

CCAMLR protocols for pinniped identification, sexing, and length measurement



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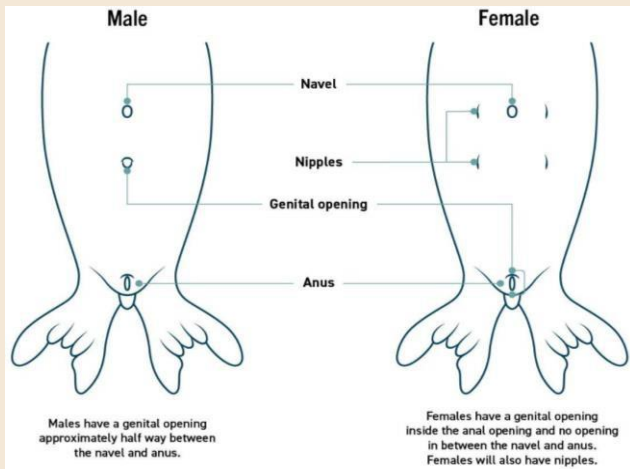
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Introduction

The CCAMLR pinniped identification guide was developed with the assistance of Members of the U.S. and New Zealand delegations and was presented and endorsed by the Working Group on Incidental Mortality Associated with Fishing in 2024 ([WG-FSA-IMAF-2024/76](#)). The guide contains information on how to sex and measure pinnipeds, identify Antarctic pinniped species, and information on safety around pinnipeds when encountered on fishing vessels. Feedback on the guide can be sent to the CCAMLR Secretariat (ccamlr@ccamlr.org).

Sexing pinnipeds

Sexing pinnipeds is sometimes only possible by examining the genital region. Do not attempt this on live animals. Use other cues such as size, colour, and the presence of mane. If unsure, the best thing to do is to take a picture of the navel and genital area and directly between the flippers, and record the sex as 'unknown' or 'unidentified'. This way marine mammal ID experts can confirm or amend your classification made at sea.



Sexing pinnipeds image. Source: New Zealand Department of Conservation and Ministry for Primary Industries

If the genital opening is located right above the hind flippers, then it is a female, but if the animal has two openings higher up, then it's a male.

Both males and females have an anal opening near the base of the tail. They also both have an umbilical scar (navel) near the base of the ribs which will be a small, depressed area.

If there is a genital opening halfway between the anus and navel (which would be a depressed area of wrinkled and hairless skin) then it is a male.

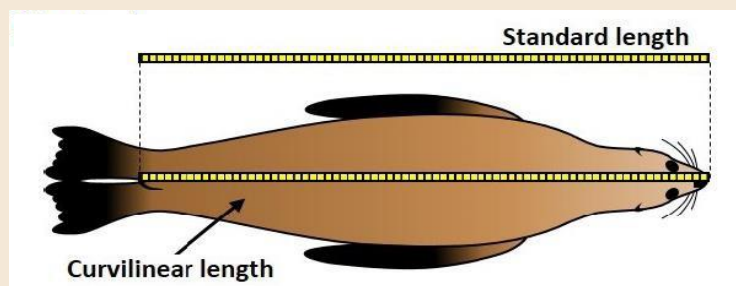
Females have a genital opening inside the anal opening which may be seen by pulling apart the hind flippers.

Measurements of Pinnipeds

There are two acceptable ways to measure a pinniped.

Standard length: Measure in a straight line from the tip of the snout or rostrum to the tip of the tail flesh or tail notch on the unskinned body, belly up, ideally with the head and vertebral column on a straight line. Record your measurement to the nearest centimetre.

Curvilinear length: Shortest surface distance from the tip of the snout or rostrum to the tip of the tail or tail notch along the back, belly, or side. This method is used if rigor has set in or the animal is too large or deteriorated to manoeuvre. Record your measurement to the nearest centimetre.



Pinniped measurement image. Source: NOAA

Safety around Pinnipeds

No attempt should be made by an Observer to approach a live seal as these animals are surprisingly agile on a trawl deck. They can inflict a serious bite and can become aggressive if they perceive that their means of escape from the vessel is blocked in any way. Returning these animals to the sea should be left to the deck crew.

Seals hooked in the course of long-line fishing should ideally be released with dehooking devices, or otherwise released by cutting the snood as close to the animal as possible.

Antarctic fur seal *Arctocephalus gazella*

CCAMLR species code: SEA



Images: Example of measurements of female Antarctic fur seal (above). Credit: MRAG Ltd.

- Eared seal - Long, prominent external ears (pinnae).
- Moderately pointed muzzle, the nose does not extend much past the mouth, and the nostrils point ahead.
- Long and creamy white whiskers. On adult males reaching 35-50 cm (longest on any pinnipeds).
- The fore flippers are about one-third of the standard length and hind flippers slightly more than one-fourth.

Colouration: Adult males have grey-brown to dark brown fur, with lighter underfur in their mane. Adult females and juveniles range from grey to brown with pale tan fur ventrally, and sometimes around the muzzle. Pups are born with mostly black fur with light grey bellies, after the first month, they lose the lanugo progressively to a silver coat.

Size: Adult males up to 2 m long weighing between 110 to 230 kg, and females 1.4 m and 22 to 51 kg. Any male measured less than 1.5 m, or animal of either sex measured less than 1.1 m should be classified as juvenile. Any animal measuring less than 100 cm classified as yearling.

Antarctic distribution / habitat: At sea, using large regions of the Southern Ocean and sea ice. On land, they prefer rocky areas, but they will come ashore on sandy beaches and even move higher up into tussock grass.



Male adult size: 1.6 to 2 m long and between 130 to 200 kg

Male colour: grey-brown to dark brown fur, with lighter underfur in their mane

Other morphologic differences: creamy white whiskers reaching 35-50 cm.

Image: Renato Borrás-Chavez



Female adult size: 1.2 to 1.4 m and 22 to 51 kg

Female colour: females and juveniles range from grey to brown with pale tan fur ventrally.

Image: Sergio Morales. U.S. AMLR photos taken in accordance with Marine Mammal Protection Act permit Nos. 20599 and 25786

Southern elephant seal *Mirounga leonina*

CCAMLR species code: SES



Image Sam Woodman. U.S. AMLR photos taken in accordance with Marine Mammal Protection Act permit Nos. 20599 and 25786.

- True seal – No external ears (pinnae) present
- Adult males are unmistakable due to the inflatable proboscis (snout) which is thought to increase the effectiveness of the bull elephant seal's roar.
- Adult females and subadults of both sexes do not have a proboscis, but rather a short nose and muzzle which with their very wide head gives them a somewhat "pug" appearance.

Colouration: they are dark grey immediately after moulting, fading through the year to a rust greyish brown.

Size: the southern elephant seal is the largest species of seal in the world, up to 5.5m.

Antarctic distribution / habitat: nearly circumpolar distribution in the Southern Ocean. While most haulout sites are on Subantarctic and Antarctic islands. They forage at sea between about 40° south and the Antarctic Continent.



Male adult size: 4-5 m long and 1,600 to 3,600 kg.

Male colour: dark grey immediately after moulting, fading through the year to a rust greyish brown.

Other morphologic differences: males are unmistakable due to the inflatable proboscis (snout).

Image: Michelle Goh. U.S. AMLR photos taken in accordance with Marine Mammal Protection Act permit Nos. 20599 and 25786.



Female adult size: 2–3 m and 400-800 kg.

Female colour: dark grey immediately after moulting, fading through the year to a rust greyish brown.

Crabeater seal *Lobodon carcinophagus*

CCAMLR species code: SET



Image: Jefferson Hinkle. U.S. AMLR photos taken in accordance with Marine Mammal Protection Act permit Nos. 20599 and 25786.

- True seal – No external ears (pinnae) present
- No distinctive differences, at first sight, between males and females
- The head and muzzle are moderately long and thin relative to overall size, with muzzle scooping slightly upward. Nostrils are on top of muzzle. Pale to clear, short whiskers. Foreflippers are long, oar shaped and pointed.
- Many crabeaters bear long scars, either singly or as a parallel pair, presumably attributable to attacks by leopard seals.

Colouration: fur colour ranges from dark brown to blonde, becoming lighter in the summer. Pups have a soft woolly coat that is greyish-brown in colour and has been described as light, milk coffee brown, with darker colouring on the flippers.

Size: adult male and females are similar in size, up to 2.6 m in length and weighing an estimated 200 to 300 kg.

Antarctic distribution / habitat: Distribution tied to seasonal fluctuations of the pack ice, as far south as the Bay of Whales (Lindsey 1938), during late summer ice break-up. They are frequently encountered alone or in small groups of up to three on the ice or in the water. Foraging occurs primarily at night (Bengtson and Stewart 1992).

Similar Species: can be confused with leopard seals, Weddell seals and juvenile elephant seals. Teeth inspection in dead animals is recommended.



Male and female adult size: 2 to 2.6 m in length and weighing an estimated 200 to 300 kg. See sexing section.

Male and female colour: from dark brown to blonde, becoming lighter in the summer.

Image: Renato Borrás-Chavez



Other morphologic differences: Crabeater seals have specially adapted teeth. Post-canines have more than three cusps. The interlocking teeth act as a sieve, allowing them to filter krill from the water.

Image Crabeater Seal, *Lobodon carcinophaga* (Hombron and Jacquinot, 1842), collected 1 April 1916, Petone, New Zealand. Gift of Wellington Zoo, 1916. CC BY 4.0. Te Papa (MM000387)

Weddell seal *Leptonychotes weddellii*

CCAMLR species code: SLW



Image Sam Woodman. U.S. AMLR photos taken in accordance with Marine Mammal Protection Act permit Nos. 20599 and 25786.

- True seal – No external ears (pinnae) present
- No distinctive differences, at first sight, between males and females
- The head is small relative to body size. A very short, blunt muzzle, large eyes and upturned mouth line contribute to a cat-like appearance.
- Thick, long, dense whiskers compared to other Antarctic seals. Long and generally rounded body, with proportionally short fore flippers.

Colouration: fur is generally a dappled grey to brown with pale patches on the back, and a silvery-white underbelly. The muzzle is usually pale. Pups have a woolly silver-grey coat, with a darker swatch along the midline of the back. They shed the lanugo for the adult pelage in 1 to 4 weeks.

Size: adult males reach up to 2.5-2.9 m long, and females up to 3.3 m. Adults weigh up to 400 – 600 kg. Females are longer and heavier than males, but not by enough to distinguish the sexes. Newborns are 1.2-1.5m long and 22-29 kg.

Antarctic distribution / habitat: Circumpolar and widespread in the Southern Ocean. Occur in large numbers on fast ice, right up to the shoreline of the Antarctic continent. They also occur offshore in the pack ice zone north to the seasonally shifting limits of the Antarctic Convergence. A small population lives all year on South Georgia. Weddell Seals are present at many islands along the Antarctic Peninsula that are seasonally ice-free.

Similar Species: Ross and crabeater seals are the most similar. Note the proportionately larger and wider neck and head, and stripes of the Ross seal; and for the other species, characteristics of the muzzle, head, neck, colour pattern, flippers, and vibrissae. Smearred pale spots are similar to leopard seals, however Weddell seals can be differentiated by a blunt muzzle.



Image Sam Woodman. U.S. AMLR photos taken in accordance with Marine Mammal Protection Act permit Nos. 20599 and 25786.

Male and female adult size: adult males up to 2.9 m long; females 3.3 m. Adults weigh up to 400 – 600 kg.

Male and female colour: fur is generally a dappled grey to brown with pale patches on the back, and a silvery-white underbelly. The muzzle is usually pale.

Pups have a woolly silver-grey coat, with a darker swatch along the midline of the back. They shed the lanugo for the adult pelage in 1 to 4 weeks.

Other morphologic differences: Female are bigger, but not significantly to be used for sexing.

Leopard seal *Hydrurga leptonyx*

CCAMLR species code: SLP



Image: Douglas Krause. U.S. AMLR photos taken in accordance with Marine Mammal Protection Act permit Nos. 20599 and 25786.

- True seal – No external ears (pinnae) present
- No distinctive differences, at first sight, between males and females
- Disproportionately large head, massive jaws and gape give a serpentine appearance
- Long slim body and proportionately large foreflippers
- Whiskers are clear to pale, thin, and generally quite short

Colouration: shades from almost black to almost blue on the flanks. The muzzle, throat and belly are light grey scattered with dark grey and black spots. The demarcation between dorsal and ventral colouration is distinct but diffuse. Pup appearance is very similar to that of the adults.

Size: Adults typically reach 3 m and weigh between 300 and 450 kg, however they are reverse sexually dimorphic and the larger females may reach 3.6 m and 600kg. Pups are born at about 1 to 1.6 m and weigh around 30 to 35 kg.

Antarctic distribution / habitat: widely distributed in the polar and subpolar waters of the Southern Hemisphere. They are found throughout the pack ice zone, where their abundance is greatest. They haul-out on ice and land, often preferring ice floes, when available.

Similar Species: when seen well, leopard seals are unmistakable. At a distance, however, they might be confused with crabeater or Weddell seals. To rule out other species, note head size and shape, overall coloration and length of foreflippers.



Image: Douglas Krause. U.S. AMLR photos taken in accordance with Marine Mammal Protection Act permit Nos. 20599 and 25786.

Male and female adult size: females can be up to 50% larger than males. Adult female, generally 454±59 kg, and 302±11 cm; adult males 302±22 kg, and 276±11 cm.

Male and female colour: similar colouration. Shades from almost black to almost blue on the flanks. The muzzle, throat and belly are light grey scattered with dark grey and black spots.

Other morphologic differences: the species presents female biased size dimorphism, females can be up to 50% larger than males.

Ross seal *Ommatophoca rossii*

CCAMLR species code: SRS



Image: Yannick Kern

- True seal – No external ears (pinnae) present
- Ross seals are the smallest, least frequently sighted and least known of the Antarctic pinnipeds.
- A relatively short and wide head, with disproportionately large eyes. The muzzle is short and wide with a blunt end.
- Small number of whiskers, that are short and slender.

Colouration: adults are dark grey above and silvery below. Spots and streaks frequently mark the head, neck and flank. In summer, unmoulted seals are tan to brownish.

Size: adults reach around 2.4 m and can weigh around 204 kg. Females are slightly larger than males. Newborn pups are about 1 m and weigh 16 kg.

Antarctic distribution / habitat: circumpolar distribution in the Antarctic, and usually found in dense consolidated pack ice, but can also be found on smooth ice floes in more open areas.

Similar Species: Weddell seal is most similar in appearance, however Ross seals are much smaller, and have a wider head and relatively thicker neck (with streaks).



Image: Mia Wege. University of Canterbury. New Zealand.

Male and female adult size: Adult male generally 1.7-2.1m in length and 130-215kg; females, larger, 2-2.4m and 160-200kg.

Male and female colour: adults are dark grey above and silvery below. Spots and streaks frequently mark the head, neck and flank. In summer, unmoulted seals are tan to brownish.

Other morphologic differences: females are slightly bigger than males, but sexing protocols might be required for confirmation.