

Seabirds of Goa, India: Recent updates

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Abstract

A comprehensive review of the status of seabirds off the Goa coast is presented here. This is based on the results of five offshore seabird surveys organised by the Goa Bird Conservation Network; tracking of wind-blown, and coastal seabirds from social media platforms, and animal rescue groups; and a review of all available literature on the seabirds of Goa. This exercise of field surveys, and literature trawls has led to the addition of four species to the Goa checklist, namely, Red-billed Tropicbird *Phaethon aethereus*, Swinhoe's Storm-petrel *Hydrobates monorhis*, Flesh-footed Shearwater *Ardenna carneipes*, and Red-footed booby *Sula sula*; the up-listing of Red-necked Phalarope *Phalaropus lobatus*, Brown Noddy *Anous stolidus*, and Black-legged Kittiwake *Rissa tridactyla* from the list of unconfirmed species to the main checklist; and down-listing Wedge-tailed Shearwater *A. pacifica* as an unconfirmed species for the state: bringing the number of seabirds recorded from Goa to 25 confirmed species, and one unconfirmed.

Introduction

The offshore waters of India have been historically less explored with respect to pelagic avifauna, leading to a paucity of data (Robertson 1995; Karuthedathu *et al.* 2013). Most past reports of pelagic birds from India have been from observations made by sailors from ships at sea (published in *Sea Swallow*; <http://www.rnbws.org.uk/publications/>), wind-blown specimens collected from India's coasts, sight records of wind-blown individuals, and a few ornithological expeditions to offshore islands, most of which were restricted to the Vengurla Rocks off Maharashtra (Hume 1876; Abdulali 1942; Abdulali 1970; Abdulali 1983; Madsen 1988; Mohan 1989; Lainer 2003; Katdare *et al.* 2004; Pande *et al.* 2007), and the Lakshadweep Islands (Aitken 1900; Mathew & Ambedkar 1964; Daniels 1992). This constituted the majority of what we knew about these elusive birds of the Arabian Sea till 2009. In the years 2010, and 2011, KeralaBirder, and the Malabar Natural History Society jointly organised three offshore expeditions from Kerala (Praveen *et al.* 2011), which became a template for others to emulate, and led to such surveys being initiated from Karnataka, and Maharashtra off the western coast, and from Tamil Nadu off the eastern coast of India (Praveen 2014). These offshore surveys have added much information about the seabirds that are seen in the pelagic waters of the country, particularly the western coast, with many photographs of these species now archived in Oriental Bird Images (<http://www.orientalbirdimages.org/>).

Unlike other states of India, very little was known about the bird life of Goa during its occupancy by Portuguese. Post liberation of the state till the year 2000 there were only a handful of studies done on the birds of the state which includes, the first ornithological survey in 1972 (Grubb & Ali 1976), followed by surveys conducted by the Zoological Survey of India (Saha & Dasgupta 1992), and surveys by Heinz Lainer (Lainer 1999a, b). Whatever little was known about seabirds from off the coast of Goa was due to the efforts of Heinz Lainer, who kept a regular sea watch from the Anjuna coast, and made a few trips by boats to report pelagic birds.

Lainer (2013) confirmed 19 species of seabirds, and listed

three other species as unconfirmed, all of which were sight records, with no photographic documentation of the majority of the seabirds reported till 2013 (Lainer & Alvares 2013).

In 2014, drawing inspiration from the offshore surveys being initiated from neighboring states, the Goa Bird Conservation Network (GBCN) organised the first offshore seabird survey from Goa, with the aim to systematically document these birds off the state's coast. Between 2014 and 2015, five surveys were conducted, all initiating at the Malim Jetty, Betim, situated in the Mandovi Estuary where Goa's Mandovi River drains into the Arabian Sea.

The continental shelf extends to c. 57 nm (100 km) from the coastline of Goa, and all the surveys have been conducted within a distance of 16 nm (30km) of the shoreline, and hence cannot be termed as pelagic surveys (Bailey 1968)—so we use the term, 'offshore survey' throughout this paper. For preparing checklists, the Exclusive Economic Zone (EEZ) boundary, which is 200 nm from the nearest land (including island) is used for including birds in lists, and the rationale behind this follows Jaramillo (2003). However, in case the boundaries of two political entities overlap, the median distance between the two entities is chosen as the offshore limit (Praveen 2011). Cherbaniani Island, in the Lakshadweep archipelago, abuts the EEZ region off Goa's coast, and hence the offshore boundary of Goa would be a parabolic arc with foci as Cherbaniani who's northern and southern limits is situated at 153 nm, and 116nm, from Goa's coast, respectively. For the purpose of this paper, we consider the above-defined zone as the offshore area of Goa. It is also important to note that the islands of Vengurla, from where considerable information about seabirds exists, are politically a part of Maharashtra, and are not, therefore, part of the discussion in this paper.

Other than the records from offshore surveys, a few wind-blown, and coastal species of seabirds have been reported, by local bird watchers, between 2013 and 2015, which have been tracked, identified, and listed from social networking platforms, and animal rescue groups in the state. In addition to the surveys, and tracking records of wind-blown species, a review of all

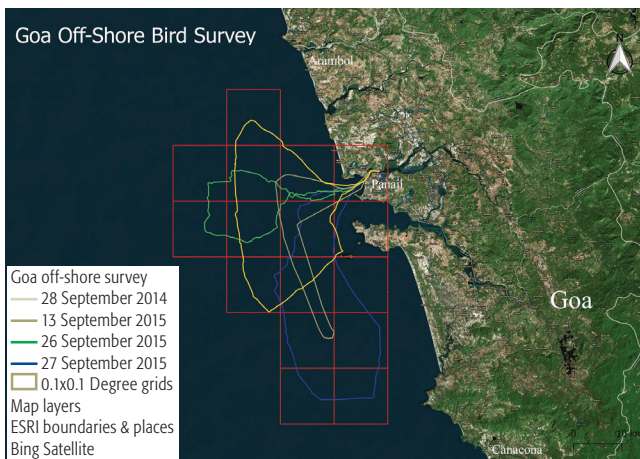


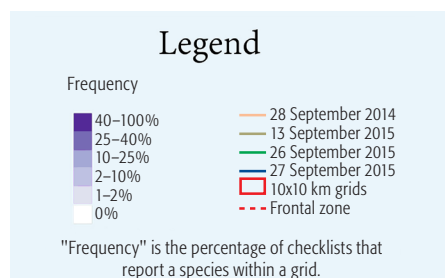
Fig. 1. Travel paths of four surveys and 0.1x0.1 degree grids.

existing literature on the seabirds off Goa's coast has been done in order to present a checklist of seabirds of Goa (Appendix 1).

Definition of seabirds

There is no single definition explaining which groups, families, and species could be classified as seabirds, with considerable confusion in all sources of literature (Bourne & Cheshire 2013; Paleczny *et al.* 2015; BirdLife International 2016; Wetland International 2016).

In this paper, the term 'seabird' is used in a restricted manner, since the aim of this paper is to focus on the species of the open oceans. We treat all storm-petrels (Oceanitidae, and Hydrobatidae), boobies (Sulidae), frigatebirds (Fregatidae), tropicbirds (Phaethontidae), and skuas/jaegers (Stercorariidae) as seabirds. Amongst waders (Scolopacidae), phalaropes (*Phalaropus*) are treated as seabirds as all other species frequent coastal or inland waters. Amongst gulls and terns (Laridae), we treat noddies (*Anous*), kittiwakes (*Rissa*), *Ichthyaetus* gulls, *Onychoprion*, *Thalasseus*, and *Sterna* terns, except the two freshwater species, River Tern *S. aurantia*, and Black-bellied Tern *S. acuticauda*, as seabirds, since all these species have a stronger affinity towards open waters than other members of the Laridae.



'Birds of Goa'

In this paper, when we refer to the list of 'Birds of Goa', we imply the list in Lainer & Alvares (2013). We treat those species of seabirds that do not figure in this list, but which have been reported from either the seabird surveys, monitoring of wind-blown seabirds, or our review of all relevant literature on seabird sightings off Goa's coast, as 'additions to the bird list of Goa.'

Offshore survey methodology

Each survey was carried out with an average of 12 participants and it was ensured that at least three people were on the lookout for birds at all times during the duration of the survey. Birds were observed using binoculars, and identified using Grimmett *et al.* (2011), and Rasmussen & Anderton (2012). Photographers took as many photos as they could, which further aided in comparing, and confirming identifications.

During the survey, species, and the number of individuals encountered, were immediately noted, along with the time of such observations. A simple Android-based application, 'GPSLogger', was used to log the path that was taken during the survey. After the survey, the bird list was entered in an Excel file of a standard format. A simple Python Script (Dipu 2016; Karuthedathu & Praveen 2016) was then used to combine the bird list and GPS path data to generate an output of multiple

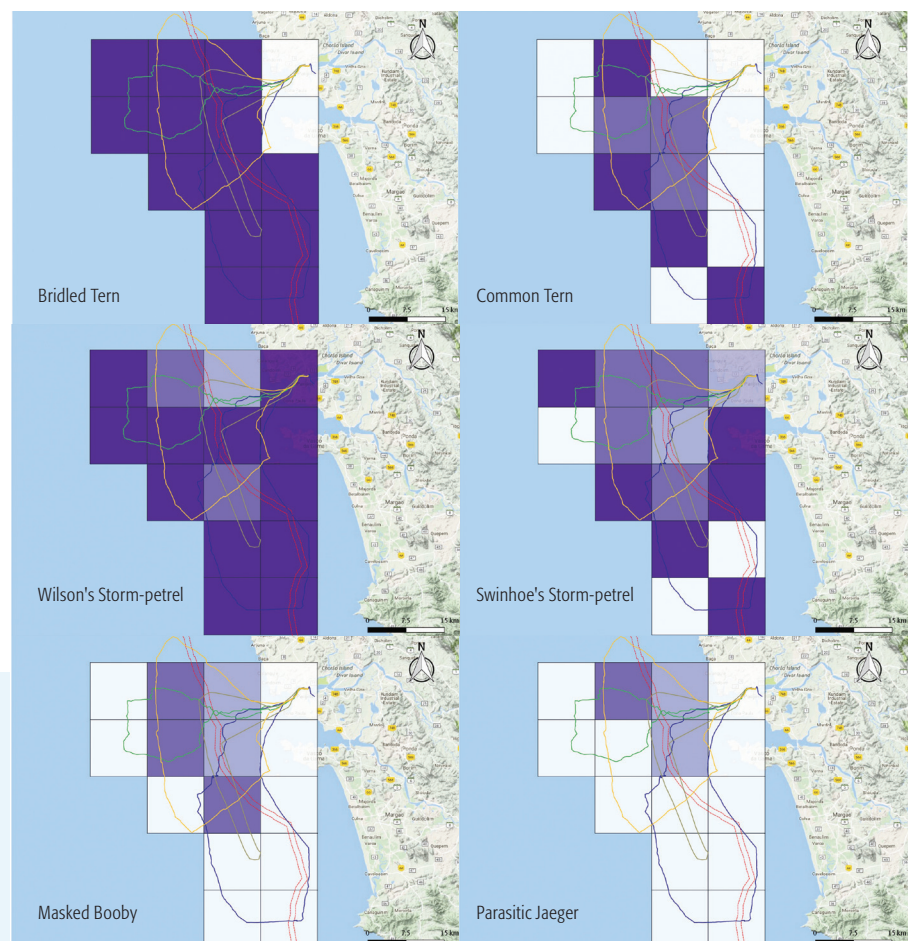


Fig. 2. Species frequency maps from four offshore surveys.

Table 1. Seabirdsightings off the Goa coast, from five off-shore surveys

		Number of individuals				
Sl.No	Species	27-09-'14	28-09-'14	13-09-'15	26-09-'15	27-09-'15
Oceanitidae						
1	Wilson's Storm-petrel <i>Oceanites oceanicus</i>	-	1	-	235	430
Hydrobatidae						
2	Swinhoe's Storm-petrel <i>Hydrobates monorhis</i>	-	-	-	13	21
Procellariidae						
3	Flesh-footed Shearwater <i>Ardenna carneipes</i>	-	-	-	1	-
4	Tropical (Persian) Shearwater <i>Puffinus bailloni persicus</i>	1	1	-	-	1
Sulidae						
5	Masked Booby <i>Sula dactylatra</i>	3	3	1	3	3
Stercorariidae						
6	Arctic Skua <i>Stercorarius parasiticus</i>	1	1	-	5	2
Laridae						
8	Brown Noddy <i>Anous stolidus</i>	-	-	2	-	-
9	Bridled Tern <i>Onychoprion anaethetus</i>	50	160	200	350	345
11	Roseate Tern <i>Sterna dougallii</i>	-	-	-	7	10
12	Common Tern <i>S. hirundo</i>	30	45	23	11	61
13	Lesser Crested Tern <i>Thalasseus bengalensis</i>	30	7	1	9	-
14	Greater Crested Tern <i>T. bergii</i>	20	1	-	1	-

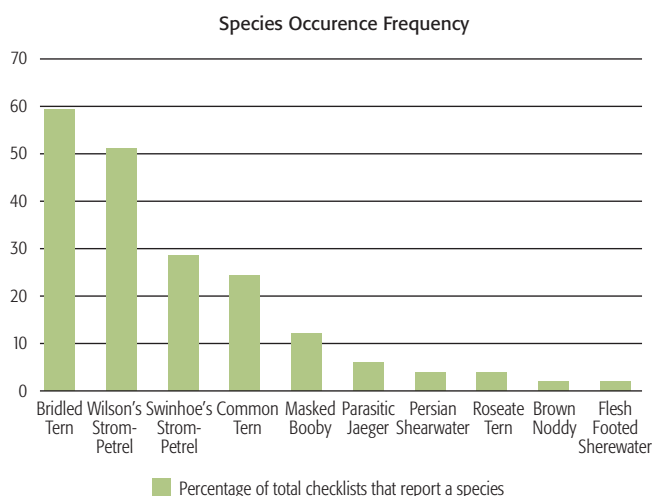


Fig. 3. Percentage of checklists in which species is reported.

lists that represented birds observed in a 0.1x0.1 degree grid (Fig. 1). These lists were then uploaded to eBird (www.ebird.org), and each grid designated an eBird hotspot. None of the survey tracks, during the five trips, went beyond the marine boundaries of Goa.

Collection of data on wind-blown seabird species

We gathered information on wind-blown species in Goa from online Facebook groups, GBCN's website (www.birdsofgoa.org), and from animal rescue groups in the state. All records from 2013 onwards have been verified and included.

Results

Offshore survey

A total distance of approximately 60 km along the coast, and 30 km outward from it was covered during these five surveys, and data generated was represented within 16-(0.1 x 0.1) degree grids on eBird (Fig. 1). Out of the five trips, GPS data could not be retrieved from the first trip due to technical errors and hence has not been represented in the map (Fig. 1). Of the 22 species reported by Lainer & Alvares (2013), including unconfirmed records, 14 have been reported, and photo documented during these surveys (Table 1), while two species, namely, Swinhoe's Storm-petrel *H. monorhis*, and Flesh-footed Shearwater *A. carneipes* were recorded during these surveys (they were not listed in Lainer & Alvares 2013). It was observed that the Bridled Tern *O. anaethetus* was the most frequently recorded pelagic species, occurring in 69% of all checklists from the four trips, while Wilson's Storm-petrel *O. oceanicus* was the second most frequently recorded species, occurring in 52% of checklists (Figs. 2, 3).

Interesting observations from seabird surveys

Wilson's Storm-petrel *Oceanites oceanicus*

During the two surveys in 2014, only one bird was spotted on 28 September, 11nm off the Baina coast, flying rapidly in a northwardly direction. In the surveys of 2015 however, this species was the most common seabird encountered! We started observing individuals about two nautical miles away from the coast on both, 26, and 27 September. On 26 September, a high count of c. 40 individuals, in a single flock, were recorded six nautical miles off the Baina coast, while on

27 September, a high count of c. 300 individuals, from a single flock, was recorded six nautical miles off the Cabo de Rama coast. This zone, about six nautical miles off the coast, had a line of surf running parallel to the coast for as far as we could see, with a clear demarcation between turbid, and clear water, on either side. This region seemed to be highly productive in biological diversity, with big schools of fish in the morning, and a lot of jellyfish in the evening, concentrated here, and a great deal of seabird activity in the general area. These observations of ours match closely with the definition of what is called a 'frontal zone', which is considered very important for foraging seabirds (Schneider 1990). Individuals in the flock observed on the 26th were busy foraging, and displaying behavior that is unique to the storm-petrels, called 'pattering'. While pattering, the birds face into the wind with their wings extended, and patter on the surface of the water using their feet. This gives an impression as if the bird is literally walking over the surface of the water. The flock on the 27th was observed sitting on the water, apparently resting.

Swinhoe's Storm-petrel

This species was recorded from the surveys on 26–27 September 2015. Birds were usually found singly, or in pairs, amongst flocks of Wilson's Storm-petrels, with one exception, when a flock of four birds were seen flying in a northwardly direction on the 27th. On both the days, we observed that from late afternoon, these birds flew purposefully in a northwardly direction. These birds were always observed in flight, and no pattering behavior was observed [18].

Flesh-footed Shearwater

A single individual was spotted flying rapidly in a northwardly direction on 26 September 2015, nine nautical miles off the Candolim coast. It was easily identified by its pale, and broad pinkish bill, and similar coloured legs, as against a Wedge-tailed Shearwater *Puffinus pacificus* [19].

Tropical (Persian) Shearwater *Puffinus bailloni persicus*

On 27 September 2014, one bird was observed flying northwards, seven nautical miles off the Miramar coast, while on 28 September 2014 one bird was observed seven nautical miles off the Candolim coast, amidst a huge mixed flock of Common,



Amit Bandekar

18. Swinhoe's Storm-petrel.



Pronoy Baidya

19. Flesh-footed Shearwater.



Omkar Dhanwadkar

20. Tropical (Persian) Shearwater.

and Bridled Terns, feeding on a fish, while sitting on the water [20]. This was again an example of a large congregation of foraging birds near the frontal zone. On 27 September 2015 one bird was observed flying in a northwardly direction 15nm off the Majorda coast. On both the occasions the birds were identified as *P. bailloni persicus* by the presence of dark axillaries, which distinguishes it from *P. bailloni nicolae*.

Masked Booby *Sula dactylatra*

This species is probably one of the regular seabirds sighted off the coast of Goa, being recorded on all the five surveys. The nearest sighting of this species, to the mainland, was about four nautical miles off the Sinquerim coast.

Arctic Skua *Stercorarius parasiticus*

This species is another commonly encountered seabird that has been recorded in four out of the five surveys. On 26 September 2015, we observed five birds sitting in the water, close to a flock of five Lesser Black-backed Gulls. When one of the gulls caught a fish, and started moving a bit further away, the skuas started chasing the gull instantly, and kept pestering it until the gull dropped the fish, and one of the skuas picked it up. In another observation of klepto-parasitism, we observed an Arctic Skua chase a Bridled Tern for up to five minutes before the tern finally gave up its prey [21].



Mandar Bhagat

21. Arctic Skua chasing Bridled Tern.



Omkar Dharwadkar

23. A flock of Roseate Tern.

Brown Noddy *Anous stolidus*

Two birds were seen foraging in a mixed flock of Common, and Bridled Terns about seven nautical miles off the Majorda coast on 13 September 2015. The observation was short, as the entire flock, including the Brown Noddy, suddenly left the area and flew off towards the south-west.

Bridled Tern *Onychoprion anaethetus*

This is one of the most common and abundant species of the open seas, with a very high encounter rate. Encounters are erratic, ranging from 70 individuals in a mixed flock, to single bird. Bridled Terns seem to be able to locate schools of fishes precisely, with large flocks congregating wherever there was good fish activity. Bridled terns also seem to have a greater affinity towards perching on floats, as they were never seen sitting in water like other terns [22]. Most observations of terns perched on oceanic debris were invariably of Bridled Terns. There were many instances of individuals fighting for perches, which would vary widely, from glass bottles to floating wood!

Roseate Tern *Sterna dougallii*

Flocks of seven, and ten individuals were observed on 26–27

September 2015, approximately six nautical miles off the Miramar, and Sinkerim coasts, respectively. On the 26th we observed them sitting in the water, in a monospecific flock, while on the 27th they were in a mixed flock with Common Terns. On the 26th, out of the seven birds observed, three were juveniles, and four adults, with bill colours varying in shades of orange, in the latter. While two birds had bright 'orangish' bills, one had a pale yellow one, while another had yellow in patches with the bill almost black in certain regions [23]. On the 27th, of the 13 individuals observed, six were adults with varying bill colours, and the rest, juveniles.

Common Tern *S. hirundo*

This species, unlike Bridled Terns, was found to be rather uncommon in terms of encounter rates, and numbers, during all five surveys. The maximum high count was 27 individuals on 27 September 2015, with a day count of 61 individuals. This species was mostly spotted in small flocks with three individuals frequently comprising a flock. Most sightings of this species were within a mixed foraging flock, with Bridled Terns being the major part of these flocks.

Lesser Crested Tern *Thalasseus bengalensis*

This species appeared to be very uncommon on the open waters, with records of only seven birds in five trips. Most sightings occurred within one to two nautical miles of the coastline. They are however very common on the coast and often seen even in estuarine regions.

Great Crested Tern *T. bergii*

In all the five surveys, this species was mostly sighted within one nautical mile of the coast. There was just one instance when a bird was recorded four nautical miles off the Baina coast.

Wind-blown seabirds, and coastal observations

There have been eight wind-blown or coastal records (34 individuals) of eight pelagic species from the coastline of Goa between 2013 and 2015 (June–September) (Table 2), of which the Red-billed Tropicbird was not listed in Lainer & Alvares (2013).



Princy Bardya

22. Bridled Tern.

Table 2. Wind-blown or coastalseabird sightings along the Goa coast between 2013 and 2015

S.No.	Species	Notes
Phaethontidae		
1	Red-billed Tropicbird <i>P. aethereus</i>	An exhausted and wind-blown juvenile specimen was found on the Velsaocoast and rescued by BM on 07 June 2014. (Baidya 2014).
Fregatidae		
2	Lesser Frigatebird <i>F. ariel</i>	A single wind-blown bird was observed and photographed by PP in Canaguinim on 03 August 2014 (Karuthedathu <i>et al.</i> 2015).
3	<i>Frigatebird species</i>	A single bird was observed off the Baina coast on 30 July 2014 by MB. Conditions were not favourable to get a positive identity (Bhagat 2014).
Sulidae		
4	Masked Booby <i>S. dactylatra</i>	Seven birds were rescued during the monsoons of 2015 from different locations across Goa's coastline. The first rescue was from Calangute on 15 July 2015 by LF.
Laridae		
5	Sooty Tern <i>O. fuscatus</i>	A single juvenile specimen was observed and photographed on 24 June 2015 in the Vasco da Gama port area by ST [24], while another juvenile bird was observed and photographed by MB on 27 June 2015 [25] at the same location (Bhagat 2015e).
6	Bridled Tern <i>O. anaethetus</i>	Four birds were observed and photographed by MB, RD, and HG in the Vasco Da Gama Port area on 10 August 2014, four, three, four, and three birds were observed and photographed by MB and ST at Mormugao Harbour on 22, 23, 26, 27, and 29 June 2015 respectively (Bhagat 2015a,b,d,e,f).
7	Common Tern <i>S. hirundo</i>	Three birds were observed and photographed by MB, RD, and HG in the Vasco da Gama Port area on 10 August 2014 (Bhagat 2015).
8	White-cheeked Tern <i>S. repressa</i>	1 bird was observed and photographed by MB in the Vasco da Gama Port area on 22, 23, and 25 June 2015 (See discussions for more details) (Bhagat 2015a,b,c).

Index: BM=Bonita Menezes; HG=Harshada Gauns; LF=Lloyd Fernandes; MB=Mandar Bhagat; PP=Prasanna Parab; RD=Ronit Dutta; ST=Satish Thayapurath.



Satish Thayapurath

24. Sooty Tern.



Mandar Bhagat

25. Sooty Tern.

Review of recent, and past literature on seabirds off the Goa coast

Lainer & Alvares (2013) have not documented a few species reports, primarily published in the *Sea Swallow*, some scattered reports from the GBCN's Google group, and online trip reports from visiting birdwatchers, which merited inclusion in their book. All old issues of *Sea Swallow* are now accessible online, and have been used by us to identify historical reports of seabirds off the Goa coast, and not covered in Lainer & Alvares (2013) (Table 3). Further, reports of a few species of seabirds, which have been published post 01 January 2013, are also listed in Table 4.

Discussion

The five offshore surveys have given a head start to begin understanding the status of seabirds off the state's coastline and have provided a platform for future monitoring. Observations like the higher abundance of Bridled Terns when compared to Common Terns, large congregations at frontal zones, and composition of mixed foraging flocks in the sea will prove valuable, when they are compiled over a longer period of time. Continuity of offshore surveys in future will help in better understanding the migration patterns of these species and will aid in mapping out their presence in the Arabian Sea. If this data is analysed with those from the other surveys conducted along the western

Table 3. Historical records not covered in Lainer&Alvares (2013)

S.No.	Species	Notes
Phaethontidae		
1	Red-billed Tropicbird <i>P. aethereus</i>	27 February 1969: Captain P.W.G. Chilman of the Royal Navy, UK reported an unspecified number of birds about 16.2 nm off the Aguada coast (15.50°N, 73.50°E) (Bourne & Dixon 1973).
Procellariidae		
2	Flesh-footed Shearwater <i>A. carneipes</i>	03 May 1964: eight birds were recorded c. 38 nm off the Palolem coast, South Goa (Gill 1967).
Sulidae		
3	Masked Booby <i>S. dactylatra</i>	August 2010: an adult bird was unsuccessfully rescued in North Goa (Rangnekar 2010).
Scolopacidae		
4	Red-necked Phalarope <i>P. lobatus</i>	One bird observed at Chapora Estuary on 10 October 2003 by Anand Prasad (Prasad 2004a,b).
Stercorariidae		
5	Pomarine Skua <i>S. pomarinus</i>	10 November 2008: one bird observed and photographed off Morjim by Mark Newsome (Newsome 2015).
Laridae		
6	Brown Noddy <i>A. stolidus</i>	November 2009: one bird was observed and photographed by Dave Williams at Utorda beach (Williams 2009).
7	Black-legged Kittiwake <i>R. tridactyla</i>	16–19 January 2005: one bird (first winter) was observed and photographed from the Morjim coast (Newsome 2005).

Table 4. Records post 1 January 2013 in Gandhe (2014)

S.No.	Species	Notes
Sulidae		
1	Red-footed Booby <i>S. sula</i>	13 December 2013: one bird observed and photographed 40 km off the Goa coast.
2	Brown Booby <i>S. leucogaster</i>	05 February 2014: one bird was observed and photographed 80 km off the Goa coast.
3	Masked Booby <i>S. dactylatra</i>	June 2013: an adult was observed and photographed 70 km off the Goa coast.

coast, from Kerala, Karnataka, and Maharashtra, broader patterns about the status of these birds off the western coast of India might emerge. Offshore surveys also provide an opportunity to observe and photograph seabirds at close range, which help in documenting other rare pelagic species, which are usually difficult to identify by sea watching from land. As of now, all surveys off Goa have been initiated between August and September, giving us a snapshot of the species found off the coast during these two months. The next challenge would be to carry out these surveys across different seasons, which will help us better understand the species composition, and migration patterns.

Keeping track of wind-blown pelagic species is crucial in understanding species' movements, and the present social media network setup, provides a very good platform for tracking and collating such information (Karuthedathu *et al.* 2015). In the present compilation of wind-blown, and coastal records of seabirds from Goa, social media groups have helped greatly to identify, and touch-base with bird rescuers. This became a very useful tool to make sure that these observations are recorded in eBird, and Birds of Goa websites (www.birdsofgoa.org), from where they are easily retrievable.

During the review of all available literature on seabirds from Goa, it was noticed that Lainer & Alvares (2013) did not include observations published in *Sea Swallow*, having depended primarily on their own records and those from the unpublished trip reports of visiting bird-watchers. This resulted in the Red-billed Tropicbird, and the Flesh-footed Shearwater not featuring in the birds of Goa list (*ibid.*), while the Red-necked Phalarope, Brown Noddy, and the Black-legged Kittiwake were treated as unconfirmed, even though there were conclusive notes and photographs

available as evidence. Recent evidences from genetic research have revealed that many of the previously known species are actually complexes, which could involve multiple species. We briefly discuss below four species that are quite confusing, from the point of view of field identification, and propose that all their earlier sight records, from Goa, be re-assessed.

Procellariidae

Wedge-tailed Shearwater *A. pacifica*

Heinz Lainer mentions observing both, the pale, and dark morphs of this species during his sea-watch, and notes that they are 'not-so-rare monsoon and autumn passage migrant' (Lainer & Alvares 2013). Rasmussen & Anderton (2012) however, do not think pale morph birds are found in the northern Indian Ocean. Praveen *et al.* (2013) have noted that the dark morph birds could well be the commoner Flesh-footed Shearwater, and the pale morphs could be Streaked Shearwater, both of which have not been reported by Lainer & Alvares (2013), and have therefore not included the Goa records as reference for entry of this species into their India Checklist. Considering this ambiguity, the Wedge-tailed Shearwater records from Goa should be placed in the list of unconfirmed species until further evidence about their status is obtained in the future.

Tropical (Persian) Shearwater *P. b. persicus*

Lainer & Alvares (2013) have three sighting records from over two decades. However, they have not provided any diagnostic features based upon which they have identified this species.

Praveen *et al.* (2013) note that this is a contentious taxon with recent molecular studies showing the existence of three clades, 'bailloni', 'persicus', and 'bannermani', sometimes elevated as distinct species. Taxonomical uncertainty, and problems infield identification have made all previous sight records from India inconclusive, as rightly noted in Praveen *et al.* (2013). Specimens from the seabird surveys were conclusively identified as *P. b. persicus*, by the presence of dark axillaries, a feature that separates it from *P. b. nicolae*, however the absolute identity of Lainer & Alvares's (2013) records remains unclear and could also refer to *P. b. nicolae* (Praveen *et al.* 2013).

Scolopacidae

Red-necked Phalarope *Phalaropus lobatus*

A single bird was observed at the Chapora Estuary on 10 October 2003 by Anand Prasad (Prasad 2004a,b).

Recent records, from neighboring states, are off the coast of Mangalore (Karnataka), where a single bird was reported on 26 October 2014 (Dipu 2014), while further records are from Kerala (Palot *et al.* 2014; Surendran 2014; Dalvi 2015). Lainer & Alvares (2013) have listed it under unconfirmed records, with inconclusive identification details, while Prasad too does not provide any identification details (Prasad 2004a,b).

Considering all the recent sightings from neighboring states, it is highly likely that this species could be sighted off Goa's coast, between the months of September and October, which also coincides with the observation of Prasad.

Phalaropes are unmistakable, while there is a contention with Grey Phalarope *P. fulicarius*, the sighting dates supported by subsequent observations argues well for the inclusion of this record as definite. We elevate this sighting from unconfirmed to the main checklist, based on these arguments.

White-cheeked Tern *S. repressa*

Multiple sightings between 1996 and 2001, with a high count of 14,250 passing individuals between early September and late October (1996–1999) reported by Lainer & Alvares (2013).

There are historical reports of this species breeding at Vengurla in Maharashtra (Abdulali 1940), but Abdulali (1983) did not find any further evidence of its breeding in 1981, and neither did Lainer (2003) in 1989, 1997, or 1998, and nor did Pande (2002), though he mentions sighting a pair of White-cheeked Terns in 2001. Lainer & Alvares (2013) state that they, 'found it difficult if not impossible to tell Common Terns from White-cheeked Terns under the conditions prevailing during the time of offshore migration'. Lainer (2004) however emphasises the ivory tip on the bill of a White-cheeked Tern, as mentioned in Ali & Ripley (1983), as one of the features used to identify this species, which Prasad (2004) mentions is a commoner feature of the Common Tern. A lot of ambiguity prevails with regard to specific field identification pointers to distinguish Common, and White-cheeked Terns. Olsen & Larsson (1995) have mentioned that Common Terns, of first-summer plumage, sometimes have pale grey rump and tail, while they also mention that the palest summer plumage adults of White-cheeked Terns are close to the darkest Common Terns of the race *longipennis*. Based on the current trends observed from all the offshore surveys from the western coast of India, it appears that the Common Tern is the more commoner species observed on the western coast, rather than the White-cheeked Tern. The record of White-



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26. White-cheeked Tern.

cheeked Tern off Vasco Port in 2015 [26] has been accepted as such by Krys K. for Oriental Bird Images, and is included in that database. The bird that was photographed appears to show many known characteristics of White-cheeked Tern, while some of the features may be debatable as discussed above. As evident from the above discussions, this complex ("Common-ish" Terns: Common, White-cheeked, and Roseate) requires further detailed studies to completely ascertain their status, and distribution along the western coast of India. We retain this species in the checklist, albeit with some uncertainty, and expect future workers to look out specifically for this species and provide supporting documentation.

These preliminary surveys, along with the monitoring of wind-blown seabirds, and a review of all literature on seabird sightings off Goa's coast have added four species of birds to the checklist of Goa: Red-billed Tropicbird, Swinhoe's Storm-petrel, Flesh-footed Shearwater, and Red-footed Booby. We shift Red-necked Phalarope, Brown Noddy, and Black-legged Kittiwake from the list of unconfirmed species (Lainer & Alvarez 2013) to the main checklist while, Wedge-tailed Shearwater is moved into the list of unconfirmed species for the state. This brings the total number of seabirds reported from Goa to 25 confirmed species, and one unconfirmed species.

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Appendix 1. Checklist of seabirds from Goa.

S.No.	Species	Scientific name	Alternate English name(s)
I. Phaethontiformes			
1. Phaethontidae (tropicbirds)			
1	Red-billed Tropicbird	<i>Phaethon aethereus</i>	Short-tailed Tropicbird
II. Procellariiformes			
2. Oceanitidae (Austral storm-petrels)			
2	Wilson's Storm-petrel	<i>Oceanites oceanicus</i>	
3. Hydrobatidae			
3	Swinhoe's Storm-petrel	<i>Hydrobates monorhis</i>	Fork-tailed Storm-petrel
4. Procellariidae			
4	Flesh-footed Shearwater	<i>Ardenna carneipes</i>	Pink-footed Shearwater (incl. <i>A. creatopus</i>)
5	Tropical Shearwater	<i>Puffinus bailloni</i>	Persian Shearwater
6	Jouanin's Petrel	<i>Bulweria fallax</i>	Jouanin's Gadfly Petrel
III. Pelecaniformes			
5. Fregatidae			
7	Lesser Frigatebird	<i>Fregata ariel</i>	Least Frigatebird
8	Great Frigatebird	<i>F. minor</i>	Lesser Frigatebird (vide HBK)
6. Sulidae			
9	Red-footed Booby	<i>Sula sula</i>	
10	Brown Booby	<i>S. leucogaster</i>	
11	Masked Booby	<i>S. dactylatra</i>	
IV. Charadriiformes			
7. Scolopacidae			
12	Red-necked Phalarope	<i>Phalaropus lobatus</i>	
8. Stercorariidae			
13	Arctic Skua	<i>Stercorarius parasiticus</i>	Parasitic Jaeger
14	Pomarine Skua	<i>S. pomarinus</i>	Pomarine Jaeger
9. Laridae (gulls and terns)			
15	Brown Noddy	<i>Anous stolidus</i>	Noddy Tern
16	Black-legged Kittiwake	<i>Rissa tridactyla</i>	
17	Sooty Gull	<i>Ichthyophaga hemprichii</i>	
18	Sooty Tern	<i>Onychoprion fuscatus</i>	
19	Bridled Tern	<i>O. anaethetus</i>	Brown-winged Tern
20	Roseate Tern	<i>Sterna dougallii</i>	Rosy Tern
21	Common Tern	<i>S. hirundo</i>	
22	White-cheeked Tern	<i>S. repressa</i>	
23	Lesser Crested Tern	<i>Thalasseus bengalensis</i>	
24	Sandwich Tern	<i>T. sandvicensis</i>	
25	Greater Crested Tern	<i>T. bergii</i>	Large Crested Tern