# MARINE MAMMALS

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**TECHNICAL TERMS** 

**GENERAL REMARKS** 

The term "marine mammals" does not stand for a single taxonomic unit, but merely covers all mammals that spend most or all of their time in a marine habitat (exclusive of a few fresh-water species). Marine mammals are placed in 4 orders, 3 of which are exclusively aquatic: the cetaceans or whales, dolphins, and porpoises (all in the order Cetacea), the sirenians or seacows (order Sirenia), and the pinnipeds or seals (order Pinnipedia). The fourth order (Carnivora), although mainly terrestrial, includes a smaller number of true marine mammals, such as the sea otter (*Enhydra lutris*) and the polar bear (*Ursus maritimus*).

In the Western Central Pacific, only the cetaceans with about 30 species and the sirenians with a single species are of relevance to fisheries. Pinnipeds and marine carnivores are not known from the area. The range of the only true tropical seal, the Hawaiian monk seal (*Monachus schauinslandi*), is relatively close to the area, but so far there are no reports of individuals that have been straying further away than 140 km from the Hawaiian Islands. Northern elephant seals (*Mirounga angustirostris*) were reported from the Midway Islands outside the area. Fisheries statistics are not available on marine mammals caught in the Western Central Pacific.

## KEY TO THE ORDERS OF MARINE MAMMALS OCCURRING IN THE AREA

- **1a.** Dorsal fin usually present (in the area, absent only in *Neophocaena phocaenoides* and *Physeter macrocephalus*); nasal opening(s) set back on top of head (except *P. macrocephalus*); mammary nipples located in urogenital area.....order Cetacea
- **1b.** Dorsal fin absent; nasal openings on top of snout; mammary nipples located near axillae **.... order Sirenia** 
  - (a single species, *Dugong dugon*, occurring in the area)

## LIST OF ORDERS, SUBORDERS, AND FAMILIES OCCURRING IN THE AREA

The symbol *signal is given when species accounts are included.* 

#### Order CETACEA: Whales, dolphins, and porpoises

#### Suborder MYSTICETI: Baleen whales

BALAENOPTERIDAE: Rorquals, finback whales

- Balaenoptera acutorostrata Lacepède, 1804 Minke whale
- 🔶 Balaenoptera borealis Lesson, 1828 Sei whale
- 🔶 Balaenoptera edeni Anderson, 1879 Bryde's whale
- Balaenoptera musculus (Linnaeus, 1758) Blue whale
- Fin whale (Linnaeus, 1758) Fin whale
- Megaptera novaeangliae (Borowski, 1781) Humpback whale

## Suborder ODONTOCETI: Toothed whales

#### PHYSETERIDAE: Sperm whale

Physeter macrocephalus Linnaeus, 1758 - Sperm whale
(= Physeter catodon Linnaeus, 1758)

- KOGIIDAE: Pygmy and dwarf sperm whales
- Kogia breviceps (de Blainville, 1838) Pygmy sperm whale
- Kogia simus (Owen, 1866) Dwarf sperm whale

#### ZIPHIIDAE: Beaked whales

- ← Hyperoodon sp.
- Mesoplodon densirostris (de Blainville, 1817) Blainville's beaked whale
- Mesoplodon ginkgodens Nishiwaki and Kamiya, 1958 Ginkgotoothed beaked whale
- Mesoplodon layardii (Gray, 1865) Straptoothed whale
- Mesoplodon pacificus Longman, 1926 Longman's beaked whale
- Ziphius cavirostris Cuvier, 1823 Cuvier's beaked whale

#### DELPHINIDAE: Marine or true dolphins

- Delphinus capensis Gray, 1828 Longbeaked common dolphin
- Delphinus delphis Linnaeus, 1758 Shortbeaked common dolphin
- Feresa attenuata Gray, 1875 Pygmy killer whale
- Globicephala macrorhynchus Gray, 1846 Shortfinned pilot whale
- Grampus griseus (Cuvier, 1812) Risso's dolphin
- Lagenodelphis hosei Fraser, 1956 Fraser's dolphin
- Orcaella brevirostris (Gray, 1866) Irrawaddy dolphin
- Orcinus orca (Linnaeus, 1758) Killer whale
- Peponocephala electra (Gray, 1846) Melonheaded whale
- Pseudorca crassidens (Owen, 1846) False killer whale
- Sousa chinensis (Osbeck, 1765) Indo-Pacific humpbacked dolphin

Stenella attenuata (Gray, 1846) - Pantropical spotted dolphin

- Stenella coeruleoalba (Meyen, 1833) - Striped dolphin

- Stenella longirostris (Gray, 1829) - Spinner dolphin

- Steno bredanensis (Lesson, 1828) - Roughtoothed dolphin

- Tursiops truncatus (Montagu, 1821) - Bottlenose dolphin

**PHOCOENIDAE:** Porpoises

- Neophocaena phocaenoides (Cuvier, 1829) - Finless porpoise

Order SIRENIA: Sirenians or seacows

#### DUGONGIDAE: Dugong

- Dugong dugon (Müller, 1776) - Dugong

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## **Class MAMMALIA**

#### **Order CETACEA**

#### Whales, dolphins, and porpoises

The order Cetacea (whales, dolphins, and porpoises) comprises 80 species worldwide, about 30 of which occur in the Western Central Pacific. Cetaceans are found in coastal and estuarine waters down to a depth of 50 m, in shore waters (50 to 200 m), and offshore waters (deeper than 200 m). They are fully adapted to the aquatic environment and have developed a fusiform body shape. There are no external ears. The hind limbs are reduced and only vestiges of them are found inside the body, and some species even have lost them completely. The front limbs are transformed into flippers. Cetaceans have lost their ancestral fur except for a few single hairs or fringes of hair found on the upper lip; in some species these hairs are only present in fetuses. Most species possess a single dorsal fin, while others either lack it completely or possess a series of bumps. The sex is easily determined by the relative position of the genital slit to the anus: both are more widely separated in males, but placed close together in females. In females, additionally 2 mammary slits are found, 1 each side of the genital slit.

Depending on the species, adult size ranges from 1.5 to 33 m body length. Species with a length of more than 10 m are defined as large species, those attaining lengths between 4 and 10 m medium-sized, and species less than 4 m are considered small species. Most of the large species are found in the suborder Mysticeti (baleen whales), while all the small species, along with a number of medium-sized and a few large representatives, are found in the suborder Odontoceti (toothed whales). Cetaceans prey on crustaceans, squids, fish, birds, pinnipeds, and other cetaceans. The present contribution covers species encountered all year round or seasonally in the Western Central Pacific. Rare stragglers, mainly temperate-water species, have been omitted.

#### Key to the suborders of Cetacea

- 1b. Double blowhole; baleens present; teeth absent (Fig. 2) ..... suborder Mysticeti



Fig. 1 toothed whale

Fig. 2 baleen whale

Suborder MYSTICETI

#### **Baleen whales**

The suborder Mysticeti includes 11 species worldwide, 6 of which occur in the Western Central Pacific. Baleen whales have a double blowhole. They possess baleens and lack teeth. Females are larger than males. There are 4 families of which only a single one, the finback whales or rorquals (Balaenopteridae), occurs regularly in the area. Gray whales (Eschrichtidae) and right whales (Balaenidae) have been reported to stray into waters of Taiwan Province of China and may very infrequently occur in the area, but are not treated further here. The poorly known pygmy right whale (*Caperea marginata*, family Neobalaenidae) is a temperate species of the southern hemisphere that may stray into the area as well.



## BALAENOPTERIDAE

#### Rorquals, finback whales

Diagnostic of this family is the presence of a series of ventral grooves, that enable them to gulp in enormous amounts of water. A well-defined dorsal fin is usually present behind the midpoint of the back. The shape and height of the "blow" (i.e. spout of water vapor) and the surface and dive profiles are important for species identification in the field. As a rule, rorquals are migratory animals with poleward, feeding-area bound migrations in spring, and equatorward, breeding-area bound migrations in autumn. The species can probably be encountered all year round, with northern and southern hemisphere stocks occurring at different times of the year. Bryde's whale (*Balaenoptera edeni*) with less pronounced migrations is an exception to this rule; it may stay all year round in subtropical or tropical waters. Dwarf forms of minke whales (*B. acutorostrata*) and blue whales (*B. musculus*) have been described from the southern hemisphere, and dwarf forms of Bryde's whale are known from Southeast Asia, their taxonomical status still being unsettled. Hybrids are known between blue whales and fin whales.

## Key to the species of Balaenopteridae occurring in the area

Note: for species identification, see also Figs 4 and 5 on the following pages.

- 2a. Three prominent ridges on top of head (Fig. 2a) . . . . . . . . Balaenoptera edeni (Bryde's whale)
- **2b.** A single prominent ridge (Fig. 2b)  $\ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \rightarrow 3$



Fig. 1 Megaptera novaeangliae

Fig. 2 dorsal view of head

**3a.** Ventral grooves ending before navel (Fig. 3a).  $\cdots \cdots \rightarrow 4$ **3b.** Ventral grooves ending at or after navel (Fig. 3b).  $\cdots \cdots \cdots \cdots \cdots \cdots \cdots \cdots \cdots \cdots \rightarrow 5$ 



Fig. 3

## List of species occurring in the area

The symbol *is* given when species accounts are included.

- Balaenoptera acutorostrata Lacepède, 1804
- Balaenoptera borealis Lesson, 1828
- 🔶 Balaenoptera edeni Anderson, 1879
- Balaenoptera musculus (Linnaeus, 1758)
- Balaenoptera physalus (Linnaeus, 1758)
- Megaptera novaeangliae (Borowski, 1781)



Fig. 4 surfacing characteristics of large whales with a dorsal fin occurring in the area note: except for the sperm whale, all species depicted are members of the Balaenopteridae

(after Foster in Leatherwood et al., 1982)



Fig. 5 lateral and dorsal views of heads of the balaenopterid species occurring in the area (after Foster in Leatherwood et al., 1982)

## Balaenoptera acutorostrata Lacepède, 1804

#### En - Minke whale; Fr - Petit rorqual; Sp - Rorcual enano.

A medium-sized whale; body length ranges from 2.4 (new-born) to 9 m. Baleens 231 to 360, white to grey, to 28 cm in length. Ventral grooves 30 to 70, reaching navel. Coloration dark grey on back, white on belly; centre of back often of lighter colour; a white patch in middle of external flipper area (absent in southern-hemisphere individuals). Head strongly pointed. Dorsal fin comparatively large and falcate, the fin insertion at about 2/3 of the way back from snout tip. Spout inconspicuous, often not visible. Worldwide distributed in coastal, inshore, and offshore waters. Distribution in the area poorly documented, due to confusion with the small form of Bryde's whale.





## Balaenoptera borealis Lesson, 1828



## En - Sei whale; Fr - Rorqual de Rudolphi; Sp - Rorcual del norte.

A large whale; body length ranges from 4.5 (new-born) to 18 m. Baleens 219 to 402, colour black, to 80 cm in length, with very fine fringes. Ventral grooves 32 to 60, ending far before navel. Body dark grey overall. Dorsal fin falcate, rising with steep angle from the back, the fin insertion at about 2/3 of the way back from snout tip. Flukes not frequently visible above water. Spout about 3 m in height. Worldwide distributed, but rarely seen in coastal areas. The southern-hemisphere form (*Balaenoptera borealis schlegelii*) was described from Java.



## Balaenoptera edeni Anderson, 1879



En - Bryde's whale; Fr - Rorqual de Bryde; Sp - Rorcual tropical.

A large whale; body length ranges from 4 (new-born) to 15.5 m. Baleens 250 to 370, colour grey, to 50 cm in length; ventral grooves 40 to 70, reaching navel. Body coloration grey-blue overall. Easily distinguished by presence of 3 ridges on head. Dorsal fin rising in a steep angle from the back (as in the sei whale). Flukes not frequently visible above water. No prominent spout visible, as the species tends to exhale under water. Worldwide distributed in subtropical and tropical waters. A small form known from Southeast Asian waters often misidentified as a minke whale.





MIW



## Balaenoptera musculus (Linnaeus, 1758)

#### En - Blue whale; Fr - Rorqual bleu; Sp - Ballena azul.

A large whale; body length ranges from 7 (new-born) to 33 m. Baleens 270 to 395, colour black, to 1 m in length. Ventral grooves 55 to 88, reaching navel. Head U-shaped in dorsal view. Body blue-grey overall. Dorsal fin very small, its insertion at about 3/4 of the way back from snout tip. Flukes quite often visible above water, with straight trailing edge. Spout about 9 m in height. Worldwide distributed. A smaller form with a relatively larger head has been described from the southern oceans.



## Balaenoptera physalus (Linnaeus, 1758)



HUW

En - Fin whale; Fr - Rorqual commun; Sp - Rorcual común.

A large whale; body length ranges from 6 (new-born) to 27 m. Baleens 260 to 480, grey and yellow in colour, to 90 cm in length, those in anteriormost part of right side usually with lighter coloration. Ventral grooves 50 to 100, reaching navel. Coloration black-grey on back, white on belly. Head more pointed than in blue whales, with asymmetrical coloration (right side white); top of head with white chevron markings. Dorsal fin larger and placed more anteriorly than in blue whales; rising in a shallow angle in contrast to the sei whale and Bryde's whale. Flukes not frequently visible above water. Spout 4 to 6 m in height. The fastest swimming whale in the family, reaching 37 km/h. Worldwide distributed, sometimes found in coastal waters.





Megaptera novaeangliae (Borowski, 1781)

En - Humpback whale: Fr - Baleine à bosse: Sp - Rorcual jorobado.

A large whale; body length ranges from 4.5 (new-born) to 16 m. Baleens 231 to 360, black in colour, to 60 cm in length. Ventral grooves 14 to 35, reaching to at least navel. Coloration dark grey to black on back, white on belly. Flippers very long, ranging in colour from all black to all white. Dorsal fin highly variable in shape, often "humped", with a series of bumps behind fin. Flukes frequently exposed above water, with serrated trailing edge (in contrast to the blue whale), and exhibiting a coloration pattern well suitable for photo-identification. Spout bushy, up to 3 m in height. Worldwide distributed.



## **Suborder ODONTOCETI**

#### **Toothed whales**

The suborder Odontoceti includes a small number of large species and all small cetaceans (worldwide about 70 species, about 26 in the area). All odontocetes possess teeth, but their number varies considerably and can be much reduced. In some species the teeth only erupt in males. The tooth wear reflects the diet of the species. For instance, squid-feeding species tend to have fewer teeth, while fish-feeding species possess many needle-shaped teeth. Carnivorous or falcultative carnivorous species have large and strong teeth. The number of teeth is given as the number present on each side of upper and lower jaws. Odontocetes possess a single blowhole. As a general rule, males are larger than females, but there are several exceptions. Nine families are recognized, of which 3 are only found in rivers (Platanistidae, Iniidae, and Pontoporidae). There is also a single arctic family, the Monodontidae. Representatives of the remaining 5 families occur in the Western Central Pacific.





Fig. 3 Kogiidae



Physeter macrocephalus Linnaeus, 1758

SPW

En - Sperm whale; Fr - Chachalot; Sp - Cachalote.

A large cetacean; body length ranges from 3.5 (new-born) to 12 (females) and 18 m (males). Head large, square-shaped; skin rippled. No dorsal fin, but a series of humps. Each side of lower jaw with 19 to 22 teeth which fit into holes in upper jaw; upper jaw with highly curved, vestigal teeth. Body black, with white areas around mouth and genital area. Parallel throat grooves present just behind base of lower jaw. Flukes frequently visible above water. The spout is highly diagnostic, directed forward (45°). Cosmopolitan in distribution, found mainly over deep water; males range into temperate and arctic waters of both northern and southern hemispheres.





# KOGIIDAE

#### Pygmy and dwarf sperm whales

hese are small whales with some resemblance to the sperm whales, but with well-defined dorsal fins. They have a "shark-like" appearance, with the upper jaw protruding far over the lower jaw and the presence of a single false "gill aperture" (resembling a bracket) on each flank.

## Key to the species of Kogiidae occurring in the area

- **1a.** Adult size larger than 2.7 m; dorsal fin small (less than 5% of body length), placed on
- **1b.** Adult size smaller than 2.7 m; dorsal fin larger (more than 5% of body length), generally

#### List of species occurring in the area

The symbol *is given when species accounts are included.* 

- Kogia breviceps (de Blainville, 1838)
- Kogia simus (Owen, 1866)

Kogia breviceps (de Blainville, 1838)

**En** - Pygmy sperm whale; **Fr** - Cachalot pygmée; **Sp** - Cachalote pigmeo.

A small cetacean; body length ranges from 1.2 (new-born) to 3.4 m. Usually no teeth in upper jaw, 10 to 16 pairs in lower jaw. Dorsal fin small, set far behind on back (about 2/3 distance from snout). Coloration dark grey on back and flanks; belly white; a white bracket mark just behind eye. Subtropical and tropical in distribution, found in offshore waters.



Kogia simus (Owen, 1866)

A small cetacean; body length ranges from 1 (new born) to 2.7 m. Teeth sometimes present in upper jaw, usually 8 to 11 pairs in lower jaw. Dorsal fin larger than in Kogia breviceps and set on centre

of back. Coloration varies between different shades of grey, darkest on back and upper flanks and lighter on lower flanks; belly white; a whitish bracket mark just behind eye. Tropical and subtropical in distribution, found in offshore waters.









4021

**PYW** 

DWW

# ZIPHIIDAE

#### **Beaked whales**

Medium-sized cetaceans. Some species have pronounced beaks and may superficially resemble true dolphins (Delphinidae), but they are readily identified as ziphilds by the low number of teeth. There are usually only 1 or 2 teeth on each side of the lower jaw (erupting only in males). The position of the teeth is of high diagnostic value. In contrast to all other whale families there is no fluke notch. Two posteriorly diverging grooves are present on the throat. The flippers are very small relative to the body size and compared to other cetaceans. Adult males often exhibit plenty of scars on the flanks that originate from intermale fights. Beaked whales are oceanic squid feeders. Much of our limited knowledge on ziphilds is based on stranded specimens. The taxonomy and number of species in this family is still uncertain and at least 2 new species await formal description. Accurate species identification frequently requires examination of the skull. Therefore, beaked whales should preferably be examined by an expert, or material collected for examination.



#### Key to the species of Mesoplodon occurring in the area

Note: this key is provisional and only applies to adult males. Thirteen species are presently included in this genus; the distribution for many of them is insufficiently known and mainly based on stranded specimens. All members of this genus have well-defined beaks and 2 teeth in the lower jaw. In many cases, accurate species identification is impossible unless the skull is available. For some species the coloration of young animals and females is unknown. The species here included were selected according to their known range. However, at the present poor state of knowledge it cannot be excluded that other members of the genus occur in or may stray into the area.

1a. 1b.	Teeth placed on tip of low Teeth in middle of lower ja	er jaw (Fig. 4a) aw (Fig. 4b)	Mesoplodon pacific	<i>us</i> (Longman's l	beaked whale) $\ldots \rightarrow 2$
2a. 2b.	Gape straight (Fig. 5a) . Gape curved (Fig. 5b) .		. Mesoplodon layardı	ii (straptoothed $1$	beaked whale) $\ldots \rightarrow 3$
teeth lov	on tip of ver jaw	teeth in middle of lower jaw	gape straight	gape curved	۲
а	) dorsal view of mandible b) Fig. 4	lateral view of mandible	a)	Fig. 5	b)

3a.	Teeth barely visible	Mesoplodon gingkodens (gingkotoothed beaked whale)
3b.	Teeth clearly visible	Mesoplodon densirostris (Blainville's beaked whale)

#### List of species occurring in the area

The symbol *signal is given when species accounts are included.* 

- Hyperoodon sp.
- Mesoplodon densirostris (de Blainville, 1817)
- Mesoplodon ginkgodens Nishiwaki and Kamiya, 1958
- 📥 Mesoplodon layardii (Gray, 1865)
- Mesoplodon pacificus Longman, 1926
- 📥 Ziphius cavirostris Cuvier, 1823

## Hyperoodon sp.

An unidentified representative of *Hyperoodon* occurs in the area. As no specimens of this species have been examined so far, a generalized description of the genus is given here: size estimates range from 4 to 9 m body length; size at birth unknown. Head bulbous with pronounced beak, especially in males. The species is believed to occur in the equatorial waters of the Indo-Pacific. Reliable sightings within the area from Indonesian waters. Considered to be conspecific with *Mesoplodon pacificus* by some authors.



## Mesoplodon densirostris (de Blainville, 1817)



En - Blainville's beaked whale; Fr - Balaine à bec de Blainville; Sp - Zifio de Blainville.

A medium-sized whale; body length ranges from 2 (new-born) to 4.7 m (both sexes). Gape of mouth highly curved, especially in old males. A single tooth in the middle of each side of lower jaw (teeth well visible in adult males and sometimes facilitate identification in the field). Coloration of adults blue-grey on back and flanks, and white on belly; white spots and scars usually present in adult individuals; coloration of juveniles unknown. Distributed in deeper offshore waters of all oceans except polar regions.



skull

## Mesoplodon ginkgodens Nishiwaki and Kamiya, 1958



En - Ginkgotoothed beaked whale; Fr - Balaine à bec de Nishiwaki; Sp - Zifio Japonés.

A medium-sized whale; body length ranges from 2 (new-born) to 4.9 m (both sexes). Gape slightly curved. Teeth just barely visible in adult males. Coloration of adults dark grey, sometimes with light spots on back and flanks: belly white: females tend to be lighter in coloration than males: iuvenile coloration not known. Less scars present than in other members of the genus. Known distribution includes the northern Pacific and tropical Indo-Pacific; may occur throughout the area.



skull

## Mesoplodon layardii (Gray, 1865)

TSW

En - Straptoothed whale; Fr - Balaine à bec de Layard; Sp - Zifio de Layard.

A medium-sized whale; body length ranges from 3 (new-born) to about 6 m (both sexes). Gape of mouth straight. Teeth are long and strap-shaped in males (teeth are visible and may facilitate identification in the field). Coloration dark grey or black on back and flanks; belly white; a white band around head. Known to occur in all southern oceans; may enter the southernmost part of the area.

