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Marine Mammals in Sarawak

Cindy Peter

They are not migratory. They are residents. They are here in Sarawak and they live here. Who are they, you may wonder? Well they are dolphins, whales and porpoises! Yes, we have these charismatic marine megafaunas in our waters and they live here year-round. According to the most updated count of cetacean species, there are 21 species in Sarawak. These include the large whales such as the Bryde's and Humpback whales, to the smaller Irrawaddy Dolphins and Indo-Pacific Finless Porpoises (referred to from now on as the finless porpoise) (Ponnampalam, 2012). This article will focus on the species more commonly occurring in the coastal waters; where water enthusiasts, such as anglers and local fishermen, as well as the public might catch a glimpse of.



Figures 1a (left) and 1b (right): Irrawaddy Dolphins (*Orcaella brevirostris*) are characterized by their flat face and small dorsal fins while the Indo-Pacific Finless Porpoise (*Neophocaena phocaenoides*) lack dorsal fins on its back.
@Sarawak Dolphin Project

Location of dolphins

Irrawaddy Dolphins and finless porpoises are two most commonly occurring species along the coast of Sarawak. Comprehensive monitoring research conducted at Kuching Bay, Rajang-Belawai-Paloh coastline in the central region, Similajau-Kuala Nyalau coastline, Bintulu and off the Baram river in Miri that started in 2008 provided insights into their distribution patterns and population estimates. Mark-recapture photo-identification have indicated there are at least 200 Irrawaddy Dolphins in Kuching Bay, while line transect distance analyses indicated there are 130 finless porpoises. Mark-recapture analyses could not be carried out for finless porpoises as they lack a dorsal fin to distinguish them from one individual to the next (Figure 1a and 1b).

Species such as Indo-Pacific Humpback and Indo-Pacific Bottlenose Dolphins have also been regularly sighted by the Sarawak Dolphin Project researchers. Humpback Dolphins, as its name suggests, have a hump under their dorsal fin that is more pronounced in adults. Humpback Dolphins are born black in colour but as they grow older they fade to pink. As they age they will be covered in clusters of pink spots or they could even be entirely pink! Big pods of 20 to 45 individuals of Humpback Dolphins have been observed in the waters of Kuching Bay, while in the Rajang-Belawai-Paloh region, they have always been seen in smaller groups of five to eight individuals (Figure 2).

Irrawaddy Dolphins are usually seen around the coastal waters and within a six kilometre radius of the Salak, Santubong, Rajang, Belawai and Paloh rivers. They occur in waters of salinity between 25 to 30.99 psu (practical salinity unit), and movements have been found to follow the tide levels. The tidal levels correspond with the Irrawaddy Dolphins' distribution within their surroundings, as they seem to follow the interface between riverine and saline coastal waters. They occur inshore during high tides and further offshore during lower tides (Peter et al., 2016a). Irrawaddy Dolphins mainly feed on fish, cephalopods, and crustaceans. Finless porpoises are usually sighted in deeper waters between 1.3 to 16.8 m deep. Their distributions occur further from river mouths as they are known to feed on more diverse diets such as fishes, cephalopods, crustaceans, and even bivalves (Lu et al., 2016).

Photo-identification of Irrawaddy Dolphins has shown that they very rarely migrate over a long distance, unlike the Humpback Whales which move between their northern feeding grounds and southern breeding grounds, or Gray Whales which migrate between Russia and California, USA. Our research has shown that Irrawaddy Dolphins move a short distance between two bays or crossing several rivers, most notably between the Santubong estuary to the Bako-Buntal Bay in Kuching Bay and from Similajau National Park to Tanjung Payong in Bintulu (Minton et al., 2013; Peter et al., 2016a). A number of individuals showed a high-degree of site fidelity, with less than 15 to 25 km between sighting locations in Kuching Bay and the Similajau-Kuala Nyalau coastline (Peter et al., 2016a; 2017).

Feeding

These resident species utilize our waters as their feeding ground. Behaviours such as surfacing near active fishing boats, following active trawling boats, and feeding on discarded trash fishes are commonly seen. In addition, at the three study sites, calves have been seen year-round, suggesting that the Irrawaddy Dolphins, finless porpoises and Humpback Dolphins are using the coastal areas as their calving grounds. The year-round existence and importance of our waters for their livelihood has led the IUCN

Marine Mammal Protected Areas Task Force to designate Kuching Bay and Similajau-Kuala Nyalau coastline as Important Marine Mammals Areas (IUCN, 2020a; 2020b).

Conservation status

The IUCN Red List of Threatened Species has assessed Irrawaddy Dolphins as Endangered (Minton et al., 2017), while Humpback Dolphins and finless porpoises are Vulnerable (Jefferson et al., 2017; Wang and Reeves, 2017), and Bottlenose Dolphins are considered Near Threatened (Braulik et al., 2019). Globally, incidental catch in fishing gear, or bycatch are the number one risk facing these nearshore species (Read, 2008), and in Sarawak it is no different (Ambie, 2021). Being mammals like human beings, these cetaceans are K-strategists in that they breathe air through their lungs, the female gives birth to one offspring, and then takes care of the calf until it is able to fend for itself. They need to surface above water level to breathe. So when these marine mammals are entangled in a fishing net that is weighed down they are unable to surface, and they inevitably drown.

The marine mammals' occurrence throughout our coastal waters overlaps with the artisanal fisheries of coastal villages. After the *landas* or northeast monsoon period, between the months of March to May, fishermen tend to fish more frequently and driftnets and trammel nets account for the highest proportion of fishing gear used in Kuching Bay (Peter et al., 2016b). In contrast, during the pre-*landas* season (period between September and October), the encounter rates of unattended gillnets peaked. Unattended nets are usually set for up to 12 to 18 hours during unpredictable weather conditions which are risky for fishermen to stand by and tend their nets. Interviews with fishing communities, throughout the coastal areas of Sarawak, revealed that bycatch is a yearly occurrence.

Other anthropogenic threats that these marine mammals face are the depleting food source due to fisheries expansion, habitat degradation such as water pollution caused by uncontrolled coastal development, and collision due to vessel traffic. The rapid expansion of fisheries activities,



Figure 2: Adult Indo-Pacific Humpback Dolphins (*Sousa chinensis*) are usually pink or mottled pink while their calves are born grey. Marine mammals practice maternal care and the mothers would look after their young until the offspring are able to fend for themselves. @Sarawak Dolphin Project

both artisanal and industrial fishing due to the advancement of technology has resulted in constant pressure to catch more in order to justify the associated cost of technology usage. The fisheries sector has increased significantly in the last two decades; similarly, the human population has continued to expand globally.

Fish and prawns need time to grow into fully mature adults so that they have a higher economic value, and there are other natural predators of these aquatic animals; so the expansion of the fishing industry means that

we are contributing to the depletion of food sources for the marine mammals. Insufficient food supply for marine mammals could lead to health risks and proneness to diseases which could ultimately cause the collapse of the entire ecosystem due to them being apex predators. Sick marine mammals tend to strand themselves on the beach when they are unable to search for food or to avoid being caught by predators.

Irrawaddy Dolphins and finless porpoises search for food using their sight and hearing. Although they possess the ability to use echolocation

in finding their prey, the marine mammals found in Sarawak still need to see in order to catch their prey. Habitat degradation caused by uncontrolled coastal development, untenable aquaculture practices, uncontrolled logging upstream and increasing conversion of forested areas into Oil Palm estates could pollute the river systems and coastal waters which these animals rely on for food and refuge. Currently in Malaysia, there is no speed limit/law or regulation that is imposed on moving boats, ferries or vessels. Boat strikes or propeller strikes could cause severe injuries to the body or tail of the cetaceans. In some cases, boat strikes have led to mortality of these marine mammals.

Owing to the urgency and swiftness of actions needed whenever sick or injured marine mammals are stranded on our beaches, the Sarawak Marine Mammals Stranding Network was established to pool government agencies, ensure a direct line of communication is

available. Universiti Malaysia Sarawak (UNIMAS) is a part of the stranding network as we contribute by providing expertise and advice whenever any strandings occur. If you encounter an injured or dead marine mammal along the beaches of Sarawak, please contact the Sarawak Forestry Corporation at their registered hotlines available on their website. The Sarawak Dolphin Project can also be contacted so that information can be channelled to the right agency and help can be sent to the ground swiftly. This is especially urgent for cases where the animals are still alive.

Marine mammals exist in the tropical waters within Sarawak. When you find yourself at a beach, keep a lookout. You might just see the nubbin dorsal fin of the Irrawaddy Dolphins, or the sharp dorsal fin of Bottlenose Dolphins in the horizon! Help us protect them and you can contribute to citizen science by tagging us!



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Figure 3: Indo-Pacific Bottlenose Dolphins (*Tursiops aduncus*) are usually found in deeper waters of five to 20 m. Tooth rakes can be seen on the tip of the dorsal fin indicating this could be a male dolphin as males are prone to getting tooth rakes and scratches on their bodies due to their sometimes aggressive behaviour with each other. @Sarawak Dolphin Project

References

- Ambie, S. (2021) Distribution, species composition and habitat characteristics of cetacean and elasmobranch, associated with fisheries activities in Kuching Bay, Sarawak. Universiti Malaysia Sarawak, Kota Saramahan, Sarawak. [Unpublished Master thesis]
- Braulik, G., Natoli, A., Kiszka, J., Parra, G., Plön, S. and Smith, B. (2019) *Tursiops aduncus*. *The IUCN Red List of Threatened Species 2019*: e.T41714A50381127. [Online]
- IUCN-MMPATF (2020a). *Kuching Bay IMMA, Global Dataset of Important Marine Mammal 686 Areas*. IUCN-IMMA. [Online]
Available at: www.marinemammalhabitat.org/imma-eatlas
- IUCN-MMPATF (2020b) *Similajau-Kuala Nyalau coastline IMMA, Global Dataset of Important Marine Mammal 686 Areas*. IUCN-IMMA. [Online]
Available at: www.marinemammalhabitat.org/imma-eatlas
- Jefferson, T.A., Smith, B.D., Braulik, G.T. and Perrin, W. 2017. *Sousa chinensis (errata version published in 2018)*. *The IUCN Red List of Threatened Species 2017*: e.T82031425A123794774. [Online]
Available at: <https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T82031425A50372332.en>.
[Accessed: 13 September 2022]
- Lu, Z. & Xu, Shengyong, Song, N., Gao, T., Tian, J. and Han, J. (2016) 'Analysis of the diet of finless porpoise (*Neophocaena asiaorientalis sunameri*) based on prey morphological characters and DNA barcoding'. *Conservation Genetics Resources* 8.10.1007/s12686-016-0575-2.
- Minton, G., Peter, C., Zulkifli Poh, A.N., Ngeian, J., Braulik, G., Hammond, P.S. and Tuen, A. A. (2013) 'Population estimates and distribution patterns of Irrawaddy dolphins (*Orcaella brevirostris*) and Indo-Pacific finless porpoise (*Neophocaena phocaenoides*) in the Kuching Bay, Sarawak'. *Raffles Bulletin of Zoology* 61, pp877–888. [Online]
Available at: <https://lknhm.nus.edu.sg/wp-content/uploads/sites/10/app/uploads/2017/04/61rbz877-888-1.pdf>
- Minton, A. G., Smith, B. D., Braulik, G., Kreb, D., Sutaria, D. and Reeves, R. (2017) *Orcaella brevirostris*, The IUCN Red List of Threatened Species 2017, e.T15419A50367860. [Online]
Available at: <http://www.iucnredlist.org/details/15419/0>
- Peter, C., Zulkifli Poh, A.N., Ngeian, J., Tuen, A. A. and Minton, G., (2016a) 'Identifying Habitat Characteristics and Critical Areas for Irrawaddy Dolphin, *Orcaella brevirostris*: Implications for Conservation'. in A.A. Tuen and I. Das Naturalists (eds) *Explorers and Field Scientists in South-East Asia and Australasia. Topics in Biodiversity and Conservation (15)*. Springer International Publishing, pp. 225-238. [Online]
Available at: https://doi.org/10.1007/978-3-319-26161-4_15
- Peter, C., Ngeian, J., Minton, G., Zulkifli Poh, A. N., Grinang, J. and Tuen, A. A. (2016b) *Artisanal fisheries and cetaceans in Kuching Bay, Sarawak, East Malaysia: Threats and potential mitigation*. Report presented to the meeting of the Scientific Committee of the International Whaling Commission, SC/66b/SM09, 18.
- Peter, C., Tuen, A.A., Zulkifli Poh, A.N., Ngeian, J. and Minton, G. (2017) 'Population estimates and range of movement of Irrawaddy dolphins (*Orcaella brevirostris*) in Similajau, Bintulu, Malaysian Borneo'. 22nd Biennial Conference on the Biology of Marine Mammals, Halifax, Canada.
- Ponnampalam, L. (2012) 'Opportunistic observations on the distribution of cetaceans in the Malaysian South China, Sulu and Sulawesi Seas and an updated checklist of marine mammals in Malaysia'. *The Raffles Bulletin of Zoology* 60, pp. 221-231.
- Read, A. J. (2008) 'The looming crisis: interactions between marine mammals and fisheries'. *Journal of Mammalogy*, 89(3), pp. 541–548.
- Wang, J.Y. and Reeves, R. (2017) *Neophocaena phocaenoides*. *The IUCN Red List of Threatened Species 2017*: e.T198920A50386795. [Online]
Available at: <https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T198920A50386795.en>.
[Accessed: 13 September 2022]

**Cindy Peter**

Cindy Peter, who is from Sarawak, Malaysia, became the Coordinator of the Sarawak Dolphin Research Project in 2012, which is based at the Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak. She is also a lecturer at the university. The Sarawak Dolphin Project focuses its research on the conservation and biology of coastal cetaceans, such as the Irrawaddy dolphin and finless porpoise. The project conducts primary research, incorporates social science aspects to our work and encourages public awareness through outreach programmes.

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The publication of this special edition of the Malaysian Naturalist is due to many. It is here because of the land - the stunning vistas that flourish in Sarawak, one of two Malaysian states on the third largest island in the world. It is here because of the forest landscapes, unique ecosystems, that shelter the outstanding biodiversity of the island. It is here because of the people of Sarawak and all volunteer writers and photographers, editors, that have put in so much effort in making this issue of the Malaysian Naturalist a truly special one.

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