

## Introduction

Seabirds are the apex predators and indicators of the health of marine ecosystem. Seabirds are also called as 'sentinels' or bio-monitors of ecosystem change. So far 346 species of seabirds belonging to 9 families have been reported in the world of the 9000 birds belonging to 156 bird families. Seabirds are the indicators of fish shoal for fishers and play an important role in recycling nutrients in pelagic ecosystem. Research on seabirds of India is very limited and most of the information is available on shore birds. Therefore the present study was undertaken to fulfill the gap.

## Objectives

To study the diversity and abundance of seabirds in the southwest coast of India.

Investigate the foraging behaviour of seabirds.

To study the food/prey preference of seabirds.

These objectives have not been attempted in the country so far and are attempted for the first time in India.

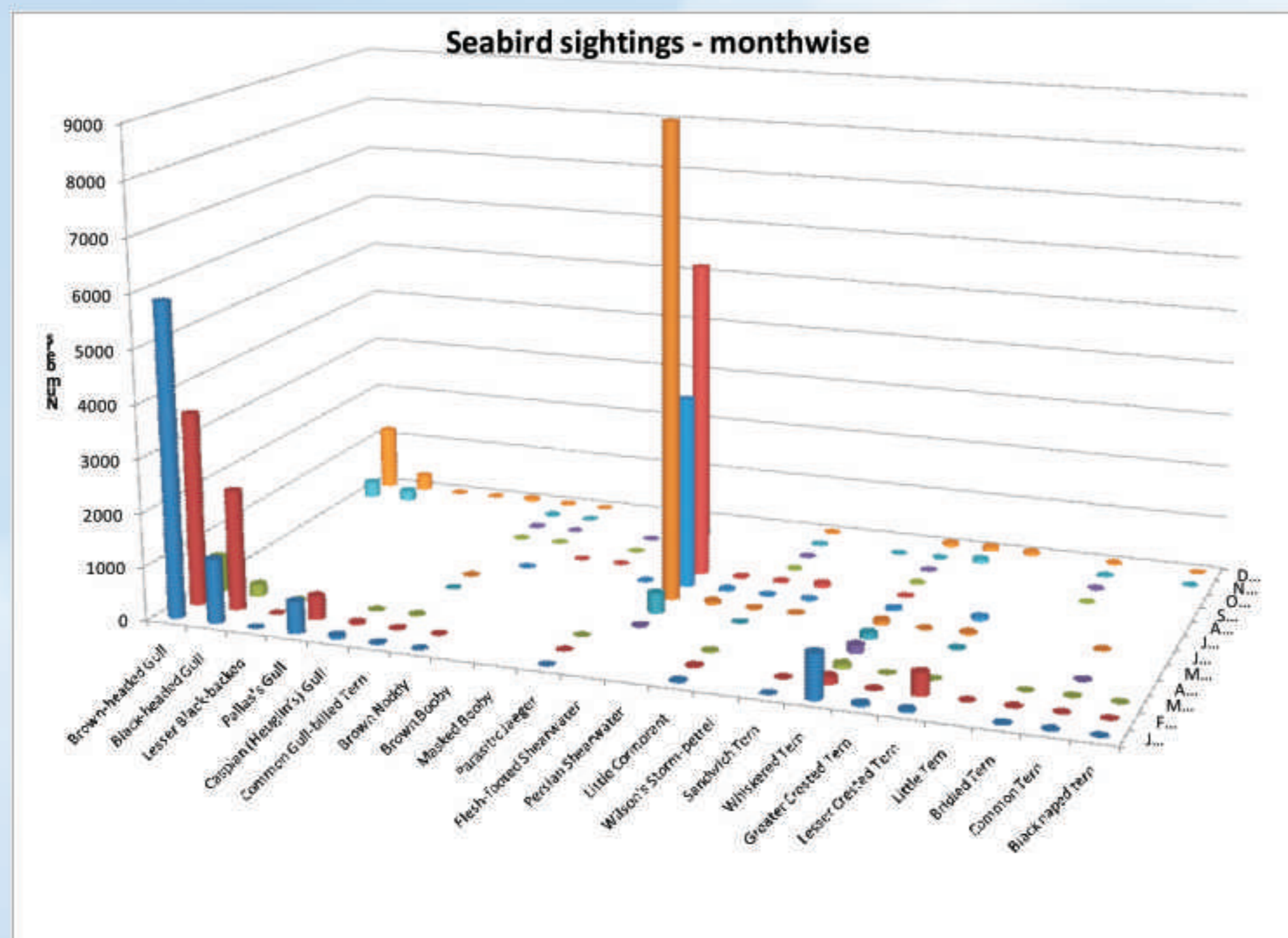
## Material and Methods

Vessel-based surveys are recognized as precious tools to investigate species range expansions and abundance estimation. Systematic field surveys were conducted from September 2013 to October 2014 to study the seabirds of southwest coast of India using FRV *Silver Pompano*. Seabird sighting and abundance were estimated based on the 'Band Transect Method' developed by the Tasker *et al.* (1984). The sighted seabirds and their count within a 300m wide strip transect in 1-, 5- or 10-minute intervals was recorded with photos. The foraging behaviours of seabirds were characterized based on Ashmole (1971).

## Results

### Diversity and Abundance of Seabirds

The results showed that 22 species of seabirds belonging to 15 genera of 8 families were present in the area. Among these Boobies, Cormorants, Shearwaters, Petrels, Gulls, Terns, Noddies and Skuas abundance were estimated using band transect method. The Brown-headed gull *Larus brunnicephalus* were abundant in January and Flesh-footed shearwater *Ardenna carneipes* were dominant during June. The maximum, 7500 numbers of Flesh-footed shearwaters were observed on 26<sup>th</sup> June 2014. The seabird diversity was more during upwelling period.



### Foraging Behaviour of Seabirds

The foraging behaviours like scavenging, surface pecking, skimming, dipping, pursuit plunging, surface seizing, pursuit diving of different seabird species with photographic evidence are presented.

### Food/Prey Preference of Seabirds

The food preference and foraging behavior of seabirds in India has not been studied so far except for Pelicans and Cormorants. This is the first report from this Oceanic Region. The present study showed that oil sardine was the most preferred food for the shearwaters and the next preference was anchovies. They feed only on live fish and do not eat dead fish. The flesh-footed shearwaters distribution and abundance was directly correlated to the occurrence of oil sardine shoal. When ship passed through the oil sardine shoal, one or two shearwater sighted the shoal and they made high pitched squeal. Immediately all other shearwaters flocked to the area, which was very close to the ship. Immediately afterwards heavy competition was observed among them in scavenging fish. Most of the Terns preferred to feed on shrimps *Fenneropenaeus indicus* and *Metapenaeus dobsoni*.

### Conclusion and Future Direction

The present study clearly indicates that the diversity and abundance of seabirds were more compared to other regions. The pelagic resources like sardine, anchovies and shrimps like *F. indicus* and *M. dobsoni* are abundant in southwest coast due to the upwelling during the southwest monsoon. The availability of prey is a major factor attracting many seabirds. Annual global fisheries landings are currently 80 million tons, and seabirds worldwide consume similar quantities of fish (Brooke 2004). Quantification of consumption of prey such as fishes and shrimps by seabirds in the area and their economic value has to be studied. Continuous monitoring and seabirds census data would be much useful for climate change studies.

The large population sizes of seabirds, their high mobility and their wide geographic distribution make them significant potential players in the ecology and epidemiology of zoonotic diseases, and in several instances they have been involved in major outbreaks. Recent outbreaks of avian influenza have highlighted the role that birds can play in the ecology of zoonotic diseases. As warm blooded vertebrates, seabirds are hosts of a large suite of pathogens and parasites (Hubalek, 2004). Viruses which are circulating in seabird populations (Hubalek, 2004), belong to two groups: arboviruses (often transmitted among seabirds by nest dwelling parasites such as ticks) and influenza A viruses). Hence, a prophylactic scrutiny of migratory seabirds of Indian seas coming from polar region and elsewhere can provide more information on source and spread of Avian flu viruses.

## Foraging behaviour of Flesh-footed Shearwater



## Prey Preference



## Flock of Seagulls



## References

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