Geospatial Technology: An effective tool for Marine Mammal Conservation

Shelton Padua *, Jeyabaskaran, R., Jayasankar, J., Kripa, V., Prema, D., Lavanaya, R., Seban John and Vysakhan, P.
ICAR-Central Marine Fisheries Research Institute, Kochi, India
*Email: shelton_padua@yahoo.com

Introduction

➢Marine mammals exert huge influence on the marine food webs and forms an important component of the marine ecosystem. They have a major say on the structure and functions of marine ecosystems.

➢A total of 130 marine mammal species have been reported world wide. Indian seas support 26 species out of which 25 are cetaceans and one is sirenian (Kumaran, 2002; Vivekandan and Jeyabaskaran, 2012).

➢Stranding of marine mammals are reported world wide. In most of the occurrences, cause of stranding is unknown. Some of the identified causes are infectious disease including parasite infestation, starvation, exposure to pollution, trauma (e.g., injuries from ship strikes or fishery entanglements), sound (human-generated or natural), harmful algal blooms and associated biotoxins, unusual weather or oceanographic events and ingestion of marine debris (http://www.nmfs.noaa.gov/pr/)

➢The information collected from stranded mammals provide insights into their lives including seasonal distribution, natural history, population health, environmental contaminant levels, cases of human interaction, and incidence of disease.

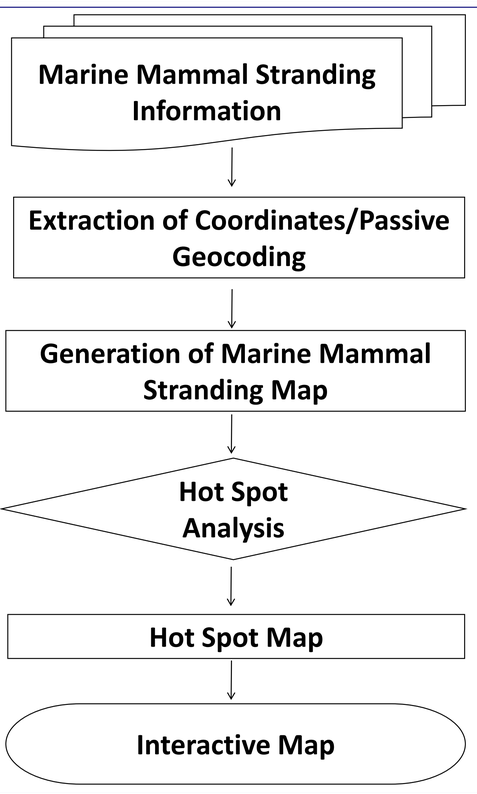
➢Information on common stranding locations and can be of great aid to marine biologists and conservationists.

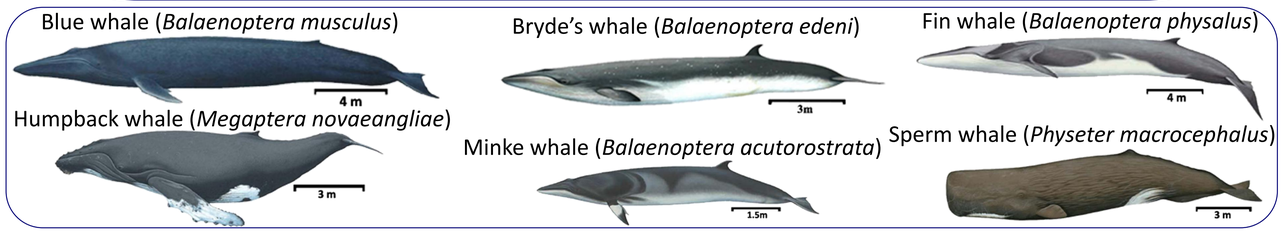
Objectives

➢To map marine mammal strandings along the Indian coast and to identify the hot spot area.
➢To develop an interactive map of the same, enriched with information useful for conservation activists.

Methodology

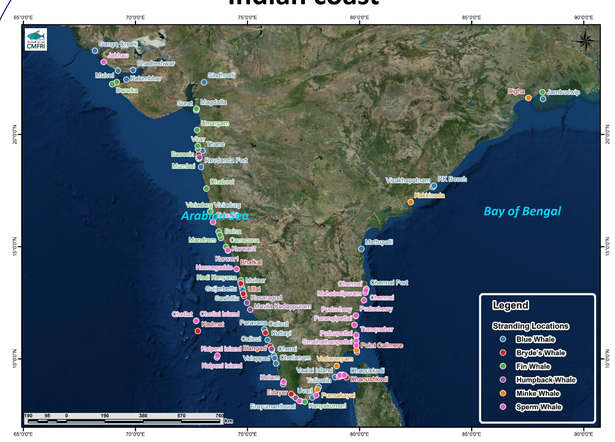
➢Area : Indian Coast
➢Period : 1874 to 2016
➢ Species studied: Blue whale (*Balaenoptera musculus*)
Bryde's whale (*Balaenoptera edeni*)
Fin whale (*Balaenoptera physalus*)
Humpback whale (*Megaptera novaeangliae*)
Minke whale (*Balaenoptera acutorostrata*)
Sperm whale (*Physeter macrocephalus*)
➢Data source : Published literature



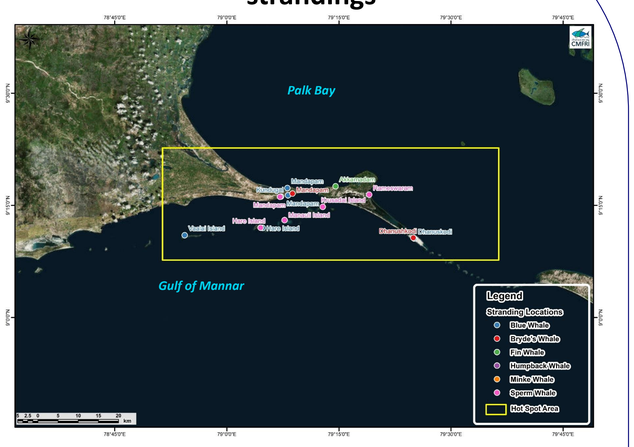


Results and Discussion

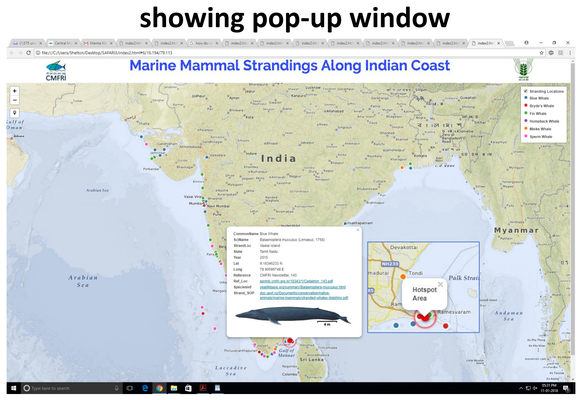
Marine mammal strandings along Indian coast



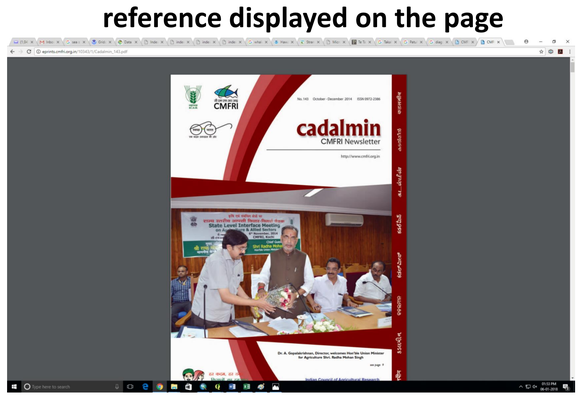
Hot spot area of marine mammal strandings



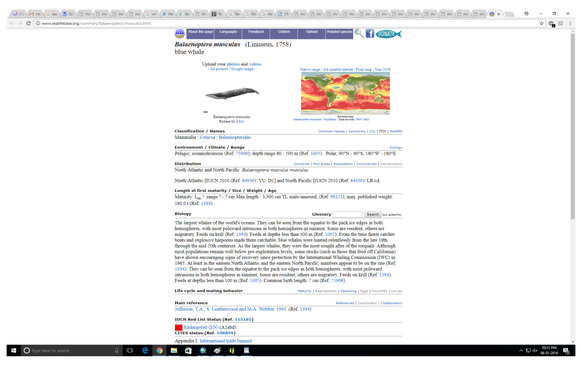
Screenshot of the interactive map showing pop-up window



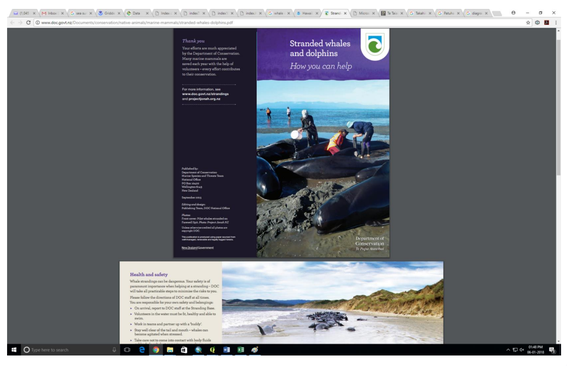
Screenshot of the hyperlinked reference displayed on the page



Screenshot of the hyperlinked species information drawn from *Sealifebase*



Screenshot of the hyperlinked stranding SOP displayed on the page



➢The western coast is more prone to marine mammal stranding, with an exception of Tamil Nadu.

➢Mandapam-Rameswaram region of Tamil Nadu is a hot spot area for marine mammal stranding.

➢Forty two percentage of the strandings were reported from eastern coast while, fifty eight percentage of the strandings occurred in western coast. This possibly indicate a better reporting of marine mammal stranding from west coast than the east coast.

➢The interactive map developed was enriched with species information, standard operating procedure in case of stranding, reference information, name of the stranding location, state/UT, year of stranding etc.

Conclusion

Interactive map is very handy and packed with information required for field level conservationists and policy makers alike. Marine mammal stranding hot spot area (Mandapam-Rameswaram region) requires special attention and further research is needed to find out the reasons behind it.

Reference

Vivekandan, E. and Jeyabaskaran, R. 2012. Marine mammal species of India, Central Marine Fisheries Research Institute, Kochi, 228 p.

Acknowledgement

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