i>Circus melanoleucos</i>	LC	4				
5	Short-toed Snake-eagle	<i>Circaetus gallicus</i>	LC	1	2			
	Total raptors			6	7	1	0	3
	Total wetland dependent species			2492	7688	5513	7765	3091

Table A2: Daily counts of birds per species during bird surveys from 28th December 2023 to 1st January 2024 in the GoM, Myanmar

No	Date		IUCN Status (2017) ver 3.1	28-Dec-23	29-Dec-23	30-Dec-23	31-Dec-23	1-Jan-24
	Aproximate centre of survey - Latitude			17.1491	17.1009	17.0571	17.0270	16.9404
	Aproximate centre of survey - Longitude			96.9721	96.9173	96.8911	96.9841	97.0681
	Survey units			1	2	3	4	5
	Common Name	<i>Scientific Name</i>						
1	Black-tailed Godwit	<i>Limosa limosa</i>	NT			71	141	185
2	Bar-tailed Godwit	<i>Limosa lapponica</i>	NT		4		1	1
3	Whimbrel	<i>Numenius phaeopus</i>	LC		4		7	22
4	Eurasian Curlew	<i>Numenius arquata</i>	NT		15		13	71
5	Terek Sandpiper	<i>Xenus cinereus</i>	LC		1		4	6
6	Asiatic Dowitcher	<i>Limnodromus semipalmatus</i>	NT				3	1
7	Common Redshank	<i>Tringa totanus</i>	LC	5	7	29	1664	74
8	Marsh Sandpiper	<i>Tringa stagnatilis</i>	LC	2	2	2	75	10
9	Common Greenshank	<i>Tringa nebularia</i>	LC		3	12	4	6
10	Spoon-billed Sandpiper ¹	<i>Calidris pygmeus</i>	CR		5			
11	Little Stint/Red-necked Stint			113	276	13	278	318
12	Great Knot	<i>Calidris tenuirostris</i>	EN				15	1
13	Curlew Sandpiper	<i>Calidris ferruginea</i>	NT		46	5	1226	42
14	Broad-billed Sandpiper	<i>Calidris falcinellus</i>	LC		303		311	9

No	Date		IUCN Status (2017) ver 3.1	28-Dec-23	29-Dec-23	30-Dec-23	31-Dec-23	1-Jan-24
	Aproximate centre of survey - Latitude			17.1491	17.1009	17.0571	17.0270	16.9404
	Aproximate centre of survey - Longitude			96.9721	96.9173	96.8911	96.9841	97.0681
	Survey units			1	2	3	4	5
	Common Name	<i>Scientific Name</i>						
15	Kentish Plover	<i>Charadrius alexandrinus</i>	LC	105	265	98	112	91
16	Lesser Sand Plover	<i>Charadrius mongolus</i>	LC	76	7820	50	1489	1156
17	Greater Sand Plover	<i>Charadrius leschenaultii</i>	LC	1	34	4	16	22
18	Pacific Golden Plover	<i>Pluvialis fulva</i>	LC		11	7	389	
19	Grey Plover	<i>Pluvialis squatarola</i>	LC		1			
	Total Waders			302	8797	291	5748	2015
	Estimated total small waders (includes unidentify spp)			400	15500	0	10000	8000
1	Brown-headed Gull	<i>Larus brunnicephalus</i>	LC	1	2	3		
2	Pallas's Gull	<i>Larus ichthyaetus</i>	LC		3		2	107
3	Caspian Tern	<i>Hydroprogne caspia</i>	LC		2			
4	Little Tern	<i>Sterna albifrons</i>	LC		3			
5	Whiskered Tern	<i>Chlidonias hybrida</i>	LC	247	120	15		
6	White-winged Tern	<i>Chlidonias leucopterus</i>	LC		26	27		523
	Total Gulls and Terns			248	156	45	2	630

No	Date		IUCN Status (2017) ver 3.1	28-Dec-23	29-Dec-23	30-Dec-23	31-Dec-23	1-Jan-24
	Aproximate centre of survey - Latitude			17.1491	17.1009	17.0571	17.0270	16.9404
	Aproximate centre of survey - Longitude			96.9721	96.9173	96.8911	96.9841	97.0681
	Survey units			1	2	3	4	5
	Common Name	<i>Scientific Name</i>						
1	Great Egret	<i>Ardea alba</i>	LC			1		97
2	Grey Heron	<i>Ardea cinerea</i>	LC	2				13
3	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	LC	7	7	7	7	7
4	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	NT				3	2
5	Painted Stork	<i>Mycteria leucocephala</i>	NT				1	
6	Glossy Ibis	<i>Plegadis falcinellus</i>	LC				10	
	Total other dependent waterbirds			9	7	8	21	119
1	Peregrine Falcon	<i>Falco peregrinus</i>	LC	1				
2	Eastern Marsh Harrier	<i>Circus spilonotus</i>	LC	1				
3	Pied Harrier	<i>Circus melanoleucos</i>	LC					
4	Short-toed Snake-eagle	<i>Circaetus gallicus</i>	LC					
	Total raptors			2	0	0	0	0
	Total wetland dependant species			561	8960	344	5771	2764

Table A3: Daily counts of birds per species during bird surveys from 9th to 17th January 2024 in the GoM, Myanmar

No	Date		IUCN Status (2017) ver 3.1	9-Jan-24	10-Jan-24	11-Jan-24	12-Jan-24	13-Jan-24	14-Jan-24	15-Jan-24	16-Jan-24	17-Jan-24
	Aproximate centre of survey - Latitude			17.1919	17.1796	17.0999	16.9742	17.0220	16.9827	16.9413	17.0155	17.0010
	Aproximate centre of survey - Longitude			96.9786	96.9440	96.9216	96.8478	96.9915	96.0293	97.0724	96.9901	96.9911
	Survey units			1	2	3	4	5	6	7	8	9
	Common Name	Scientific Name										
1	Black-tailed Godwit	<i>Limosa limosa</i>	NT	3	17	35	200	150		29		
2	Bar-tailed Godwit	<i>Limosa lapponica</i>	NT		6	5	3					
3	Whimbrel	<i>Numenius phaeopus</i>	LC	125	5	105	79	43	8	13	1	
4	Eurasian Curlew	<i>Numenius arquata</i>	NT	9			202	22	22	111	13	4
5	Ruff	<i>Calidris pugnax</i>	LC		1		3		1			
6	Terek Sandpiper	<i>Xenus cinereus</i>	LC	3	3	1		1	2	32	4	1
7	Common Sandpiper	<i>Actitis hypoleucos</i>	LC	50		1	13				2	
8	Ruddy Turnstone	<i>Arenaria interpres</i>	LC							1		
9	Asiatic Dowitcher	<i>Limnodromus semipalmatus</i>	NT					22		5		

No	Date		IUCN Status (2017) ver 3.1	9-Jan-24	10-Jan-24	11-Jan-24	12-Jan-24	13-Jan-24	14-Jan-24	15-Jan-24	16-Jan-24	17-Jan-24
	Aproximate centre of survey - Latitude			17.1919	17.1796	17.0999	16.9742	17.0220	16.9827	16.9413	17.0155	17.0010
	Aproximate centre of survey - Longitude			96.9786	96.9440	96.9216	96.8478	96.9915	96.0293	97.0724	96.9901	96.9911
	Survey units			1	2	3	4	5	6	7	8	9
	Common Name	Scientific Name										
10	Spotted Redshank	<i>Tringa erythropus</i>	LC		4	15					4	7
11	Common Redshank	<i>Tringa totanus</i>	LC	280	1334	64	110	67	27	19	47	17
12	Marsh Sandpiper	<i>Tringa stagnatilis</i>	LC	2	38	8		1		8	1	5
13	Common Greenshank	<i>Tringa nebularia</i>	LC		32	17	15	6	10	17	5	6
14	Nordmann's Greenshank	<i>Tringa guttifer</i>	EN		8	3		1	6	15	3	13
15	Sanderling	<i>Calidris alba</i>	LC									
16	Spoon-billed Sandpiper ¹	<i>Calidris pygmeus</i>	CR		2	6	2	1	3		5	
17	Little Stint/Red-necked Stint			30	1400	639	31	193	1280	210	425	233
18	Dunlin	<i>Calidris alpina</i>	LC					1			4	
19	Temminck's Stint	<i>Calidris temminckii</i>	LC									
20	Long-toed Stint	<i>Calidris subminuta</i>	LC									
21	Great Knot	<i>Calidris tenuirostris</i>	EN		1	1		5	3	7	5	5

No	Date		IUCN Status (2017) ver 3.1	9-Jan-24	10-Jan-24	11-Jan-24	12-Jan-24	13-Jan-24	14-Jan-24	15-Jan-24	16-Jan-24	17-Jan-24
	Aproximate centre of survey - Latitude			17.1919	17.1796	17.0999	16.9742	17.0220	16.9827	16.9413	17.0155	17.0010
	Aproximate centre of survey - Longitude			96.9786	96.9440	96.9216	96.8478	96.9915	96.0293	97.0724	96.9901	96.9911
	Survey units			1	2	3	4	5	6	7	8	9
	Common Name	Scientific Name										
22	Red Knot	<i>Calidris canutus</i>	NT					1			2	
23	Curlew Sandpiper	<i>Calidris ferruginea</i>	NT	3	128	472	19	1600	314	41	1173	788
24	Broad-billed Sandpiper	<i>Calidris falcinellus</i>	LC	25	341	823	7	749	98	8	448	300
25	Small Pratincole	<i>Glareola lactea</i>	LC									
26	Little Ringed Plover	<i>Charadrius dubius</i>	LC	8	12							
27	Kentish Plover	<i>Charadrius alexandrinus</i>	LC	150	1526	909	568	745	903	264	1645	896
28	Lesser Sand Plover	<i>Charadrius mongolus</i>	LC	100	3385	4883	1082	4573	1357	473	6892	869
29	Greater Sand Plover	<i>Charadrius leschenaultii</i>	LC	4	28	29	2	10	13	18	12	3
30	Pacific Golden Plover	<i>Pluvialis fulva</i>	LC	10	543	343	534	50			254	67
31	Grey Plover	<i>Pluvialis squatarola</i>	LC	40	20	6	2	1		4	20	2
	Total Waders			842	8834	8365	2872	8242	4047	1275	10965	3216

No	Date		IUCN Status (2017) ver 3.1	9-Jan-24	10-Jan-24	11-Jan-24	12-Jan-24	13-Jan-24	14-Jan-24	15-Jan-24	16-Jan-24	17-Jan-24
	Aproximate centre of survey - Latitude			17.1919	17.1796	17.0999	16.9742	17.0220	16.9827	16.9413	17.0155	17.0010
	Aproximate centre of survey - Longitude			96.9786	96.9440	96.9216	96.8478	96.9915	96.0293	97.0724	96.9901	96.9911
	Survey units			1	2	3	4	5	6	7	8	9
	Common Name	Scientific Name										
	Estimated total small waders (includes unidentify spp)			1500	2500	7000	250	30000	6500	2500	25000	2300
1	Black-headed Gull	<i>Larus ridibundus</i>	LC		8	1						
2	Brown-headed Gull	<i>Larus brunnicephalus</i>	LC	3	209	16	30	12	7	230	911	
3	Pallas's Gull	<i>Larus ichthyaetus</i>	LC			7	2	2	55	3	7	5
4	Gull-billed Tern	<i>Gelochelidon nilotica</i>	LC		20	3	14	10	19	27	1	10
5	Caspian Tern	<i>Hydroprogne caspia</i>	LC		9	7	6	3	12		3	
6	Little Tern	<i>Sterna albifrons</i>	LC		1	10	12		2	1	6	7
7	Whiskered Tern	<i>Chlidonias hybrida</i>	LC	100	2297	63	285		314	465	12	1
8	White-winged Tern	<i>Chlidonias leucopterus</i>	LC	500	977	140	259	156	337	713		255
9	Indian skimmer	<i>Rynchops albicollis</i>	VU									
10	Whiskered/White-winged Tern	<i>all tern species</i>			1000		2000	200	150		100	

No	Date		IUCN Status (2017) ver 3.1	9-Jan-24	10-Jan-24	11-Jan-24	12-Jan-24	13-Jan-24	14-Jan-24	15-Jan-24	16-Jan-24	17-Jan-24
	Aproximate centre of survey - Latitude			17.1919	17.1796	17.0999	16.9742	17.0220	16.9827	16.9413	17.0155	17.0010
	Aproximate centre of survey - Longitude			96.9786	96.9440	96.9216	96.8478	96.9915	96.0293	97.0724	96.9901	96.9911
	Survey units			1	2	3	4	5	6	7	8	9
	Common Name	Scientific Name										
11	Lesser Black-backed Gull	<i>Larus fuscus</i>				1						
	Total Gulls and Terns			603	4521	248	2608	383	896	1439	1040	278
1	Little Egret	<i>Egretta garzetta</i>	LC	6	24		24	1	19	23		3
2	Intermediate Egret	<i>Ardea intermedia</i>	LC									
3	Great Egret	<i>Ardea alba</i>	LC	30	160	1	157	10	18	446	1	2
4	Cattle Egret	<i>Bubulcus ibis</i>	LC									
5	Grey Heron	<i>Ardea cinerea</i>	LC	6	65	1	11		13	20		
6	Pacific reef Egret	<i>Egretta sacra</i>	LC									
7	Pond Heron spp.	<i>Ardeola sp</i>	LC	45								
8	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	LC			7	7	7	7	10	7	10
9	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	NT	38	3	9	67			6		
10	Painted Stork	<i>Mycteria leucocephala</i>	NT		19							

No	Date		IUCN Status (2017) ver 3.1	9-Jan-24	10-Jan-24	11-Jan-24	12-Jan-24	13-Jan-24	14-Jan-24	15-Jan-24	16-Jan-24	17-Jan-24
	Aproximate centre of survey - Latitude			17.1919	17.1796	17.0999	16.9742	17.0220	16.9827	16.9413	17.0155	17.0010
	Aproximate centre of survey - Longitude			96.9786	96.9440	96.9216	96.8478	96.9915	96.0293	97.0724	96.9901	96.9911
	Survey units			1	2	3	4	5	6	7	8	9
	Common Name	Scientific Name										
11	Asian Openbill	<i>Anastomus oscitans</i>	LC	1								
	Total other dependent waterbirds			126	271	18	266	18	57	505	8	15
1	Peregrine Falcon	<i>Falco peregrinus</i>	LC	1	1	2			1	2	1	
2	Common kestrel	<i>Falco tinnunculus</i>	LC	2								
3	Osprey	<i>Pandion haliaetus</i>	LC									
4	Black Kite	<i>Milvus migrans</i>	LC	5		2	1			1		
5	Eastern Marsh Harrier	<i>Circus spilonotus</i>	LC	30	1		3		2	1		
6	Western Marsh Harrier											
7	Pied Harrier	<i>Circus melanoleucos</i>	LC	1								
8	Short-toed Snake-eagle	<i>Circaetus gallicus</i>	LC									
	Total raptors			39	2	4	4	0	3	4	1	0
	Total wetland dependent species			1610	13628	8635	5750	8643	5003	3223	12014	3509

No	Date		IUCN Status (2017) ver 3.1	9-Jan-24	10-Jan-24	11-Jan-24	12-Jan-24	13-Jan-24	14-Jan-24	15-Jan-24	16-Jan-24	17-Jan-24
	Aproximate centre of survey - Latitude			17.1919	17.1796	17.0999	16.9742	17.0220	16.9827	16.9413	17.0155	17.0010
	Aproximate centre of survey - Longitude			96.9786	96.9440	96.9216	96.8478	96.9915	96.0293	97.0724	96.9901	96.9911
	Survey units			1	2	3	4	5	6	7	8	9
	Common Name	Scientific Name										

Other terrestrial bird species

1	Oriental Skylark	<i>Alauda gulgula</i>	LC	10			3				3	
2	Red-throated Pipit	<i>Anthus cervinus</i>	LC		6			2			35	
3	Blue-tailed Bee-eater	<i>Merops philippinus</i>	LC								3	
4	Germain's swiftlet		LC	10	10		20	10	10	15	30	6
5	Barn swallow	<i>Hirundo rustica</i>	LC	100	55	70	35	4	19	20	16	2
6	Greater Spotted Eagle	<i>Clanga clanga</i>	VU	1								
7	Steppe eagle	<i>Aquila nipalensis</i>	EN	2								
8	Eurasian wigeon	<i>Mareca penelope</i>	LC		2							
9	Little Green bee-eater	<i>Merops orientalis</i>	LC			3						
10	Red-rumped swallow	<i>Cecropis daurica</i>	LC				12		5	4		
11	Little Cormorant	<i>Microcarbo niger</i>	LC				1					
12	Bank Swallow	<i>Riparia riparia</i>	LC						5	4		

No	Date		IUCN Status (2017) ver 3.1	9-Jan-24	10-Jan-24	11-Jan-24	12-Jan-24	13-Jan-24	14-Jan-24	15-Jan-24	16-Jan-24	17-Jan-24
	Aproximate centre of survey - Latitude			17.1919	17.1796	17.0999	16.9742	17.0220	16.9827	16.9413	17.0155	17.0010
	Aproximate centre of survey - Longitude			96.9786	96.9440	96.9216	96.8478	96.9915	96.0293	97.0724	96.9901	96.9911
	Survey units			1	2	3	4	5	6	7	8	9
	Common Name	Scientific Name										
13	Red-collared dove	<i>Streptopelia tranquebarica</i>	LC						1		1	
14	Reed Warbler sp.								1			
	Daily total count of other terrestrial bird species			123	73	73	71	16	41	43	88	8

Table 5: Daily counts of birds per species during bird surveys from 2nd to 7th February 2024 in the GoM, Myanmar

No	Date		IUCN Status (2017) ver 3.1	2-Feb-24	3-Feb-24	4-Feb-24	5-Feb-24	5-Feb-24	6-Feb-24	7-Feb-24
	Aproximate centre of survey - Latitude			17.1389	17.0976	17.0692	17.0047	16.9958	17.0140	17.0314
	Aproximate centre of survey - Longitude			96.9594	96.9292	96.9376	96.9730	96.9760	96.9877	96.9828
	Survey units			1	2	3	4-Morning	4-Afternoon	5	6
	Common Name	<i>Scientific Name</i>								
1	Black-tailed Godwit	<i>Limosa limosa</i>	NT	11	551	1656	87	204	231	210
2	Bar-tailed Godwit	<i>Limosa lapponica</i>	NT						35	
3	Whimbrel	<i>Numenius phaeopus</i>	LC	65	2007	368	45	71	42	81
4	Eurasian Curlew	<i>Numenius arquata</i>	NT	21	14	100	18	145	316	122
5	Ruff	<i>Calidris pugnax</i>	LC		6				3	2
6	Terek Sandpiper	<i>Xenus cinereus</i>	LC	1				6		1
7	Common Sandpiper	<i>Actitis hypoleucos</i>	LC	1					5	3
8	Ruddy Turnstone	<i>Arenaria interpres</i>	LC							
9	Asiatic Dowitcher	<i>Limnodromus semipalmatus</i>	NT		2				26	
10	Spotted Redshank	<i>Tringa erythropus</i>	LC		4	22			97	6
11	Common Redshank	<i>Tringa totanus</i>	LC	28	54	1228	340	635	2444	489
12	Marsh Sandpiper	<i>Tringa stagnatilis</i>	LC	3	4	4	17	8	38	32
13	Common Greenshank	<i>Tringa nebularia</i>	LC	46	11	23	22	51	107	4

No	Date		IUCN Status (2017) ver 3.1	2-Feb-24	3-Feb-24	4-Feb-24	5-Feb-24	5-Feb-24	6-Feb-24	7-Feb-24
	Aproximate centre of survey - Latitude			17.1389	17.0976	17.0692	17.0047	16.9958	17.0140	17.0314
	Aproximate centre of survey - Longitude			96.9594	96.9292	96.9376	96.9730	96.9760	96.9877	96.9828
	Survey units			1	2	3	4-Morning	4-Afternoon	5	6
	Common Name	Scientific Name								
14	Nordmann's Greenshank	<i>Tringa guttifer</i>	EN		2	1		1		
15	Sanderling	<i>Calidris alba</i>	LC							
16	Spoon-billed Sandpiper ¹	<i>Calidris pygmeus</i>	CR	1	7	5		3		
17	Little Stint/Red-necked Stint			172	6000	1148	97	1275	443	476
18	Dunlin	<i>Calidris alpina</i>	LC			2				
19	Temminck's Stint	<i>Calidris temminckii</i>	LC							
20	Long-toed Stint	<i>Calidris subminuta</i>	LC			1				
21	Great Knot	<i>Calidris tenuirostris</i>	EN		5	36		5		
22	Red Knot	<i>Calidris canutus</i>	NT							
23	Curlew Sandpiper	<i>Calidris ferruginea</i>	NT	28	688	174	80	890	680	100
24	Broad-billed Sandpiper	<i>Calidris falcinellus</i>	LC	143	4994	174	37	1089	167	800
25	Small Pratincole	<i>Glareola lactea</i>	LC							
26	Little Ringed Plover	<i>Charadrius dubius</i>	LC						10	18
27	Kentish Plover	<i>Charadrius alexandrinus</i>	LC	1772	5983	1259	237	784	2586	1000
28	Lesser Sand Plover	<i>Charadrius mongolus</i>	LC	1701	6000	1690	460	5661	2355	520
29	Greater Sand Plover	<i>Charadrius leschenaultii</i>	LC	1	218	221	12	3000	201	800

No	Date		IUCN Status (2017) ver 3.1	2-Feb-24	3-Feb-24	4-Feb-24	5-Feb-24	5-Feb-24	6-Feb-24	7-Feb-24
	Aproximate centre of survey - Latitude			17.1389	17.0976	17.0692	17.0047	16.9958	17.0140	17.0314
	Aproximate centre of survey - Longitude			96.9594	96.9292	96.9376	96.9730	96.9760	96.9877	96.9828
	Survey units			1	2	3	4-Morning	4-Afternoon	5	6
	Common Name	<i>Scientific Name</i>								
30	Pacific Golden Plover	<i>Pluvialis fulva</i>	LC	35	1223	491	500	1620	2075	1237
31	Grey Plover	<i>Pluvialis squatarola</i>	LC	18	86	21	1	85	8	1
	Total Waders			4047	27859	8624	1953	15533	11869	5902
	Estimated total small waders (includes unidentify spp)			7000	30000	4000		15000	5000	8000
1	Common Shelduck	<i>Tadorna tadorna</i>	LC						7	
2	Less Whistling duck		LC							
3	Ruddy Shelduck	<i>Tadorna ferruginea</i>	LC							
4	Ferruginous Pochard	<i>Aythya nyroca</i>	LC							
5	Garganey	<i>Spatula querquedula</i>	LC							
5	Eurasian wigeon	<i>Mareca penelope</i>	LC							
	Total Wildfowl			0	0	0	0	0	7	0
1	Black-headed Gull	<i>Larus ridibundus</i>	LC	1			1			
2	Brown-headed Gull	<i>Larus brunnicephalus</i>	LC	53		11	200		2344	301
3	Pallas's Gull	<i>Larus ichthyætus</i>	LC	2		3	2	6	2	
4	Gull-billed Tern	<i>Gelochelidon nilotica</i>	LC	31	45	26	30	11	84	42

No	Date		IUCN Status (2017) ver 3.1	2-Feb-24	3-Feb-24	4-Feb-24	5-Feb-24	5-Feb-24	6-Feb-24	7-Feb-24
	Aproximate centre of survey - Latitude			17.1389	17.0976	17.0692	17.0047	16.9958	17.0140	17.0314
	Aproximate centre of survey - Longitude			96.9594	96.9292	96.9376	96.9730	96.9760	96.9877	96.9828
	Survey units			1	2	3	4-Morning	4-Afternoon	5	6
	Common Name	<i>Scientific Name</i>								
5	Caspian Tern	<i>Hydroprogne caspia</i>	LC	1	4	3	16		6	
6	Little Tern	<i>Sterna albifrons</i>	LC	61	3	3	2	4	41	3
7	Whiskered Tern	<i>Chlidonias hybrida</i>	LC	254						
8	White-winged Tern	<i>Chlidonias leucopterus</i>	LC							
9	Indian skimmer	<i>Rynchops albicollis</i>	VU							
10	Whiskered/White-winged Tern	<i>all tern species</i>		1500	2777	658	600	100	800	238
11	Lesser Black-backed Gull	<i>Larus fuscus</i>								
	Total Gulls and Terns			1903	2829	704	851	121	3277	584
1	Little Egret	<i>Egretta garzetta</i>	LC	14	2		2		20	41
2	Intermediate Egret	<i>Ardea intermedia</i>	LC							
3	Great Egret	<i>Ardea alba</i>	LC	87			40		110	119
4	Cattle Egret	<i>Bubulcus ibis</i>	LC							
5	Grey Heron	<i>Ardea cinerea</i>	LC	11		2	13		101	4
6	Pacific reef Egret	<i>Egretta sacra</i>	LC							
7	Pond Heron spp.	<i>Ardeola sp</i>	LC						21	
8	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	LC		7		7		7	7

No	Date		IUCN Status (2017) ver 3.1	2-Feb-24	3-Feb-24	4-Feb-24	5-Feb-24	5-Feb-24	6-Feb-24	7-Feb-24
	Aproximate centre of survey - Latitude			17.1389	17.0976	17.0692	17.0047	16.9958	17.0140	17.0314
	Aproximate centre of survey - Longitude			96.9594	96.9292	96.9376	96.9730	96.9760	96.9877	96.9828
	Survey units			1	2	3	4-Morning	4-Afternoon	5	6
	Common Name	<i>Scientific Name</i>								
9	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	NT							
10	Painted Stork	<i>Mycteria leucocephala</i>	NT							
11	Asian Openbill	<i>Anastomus oscitans</i>	LC							
	Total other dependent waterbirds			112	9	2	62	0	259	171
1	Peregrine Falcon	<i>Falco peregrinus</i>	LC			1		1	3	
2	Common kestrel	<i>Falco tinnunculus</i>	LC							
3	Osprey	<i>Pandion haliaetus</i>	LC							
4	Black Kite	<i>Milvus migrans</i>	LC	1	2					1
5	Eastern Marsh Harrier	<i>Circus spilonotus</i>	LC		1	1	1		1	2
6	Western Marsh Harrier									
7	Pied Harrier	<i>Circus melanoleucos</i>	LC	1						
8	Short-toed Snake-eagle	<i>Circaetus gallicus</i>	LC							
	Total raptors			2	3	2	1	1	4	3
	Total wetland dependant species			6064	30700	9332	2867	15655	15416	6660

Appendix: Photos section



Talking about basic ecotourism practices during the training on ecotourism in Koe Tae Su village, Billin Township, Mon State



Grouping for the discussion during the training



Discussion by a participant



Group photo of the participants during the trainin on ecotourism



Handover a fishing boat to the LCG of Koe Tae Su village, Billin Township, Mon State



Photo of the boat donating to the Koe Tae Su LCG



Group of observer and two boatmen observing during survey trip in November 2023



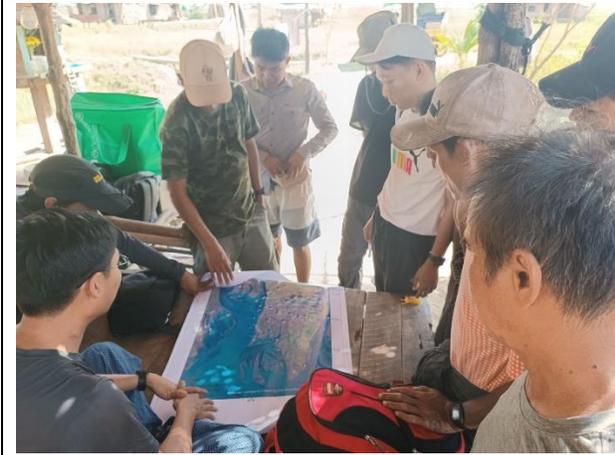
Group photo of three observers and one boatman during survey trip in December 2023



Participants' group photo: January 2024 Survey



Participants' group photo: February 2024 Survey



Discussion for potential survey areas



Discussion for potential survey areas © Lena



Preparing to depart at the channel near Koe Tae Su village, Bilin Township (January 2024)



Preparing to depart at the channel near Koe Tae Su village, Bilin Township (February 2024)



View at departure © Lena



Boats before departure



LCGs using the spotting scopes to find the Spoon-billed Sandpipers



Local trainees practicing the bird surveys, species identification and count



International, national and local bird observers are doing surveys



Photographing during high tide © Antom



Preparing meals on boat



Observers gathering for making bird list and estimating the small waders population



Participants discussing for moving to next place and the surveyed area coverage



Observers conducting bird count on the mudflat© Thura



Observers getting back to the boat after bird surveys© Thura



Observers getting back to the boat after bird surveys© Thura



Observers conducting bird surveys from boat during the high tide



One of our Russian observer getting back to the boat after surveys © Lena



Foodprint of the observer © Lena



Boats were anchored for surveys © Christoph Zöckler



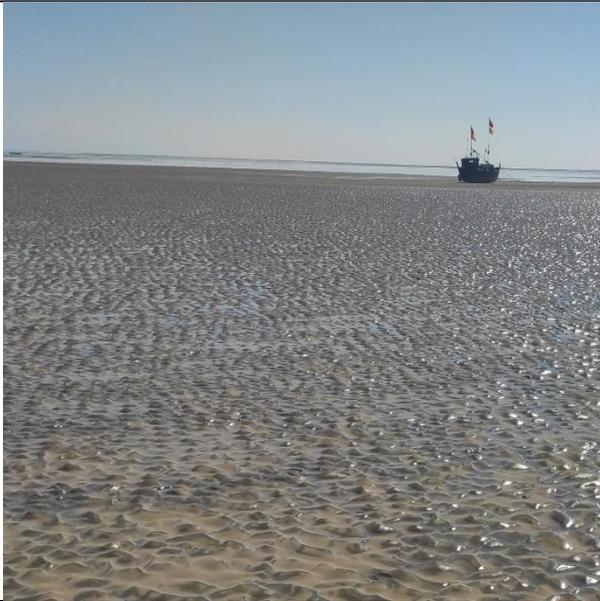
Chinese New Year celebration on boat © Christoph Zöckler



Sand



Mud



Hard Sand



Sand with a thin layer of mud on the top



Common Shelduck *Tadorna tadorna* © Ye Min Aung



A flock of shorebirds(in front), and Guttama Buddha Statue and Mahar Budhi Stupa(back) see from the GoM © Ye Min Aung



A flock of shorebirds(in front) and pagoda on the hill(back) Wildlife Sanctuary see from the GoM © Thura



A flock of flying small waders



A flock of small waders



A flock of small waders roosting near the old mudflat with sea grasses during the high tide© Thura



A flock of Caspian tern *Hydroprogne caspia* © Thura



A flock of Pacific Golden Plover *Pluvialis fulva* © Thura



A flock of Eurasian Curlew *Numenius arquata* © Thura



A flock of small waders (Curlew Sandpipers and plovers) © Ye Min Aung



Whimbrel © Ye Min Aung



Eurasian Curlew © Ye Wint Phyoe



Black-tailed Godwit © Ye Min Aung



Black-tailed Godwit © Ye Min Aung



Common Redshank *Tringa totanus* © Thura



Spotted Redshank *Tringa erythropus* © Zarni Aung



Common Greenshank *Tringa nebularia* © Ye Min Aung



Nordman's Greenshank *Tringa guttifer* © Ye Wint Phyoe



Marsh Sandpiper *Tringa stagnatilis* ©Ye Min Aung



Common Sandpiper *Tringa nebularia* © Ye Wint Phyoe



Pacific Golden Plover *Pluvialis fulva* © Thura



Grey Plover *Pluvialis squatarola* ©Ye Min Aung



Broad-billed Sandpiper *Calidris falcinellus* © Thura



Curlew Sandpiper *Calidris ferruginea* © Thura



Red-necked/Little Stint(left) and Spoon-billed Sandpiper *Calidris pygmeus* (right) © Thura



Kentish plover *Charadrius alexandrinus* ©Ye Min Aung



Lesser Sand Plover *Charadrius mongolus* ©Ye Min Aung



A flock of small waders at GoM ©Thura



A flock of small waders at GoM © Ye Min Aung



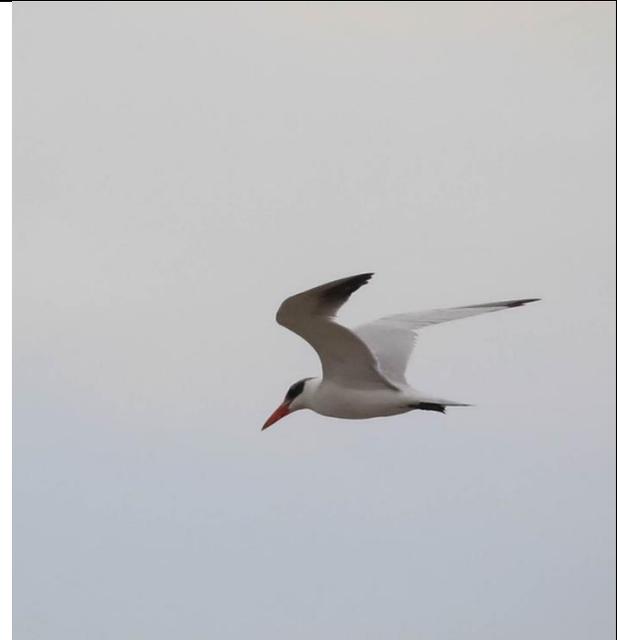
White-winged Tern *Chlidonias leucopterus* © Ye Min Aung



Whiskered Tern *Chlidonias hybrida* © Ye Min Aung



Pallas's Gull *Larus ichthyaetus* © Ye Min Aung



Caspian Tern *Hydroprogne caspia* © Ye Min Aung



Spoon-billed Sandpiper tagged with Yellow flag with letters "XJ" in Kamchatka, 2020(left photo) © Yuri and its resighting in GoM in 2024(right photo) © Ye Min Aung



Celebrating Chinese New Year with lantern



Trainer giving a talk on bird watching practices to local youth trainees



Wrap-up discussion after bird watching by local youth trainees and trainer



Assessment test on the local youths on bird watching practices



Answer by a trainee during the quiz session



Announcing the best birdwatcher, boatman(Captain) and boatmen(assistant)



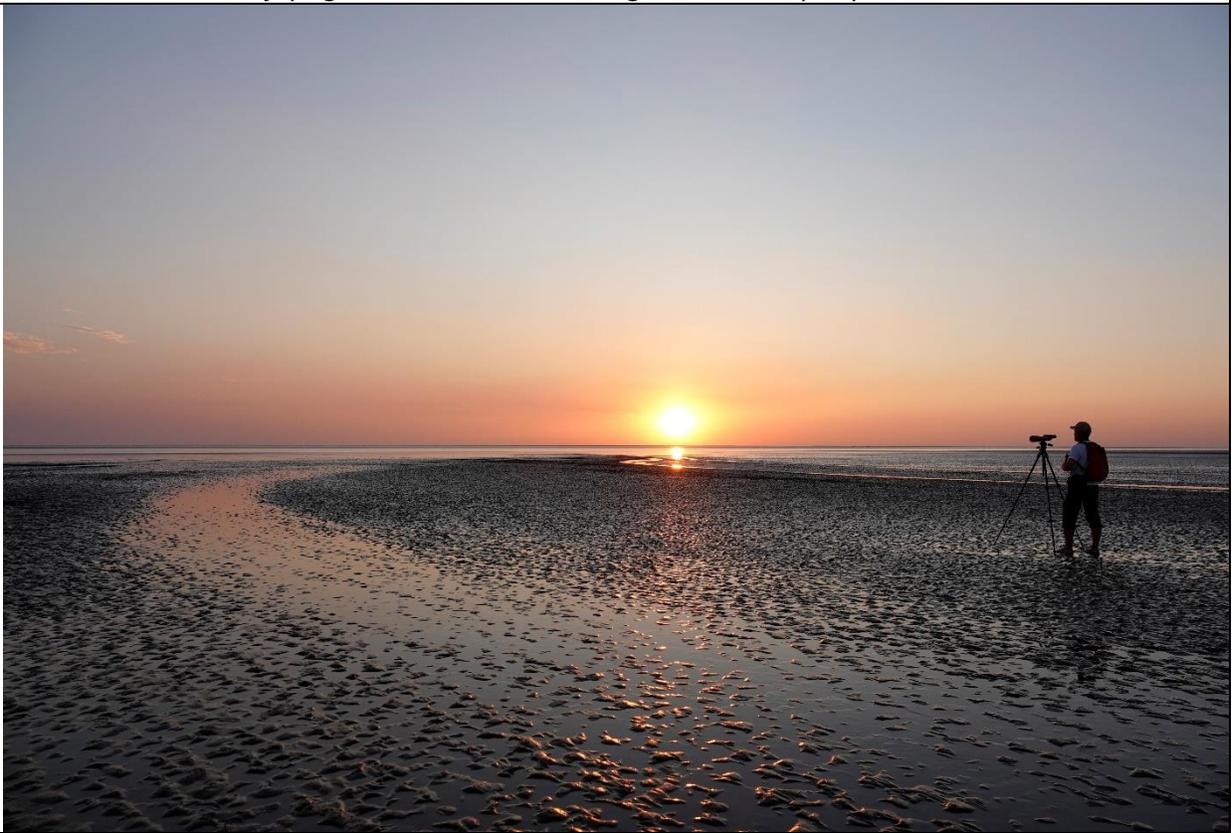
Awarding the best boatman during the January trip



Awarding the best boatman during the February trip



Enjoying the Karaoke Show during the Farewell party on a boat



Sunset at at the GoM © Lena

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