

# WhaleRescue.org Marine Mammal Medic Training Handbook

This course first originated in 1986 has been derived using information from many sources mainly from an early New Zealand researcher Frank Robson whose pioneering ideas about whale rescue brought about a significant change internationally once incorporated into this manual. It is now used as the basis for cetacean rescue and training manuals by various government departments and environmental groups internationally along with the use of the WR.org designed inflatable rescue pontoons.

## Course Aim

By the end of this course participants should be able to:

- Assist in the rescue of marine mammals.
- Take charge of a group of volunteers and direct this group in basic marine mammal first aid procedures.
- Assist in the refloat of a whale or dolphin using the inflatable pontoon system (Providing actual in water training is undertaken)

Upon successful completion of the course the participants should be able to issued with a Marine Mammal Medic ID, this identifies the holder as someone who has had formal training in the rescue of marine mammals. Most major overseas animal welfare and rescue organisations now recognise this ID and accept only “certified” trained volunteers at rescues.

## Management of the Stranded Cetacean

Possible causes of live cetacean strandings

Theories of why cetaceans strand are many and varied. Some of them are very briefly covered here:

### IN HEALTHY CETACEANS:

Healthy cetaceans may strand through navigational error, if they are unfamiliar with the coastline:

- (i) It has been suggested some cetaceans may use geomagnetic contours to navigate and where these cross the beach or an outcrop of land, this can result in the animal following the line of the contour on to the shore. But again this is only a un-proven theory.
- (ii) Gently shelving beaches may not reflect echolocation signals back to the cetacean, which may make it believe it is in deeper water. This is the most common cause in areas such as Farewell Spit NZ and Cape Cod USA.
- (iii) Cetaceans chasing prey may strand while involved in the chase. They can be picked up by a wave and thrown onto a beach or left high and dry by the receding tide. Again a common cause in NZ particularly in upper North Island strandings

(iv) Unfamiliar coastal configuration or unusual weather patterns, particularly electrical storms, may also cause cetaceans to strand through navigational error. Severe weather and storms has been shown to disrupt bees and pigeons from finding their way back “home” possibly by temporarily disrupting the earth’s magnetic fields with which they navigate by.

Healthy cetaceans may also strand for social reasons:

Strong social bonds may cause some species of cetaceans to often follow an injured or diseased animal onto the beach. This has been most frequently observed in Pilot and False Killer whale mass strandings where it is thought one or two individuals have encountered difficulties and then drawn the remainder of the pod ashore with their distress calls.

Social displacement of young male Sperm whales may make them ultimately more susceptible to stranding as they are often chased ashore by rival competing males during mating attempts.

*Species involved in such above strandings are usually pelagic.*

#### **OTHER CAUSES:**

Cetaceans may also strand alive because they are diseased. The effects of such disease leaves them weak and disorientated or with impaired echolocation, and thus more likely to strand. Cetaceans suffer from:

- (i) Bacterial disease, e.g. pneumonia, peritonitis, hepatitis, gastroenteritis, meningitis, septicaemia.
- (ii) Parasitic disease, e.g. lungworm, some species of worms are known to burrow into lower jaws of many beaked whales causing loss of ability to receive echolocation signals which in turn causes disorientation.
- (iii) Viral disease, e.g. morbillivirus.

Other causes of stranding include:

- (i) Trauma, such as serious wounds, flipper dislocations or fractures, and spinal/muscle damage. In recent times some evidence of internal damage has been discovered in a few individuals after Naval sonar military or seismic testing activities associated with Oil/Gas exploration these injuries are ruptured eardrums shattered and/or ear bones. The injured cetacean will usually exhibit signs of bleeding from ears/eyes and/or blowhole and further internal exam would be required to confirm such damage.
- (ii) Malnutrition, particularly in separated dependent calves and old adults.
- (iii) Net entanglement (bycatch), although few of these ever strand alive.
- (iv) Chased ashore by predators (Orca Sharks) or as result of aggression as happens in Sperm Whales, where males have been seen to fight with one another and literally drive another male ashore, abandoning him once he is stuck.

*Species stranding for such reasons may be coastal or pelagic.*

## Initial response to cetacean stranding reports on the telephone

### ASK FOR DETAILS:

- Species, size and number (if species not known, size and appearance).
- Contact details (who reported by - contact tel. no.).
- Exact location (nearest town - name of beach - location on beach - access to beach). • Conditions at the scene (weather - sea state - tide state - level of disturbance).
- Condition of cetacean (alive or dead - no. of breaths per minute - any wounds - skin condition - obvious dipping of lumbar muscles or neck? - period of time observed).
  - Position of cetacean (in sun or shade - in or above the surf - on rocks, shingle or sand).
- How long has it/they been stranded?
- Any attempts made to refloat? (If so, how was it done and how long was taken over it?)

### GIVE OUT ADVICE:

- Support the animal in an upright position and dig trenches under the pectoral fins.
- Cover the animal with wet sheets or towels (even seaweed) and keep it moist by spraying or dousing with water. N.B. the blowhole should not be covered, and care should be taken to avoid any water or sand entering it
- Provide shade or shelter, if necessary, DO NOT apply sun screen lotion/creme.
- Avoid the tail and breaths from the blowhole, due to injury/health risks
- All contact noise and disturbance should be kept to a minimum.

### Equipment needed for cetacean strandings

#### GRAB BAG LIST

Typical contents of a personal bag prepared for attending strandings:

- Personal identification (including Medic ID).
- Whale identification guide and Medic handbook
- Sunshade, and woolly hat to keep your head warm if required
- Towel
- Drysuit (preferably) or wetsuit (good fit to ensure warmth)
- Life jacket (PFD), compact Inflatable type preferred.
- Change of clothes / warm clothes
- Personal items (toiletries, toilet paper, **sunscreen**, watch, money, mobile phone)
- Sleeping bag, plus large plastic bag or ground sheet, or tent.
- Food/Water - Mars bars; chocolate, high energy food and fruit juices.
- Rain/wind protection – warm and water proof jacket.

As your experience grows, and the number of strandings you attend increases;

Other items can be taken to strandings, which will enable you to get more involved. These include:

- Old sheets and towels
- Tape measure
- Buckets (collapsible or plastic)
- First aid kit
- Disinfectant and scrubbing brush

- Air mattress or high density foam
- Disposable gloves
- Spade and/or shovel
- Torch (water proof) and spare batteries
- Watering can + sprayer
- Tarpaulin + stretcher
- Plastic whistles (to gain attention)
- Clipboard and pens
- Camera and spare batteries
- Data recording sheets

### Assessment of stranded cetaceans

Note: a full assessment of the animal's condition ideally should only be made with the assistance of a veterinary surgeon/experienced person, but not always available remote areas.

### ALIVE OR DEAD?

This is determined by watching for opening and closing of the blowhole. As it may take some time for a larger cetacean to take a breath, some whales will go into a “diving reflex” and may not breathe for some time (up to 30 mins). It may be necessary to assess other parameters, e.g. the presence/absence of reflexes such as the palpebral reflex, checked by seeing if there is any response to putting light pressure on the animal's eyelid. The corneal reflex, i.e. touching the surface of the eye, is the most reliable reflex for determining if an animal is alive or dead. However, as this will often elicit a violent response from a conscious animal, it should NOT be attempted until negative responses from other reflexes have been obtained. A list of useful reflexes and tones that can be assessed is provided later in this section.

Generally speaking many individuals of pelagic species may strand in healthy condition (over 50%), whereas the vast majority of individuals of coastal species strand with serious illness, malnutrition or trauma. Thus, species identification can be a useful aid in assessment.

### MALNUTRITION

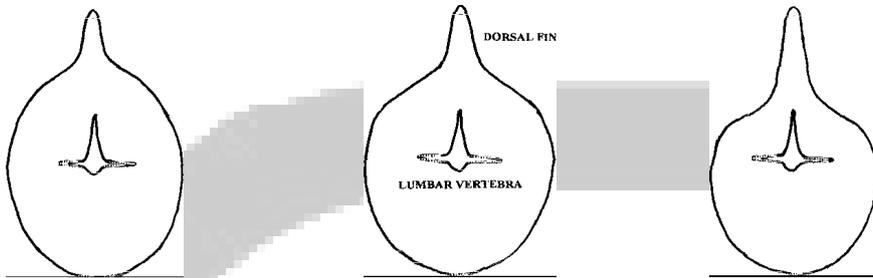
Often the most readily discernible indicator of the condition of the stranded cetacean. This is assessed by examining the profile of the muscle masses below the dorsal fin

In addition to readily visible 'dipping' of the muscle masses, emaciated animals may also have a visible 'neck'. N.B. the mouth should be checked for missing, broken and worn teeth, as this may explain the animal's poor condition. Note: interpreting muscle mass is complicated by a number of factors:

It is more difficult to determine the profile of the muscle mass with a cetacean out of the water, particularly in larger species, due to additional compression of the body lifting the muscles up around the dorsal fin.

(ii) The significance of the muscle mass profile may vary with the time of year, e.g. harbour porpoises in moderate body condition can survive in the summer, but are close to suffering from hypothermia in the winter.

(iii) Animals in good body condition may not necessarily be healthy, as they may be suffering from an acute illness or trauma. In other words, don't base your entire judgement about the animal's state of health on this parameter.



*Good Condition*

*Moderate Condition*

*Thin Condition*

## TRAUMA

Superficial trauma occurring during stranding may not be significant, despite often heavy bleeding. Such wounds are usually seen as abrasions on the 'beak melon' (fat pad on the front of the animal's head), flippers and tail fluke. Obvious wounds penetrating deep into the muscle layer, or exposing bone, will affect the animal's prognosis, as will persistent flexion (curving) of the trunk, which may be associated with muscle damage or spinal injuries. Other injuries may be important but difficult to detect, such as fractures and dislocations of the pectoral flippers, and the muscle damage that tends to occur with the trauma, exertion and stress of stranding, and which will tend to become more serious the longer the animal is on the beach. Often whales are tumbled in the surf zone during the stranding and can suffer further injuries which are not generally fatal.

Be aware of some species such as Dwarf/Pygmy Sperm whales that have bright red faeces often excreted during stranding which can frequently be mistaken for blood and internal bleeding.

### Breathing rates in cetaceans

#### Small Cetaceans e.g. Common dolphin

2 -5 breaths per minute	Normal
6+ breaths per minute	Mild stress or respiratory compromise
10+ breaths per minute	Severe stress or respiratory compromise

#### Medium –large cetaceans

1 breath per minute	Pilot Whale - normal
as low as 1 breath per 20 minutes	Sperm Whale - normal

## ABNORMAL BREATHING

This may be seen with stress and respiratory disease.

A rough guide to breathing rates in cetaceans is given in the above table. Rates are determined by watching the opening and closing of the blowhole. In healthy cetaceans, the blowhole is voluntarily held in a closed position. As stated earlier, on opening of the blowhole, the cetacean rapidly breathes out (expiration) before immediately breathing in (inspiration). Experience has shown that once a rescue begins the breathing rate will often decrease. However, increases may occur with imposed stress, e.g. handling, moving and treatment. The rate should return, in a matter of minutes, to the previous level after the stress is removed. If it does not, then this is a poor sign and may indicate that the animal is becoming extremely stressed or shocked. Other signs that may indicate the onset of shock include a significant gap between breathing out and breathing in (greater than 4 seconds in small cetaceans) and breath holding, the latter occurring when an animal goes into a dive reflex (i.e. as would occur at the beginning of a dive).

Respiratory disease also may cause breathing rate increases and increased gaps between expiration and inspiration. Other signs include shallow breathing, strong smelling breaths and a sticky discharge from the blowhole. However, for health and safety reasons, the temptation to smell breaths should be resisted. Affected animals also may cough, but this should be distinguished from aggressive snorting noises made by some dolphins and smaller whales when handled.

## DETERIORATION IN SKIN CONDITION

This occurs once cetaceans are out of the water, as the skin quickly dries out, wrinkling and eventually peeling (known as 'air burn' or 'wind burn').

This occurs most rapidly in sunny and/or windy conditions. Excessive skin loss is a poor sign, as it is associated with fluid loss and a risk of secondary infection.

## DEHYDRATION

Stranded animals are often dehydrated. This is difficult to assess, but may be detectable to the experienced as a sponginess or loss of tone when hands are pressed against the animal's sides.

## TEMPERATURE

Stranded cetaceans, adapted to cooler sea temperatures, cannot lose heat effectively on land, and thus often overheat, (i.e. suffer from hyperthermia) when they strand. Occasionally, however, malnourished and weak animals may suffer from low body temperatures (i.e. hypothermia), particularly in cold weather, and this is thought to be a common contributory factor to the death of small dolphins and porpoises in less than optimal body condition. In most stranded cetaceans, temperatures need to be taken with a suitable temperature probe inserted at least 20cm into the rectum, ***and this should only be carried out by a veterinary surgeon or suitably trained personnel*** (it is possible in animals under 50kg to use a standard digital thermometer).

Normal temperatures lie between 36 and 37.5 °C (97 - 99.5 °F). If the animal's temperature is over 40°C (104°F), the animal is in critical condition. Over 42 °C (107.6 °F) is considered terminal. A positive response to cooling is a good sign in any stranded cetacean that is likely to be overheating.

### BLEEDING FROM ORIFICES:

Excessive bleeding from the blowhole, mouth and anus are poor prognostic signs, unless due to superficial cuts occurring at the time of stranding. NOTE: Pygmy/Dwarf Sperms and many beaked whales have red/dark coloured faeces which can be mistaken for blood.

### REFLEXES AND MUSCLE TONE:

Assessment of key reflexes and muscle tone may give an indication of the level of consciousness in animals showing little evidence of movement, vocalisation, etc. Those that can be assessed include:

- Palpebral reflex- should close eyelids on touching.
- Blowhole reflex - normally held closed and should tighten on touching its edge.
- Jaw tone - should resist attempts to open its mouth.
- Tongue and flipper tone - gentle tugging on the tongue or flipper should be met with strong resistance.

### AGE:

It is useful to try and assess the age of stranded cetaceans, as this may affect the prognosis, and thus the options taken. Neonates only a few days old can be identified by the presence of a fleshy umbilicus and the feather like edge on the sides of the tongue, which helps seal it around the mother's milk nipple making any rescue attempt more difficult. Other factors that may indicate that a calf is still dependent include the length of the animal and the time of year of stranding. In toothed cetaceans excessive tooth wear may indicate that the stranded animal is an old adult.

**HOW LONG HAS THE ANIMAL BEEN STRANDED?** Speak to any locals who may have witnessed the stranding to try and determine this and also the behaviour of the animal prior to stranding. This could be important in determining prognosis.

**ANY ATTEMPTS MADE TO REFLOAT?** It is important to determine if any efforts have already been made to push an animal back in to the sea. A hastily carried out refloat often leads to an animal restranding, may partially explain the animal's condition on assessment, and affect its prognosis.

## Organisation of Cetacean Strandings Response

*Please note: as every stranding is different it is impractical to suggest that actions outlined in the next section should be followed to the letter. They are given only as a guide to show the various techniques that have been used and proven to be effective at many previous strandings.*

### UPON ARRIVAL AT A STRANDING SITE

- Report to the officer/official in charge or a Senior Marine Mammal Medic (they should be wearing a readily identifiable vest) and show MM Medic ID card.
- Ask the person in charge what you can do to assist.
- Secure personal items to be left ashore somewhere safe.
- If you are the most experienced person on the beach, try and take charge and direct/advise anyone else who maybe helping.

## GUIDELINES FOR MOST EXPERIENCED MARINE MAMMAL MEDIC

### GENERAL POINTS

Set up communications to keep everyone informed. Others will probably be on the way to the site. Keep a list of useful contact numbers with you to use.

Divide volunteers into groups. Appoint leaders and brief them. Explain reason why you are doing things.

ALL contact noise and disturbance should be kept to a minimum. This includes dogs, motor bikes, helicopters and over enthusiastic people. Make sure those with boats use them correctly and only when told to do so, to limit excess noise and avoid confusing the cetacean(s). Remember when a more experienced Marine Mammal Medic arrives, he or she will probably take charge - it is their job to take charge; please remember this. The Controlling Officer/Senior Medic will not only be concerned for the safety of the cetacean(s) but also for the safety of the volunteers. He or she may over ride your previous- instructions to the volunteers. Please do not question these decisions. If you have a comment or suggestion, feel free to make it, but accept that the Controlling Officer/Senior Marine Mammal Medic's ultimate decision is final.

### **ALL PERSONS WHO ATTEND AND SUCCESSFULLY COMPLETE THIS MARINE MAMMAL MEDIC COURSE MUST ACCEPT THIS.**

### HEALTH AND SAFETY

Ensure volunteers are not in the water for long periods and are wearing protective clothing, wetsuits (preferably Drysuits or survival suits in colder climates), and that they can work safely in the conditions. Remember that hypothermia is a real risk for people in the water, regardless of the season.

Think about any task you may ask people to undertake and ensure you are not putting them or the cetacean(s) at risk and that they are capable of performing the task safely.

Ensure care is taken around the tail, which can thrash violently, and around the teeth, which are sharp. The animal's lungs may carry a number of potentially zoonotic bacteria (i.e. transmissible to man) and therefore ensure care is taken to avoid people breathing in the animal's expired air. A new Brucella species has been found in marine mammals, which appears to be widespread in cetaceans in British coastal waters. It can cause disease in humans (headaches, lethargy and severe sinusitis) and it is possible that, as with other Brucella species, it may cause abortion in infected animals. Until more is known about this possibility, no pregnant women should handle cetaceans.

- Personnel taking control of a stranded cetacean are usually covered/protected by various State/Commonwealth/Federal laws and have third party liability insurance. If you are a government Officer, you automatically will have this.

Apart from the above, there are two areas of organisation required on the beach: cetacean care and public media control.

## CETACEAN CARE

- Ensure, where at all possible, arrange veterinary attendance to the stranded animal. Vets, even without previous experience, can provide invaluable help with assessment, decision making and appropriate treatment. They can also ensure, wherever possible, that any animals with a poor prognosis are humanely euthanized (destroyed).

Note: In NZ this is not usually the case as many vets have little or no experience with marine mammals.

- Ensure that all specific first aid tasks are being covered.
- Ensure that relevant data is being recorded. For this, the recording sheets issued by the local controlling department should be used.

## PUBLIC/MEDIA CONTROL

Appoint a beach master, who will coordinate all 'non-caring' activities. He/she needs to be readily identifiable and thus a uniformed officer is useful here. Tasks will include:

- Ensuring the vet and the care team are shielded from the public and media so they can concentrate on cetacean care.
- Appointing marshals to control public and media noise and activity. People not needed directly should be moved back.
- Cordoning off the stranded animal(s) at a suitable distance.
- Ensuring public and media safety (N.B. again this person should have third party liability insurance).
- Preparation of a press statement and conducting press interviews.

When cetaceans are beached, begin first aid procedures immediately before organising further rescue plans.

The objective is to reduce stress, calm the cetacean(s), make them as comfortable as possible, and protect them from the sun, heat and drying winds, until such time as either the tide comes in and refloats them or you are able to move them into deeper water with experienced guidance.

The essential points are;

Support the animal in an upright position and dig trenches under the pectoral fins.

Cover the animal with wet sheets or towels and keep it moist and cool by spraying or dousing it with water. Cool water should be applied to the whole body, particularly the rear half, as the tail stock appears to be an important site for heat dumping. Do NOT use very cold water or ice on the flukes and fins.

The blowhole should NOT be covered, and care should be taken to avoid any water or sand entering it.

DO not apply any lotions or cremes without specific instructions from a qualified vet, they may suggest that the blowhole's margins can be protected by smearing them with lubricating jelly or zinc oxide cream.

In sunny weather, erect a shade over the animal. If this is not possible, consider moving the animal (see later for technique).

- If the weather is cold and windy, particularly when dealing with emaciated animals and neonates, erect windbreaks to protect both animal and rescue teams as well.

## STRESS

Stress is dangerous and can kill not only humans but also cetaceans. Past experience has shown that many frightened and nervous cetaceans will calm down and respond to individual human contact. Talking and stroking gently will often comfort and calm them. As indicated earlier, if the stress or noise level is too high, the animal may go into a dive reflex and start breath holding, so the importance of keeping the animal calm is reinforced. Breathing rates may also increase with stress, so closely monitoring the breathing pattern is a good way to check on stress levels.

**FURTHER TREATMENT.** For further details of further therapy for stranded cetaceans, including oral rehydration, refer to a veterinary surgeon or persons experienced with marine mammals.

## LIFTING AND MOVING CETACEANS,

### **NOTE; ONLY IF ABSOLUTELY NECESSARY**

The stranded animal may need to be moved if it is in bright sunlight, on rocks or rolling around in the surf placing it or rescue personnel in danger.

Smaller cetaceans can be moved in a tarpaulin/or a pontoon mat. The animal is prepared by folding the pectoral flippers gently downwards against its sides, then rolling it onto one side. The tarpaulin is then placed, half rolled up, against the belly of the animal, before the animal is rolled back onto its other side, again after folding down the pectoral flippers. The tarpaulin is then unrolled and the animal gently pushed back into an upright position. The animal is now on the tarpaulin and can be moved by rolling up the sides of the tarpaulin and using these to grip and lift it. While the animal is being moved in this manner, its pectoral flippers should be kept folded inwards tight against the body EXCEPT in Orca. If the animal is too heavy to lift, then it can be rolled onto a tarpaulin, as described above, and dragged with great care slowly.

N.B. cetaceans should never be dragged without a tarpaulin and, even if on a tarpaulin, should never be dragged over rocks or shingle. Furthermore, cetaceans should never be picked up by the pectoral flippers, dorsal fin or tail. This is extremely dangerous to both animal and handlers.

Stretchers specifically designed for cetaceans can be obtained. These have holes for the pectoral flippers, which need to be well padded.

It may also be feasible to use heavy plant to lift heavier animals utilising a pontoon mat (see next section). However, if the animal is too large to move safely, then it should be made as comfortable as possible where it stranded (by providing support and shading) until the tide comes in.

Extra support can be provided for stranded cetaceans

## AIR MATTRESS OR FOAM

These can be useful in providing additional support on rocky and shingle beaches (do not over inflate), and reducing the level of trauma and bruising when animals cannot be moved to a more suitable substrate, or into the water.

## INFLATABLE RESCUE PONTOON



This inflatable device was originally designed by WhaleRescue.org (NZ) to refloat small whales weighing around two tonne. However, by interlocking two or more sets of pontoons together, larger whales can and have been successfully refloated. Correctly assembled, the pontoon system will float a full grown 3 tonne Pilot whale in knee-deep water. It is important that at least one person in the group assembling this device has had prior training. Incorrectly assembled, there is a risk that the entire system will become unstable and the whale will be lost either prior to, or during towing. The assembled unit consists of two pontoons (cylindrical shaped tubes) and one lifting mat. (2x mats per set) it is inflated with compressed air(dive tank); although it is designed to aid the refloatation of cetaceans it is also useful in supporting them in an upright position on the beach.

They have been used successfully overseas on larger whales when a number are used in series, a large Bottlenose whale was successfully refloated in the Thames River by UK based British Diver Rescue teams. These pontoons have been attributed with saving well over 10,000 pilot whales in New Zealand since their invention (in 1985), plus many other types of whales that have stranded in NZ and globally. Anyone attempting to use them should be trained correctly and know how they fit together to ensure success.

The pontoons are intended to refloat any stranded whale from knee deep water and allow it to be moved to deeper water for eventual release.

The sequence to use this device follows (you will be shown this in the practical water session of this course):

- 1 The mat should be placed under the whale, by half rolling the whale onto the mat or, if on rocks, by sliding the mat in from the front. Take care that no sand or grit is trapped between the whale and the mat, or that folds of the mat do not get between the whale and the mat; this is to prevent damage to the whale's delicate skin. Take care of the pectoral fins; do not bend or twist them. Position the mat to be level with the front of the fins and keep the fins inside the mat.

2. The DEFLATED pontoons should be attached to the mat by means of the quick release clips as LOW DOWN as possible. When doing this, the whale may have to be rolled slightly to one side then the other in order to accomplish this. Take note of symbols and LEFT and RIGHT markings. Usually the head end is the easiest and the first end to be attached. Different shaped rings are to help you ensure that the pontoon is clipped on to the correct set of rings (triangle or D rings) and thus keep the whale level. (This is important - most problems with the pontoons arise because the pontoon is not attached to the mat correctly, i.e. if the lowest possible ring is not used it will not lift the whale high enough or cause the pontoons to cover the whale). If unsure ask someone who can advise before inflation. When both pontoons are attached, slightly inflate one (approximately half) then fully inflate the opposite pontoon, returning to the first one to fully inflate it. Extreme care should be taken when using a dive-tank as it is possible to burst the pontoons. They should be inflated until they are firm. Make sure that the valves are in the closed position, i.e. air will not return outwards. Twist with finger to open or close the valve.

3. When the unit is fully inflated the whale will be held firmly between the pontoons and may be manoeuvred out to deeper water. The pontoon also can be inflated on dry land and used to keep the whale upright, while awaiting the incoming tide to refloat it. In the water, the pontoon can be towed slowly by attaching a rope to the D rings on the sides of the pontoon and lashing it to the side of one or two boats, if necessary. Do not tow the pontoon behind a boat, as the whale may drown. Make sure ropes do not chaff the whale's skin. Never leave the whale unattended, the whale may propel itself by using it's tail and swim off. To release the whale, simply deflate both pontoons, by placing a finger in the valves and twisting. As the pontoons sink, the whale swims off. **DO NOT COMPLETELY DEFLATE THE UNIT AS IT WILL SINK AND BE LOST,**

### **Health and safety when using Pontoons**

When using Compressed Air (SCUBA) cylinders be aware they are heavy, being made from steel or thick aluminium. They should be carried with both hands. They are unstable when left standing and tend to roll if not secured when lying down. Care needs to be taken over the valve, which is the weakest point; valve failure can be catastrophic. The valve should be opened slowly and, as it gets really cold, gloves always should be worn. The valve should not be left open. Best operated by qualified divers.

### **Lifting and Moving Pontoons and Other Heavy Equipment**

A procedure should be adopted which reduces the risk of injury to people and cetacean. Lifting from a low level should be avoided if possible and care should be taken to ensure that you have a good grip. It helps to get close to the object and a good posture should be adopted. If necessary, help should be sought from others.

The travel path should be planned and the load sized up before moving. The lift should be smooth, feet should be moved in the direction of travel and twisting avoided. The object should be lowered gently under control.

When lifting and moving a heavy object into the water, be aware of the substrate and watch out for heavy surf. Boats should be kept at a good distance unless being used. Wetsuits, Stinger suits and Drysuits should be properly fastened before entering the water and people should not stay in the water for long periods. Keep a careful watch for signs of hypothermia in others.

## **REFLOATING/RELEASE**

Release of the animal back into the sea. Release occurs after a variable period of assessment and treatment on the beach and takes place either from the beach of origin or, if conditions are unsuitable, from a beach nearby after a limited period of controlled transport. Candidates include weaned juveniles or adults, usually of pelagic species, in good or moderate-to good body condition, with no evidence of significant clinical disease or trauma. Refloating of large cetaceans, though complicated by size and weight, has been successfully achieved many times with careful planning a well thought out rescue actions and procedures. The refloatation technique for small and medium cetaceans is described in more detail later.

All the above relies on a high standard of assessment on the beach, to avoid refloating of unsuitable candidates. Also essential to be aware that if the animals are left unattended overnight and they remain out of the water it will result in further deterioration in the animal's condition. This includes the onset of shock and loss of equilibrium which will jeopardise the refloat attempt, this lack of constant overnight care is the major contributing factor in rescue failures.

## **REHABILITATION**

In some circumstances and as an absolute last resort stranded cetaceans may benefit from a period of assessment and treatment in captivity. (WhaleRescue.org is opposed to and does not support the use of any commercial captive facility,)

Possible candidates may include weaned juveniles or adults in less than optimal body condition (not emaciated), or with evidence of significant disease or trauma.

This option is used widely in the United States and Eastern Australia, but has been little used elsewhere. Survival rates often have been very poor and very few if any suitable facilities exist in most countries currently, at least for rehabilitation attempts. In most cases the stranded animal ends up becoming a money making exhibit for public display due to being deemed “un-releasable”. Therefore, rehabilitation should not be undertaken lightly or without experienced advice and suitable facilities (see below) must be available. As stated above accommodation of stranded cetaceans in inadequate facilities, or transport of severely compromised animals that are unlikely to survive cannot be condoned on welfare grounds. Transport even of comparatively healthy stranded cetaceans is likely to be stressful and thus suitable methods must be used (see Transport of stranded cetaceans).

An example of the minimum requirements for a dolphin rehabilitation attempt is:

- Minimum 9 metre diameter, 2.4 metre deep, oval or round pool
- Supply of fresh food (fish) or suitable milk substitute.
- Support systems for animals in the water
- Fully treated salt water supply
- Controlled environment
- Isolation from the public
- Handling facilities
- 24 hour observation facilities
- Experienced and qualified carers + living/sanitary requirements.

## **EUTHANASIA**

It is NOT correct to assume that every stranded cetacean can be saved and at times it is necessary to perform this task to end suffering or to prevent further individuals coming ashore. It is an emotive and controversial topic that always provokes deep emotions and reactions from those present, it should never be allowed to be undertaken as an easy way out and cost cutting measure as has been seen in NZ in recent times.

Candidates for euthanasia include individuals of any species and of any age that are emaciated or suffering from severe disease or trauma which is unlikely to respond to rescue or a period of treatment in captivity. Also included are dependent calves, due to an inability to cater for their social development in captivity prior to release.

Dependent calves of some species may strand more frequently than calves of other species in certain locations an example of this is during the annual migration of Humpbacks around Australia. Before such any calf is euthanized, however, every effort should be made to determine if the mother is still in the vicinity of the stranding, be aware of the public's emotive thinking, so act quickly and decisively.

In the absence of suitable rehabilitation facilities, euthanasia also should be the option for animals with any disease, trauma or condition loss that is likely to compromise their welfare and survival after refloatation. Drug induced euthanasia must ONLY be carried out by the attending vet and shooting with suitable sized weapon and ONLY by licensed firearms users. In both cases, the safety of volunteers and public is of paramount importance, and it is a good idea to shield the operation from the attention of press/media and public.

**IMPORTANT NOTE:** wherever possible, the final decision on the option to be taken with a stranded cetacean should be made with the assistance of a vet with experience with marine mammals, after he/she has examined the cetacean.

## **TRANSPORT OF CETACEANS**

As discussed earlier about this option think hard about the need to move as often the tide will return and surround the area with water, there is absolutely no need to drag any animal to the water in order to facilitate a faster rescue.

Transport may be required firstly for cetaceans that are candidates for refloating but sited on a beach unsuitable for a refloat: here, the animal can be moved to a more suitable location or beach nearby. Secondly, a cetacean may require transport to a nearby rehabilitation facility

Adequate body support and temperature control are essential for successful transport. Vehicles for cetacean transport should be capable of providing adequate space and ventilation for the cetacean and the care team. For the journey, the animal should be placed on an airbed, or preferably on moistened foam, and covered in moist sheets or towels. Again, the blowhole should not be covered. During transport, the animal should be sprayed with water (preferably salt) continually and the breathing rate monitored regularly, as an indicator of the degree of stress the animal is suffering. Transport is undoubtedly stressful and journey times should be minimised. Poor transport can contribute to deterioration in the animal's condition, including muscle damage and respiratory (lung) infections.

## **Techniques for refloating**

Move the animal into the water Move it in a pontoon mat, tarpaulin or stretcher, OR wait for the tide to come in if the animal is too large (N.B. use a pontoon for pilot whales or similar sized animals, if they are available). The animal should always be supported at waist depth with hands, towels (used as slings under the animal) or a pontoon. DO NOT allow pulling on tail or pectoral fins. In Queensland Australia rescue teams use a rope sling tied around body of stranded Humpbacks that is then attached to a boat and pulled tight, this is a very dangerous practice and causes damage and stress to the pectoral fins joints, it is NOT recommended and should not be used or copied.

## **Help restore the animal's equilibrium**

Cetaceans have difficulty regaining their equilibrium (balance) when they strand. This may cause them to swim in circles or, even worse, swim only on their sides, making breathing a tiring task. At past strandings, rocking has been used to good effect to help animals regain their balance and it also aids in relieving muscle stiffness and restoring circulation.

When the water depth is suitable, and taking advantage of the animal's neutral buoyancy, gently rock the animal from side to side, keeping the blowhole above the water at all times. There is no set time; some cetaceans have been rocked for 30 minutes before release and some for many hours. Only when it swims in an upright position without support should rocking be discontinued. Take care during this time not to venture into water over armpit depth. It is difficult to manoeuvre the animal once your feet are off the bottom.

Placing righted cetaceans into pontoon sets holds them upright and frees up essential rescue personnel to aid others, otherwise you can use sandbags placed hard against body to prevent rolling over.

### **Assess the animal's behaviour in the water**

During refloating, careful attention should be paid to other aspects of the animal's behaviour and its response to being in the water. This is very important, as assessment on the beach is complicated by the generally passive nature of cetaceans when they strand and opportunities to observe the animal's behaviour in the water before stranding are very rare (although they do occasionally occur).

Abnormal behaviour in the water includes uncoordinated movements - twitching and tremors - and pronounced flexion (curving) of the body. Disorientation, and listing to one side are signs of loss of balance and whilst inability to swim are not initially poor signs, as these can take several hours to correct, which can be helped considerably by gentle rocking before release.

### **Release the animal**

When the animal appears able to support itself and is making an effort to swim, it should be moved periodically into deeper water to see if it can swim unaided. Once it can, it should be released and guided gently seawards with surfers, divers or small boats. If available, it may be preferable to use boats and other equipment (e.g. pontoons) to take the animal further out to sea before final release, particularly in estuaries, narrow necked bays, harbours, etc., where the animal may become confused after release and restrand. Any watercraft/boats used for monitoring should be placed between the pod and shore NOT on the seaward side and not get too close.

A successful refloat may take several hours or even days to complete. Wherever possible the animal should not be released before being examined by a vet/experienced person. However, refloats of apparently healthy animals should not be jeopardised by waiting several hours for this person to attend.

#### Monitor the animal after release

Before release, the animal's identification should be established with photographs of the dorsal fin and back, and/or with a piece of biodegradable ribbon loosely fastened around the tail stock. After release, a watch should be maintained on the coastline for a minimum of 48 hours, as there is a high risk of the animal restranding.

Restranding after a controlled refloat carries a poor prognosis. Such basic monitoring may improve the chances of determining if a refloated cetacean immediately restrands, but the only means of accurately determining the likely long term survival of refloated animals is satellite telemetry done in some countries overseas. Satellite tagging stranded cetaceans is not without issues, both ethical and logistical.

The present technique requires the tag to be bolted on to the dorsal fin and the potentially deleterious effects of satellite tags on the hydrodynamics of tagged marine animals have been well illustrated, for example in penguins. However, with tags becoming smaller and lighter and casings more hydrodynamic, drag effects and energy costs associated with dorsal fin mounted satellite tags have been reduced considerably. Funding remains an obstacle, with around \$5,000 required to deploy each satellite tag and finding sponsors and grants is proving difficult. There are also considerable ethical and practical problems that have to be overcome, associated with deploying tags on suitable candidates without delaying refloatation in a country where many strandings occur on remote coasts. Because as stated earlier there is not yet any method of attaching tags long term that do not damage the host animal, it is widely discouraged and NOT endorsed by WhaleRescue.org.

#### Mass Strandings

Some species are known to mass strand, e.g. Sperm, Pilot whales, False Orca and some smaller dolphins which all are Odontocetes – meaning have teeth

**All are pelagic species with a highly evolved** social structure. Mass strandings are thought to occur when one individual in the pod strands for one of the reasons already described. The remainder of the pod, due to their high level of social bonding, then becomes involved in the incident.

This strong social bonding is without question **THE** most important factor we must consider in dealing with mass strandings. Usually free swimming animals will not leave those still stranded and rescue action must attempt to refloat the whole group as one unit. One of the most common patterns with mass strandings is that one animal will get into difficulties, through injury, disease or navigational error, and subsequently strand and the rest will mill around slightly offshore. Next the receding tide or currents catch the waiting group, and within a short time the whole group is stranded. It was suggested in the past that marine mammal groups are controlled by a dominant male. Experience at many mass strandings has shown that this is not correct. More often the groups are centred on females and calves, and the most socially important group members are the old females (grandmothers).

Large males are usually the last to strand; some say that this is because their social bonding to the others is not as strong as the females and calves. Most humans find it hard to understand that cetaceans will continue to place themselves at risk to be with others stranded upon a beach or even that they will come ashore to be with the others in adverse conditions.

Assessment and treatment is essentially the same as for single strandings, but ensuring adequate care for all stranded individuals requires a high level of organisation and the public's help is usually needed. The use of experienced trained Marine Mammal Medics is highly recommended as they can spread their basic knowledge to “untrained” volunteers

The majority of animals ashore are usually thought to be healthy and most suitable for refloating.

Young cetaceans in a mass stranding are particularly prone to panic and can trigger off the rest of the pod. An agitated pod can be very difficult to move. If the situation allows, one person (at least) should stay with each animal, to calm it. **Whenever possible, keep the same person or people with the same cetacean until it is finally refloated and swimming free.**

Priorities in the first instance is to get water to the site to keep the whales wetted down and prevent dehydration, this can be achieved by making a bucket brigade to the water's edge, but this maybe some distance away so it is often more practical to dig a shallow trough from one of the inlets of water close by and the ferry buckets back and forth. Firefighting equipment can be used to provide a fine mist and spray to cover the whales, but pumps with noisy engines need to be positioned far away so not to add to noise and stress. Dig holes around the whales to allow water to drain away and not “pool” around their bodies, obviously be aware not put water down or near blow holes. There has been a recent controversial trend to try and rehydrate whales by using hoses and pouring water into their mouths, this is a very specialised task and best left to those with the experience and the knowledge to do so, done incorrectly it can cause considerable stress and actually kill what could have been a “savable” whale. Sometimes a veterinarian may be on scene and decide to administer medication or drugs to treat injuries and help calm the whales but with little or no marine mammal related experience by most vets this is dangerous practice and should be questioned as the suitability and certainly checked with the controlling authority before it is undertaken. In this day and age it is possible to gain almost instant advice from “experts” overseas if in doubt about administering medications

The wind and sun also needs to be considered as in the past the wind/sun has dried the skin of the whales very quickly and also made life uncomfortable for the rescue teams. If possible rig tarps or use people to provide a physical barrier from these elements. If using sheets to cover whales then be careful not to allow heat buildup around dorsal fin area, the fin should ideally be poking out for the sheet and may require a slit to be made. Do not apply any type of lotions/creams to the whales to prevent sunburn or help heal wounds unless direct to by vet/experienced persons, the best solution is to cover from exposure as explained above whilst ashore. Some coastal areas experience a big difference in temperature between day and night and this is particularly concerning for the rescue teams who may have to endure and persevere for days sometimes being in often remote virtually inaccessible locations.

Another priority when first arriving is to try and get the whales upright- that is sitting straight upwards. *(This can be done relatively easily by a few people pushing onto the whale, spread the contact by using large areas of the rescuers body and not just using hands. A good technique is to lean against/on the whale to gently move upright, be very careful of pulling on dorsal and pectoral fins and whenever possible dig holes for the fins to sit into. Large whales can be righted by digging a hole in the sand beside them and rolling them into it, make sure a drain is also dug to carry away and any water used to cool it.)* This will greatly assist the whales to regain their balance and help prevent disorientation. Whenever possible mothers and calf pairs should be kept together but far enough apart to allow water to flow away and cool them. If the tide returns the whales can be held upright in the shallows by a couple of rescuers and if necessary checked for balance by letting go to see if the whale can stay upright or it may slowly topple over, in which case it needs to be gently rocked back and forth, (being mindful not to pull/push on the dorsal fin) there is no time frame for this it may re-establish balance within minutes or it may take many hours. If you do not allow this important process to take place the whole refloat will be jeopardised and they will restrand again.

**There is never a quick and easy solution in marine mammal rescue**, often well-meaning people have simply pushed the whales back to sea when the rescue teams have been ready as opposed to waiting until the whales are ready. This causes them to simply restrand somewhere else on the beach and more often than not the rescue teams have departed thinking that they are safely out to sea only to find out the next day they are back ashore stranded, worse for the experience.

There is absolutely no need or requirement to get them back into the water at all costs, past rescues have taken days and used large diggers (and/or people) to carve channels in the sand to bring in fresh sea water and create a channel in which to hold the whales until they are ready to go, having reestablished their buoyancy being a very important consideration. Frequently there are still whales off shore part of the original pod, communication between these whales and the whales ashore should be avoided and can easily be “severed” by facing the stranded whales inwards towards land, being aware that sound does not get transmitted from the land (air) to the water, so if the stranded whales are “high and dry” there is no urgency in doing this, but be mindful once the incoming tide returns and they are placed into the man-made channel they can resume communicating and draw the others in. The time between stranding and final refloat is termed the “holding period” which has no set time period, it could be within hours of the stranding or could be days later when all the conditions are most favorable.

The technique for refloating involves amassing all those suitable in the shallows and releasing them together when the conditions are suitable. It is advisable to try and refloat one of the “key” whales (usually a large female) she is often the matriarch of the pod and may call the others out. A technique, most commonly used by many MMM’s overseas, is to tow the largest female and one or two other key animals (possibly calves) out to sea in pontoons strapped to the sides of boats facing outwards/offshore. At a suitable distance offshore decided between experienced persons and the rescue coordinator these animals are then turned to **face the shore**, while the animals held in the shallows are turned to face the sea. Again, hopefully, the acoustic signals/communication from the key animals will attract the others out into deeper clear water.

Any refloat attempt is best done during daylight hours and should be attempted only when it has been assessed that the whales are ready and have no major balance or injury concerns, all required resources (including health and safety procedures/policies) are in place and the rescue teams have been briefed on the correct procedure and steps to follow. Everyone needs to be clear on who is in charge and who will issue orders and corrections if required, past rescues have failed at this stage when people have not followed simple directions from experienced persons in charge. Maintain a good communications network between rescue teams to ensure everyone moves together and accordingly to directions/instructions given. Many rescue areas have dangerous seabed contours with strong currents, deep guts and channels one moment then shallow sandbars the next, the safety and well-being of the rescuers should be a high consideration but use only suitable people as having to arrange a rescue of people in the middle of a refloat could again jeopardise the entire whale rescue effort. Small boats, strong swimmers/divers, kayaks, surf skis and alike have been used to slowly herd the whales offshore using propeller noise behind the group to push them seawards, being over ambitious and moving too fast can cause the group to panic and break away restranding. It has been observed many times that once offshore usually in water a few metres deep the Pilot whales in particular will stop briefly “mill” around spending time supporting, bumping up against and touching each other along with a great deal of vocalisation will also be heard. This is thought to be an important step towards rescue success in letting them reestablish contact and sort themselves out, at this time watch for individuals having difficulty staying upright and not swimming straight, it has again been observed that often rescued whales will “hold and support” those not able to support themselves they help each other, give them time to do this at this time as well.

What can be termed “safe water” is usually many miles offshore and it can be a long and drawn out process to get the whales out into sufficiently deep water or to rejoin their original pod, again do not rush this final step. The recovery of equipment (pontoons etc) and rescuers from deep water and returning them to shore safely must also be considered and done in a safe and timely manner.

Obviously if there are many more whales offshore then actions on the beach are more urgent and as stated previously the need to break off communication between those ashore and offshore is a high priority. If at all possible the refloated pod should be observed for as long as possible to ensure they reach safe deep water well clear of the beach and in subsequent days a flight to check the immediate area would be most useful

### **Night time Rescue Attendance**

One of the biggest reasons mass stranding rescue attempts have failed to be successful in New Zealand in recent times is due to the misbelief that the whales onshore can be left alone at night. It is completely illogical to assume that whilst you can provide the very best of attention, care and assistance the whales during the day they can then be left alone at night. Prior to 2000 Marine Mammal Medics were allowed to stay alongside whales at night but a change in DOC policy now actively prevents this and this has been reflected in the dramatic decline of measured rescue success. Night time “holding operations” do present some challenges and risks to the rescue teams but nothing that cannot be managed, prepared and mitigated for. As said earlier it is not a good idea to attempt a refloat in darkness unless there is no other choice due to tides and other factors such as weather sea conditions abating.

All persons on the beach after dark should be suitably dressed in warm clothing and/or wetsuits with reflective tape or a chemical stick/light attached to track their movements. If on or near the water then the use of PFD's should be encouraged fitted with light and whistle. Adequate food and water supplies and a means of communication back to "base camp" are important for the long hours expected often on a remote location. Standard mobiles cannot be relied on to work in such conditions so radio is often the best option, VHF Marine is preferred, logging in/out with local Coastguard units or similar. Regular check in/out times should be established with those not involved in the night time holding operation and arrangements made for welfare checks if allocated calls in times are missed.

In some locations there is a real danger of large predators (sharks) being attracted to the stranding site, obviously these also pose a significant risk to the rescuers. As the tide comes in and animals are able to float free then they should be moved gently up the tideline and again back down as it recedes to prevent being in deep water where it can become impossible to hold onto and keep control of them, and prevent any interaction with such predators.

### **Post refloat actions**

As previously mentioned in this course it is important to monitor any refloated cetaceans for as long as possible after release to ensure they do not return to a situation where they may restrand.

An important task immediately after the refloat is to ensure all persons have returned back safely and are accounted for, remember to thank everyone involved. It can be a very emotional time for some and mentally and physically draining so be aware you may not be in the best frame of mind for the long drive home.

### **Autopsies/data collection**

During the stranding rescue some people maybe tasked with taking measurements and DNA/skin samples, if you notice anything particularly unusual such as open wounds or external parasites then bring this to the attention of those in charge. In single strandings the cetacean maybe of particular scientific interest and a team may be sent to perform a necropsy on the deceased individuals. This can be a great learning opportunity and providing you do not cause interference a task where you can learn a great deal and one that should be observed whenever possible/permitted.

In some countries there maybe a requirement to observe indigenous rights, culture and customs. A blessing/prayer over the stranded whales before rescue may be performed but do not allow this to delay or impact on initial rescue efforts to ensure survival of those ashore. The removal of bones and teeth may be undertaken as part of these "rights" in the post rescue phase

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**For any further advice, comments or suggestions please contact [WhaleRescue.org](http://WhaleRescue.org) at  
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