



Ngesechel a Cherechar Belau National Museum

November 6, 2017

Mission

In the belief that “no song, no performance, no act of creation can be properly understood apart from the culture in which it is found and of which it is a part”, the purpose of the Belau National Museum (BNM) as a major component of nation building is to identify, contextualize, create and record Palau’s past and present through collection, identification, documentation, preservation, interpretation, education, research and exhibition of cultural and natural property for the people of Palau.

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On behalf of the Board of Trustees of the Belau National Museum, I offer the enclosed authoritative report on the legacy of Belualasmau and surrounding coastal wetlands, also known as the Northern Peleliu Lkes Important Bird Area. The report was prepared by the museum to help inform your decisions regarding Belualasmau.

The report summarizes over 150 years of scientific studies of the large numbers and rich diversity of the migratory shorebirds at Belualasmau. The scientific studies proved that Belualasmau (Northern Peleliu Lkes Important Bird Area) is the most important site for migratory shorebirds in Micronesia and Oceania, however, the site is in extreme danger of destruction from commercial development.

Furthermore, Belualasmau is refuge for the only stable population of migratory Far Eastern Curlews in Palau. The globally endangered Far Eastern Curlew is the living archetype of Delerrok (Palauan Money Bird), an ancient and important icon of Palauan culture, pride and prosperity. Failure to immediately protect Belualasmau from commercial development or any other threat would certainly cause the extinction of Delerrok in Palau, depriving future generations of a cherished cultural legacy.

The Far Eastern Curlew is singled out for priority protection under Appendix I of the U.N. Convention on the Conservation of Migratory Species of Wild Animals (CMS). The CMS calls for the immediate protection of the habitats of each species listed in Appendix I.

Moreover, all of the shorebird species at Belualasmau (Northern Peleliu Lkes Important Bird Area) are protected under CMS Appendix II.

Therefore, the Board of Trustees takes the position that the Northern Peleliu Lkes Important Bird Area, including Belualasmau, must be immediately protected as a critical habitat for migratory shorebirds pursuant to the Republic of Palau’s commitments as a party to the U.N. Convention on the Conservation of Migratory Species of Wild Animals (CMS).

Regards,

Demei O. Otobed
President, Board of Trustees

For additional information or to schedule an audio/visual presentation on Belualasmau please contact the Director of Belau National Museum.

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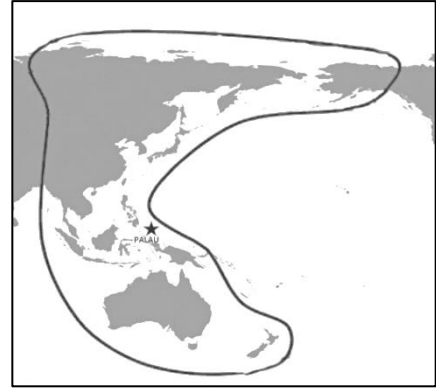
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LEGACY OF BELUALASMAU - THE NORTHERN PELELIU LKES IMPORTANT BIRD AREA (IBA)

Introduction

Every year, millions of shorebirds migrate thousands of miles from their northern breeding grounds to southerly non-breeding localities and back. The annual migrations of these shorebirds have moved along particular flyways for millennia, following the same routes between breeding grounds and non-breeding localities every year. Palau is in the East Asian-Australasian Flyway (EAAF) (map, right) which stretches from shorebird breeding grounds in the arctic and subarctic regions of East Asia, Siberia and Alaska to coastal habitats as far south as Australia and New Zealand. Every year during migratory season thousands of migratory shorebirds pass through Palau on their way south (August – October) or north (March – May). Many, however, go no further than Palau, remaining in our coastal wetlands from August through May before returning to their northern breeding grounds.



The most important wetland habitat for migratory shorebirds is **Belualasmau** (in Peleliu) and the surrounding intertidal sand flats. Although shorebirds began migrating to Belualasmau thousands of years before the first humans arrived in outrigger canoes, the global significance of the site was not appreciated until modern scientists began studying the area approximately 150 years ago. Based on the scientific studies, BirdLife International officially recognized Belualasmau and its sand flats as Important Bird Area (IBA) #PW011 “the Northern Peleliu Lkes IBA” in 2015, declaring it the most important shorebird site in Micronesia and Oceania and conferring high priority on the protection of Belualasmau (Northern Peleliu Lkes IBA) with particular care for safeguarding species heading towards extinction.

A Brief History of the Study of the Shorebirds of Belualasmau (Northern Peleliu Lkes IBA) (1860-2010)

Although Captain **Henry Wilson** described bird life in the journal he kept while shipwrecked in Palau in 1783, the history of the organized study of the shorebirds of the Belualasmau (Northern Peleliu Lkes IBA) began in the 1860s when the Godeffroy Museum of Hamburg, Germany commissioned the collection of zoological specimens in Micronesia. The museum became interested in the birds of Palau on account of specimens haphazardly collected by captains of ships that brought supplies to trading posts owned by Godeffroy in Micronesia.

Carl Semper was the first scientist sent to Micronesia by Godeffroy, primarily to conduct anthropological studies and secondarily to collect zoological specimens. Semper visited Palau several times from 1861-1863 including a stay in Peleliu where he collected birds from the Belualasmau sand flats. In those days, scientists shot the birds and preserved the skeletons and skins (with feathers) for the museum collections in Europe.

From 1871 to 1872, **Johann Kubary** collected hundreds of bird specimens in Palau for the Godeffroy Museum. He collected at least 200 bird specimens from Peleliu and the sand flats of Belualasmau. Unfortunately, those specimens were lost overboard during a storm on his return journey in an outrigger canoe from Peleliu to his base in Koror. Ten years later he returned to Palau to write his anthropological treatise.

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The table below summarizes the bird species collected for Godeffroy Museum by Semper and Kubary as catalogued by Hartlaub in 1872. Items 21 through 28 are migratory shorebirds.

We add a list of the 41 known species of birds of the Pelew Islands.	
1. <i>Collocalia vanicorensis.</i>	21. <i>Numenius phaeopus.</i>
2. <i>Harelda sanctus.</i>	22. <i>Actitis hypoleucos.</i>
3. ——— <i>albicilla.</i>	23. <i>Tringa minima.</i>
4. ——— <i>reichenbachii.</i>	24. ——— <i>acuminata.</i>
5. <i>Myzomela rubratra.</i>	25. <i>Streptopus interpres.</i>
*6. <i>Ptaenothia anaa.</i>	26. <i>Charadrius fuscus.</i>
*7. <i>Tephrus finashi.</i>	27. ——— <i>geoffroyi.</i>
*8. <i>Zosterops eruperi.</i>	28. ——— <i>castaneus.</i>
*9. <i>Rhipidura lepida.</i>	29. <i>Ardea sacra.</i>
*10. <i>Myiagra erythroga.</i>	30. <i>Nycticorax caledonicus.</i>
*11. <i>Rectes tenebrosus.</i>	31. ——— <i>goisagi.</i>
12. <i>Artamus leucorhynchus.</i>	32. <i>Anas superciliosa.</i>
13. <i>Colarus hirtititii.</i>	33. <i>Fuligula cristata.</i>
*14. <i>Ptilonopus pelewensis.</i>	34. <i>Puffinus opisthomelas.</i>
15. <i>Carpophaga pacifica.</i>	35. <i>Sterna lunata.</i>
*16. <i>Megapodius senex.</i>	36. <i>Gygis alba.</i>
17. <i>Rallus fasciata.</i>	37. <i>Anous stolidus.</i>
18. <i>Rallus pectoralis.</i>	38. <i>Phaethon candidus.</i>
19. <i>Oryzometra quadristri-gata.</i>	39. <i>Dryoporus piscator.</i>
20. <i>Porphyrio melanotus.</i>	40. ——— <i>ala.</i>
	41. <i>Carbo melanoleucus.</i>

[The eight species marked with an * are exclusively proper to the Pelew group.]

During the Japanese Mandate (1918-1944), the Ornithological Society of Japan commissioned several ornithologists to collect birds in Micronesia. **N. Kuroda** was the society's main collector in Palau. The society published the first checklist of the Birds of Micronesia which contained 12 shorebird species from Palau including 3 migratory shorebird species from Belualasmau (Northern Peleliu Lkes IBA).

In 1931, **William Coultas** visited Palau as a collector for the Whitney South Sea Expedition of the American Museum of Natural History. He collected 10 species of shorebirds in Palau and reported large mixed flocks of whimbrels and curlews at Belualasmau (Northern Peleliu Lkes IBA) as well as small numbers of the endangered Bar-tailed Godwit.

At the end of WWII, the US Navy sent **Rollin Baker** (Harvard University) to collect zoological specimens in Micronesia. In 1945 Baker spent several months in Palau collecting bird specimens, especially at the Belualasmau sand flats where he systematically documented the large numbers and rich diversity of migratory shorebirds at Belualasmau (Northern Peleliu Lkes IBA). In 1951, Baker published the first monograph on the birds of Micronesia which contained descriptions of his work at Belualasmau. The table below contains Baker's counts of the migratory shorebirds of Palau taken in 1945. Columns marked with an asterisk (*) are from Belualasmau (Northern Peleliu Lkes IBA).

TABLE 10. POPULATIONS OF MIGRATORY SHORE BIRDS SEEN AT THE PALAU ISLANDS IN 1945

SPECIES	Peleliu								Angaur
	August		September						Sept. 21
	24	28	1	6*	8*	9†	16*	20*	
<i>Pluvialis dominica</i>	x		x	x	25		20	x	x
<i>Charadrius mongolu</i>				x	25		5	x	x
<i>C. leschenaulti</i>				x	25		5	x	x
<i>Numenius phaeopus</i>			3	x	30		20	x	x
<i>N. madagascariensis</i>					1		1		15
<i>Limosa lapponica</i>					3		4		
<i>Tringa nebularia</i>		6					3		
<i>T. glareola</i> †									1
<i>Actitis hypoleucos</i>						2			
<i>Heterosceclus</i> sp.			x	x	75		x	x	x
<i>H. breripes</i> †				3	2		2		
<i>Ardearia interpres</i>					20				
<i>Capella megala</i>									4
<i>Calidris tenuirostris</i>					15		20		
<i>Erolia minima</i>				x	50		50	x	x
<i>E. acuminat</i> †									3
<i>E. ferruginia</i> †				1					
<i>Limicola falcinellus</i> †									1
Unidentified	x			x	x		x	x	x
Total number of individuals	x	6	x	x	271+	3	129+	x	x
Total number of species	1	1	3	7	10	2	9	7	10

* Observations made on beaches at Akarakero Point, Peleliu.
† Observations made at fresh water ponds.
x Observed but numbers not recorded.
‡ Figures based on identified skins.

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Baker listed 17 migratory shorebird species from Palau. Fifteen of those shorebird species were from Belualasmau (Northern Peleliu Lkes IBA). Baker witnessed flocks of Whimbrels, Tattlers and Red-necked Stints at Belualasmau. He also found small flocks of the endangered Far Eastern Curlew (Delerrok), the endangered Great Knot and the endangered Bar-tailed Godwit at Belualasmau and nowhere else.

Robert Owen lived and worked in Palau from the 1950s through the 1970s as Quarantine Officer and later as Chief Conservationist for the U.S. Trust Territory of the Pacific Islands. In 1977, Owen published a Micronesia bird checklist with 123 bird species from Palau. Compiled over a period of 25 years, his checklist included 32 migratory shorebird species, almost double the number from previous checklists. From 1977 to 1979, **John Engbring**, a Peace Corps volunteer in the office of the Chief Conservationist, collected data to update Owen's checklist and eventually published the first field guide to the birds of Palau which was illustrated by local artist **Takesi Suzuki**. Engbring reported large flocks of migratory shorebirds, especially Red-necked Stints, at Belualasmau (Northern Peleliu Lkes IBA).

Contemporary Studies of the Shorebirds of Belualasmau (Northern Peleliu Lkes IBA)

After the retirement of Robert Owen, the study of Palau's birds was continued by the team of **H. Douglas Pratt** out of Louisiana State University Museum of Natural History and **Mandy Etpison**, who founded the local Etpison Museum. Their collaborations culminated in the publication of the book "Birds & Bats of Palau" (2008) which mentions the Belualasmau sand flats as a migratory shorebird site.

In 2005, **Gary Wiles** compiled a bird checklist for Micronesia that included 30 migratory shorebirds and in 2006, **Eric VanderWerf** reported 22 species of migratory shorebirds from Palau. From 2007 through 2010, **Heather Ketebengang**, the species specialist for Palau Conservation Society, conducted a study of Palau's migratory birds for the U.S. Fish and Wildlife Service and encountered 32 shorebird species. These ornithologists did not visit Belualasmau (Northern Peleliu Lkes IBA) however.

In 2010, the Republic of Palau and the Belau National Museum established the Palau National Program for Monitoring Forest and Coastal Birds with **Alan Olsen** and **Milang Eberdong** as field ornithologists who instituted periodic monitoring of coastal wetlands including the habitats of migratory shorebirds. On their first visit to Belualasmau (Northern Peleliu Lkes IBA) in 2017, they observed diverse flocks of migratory shorebirds as well as the endangered Bar-tailed Godwit and the endangered Far Eastern Curlew (Delerrok). The national program publishes an annual report of recent observations and all of their observations can be found on the eBird global database (www.ebird.org) of the Cornell University.

In 2013, **Glenn McKinlay** began a thorough field study of the migratory shorebirds of Belualasmau (Northern Peleliu Lkes IBA). From 2013 through 2017, McKinlay documented 27 shorebird species at Belualasmau. He confirmed the large flocks of shorebirds that were witnessed by Semper, Kubary, Coultas, Baker, Owen and Engbring over the past 150 years. He also confirmed the annual arrivals at Belualasmau of all three of the endangered species observed at Belualasmau by Baker in 1945 - the Great Knot, the Bar-tailed Godwit and the Far Eastern Curlew (Delerrok).

In 2014, Belau National Museum Board of Trustees established the Palau Bird Records Committee as a component of the National Program for Monitoring Forest and Coastal Birds. **Demei Otobed** chairs the committee whose membership includes the contemporary ornithologists mentioned previously. In 2017, the committee approved two new records of birds that McKinlay encountered on the sand flats of Belualasmau (Northern Peleliu Lkes IBA): A Black-faced Spoonbill that overwintered at

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Belualasmau from December 2013 through mid-March 2014 and Palau's first record of the Eurasian Curlew, observed at Belualasmau in 2014. Both the spoonbill and the curlew were found only at Belualasmau. The spoonbill is a critically endangered species.

Recent (2013 – 2017) studies of the Shorebirds of Belualasmau (Northern Peleliu Lkes IBA)

Abundance data in this section are from the databases of the Belau National Museum, Palau Conservation Society and the eBird website (www.ebird.org). The table below compares the abundance and diversity of migratory shorebirds in the different coastal zones of Palau for the period 2013-2017. The zones are the fringe reef of eastern Babeldaob (F), the northern lagoon (N), the southern lagoon/rock islands (S), Peleliu (P), Angaur (A), Kayangel (K) and inland refuges such as ponds and fish farms (R). Column "P" (highlighted in yellow) contains the maximum daily counts for each species found at Belualasmau (Northern Peleliu Lkes IBA) which are the highest counts in Palau by a wide margin.

English Name	Scientific Name	No. Sites	F	N	S	P	A	K	R
Pacific Golden Plover	Pluvialis fulva	38	45	20		254	29	12	65
Common Sandpiper	Actitis hypoleucos	36	10	10	1	69	6	11	17
Whimbrel	Numenius phaeopus	27	54	18		642	2		63
Grey-tailed Tattler	Tringa brevipes	22	27	8	1	772	6	1	66
Ruddy Turnstone	Arenaria interpres	22	26	2	5	328	27	3	15
Greater Sand Plover	Charadrius leschenaultii	19	50	5		106	3	4	30
Common Greenshank	Tringa nebularia	14	3	3		79			21
Wood Sandpiper	Tringa glareola	13	5	31		1			68
Sharp-tailed Sandpiper	Calidris acuminata	12	10	5		24	2		40
Lesser Sand Plover	Charadrius mongolus	9	18	5		88	5		5
Marsh Sandpiper	Tringa stagnatilis	9	3	1		2			13
Long-toed Stint	Calidris subminuta	9	2	7		2			35
Kentish Plover	Charadrius alexandrinus	9	2	2		17			4
Red-necked Stint	Calidris ruficollis	7	17	4		1101	11		38
Grey Plover	Pluvialis squatarola	8	3	2		118			2
Wandering Tattler	Tringa incana	8		2	4	2	2		15
Common Ringed Plover	Charadrius hiaticula	6	6	1					2
Common Redshank	Tringa totanus	6	1	1		9			3
Little Ringed Plover	Charadrius dubius	6	5	2					4
Pectoral Sandpiper	Calidris melanotos	5	4						12
Ruff	Calidris pugnax	5	1						3
Bar-tailed Godwit*	Limosa lapponica	5	1			26			2
Sanderling	Calidris alba	5	1	2		9			31
Terek Sandpiper	Xenus cinereus	5	2	1		17			14
Little Curlew	Numenius minutus	5		1					6
Black-tailed Godwit	Limosa limosa	4				4			2
Great Knot*	Calidris tenuirostris	4	2			10			38
Oriental Plover	Charadrius veredus	3		2					1
Far Eastern Curlew*	Numenius madagascariensis	3		1		5			1
Curlew Sandpiper	Calidris ferruginea	2				5			1
Green Sandpiper	Tringa ochropus	2		1					2
Broad-billed Sandpiper	Calidris falcinellus	2	3			4			
Dunlin	Calidris alpina	1				1			
Red Knot	Calidris canutus	1							1
Eurasian Curlew	Numenius arquata	1				1			
Maximum count (all species, 2007-2017)			97	44	5	2674	50	7	174

Table 1 confirms the observations of Semper, Kubary, Kuroda, Baker, Owen and Engring over the past 150 years that Belualasmau (Northern Peleliu Lkes IBA) has always been an important site for a rich diversity and exceptionally large number of migratory shorebirds.

- After 150 years, the same migratory shorebird species collected by Semper and Kubary in the 1800s continue to arrive in Belualasmau (Northern Peleliu Lkes IBA) every year.

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- The large flocks of Whimbrels, Tattlers and Red-necked Stints encountered by Coultas (1931), Baker (1945) and Engbring (1979) at Belualasmau (Northern Peleliu Lkes IBA) have persisted through 2017, a span of 85 years.

Photos taken at Belualasmau (Northern Peleliu Lkes IBA) during the 2016-2017 migratory season.



Whimbrels (Okak)



Tattlers



Red-necked Stints

- The endangered Bar-tailed Godwit has been migrating to Belualasmau (Northern Peleliu Lkes IBA) since the era of Semper (1860s) over 150 years ago.
- After 70 years, all three of the endangered species encountered by Baker at Belualasmau (Northern Peleliu Lkes IBA) in 1945 (Bar-tailed Godwit, Great Knot and Far Eastern Curlew) are still regular migrants to Belualasmau

Photos of Endangered Species taken at Belualasmau (Northern Peleliu Lkes IBA) (2016-2017 season)



Bar-tailed Godwit

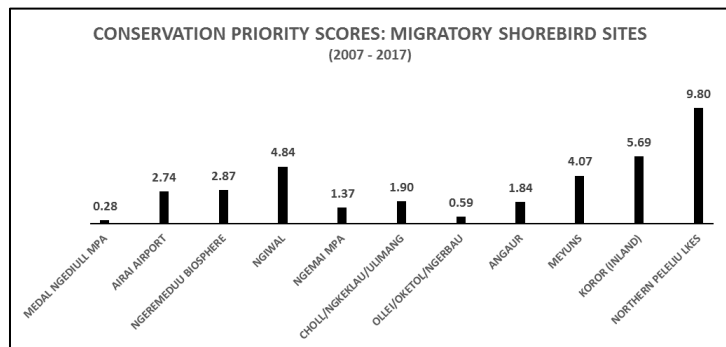


Great Knot



Far Eastern Curlew (Delelrok)

Priority scoring uses a standardized mathematical formula to rank the relative conservation values of sites based on a component of shared biodiversity, in this case the richness of migratory shorebird species. Although the formula measures overall species richness, it is weighted in favor of rare and endangered species so that areas with rare species receive proportionately higher scores than areas without rare species. The chart (right) summarizes the conservation priority scores for the major coastal habitats of Palau. The scores were calculated from field data collected in 2007 through 2017. Compared to every other shorebird site in Palau, the Belualasmau (Northern Peleliu Lkes IBA) (far right column) has by far highest conservation priority in Palau.



International Status of Belualasmau (Northern Peleliu Lkes IBA)

The Important Bird Area (IBA) status of Belualasmau (Northern Peleliu Lkes IBA) was granted by BirdLife International based on the presence of six “trigger” species that meet IUCN criteria for priority habitat conservation. Five IBA trigger species for the Northern Peleliu Lkes IBA are shorebirds - Gray-tailed Tattler, Red-necked Stint, Ruddy Turnstone, Great Knot and Far Eastern Curlew. The tattler, stint and turnstone are trigger species because more than 1% of the EAAF population occurs at Belualasmau (Northern Peleliu Lkes IBA). The knot and curlew are trigger species because they are globally endangered. All five of the shorebird trigger species appear in Hartlaub’s 1872 list of shorebirds collected by Semper and Kubary 150 years ago as well as in Baker’s list of the shorebirds that he collected at Belualasmau in 1945. (The sixth trigger species is the Palau Megapode, an endangered species that nests on the beaches of Belualasmau).

The two endangered shorebird trigger species (Great Knot and Far Eastern Curlew) also appear in Appendix I of the United Nations Convention on the Conservation of Migratory Species of Wild Animals (CMS) to which the Republic of Palau is a party. Appendix I species are the highest priority for habitat protection by all nations that are party to the CMS.

All of the migratory shorebird species encountered at Belualasmau from 1860 through 2017 are included in CMS Appendix II, the next highest priority for habitat protection.

Populations of migratory shorebirds of the East Asian-Australasian Flyway (EAAF) are in crisis due to loss of coastal wetland habitats along the EAAF migration routes. The EAAF Partnership was formed by CMS member nations to mitigate the recent steep declines in EAAF populations of shorebirds and other waterbirds due to the loss of critical coastal habitats to commercial developers. Recently, the partner nations took the unparalleled action of proposing a single species action plan solely intended to protect the Far Eastern Curlew whose population in the flyway is in danger of extinction. The Far Eastern Curlew (Delerrok) is a regular migrant to Belualasmau (Northern Peleliu Lkes IBA). Delerrok icons (below, left to right) from a traditional abai, the institutional logo for Belau National Museum and the national capitol building of the Republic of Palau emphasize the importance of preventing the extinction of this species in the Republic of Palau.



Conclusion

The islands and sand flats of Belualasmau (Northern Peleliu Lkes IBA) have been a critical coastal wetland habitat for Delerrok and many other shorebirds for thousands of years. The scientific evidence collected over the past 150 years confirms the status of the IBA as the most important shorebird site in Oceania and home for several endangered species of shorebirds including Delerrok (Far Eastern Curlew – Palau Money Bird). Loss of Belualasmau (Northern Peleliu Lkes IBA) to developers would risk the extinction of several shorebird species including the loss of Delerrok, a national legacy and iconic symbol of Palauan pride and prosperity.

Recommendations


1. Provide immediate protection of Belualasmau (Northern Peleliu Lkes IBA) as a critical habitat for migratory birds, especially Delerrok (Far Eastern Curlew), and as the most important shorebird site in Oceania.
2. Monitor the shorebird populations of Belualasmau (Northern Peleliu Lkes IBA) on a seasonal basis.
3. Develop a Shorebird Conservation Action Plan for Belualasmau (Northern Peleliu Lkes IBA).
4. Provide immediate protection of Belualasmau (Northern Peleliu Lkes IBA) as a nesting ground for the endangered Palau Megapode.
5. Implement the existing Palau Megapode Conservation Action Plan at Belualasmau (Northern Peleliu Lkes IBA).



Aerial view of Belualasmau (Northern Peleliu Lkes IBA)

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 <p>The Holy See</p>	<p>42. Greater investment needs to be made in research aimed at understanding more fully the functioning of ecosystems and adequately analyzing the different variables associated with any significant modification of the environment. Because all creatures are connected, each must be cherished with love and respect, for all of us as living creatures are dependent on one another. Each area is responsible for the care of this family. This will require undertaking a careful inventory of the species which it hosts, with a view to developing programmes and strategies of protection with particular care for safeguarding species heading towards extinction.</p>
<p>ENCYCLICAL LETTER LAUDATO SI' OF THE HOLY FATHER FRANCIS ON CARE FOR OUR COMMON HOME</p>	