STATUS OF SEABIRDS IN INDONESIAN WATERS

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Received 16 May 2024, accepted 29 April 2025

ABSTRACT

Iqbal, M., Widayanti, G. A., Aprillia, I., Sari, D. K., & Arifah, N. (2025). Status of seabirds in Indonesian waters. *Marine Ornithology*, *53*(2), 341–346. http://doi.org/10.5038/2074-1235.53.2.1656

We report the current status of seabirds in Indonesian waters, where a total of 74 species have been recorded. This includes nine species classified as threatened and 56 species protected under Indonesian law. The majority of seabird species in Indonesia are non-breeding visitors; only 16 have been recorded breeding in the region. Since the 2000s, several new species have been documented, including Red Phalarope *Phalaropus fulicarius*, Lesser-backed Gull *Larus fuscus*, Red-billed Tropicbird *Phaethon aethereus*, Beck's Petrel *Pseudobulweria becki*, Heinroth's Shearwater *Puffinus heinrothi*, Slaty-backed Gull *Larus schistiagus*, and Slender-billed Gull *Chroicocephalus genei*. While Indonesian waters encompass extensive and diverse seabird habitats, the likelihood of identifying many additional species is considered low.

Key words: avifauna, condition, Indonesia, marine, Pacific Ocean

INTRODUCTION

Seabirds are species whose primary habitat and food sources are found in the marine environment (Faaborg, 1988; Harrison, 1983). Extensive suitable habitat for seabirds exists throughout the tropical Indo-Pacific region, an area known for its high levels of biodiversity (Ministry of Marine Affairs and Fisheries [MMAF], 2016; Tomascik et al., 1997). Within this region, Indonesia occupies a central position, stretching approximately 6,400 km from the Malay Peninsula to the island of New Guinea, off the north coast of Australia (Scarlett & Cubitt, 1995). On a broad scale, the country's marine and coastal areas constitute about two-thirds of its total area (Seward et al., 2012).

Information on seabird behavior and ecology at sea remains limited, largely because such studies require expensive ship time or remotely sensed data, and significant infrastructure (Ballance, 2007; Rajpar et al., 2018). As a result, data on seabird occurrence around Indonesia is sparse, except for records from coastal colonies, such as those at Tubbataha Reefs Natural Park in the Philippines and Ashmore Reef in Australia (Clarke et al., 2011; de Korte & Meltofte, 1997; Jensen & Songco, 2016; Poole et al., 2011; Trainor, 2005). Since the 2000s, seabird observations in Indonesian waters has increased significantly, driven by a rise in birding. This has led to the collection of new data on seabird distribution and ecology (Iqbal et al., 2022; Taufiqurrahman et al., 2011; Tirtaningtyas & Yordan, 2017). In response to this new information, here we review and summarize the latest research on seabird assemblages in Indonesian waters.

METHODS

We present an annotated checklist of Indonesian seabirds, compiled from published information (Table 1). Taxonomy follows Harrison et al. (2021), combined with appropriate bird guides (Eaton et al., 2021; Mann, 2008; Pratt & Beehler, 2015; Taufiqurrahman et al., 2022).

We include status according to the International Union for Conservation of Nature (IUCN) Redlist of Threatened Species (Birdlife International, 2024), using the categories: Critically Endangered (CR), Endangered (EN), Vulnerable (VU), and Near Threatened (NT). Protection status under Indonesian law is also provided, as defined in Peraturan Menteri Lingkungan Hidup dan Kehutanan No. 106 Tahun 2018 (Ministry of Environment and Forestry, 2018). Additionally, species records are tabulated according to major island regions, following Andrew (1992) and Sukmantoro et al. (2007): Sumatra (S), Kalimantan (Indonesian Borneo) (K), Java and Bali (J), Sulawesi (C), Lesser Sundas (L), Moluccas (M), and Papua (Pa; referring to the island of New Guinea and including the Indonesian provinces of Indonesian Papua and West Papua).

RESULTS AND DISCUSSION

A total of 74 seabird species have been recorded in Indonesian waters, centrally located in the East Asia Australasian Flyway (EAAF) (Table 1).

New species records for Indonesia

Since the 2000s, several seabird species have been reported for the first time in the country's waters and are listed here. On 20 April 2008, Red Phalarope *Phalaropus fulicarius* was observed on a lagoon at Trisik Beach, Java (Taufiqurrahman et al., 2011). On 30 October 2008, a Lesser-backed Gull *Larus fuscus* was observed and documented in the Banda Sea; Trainor et al. (2011) later reported this as Heuglin's Gull *Larus heuglini* based on an alternative taxonomic interpretation. On 12 October 2009, Silver Gull *Chroicocephalus novaehollandiae* was reported based on an observation from Sanur Beach, Bali (Gardner & Gilfedder, 2011). In August 2010, a single sighting of Lesser Noddy *Anous tenuirostris* was reported off West Java (Eaton et al., 2021). On 21 October 2011, Heinroth's Shearwater *Puffinus heinrothi* was reported based on observations made in the Flores Sea (Eaton

TABLE1
An annotated checklist and status of seabird species in Indonesian waters[a]

No.	Species	Protection status		Migration status	Distribution						
		IU	IL		S	K	J	C	L	M	Pa
1	Little Grebe *Tachybaptus ruficollis*		P		S	K	J	C	L	M	Pa
2	Australian Grebe *Tachybaptus novaehollandiae*		P		S		J	C	L	M	Pa
3	Great Crested Grebe *Tachybaptus cristatus*		P							M	
4	Red-necked Phalarope *Phalaropus lobatus*		P		S	K	J	C	L	M	Pa
5	Red Phalarope *Phalaropus fulicarius*					K	J				
6	Sabine's Gull *Xema sabini*		P		S					M	
7	Brown-headed Gull *Chroicocephalus brunnicephalus*		P		S						
8	Silver Gull *Chroicocephalus novaehollandiae*		P				J				Pa
9	Brown-headed Gull *Chroicocephalus ridibundus*		P		S	K	J	C		M	Pa
10	Slender-billed Gull *Chroicocephalus genei*				S						
11	Lesser-backed Gull *Larus fuscus*		P		S	K				M	
12	Slaty-backed Gull *Larus schistiagus*		P			K	J				
13	White Tern *Gygis alba*		P		S		J		L	M	Pa
14	Brown Noddy *Anous stolidus*		P	R	S	K	J	C	L	M	Pa
15	Lesser Noddy *Anous tenuirostris*						J				
16	Black Noddy *Anous minutus*		P	R	S	K	J	C			Pa
17	Aleutian Tern *Onychoprion aleuticus*	VU	P		S	K	J	C	L	M	Pa
18	Grey-backed Tern *Onychoprion lunatus*		P							M	Pa
19	Bridled Tern *Onychoprion anaeuthetus*		P	R	S	K	J	C	L	M	Pa
20	Sooty Tern *Onychoprion fuscatus*		P	R	S	K	J	C	L	M	Pa
21	Little Tern *Sternula albifrons*		P	R	S	K	J	C	L	M	Pa
22	Whiskered Tern *Chlidonias hybrida*				S	K	J	C	L	M	Pa
23	White-winged Tern *Chlidonias lucopterus*		P		S	K	J	C	L	M	Pa
24	Gull-billed Tern *Gelochelidon nilotica*		P		S	K	J	C	L	M	Pa
25	Australian Tern *Gelochelidon macrotarsa*						J		L	M	
26	Caspian Tern *Hydropogne caspia*		P		S				L	M	Pa
27	Lesser Crested Tern *Thalasseus bengalensis*		P	R	S	K	J	C	L	M	Pa
28	Greater Crested Tern *Thalasseus bergii*		P	R	S	K	J	C	L	M	Pa
29	Chinese Crested Tern *Thalasseus bersteini*	CR	P							M	
30	Black-naped Tern *Sterna sumatrana*		P	R	S	K	J	C	L	M	Pa
31	Roseate Tern *Sterna dougallii*		P		S	K	J	C	L	M	Pa
32	Common Tern *Sterna hirundo*		P		S	K	J	C	L	M	Pa
33	Artic Tern *Sterna paradisea*		P				J		L		
34	South Polar Skua *Stercorarius maccormicki*		P		S						
35	Pomarine Jaeger *Stercorarius pomarinus*		P		S	K	J	C	L	M	Pa
36	Parasitic Jaeger *Stercorarius parasiticus*		P		S		J	C	L	M	Pa
37	Long-tailed Jaeger *Stercorarius longicaucus*		P				J	C	L	M	Pa
38	White-tailed Tropicbird *Phaethon lepturus*		P	R	S	K	J	C	L	M	Pa
39	Red-billed Tropicbird *Phaethon aethurus*								L		
40	Red-tailed Tropicbird *Phaethon rubricauda*		P	R	S		J	C	L	M	
41	Wilson's Storm Petrel *Oceanites oceanicus*		P		S		J	C	L	M	

Table 1 continued on next page

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No.	Species	Protection status		Migration status	Distribution						
		IU	IL		S	K	J	C	L	M	Pa
42	White-faced Storm Petrel *Pelagodroma marina*		P		S					M	
43	Matsudaira's Storm Petrel *Hydrobates matsudairae*		P		S	J			L	M	Pa
44	Swinhoe's Storm-Petrel *Hydrobates monorhis*		P		S		J		L	M	
45	Barau's Petrel *Pterodroma baraui*	EN	P		S						
46	Hawaiian Petrel *Pterodroma sandwichensis*	EN	P							M	
47	Kermadec Petrel *Pterodroma neglecta*										Pa
48	Tahiti Petrel *Pterodroma rostrata*	NT							L	M	Pa
49	Beck's Petrel *Pseudobulweria becki*	CR								M	Pa
50	Antarctic Prion *Pachyptila desolata*						J				
51	Wedge-tailed Shearwater *Ardenna pacifica*		P		S	K	J	C	L	M	
52	Flesh-footed Shearwater *Ardenna carneipes*		P		S						
53	Streaked Shearwater *Calonectris leucomelas*		P		S	K	J	C	L	M	Pa
54	Tropical Shearwater *Puffinus bailloni*							C	L	M	Pa
55	Heinroth's Shearwater *Puffinus heinrothi*	VU	P					C	L	M	Pa
56	Hutton's Shearwater *Puffinus huttoni*	EN									Pa
57	Short-tailed Shearwater *Puffinus tenuirostris*				S						Pa
58	Bulwer's Petrel *Bulweria bulwerii*		P		S	K	J	C	L	M	
59	Jouanin's Petrel *Bulweria fallax*		P		S						
60	Pintado Petrel *Daption capense*		P							M	
61	Lesser Frigatebird *Fregata ariel*				S	K	J	C	L	M	Pa
62	Christmas Frigatebird *Fregata andrewsi*	VU	P		S	K	J	C	L	M	Pa
63	Great Frigatebird *Fregata minor*		P	R	S	K	J	C	L	M	Pa
64	Abbott's Booby *Papasula abbotti*	EN	P		S		J		L	M	Pa
65	Masked Booby *Sula dactylatra*		P	R	S		J	C	L	M	
66	Red-footed Booby *Sula sula*		P	R	S	K	J	C	L	M	Pa
67	Brown Booby *Sula leucogaster*		P	R	S	K	J	C	L	M	Pa
68	Little Cormorant *Microcarbo niger*			R	S	K	J				
69	Little Pied Cormorant *Microcarbo melanoleucos*					K	J	C	L	M	Pa
70	Great Cormorant *Phalacrocorax carbo*				S	K	J			M	P
71	Little Black Cormorant *Phalacrocorax sulcirostris*			R	S	K	J	C	L	M	P
72	Spot-billed Pelican *Pelecanus philippensis*	NT	P		S		J	C	L	M	P
73	Australian Pelican *Pelecanus conspilatus*		P		S?		J	C	L	M	P
74	Great White Pelican *Pelecanu onocrotalus*		P		S?		J				

[a] Abbreviations: IU (IUCN), IL (Indonesian law, species protected by the Indonesian Government), M (Migrant), R (Resident), CR (Critically Endangered), EN (Endangered), VU (Vulnerable), NT (Near Threatened), S (Sumatra), K (Kalimantan, Indonesian Borneo), J (Java and Bali), C (Celebes or Sulawesi), L (Lesser Sundas), M (Moluccas) and Pa (Papua).

& Rheindt, 2017). In November 2011, Red-billed Tropicbird *Phaethon aethereus* was reported based on a single record from the Flores Sea (Eaton et al., 2021). In February 2016, Slaty-backed Gull *Larus schistisagus* was documented based on an observation at Ampenan Beach, Lombok (Lesser Sundas) (Iqbal & Albayquni, 2016). In October 2019, one Beck's Petrel *Pseudobulweria becki* was observed in the Molucca Sea, off Obi (Eaton et al., 2021; Rayner et al., 2019). On 19 October 2022, a single Kermadec Petrel *Pterodroma neglecta* was documented in Papua Barat waters (eBird, 2025). Most recently, on 08 February 2023, a Slender-billed Gull *Chroicocephalus genei* was documented based on observations along the Banyuasin Peninsula, Sumatra (Iqbal et al., 2023).

New distributional records for Indonesia

Based on new Indonesian records, the distribution of some seabird species is more widespread than previously recognized, with additional data now available for several major island groups. The Black-headed Gull *Chroicocephalus ridibundus* was previously unconfirmed in Sumatra and Kalimantan due to its close morphological similarity to the Brown-headed Gull *Chroicocephalus brunnicephalus.* However, subsequent observations supported by photographic evidence have confirmed its presence and established its status in both regions (Hasyim et al., 2019; Iqbal et al., 2020a). Recent observations from 2016 to 2020 suggest that Little Cormorant *Microcarbo niger*, Little Black Cormorant *Phalacrocorax sulcirostris*, and other large wetland bird species have become more widespread in Sumatra (Aminuddin et al., 2020; Jumilawaty & Andriayani, 2019; Setiawan et al., 2020). The Aleutian Tern *Onychoprion aleuticus* and Caspian Tern *Hydroprogne caspia*, previously considered rare in Indonesia, are now considered more common, with Indonesian waters recognized as key wintering grounds for both species (Eaton et al., 2021; Iqbal et al., 2020c; Yordan et al., 2019). The Chinese Crested Tern *Sterna bernsteini*, a highly threatened species with an estimated global population of 200 individuals (Lu et al., 2020), is known to winter on satellite islands in eastern Indonesia. The White-faced Storm Petrel *Pelagodroma marina*, previously recorded only from Sumatra, has now been observed in North Molucca (11 March 2024; eBird, 2025). Additionally, a recent observation of a Spot-billed Pelican *Pelecanus philippensis* in North Sumatra Province suggests the presence of suitable habitats for the species (Abdillah et al., 2022), although further research is needed to confirm its status in the region.

Breeding sites

Only 16 of the total 74 species (*c*. 21%) can be considered resident to Indonesia. These include Black Noddy *Anous minutus*, Brown Noddy *Anous stolidus*, Little Tern *Sternula albifrons*, Black-naped Tern *Sterna sumatrana*, Lesser Crested Tern *Thalasseus bengalensis*, Greater Crested Tern *Thalasseus bergii*, Bridled Tern *Onychoprion anaeuthetus*, Sooty Tern *Onychoprion fuscatus*, Red-tailed Tropicbird *Phaethon rubricauda*, White-tailed Tropicbird *Phaethon lepturus*, Great Frigatebird *Fregata minor*, Red-footed Booby *Sula sula*, Brown Booby *Sula leucogaster*, Masked Booby *Sula dactylatra*, Little Cormorant *Microcarbo niger*, and Little Black Cormorant *Phalacrocorax sulcirostris*.

Many of Indonesia's satellite islands serve as important breeding colonies for certain seabird species (de Korte, 1984; Monk, 1993). Six islands in the Banda and Flores Seas—Sarege, Kakabia, Moromaho, Gunung Api, Suanggi, and Manuk—are particularly significant for seabird colonies (de Korte, 1991; de Korte & Silvius, 1994; Gaston, 2022). The most recent data on breeding activity in these islands comes from de Jong (2011), who reported 3,500 Red-footed Boobies, including 500 breeding pairs on Suanggi Island.

In Sumatra, only a limited number of islands are known to support breeding seabird populations, including Anambas, Belitung, Lengkuas, Kebatuan, Simeuleu, Aruah, Nias, and several smaller islands off the west coast (Marle & Voous, 1988). In Java, breeding seabirds have been recorded in Ujung Kulon, Pulau Dua, and the Karimun Jawa Islands (MacKinnon, 1988; Susanto et al., 2024). In Kalimantan, breeding seabirds are limited to only a few known sites, including Tanjung Datu, Larian Reef, and Karimata Island (Mann, 2008).

Seabird conservation

Nine threatened seabird species occur in Indonesian waters, all as non-breeding visitors: Aleutian Tern (VU), Chinese Crested Tern (CR), Barau's Petrel *Pterodroma baraui* (EN), Hawaiian Petrel *Pterodroma sandwichensis* (EN), Beck's Petrel (CR), Heinroth's Shearwater (VU), Hutton's Shearwater *Puffinus huttoni* (EN), Christmas Frigatebird *Fregata andrewsi* (VU), and Abbot's Booby *Papasula abbotti* (EN). Two species are classified as Near Threatened (NT): Tahiti Petrel *Pterodroma rostrata* and Spot-billed Pelican.

The Indonesian government has designated 56 seabird species (approximately 73%) as protected under national law. Despite this legal protection, seabird conservation in Indonesia continues to face significant challenges. Tirtaningtyas & Hennicke (2015) reported various threats to Christmas Frigatebirds in Jakarta Bay, including entanglement in fishing gear, capture and attachment of string to their legs, poisoning or sedation, and even shooting—threats that likely affect other seabird species in Indonesian waters as well. Bycatch from longline fisheries has been documented in Benoa Bay, Bali, highlighting a well-known global threat to seabirds (Zainudin et al., 2017). At breeding colony sites, additional threats include uncontrolled egg collection and the presence of invasive predators such as rats and domestic cats. The introduction of the Domestic Cat *Felis catus*—a relatively recent consequence of settlement of non-Indigenous peoples on smaller Indonesian islands—poses a serious risk to wildlife. For example, on Enggano Island, Sumatra, local residents have reported that cats killed large numbers of Enggano Thrush *Geokichla leucolaema* (Iqbal et al., 2020b). However, similar data regarding seabird impacts remain scarce, and further research is needed to assess the extent of such threats to seabird populations.

There is an urgent need to strengthen citizen science initiatives to support the study and conservation of seabirds in Indonesia. Collaborative efforts among conservation organizations—across disciplines such as ornithology, herpetology, and botany—can enhance the effectiveness of data collection and biodiversity protection. It is equally important to establish long-term monitoring programs in partnership with government agencies and local authorities to ensure coordinated and sustainable conservation actions.

ACKNOWLEDGEMENTS

We are deeply grateful to the editors of *Marine Ornithology* and the anonymous reviewers for their critical review and constructive feedback on the manuscript. We also express our sincere appreciation to the Universitas Indo Global Mandiri (UIGM) for providing the necessary resources and support that made this research possible.

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