

Marine Mammal Diversity in Indian Waters

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Marine mammals are aquatic vertebrates within the class mammalia, characterized by being warm-blooded, breathing air through lungs, utilizing fins and flippers for locomotion, and producing milk to nurture their offspring. They are into four taxonomic groups: **cetaceans** (whales, dolphins, and porpoises), **sirenians** (manatees and dugong), **pinnipeds** (walrus, seals and sea lions), and **fissipeds** (polar bear and sea otters). While cetaceans and sirenians remain exclusively in water throughout their lives, other marine mammals may come ashore intermittently for various reasons during specific stages of their life cycle¹.

Marine mammals play a vital role as keystone species within the marine ecosystem, and the decline in their population can trigger a ripple effect throughout the food web, ultimately impacting human communities. With their widespread distribution, large body size, and predatory behaviour, marine mammals significantly shape marine food webs and influence the structure and functioning of marine ecosystems. These organisms inhabit a diverse range of environments including tropical, subtropical, temperate, and polar oceans and seas, as well as estuaries and the connected seas of major rivers worldwide. Notably, marine mammals exert considerable influence on the behaviour and life history characteristics of both prey species and predators, contribute to nutrient storage and recycling, and modify habitats within their ecosystems.

In recent years, marine mammals have encountered various threats to their survival.

These include accidental fatalities among coastal populations caused by becoming entangled in fishing gear, colliding with powered vessels, and becoming trapped in water regulation devices. Additionally, pollution, ocean acidification, infectious diseases, harmful algal blooms, disturbances from seismic activities and ocean warming poses significant stressors to these organisms⁴.

Conservation and sustainable management of marine mammals is crucial for maintaining and restoring their distribution, abundance, and diversity, thereby ensuring a healthy ocean. Taxonomy serves as a fundamental tool in this endeavor, as it helps identify the units of conservation based on population structure and, ultimately, species designation. By understanding the taxonomy of marine mammals, conservation efforts can be better targeted towards protecting specific populations and species, ultimately contributing to the overall health of the oceanic environment.

Marine mammals comprises 21 families (with 8 being monotypic) and a total of 135 recognised species worldwide, organised into four taxonomic groups: cetaceans (such as whales, dolphins, and porpoises), sirenians (including manatees and dugongs), pinnipeds (encompassing seals, sea lions, and walruses), and marine fissipeds (consisting of polar bears and sea otters). According to the International Union for Conservation of Nature (IUCN), 25% of these species are classified as threatened. Without proper management and conservation measures, many of these species are at risk of extinction (IUCN, 2009).

Marine mammal diversity of the world

Order	Infraorder	Parvorder	Family	No. of Species
Carnivora (38)	Arctoidea (3)	Ursida	Ursidae	1
		Mustelida	Mustelidae	2
	Pinnipedia (35)		Otariidae	15
			Odobenidae	1
			Phocidae	19
Artiodactyla (92)	Cetacea (92)	Mysticeti (15)	Balaenidae	4
			Neobalaenidae	1
			Eschrichtiidae	1
			Balaenopteridae	9
		Odontoceti (77)	Physeteridae	1
			Kogiidae	2
			Ziphiidae	23
			Platanistidae	2
			Iniidae	1
			Lipotidae	1
			Pontoporiidae	1
			Monodontidae	2
			Delphinidae	37
			Phocoenidae	7
Sirenia (5)			Trichechidae	3
			Dugongidae	2
Total				135

Marine mammal diversity of India

In the Indian seas, marine mammals consist of cetaceans and sirenians, totaling 28 species. This accounts for nearly 25 percent of the world's marine mammals and approximately 8 percent of all mammalian fauna documented in India. Among these, the sirenina group is represented solely by the species *Dugong dugon*. All the marine mammal species in India are listed under

Schedule I of the Wildlife (Protection) Act of 1972.

Taxonomy of marine mammals

The identification of marine mammals involve various methods, including morphology-based classical taxonomy, acoustic detection through

comparison of sound frequencies, and modern techniques such as molecular identification. Molecular methods utilize DNA barcoding (such as COI and 16s rRNA), mass spectrometry (specifically collagen peptide mass fingerprinting), and environmental DNA (eDNA) analysis using droplet digital PCR. Next-Generation Sequencing (NGS) is frequently employed to study present cetacean populations, enabling the recovery of full mitochondrial genomes, genomic Single Nucleotide Polymorphisms (SNPs), and even complete nuclear genomes. This aids in developing more sophisticated models of evolutionary systematics and population histories. Current molecular research on cetaceans globally encompasses various areas, including DNA barcoding, eDNA analysis, whole genome sequencing⁷, mitogenomics, and molecular identification of market samples. However, despite the success of molecular approaches in identifying marine animals, they are often costly, and obtaining fresh tissue samples can be challenging. As a result, researchers commonly rely on morphology-based visual identification methods.

Marine mammal specimens can be identified using various morphological characteristics, such as the body shape, body colour, colouration pattern, head shape, flipper shape, dorsal fin's shape and position, caudal fluke's shape, the ratio of the outer margin of the flipper to the total body length, throat grooves' extent, teeth count and blow hole position. In visual surveys, the blow pattern is a crucial feature for species identification. Photographs of dorsal fins and flukes aid in the identification of individual cetaceans through a technique known as photo-identification. This method is practically useful for studying pod size, structure, and species composition. Conducting repeated photo-sessions from the geographical location over an extended period helps monitor resident and migratory populations, as well as reproductive success. Identifying species at sea presents unique challenges compared to those on land. Even under ideal conditions, observers often have brief sightings of a splash, blow, dorsal fin, head, flipper, or back, often from a considerable distance¹.

Order: Artiodactyla

Infraorder: Cetacea

- All cetaceans possess a similar streamlined body structure
- The blow hole, consisting of one nostril in odontoceti and two in mysticeti, is located

on the top of the head

- Propulsion is achieved through the up and down movement of tail, which ends with a flattened paddle like cartilaginous fluke
- Telescoping in skull refers to a restructuring process that pushes the nasal passages posteriorly in the cetacean skull¹⁵
- They have a well-developed blubber layer that envelops their bodies.
- Unique boneless structures, such as tail flukes and dorsal fins or ridges, have evolved in cetaceans.

Parvorder: Mysticeti (baleen whales)

- This group includes the largest animal on the planet. Antarctic blue whale, weighing up to 181 tonnes (equivalent to approximately 33 elephants) and reaching lengths of up to 98 feet
- Paired nostrils or blowholes are longitudinal slits located at the top of the cranium, resulting in a V-shaped blow
- the wing like movement of their flipper helps in the propelling the body
- Presence of baleen (keratinaceous baleen plates (or "whalebone")) instead of teeth in their mouths, used to filter planktonic organisms from the water
- The family Balaenopteridae represents Indian baleen whales

Key characteristics for whale identification

- Shape of head
- Dorsal fin characteristics (shape and position)
- Body coloration and patterns
- Colour of baleen plates
- Number of ventral (throat) grooves
- Flipper length and shape
- Ratio of girth to length
- Ratio of head length to body length

Family: Balaenopteridae

- Members of this family, commonly known as rorquals, include the largest animals to ever exist.
- In Indian waters, the Balaenopteridae family encompasses 6 species distributed across 2 genera: Balaenoptera and Megaptera.
- With the exception of the humpback whale, other members possess a streamlined body adorned with long pleats extending from the snout tip to as far back as the navel on the ventral

surface.

- Lunge feeding is an intense, rapid, and active feeding technique. Their anatomical structure enables them to accelerate to high speeds before opening their jaws wide and expanding their throats to engulf large quantities of water during feeding.
- The baleen plates of Balaenopteridae species are moderately sized and possess fine fringes. Variations in density, fringe diameter, plate number, and width-to-length ratio serve as diagnostic characteristics among species.
- Dorsal fins are positioned behind the midpoint of the back, typically at around $2/3^{\text{rd}}$ to $3/4^{\text{th}}$ of the total body length.
- Pleated throat grooves are distinctive features that differentiate Balaenopteridae species from other whales.

***Balaenoptera musculus* (Linnaeus, 1758)** Blue whale



- Dorsal fin: Very small, approximately 1% of body length, positioned at $3/4$ of total length.
- Baleen plates: Each side contains 260 to 400 black baleen plates with black bristles, with all three sides of each plate roughly equal in length.
- Body color: Bluish or light grey body color with grey patches on the dorsal surface.
- Ventral grooves: 60-80 ventral grooves extending near to the navel.
- Maximum body length: 33 meters.
- Adult sizes: Most adults measure between 23 to 27 meters, while newborns measure about 7-8 meters.
- IUCN status: Endangered.

***Balaenoptera physalus* (Linnaeus, 1758)** Fin whale



- Head shape: V-shaped from above, pointed at the tip.
- Mouth ridges: A ridge on the upper side of the mouth and another prominent ridge between the dorsal fin and fluke.
- Baleen plates: 260 to 480 grey baleen plates with white streaks on the side.
- Coloration: Asymmetrical head coloration (left side grey, much of right side white); back is dark with light streaks; belly is white.
- Dorsal fin: Tall and falcate (curved), positioned farther forward on the caudal peduncle.
- Ventral grooves: 50-100 ventral grooves extending up to the navel.
- Maximum size: Adults reach a maximum size of 27 meters in the southern hemisphere and 24 meters in the northern hemisphere.
- IUCN status: Vulnerable.

***Balaenoptera borealis* Lesson, 1828** Sei whale



- Rostrum: Pointed, snout slightly down, and turned at the tip.
- Pectoral fins: Relatively short, comprising only 9%–10% of body length, and pointed at the tips.
- Ventral pleats: 32 to 60 in number, with the longest extending past the flippers but well short of the navel.
- Baleen plates: 300 to 380 pairs of black baleen plates with many whitish bristles, each less than 80 cm long.
- Flippers: All dark in color.
- Median ridge: A single median ridge present.
- Maximum body length: 19.5 meters.

IUCN status: Endangered.

***Balaenoptera edeni* Anderson, 1878** Bryde's whale



- Head shape: Pointed with three prominent ridges on the dorsal side of the rostrum.
- Ventral pleats: 40 to 70 ventral pleats extending to the umbilicus.
- Baleen plates: 250 to 370 slate-grey baleen plates per side, with white to light grey fringes.
- Head coloration: Symmetrical.
- Dorsal fin: Tall and well-falcate (curved).
- Body coloration: Dark gray on the dorsal profile and light ventrally. The tip of the lower jaw is dark.
- Maximum body length: 14 meters.
- IUCN status: Least Concern.

***Balaenoptera acutorostrata* Lacepede, 1804**
Common Minke whale



- Head shape: Sharply pointed and V-shaped with a prominent ridge on the upper rostrum.
- Dorsal fin: Tall and falcate, located at two-thirds of the body length.
- Body coloration: Dark grey with shades on the lateral side of the body.
- Throat grooves: 50-70 throat grooves extending just past the flippers.
- Baleen plates: 231 to 360 cream-colored baleen plates with coarse bristles per side, less than 21 cm long. They are mostly white or yellowish-white, sometimes with a dark margin along the outer edge. Often, conspicuous white bands are present on the upper surface of the flippers.
- Maximum body length: 9 meters.
- IUCN status: Least Concern.

***Megaptera novaeangliae* (Browski, 1781)**
Humpback whale



- Body shape: Robust and stocky.
- Head features: Covered with knobs, with a prominent cluster of knobs at the tip of the lower jaw. Prominent tubercles near the lips and chin.
- Flippers: Elongated, comprising one-fourth to one-third of the body length, with knobs on the leading edge.
- Dorsal fin: Small and usually located at the top of an obvious hump.
- Coloration: Black and dark grey.
- Ventral grooves: 14-35 ventral grooves extending beyond the navel.
- Baleen plates: 270 to 400 black to olive-brown baleen plates with grey bristles per side, each less than 80 cm long.
- Flukes: With irregular trailing edges.
- Maximum body length: 16 meters.
- IUCN status: Least Concern.

Parvorder: Odontoceti (Toothed whales)

- Represented by 6 families in India.
- Generally small to medium-sized cetaceans, except for sperm whales, with males capable of growing at least 18 meters in length.
- Presence of teeth throughout life.
- Single blow hole.

An asymmetrical skull with

- Concave profile
- Sternum with 3 or more parts
- Complex system of nasal sacs
- Fatty organ in the forehead area called the melon

Capable of echolocation to

- Navigate
- Find food
- Avoid predators

Family: Physeteridae (sperm whales)

- The sperm whales are the largest toothed cetacean.

- There is a low dorsal hump, followed by a series of crenulations.
- Has a large head with a squarish profile, a narrow underslung lower jaw, and functional teeth only in the lower jaw (which fit into sockets in the upper jaw).
- Caudal flukes are triangular and very thick.
- Blowhole located at the left front of the head.
- Head is divided into sections called the “junk” and the spermaceti organ or “case”.
- Spermaceti organ: A large oil-filled reservoir located within the head.
- Capable of very deep and long dives.

***Physeter macrocephalus* (Linnaeus, 1758) Sperm whale**



- Head: Squarish and large, comprising 20 to 30% of the body length.
- Lower jaw: Narrow.
- Flippers: Short and broad.
- Dorsal hump: Small, thick, and round, followed by a series of crenulations along the midline.
- Teeth: 18-26 pairs of teeth present only in the lower jaw, fitting into sockets in the upper jaw.
- Body coloration: Black to charcoal grey, with white lips and inside of the mouth.
- Throat grooves: 2-10 short throat grooves present.
- Blowhole: S-shaped blowhole located at the left side of the front of the head.
- Maximum size: 18 meters.
- IUCN status: Vulnerable.

Family: Kogiidae

- Blunt squarish head not exceeding 15% of the body length, with a very short rostrum.
- Blowhole is not located at the front of the head.

- Dorsal fin is larger than the sperm whale.
- 8 to 16 long, thin, and sharply pointed homodont teeth in each side of lower jaw, fitting into sockets in the upper jaw.
- Similar to sperm whales, Kogiidae also possess spermaceti in their head.
- Body size is typically less than 4 m.

***Kogia breviceps* (Blainville, 1838) Pygmy sperm whale**



- Lower jaw: Tiny underslung lower jaw.
- Head: Small and squarish.
- Dorsal hump: A hump on the dorsal side between the blowhole and dorsal fin.
- Dorsal fin: Well-curved and set behind the midpoint of the body.
- Flipper: Set near to the head.
- Throat creases: Generally absent; dorsal fin is short (< 5% of body length).
- Snout to blowhole distance: Greater than 10.3% of the total length.
- Teeth: 12 to 16 (rarely 10 to 11) sharp fang-like teeth in each half of the lower jaw.
- Maximum body length: 3.5 meters.
- IUCN status: Least Concern.

***Kogia sima* Owen, 1866 Dwarf sperm whale**



- Lower jaw: Tiny underslung lower jaw.
- Head: Triangular or squarish.
- Dorsal hump: No hump on the dorsal side between the blowhole and dorsal fin.
- Dorsal fin: Tall and slightly falcate.
- Throat grooves: A pair of short throat grooves.
- Flipper: Small with a blunt tip, positioned near the head.

- Teeth: Sharp fang-like 7-12 pairs of teeth present on the lower jaw.
- Snout to blowhole distance: Greater than 10.2% of the total length.
- Maximum body length: 2.7 meters.
- IUCN status: Least Concern.



Family: Ziphiidae

- Beaked whales are medium size cetaceans (4 to 13 m length).
- Have a pronounced beak in general.
- Relatively small dorsal fin set far back on the body.
- Small flippers that fit into depressions on the sides.
- A pair of converging grooves under the throat, with the notch is absent in the tail fluke.
- Not more than 1 or 2 pairs of exposed teeth in the lower jaw, found in males only.
- The blubber of these whales is predominantly composed of wax ester, which is a unique characteristic of this family.

- Body: Slender and relatively robust compared to other beaked whales.
- Head: Short relative to body size, with a poorly distinct beak.
- Forehead: Smoothly sloping, slightly concave in front of the blowhole.
- Coloration: Light rusty brown with a lighter area around the head.
- Mouth: Mouth line gently slopes upwards.
- Flippers: Small and rounded.
- Throat grooves: Single paired V-shaped throat grooves.
- Dorsal fin: Small falcate dorsal fin set near to the hind end of the body.
- Teeth: A single pair of teeth directed forward and upward at the tip of the lower jaw, exposed only in adult males.
- Maximum body length: 6 meters.
- IUCN status: Least Concern.

Indopacetus pacificus Longman's beaked whale



- Body: Large and robust.
- Head: Bulging foreheads and moderate tube beaks.
- Teeth: Beak with a single pair of oval teeth at the tip of the lower jaw.
- Dorsal fin: Large and falcate, located behind the midpoint of the body.
- Flukes: Broad with straight trailing edges.
- Flippers: Small and blunt.
- Throat grooves: A pair of V-shaped grooves on the throat.
- Coloration: Umber brown to bluish.
- Maximum size: 6 meters.
- IUCN status: Least Concern.

Key characteristics for identification of dolphins

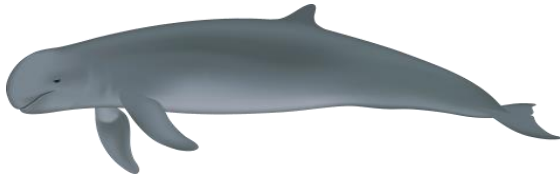
- Shape and location of dorsal fin.
- Shape of flipper.
- Shape of head.
- Colour and pattern of body.
- Teeth count.

Family: Delphinidae

- Delphinids range in size from 1 to 10 meters. Many small to medium sized odontocetes of various forms have been lumped together in this group, and so the family has been referred to as "taxonomic trash basket".
- Most delphinids share the following characteristics
 - Inhabit marine environments.
 - Typically have a noticeable beak.
 - Conical teeth.
 - A large falcate dorsal fin, which is set near the middle of the back.

Ziphius cavirostriscuvier, Cuvier 1823 -Cuvier's beaked whale

Orcaella brevirostris (Gray, 1866) Irrawaddy dolphin



- Body: Moderately robust.
- Head: Blunt and bulbous with no beak and a straight mouthline.
- Dorsal groove: Present between the neck and the falcate dorsal fin.
- Dorsal fin: Set just behind the midpoint of the body.
- Neck: Indistinct neck crease.
- Blowhole: U-shaped and open towards the front.
- Coloration: Gray on the dorsal and lateral sides with a white belly.
- Teeth: 8 to 19 pairs present in the upper jaw and 11-18 in the lower jaw.
- Maximum size: 2.4 meters.
- IUCN status: Endangered.

***Orcinus orca* (Linnaeus, 1758) - Killer whale**



- Body: Robust and spindle-shaped.
- Dorsal fin (Male): Very tall and straight, often erect or triangular.
- Dorsal fin (Female): Slightly shorter and falcate, with a pointed or round tip.
- Eye patches: White oval-shaped patches behind the eyes.
- Saddle patch: A light gray saddle patch behind the dorsal fin.
- Flipper: Large and oval-shaped with blunt tips.
- Coloration: Peculiar black and white coloration, including post-ocular patches, a white lower jaw, white ventrolateral field, and a light gray saddle patch behind the dorsal fin.
- Teeth: 10 to 14 pairs of large oval teeth in each jaw.
- Maximum body length: 8 meters.
- IUCN status: Data Deficient.

***Pseudorca crassidens* (Owen, 1846) False killer whale**



- Body: Long, slender, and cigar-shaped.
- Head: Rounded and overhanging melon with no discernible beak.
- Dorsal fin: Moderate height with a rounded tip.
- Flipper: Slightly curved with a distinct hump on the leading edge located near the midpoint of the back.
- Coloration: Predominantly dark grey or black.
- Teeth: 7 to 12 pairs of large teeth in each half of both jaws.
- Maximum body length: 6 meters.
- IUCN status: Near Threatened.

***Peponocephala electra* (Gray, 1846) Melon headed whale**



- Body: Moderately robust.
- Head: Triangular and sharply pointed bulbous.
- Beak: Extremely short and indistinct, may be present in younger animals.
- Cape: Faint cape that dips low below the tall and falcates dorsal fin.
- Lower jaw: Lip of the lower jaw is white.
- Coloration: Body is charcoal gray to black with a white urogenital patch.
- Teeth: 20-25 pairs of teeth per side of each jaw.
- Flippers: Sickle-shaped with sharply pointed tips.
- Maximum body length: 2.75 meters.
- IUCN status: Least Concern.

***Feresa attenuata* (J. E. Gray, 1874) Pygmy killer whale**



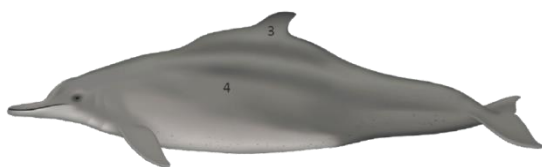
- Head: Short and rounded.
- Body coloration: Dark gray to black on the cape with a sharp change to lighter gray on the sides.
- White patches: White patches on the belly and lips of the jaw white.
- Dorsal fin: Rounded-tipped.
- Teeth: Higher teeth count, with approximately 48 teeth, consisting of 22 on the upper jaw and 26 on the lower jaw.
- IUCN status: Least Concern.

***Sousa chinensis* (Osbeck, 1765)** Indo-Pacific humpback dolphin



- Body: Robust, typically grey with bluish, cream, or pink tinge, and a light belly.
- Beak: Long and well-defined, with no distinct crease.
- Dorsal fin: Small and wide, based on a mid-dorsal hump.
- Dorsal ridge: Absent.
- Color change: Light-colored calves become grey or brown as adults.
- Teeth: 31-39 pairs in the upper jaw and 29-38 pairs in the lower jaw.
- Maximum size: Up to 2.5 meters.
- IUCN status: Vulnerable.

***Sousa plumbea* (G. Cuvier, 1829)** Indian Ocean humpback dolphin



- Body: Robust.
- Beak: Long and well-defined.
- Dorsal fin: Small, sits on a dorsal

hump.

- Color: Brown/grey, sometimes with white/pink on the dorsal fin.
- Teeth: Upper jaw has 33-39 teeth in each tooth row, while the lower jaw has 31-37 teeth.
- Maximum size: Up to 2.8 meters.
- IUCN status: Endangered.

***Steno bredanensis* (Lesson, 1828)** Rough toothed dolphin



- Body: Robust, dark grey to black above and white below, with many scratches and spots.
- Head: Long and conical.
- Beak: Long, with no distinct crease between the melon and the beak.
- Cape: Dark grey cape below the slightly falcate dorsal fin.
- Coloration: Belly, lips, and lower part are white with spots.
- Flippers: Very large and set farther back.
- Teeth: 19 to 28 slightly wrinkled teeth in each half of both jaws.
- Maximum body length: 2.5 meters.
- IUCN status: Least Concern.

***Grampus griseus* (Cuvier, 1812)** Risso's dolphin



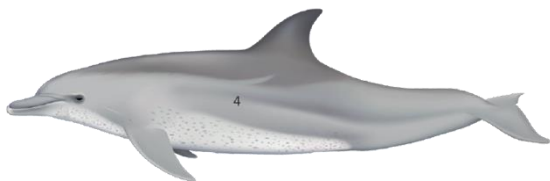
- Body: Robust.
- Head: Blunt head with no beak and a vertical crease on the front of the melon.
- Dorsal fin: Very tall, slender, and dark, falcate with a pointed tip.
- Mouthline: Slopes upwards.
- Teeth: 2 to 7 pairs of teeth at the front of the lower jaw only, with 1 to 2 pairs in the upper jaw. Teeth may be absent or extensively worn.
- Coloration: Body is grey to white, covered with scratches and splotches in adults, while young ones are relatively unmarked.
- Flippers: Long, pointed; sickle-shaped.
- Maximum body length: 3.8 meters.
- IUCN status: Least Concern.

***Globicephala macrorhynchus* Gray, 1846** Short-finned pilot whale



- Head: Bulbous and round, with sloping mouth lines and a short or no prominent beak.
- Flipper: Long and sickle-shaped.
- Teeth: 7 to 9 pairs of short, sharply pointed teeth present.
- Dorsal fin: Round and broad-based, situated near the fore end of the body.
- Coloration: Black in color with a white cape below the dorsal fin.
- Size: Adults grow up to 5 meters
- IUCN status: Least Concern.

***Tursiops aduncus* (Ehrenberg, 1833)** Indo-Pacific bottlenose dolphin



- Body: Moderately robust.
- Beak: Short, set off by a distinct crease.
- Dorsal fin: Tall, slightly falcate, and broader.

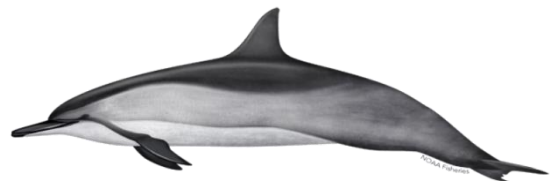
- Coloration: Gray body with a white belly. Prominent black spots or flecks on bellies.
- Teeth: 20 to 26 teeth in each half of the upper jaw, and 18 to 24 in the lower jaw.
- Maximum body length: Up to 2.7 meters.
- IUCN status: Near Threatened.

***Stenella attenuata* (Gray, 1846)** Pantropical spotted dolphin



- Body: Fairly slender.
- Beak: Long and slender, with a white tip separated from the melon by a distinct crease.
- Flipper: Slender and strongly curved.
- Stripe: Dark stripe from gape to flipper.
- Dorsal fin: Narrowly curved falcate dorsal fin with a pointed tip.
- Coloration: Body heavily spotted, with a dark grey band between the eye and the apex of the melon. Adults may have light to extensive spotting and grey bellies, with spotting sometimes absent.
- Teeth: 34 to 48 teeth in each jaw.
- Maximum size: 2.1 meters.
- IUCN status: Least Concern.

***Stenella longirostris* (Gray, 1828)** Spinner dolphin



- Body: Slender.
- Beak: Long and slender, with a black tip.

- Dorsal fin: Erect and triangular or slightly falcate, located in the mid-body region.
- Coloration: Dark grey cape followed by light grey sides and a white belly.
- Stripe: Dark strip present between the eye and the origin of the flipper.
- Teeth: 40 to 62 very fine, sharply pointed teeth per tooth row.
- Maximum size: 1.8 meters.
- IUCN status: Least Concern.

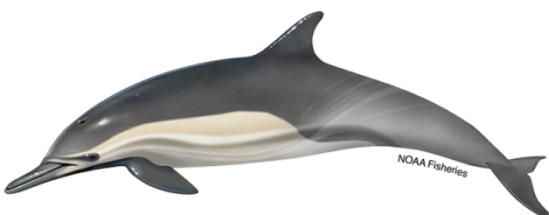
- Beak: Deep crease present between beak and melon.
- Dorsal fin: Tall and slightly falcate, with a distinctive V shape present below.
- Stripe: Extends from chin to origin of flipper.
- Flipper: Recurved and pointed at tips.
- Coloration: Dark back and white belly. Tan to buff thoracic patch and light grey streaked tail stock from an hourglass pattern that crosses below dorsal fin.
- Teeth: 47 to 67 sharp and pointed teeth in each jaw; palate with two deep longitudinal grooves.
- Maximum size: 2.4 meters.
- IUCN status: Data Deficient.

Stenella coeruleoalba (Meyan, 1833) Striped dolphin



- Snout: Moderate, black in color.
- Beak: Moderate length, with a distinct crease between the melon and beak.
- Stripes: Prominent dark stripes from the eye to the anus and from the eye to the flipper.
- Coloration: Black to dark grey on the back, white on the belly. Light grey spinal blaze extending to below the dorsal fin (not always present).
- Palatal grooves: Shallow palatal grooves are often present.
- Teeth: 40 to 50 pairs of slender and pointed teeth present in each jaw.
- Maximum size: 2.4 meters.
- IUCN status: Least Concern.

Delphinus capensis (Gray, 1828) Long-beaked common dolphin



- Rostrum: Elongated.

Family: Platanistidae

- Includes the extant susu and the bhulan of the Ganges and Indus rivers, respectively.
- Long forceps like beak, with front teeth that extend outside the closed mouth.
- Blowhole is a longitudinal slit.
- Instead of a true dorsal fin a short dorsal ridge is present.

Platanista gangetica (Roxburgh, 1801) Ganges River dolphin



- National aquatic animal.
- Body: Tan, chocolate brown, or light blue, with a lighter or pinkish belly.
- Blowhole: Slit-like, single blowhole.
- Beak: Long, with sharp and pointed teeth protruding outside the closed mouth at the front half.
- Teeth: 26 to 39 teeth in each row.
- Dorsal fin: Rectangular, ridge-like.
- Maximum size: Up to 2.5 meters.
- IUCN status: Endangered.

Family: Phocoenidae

- They are small cetaceans generally coastal in distribution with no prominent beak.
- Streamlined body and two limbs that are modified into flippers.
- Spade-shaped teeth distinguished from the conical teeth of dolphins.

- The Dorsal fin is either short and triangular or absent.
- These exhibit sexual dimorphism where the females are larger than males.

***Neophocaena phocaenoides* (Cuvier, 1829)** Finless porpoise



- Forehead: Round and rises steeply from the snout tip, devoid of a beak.
- Dorsal Fin: True dorsal fin is absent, replaced by a narrow dorsal ridge covered in thick skin bearing several lines of tiny tubercles.
- Bumps: Tiny bumps on the dorsal side behind the forehead.
- Body Color: Grey or black, with a lighter belly.
- Teeth: 15 to 22 teeth present in each jaw.
- Flipper: Large, with rounded tips.
- Fluke: Fluke with a concave trailing edge.
- Maximum Size: 1.7 meters.
- IUCN Status: Vulnerable.

Order: Sirenia

- These are herbivorous groups of marine mammals.
- Robust fusiform body with tough and thick skin bearing short hair.
- They have heavy bones that act as ballast to counteract the buoyancy of their blubber.
- 2 nostrils present on top or at the front of a thick muzzle.
- External ear pinnae are absent.
- Forelimbs modified as flippers and hind limbs are absent.
- Horizontally flattened tail; and dense and swollen bones.

Family: Dugongidae

- There is only one extant species in the family.
- Flattened tail is broadened into flukes which are similar to cetaceans.
- Rostrum is deflected downwards, with the presence of erupted tusks in males.
- Absence of nails on the flippers.

***Dugong dugon* (Muller, 1776)**

Sea cow or dugong



- Habitat: Found in the Indo-Pacific region.
- Body Shape: Streamlined body shape resembling cetaceans.
- Nostrils: Valve-like nostrils on top of the snout.
- Teeth: Incisors present in the form of tusks.
- Head: Muzzle deflected downward, ending in a "rostral disk" with short and dense bristles.
- Dorsal Fin: Absent.
- Skin: Smooth skin sprinkled with short hairs.
- Flippers: Paddle-shaped flippers containing no nails.
- Tail: Split into flukes, with a median notch; tail stock laterally compressed into a peduncle.
- Maximum Size: 3.3 meters.

IUCN Status: Vulnerable.

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