

Winter Bird Monitoring at the Ayeyarwady River, Myitkyina – Bagan, Myanmar in 2017, 2018 and 2019

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Summary

Migratory Waterbirds roosting and feeding on a large river is a rare phenomenon. Recording more than 22,000 waterbirds on a 140 km river stretch though as in 2019 is almost unheard of and unique in the world. The middle reaches of the Ayeyarwady River between Myitkyina and Bagan hosted in 2019 more than 40,000 waterbirds, more than half of these were recorded on the river between Sagaing and Bagan only, qualifying this river stretch for Ramsar under criterion 5! Yet these numbers are only a small fraction of what used to winter regularly on the river only 20 years ago. Fortunately we have the accounts of J. van der Ven, Simba Chan and others who surveyed the river almost 20 years ago and recorded more than double those numbers and many more species that sadly have not been seen over the past three years. Spot-billed Pelicans, Black-necked Storks and Cotton Pygmy Goose all have disappeared and several other species like the River Tern and Black-bellied Tern are on the brink of local extinction. The latter globally endangered species might not just disappear from the Ayeyarwady River but from the entire planet if no conservation action is taken.

The River is subjected to a wide range of increasing pressures from a growing population. More and more people settle on remote sandy river islands and more crops encroaching into riverine habitats and drain nearby wetlands. Waterways for shipping are constructed and imperil the natural dynamic of the riverine ecosystem. Gold washing and sand and pebble abstraction have increased leaving less and less habitats for ground nesting waterbirds. Bird hunting is still widespread and systemic. All these factors most certainly contribute to the strong declines of several species noticed.

This report summarises the results of three consecutive surveys and provides and recommendations for urgent conservation. These consist of proposed Ramsar sites and no go areas as well as community outreach and campaigning.

Introduction

The Ayeyarwady River is one of the last little human-impacted and almost undammed large rivers in Asia. It has one of the largest sediment flows in the world (WWF 2017) and is very diverse in habitats for birds and biodiversity in general. The sandbanks adjacent to the water bodies and riverine wetlands create numerous of habitats for birds, fish and other animals.

The river has been surveyed before (e.g. Oates 1888, Harrington 1909-1910, 1911, Stanford & Ticehurst 1938-1939), though no numbers of birds were recorded. More recently Davies et al. 2004, Thet et al. 2006, 2007, 2009, WCS 2012, Harrison Institute (2015) provided more comprehensive surveys and numbers of most waterbirds for at least some river stretches. Most of the surveys are either very old or covered only part of the river. The last survey in Feb 2019 has been the third such survey in three consecutive years, repeating the 2001-2003 surveys by Davies et al. (2004) and offers short term and long term trends, assessments and comparisons of the present avifauna with that in the 2001-2003 period and before.

The region is very rich in water birds but also other birds have been recorded and were integrated in the assessment.

Methodology

The surveys along the Ayeyarwaddy River between Myitkyina and Bagan were conducted at a similar time each year in January and February (in 2017 from 2 - 16 Feb. and in 2018 from 23 Jan - 5 Feb.). In 2019 the survey started again at the same time on 2 but finished on 13 February 2019.

The survey was conducted by boat and on foot at selected sites, where landing was possible and promising to reveal additional information to the boat based survey only. Bird observations were made using binoculars 10x40 and 8x32 respectively as well as zoom telescopes 25-60x85. Observations were made from the boat driving slowly or drifting without motor downstream, although observations by telescope were hampered by boat vibrations. Even boat II which has a much smoother engine running, was not free of vibrations and at critical situations the engine was stalled, when possible, to allow scanning of the river and listening to passing birds.

At several stops with potential high density of waterbirds several excursions on foot were undertaken to conduct water bird counts and establish a

more comprehensive picture of the bird distribution along the river and floodplain. Due to insurgencies and uprising some river sections were not accessible in some years and the gorge between Sinbo and Bhamo not passable in any of the survey years and prevented us from fully surveying stretch I in 2018 further than Talawgyi village.

Also in section II the insurgencies prevented us from fully covering this section in 2017 and 2018, but some areas north of Bhamo were monitored. All other sections were more or less surveyed with the similar amount of time spent to allow year to year comparisons.

All birds were registered and all waterbirds and characteristic birds of the floodplain forests and globally threatened species counted and georeferenced using a KOBO smart phone app and QGIS entered in a pre-prepared map. Bird species were only included when they were recorded in the near vicinity of the river and floodplain and were mostly recorded from the actual river itself. Also all mammals, almost entirely Irrawaddy Dolphins only, were registered.

Table 1: Itinerary of survey on the Ayeyarwady River in 2019

Date	River stretch	Survey method	River section
2 Feb	Myitkyina – Talawgyi	Survey Boat I	I
3	Talawgyi – ½ way to Sinbo and rtn to Talawgyi	Survey Boat I	I
4	rtn to Myitkyina and flight to Bhamo	Survey Boat I	I
4	Bhamo	Survey Boat II	II
5	Bhamo – Shwegu	Survey Boat II	II and III
6	Shwegu – Khatta	Survey Boat II	III
6	Khatta – Inywa	Survey Boat II	III
7	Inywa – Takaung	Survey Boat II	III
8	Takaung – Thabeikkyin (Singu)	Survey Boat II	IV
9	Thabeik – Singu	Survey Boat II	V
10	Singu – Mandalay	Survey Boat II	V
11	Mandalay – Si Moo Khoon; Chindwin confl.	Survey Boat II	VI
12	Si Moo Khoon Chindwin – Bagan	Survey Boat II	VI

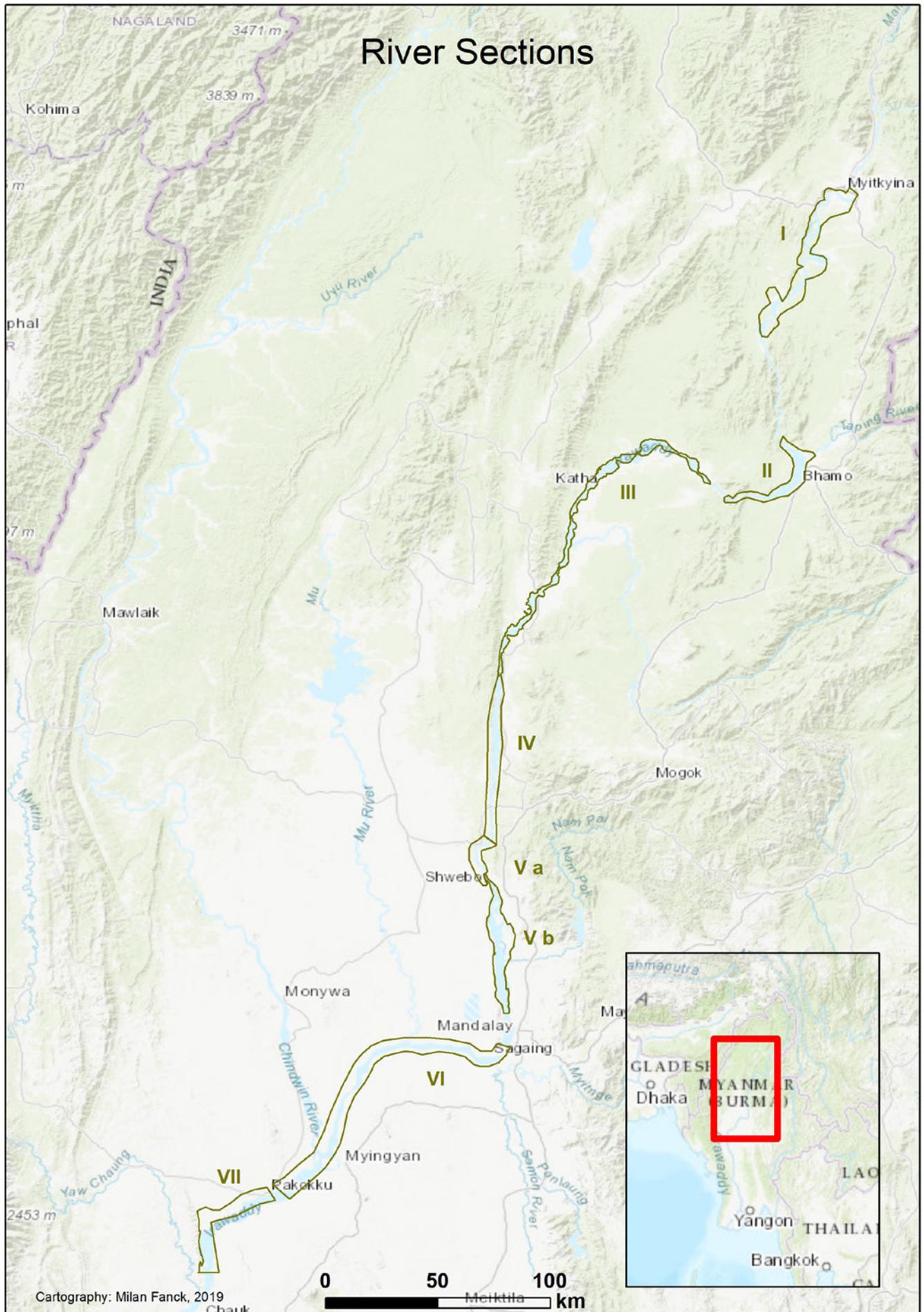


Figure 1: Ayeyarwady River sections slightly modified in accordance with Davis et al. (2004)

Main Results

The third comprehensive water bird survey of the Ayeyarwady River between Myitkyina and Bagan that took place between 2 and 13 February and recorded a total of 188 bird species. This is similar to 2017 (192), but slightly more than in 2018 (177), when less time was spent in adjacent bush and forest habitats along the river and the main focus was on water birds. A total of 65 species of waterbirds were recorded, depending on the special wetland character of the riverine habitats, totalling to more than 40,000 birds in 2019. The number of waterbirds increased considerably compared to 2017 and 2018, which might be related to a considerable higher water level than in the two previous years.

Overall the total number of waterbirds in 2019 has been much higher than in both previous years at 40,088 compared to 29,052 in 2018 and 31,725 in 2017. Not all species though have increased and the trends show a mixed picture. Most numerous

species were still Ruddy Shelduck (9147 in 2018) and Small Pratincole (7212 in 2018) and also at least in 2019 Cattle Egret with over 7300 individuals in the lower part of the survey area. Other numerous waterbirds include the Spot-billed Duck (4513 in 2019), Great Cormorant (1488 in 2019) and Northern Pintail (3031 in 2017). Almost all waterbirds have declined compared to 2001-2004 period.



*Survey boat I near Talawgyi and survey boat II near Tagaung
all photos C. Zöckler if not stated other*



Table 2: Trends (year to year and long-term trends) in selected waterbird species between 2017 and 2019 on the Ayeyarwady River between Myitkyina – Bagan. Long-term trend where complete data sets are available in reference to Davies et al (2004) and Thet (2006); bold: strong decline of >50% over past 18 years

Species	Scientific name	IUCN	2019	2018	2017	Year-year trend	Long-term trend
Lesser Whistling-Duck	<i>Dendrocygna javanica</i>		190	100	0		
Greylag Goose	<i>Anser anser</i>		517	103	156	INC	DEC
Greater White-fronted Goose	<i>Anser albifrons</i>		0	2	10		
Bar-headed Goose	<i>Anser indicus</i>		1102	2	106	FLU	
Common Shelduck	<i>Tadorna tadorna</i>		4	41	5		
Ruddy Shelduck	<i>Tadorna ferruginea</i>		7337	9147	7865	DEC	DEC?
Gadwall	<i>Anas strepera</i>		485	637	986	DEC	DEC
Falcated Duck	<i>Anas falcata</i>	NT	2	-	2		
Eurasian Teal	<i>Anas crecca</i>		38	448	64		
Eurasian Wigeon	<i>Anas penelope</i>		3	37	2		
Mallard	<i>Anas platyrhynchos</i>		99	307	784	DEC	
Indian Spot-billed Duck	<i>Anas poecilorhyncha</i>		4513	2914	3741	INC	INC
Northern Shoveler	<i>Anas clypeata</i>		50	6	5	INC	
Northern Pintail	<i>Anas acuta</i>		2173	984	3031	DEC	
Common Merganser	<i>Mergus merganser</i>		23	7	9		
Red-breasted Merganser	<i>Mergus serrator</i>				3		
Garganey	<i>Anas querquedula</i>		109		1	INC	
Comb Duck	<i>Sarkidiornis melanotos</i>		26	2	0	INC	
Red-crested Pochard	<i>Netta rufina</i>		6	1	0		
Common Pochard	<i>Aythya ferina</i>	NT	1		3		
Tufted Duck	<i>Aythya fuligula</i>		12				
Ferruginous Pochard	<i>Aythya nyroca</i>	NT	1		1		
Goldeneye	<i>Bucephala clangula</i>		12	8	5	INC	
Mandarin Duck	<i>Aix galericulata</i>				1		
Great Crested Grebe	<i>Podiceps cristatus</i>		25	17	10	INC	
Black-necked Grebe	<i>Podiceps nigricollis</i>		0	2	0		
Asian Openbill	<i>Anastomus oscitans</i>		1118	720	725	INC	
Black Stork	<i>Ciconia nigra</i>		99	106	75	INC	DEC
Painted Stork	<i>Mycteria leucocephala</i>	NT			2		
Lesser Adjutant Stork	<i>Leptoptilos javanicus</i>	VU	1				
Woolly-necked Stork	<i>Ciconia episcopus</i>	VU			11	DEC	DEC
Black-headed Ibis	<i>Threskiornis melanocephalus</i>	NT	249	20	100	INC	
Glossy Ibis	<i>Plegadis falcinellus</i>		697	727	264	INC	INC
Indian Pond-Heron	<i>Ardeola grayii</i>		31	24	58		
Eastern Cattle Egret	<i>Bubulcus coromandus</i>		7305	1664	1109		
Grey Heron	<i>Ardea cinerea</i>		376	427	442	STA	
White-bellied Heron	<i>Ardea insignis</i>	CR	0	1			
Great Egret	<i>Ardea alba</i>		503	165	192	INC	

Little Egret	<i>Egretta garzetta</i>		337	349	846	DEC	
Little Cormorant	<i>Phalacrocorax niger</i>		831	256	720	INC	
Great Cormorant	<i>Phalacrocorax carbo</i>		1488	920	1375	INC	DEC
Oriental Darter	<i>Anhinga melanogaster</i>	NT	46	22	39	INC	DEC
Common Crane	<i>Grus grus</i>		1054	207	425	INC	DEC
Pacific Golden Plover	<i>Pluvialis fulva</i>		77	77	339	n/a	
Small Pratincole	<i>Glareola lactea</i>		5629	7212	5920	INC	DEC
Oriental Pratincole	<i>Glareola maldivarum</i>				1		
Pied Avocet	<i>Recurvirostra avocetta</i>			12			
Northern Lapwing	<i>Vanellus vanellus</i>		96	14	63	INC	
River Lapwing	<i>Vanellus duvaucelii</i>	NT	2	2	27	DEC	DEC
Grey-headed Lapwing	<i>Vanellus cinereus</i>		7		38	DEC	
Kentish Plover	<i>Charadrius alexandrinus</i>		1022	425	359	n/a	
Lesser Sandplover	<i>Charadrius mongolicus</i>		12	91	164	DEC	
Little Ringed Plover	<i>Charadrius dubius</i>		505	300	295	STA	
Common Greenshank	<i>Tringa nebularia</i>		129	70	87	STA	STA
Spotted Redshank	<i>Tringa erythropus</i>		293	132	314	STA	
Common Redshank	<i>Tringa totanus</i>		1	11			
Common Sandpiper	<i>Actitis hypoleucos</i>		69	48	60	n/a	
Green Sandpiper	<i>Tringa ochropus</i>		14	12	18	n/a	
Wood Sandpiper	<i>Tringa glareola</i>		104	3	2	n/a	
Ruff	<i>Philomachus pugnax</i>		0	1	13	DEC	
Red-necked Stint	<i>Calidris ruficollis</i>	NT	693	60	2	INC	
Dunlin	<i>Calidris alpina</i>		18	13	41	DEC	
Temminck's Stint	<i>Calidris temminckii</i>		503	138	514	STA	
Greater Black-headed Gull	<i>Larus ichthyaetus</i>		58	60	69	DEC	DEC
Brown-headed Gull	<i>Chroicocephalus brunniceph.</i>		1	4	196	DEC	
River Tern	<i>Sterna aurantia</i>	NT	3	2	2		DEC
Black-bellied Tern	<i>Sterna acuticauda</i>	EN	5	3	3		DEC
Little Tern	<i>Sternula albifrons</i>		16	1	14		DEC

Red Listed Species

Among the 82 water bird species recorded in 2017-2019, 18 are globally threatened or near-threatened (13). However, four species have only been seen in 2019, five in 2018 and four in 2017. Among them the globally critically endangered White-bellied Heron *Ardea insignis* on 23 January 2018 and later once again in March both times near Myitkyina. The Pallas' Sea Eagle (EN), observed in 2017 was not been observed again in

2018 or 2019 and the Lesser Adjutant Stork (VU) observed in 2019 for the first time since 2003. The endangered Black-bellied Tern (EN) was again observed displaying near Takaung. Other globally threatened birds were not observed and also five near-threatened birds observed in 2017 were not recorded in 2018. Four of the near-threatened birds recorded though showed continued decline (see also Table 2).

Table 3: Globally threatened Bird Species along the Ayeyarwady River between Myitkyina and Bagan in 2017-2019, additional species listed (shaded) were recorded previously or outside the actual surveys

Species	Scientific name	RL	Year rec	Comment
Pink-headed Duck	<i>Rhodonessa caryophyllacea</i>	CR	1910	Wetlands near Singu (Smithies 1953, Tordoff et al. 2008)
Indian Skimmer	<i>Rhynchops albicollis</i>	VU	2019	Naing Lin pers.comm.
White-bellied Heron	<i>Ardea insignis</i>	CR	2018	First record since Stanford & Ticehurst (1938-39)
Baer's Pochard	<i>Aythya baeri</i>	CR	2001	Near Naung U (IWC)
White-rumped Vulture	<i>Gyps bengalensis</i>	CR	2003	Davies et al. 2004
Slender-billed Vulture	<i>Gyps tenuirostris</i>	CR	2003	Davies et al. 2004
Black-bellied Tern	<i>Sterna acuticauda</i>	EN	all	Strong decline
Yellow-breasted B	<i>Emberiza aureola</i>	EN	2017	Bagan (Lay Win pers. comm.)
Pallas' Fish-Eagle	<i>Haliaeetus leucoryphus</i>	EN	2017	Near U Laut
Lesser Adjutant Stork	<i>Leptoptilos javanicus</i>	VU	2019	Near Sinbo
Woolly-necked Stork	<i>Ciconia episcopus</i>	VU	2017	Near Si Mee Khon
Common Pochard	<i>Aythya ferina</i>	VU	2017, 2019	Strong decline
Greater Spotted Eagle	<i>Aquila clanga</i>	VU	2001	Naung U (IWC)
Dark-rumped Swift	<i>Apus acuticauda</i>	VU	2019	New record near Tabheikkyin
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	NT	2004	Davis et al. (2004)
Spot-billed Pelican	<i>Pelecanus philippensis</i>	NT	2007	Thet (2007)
Great Thick-knee	<i>Esacus recurvirostris</i>	NT	?	
River Tern	<i>Sterna aurantia</i>	NT	all	Strong decline
Falcated Duck	<i>Anas falcata</i>	NT	2017, 2019	First records since 2007 (Thet 2007)
Ferruginous Pochard	<i>Aythya nyroca</i>	NT	all	Strong decline
Painted Stork	<i>Mycteria leucocephala</i>	NT	2017	Stable?
Black-headed Ibis	<i>Threskiornis melanocephalus</i>	NT	all	Stable?
Oriental Darter	<i>Anhinga melanogaster</i>	NT	all	Strong decline
River Lapwing	<i>Vanellus duvaucelii</i>	NT	all	decline
Eurasian Curlew	<i>Numenius arquata</i>	NT	2019	exceptionally
Little St/Red-necked St	<i>Calidris minuta/C ruficollis</i>	NT	all	Only Red-necked Stint is NT
Himalayan Griffon	<i>Gyps himalayensis</i>	NT	2019	First record since 2003 (Davies et al. (2004)

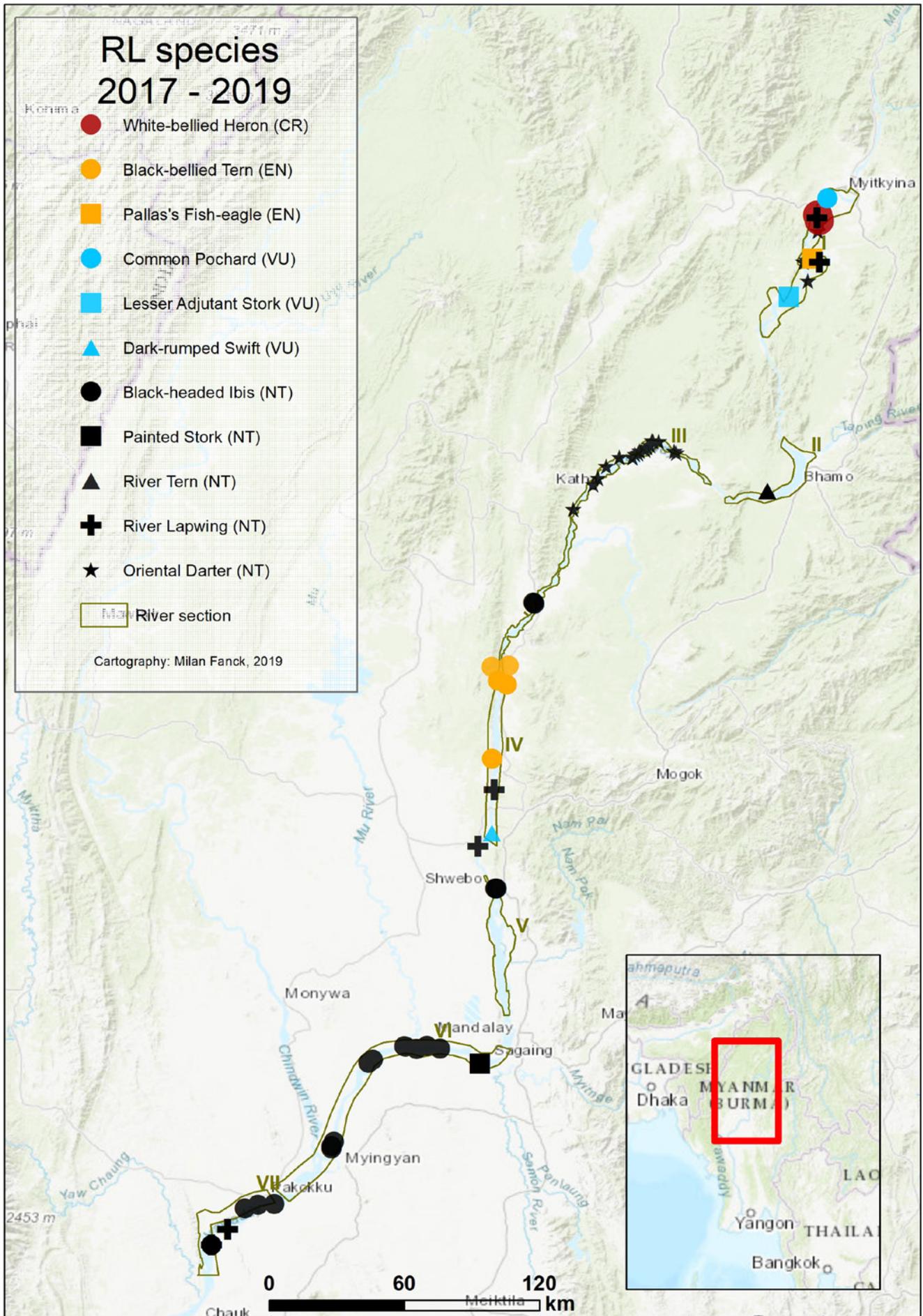


Figure 2: Distribution of Red-listed Species in Jan/Feb 2017-2019

White-bellied Heron

On 23rd of January 2018 an adult White-bellied Heron was observed and photographed at the Ayeyarwady River bank not far from Myikyina (see Figure 2). A second observation probably involving the same individual was reported by Nyein Chan (FFI) on 26th of March 2018 in the same area.

This record constitutes the first and second observation at any place along the river since 2013. It is a very significant as it proves the presence of this rare and globally critically endangered heron in the region. A previous record from 2013 near Bhamo constitutes the last record of this species that despite searches has not been found in that

area again (Thet Zaw Naing pers. comm.). Stanford & Ticehurst (1939) listed the species for the Bhamo region. Otherwise the species is only known from the Upper Reaches in the Mali Hka tributary. Smythies (1953) noted the species still as a not uncommon resident in Northern Burma, but rare in Central and southern Burma. However, the 2005 update of Key Biodiversity Areas lists the species for the Nam Sam Chaung KBA. It is not known from which period the listing derives, but the KBA is located east and not far from observation site. It is quite likely that birds from the KBA area regularly visit the Ayeyarwady river stretch. In 2019 no birds were recorded despite special search in this area.



White-bellied Heron in Ayeyarwady River near Myitkyina, 23 January 2018

Riverine Terns

Other red-listed species included the endangered (EN) Black-bellied Tern *Sterna acuticauda*. Each year 3-5 birds were observed in a small river stretch in section IV. Three birds of which two appeared to be one pair were observed at one site in 2018 and 2019. The pair was displaying and also birds were observed attacking nearby roosting Grey Herons and also Brown-headed Gulls, obviously in defence of a territory. A nest guarding

and protection scheme by WCS identified three to four pairs in the Tagaung region in 2018, which raised a total of five hatchlings in March 2018 (A. Diment in litt.). In 2018 a nest containing three eggs was found on 5 Feb by WCS (Naing Lin pers. comm) indicating the beginning of the breeding season at this time and that other pairs might follow soon. No further details about breeding success are known at the state of writing.



Black-bellied Tern near Takaung, 8 Feb 2019

Stefan Pfützke



Nest of Black-bellied Tern south of Takaung (WCS), 8 Feb 2019

River Tern (NT)

A pair of River Terns *Sterna arauntia* has been observed in the river sandbars near Bhamo at the same site in all three survey years. It constitutes the only observed pair between Myitkyina and Bagan, a strong decline from 81 birds still observed in the early 2000s (Thet 2007). The survey period has always been regarded as a little too early, but in 2019 on 5 Feb a full clutch with eggs was found in Bhamo area. The birds were attacking a nearby roosting Black Stork and Grey Herons. A bird net nearby was immediately taken down and a fishermen camping on the sand bank was requested to move on with the help of the fishery department authorities. The Fishery Department officer Toe Tun also got in contact with the fishermen who has the fishing rights in the area to guard the nesting pair.

An immature bird observed further south near Takaung the following day might be likely an offspring from last year of this pair.

The news in early March reported of a freak spring flood of over 60 cm after unusual strong rainfall further north which might have affected the nest, but no follow up visit was conducted.

The Little Tern was only observed in one individual and seems to follow the same fate of all the other sand bar breeding birds (see also Figure 3)

The fate of all riverine tern species is extremely precarious and requires immediate conservation actions. The designation of Community Conservation Areas (CCA) is highly recommended to be developed and maintained in the last remaining tern sites along the river. First testing of this methodology has been applied at the nesting sites of the Black-bellied Tern and for the first time expanded to include the last remaining nest of the River Tern in collaboration with the Department of fishery.



Nest of River Tern near Bhamo, 5 Feb 2019



*Pair of River Terns, Ayeyarwady near Bhamo, 28 Jan 2018
Stefan Pfützke*



2nd year River Tern, 8 Feb 2019, River near Takaung



River Tern, Ayeyarwady near Bhamo, 5 Feb 2019

Stefan Pfützke

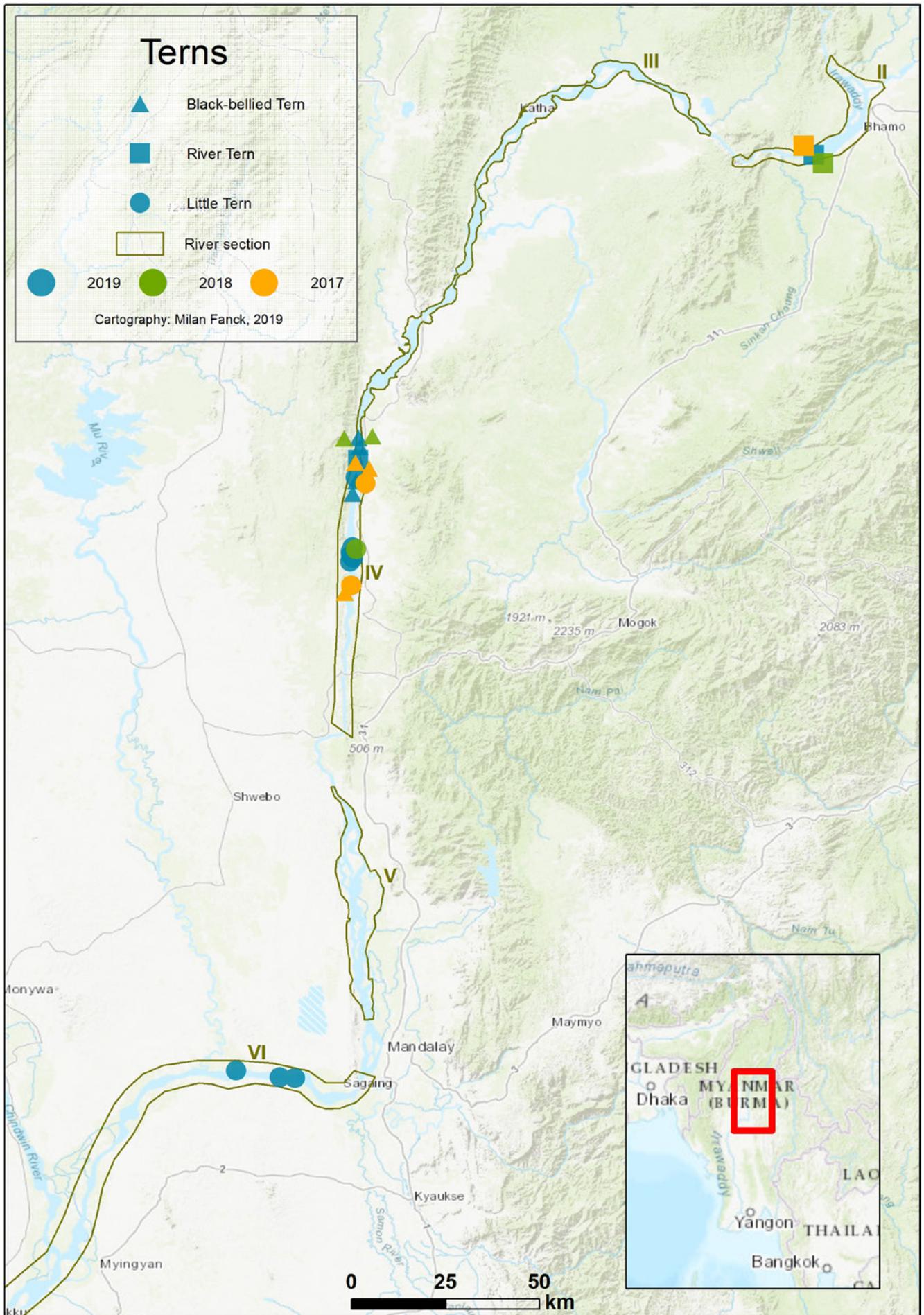


Figure 3: Distribution of ground-nesting tern species

Lesser Adjutant (VU)

The only recorded Adjutant Stork in the entire 3-year monitoring period was one individual on 3 Feb. 2019 crossing the river near Sinbo in section I (see Figure 2).

The last record from the river was from 2007 concerning also one bird (Ven & Thet 2007). But in 2003 this river stretch still held 14 birds (Davies et al 2004). There have been no other records from anywhere along the river and this is the first yet promising record in over ten years. The next known breeding area is at Lake Indawgiy.

Woolly-necked Stork (VU)

Only one record in the 3-yr monitoring period on 13 Feb 2017 from Si Moo Khon in section VI, when 11 birds were roosting on the sandbank. No further records had been made since and the species is widely regarded as in decline. Davies et al (2004) and V.d. Ven & Thet (2007) reported 2 each from section I.

Common Pochard (VU)

Single birds were observed only in two of the three year period (see Table 2).

Dark-rumped Swift (VU)

On 9 Feb 2019 the survey team observed and photographed a mixed flock of 20-30 swifts of

several species including Fork-tailed Swifts and mostly Dark-rumped Swifts, following the survey boat and chasing above the river in the gorge near Thabeikkyin in river section IV (see Figure 2). The birds were also seen concentrated around some nearby hills above the right river bank. In total at least 15-20 Dark-rumped Swifts were noted within this flock. The species is regarded as globally threatened due to its restricted range and small population (BirdLife International 2019). Several photos were taken that confirm the species' identity. This record is the first confirmed for Myanmar after one unconfirmed and undated record from Northern Myanmar (BirdLife International 2019). A record of 15-20 birds in one flock points to a potential new wintering site that should be monitored more carefully. This swift species is poorly known. According to BirdLife International (2019) the species is only known from just a few breeding colonies in the Himalayan foothills in Bhutan, and the hills of Meghalaya, Nagaland and Mizoram, north-eastern India (BirdLife International 2001, Chantler 2005, Ahmed et al. 2007). During non-breeding season birds have been recorded from India, Yunnan and one site in NW Thailand, which both are relatively close to the current observation site. The new site might indeed constitute a new wintering site and the area might merit from further searches to establish the full number of birds involved.



Dark-rumped Swift, Thabyeikkyin, 9 Feb 2019

Stefan Pfützke

Waterbirds of the Ayeyarwady River

Ruddy Shelduck

The Ruddy Shelduck is the most abundant waterbird on the river. Most of the birds are wintering along the river, migrating from Central Asia or Northern Myanmar to spend the winter at the river shores. Some birds may be breeding in the northern area of the Ayeyarwady River and in surrounding wetlands. In total over 7300 individual Ruddy Shelduck have been recorded each year and max even 9140 in 2018 have been counted along almost the entire river stretch between Myitkyina and Bagan. This represents 15-18% of the flyway population. Even through the number in 2018 reached over 9000 it is still well short of the estimated 12,000 and more birds that were counted in the years around 2001-2004 (Davies et al. 2004, Wetlands International 2001). Figure 4 shows the trend in section I for which most comprehensive data exist. The low figure in 2019 for this section and also overall with only 7337 in total is worrying, especially in a year with high water levels and a general increase in ducks, geese and other waterbirds.

In some river sections the numbers of Ruddy Shelduck continued to decline compared to surveys of previous years. In section I between Myitkyina and Sinbo the number decreased below 1000 compared to well over 3000 in the early to mid 2000s by over 75% compared with 3626 in 2003 (Davies et al. 2004), while in other sections, as in section III, IV and VI the number seen were higher, suggesting a redistribution. In section I, III, IV, V and VI the species is with over 1000 each and up to 2500 in section IV well represented with more than 2-5% of the flyway population in each of those sections respectively.

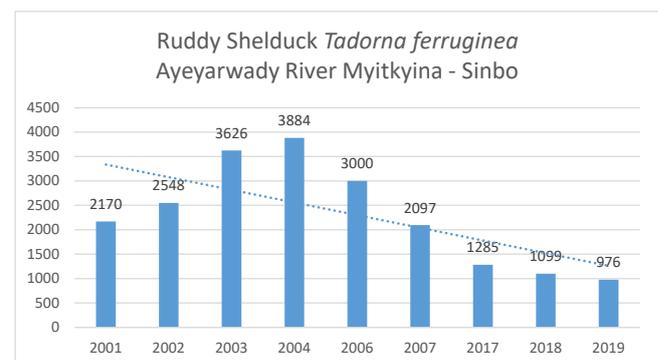


Figure 4: Numbers of Ruddy Shelducks in section I Myitkyina - Sinbo over the past 18 years



Pair of Ruddy Shelduck, Feb 2016

Small Pratincole

This species is very difficult to survey as the small shorebird is well camouflaged between the pebbles on the sandbanks and can be easily missed. However due to their vocal display larger colonies are less likely missed. Across all river section a total of 7200 birds were counted in 2018, but only 5629 in 2019, more in line with 2017 figures of 5900 birds. The higher numbers of 2018 might purely reflect a more thorough survey than was possible in 2017, especially for sections V and VI. Also, paying attention to the roosting sites in the morning and prominent feeding patterns in the evenings of the species might have revealed more accurate and higher numbers. But even with more attention and experience no more than 5629 birds were observed in total in the third survey year in 2019. Figure 6 displays the distribution of the Small Pratincole in all three years. Figure 6 also shows the shift from the northern stronghold in the Myitkyina to Sinbo section to more southern river stretches.

The Small Pratincole is resident and breeding on the river sand and gravel banks. It is not clear how many migrants join the breeding population in winter from other regions nearby, but the majority very likely will breed in the region. The species is breeding in large colonies on sandbanks and gravel banks in the river. The largest colony found consisted of around 1700 birds in 2018 near Singhu. A total of more than 7200 birds constitutes an overall increase of 18% compared to the almost 6000 birds in 2017, although count data from section V and VI might be higher due to more accurate counting methods, but figures in 2019 dropped again below the 2017 figures to 5600. Still 5600-7200 birds represents around 8-10% of the flyway population and indicates the huge importance of the river stretch for the species as breeding birds.



Small Pratincole showing characteristic black and white flight pattern, Jan 2018

Stefan Pfützke

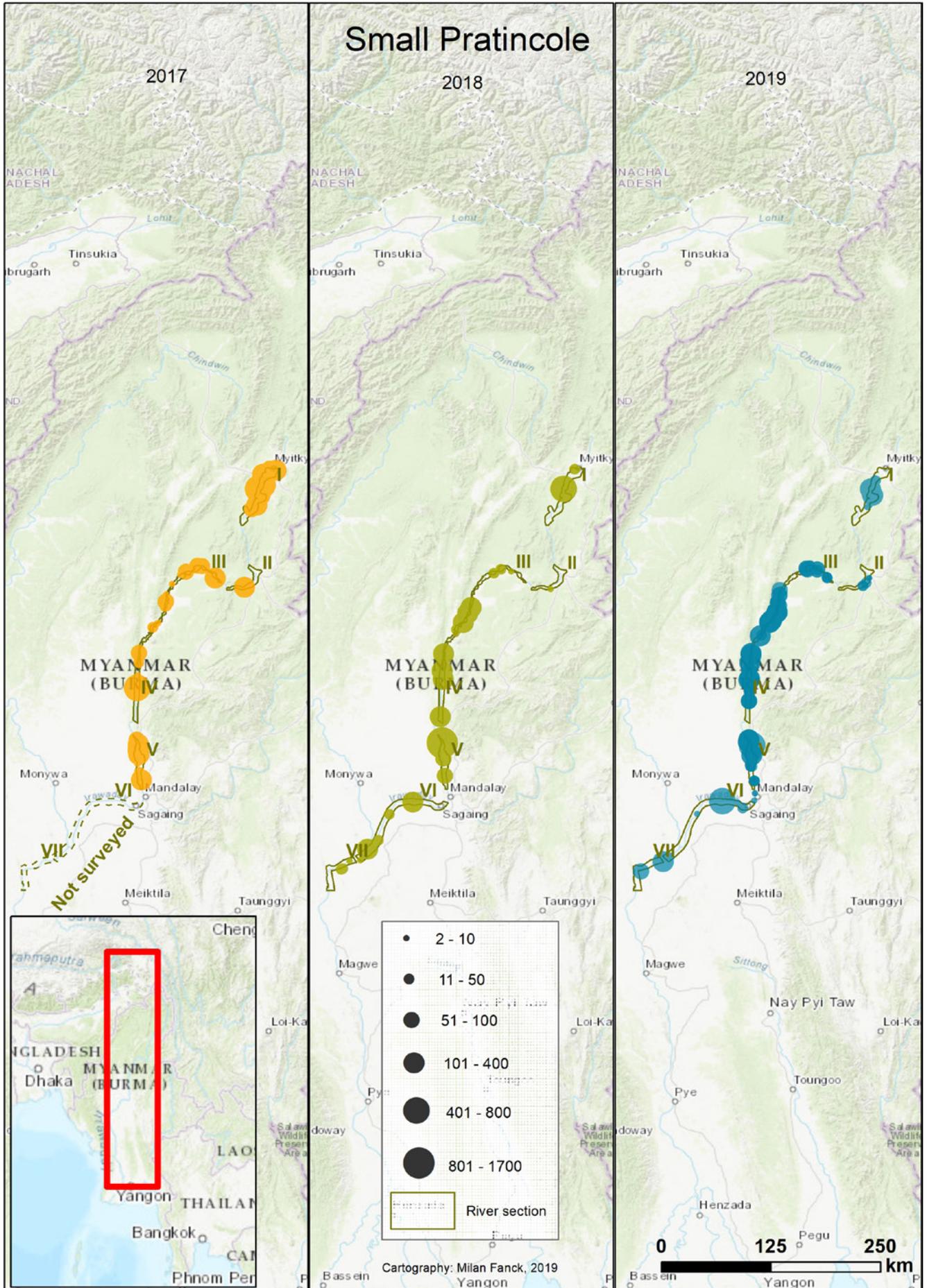


Figure 6: Distribution of Small Pratincole colonies in all three survey years

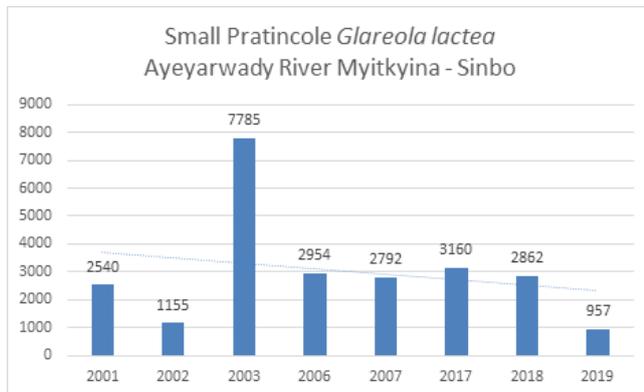


Figure 5: Numbers of Small Pratincoles on the Ayeyarwady River between Myitkyina – Sinbo over the past 18 years

Yet the species has declined in the upper sections I (see figure 5) and II and is possibly vacant from large sections within section III. However, also overall the numbers across the entire river sections maybe decreasing across all sections and a possible redistribution from northern areas where pressures of habitat conversions seem to be strongest to more southern less disturbed areas is observed. Compared to the early 2000s though, when the number might have been much higher and is estimated at 10,000-12,000 birds. Davies et al (2004) already counted 7775 in the Myitkyina – Sinbo section alone. The species is still in decline and also shifting and redistributing. The Myitkyina – Sinbo section experienced the strongest declines and also the most severe threats. Persistent gold panning and washing, converting almost all of the pebble and sand beaches along this stretch consist of the most severe threat to this and other ground nesting species. Very few breeding colonies seem to have remained and these places need to be safeguarded from future gold and sand mining activities. Unfortunately, little comprehensive data for the entire river sections are available to verify the baseline from previous surveys in the early 2000s. It is vital for the species to survive and holds its population that most if not all colonies with more than 100 birds involved will be designated as no-go areas.

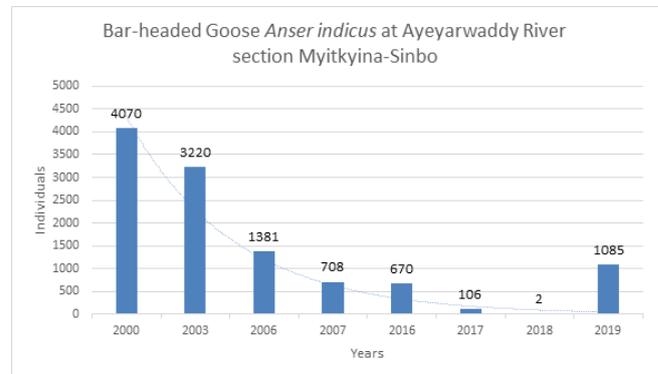


Figure 7: Numbers of Bar-headed Geese roosting on the Ayeyarwady River between Myitkyina and Sinbo over the past 20 years

Bar-headed Goose

The Bar-headed Goose has undergone a remarkable comeback in 2019 after a consistent decline almost completely disappearing in 2018 from the entire river. The numbers in 2019 reached well over 1000 (see figure 7). The decline in previous years has been explained partly with warmer winters and birds more likely staying at wintering grounds in southern China rather than continuing to Myanmar sites (Zöckler 2018). But the cold winter 2018/19 might have triggered some of the geese to return to their old wintering grounds along the Ayeyarwady River.



Bar-headed Goose on the Ayeyarwady River near Myitkyina, 11 Feb 2016

Dabbling Ducks

Most other waterfowl have declined overall. Only the Spot-billed Duck increased steadily over the years in all river stretches and also in Myitkyina – Sinbo (see Figure 8) reflecting the overall trend across all river sections. Totalling over 4500 birds the duck species increased by over 20% compared to 2017 but is highly fluctuating, possibly also in response to local weather conditions further north or even in response to wetland and habitat loss in neighbouring regions. It is now one of the most common water birds of the river.

The numbers in Pintail Duck were substantially lower by over 2/3 in 2018 but this could be part of a survey error and the 2019 survey of over 2100 birds confirmed again a higher value for the Pintail Duck and the difficulty to survey this species, where entire flocks of several hundred birds might have disappeared out of sight. The Falcated Duck *Anas falcata* (NT) is very rare in Myanmar, but in 2017 and 2019 observed in two individuals at very much the same place in section I. Eurasian Teal *Anas crecca* and Wigeon *Anas penelope* were both increasing, yet still in small numbers only, while all diving ducks were further declining or disappearing all together like Pochard *Aythya ferina* (see above) and Ferruginous Duck *Aythya nyroca* (NT). They (2006, 2007) still observed several hundred of the latter in at least two river stretches in 2006 and 2007, but this has declined to 1 individual only ten years later in each survey year.

Also, the Common Shelduck, a recent newcomer in the country seems to have established and increased significantly from 5 to 41 in 2018 but fewer birds again in 2019 (see Table 2).

Comb Duck

In 2019 Comb Ducks were observed at two sites within the river section V and VI. Near Singhu a record number of 14 birds were observed plus another 12 birds south of Mandalay. This is a huge increase compared to 2018 when for the first time since 2015 2 individual Comb Ducks have been

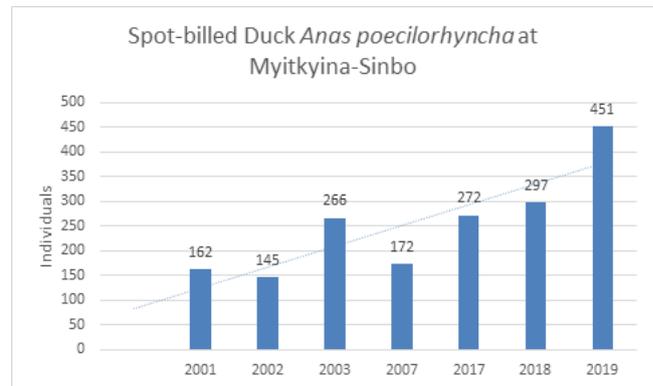


Figure 8: Numbers of Spot-billed Ducks in section I Myitkyina – Sinbo

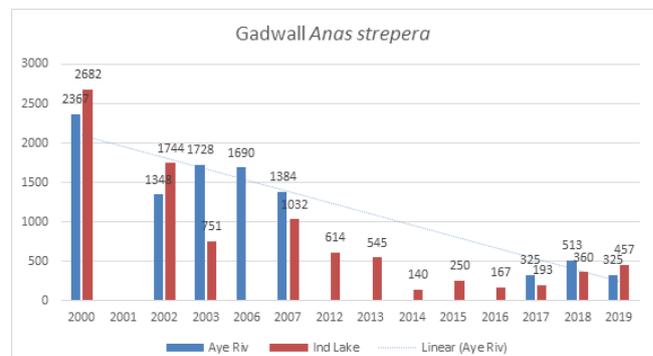


Figure 9: Numbers in Gadwall on the Myitkyina – Sinbo river section and Lake Indawgyi (Ngwe Lwin in lit.)



Six Comb Ducks out of a flock of 14 together with Lesser Whistling Ducks south of Mandalay, 11 Feb 2019

seen in section IV. This corresponds with previous sightings in the same area (Harrison Institute 2015).

Cormorants and egrets

All three cormorant species are fish eating specialist. All three species continued to decline in 2018, but appeared to have slightly recovered in 2019, possibly in response to high water levels but the reasons are not fully understood. The Cormorant is the sixth most common waterbird species on the river (see Table 2). It seemed to have increased during the 3-yr period but is fluctuating quite strongly most likely in response to changing water levels. The long-term trend though still seems to be declining as shown for section I in figure 10.

The Darter *Anhinga melanogaster* (NT) has been declining overall quite considerably (see Figure 11). However higher numbers in 2019 not only in section I but also in section III near Khatta (see Figure 2) are promising that the species decline has halted. The section near Khatta held a total of 31 Darters, which constitutes a huge increase with an overall number of 46 birds along the entire stretch.

The Little Cormorant appears to be increasing and also spreading further north. A total of over 800 birds is the highest recorded for the entire river. Even compared with early 2000s figures the Little Cormorant has increased at least in section I, from where figures are available (see figure 12).

The long-term trend for both Great Cormorant, a migratory species, and the Darter, a resident species generally reflects a deteriorating situation along the river. This is also in line with most other waterbirds and cannot only be attributed to fewer fish in the river but more generally in loss of habitats and issues along the flyway in case of the migratory Great Cormorant.

Other fish eating species such as herons and egrets do not seem to have declined similarly. The picture differs from species to species. The Great Egret seemed to have increased to over 500 in 2019, whereas Little Egrets gradually declined to only 337 by over 50%. The Grey Heron is slowly decreasing by over 15% compared to 2017. Three

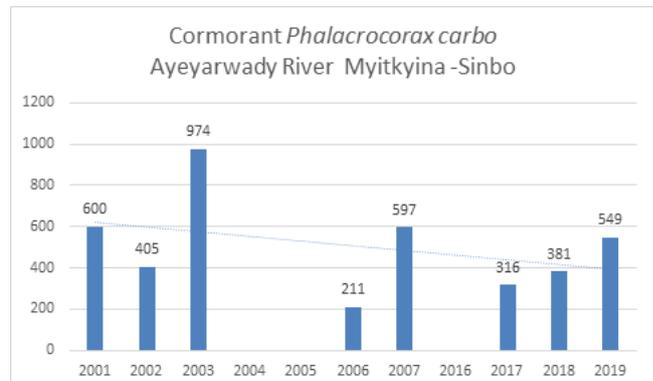


Figure 10: Numbers of Great Cormorants in section I Myitkyina - Sinbo over the past 18 years

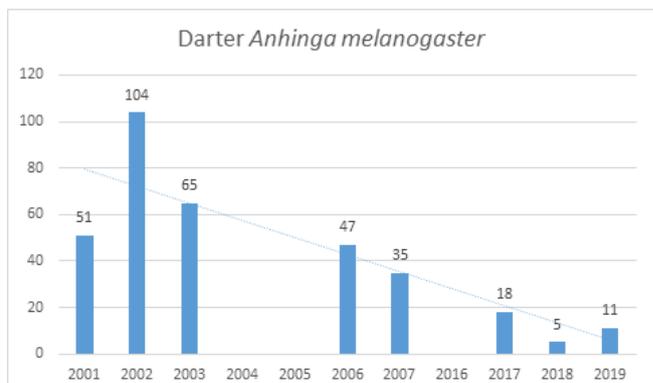


Figure 11: Numbers of Darter in the Ayeyarwady River Myitkyina - Sinbo over the past 18 years

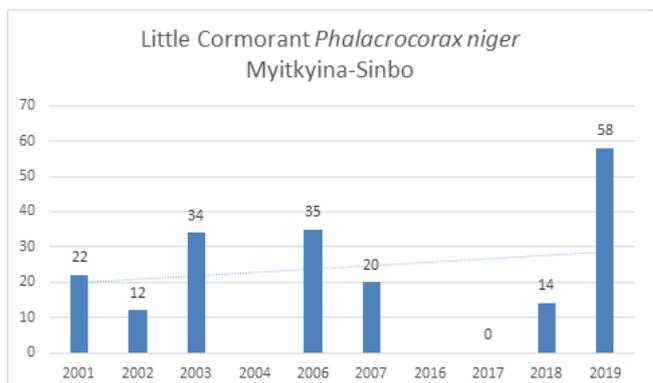


Figure 12: Numbers of Little Cormorants in section I Myitkyina - Sinbo over the past 18 years

years though are not long enough to show clear trends and there seems to be a lot of variation in the data. The astonishing rise of the Cattle Egret in 2019 might be an oversight in previous surveys. With more than 7000 birds, mostly in the lower sections south of Mandalay the species clearly has been overlooked previously, which could be due

to its congregatory behaviour in the mornings when the birds are easy to count. They still rely on the riverine wetlands for sleeping and cleaning, but spend most of the day feeding in neighbouring agricultural lands, where they are not always welcome by local people, who have been observed chasing them with sticks and by motorbikes!

Last not least are all kingfishers observed along the river fish eating birds that deserve to be mentioned in this section. Most common and regular is the Pied Kingfisher *Ceryle rudis* which regularly has been observed in high numbers of 103 (2017), 139 (2018) or 94 in 2019, while other species were less common.



Oriental Darter near Talawgyi, 25 January 2018

Birds of Prey

Osprey

After the Black Kite the fish-eating Osprey is one of the most common birds of prey along the river, often perching directly at the river or fishing in the water. Over the three-year period the number varied little between 30 (2019) and 35 in 2017 over the entire river section.

Himalayan Vulture

On 3 Feb 2019 one vulture was soaring high above the village of Talawgyi and was most likely assigned to this species although the distance was

very high. This is notable as there were no vulture observations in recent years and there is hope that the globally threatened vulture species, including the critically endangered species might recover.

Long-legged Buzzard

In both years, 2018 and 2019 one individual of this species was present at U Laut pretty much at the same site. This was the only individual of this species. (See Figure 13)



Long -legged Buzzard near U Laut, Jan 2018

Merlin

Little is known about this small northern falcon and its status in Myanmar. It was previously only once recorded in Myanmar. However during our surveys we found the species in total four times, two times each in 2018 and 2019 (see figure 13). All four observations were simply by chance and the number of wintering birds could be easily much higher when surveyed more thoroughly. The species appears to be wintering in the Ayeyarwady river area and is benefitting from the large number of passerines, namely wagtails as in U Laut in section I, where a night roost has been observed. Also roosting swallows seem to be targeted by the Merlin.

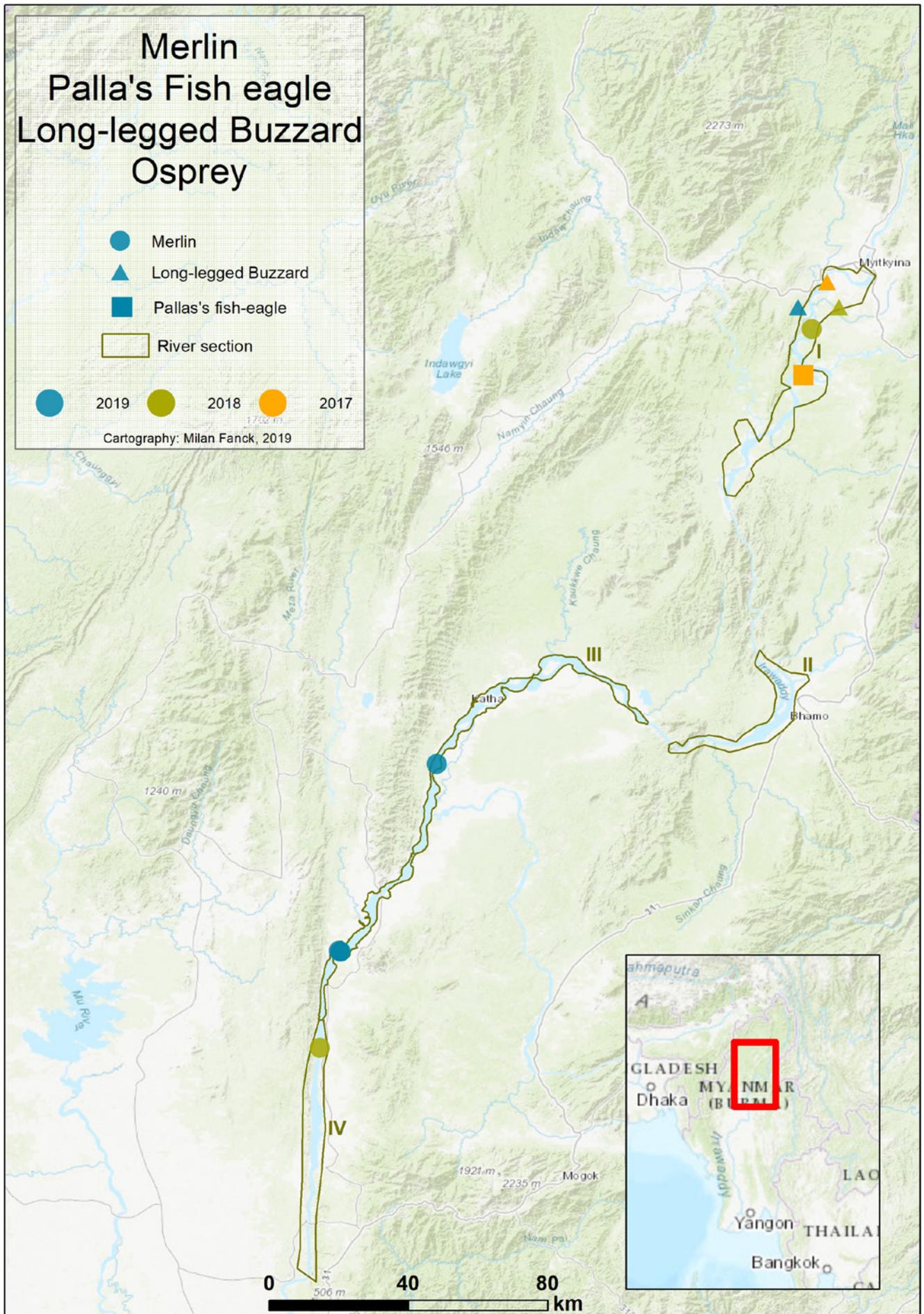


Figure 13: Notable records of selected Birds of Prey in 2017-2019

Notable wetland dependent Passerines

Jerdon's Bushchat

Jerdon's Bushchat was only known from a few wetland sites, such as Lake Inle and Indawgiy, but not from the Ayeyarwady River. It was surprising to find several birds in the bank vegetation of the river at several locations in the northern part of the river. The species is not migratory and resident in the area. Figure 14 shows the distribution of singing birds across the survey period. The species showed a strong affiliation with tall reed grasses which is typical for the floodplain adjacent to the river, but this habitat has been increasingly converted into agricultural land and constrained to smaller remaining islands of suitable habitat.

Similarly to Jerdon's Bushchat, the Striated Babbler is a resident breeder along the riverine wetlands. It has been sharing many of the same reed grass-based habitats along the river banks. Yet its overall distribution is much further south (see Figure 14).

Swallows

It is worth mentioning the impressive numbers of roosting and feeding numbers of Swallows along the river in almost all sections right from Miytkyi-

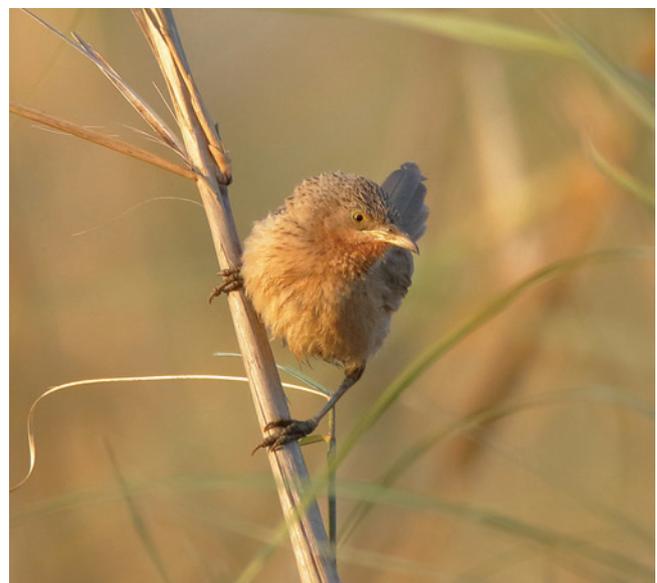
na down river to Bagan. It is difficult to estimate the total numbers, as the distribution is not even. But in some places of sections I, III, V and VI the density reaches 2000 individuals and above per sqkm which could mean a total of 200,000 - 500,000 swallows are regularly wintering in wetlands of the river, highlighting the significance of the river for wintering birds. However, these are very rough estimates and a more sophisticated survey of sample stretches is recommended to establish the real number of swallows involved. Even though the majority of swallows are Barn Swallows *Hirundo rustica*, a large proportion of Red-rumped Swallows *Hirundo daurica* have been noted among the swallow flocks in section III-VI.

Wagtails

Large congregations of wagtails have been observed at some more extensive reed bed areas, such as U Laut (section I). Here were also predators such as Merlin observed. The flocks were of mixed species with Yellow Wagtails dominating in U Laut. Pied Wagtails were more widespread and not specifically allocated to roost sites. While Citrine Wagtails are most prominent in nearby Lake Indawgiy they rarely feature the fauna of the river banks.



Jerdon's Bushchat, U Laut, 3 Feb 2019



Striated Babbler, 8 Feb 2019

Stefan Pfützke

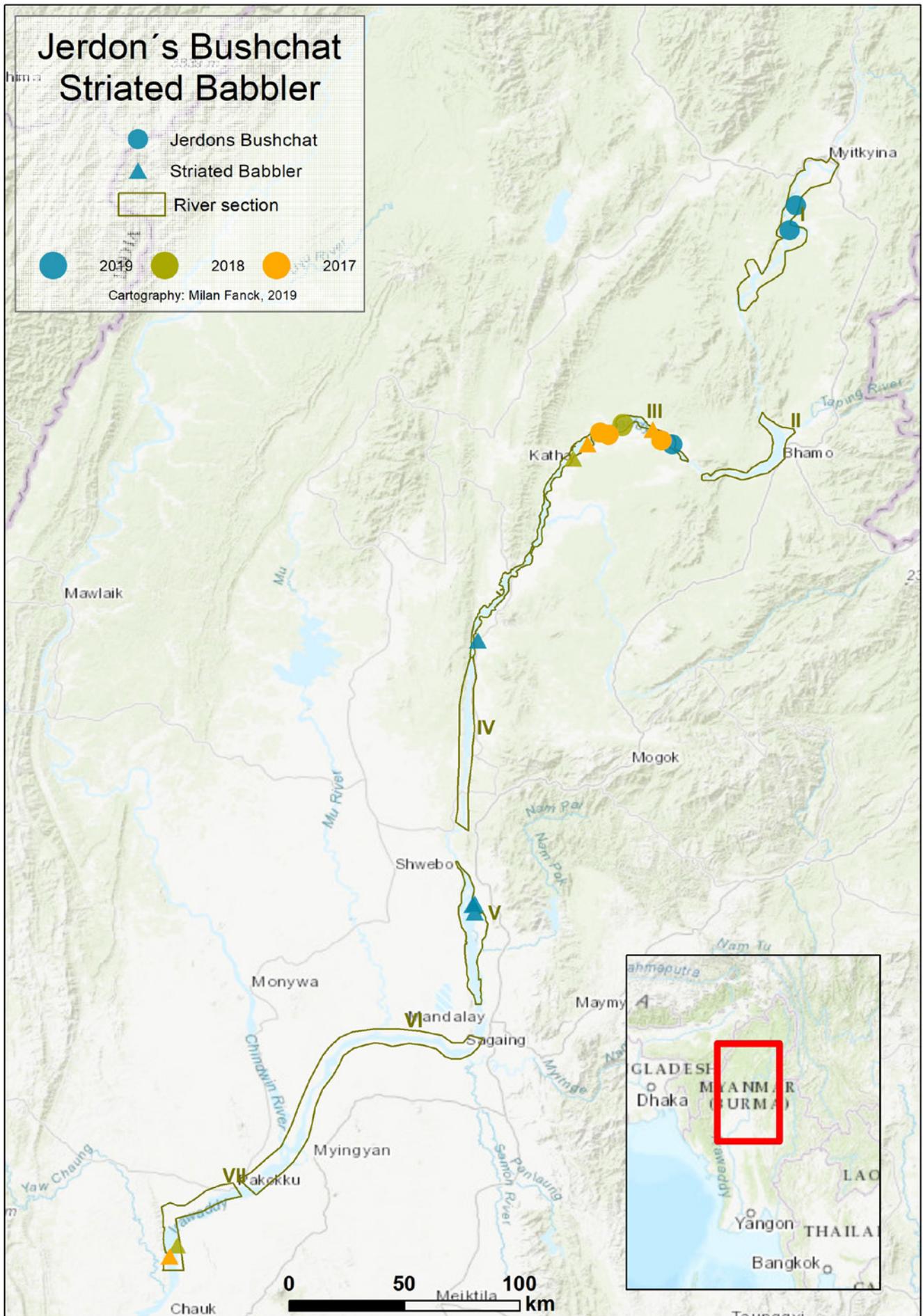


Figure 14: Jerdon's Bushchat and Striated Babbler, two wetland dependant resident birds along the river

Irrawaddy Dolphin

Although the Dolphin was not specifically included in the survey, it was surveyed as well and figure

15 depicts the distribution of the dolphins in the survey years.



Irrawaddy Dolphins near Bhamo, 5 Feb 2019

Stefan Pfützke

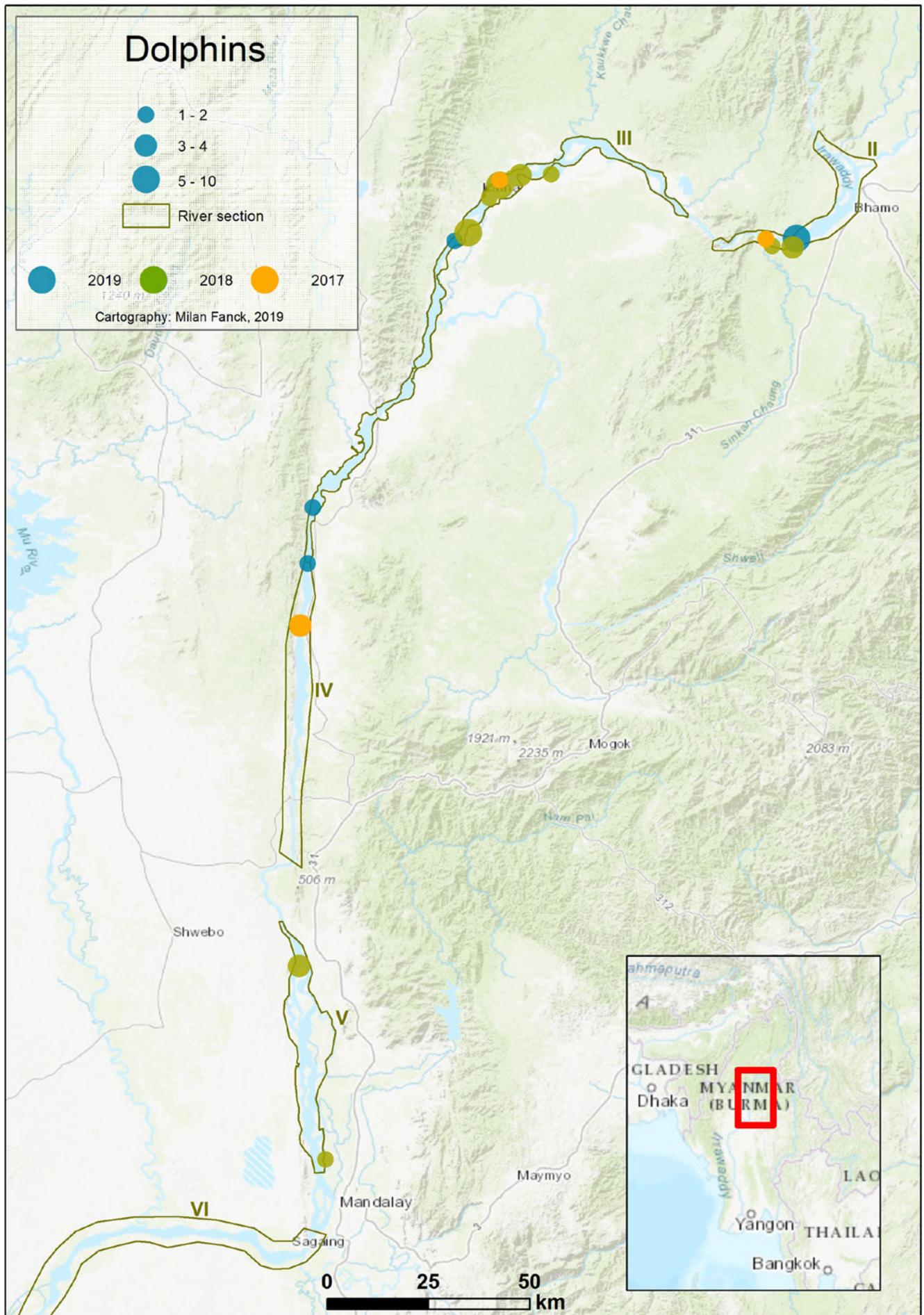


Figure 15: Distribution of the Irrawaddy Dolphins in the survey period 2017-2019

Threats to the riverine wetlands and its waterbirds

Water way construction and damming

The Ayeyarwady River is one of the very few large rivers in the world that still has largely not been dammed, aligned, channelised or interrupted by man-made structures. This has ensured that the flow of water, sediments and nutrients as well as its biodiversity, namely fish is unhampered, creating one of the most dynamic ecosystems that is home for many fish, dolphin and waterbird species. This in turn is the vital basis for the many communities that live and depend of the riverine ecosystem for their livelihoods. Any disruption for different purposes, such as generating energy or creating large irrigation systems will disrupt this delicately balanced system with unforeseen consequences not only for waterbird populations. The current plans of building seven dams in the upper region can therefore not be regarded as sustainable for the riverine ecosystem.

Agricultural expansion and Irrigation

An increasing population along the river banks is demanding and ever increasing acreage of agricultural land. More and more maize and peanut fields, beans and other crops are expanding into reed and grassland areas. Sandy islands and river banks are encroached and cattle herds are grazing on sparsely vegetated sandy banks and islands in the river. The characteristic Reed bed vegetation and the grassy river banks are gradually diminished and jeopardise the remaining habitat of certain waterbird species, such as Jerdon's Bushchat and Striated Babbler amongst many others.

Hunting

Hunting and poaching is wide-spread. Bird trapping was observed in almost all rivers stretches (see photo). Bait poisoning has also been recorded. The level of bird hunting is systemic and wide-



Land use right up to the river margins, leaving little room for ground nesting birds and reed habitats



Bird trapping in section IV near nesting Black-bellied Terns

spread, even though it is illegal, but no or little law enforcement. A large-scale awareness campaign including village leaders is needed and highly recommended to combat the systemic hunting and trapping of migratory waterbirds along the entire river stretch.

During the 2019 survey we were accompanied by staff from the fishery department that were instrumental in enforcing the hunting ban on birds. In total three different nets were taken down, but many more nets were encountered and an awareness campaign with the local communities is essential in mitigating the hunting threat.

Electro-fishing

Electro-fishing is wide-spread and can be devastating for the fish and aquatic communities and is creating a competitive to-the-bottom-approach. Cormorants and other fish eating species seemed to have declined long-term but not recently and all three cormorant species seemed to have benefited from higher water levels in 2019 (see Table 2) and still find sufficient food along all river sections.

Gold panning and sand mining

The most obvious impact on the river is the conversion of the gravel banks into a gold dredging facility. Semi-industrial gold-washing installations can be found on all suitable areas of the sandbanks, but also small-scale operations have been observed regularly turning over the top layer of the river and leaving small heaps of gravel pyramids behind. Some birds like the Small Pratincole are still breeding among these but clearly affected and occupies these converted areas less frequently. Gravel banks near military installations from example were not affected and had higher numbers of Small Pratincoles in the colony. The human impact is visible and increasing. The serious decline of the overall waterbirds and other birds is associated with the loss of habitats, mostly due to gold dredging.

Gold panning, pebble mining and cattle herding on river sand banks in Myitkyina – Sinbo section. It is believed that the increasing gold panning and dredging in this section has created sufficient disturbances to ground nesting birds which resulted in the disappearance of River terns (no records



Pebble mining near Myitkyina, 25 Jan 2018

in the survey period in this river section) and the strong declines in the Small Pratincole, particularly in this section (see figure 6). Other sections were less affected by gold panning and dredging and seemed to have hold, or even increased the numbers of breeding Small Pratincoles.

Plastic

There is so far no system of waste management for plastic or any other item and vast amounts of plastic are just dumped into the river and litter the adjacent river banks and ultimately the sea.



*Waste dumps on the river bank in the village of Takaung
Stefan Pfützke*

Ayeyarwady River sections

The entire river stretch between Myitkyina and Bagan has been divided into seven discrete sections (see Table 4). This is largely in accordance

to Davies et al (2004) and also international Waterbird counts (IWC) defined areas. Section VI and VII have been summarised here.

Table 4: River sections between Myitkyina and Bagan in accordance to Davis et al. (2004) and our observations (see also Fig.1)

Name	Section	Key characteristics	Approx. length in km
Myitkyina – Sinbo	I	Floodplain with many adjacent wetlands and oxbow lakes, serious erosion	95
Bhamo – 2. Gorge (Shwegu)	II	Outwash floodplain	45
Shwegu– Khatta – Takaung	III	Very long stretch of large floodplain with huge sandbanks and steep banks, some reedbeds and gorge near the end towards Takaung	107
Takaung – Thabeikkyin (Singu)	IV	Continuation of gorge but open wide floodplain areas in between with large sandbanks and oxbow lakes	70
Singu – Mandalay	V	Very wide channel with large sandbanks and river arms in open floodplain	20
Mandalay – Naung U	VI	Large, wide open river channel with large sandbanks and many braided river channels	130
Naung U – Bagan	VII	Large open river channel, large sandbanks, oxbow lakes	20

Myitkyina – Sinbo section I

The Myitkyina – Sinbo section deserves special attention not only because of its different riverine structure, but also because of the dramatic declines in waterbirds over the past 15 years. This section differs from others in that it is much richer in pebbles and has more upland river character but also already large amounts of sand sediments deposited. This makes it very rich and diverse but exposes it also to stronger exploitation. The close vicinity of Myitkyina also adds to the pressures on this particular river stretch. Table 5 shows the

waterbirds numbers and decline over the past 19 years with gaps for some species and some years. However, the overall picture illustrates a huge loss of species and numbers of those remaining. Still, at least for two species the numbers surpass the 1% flyway population level and also several globally endangered species in 2017 (Pallas's Fish-Eagle) and White-bellied Heron in 2018 and the Lesser Adjutant Stork in 2019 demonstrate the still highly significant importance of this stretch for waterbirds.

Table 5: Numbers in waterbirds recorded between 2000-2019 at the Ayeyarwady River section between Myitkyina and Sinbo. 2018 counts were incomplete, lacking the last stretch Talawgyi to Sinbo and need adjusting by 2017 data for the Sinbo stretch, see column Sinbo*, DEC+ = species still declining but recovered from 2017 values, based on Van der Ven 2000, 2001, Davies et al (2004) Thet & Ngwe Lwin (2006), Thet (2009), Thet & van der Veen (2008)

Species	scientific name	2000	2001	2002	2003	2004	2006	2007	2016	2017	2018	2019	Trend
Cormorant	<i>Phalacrocorax carbo</i>		600	405	974		211	597		316	381	549	DEC
Little Cormorant	<i>Phalacrocorax niger</i>		22	12	34		35	20		0	14	58	DEC
Darter	<i>Anhinga melanogaster</i>		51	104	65		47	35		18	5	11	DEC
Bar-headed Goose	<i>Anser indicus</i>	4070	3085	946	3443		1381	708	670	106	1	1085	DEC
Greylag Goose	<i>Anser anser</i>		379	121	31			1958		84	103	65	DEC
Ruddy Shelduck	<i>Tadorna ferruginea</i>		2170	2548	3626	3884	3000	2097		1285	1099	976	DEC
Gadwall	<i>Anas strepera</i>	2367		1348	1728		1690	1384	365	325	528	325	DEC
Falcat Duck	<i>Anas falcata</i>	2						2	0	2	0	2	
Mallard	<i>Anas platyrhynchos</i>	546	36	29	47		48	106		400	317	71	INC
Pintail	<i>Anas acuta</i>		38		5			6		20	2	3	STA
Teal	<i>Anas crecca</i>		20	4	16					50	5	21	?
Wigeon	<i>Anas penelope</i>		5	10	22		10	8		0	0	3	?
Spot-billed Duck	<i>Anas poecilorhynchus</i>	939	162	145	266			172		272	328	518	INC?
Ferruginous Pochard	<i>Aythya nyroca</i>		26	2	26		389	1500		1	0	1	DEC
Tufted Duck	<i>Aythya fuligula</i>		50	55	176		460	130		0	0	0	DEC
Red-crested Pochard	<i>Netta rufina</i>	18		6	14			16	5	0	1	6	DEC
Goosander	<i>Mergus merganser</i>		108	50	82		59	115		9	7	23	DEC
Goldeneye	<i>Bucephala clangula</i>	4	29	1	4		18	28	1	5	8	12	DEC
Small Pratincole	<i>Glareola lactea</i>		2540	1155	7785		2954	2792		3160	2862	957	DEC
Eurasian Crane	<i>Grus grus</i>	2419	1457	757	1503		846	165		28	18	135	DEC
Black Stork	<i>Ciconia nigra</i>		80	233	163		26	27		43	73	86	DEC
Great Crested Grebe	<i>Podiceps cristatus</i>				20		30	36		10	17	25	DEC
Grey Heron	<i>Ardea cinerea</i>		75		44			20		40	20	40	STA
Little Egret	<i>Egretta egretta</i>		50	58	50			105		73	8	10	STA
Great Egret	<i>Egretta alba</i>		7	9	7			9		44	55	24	INC
White-bellied Heron	<i>Ardea insignis</i>									0	1	0	
Pallas's Gull	<i>Larus ichthyaetus</i>		130	98	160		95	157		44	57	44	DEC
Temminck Stint	<i>Calidris temminckii</i>		38	32	31					103	54	28	STA?
Little Ringed Plover	<i>Charadrius hiaticula</i>		4	19	14		32	6		57	33	29	INC
River Lapwing	<i>Vanellus duvaucelii</i>		8		8		5			8	1	0	STA
Northern Lapwing	<i>Vanellus vanellus</i>									51	4*	94	
Greenshank	<i>Tringa nebularia</i>		40	29	6			36		26	34	30	STA
River Tern	<i>Sterna aurantia</i>		65	38	69			1		0	0	0	DEC
Woolly-necked Stork	<i>Ciconia episcopus</i>		1	2	2			2		0	0	0	DEC
Lesser Adjutant	<i>Leptoptilos javanicus</i>			10	14			1		0	0	1	DEC
White-tailed Eagle	<i>Haliaeetus albicilla</i>			5	1			3		0	0	0	DEC
Spot-billed Pelican	<i>Pelecanus philippensis</i>	222			12	59		70		0	0	0	?

Historically this river section hosted a huge wealth of waterbirds. Table 5 shows decline in most waterbirds. But there have been also many species that are not listed which have disappeared all together. This include Black-necked Stork, Pink-necked Pelican, Cotton Pygmy Teal and Great and Indian Thick-knee (Davies et al 2004). None of these has been reported in this section or any other river section again.

For at least four globally threatened species this river section fulfils Ramsar criterion 2, even though three of the species were each recorded only in one year. For Small Pratincoles this section serves as a critical life cycle (criterion 4) and four species surpass the 1% flyway population threshold (6) (see also Table 6).

Bhamo – Shwegu section II

This section is characterised by a much broader river and wide sections meandering with large sandy islands included. Here we still find good numbers of Irrawaddy Dolphins (see figure 15). In 2019 a group of 10 or maybe 15 individuals was observed for several hours, playing, hunting and displaying together. This section also hosts the only remaining nesting River Tern. In 2019 a nest with three eggs was found, but significant large numbers of any other birds were not recorded.

Historically this section regularly hosted White-bellied Herons and Baers Pochard (Smithies 1953), The Zaw Naing (pers. comm.) and was the site with the last accepted record of the Pink-headed Duck (Harrington 1909-1910).

This river stretch fulfils the Ramsar criteria 2 for Irrawaddy Dolphins and 4 for the River Terns (see also Table 6) for all three survey years.

Shwegu – Takaung section III

This section of the river is very long: over 100 km. It is a large floodplain with huge sandbanks and steep banks, some reedbeds and plenty of sandy islands. The Irrawaddy Dolphin has been record-

ed in all three years (crit. 2) and serves several large Small Pratincole colonies (crit. 4). Two species, Ruddy Shelduck and Small Pratincole surpass the 1% flyway population threshold (crit. 6) (see also Table 6). The area also hosts relatively large numbers of Oriental Darters (see figure 11). Even though these figures do not reach the 1% threshold, they are notable providing the highest figures along the entire river stretch.

Takaung – Thabeikkyin (Singu) section IV

In this section the river narrows and follows widely a straight line from North to south. The first half is dominated by large sandy islands that are only sparsely vegetated if at all. Further on it passes through a semi gorge where small rocky banks accompany the river and forested mountains surround most of the river. This section regularly hosts the last remaining Black-bellied Terns (EN) and the Irrawaddy Dolphin regularly in all three years. In 2010 the Dark-rumped Swift was also recorded here, all contributing to the criterion 2 for this section been fulfilled. For the Black-bellied Terns and the Small Pratincole the section supports nesting sites as critical life cycle (crit. 4). The Small Pratincole and also Ruddy Shelduck surpass the 1% flyway population threshold for Ramsar crit. 6 (see also Table 6).

Singu – Mandalay section V

This section is a large floodplain of several river sections intermingling. Several stretches were not passable by boat and large sections have not been covered adequately. Huge sandy islands with large areas of vegetation and reedbeds dominate this section. Most of them are also inhabited by small communities that are pursuing fishing and small scale farming on the islands.

The Irrawaddy Dolphin has been recorded in all three years, fulfilling crit. 2 and several large Small Pratincole colonies contribute to crit. 4, while three species surpass the 1% flyway population threshold (crit. 6) (see also Table 6). This section also regularly hosts larger numbers of the

Comb Duck. Even though the numbers do not reach the 1% threshold they seem to be significant while everywhere else the species has vanished or strongly declining.

Historically this section was mentioned as one of the last sites where Pink-headed Ducks were recorded. Smithies (1953) mentions a female duck shot near Singhu in December 1908.

Mandalay – Bagan section VI

South of the metropolitan city Mandalay the river is broad and rich on large sandy banks and wetlands such as oxbow lakes.

It is interesting to see still large congregations on the river at several sections of the river in all years but very pronounced in 2019. It must be seen as a reflection of fewer disturbances. There has been no gold panning on the shores observed and also less hunting. Although large boats were dredging in some sections of the river and sand has been

mined. Also a construction of a water channel cutting short the channel for shipping transport not far south from Sagaing has been noted. Yet the area hosted more than 22,500 waterbirds. These include about 7000 Cattle Egret this section, which is of value in its own right and even without these it is still very rich in waterbirds. It is the only section that fulfils criterion 5 of over 20,000 waterbirds. Three globally threatened bird species have been recorded. Among them a recently discovered pair of Black-bellied Terns (Lay Win pers. comm.). The section also supports the nesting of Small Pratincoles (crit. 4) and lists eight species that surpass the 1% threshold of the flyway population (crit. 6) (see also Table 6).

Historically the area also hosted Baer's Pochard (Wetlands International 2001) and Great Thick-knees. The later might be still there but have not been recorded for over ten years (Lay Win pers. comm.)



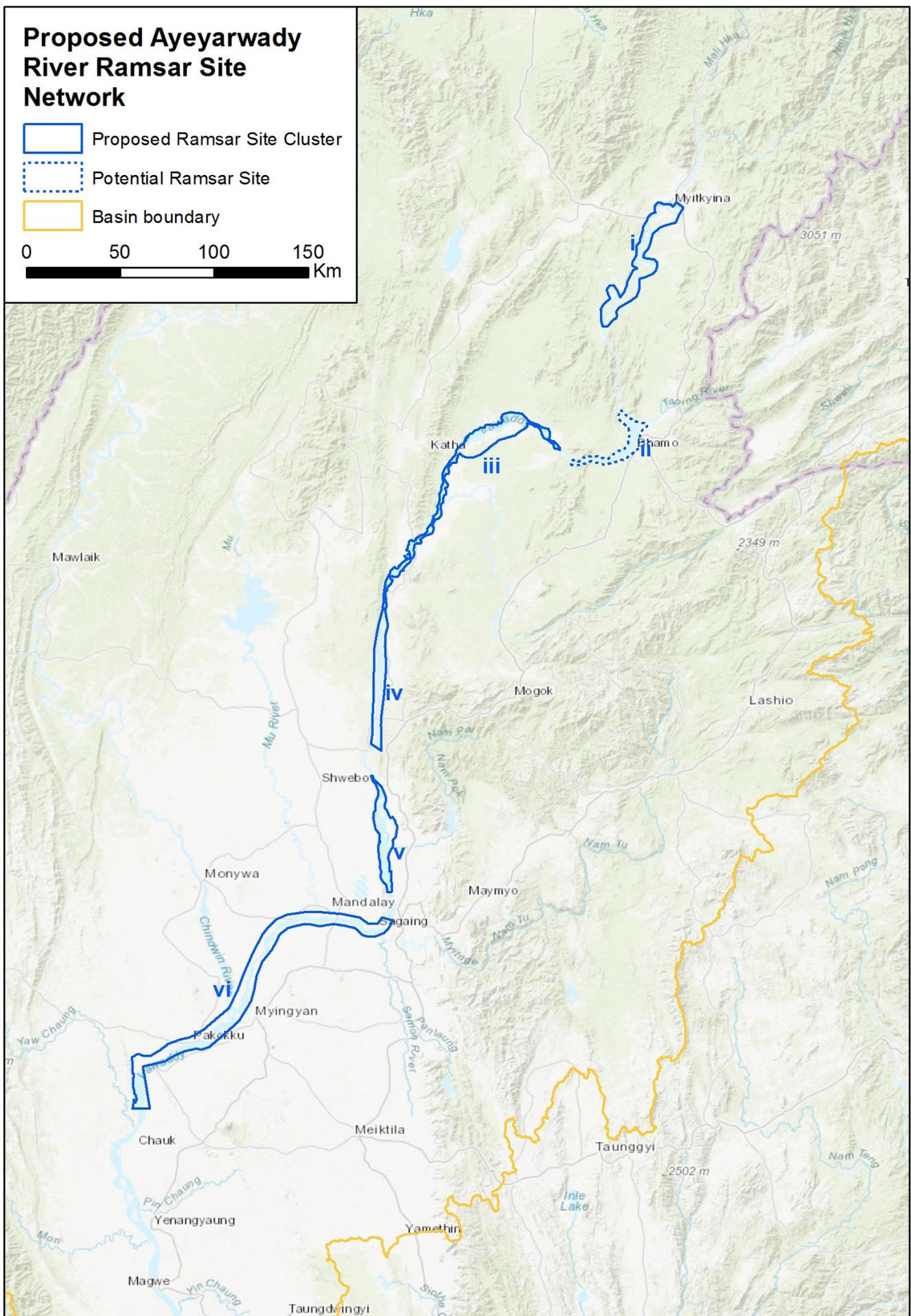


Figure 16: Proposed and potential Ramsar site cluster along the Ayeyarwaddy River between Myitkyina and Bagan (sites I-VI)

Protected Area Planning

Ramsar and Community Conservation Areas

Table 6 shows that each river section fulfils at least two or more Ramsar criteria and each serves a large and important number of waterbirds. Each section could serve as a Ramsar site. A full analysis for each section is below. The sections have been defined previously (Davies et al. 2004) and also applied in all three surveys. They also correspond with natural boundaries, separated by gorges or other geographical or man-made markers like the bridge across the river in Sagaing. Figure 16 depicts these areas. All of them would qualify as Ramsar sites in their own right. But as they are all connected by the same river it would make sense to designate all of them as one cluster of Ayeyarwady River Ramsar sites.

Rather than considering the entire length of the river between Myitkyina and Bagan as one Ramsar site, a cluster of six sites is considered that is loosely connected with each other through the river. The connection of the string of sites are building a larger Ramsar cluster of sites along the Ayeyarwady River, each fulfilling several criteria in its own right and all together need to be considered as riverine Ramsar sites with a common theme, value and significance linked by the river itself. Waterbird data from the past three winter seasons have been taken into account to describe the full potential of each section. Table 6 lists each section and how relevant Ramsar criteria apply. Criterion 1 applies for all if not most of the rivers sections as all these sections have not been impacted or altered directly by damming, dike constructions or channel construction or any alteration at the river structure itself and the original wetland character is largely intact and little impacted. Agricultural intrusion and often accompanied with this hunting and trapping has widely been noted but is also only partial and temporal due to the annual river dynamic. Therefore criterion 1 applies to all sections.

The following Table 6 lists all other relevant waterbird criteria 2, 4, 5 and 6. Only one of the sections reaches the 20,000 individual waterbird criterion 5, but all sections together have 30,000 and 40,000 waterbirds. In fact in 2017 and 2018 each count had around 30,000 waterbirds in total and in 2019 a total of over 40,000 was counted.

Community Conservation areas

For several areas, most importantly for all riverine tern sites, but also the most abundant Small Pratincole breeding sites and others, so called Community Conservation Areas are proposed to protect the few remaining breeding sites from endangerment by deliberate or undeliberate intrusion. Specially designed sites would need to be negotiated and jointly delineated with the local communities. These sites should focus on the core nesting sites of the few last remaining riverine terns (see Figure 2) and also most if not all larger colonies of the Small Pratincole with over 100 breeding birds involved (see Figure 6). This would involve three sites for the Black-bellied and River Tern and at least 13 such sites for the Small Pratincole.

Biosphere Reserve

Together with Ramsar sites as core areas and the adjacent communal forest and agricultural land the area is predestined for being protected and managed as a Biosphere Reserve. Especially in combination with community conservation areas (CCA) and Ramsar sites the whole river system could receive the level of protection and co-management that this region deserves and needs to escape the vicious cycle of ecological and social destruction and disruption that will ultimately lead to self-destruction. The framework of a biosphere reserve provides a unique opportunity of the communities to develop sustainably and it can only be achieved if all communities and all provinces involved play together and are fully supported by the national and international agencies and organisations.

Table 6: Internationally important wetland sites. Ramsar criteria 2, 4, 5 and 6 for 2017-2019 survey period highlighting several Ayeyarwady River sections

No	River section (see also Figure 5)	State/ Province	Criterion 2 (Threatened Species)	Criterion 4 (Critical life cycle stage)	Criterion 5 (20,000 water- birds threshold)	Criterion 6 (1% of flyway population)
I	Myitkyina – Sinbo	Kachin	White-bellied Heron (CR), Pallas's Fisheagle (EN), Lesser Adjutant Stork (VU), Common Pochard (VU)	Small Pratincole breeding colonies	-/-	Ruddy Shelduck (2-2.1%) Bar-headed Goose (1.8%, 2019) Black Stork: 86 ind.) Small Pratincole (2-4%)
II	Bhamo – Shwegu	Kachin	Irrawaddy Dolphin (CR)	River Tern breeding colony	-/-	-/-
III	Shwegu – Khatta – Takaung	Sagaing	Irrawaddy Dolphin (CR)	Small Pratincole breeding colonies	-/-	Ruddy Shelduck (~5%) Small Pratincole (2%)
IV	Takaung – Singhu	Mandalay/ Sagaing	Black-bellied Tern (EN), Irrawaddy Dolphin (CR), Dark-rumped Swift (VU)	Small Pratincole and Tern breeding colonies	-/-	Ruddy Shelduck (2%) Small Pratincole (2%)
V	Singu – Mandalay	Mandalay	Irrawaddy Dolphin (CR)	Small Pratincole breeding colonies	-/-	Ruddy Shelduck (3.5%) Glossy Ibis (1.8%) Small Pratincole (4%)
VI	Man dalay – Bagan	Sagaing/ Mandalay/ Magway	Yellow-breasted Bunting (CR), Woolly-necked Stork (VU), Black-bellied Tern (EN) (WCS, BANCA)	Small Pratincole breeding colonies	22,500 (2019)	Ruddy Shelduck (5.2-7.4%) Greylag Goose (1.7%) Pintail (~1%) Indian Spot-billed Duck (2.9%) Black-headed Ibis (1-2.5%) Glossy Ibis (1.2%) Common Crane (1.1%) Small Pratincole (1.3%)

Future monitoring

The repeat survey in 2018 and 2019 demonstrated that the monitoring of waterbirds along the Ayeyarwady River provides valuable insights into the trends and responses of waterbird species to various threats and pressures. The applied methodology also demonstrated that it is appropriate

and reasonably accurate. Over such a large area there will always be an error in the numbers, but by keeping the means of counting, like number of people, boat types and timing relatively equal comparisons with future monitoring will be allowed.

One reflection of accuracy of the numbers can be derived from the numbers of Openbill Storks that over the entire river section remained roughly the same at 720 or 725 individuals respectively. Likewise Grey Herons were close in numbers to each other in both years. These might be coincidental, but both species have been counted across all six river sections. Other species however, such as Pintail Duck and Teal amounted to larger differences where oversight in one year might be likely an explanation than a decline or increase.

Overall the survey lasted about 12 days in order to cover all river sections. Also in light of the difficulties with obtaining permits and the areas of insurgencies, it might be worth considering a reduction of survey areas to only half the section I and also only part of section III from Shwegu downwards and to omit sections II and VII. This would speed up the survey and still results in most important sites and numbers.

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Annex 1: Ayeyarwady River total species list 2017 – 2019

Common New Name	Scientific name	IUCN RL	2017	2018	2019
Rain Quail	<i>Coturnix coromandelica</i>		●	●	●
Chinese Francolin	<i>Francolinus pintadeanus</i>				●
Lesser Whistling-Duck	<i>Dendrocygna javanica</i>				●
Greylag Goose	<i>Anser anser</i>		●	●	●
Greater White-fronted Goose	<i>Anser albifrons</i>		●	●	
Bar-headed Goose	<i>Anser indicus</i>		●	●	●
Common Shelduck	<i>Tadorna tadorna</i>		●	●	●
Ruddy Shelduck	<i>Tadorna ferruginea</i>		●	●	●
Gadwall	<i>Anas strepera</i>		●	●	●
Falcated Duck	<i>Anas falcata</i>	NT	●		●
Eurasian Teal	<i>Anas crecca</i>		●	●	●
Eurasian Wigeon	<i>Anas penelope</i>		●	●	●
Mallard	<i>Anas platyrhynchos</i>		●	●	●
Indian Spot-billed Duck	<i>Anas poecilorhyncha</i>		●	●	●
Northern Shoveler	<i>Anas clypeata</i>		●		●
Northern Pintail	<i>Anas acuta</i>		●	●	●
Common Merganser	<i>Mergus merganser</i>		●	●	●
Red-breasted Merganser	<i>Mergus serrator</i>		●		
Garganey	<i>Anas querquedula</i>		●	●	●
Comb Duck	<i>Sarkidiornis melanotos</i>			●	●
Red-crested Pochard	<i>Netta rufina</i>		●		●
Common Pochard	<i>Aythya ferina</i>	VU	●		●
Ferruginous Pochard	<i>Aythya nyroca</i>	NT	●		●
Tufted Duck	<i>Aythya fuligula</i>				●
Goldeneye	<i>Bucephala clangula</i>			●	●
Mandarin Duck	<i>Aix galericulata</i>		●		
Little Grebe	<i>Tachybaptus ruficollis</i>		●		
Great Crested Grebe	<i>Podiceps cristatus</i>		●	●	●
Black-necked Grebe	<i>Podiceps nigricollis</i>			●	
Slavonian Grebe	<i>Podiceps auritus</i>		●		
Asian Openbill	<i>Anastomus oscitans</i>		●	●	●
Black Stork	<i>Ciconia nigra</i>		●	●	●
Painted Stork	<i>Mycteria leucocephala</i>	NT	●		
Woolly-necked Stork	<i>Ciconia episcopus</i>	VU	●		
Lesser Adjutant	<i>Leptoptilos javanicus</i>	VU			●
Black-headed Ibis	<i>Threskiornis melanocephalus</i>		●	●	●
Glossy Ibis	<i>Plegadis falcinellus</i>		●	●	●
Indian Pond-Heron	<i>Ardeola grayii</i>		●	●	●
Chinese Pond-Heron	<i>Ardeola bacchus</i>				●
Night Heron	<i>Nycticorax nycticorax</i>		●	●	●
Eastern Cattle Egret	<i>Bubulcus coromandus</i>		●	●	●
Grey Heron	<i>Ardea cinerea</i>		●	●	●
White-bellied Heron	<i>Ardea insignis</i>			●	
Great Egret	<i>Ardea alba</i>		●	●	●
Intermediate Egret	<i>Mesophoyx intermedia</i>		●	●	●
Little Egret	<i>Egretta garzetta</i>		●	●	●
Little Cormorant	<i>Phalacrocorax niger</i>		●	●	●
Great Cormorant	<i>Phalacrocorax carbo</i>		●	●	●
Oriental Darter	<i>Anhinga melanogaster</i>	NT	●	●	●
Osprey	<i>Pandion haliaetus</i>		●	●	●

Collared Falconet	<i>Microhierax caerulescens</i>			
Peregrine Falcon	<i>Falco peregrinus</i>	●	●	●
Common Kestrel	<i>Falco tinnunculus</i>	●	●	●
Oriental Hobby	<i>Falco severus</i>		●	
Merlin	<i>Falco columbarius</i>		●	●
Oriental Honey-Buzzard	<i>Pernis ptilorhynchus</i>	●	●	●
Common Buzzard	<i>Buteo buteo</i>	●	●	●
Long-legged Buzzard	<i>Buteo longicaudatus</i>		●	●
Rufous-winged Buzzard	<i>Butastur liventer</i>		●	
Black-shouldered Kite	<i>Elanus caeruleus</i>	●	●	●
Black Kite	<i>Milvus migrans</i>	●	●	●
Brahminy Kite	<i>Haliastur indus</i>	●		
Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>	●		
Himalayan Griffon	<i>Gyps himalayensis</i>			●
Crested Serpent-Eagle	<i>Spilornis cheela</i>	●	●	
Western Marsh-Harrier	<i>Circus aeruginosus</i>	●		
Eastern Marsh-Harrier	<i>Circus spilonotus</i>	●	●	●
Hen Harrier	<i>Circus cyaneus</i>	●		
Pied Harrier	<i>Circus melanoleuco</i>	●	●	●
Pallid Harrier	<i>Circus pallidus</i>	●		
Shikra	<i>Accipiter badius</i>			●
Besra	<i>Accipiter virgatus</i>	●		
Northern Goshawk	<i>Accipiter gentilis</i>		●	
Booted Eagle	<i>Aquila pennata</i>			●
White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	●	●	●
Watercock	<i>Gallicrex cinerea</i>			●
Common Moorhen	<i>Gallinula chloropus</i>	●	●	
Common Crane	<i>Grus grus</i>	●	●	●
Pacific Golden Plover	<i>Pluvialis fulva</i>	●	●	●
Small Pratincole	<i>Glareola lactea</i>	●	●	●
Oriental Pratincole	<i>Glareola maldivarum</i>	●		
Black-winged Stilt	<i>Himantopus himantopus</i>	●	●	●
Pied Avocet	<i>Recurvirostra avocetta</i>	●	●	●
Northern Lapwing	<i>Vanellus vanellus</i>	●	●	●
River Lapwing	<i>Vanellus duvaucelii</i>	●	●	●
Grey-headed Lapwing	<i>Vanellus cinereus</i>	●	●	●
Red-wattled Lapwing	<i>Vanellus indicus</i>	●	●	●
Kentish Plover	<i>Charadrius alexandrinus</i>	●	●	●
Greater Sandplover	<i>Charadrius leschenaulti</i>	●	●	
Lesser Sandplover	<i>Charadrius mongolicus</i>	●	●	●
Little Ringed Plover	<i>Charadrius dubius</i>	●	●	●
Common Snipe	<i>Gallinago gallinago</i>			●
Pintail Snipe	<i>Gallinago stenura</i>	●		
Eurasian Curlew	<i>Numenius arquata</i>			●
Black-tailed Godwit	<i>Limosa limosa</i>			●
Common Greenshank	<i>Tringa nebularia</i>	●	●	●
Marsh Sandpiper	<i>Tringa stagnatilis</i>			
Spotted Redshank	<i>Tringa erythropus</i>	●	●	●
Common Redshank	<i>Tringa totanus</i>		●	●
Common Sandpiper	<i>Actitis hypoleucos</i>	●	●	●
Green Sandpiper	<i>Tringa ochropus</i>	●	●	●
Wood Sandpiper	<i>Tringa glareola</i>	●	●	●
Ruff	<i>Philomachus pugnax</i>	●		
Little Stint/Red-necked Stint	<i>Calidris minuta/C. ruficollis</i>	●	●	●

Dunlin	<i>Calidris alpina</i>		●	●	●
Temminck's Stint	<i>Calidris temminckii</i>		●	●	●
Greater Black-headed Gull	<i>Larus ichthyaetus</i>		●	●	●
Brown-headed Gull	<i>Chroicocephalus brunnicephalus</i>		●	●	●
River Tern	<i>Sterna aurantia</i>	NT	●	●	●
Black-bellied Tern	<i>Sterna acuticauda</i>	EN	●	●	●
Little Tern	<i>Sternula albifrons</i>		●	●	●
Rock Pigeon	<i>Columba livia</i>		●	●	●
Spotted Dove	<i>Streptopelia chinensis</i>		●	●	●
Red Collared Dove	<i>Streptopelia tranquebarica</i>		●	●	●
Burmese Collared Dove	<i>Streptopelia xanthocyclus</i>		●	●	●
Yellow-footed Green Pigeon	<i>Treon phoenicopterus</i>		●		
Ashy-headed Green Pigeon	<i>Treron phayrei</i>		●		
Grey-headed Parakeet	<i>Psittacula finschii</i>				●
Rose-ringed Parakeet	<i>Psittacula krameri</i>		●	●	●
Red-breasted Parakeet	<i>Psittacula alexandri</i>		●	●	
Alexandrine Parakeet	<i>Psittacula eupatria</i>				●
Blossom-headed Parakeet	<i>Psittacula roseata</i>				●
Lesser Coucal	<i>Centropus bengalensis</i>		●		
Greater Coucal	<i>Centropus sinensis</i>		●	●	●
Plaintive Cuckoo	<i>Coccyzus merulinus</i>		●	●	
Green-billed Malkoha	<i>Rhopodytes tristis</i>		●		
Asian Koel	<i>Eudynamis scolopacea</i>		●	●	●
Large-tailed Nightjar	<i>Caprimulgus macrurus</i>		●	●	
Savannah Nightjar	<i>Caprimulgus affinis</i>		●		
Barn Owl	<i>Tyto alba</i>			●	
Spotted Owlet	<i>Athene brama</i>		●	●	●
Collared Scops Owl	<i>Otus lettia</i>		●		
Asian Barred Owllet	<i>Glaucidium cuculoides</i>		●	●	●
Crested Treeswift	<i>Hemiprocne coronata</i>		●		
Himalayan Swiftlet	<i>Collocalia brevirostris</i>		●	●	●
Brown-backed Needletail	<i>Hirundapus giganteus</i>		●		●
Asian Palm-Swift	<i>Cypsiurus balas</i>		●	●	●
House Swift	<i>Apus nipalensis</i>		●	●	●
Fork-tailed Swift	<i>Apus pacificus</i>		●		●
Dark-rumped Swift	<i>Apus acuticauda</i>	VU			●
Dollarbird	<i>Eustoma orientalis</i>		●		
Indian Roller	<i>Coracias benghalensis</i>				●
White-throated Kingfisher	<i>Halcyon smyrnensis</i>		●	●	●
Pied Kingfisher	<i>Ceryle rudis</i>		●	●	●
Common Kingfisher	<i>Alcedo atthis</i>		●	●	●
Blue-bearded Bee-eater	<i>Nyctyornis athertoni</i>		●		
Little Green Bee-eater	<i>Merops orientalis</i>		●	●	●
Blue-tailed Bee-eater	<i>Merops philippinus</i>		●		●
Hoopoe	<i>Upupa epos</i>		●		●
Oriental Pied Hornbill	<i>Anthracoeros albirostris</i>		●	●	●
Wreathed Hornbill	<i>Aceros undulatus</i>		●	●	●
Lineated Barbet	<i>Megalaima lineata</i>		●	●	●
Blue-throated Barbet	<i>Megalaima asiatica</i>		●		
Coppersmith Barbet	<i>Megalaima haemaccephala</i>		●	●	●
Eurasian Wryneck	<i>Jynx torquilla</i>			●	●
Common Flameback	<i>Dinopium javanense</i>		●		
Jerdon's Minivet	<i>Pericrocotus albifrons</i>		●		●
Large Cuckooshrike	<i>Coracina macei</i>		●		

Long-tailed Minivet	<i>Pericrocotus ethologus</i>	●		
Black-naped Oriole	<i>Oriolus chinensis</i>	●	●	●
Black-hooded Oriole	<i>Oriolus xanthornus</i>	●		●
Slender-billed Oriole	<i>Oriolus tenuirostris</i>			●
Ashy Woodswallow	<i>Artamus fuscus</i>	●		●
White-throated Fantail	<i>Rhipidura albicollis</i>	●		
Common Iora	<i>Aegithina tiphia</i>	●	●	●
Black Drongo	<i>Dicrurus macrocercus</i>	●	●	●
Ashy Drongo	<i>Dicrurus leucophaeus</i>	●	●	●
House Crow	<i>Corvus splendens</i>	●	●	●
Large-billed Crow	<i>Corvus japonensis</i>	●		●
Rufous Treepie	<i>Dendrocitta vagabunda</i>	●		●
Hooded Treepie	<i>Crypsirina cuclata</i>	●		
Brown Shrike	<i>Lanius cristatus</i>	●		●
Long-tailed Shrike	<i>Lanius schach</i>	●		●
Grey-backed Shrike	<i>Lanius tephronotus</i>	●		●
Burmese Shrike	<i>Lanius coluroides</i>	●		●
Purple Sunbird	<i>Cinnyris asiaticus</i>	●		●
Scarlet-backed Flowerpecker	<i>Dicaeum cruentatum</i>		●	●
Golden-fronted Leafbird	<i>Chloropsis aurifrons</i>	●		
Streaked Weaver	<i>Ploceus manyar</i>	●		
Baya Weaver	<i>Ploceus philippinus</i>	●		
Red Adavadat	<i>Amandava amandava</i>			●
Scaly-breasted Munia	<i>Lonchura punctulata</i>	●		
Chestnut Munia	<i>Lonchura atricapilla</i>	●	●	●
Eurasian Tree-Sparrow	<i>Passer montanus</i>	●	●	●
House Sparrow	<i>Passer domesticus</i>	●	●	●
Plain-backed Sparrow	<i>Passer flaveolus</i>	●	●	●
Rosy Pipit	<i>Anthus roseatus</i>	●	●	●
Olive-backed Pipit	<i>Anthus hodgsoni</i>		●	●
Red-throated Pipit	<i>Anthus cervinus</i>			●
Richard's Pipit	<i>Anthus richardi</i>	●		●
Paddyfield Pipit	<i>Anthus rufulus</i>	●		●
White Wagtail	<i>Motacilla alba</i>	●		●
Yellow Wagtail	<i>Motacilla flava</i>	●		●
Citrine Wagtail	<i>Motacilla citreola</i>	●		●
Grey Wagtail	<i>Motacilla cinerea</i>		●	●
Crested Myna	<i>Acridotheres cristatellus</i>	●		
White-vented Myna	<i>Acridotheres grandis</i>	●		
Collared Myna	<i>Acridotheres albocinctus</i>	●		●
Jungle Myna	<i>Acridotheres fuscus</i>	●		●
Common Myna	<i>Acridotheres tristis</i>	●		●
Vinous-breasted Myna	<i>Acridotheres burmannicus</i>	●		●
Black-collared Starling	<i>Gracupica nigricollis</i>	●		●
Asian Pied Starling	<i>Gracupica contra</i>	●		●
Chestnut-tailed Starling	<i>Sturnus malabaricus</i>	●		
White-shouldered Starling	<i>Stunus sinensis</i>	●		●
Blue Rock Thrush	<i>Monticola solitarius</i>	●		
Siberian Rubythroat	<i>Luscinia calliope</i>	●	●	●
Bluethroat	<i>Luscinia svecica</i>	●	●	●
Eastern Stonechat	<i>Saxicola maurus</i>	●	●	●
White-tailed Stonechat	<i>Saxicola leucura</i>	●	●	●
Pied Bushchat	<i>Saxicola caprata</i>	●	●	●
Jerdon's Bushchat	<i>Saxicola jerdoni</i>	●	●	●

Taiga Flycatcher	<i>Ficedula albicollis</i>	●		●
Oriental Magpie-Robin	<i>Copsychus saularis</i>	●	●	●
White-rumped Shama	<i>Copsychus malabaricus</i>	●		
Grey-headed Canary-Flyc.	<i>Culicicapa ceylonensis</i>	●		●
Oriental Skylark	<i>Alauda gulgula</i>	●	●	●
Sand Lark	<i>Calandrella raytal</i>	●	●	●
Burmese Bushlark	<i>Mirafra microptera</i>	●	●	●
Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	●	●	●
Black-crested Bulbul	<i>Pycnonotus melanicterus</i>	●	●	●
Red-vented Bulbul	<i>Pycnonotus cafer</i>	●	●	●
Ayeyarwady Bulbul	<i>Pycnonotus blandfordi</i>	●	●	●
Sand Martin	<i>Riparia riparia</i>	●	●	●
House Martin	<i>Delichon urbica</i>	●	●	●
Pale Sand-Martin	<i>Riparia diluta</i>	●	●	●
Barn Swallow	<i>Hirundo rustica</i>	●	●	●
Red-rumped Swallow	<i>Cecropis daurica</i>	●	●	●
Greenish Warbler	<i>Phylloscopus trochiloides</i>	●		●
Yellow-streaked Warbler	<i>Phylloscopus armandii</i>			●
Raddé's Warbler	<i>Phylloscopus schwarzii</i>			●
Dusky Warbler	<i>Phylloscopus fuscatus</i>	●		●
Yellow-browed Warbler	<i>Phylloscopus inornatus</i>	●		●
Pin-Striped Tit-Babbler	<i>Macronus gularis</i>	●		
Chestnut-capped Babbler	<i>Timalia piliata</i>	●		●
Yellow-eyed Babbler	<i>Crysmomma sinense</i>	●		●
Striated Babbler	<i>Turdoides earlei</i>	●		●
White-throated Babbler	<i>Turdoides gularis</i>	●		●
Spotted Bush Warbler	<i>Bradypterus thoracicus</i>	●		
Pallas's Grasshopper Warbler	<i>Locustella certhiola</i>			●
Striated Grassbird	<i>Mengalurus palustris</i>	●		●
Zitting Cisticola	<i>Cisticola juncidis</i>	●		●
Common Tailorbird	<i>Orthotomus sutorius</i>	●		●
Yellow-bellied Prinia	<i>Prinia flaviventris</i>	●		●
Plain Prinia	<i>Prinia inornata</i>	●		●
Grey-breasted Prinia	<i>Prinia hodgsonii</i>	●		●
Black-faced Bunting	<i>Emberiza spodocephala</i>	●		
Little Bunting	<i>Emberiza pusilla</i>	●		●