



# Guidelines for evaluating hailed out seals

Department of Planning and Environment



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Cover photo: Australian fur seal (*Arctocephalus pusillus doriferus*). Shona Lorigan/DPE

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# 1. Introduction

## Purpose

The purpose of this document is to provide licensed wildlife rehabilitators and NSW National Parks and Wildlife Service (NPWS) staff with best practice guidelines for evaluating seals in line with the *Code of practice for injured, sick and orphaned marine mammals* (the Marine Mammal Code) and the *Marine Wildlife Management Manual*.

Understanding that each case is different and should be assessed individually, this document aims to provide guidance on assessment and evaluation of seals that are encountered in New South Wales.

Seals leave the water and come ashore (known as hauling out) for a number of reasons, including to rest, recuperate and to give birth. Hauling out is a natural behaviour for seals, and it is important to observe the seal before deciding whether further action is required. Seals have excellent recuperative abilities and sometimes, intervention may cause more harm than good.

Taking detailed notes on both the animal's condition and observed behaviours will provide NPWS and the marine mammal veterinarians advising them, with the best information to determine whether intervention is required and if so, the best way to intervene to minimise stress to the seal.

## Seal evaluation is important

Each year there are many seals that move up and down the coastline hauling out in a range of different locations. The information provided in a detailed evaluation is critical in tracking their condition over time.

Seals are one of the more easily accessible and readily available marine mammals to assist scientists in understanding the marine environment. Research has focused on abundance estimates as well as fur seal behaviours such as foraging strategies, habitat selection and breeding behaviours; however, there is little data on the health of fur seals in New South Wales. There is a clear gap in knowledge about the threats to fur seal populations from disease, pollution and poor water quality. Detailed evaluation records of hauled out seals can potentially address these key knowledge gaps and evidence-based management decisions can be developed to inform marine environment stewardship, coastal land use and species conservation.

Further, results will help inform clinical approaches to managing seals presenting to wildlife rehabilitation facilities and provide science-based support for decisions on intervention, rehabilitation and management of wild individuals and populations.

## Seal species encountered in New South Wales

Two species of fur seals are resident in New South Wales, the Australian fur seal (*Arctocephalus pusillus doriferus*) and the New Zealand fur seal (*Arctocephalus forsteri*), which is also known as the long-nosed fur seal. Each year several other seal species are also encountered; some have travelled from other areas in Australia, such as the Australian sea lion (*Neophoca cinerea*), while others have travelled long distances from Antarctic waters, such as the leopard seal, subantarctic fur seal, southern elephant seal, and crabeater seal. Table 1 provides a list of the 7 seal species encountered in New South Wales and an indication of their frequency. Appendix B has photos of these species.

**Table 1 Seal species encountered in New South Wales**

Species	Scientific name	Antarctic species or endemic	Frequency
<b>Family Otariidae – fur seals and sea lions</b>			
Australian fur seal	<i>Arctocephalus pusillus doriferus</i>	Endemic	Resident
New Zealand fur seal	<i>Arctocephalus forsteri</i>	Endemic	Resident
Subantarctic fur seal	<i>Arctocephalus tropicalis</i>	Antarctic	Few each year
Australian sea lion	<i>Neophoca cinerea</i>	Endemic	Rarely seen
<b>Family Phocidae – true seals</b>			
Leopard seal	<i>Hydrurga leptonyx</i>	Antarctic	Few each year
Crabeater seal	<i>Lobodon carcnophaga</i>	Antarctic	Rarely seen
Southern elephant seal	<i>Mirouga leonina</i>	Antarctic	Rarely seen

## National Parks and Wildlife Service notification

Wildlife rehabilitation providers must immediately notify NPWS (by contacting the local NPWS office during business hours or calling 13000 PARKS) for all:

- hauled out seals with a body condition of 2 or less (see Appendix E), severe injury (e.g. fracture, wound penetrating the body cavity, wound covering a large area, infected or injured eye) or signs of disease (e.g. coughing, coloured nasal discharge)
- hauled out seals out of their regular geographic range (e.g. seal species from the Antarctic region, Australian sea lions and any seal hauled out north of Newcastle)
- hauled out seals in immediate risk of danger (e.g. on dog leash-free beaches, busy jetties, boat ramps or high-profile locations such as the Sydney Opera House steps)
- suspected or confirmed entanglements or vessel strikes
- seals in ports or harbours that may impact operations (e.g. seals hauled out and impeding oil refinery operations, military facilities, or commercial port facilities)
- dependent pups that have been abandoned
- seal carcasses.

## 2. Personal safety

Human safety is the highest priority at any marine mammal event. Before commencing evaluation, personnel must be aware of possible safety risks and take necessary precautions to minimise harm to themselves. The evaluation must only be undertaken when it is safe, and sea conditions, site access and weather will determine whether it is possible at all.

Seals haul out in a range of different and difficult locations, including surf zones and rocky headlands, and there are a number of dangers to the responder inherent in these scenarios, including falls, lacerations, fractures, and even drowning.

Seals are wild animals that could cause injury if approached, harassed or disturbed. If a seal is injured or unwell, it may consider humans and dogs as a threat, especially if people walk between the seal and the water. So, it is important to ensure the seal has clear access to the water at all times. Seals will growl, bare their teeth and lunge in a matter of seconds when they feel threatened. All seals are agile and can move very quickly, whether they are on sandy beaches, jetties or even on rocks.

All initial assessments by licensed wildlife rehabilitators should be commenced from the legal approach limit of 40 m for a seal hauled out on land.

Responders at a marine event must continuously assess a situation and the risks they face for the tasks required. This will also include monitoring their own health and levels of fatigue. Rotating tasks can assist with reducing muscle fatigue and avoiding injuries.

### Personal protective equipment

Appropriate personal protective equipment (PPE) must always be used. PPE should be checked and prepared before responding to a marine mammal incident and applied before entering the site. Responders must wear closed-toe protective shoes for all incidents.

### Clothing and equipment

Appropriate clothing and equipment should be brought in preparation for all eventualities. This may include:

- layers of clothing for changing weather and conditions (e.g. jumper, jacket or raincoat)
- binoculars
- headtorch
- towel, hat, sunscreen
- mask
- data recording sheets
- camera or smart phone.

## 3. Distance evaluation of a seal

As part of its preservation reflex, a seal will attempt to look normal, particularly when it feels under threat; for example, by being stared at, approached by a human or when it moves position or returns to the water. It is important to evaluate a seal over time and observe it from several different angles, because while it may appear normal at first, as time passes it will begin to show behaviours and signs consistent with its health status.

This document summarises each of the assessment criteria one by one, however, it is important to look at the seal as a whole and not focus on each evaluation in isolation. The decision whether to intervene is a complex one and will need to take all the factors into consideration. For example, an eye injury by itself may not be a problem if the injury is old, the seal is active and has good body condition. It indicates the seal may still be successfully foraging and avoiding predators. However, if it is combined with a low body score it may indicate there are some health issues.

### Photographs

A set of clear photographs provides important baseline information for physical evaluation including species ID, sex, injuries and body condition.

Wildlife rehabilitators must only collect photos of the animal if conditions are safe to do so. All photographs should be taken and shared in as high resolution as possible to ensure the best quality photographs. If possible, time and date stamps further assist reporting.

Following the photographic priority list below will ensure a wildlife rehabilitator is gathering the best evidence to assist NPWS staff and marine mammal veterinarians in the management of the seal. Further information and tips for collecting these photos is provided below.

### Photographic priority list

The following photographs, listed in order of priority, are needed to evaluate a seal from a distance:

1. full profile from each side
2. head profile
3. flippers (details of trailing edges)
4. seal viewed from behind
5. all injuries, wounds, distinctive markings, or entanglements
6. genital and anus area (from umbilicus to the tail)
7. any eye injury, swelling or cloudiness.

### Tips for seal evaluation photography

While a good SLR camera will take the highest resolution photos and is recommended, this is not always possible and smart phones offer a good alternative when needed. The most important thing is to ensure photographs are in focus. If sending photos from a smart phone at the site to NPWS or to other members of your team, it might be tempting to send them in bulk in a text message or attached to a single email. However, the phone's software will reduce the quality of the photos, and it is best to send photos one at a time via email, ensuring the option to send at 'actual size' is chosen.



## 4. Physical evaluation

### Species ID

The first priority when evaluating any seal is to identify the species. It is crucial to determine if it is a species endemic to Australia or a species that has come from Antarctic and subantarctic waters (Table 1). If the seal being evaluated is an Antarctic or subantarctic species, it is important to notify NPWS immediately as this will have implications for management.

### Special considerations for Antarctic species

The environmental protection provisions established under the Antarctic Treaty System and the Convention for the Conservation of Antarctic Marine Living Resources also apply in Australia, which is a signatory nation of these treaties. In 1994, the Scientific Committee on Antarctic Research (SCAR) passed a recommendation discouraging the practice of reintroducing rehabilitated seals of Antarctic or subantarctic origin back into the wild, to prevent potential disease or pathogen transmission from rehabilitated seals to wild seals and possibly also to other Antarctic wildlife.

It is prohibited in New South Wales to release rehabilitated Antarctic or subantarctic seals (e.g. leopard seals, southern elephant seals, subantarctic fur seals and crabeater seals) back into the wild. Seals of Antarctic origin captured in New South Wales must either be euthanased or taken into permanent care in an approved care facility. Even precautionary decisions to capture seals of Antarctic or subantarctic origin must, therefore, consider the availability of long-term housing for the animal. These decisions are made only where the animal's welfare overwhelmingly warrants such action.

### Types of seals

The seals encountered in New South Wales fall under 2 categories (Table 1):

- fur seals and sea lions from the family Otariidae, which are able to rotate their rear flippers so they can sit up, walk and even run on all 4 limbs, making them very agile. They have obvious external ear flaps
- true seals such as the leopard seal and crabeater seal, from the family Phocidae, which move by crawling on the belly. Despite not being able to run, they use a caterpillar motion and are capable of very rapid changes in direction, and still move very quickly, especially across sand. These seals have no external ear flaps.

### Differences between Australian and New Zealand fur seals

The 2 species most often seen in New South Wales are the Australian and New Zealand fur seals. Both are endemic, with the closest breeding colony on Montague Island in southern New South Wales.

Both species are similar in appearance and identification can be tricky, especially for new wildlife rehabilitators. There are several different methods to identify which species has hauled out including external ear colour, gait and sitting stance; however, some of these methods should only be used as a secondary tool (Appendix C). The 2 most reliable ways to distinguish between these species are snout profile and the trailing edge of the front flipper.

## Snout profile

New Zealand fur seals are also known as long-nosed fur seals, which reflects their distinctive long and pointy snout and long whiskers (vibrissae). At least 3 whiskers are much longer than the rest and can reach past the external ear flaps. The Australian fur seal has a much stockier snout with shorter, more even whisker length (Figure 1).

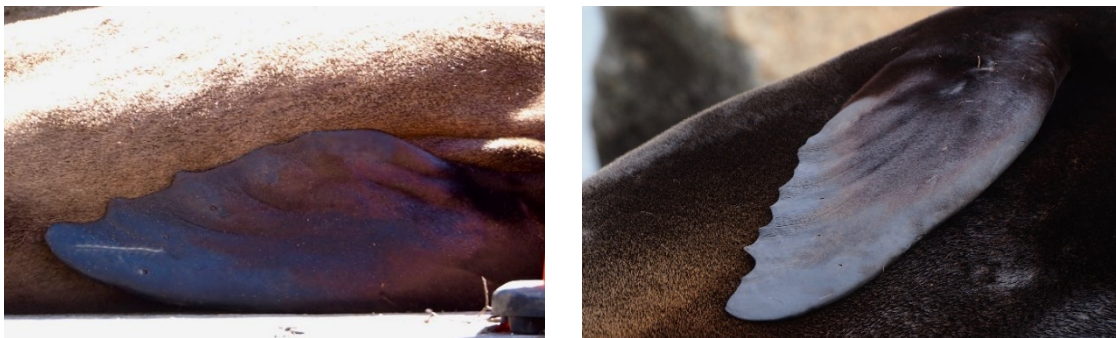


**Figure 1 Comparison of side profiles of the snout**

The Australian fur seal on the left has a much stockier snout with short whiskers that reach just past the eyes. The New Zealand fur seal (right) has a longer, more pointed snout. They have longer whiskers, including 3 distinctive whiskers reaching past the external ear flaps. Photos: Shona Lorigan/DPE

## Front flipper trailing edge

The front flippers on a New Zealand fur seal are very distinctive. The trailing edge has messy, uneven scallops, particularly near the tip, while the Australian fur seal has a trailing edge with even curves (Figure 2).



**Figure 2 Comparison of front flipper trailing edge**

The front flipper in the left photo is from an Australian fur seal and has an even scalloped trailing edge. The photo on the right is a New Zealand fur seal and shows an uneven trailing edge with larger scallops closer to the tip. Photo: Shona Lorigan/DPE

## Stage of development

The stage of development for each seal must be noted, either pup, juvenile or adult. Pups are totally dependent on their mother for nourishment. This stage is very short for true seals as they feed constantly and gain a huge amount of weight quickly, with most weaned within 4–6 weeks. Fur seals and sea lions nurse for much longer, usually from 10–12 months depending on the species (see Appendix D for weaning schedules). The pups then move off on their own and at this point they are identified as a juvenile or immature seal (Figure 3). It is important not to misidentify these young seals as abandoned pups, even though they are quite small.



**Figure 3** Juvenile New Zealand fur seal

Photo: Shona Lorigan/DPE

Juvenile seals might stay near the breeding colony or travel long distances up and down the coast, with many choosing to haul out near larger seals. There is no family relationship with the larger seal, but the younger seal is watching and learning from the larger seal. This common encounter type must not be mistaken for a mother and pup pair.

## Sex

The sex of fur seals and sea lions is easier to identify than for true seals. Male fur seals have obvious testes visible at the base of their belly near the start of the rear flippers. They also have a visible penile opening (Figure 4). This is not the case for male true seals, which do not have visible testes.

Female fur seals and sea lions have 4 teats visible on their belly, while there are 2 teats for most true seals. This may take some time for a wildlife rehabilitator to determine as the teats are easily obscured if the seal is not resting belly up, or they are covered in sand.



**Figure 4** Identifying the sex on a seal

A photo showing the whole belly area will assist with sex identification. In the left photo both the testes and penile opening are present, indicating a male fur seal. The right photo shows a female Australian sea lion.

Photos: Shona Lorigan/DPE and Kieran Marshall/Dolphin Marine Conservation Park

## Body condition

A seal's body condition is a key indicator of health, and assessment takes time as seals will always try to mask any underlying conditions. A seal will often puff up and attempt to look bigger when it is moving position or returning to the water. Dry fur can mask the layers of fat, and it is also difficult to ascertain body condition when a seal is curled up.

Subjective body condition scores based on a scale of 1–5 can be used, with 1 representing an emaciated seal and 5 a seal in excellent condition (Appendix E).

It is best to evaluate the seal when it is more relaxed, taking photos from different angles and focusing on the neck area and the rump, as these are the first areas to show signs of poor condition (Figure 5).



**Figure 5** Assessing body condition over time

All photos are of the same New Zealand fur seal taken from different angles over a few hours. Compare the seal's puffed out fur in the first photo where he is standing up and moving, with the seal's true condition in the final photo. As the seal has rested and stretched out, the dip behind the neck, lack of body fat over the hips and belly become more apparent. Despite the dry fur, the final photograph from behind shows a prominent spine and the ribs can be clearly seen, indicating a low body score of 2. Photos: Shona Lorigan/DPE

Many seals like to rest curled up with their rear flippers tucked below their belly. This can distort the body condition, particularly when the fur is dry, and the seal will look bigger and fatter. It is best to ensure the seal is stretched out and if possible, assess and take photos when the seal has just hauled out from the water and its fur is wet (Figure 6).



**Figure 6** Importance of body position when assessing body condition

Both photos are of the same juvenile New Zealand fur seal. Compare the same seal assessed in a curled up position versus stretched out and with wet fur after returning from a swim. Photos: Shona Lorigan/DPE

## Wounds or injuries

Life at sea can be a dangerous place for a seal and many will haul out with a range of injuries. These can be minor, such as a small cut or laceration, through to severe wounds, bites and fractures.

Detailed observations and photographic records of each injury on a seal can provide important information to assist with evaluating the seriousness of the injury and will also form a baseline to be used to measure recovery or inform management actions. Photographs are particularly helpful for veterinary assessment of the wounds when the vet is not on site and must include a photograph showing the position of the injury on the seal, as well as a close-up of the injury itself.

Seals are fairly resilient and can recover from quite serious injuries given some space and minimal disturbance; however, several factors may influence their recovery and need to be included in the evaluation of each wound.

### Wound condition

For each wound, identify how recent it is and if there are signs of healing or infection. Recent wounds will have a red or pink appearance and as the wound heals, a yellow fibrinous layer will form around and over the wound and it will start to decrease in size. Signs of infection include a coloured discharge (pus), or the wound is swollen and very red (Figure 7).



**Figure 7**      **Assessing wound condition**

The photograph on the left shows the wound's position on a juvenile New Zealand fur seal hauled out in a beach amenities block, while the photo on the right is a close-up showing that the wound is not healing well, as indicated by oozing pus. Photos: Shona Lorigan/DPE

### Cookiecutter shark bites

Cookiecutter sharks (genus *Isistius*) are small and grow to only about 50 cm in length. They are known for their cigar-shaped bodies and conical snouts. They regularly feed on passing marine mammals such as whales, dolphins and seals by biting into the flesh and then twisting their lower body, dropping away with a circular plug of flesh (Figure 8 and Figure 9). These wounds generally heal well and usually do not pose a risk to a hauled out seal. However, if there are several other factors in the evaluation, such as poor body condition or a large number of bites, it may indicate poor health in the hauled out seal.



**Figure 8 Fresh cookiecutter shark bite**

Photo: Shona Lorigan/DPE



**Figure 9 Healing cookiecutter shark bite**

Photo: Kieran Marshall/Dolphin Marine Conservation Park

## Injuries on the joints

The location of a wound may be important in assessing its impact on the seal. Even minor cookiecutter shark bites can compromise the seal's health if an underlying joint is impacted. Wounds located near the joints, particularly shark bites and lacerations, may also include musculoskeletal injuries (e.g. broken bones or exposed bones). These wounds can be tucked away under flippers and in some cases are not immediately apparent. For these wounds, it is important not only to record the wounds but assess the animal's mobility and gait (see 'Mobility' below).

## Nicks, bites and scars

Many seals have evidence of previous tussles with predators and have nicks, scars, wounds and bites, particularly on their flippers. If fresh, the bites usually heal naturally and pose no risk to the seal, leaving only a range of different shapes and scars (Figure 10). They are a useful tool to identify an individual seal, which is very helpful as many seals can move up and down the coastline.



**Figure 10 Individual seal identification from injuries and bites**

The New Zealand fur seals in both photos have circular bites and nicks on the trailing edge of their front flippers. These can be used to identify the seal individually when the seal moves to new locations. Photos: Shona Lorigan/DPE

## Wound depth

The depth of wounds and injuries on the abdomen must be carefully assessed to identify if the abdominal cavity has been breached. In cases where the wound has or is suspected to have penetrated the abdominal cavity, NPWS will immediately seek advice from an experienced marine wildlife veterinarian and a clear set of photographs will assist their initial diagnosis.

## Entanglements

Every seal needs to be closely observed to look for evidence of entanglements. While heavy marine debris such as ropes and nets are easily seen, some entanglements such as fishing line are not very obvious at first glance (Figure 11). Each entanglement needs to be recorded with details on the type of materials and their location on the seal. While some fishing equipment such as hooks and sinkers may fall off naturally, other entanglements will require intervention. The process is incredibly stressful and having a plan in place before commencing will minimise the stress on the animal. This means the information and photographs provided to NPWS staff tasked with carrying out the disentanglement process are crucial.



**Figure 11** Evaluating an entanglement

Not initially apparent, the fishing line entanglement on this New Zealand fur seal can be seen extending from the mouth going along the belly of the seal and wrapping around the body in the rear tail area. The line had a sinker attached that was caught between the planks of the jetty, trapping the seal. Photo: Shona Lorigan/DPE

## Eyes, nose and mouth

### Eyes

Eyes should be carefully assessed for signs of infectious disease or trauma. These may be indicated by swelling of the eye or the surrounding tissue, reddening of the conjunctiva (inside of the eyelids) or cloudiness of the eye itself (Figure 12).



**Figure 12** Evaluating eye injuries

The first photograph shows the level of swelling in and around the right eye of an adult male Australian fur seal. The right-hand photo is a close-up of the injury to provide more detail of the irritation and discharge. Photos: Shona Lorigan/DPE

Elephant seals have large and prominent eyes and they are often also red rimmed. In these cases, the reddening of the conjunctiva is normal and not an indication of an eye injury. As seals move between water and hauling out on land it is normal for them to secrete tears to lubricate their eyes, which shows up as a dark patch. This eye secretion is clear (Figure 13). When assessing eye discharge, only be concerned if the eye secretion is coloured or asymmetrical (i.e. not even on both eyes).



**Figure 13** Eye discharge

A dark patch around the eye caused by normal tear secretions to lubricate the seal's eye as it moves between water and land. Photo: Shona Lorigan/DPE



## Nose

The different species of seals have a variety of snout shapes and sizes, from long and pointy for the New Zealand fur seal, small and flat for subantarctic fur seals, and a long trunk-like nose in adult male elephant seals.

Wildlife rehabilitators must observe the condition of a seal's nose for signs of upper respiratory disease (nasal discharge). It is important to note that phocids (known as true seals) such as the leopard seal, elephant seal and crabeater seal regularly have a clear nasal discharge. This is normal and not a sign of infection (Figure 14). For these species, wildlife rehabilitators need to note if a coloured nasal discharge is present and if in any doubt, NPWS will refer the evaluation to a marine wildlife veterinarian for assessment from the photos and description in the evaluation report.



**Figure 14** Clear nasal discharge on a leopard seal

Photo: Shona Lorigan/DPE

## Mouth

Assess the mouth for signs of injury and check the jaw alignment. Seals can have some very traumatic injuries, including a fractured jaw from being flung against rocks in wild seas or even as a result of fighting with other seals.

Seals will often bare their teeth, and this is an opportunity (from a safe distance with a telephoto lens) to photograph the inside of their mouth to assess the gum colour and check for injuries. Leopard seals, in particular, have been known to have stingray barb injuries. It is also important to look for evidence of entanglements such as fishing line.

Oral mucous membranes should appear pink, while pale mucous membranes may indicate anaemia, dehydration and severe compromise. These seals must be notified to NPWS immediately for an assessment by a veterinarian.

A seal's teeth will discolour and wear as they age, particularly the front canine teeth. The amount of tooth wear can be a good indicator of general age, with juvenile seals having light, bright canines, whilst an older seal may show tooth wear almost to the gum line and brown stained teeth (Figure 15). Excessive tooth wear in a juvenile animal may indicate inappropriate foraging techniques.



**Figure 15 Tooth wear and gum colour**

Note the normal pink gum colour for both seals. A comparison of tooth wear shows that the first photo on the left is of a younger New Zealand fur seal with long white canines. The photo on the right is an old male Australian fur seal with the teeth discoloured and worn almost down to the gumline. Photos: Shona Lorigan/DPE

## Mobility

A seal's mobility is best observed when they change their haul out position and particularly when they move to and from the water. Fur seals and sea lions are quite agile, as they walk on their rear flippers. They regularly haul out on rocky headlands and steps, and climb up cliffs, navigating to and from the water with ease. It is important to observe their movement to assess if they are using all 4 flippers.

While true seals are not able to walk as their rear flippers do not rotate forward, they use a caterpillar motion to move. It is important to observe their speed and the ease with which they return to the water.

All seals haul out in a variety of locations, despite some common preferences found within each species (Table 2) and in some cases we are left perplexed as to how they were able to get there. It is important to note that the haul out location must never be considered in isolation when evaluating a seal's mobility. This is always best evaluated by direct observation of the seal's movement; however, the location can sometimes be an indicator. For example, a New Zealand fur seal resting on rocks far above the high tide mark, or several metres up a cliff, indicates a good level of mobility, while an older New Zealand fur seal or one with mobility issues might favour the lower flat platforms, the sand, or use the tides to move in and out of the water.

Providing details on the haul out location combined with tide movements may provide important context on the seal's mobility.

**Table 2 Common haul out locations for seals**

Species	Frequent haul out location
Australian fur seal	Low rocky platforms
New Zealand fur seal	Rocky headlands, cliff faces
Subantarctic fur seal	Rocky platforms, tucked under rocks, grasses
Australian sea lion	Sandy beaches
Leopard seal	Sandy beaches
Southern elephant seal	Sandy beaches
Crabeater seal	Sandy beaches

## Pelage

Seals have thick fur to help them maintain a warm core temperature. Fur seals have 2 layers of fur, while sea lions and true seals have only one layer. The condition of the seal's pelage (fur) should be recorded when evaluating its physical condition.

True seals moult once a year, a process that may last from 4–6 weeks. The process can look very dramatic, first starting around the eyes and flippers and then moving to large sheets of skin and fur. As the seal is not eating during this time, it may also lose weight, and this combined with the moulting can be confused with poor health.

Fur seals can moult at any time throughout the year, and the condition of their pelage will be determined by what stage they are at. At times their fur can be thin in places and a bit tatty looking (Figure 16). Again, this is a normal process and not a cause for concern, but should be included in the evaluation.



**Figure 16** New Zealand fur seal with signs of moulting

This fur seal is in excellent condition with minor evidence of moulting. Note the tatty and tufted fur on the back and near the front flippers. Photo: Shona Lorigan/DPE

The spots on a leopard seal's fur are a useful tool for identification as each seal has a unique spot pattern that can be used to identify these seals as they move between different locations. It is important to take a side profile of the seal; both sides is preferable but if that is not possible then at least the left side.

## Respiration

A seal's breathing is best observed while they are resting, with the rehabilitator looking at the area behind the front flippers. The rise and fall of the chest as the seal inhales and exhales can be counted for a minute to obtain a breathing rate. You do not need to be close to the seal; this observation is easily undertaken by 2 rehabilitators, one using a pair of binoculars to observe the seal and the second watching the time on a stopwatch.

The breathing rate may differ depending on the seal's activity. The seal's breathing rate may be raised if they have just hauled out, moved their location, or been disturbed or harassed or if the animal is in pain. Rather than focusing on the breaths per minute at one specific moment in time, it is more important to monitor their breathing over time and highlight any sustained change as well as the effort used by the seal to breath. Open-mouth, noisy or raspy breathing is a concern and may indicate respiratory abnormalities, particularly if it is accompanied by blood or secretions from the nose.

## 5. Behaviour evaluation

Seals have a range of healthy behaviours, and it will take time for a wildlife rehabilitator to look for signs of both normal and abnormal behaviour in a resting seal.

### Thermoregulation

Seals spend a lot of time swimming and foraging in colder waters and have a thick layer of blubber to keep themselves well insulated. They will often regulate their temperature by lifting their front flippers in the air as the flippers have veins very close to the surface, allowing for the quick transfer of warmer or cooler temperatures around the rest of their body (Figure 17). Seals hauled on land can be observed lifting a front flipper into the air but more commonly a fur seal in the water will spend time with a front flipper in the air and sometimes the rear flippers as well (this latter pose is known as juggling). A seal can hold their flipper in this position for an extended period and seals thermoregulating in the water can be in the same place for many hours. Often thought to be a sign of distress, it is the opposite and a sign of normal seal behaviour. At seal colonies several seals will float near each other thermoregulating and this is known as a raft of seals.

True seals, particularly elephant seals, are also observed flicking either sand (sand flipping) or even small pebbles over their back to keep cool.



**Figure 17** New Zealand fur seal thermoregulating

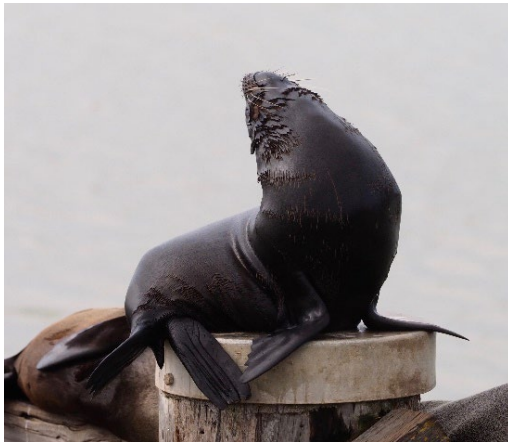
The New Zealand fur seal on the left is thermoregulating with only one front flipper while the photo on the right shows the seal using both flippers, a behaviour known as juggling. Photos: Shona Lorigan/DPE

### Demeanour

Seals haul out on land to rest and can look like they are in a deep sleep, but despite appearances they are still very alert. It is important to assess a seal's demeanour and look for signs that the seal is alert (Figure 18). This can be indicated in several ways:

- the seal lifts its head with any sudden noise or movement
- when moving position, the seal will raise its head backwards (looking like it is on guard) as this gives it a much wider view to look for threats and predators
- a seal may appear to be yawning, but this behaviour is a warning by the seal that it is feeling threatened. All wildlife rehabilitators must take extra care if this behaviour is observed and ensure they keep a safe distance from the seal.

When a seal is very listless, non-responsive or not vigilant to the surrounding dangers it is usually an indication that something is very wrong, especially when accompanied by other factors such as poor body condition.



**Figure 18** Signs a seal is alert

Both photos show seals that are alert and on guard checking for threats. The seal on the left has just returned from the water and the seal on the right is moving position after resting in the same spot. Photos: Shona Lorigan/DPE

## Grooming

Seals spend a lot of their time grooming, using their flippers to scratch, particularly around the face, neck and shoulders (Figure 19). Fur seals use the claws on their rear flippers, while true seals will use claws on their front flippers. Often after a seal has been scratching, there will be lines of separated fur exposing the undercoat. To the untrained eye this might look like an injury or even an entanglement, but it is normal seal behaviour.



**Figure 19** New Zealand fur seal grooming

Note the fur seal is grooming by using the claws on its rear flippers. Photo: Shona Lorigan/DPE

## Returning to water

While some seals haul out and stay in the same position for hours or even for a couple of days, others return to the water quite regularly and then haul out again. Neither scenario is better than the other, but it is important to note the time and frequency of a seal's visits to the water as evidence of good seal behaviour. True seals do not have a regular pattern for returning to the water, but it is a particularly good sign if fur seals

return to the water late in the afternoon as they frequently forage at night when their prey is closer to the surface.

Upon returning to the water, the seal will immediately start to roll and fur seals do tight corkscrew twists and may also commence grooming.

## Urination and faecal output

Hauled out seals should be monitored for faecal output and signs of urination (Figure 20). A description, and if possible a photograph should be taken, but only when it is safe to do so. This is best achieved with a telephoto lens or after the seal has left the area. Scats from true seals may be of scientific significance and provide valuable information on the seal's diet and health. They should be reported to NPWS if observed.



**Figure 20** New Zealand fur seal urinating

This male New Zealand fur seal was observed reversing backwards on the Sydney Opera House steps before urinating over the edge into the water. Photos: Shona Lorigan/DPE

## 6. Further reading

Jefferson T, Webber M, Pitman R and Gorter U (2015) *Marine mammals of the world: A comprehensive guide to their identification*, 2nd edition, Elsevier, London UK.

Kirkwood R and Goldsworthy S (2013) *Fur seals and sea lions*, CSIRO Publishing, Collingwood VIC, Australia.

Reeves R, Stewart B, Clapham P, Powell J and Folkens P (2002) *Sea mammals of the world: A complete guide to whales, dolphins, seals, sea lions and sea cows*, A & C Black Publishers Ltd, London UK.

Shirihai H and Jarrett B (2006) *Whales, dolphins and porpoises: A field guide to the marine mammals of the world*, A & C Black Publishers Ltd, London UK.

Vogelnest L and Portas T (eds) (2019) *Current therapy in medicine of Australian mammals*, CSIRO Publishing, Clayton South VIC, Australia.

Vogelnest L and Woods R (eds) (2008) *Medicine of Australian mammals*, CSIRO Publishing, Clayton South VIC, Australia.

WHA (Wildlife Health Australia) (2018) *Zoonosis and Australian marine mammals fact sheet*, Wildlife Health Australia

[https://wildlifehealthaustralia.com.au/Portals/0/Documents/FactSheets/Public%20health/Zoonoses\\_and\\_Australian\\_Marine\\_Mammals.pdf](https://wildlifehealthaustralia.com.au/Portals/0/Documents/FactSheets/Public%20health/Zoonoses_and_Australian_Marine_Mammals.pdf)

Wursig B, Thewissen JGM and Kovacs K (eds) (2017) *Encyclopedia of marine mammals*, 3rd edition, Academic Press, London UK.

### More information

- [Antarctic Treaty System \(1961\)](#)
- [Biodiversity Conservation Act 2016](#)
- [Biodiversity Conservation Regulation 2017](#)
- [Biosecurity Act 2015](#)
- [Code of practice for injured, sick and orphaned marine mammals](#)
- [Commission for the Conservation of Antarctic Marine Living Resources \(CCAMLR\)](#)
- [Environment Protection and Biodiversity Conservation Act 1999](#)
- [Marine Wildlife Management Manual 2021](#)
- [National Parks and Wildlife Act 1974](#)
- [Scientific Committee on Antarctic Research \(SCAR\)](#)
- [Marine Mammal Rehabilitation Training Standards for the Volunteer Wildlife Rehabilitation Sector](#)
- [Marine Mammal Rehabilitation Training Standards for the Volunteer Wildlife Rehabilitation Sector: Trainers' Guide](#)

## Appendix A: Seal evaluation form

Seal evaluation reporting sheet	
Date	Seal ID number
Location GPS	Location description
Species	
Name	Signature

### Physical condition

Attributes	Checklist	Notes
Age class	<input type="checkbox"/> Adult <input type="checkbox"/> Juvenile <input type="checkbox"/> Pup	
Sex	<input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Unknown	
Body score	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
Wounds or injuries	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Entanglements	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Distinctive markings	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Mobility	<input type="checkbox"/> Good <input type="checkbox"/> Poor	
Eyes	<input type="checkbox"/> Injury <input type="checkbox"/> Swelling <input type="checkbox"/> Cloudiness	
Nasal discharge	<input type="checkbox"/> Yes <input type="checkbox"/> No Colour: _____	
Pelage	<input type="checkbox"/> Good <input type="checkbox"/> Poor <input type="checkbox"/> Moulting	
Tooth wear	<input type="checkbox"/> Yes <input type="checkbox"/> No Colour: _____	
Respiration		

### Observed seal behaviours

Seal behaviours	Checklist	Notes
Thermoregulation	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Demeanour	<input type="checkbox"/> Alert <input type="checkbox"/> Yawning <input type="checkbox"/> Listless	
Grooming	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Returning to water	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Scats or urination	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Photograph checklist	
<input type="checkbox"/> Full profile from each side	<input type="checkbox"/> Flippers (details of trailing edges)
<input type="checkbox"/> Head profile	<input type="checkbox"/> Photo of the seal from behind
<input type="checkbox"/> All injuries, wounds, distinctive markings, or entanglements	<input type="checkbox"/> Genital and anus area (from umbilicus to the tail)
<input type="checkbox"/> Eye injury, swelling or cloudiness	<input type="checkbox"/> Inside the mouth



## Appendix B: Seal species recorded in New South Wales

### Australian fur seal



Photo: Shona Lorigan/DPE

### New Zealand fur seal



Photo: Shona Lorigan/DPE

### Subantarctic fur seal



Photo: Kathryn Yorke/DPE

### Australian sea lion



Photo: Shona Lorigan/DPE

### Leopard seal



Photo: Shona Lorigan/DPE

### Crabeater seal



Photo: Sam Hillman/ORRCA

### Southern elephant seal



Photo: Shona Lorigan/DPE

## Appendix C: Distinguishing features of adult Australian and New Zealand fur seals

Details	Adult Australian fur seal		Adult New Zealand fur seal	
	Male	Female	Male	Female
<b>Head</b>	Very large and wide Little or low brow Snout rounded (dog-like) Ears light in colour	Small No obvious brow Snout rounded (dog-like) Ears light in colour	Large Brow distinct Snout pointy; enlarged rhinarium which accentuates the pointy snout Ears dark	Small No obvious brow Snout pointy Ears dark
<b>Front flippers</b>	Paddle-shaped (rounded) with obvious thickening of the trailing edge before it joins the body Trailing edge is even and scalloped		Oar-shaped (long with straight sides) Trailing edge is uneven with larger scallops closer to the tip	
<b>Fur dry</b>	Dark greyish-brown dorsal surface Lighter ventral area Mane lighter in older males	Pale fawn to lighter greyish-brown Pale throat Brown ventrally	Dark brown to black dorsal surface Lighter ventral area	Brown to dark brown with greyish tones
<b>Fur wet</b>	Generally darker brown/grey with black flippers Lighter grey ventral surface and lighter mane	Generally darker brown/grey with black flippers Brown underbelly	Generally darker brown/grey with black flippers Darker and more uniform than Australian fur seals	
<b>Pups</b>	Australian fur seal pups are born black and turn greyish fawn with a pale throat after the first moult at 4-5 months of age Juveniles moult again a year later and turn silver-grey		New Zealand fur seal pups are born black with a whitish snout and turn greyish-brown after the first moult at 2-3 months of age	

## Appendix D: Key information for seal species recorded in New South Wales

Details	Resident seals			Antarctic species			
	Australian fur seal	New Zealand fur seal	Australian sea lion	Subantarctic fur seal	Leopard seal	Crabeater seal	Southern elephant seal
BC Act NSW listing	Vulnerable	Vulnerable					
EPBC Act federal listing			Endangered	Endangered			
Length males (max.)	2.25 m	2.5 m	2.5 m	2 m	3.4 m	2.6 m	5.8 m
Length females (max.)	1.7 m	1.5 m	1.85 m	1.4 m	3.6 m	2.65 m	2.8 m
Weight males (max.)	360 kg	180 kg	250 kg	160 kg	350 kg	230 kg	3700 kg
Weight females (max.)	120 kg	50 kg	104 kg	50 kg	590 kg	230 kg	800 kg
Average life span males	19 years	15 years	25 years	20 years	unavailable	25–30 years	10 years
Average life span females	21 years	22 years	25 years	25 years	unavailable	25–30 years	14 plus years
Birth length	60–80 cm	60–70 cm	62–68 cm	60 cm	1–1.6 m	1.2 m	1.2 m
Birth weight	5–12 kg	4–6 kg	6.4–7.9 kg	4–4.4 kg	30–35 kg	20–30 kg	45 kg
Pupping season	November – mid-December	late November – early January	Timing variable	Late October – early January	Early November – December	September – December	September – October
Pupping interval	12 months	12 months	17–18 months	12 months	12 months	12 months	12 months
Weaning	10–12 months	8–9 months	15–18 months	10 months	3–4 weeks	3 weeks	23 days

## Appendix E: Body condition assessments for otariids (eared seals) and phocids (earless seals)

Score	Condition	Otariids	Phocids	Abdomen and body	Neck
5	Excellent	 <p>Photo: Shona Lorigan/DPE</p>	 <p>Photo: Shona Lorigan/DPE</p>	Abdomen is convex and may be bulging. Body is rounded and plump.	<p><b>Otariids:</b> Thick, rounded and bulging (especially in males)</p> <hr/> <p><b>Phocids:</b> Neckline not present</p>
4	Good	 <p>Photo: Shona Lorigan/DPE</p>	 <p>Photo: Leesa Pratt/ORRCA</p>	Abdomen/waist is flat to slightly rounded. Loss of hourglass shape to waist. Pelvic bones not visible.	<p><b>Otariids:</b> Neck not distinct and slightly thickened</p> <hr/> <p><b>Phocids:</b> Neckline slightly concave</p>
3	Fair	 <p>Photo: Shona Lorigan/DPE</p>	 <p>Photo: Wayne Reynolds/ORRCA</p>	Abdomen/waist slightly concave and smooth hourglass shape to waist. Body: ribs and lumbar vertebrae not visible. Pelvic bones just visible.	<p><b>Otariids:</b> Neck less distinct</p> <hr/> <p><b>Phocids:</b> Neckline still present but less distinction between head and body</p>

Score	Condition	Otarids	Phocids	Abdomen and body	Neck
2	Poor			Abdomen/waist slightly sunken/concave. Marked hourglass shape to waist. Ribs, lumbar vertebrae and pelvic bones visible.	<b>Otariids:</b> Neck obvious <hr/> <b>Phocids:</b> Obvious neckline
1	Emaciated			Accentuated severe hourglass shape to waist. Ribs, lumbar vertebrae, pelvic bones and other bony structures obvious and prominent. Obvious loss of muscle.	<b>Otariids:</b> Neck thin and obvious <hr/> <b>Phocids:</b> Very obvious neckline

Source: Dr Larry Vogelnest, Taronga Conservation Society Australia 2009