

WARNING: A permit issued by the Department of Sustainability and Environment is necessary when caring for any native wildlife.

**TECHNIQUES FOR THE TREATMENT
OF SICK, INJURED
OR OILED
PENGUINS**



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INTRODUCTION

The Phillip Island Nature Parks (incorporating the Phillip Island Penguin Reserve) has cared for thousands of penguins during the last 24 years. In 1981 with the appointment of a full-time research biologist an on-site facility was built. This was upgraded to the present facility in 1992. All penguins are treated at the facility located within the Penguin Reserve. The Penguin and Koala Rehabilitation Complex (PKRC) includes an air-conditioned penguin ward for critical care, 2 large fully enclosed outdoor pens with artificial burrows for long term patients and separate treatment and food preparation areas. An in-ground salt-water chlorinated pool (5m long, 3m wide and 1.5m deep) was also built in 1996 and this has proved invaluable for exercising birds and testing if their plumage is waterproof before release.

The role of caring for sick, injured and orphaned wildlife is almost always undertaken by the caring volunteer. We would like to share the knowledge gained over the past 24 years with you. This rehabilitation manual, first compiled in 1989, aims to be a quick reference guide covering all aspects of penguin rehabilitation - but if you find something missing don't hesitate to give us a call on the number listed on the front cover. Topics covered include life cycle, common problems, housing, medication and release.

THE LITTLE PENGUIN - A YEARLY CYCLE

May - July Adults feed up after the moult and maintain their burrows ready for the breeding season. They spend most of their time at sea during this period.

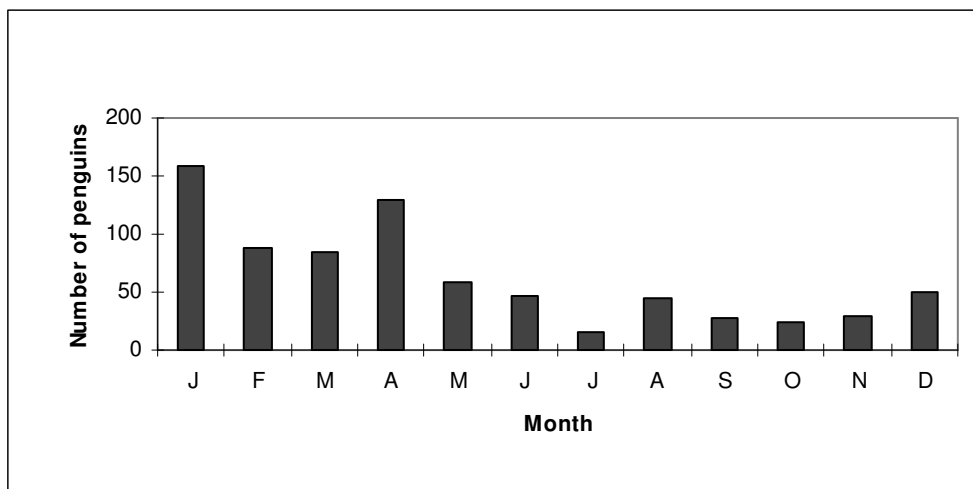
August - September Adults pair up and the female lays 2 eggs.

October - December Male and female share the incubation of the eggs and small chicks. When the chicks are approximately two to three weeks old, both parents go to sea to find food for the rapidly growing chicks.

December - March After eight weeks of growing, chicks leave the burrows and learn to swim and find food for themselves without any help from their parents. The adults finish caring for their chicks and then go to sea to double their normal weight for the moult.

March - May Adults sit on land for 17 days to completely replace their feathers (moult). They cannot swim during this time as they are not waterproof. Chicks travel vast distances to good feeding grounds and stay there until the next year when they either moult there or return to their own colony. Seventy percent of chicks die in the first year, many from starvation. If they survive the first year of life penguins can live a long time (up to 25 years), but the average lifespan is six years. They don't start to breed until they are two or three years of age.

Number of Little Penguins treated each month at the rehabilitation facility 1992-96 (excluding major oil incidents).



As you can see the most difficult time in a penguins' year is December to May.

WILDLIFE SHELTERS

You are not permitted to attempt to rehabilitate native wildlife unless you are a registered wildlife shelter.

Native wildlife are unique animals and are much more difficult to care for than a cat or dog. Wildlife shelters undertake specialised training in order to rehabilitate and release as many injured animals as possible.

In most areas there are wildlife shelters whose staff are experienced in the handling of sick and injured animals and are the best option if you are inexperienced in these matters. The locations of wildlife shelters can be obtained from your local Dept. of Sustainability and Environment (DSE) office or the RSPCA. Information may also be obtained from Wildlife Victoria, 247-251 Flinders Lane, Melbourne, Victoria, 3000 or email: wild@vicnet.net.au

**Emergency 24 hour phone number, call
13 000 WILDLIFE or 13 000 94535.**

We will rehabilitate any penguins you find, provided you can arrange transport to us at the

Phillip Island Nature Parks (Penguin Reserve) (03) 5951 2800.

CATCHING THE BIRD

A Little Penguin in the open on land during the day is a very sick animal.

Sick birds will often “perk-up” when initially caught but deteriorate rapidly afterwards.

A sick or oiled bird may be suffering from shock, cold, starvation, feather damage, poisoning and many other complaints e.g. cuts or infection.

Because penguins don't fly and have very dense feathers compared to “normal” birds they may seem heavy or “normal size”, even if they are starving.

DON'T CHASE THE BIRD

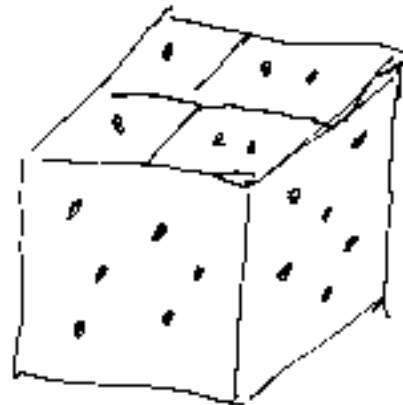
Approach slowly and use a net or towel. Wear gloves for protection if possible - welding gloves are ideal and available from hardware stores (in the case of an oil spill, other protective clothing should be worn). Once the bird is immobile, hold it firmly on the head or around the neck and support its body with the other hand (but never handle by the neck alone). Different holds are appropriate for different species of seabirds and may be seen in the oil spill training video, “Treating Oiled Birds” available from Arthur Rylah Institute or DSE.

If the bird is oiled, wrap it in a clean, dry cloth with only its head and feet protruding, or in a poncho (a 30 cm square of absorbent cloth with a hole for the head in the centre). The poncho will prevent the bird from struggling and exhausting itself, from swallowing oil and keep it warm. If you have a knitted penguin “jumper”, these are even more effective at stopping the bird from preening itself and ingesting oil. Birds should be kept in a dark, quiet place. Care should be taken in hot weather that the bird does not become overheated. If the bird becomes overheated, spray it gently with cool water and administer a rehydration solution (see Initial Treatment).



TRANSPORTATION

Cardboard boxes are suitable for transporting penguins. They need to be tall enough for the bird to stand up in - that is over 35 cm high. They need to have air holes punched into them but they must be strong because the bird will try to escape unless it is really sick. Secure the lid with packaging or masking tape. Birds should not be transported or collected from the beach in sacks or other enclosed containers as they may suffer heat exhaustion. If possible, clean towels should be used in the base of the box **NEWSPAPER OR STRAW OR GRASSES SHOULD NOT BE USED** as these harbour spores which cause fungal pneumonia (see aspergillosis) in seabirds. Oiled birds should be placed in a poncho or jumper but care should be taken that the neck hole is large enough.



Birds should not be transported large distances in the back of open vehicles, as the resulting wind could be seriously detrimental to birds suffering from shock and cold. On the other hand, adequate ventilation between boxes must be provided to prevent birds from becoming overheated or asphyxiating from lack of air. A delicate balance is required.

GENERAL CARE

INITIAL TREATMENT

All sick penguins are dehydrated on arrival at a treatment centre as they probably haven't been able to find food and they gain their fluids from the fish that they eat.

The penguin should be rehydrated and placed in a cardboard or plastic box (at least 35 cm square). The box should then be placed in a dark, quiet, draught-free place and remain undisturbed until examination or feeding time.

Do not continually check the bird as this increases the stress the bird (a wild animal) is already under.

If the bird is obviously bleeding or oiled, stem the bleeding and bandage, or, if oiled put bird in a poncho or jumper. A poncho is a 30 cm square of absorbent material with a whole cut into the middle. The hole should not be too tight around the neck but also should not be so loose that the bird can preen any oil. The jumpers can be obtained from the Phillip Island Nature Parks, or a pattern can be obtained and the jumpers knitted by yourselves.

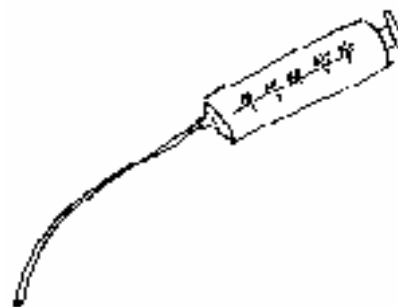
REHYDRATION

Use a 50 - 60 ml syringe with 12-15 cm of 5 mm diameter flexible plastic tubing attached (make sure the feeding end is not sharp). Pre-mix 45 ml luke-warm water with 5 ml

Vy'trate (available from Veterinary clinics see Appendix 1). Look inside the penguin's mouth and observe the wind pipe opening and closing. No fluid must get into this pipe or it will enter the bird's lungs and kill it. Slide the tube gently down the bird's throat, making sure you bypass the wind pipe and slowly depress the plunger. Watch for fluid in the

mouth. If the bird starts spluttering or if fluid starts running out of the bird's mouth, withdraw the tube and let the bird take a breath. Try again. If the bird cannot take the fluid, leave alone for 10-15 minutes and try again with less fluid. (Birds at critical starvation weight will regurgitate most of the fluid. There is little hope for these birds).

Until the bird is eating 150 - 250 grams of fish per day, continue Vy'trate solution (50ml) at least 3 times per day.

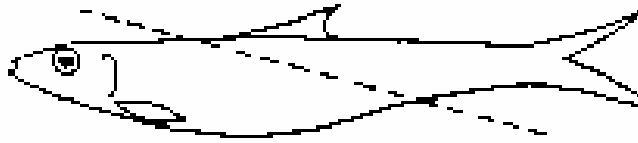


FEEDING

Food suitable for penguins includes anchovies, pilchards, squid or fillets of any type of ocean fish. Whole, freshly caught fish are the ideal food in the long-term as they contain all the necessary nutrients and have a higher calorific value than squid. Vitamin B1 and vitamin E are destroyed by freezing, so administration of a daily multi-vitamin supplement is essential if using defrosted fish.

The fish must not have been treated in any way e.g. packed in salt, treated with preservatives or tinned etc. Any contamination of food in these ways causes vomiting and DEATH within 24 - 48 hours! Only fresh-frozen fish should be used (if fresh fish is not an option). We buy 2.5 kilogram blocks of fresh-frozen Western Australian pilchards from a large bait company

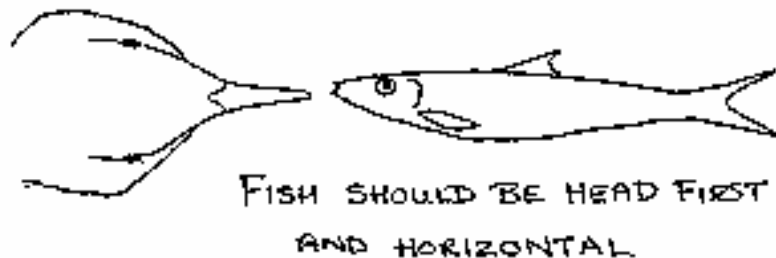
in Melbourne. (McLachlans, 45 Christensen St. Moorabbin, (03) 9555 5433). Frozen fish should be defrosted in a bucket, protected from flies overnight. If fish needs to be urgently defrosted, use only cold running water. Spare fish may be drained and stored in the refrigerator for 24 hours.



Remember to run warm water over the fish prior to feeding. During the winter months, pilchards are often too large for penguins to eat whole and will need to be sliced (see above).

Penguins must be force-fed as they do not recognise dead fish as food. For very weak or thin birds being fed for the first time, the fish should be cut into small chunks on an angle; healthier birds can be given whole fish. The fish should be dipped in seawater (or tap-water with iodised salt added - 1/2 cup per nine litre bucket of water - NB this is not a rehydration formula, you will kill the bird if you attempt rehydration with this fluid, remember the bird ingests very little of the salt-water when it feeds) before being fed to the bird. Penguins need to ingest salt and iodine daily. The salt is needed to stimulate the salt glands located in the head above the bill. Salt is excreted from these glands through the nares (slits in the bill). If the glands stop working, the bird cannot be released as it can no longer cope with a salty diet. Penguins need iodine to prevent the symptoms of iodine deficiency. The salt-water they ingest when catching their fish does all this in the wild.

When feeding, the head of the fish is the most useful piece to begin with. Kneel on the ground with the penguin facing away from you between your knees, force its bill open and push the head of the fish down the bird's throat as far as it will go or until the bird starts swallowing. Repeat with the next chunk. With lively birds, two pairs of hands are most useful, or the bird can be wrapped in a towel.



After the initial feeding, most penguins will take the “whole” fish with little help. Eventually, some birds will be able to feed directly from a fish held in the hand. However, most birds never learn this technique and are always difficult to feed. Persistence and patience are required to make sure each bird eats its quota. Care must also be taken that the feathers around the neck are not damaged or covered with fish. Try not to hold the bird around the neck when feeding.

It is better to err on the side of underfeeding, especially with birds which have recently been brought in, as they may regurgitate their food and run the risk of choking if they are too weak to completely expel food from the mouth. Over-feeding may also result in asphyxia if the stomach is so distended that it blocks the air-passages. As the bird becomes stronger, it will eat 150 - 250 grams of fish per day. Check that it is gaining weight.

The face of the penguin should be cleaned after feeding, using seawater/tap-water to prevent plumage from becoming soiled with fish. Every effort should be made to keep the bird as clean as possible - with difficult birds; meals of more, smaller fish may help.

If the penguin is too weak to swallow small chunks of fish, its chances of survival are small.

VITAMINS AND TABLETS

Penguins in captivity, eating thawed (frozen) fish will need a daily vitamin supplement to keep them healthy. A 1 kg (1000 g) bird needs 25 mg of Vitamin E and 7 mg of Thiamine (Vitamin B1). If treating only a few birds, it is not too expensive to use Blackmores or Amcal multivitamin tablets (1 tablet per day) and Blackmores or Amcal Vitamin E (1 capsule every 3 days). If treating many birds, it is cheaper to buy the vitamins separately and make a solution of powdered tablets and water. Using the correct dosage rate, tube each bird with a syringe before feeding. (see - Initial Treatment -Rehydration).

The easiest way to get a penguin to take a tablet is to place the pill in the bird's throat or put it in the gill of a fish and feed the fish to the bird.

THE RECORD BOOK

A record book should be kept on the condition of each penguin, type of treatment and whether it was successful. The records can then be used as a guide to modify treatment regimes.

Penguins can be temporarily identified by tying curling ribbon loosely around where the flipper joins the body. A variety of colours and colour combinations are available.



A record book should contain the following particulars:

1. Date when found
2. Location where found - in case of oil spill, standardise location using a detailed district map.
3. Name and address of finder
4. Sex - males have a bill depth at the nares of over 13.4 mm; females 13.4 mm or less; chicks 10-11 mm bill depth, brighter blue plumage than adults and a less pronounced hook on the end of the bill. They also have a higher, squeakier voice.
5. Injury or problem - describe what is wrong with the bird
6. Proposed treatment and any changes in treatment
7. **Weight** - birds can be weighed on kitchen scales (remember to subtract the weight of the box or bag). ***This is the most useful piece of information that you can obtain about the bird*** - Males should never be less than 800g and should be 1100g or more when healthy, females are generally 100g lighter and chicks should be 900 - 1300g. Weights should be recorded at regular intervals, every 2 -3 days. This will tell you if the bird is responding to the treatment.

HOUSING

Initially, keep the bird in a box (at least 35 cm square) in a warm room (25⁰C). Birds need to have a warm room so they don't use valuable energy on keeping warm. The body temperature of Little Penguins is about 38.5⁰C. Their small body size means that cold exposure is more pronounced and hence more energetically expensive. At temperatures below 10⁰C, measures such as fluffing up their feathers and redirecting the blood flow in their feet are not enough and they start shivering which consumes a lot of energy. As the bird becomes stronger and more mobile, leave the bird outside during the day (on fine days), and bring inside at night. Slowly harden the bird off until it is permanently outside in a predator-proof enclosure (foxes, cats, dogs and birds of prey will attack birds in roofless pens) and penguins can climb up to 2 metre wire fences and can also dig very well!

INSIDE

Boxes should be lined with a clean towel and the lining should be changed and cleaned daily. **Newspaper, paper, straw, saw-dust, wood-shavings or grasses of any type should not be used as they contain spores that can cause fungal pneumonia (aspergillosis) in seabirds.** The container should have some kind of roof over the birds' head as penguins are burrow dwellers and need overhead protection to feel "safe".

OUTSIDE

Penguins usually inhabit the open ocean where they can dive to escape predators or spend the daylight hours underground in their burrows. They seem to "know" when they are in captivity and exhibit behaviour not normally seen in the wild. At times they will walk around outside during daylight hours. As a consequence of this change in behaviour all outside pens must be completely enclosed with wire to prevent attacks by many predators including domestic pets, foxes and birds of prey. In addition penguins are extremely agile and can climb wire mesh up to 2 metres high to escape if no roof is provided.

As penguins are naturally burrow-dwellers, they do not feel secure unless they have a solid roof above them, even in a completely enclosed wire cage. A temporary shelter can be made by lying a box on its side. A more permanent shelter can be made by building a box without sides out of wood. This should be more than 35 cm high and 40 cm long.



FLOORING

Penguins in captivity are prone to foot and leg problems as they are not built for standing for long lengths of time (they spend most of their lives in the ocean).

The best surfaces to prevent problems are sand or rubber matting. Both should be kept as clean as possible to avoid infections. Sand should be raked and/or replaced daily and rubber matting should be washed and dried daily

HOT WEATHER PRECAUTIONS

When the temperature rises above 30°C Little Penguins have to expend energy to keep cool, and will become distressed. On hot days it is therefore advisable to either bring the penguin into a cooler indoor environment or put a sprinkler on so the penguin can move in and out of the spray and keep cool. It is critical during the moult period that fat birds do not become overheated (see Care of Moulting Penguins).

SWIMMING

Once the penguin is showing signs of recovery i.e. weight gain, moving around etc. it should start swimming every day except when moulting (they do not swim during this period as they are not waterproof).

Swimming allows the penguin to build up muscle tone, gets the bird off its feet for a while and wetting of the feathers promotes preening. Gentle hosing can also be used to stimulate preening. Preening is necessary to keep the bird waterproof. Start with quick dunks and build up to longer, supervised swims.



A small child's pool or bath is fine but ensure that the water is kept clean.

Weak or disabled penguins who cannot get out of the pool unassisted should not be allowed to have access to the pool unsupervised as they can drown. **Oiled penguins should not be allowed to swim unsupervised initially, even if they appear healthy as they may not be waterproof** (if you are concerned about whether the bird is waterproof, see Common Problems - Oil - Waterproof test).

Note: Little Penguins will be reluctant to swim if the water temperature is below 12°C as this is the minimum oceanic water temperature encountered in the wild. In winter try to swim birds in the afternoon when the water is warmer. Don't force birds to remain in cold water. If the water is this cold the penguin cannot keep itself warm even by shivering.

RELEASE

CRITERIA FOR RELEASE

The penguin should weigh at least 1000g or 1 kg.

Even if the penguin is not ex-oiled, it should be capable of swimming in a pool or immersed in water for 3 hours to ascertain whether the feathers are waterproof. (to test for waterproofing see Oil - Waterproof test).

Penguins should be released on the beach before noon. Releasing the birds on the beach has the advantage of enabling you to watch and see if they go out to sea. Some birds may spend

from 20 minutes to 2 hours swimming around before returning to shore exhausted - probably due to loss of muscle tone during captivity or lack of waterproofing. These birds can be taken back, rested and released on subsequent days until they finally swim away and don't return.

Chicks who have never been to sea (hand-raised) should not be released until they have attained full adult plumage and are 1 kg or more. We have found that chicks generally become very restless and difficult to feed when they are ready to go to sea. They should (if possible) be released in their original colony, as they become imprinted to their place of release when they leave (the release site is where they will attempt to return to breed).

Very occasionally when Little Penguins are kept for long periods (six months) and only swum in "fresh" water their feathers become "slimy" (you will recognise this when it happens). To avoid this problem rinse the penguin in a bucket of salted water after swimming.

COMMON PROBLEMS

Most penguins arrive at the rehabilitation centre during the end of the breeding season and the end of the moulting period. We have had seven major incidents involving large numbers of penguins since 1982. All but one (poisoning of 37 birds due to a toxic algal bloom in Port Phillip Bay) have been caused by oil spills.

These, in order of commonality are the problems most frequently seen at our rehabilitation facility:

Veterinary Advice

Most vets will not charge for a consultation concerning native wildlife, they will, however, charge for medication. Many symptoms can relate to a variety of different problems, always consult a vet if you have any queries. Vets are not taught about penguins but will use their knowledge of birds and surgical skills when the need arises. Vets are welcome to contact us if they have any seabird-specialised questions.

All the medications we use are readily available from your local vet (except for Itraconazole - see Aspergillosis).

Starvation

This is the most common problem presenting at the rehabilitation centre. In some cases, starvation is the result of another problem. Discount the following problems during initial treatment:

- Eye injury or infection
- Broken bones
- Lung infection
- Deep wound
- Head injury or fox bite
- Poisoning



Symptoms

The bird is extremely light and there is no flesh on the breast-bone. (Penguins often feel fatter than they are because they do not have hollow bones like birds that fly). The bird often cannot stand and lies flat on its chest.

In cases of extreme starvation, the birds' entire system has shut down and it cannot digest food. There is little hope for these birds because by the time you have started the system up, the bird has starved to death.

Treatment

Act quickly to stabilise the condition by administering 50 ml Vy'trate solution 3 times per day (see General Care - Initial Treatment - Rehydration). Gradually, introduce small chunks of fish. Frequent small feeds in the early stages of treatment will help prevent the penguin from regurgitating its food and choking on it (see General Care - Feeding). Exercise the birds' legs after feeding. Slowly build up the amount of food and decrease the fluid administration until the birds' weight is normal and the bird is eating between 150g and 250g of fish per day.

Oiled Birds

A training video on the treatment of oiled birds may be obtained from the Department of Sustainability and Environment.

In the case of a large spill or when a lot of birds are affected, reference should be made to your oil spill action plan. This will start action such as - searches for other birds, calls to experienced bird cleaners, search for spill and sampling of oil etc. A copy of DSE's State Plan to Deal with Wildlife Affected by Oil Spills would also be useful.

Do not try to rehabilitate a penguin yourself if you are inexperienced in handling birds and there is expert care available.

If you have any queries contact us immediately (03) 59 512 800 or after hours ring 0500 540 000 (Wildline).

Symptoms

Oil destroys the waterproofing of plumage causing loss of insulation and decreases the birds' feeding efficiency which may result in dehydration and starvation; toxins from the oil are absorbed by the birds' skin which may become red, inflamed or burnt, ingested oil from preening will cause gut inflammation and ulceration and liver damage.

Initial Treatment on Arrival at Shelter

Administer 50 ml Vy'trate rehydration solution (see - General Care - Initial Treatment - Rehydration) and 1-2 ml paraffin oil or Tympanyl (available from vets). Clean around eyes, vent and nostrils with a cloth and warm water. Leave the bird in a poncho (30 cm square of absorbent material with neck hole) or jumper in a warm, quiet area while you prepare the cleaning apparatus.



Selection of Birds

If it is necessary to limit the number of birds that are treated, the extent of oiling is not a good indication of their chance of survival. Heavily oiled birds may have come ashore quickly and therefore may not be starved and would not have had time to preen themselves and ingest much oil.

Irrespective of the degree of oiling, birds which are thin, with a sharply protruding breastbone, or which pass large quantities of oil in their faeces have the poorest chance of survival. They should be given second priority for treatment and, if resources are stretched, these birds should be euthanased.

Remember that the poncho or jumper will stop the bird from preening and that the bird will need all its strength to endure the washing process.

Remember, there is no need to clean birds which come in late in the evening as they can always be left in their ponchos or jumpers until the next day.

Washing

Delay cleaning until the bird has gained weight and strength. The bird should be alert, active, able to stand up and weigh at least 800g.

You will need:

2 - 3 containers large enough to wash a penguin (at least 30 cm deep) - plastic washing-up bins or a double sink are ideal.

A constant supply of warm water (35-40⁰C)

DivoPlusV2 available from

**JohnsonDiversey Australia Pty Ltd
29 Chifley St Smithfield NSW 2164
(02) 9757 0300 FREECALL 1800 251 738 FREEFAX 1800 626 322**

(if DivoPlusV2 is unavailable, use Sunlight dish-washing liquid.)

Clean towels

Absorbent cloths such as “Chux” for sponging the bird

Hand-held shower nozzle (if possible)

Fan heater

Protective clothing such as aprons, rubber gloves and eye protection.

Two people per bird - you can manage with one if you are desperate

A good supply of hot water - do not start to clean a bird unless you are confident you will have enough hot water to complete the rinse cycle - this is very important if you are doing more than one bird

Always rehydrate the bird prior to cleaning and don't feed.

Constantly check for signs of shock or deteriorating condition (panting or dilated pupils) - cease cleaning and rinse and dry the bird immediately if this occurs.

Three containers should be filled with warm water (35-40⁰C). To one container of warm water add DivoPlusV2 detergent - 30 ml to 4 litres water. (If DivoPlusV2 is unavailable, Sunlight detergent may be used.)

The bird's feet should be touching the bottom of the container and the water waist-deep. The washer holds the bird by the head behind the eyes with one hand while the other hand gently squeezes and presses water into the feathers with a Chux cloth to release the oil. A second person may be needed to hold the bird in the water, around the body and the leg - never by the flipper, you may break it. **The feathers should never be rubbed or pushed upwards. (Avoid the temptation to use a nail or tooth-brush or to rub vigorously as this will do more damage than the oil!).** Depending on the severity of the oiling, a period of 5 to 15 minutes should be sufficient to clean the bird. If the water becomes dirty, a fresh container of water should be used to continue the process. Do not extend the washing period beyond 15 minutes as birds become stressed. Any remaining oil, after this time, can be removed at a subsequent washing. The bird can be washed two or three times over subsequent days if necessary.

If oil occurs on the head, sponge it off gently using a downward motion and protecting the eyes. If the bird is showing signs of shock - rinse, dry and put a clean poncho or jumper on the bird and repeat the procedure the next day.

Once there is no further visible evidence of oil on the bird (one can gently lift the feathers in the areas which were the oiliest to ensure that the oil has been cleaned right throughout the plumage), it can be rinsed in a container of **warm** water (same temperature as washing water to prevent the penguin becoming chilled).

Rinsing is equally as important as washing because if any residue detergent is left on the bird, it will dissolve the bird's natural oils when it starts to preen and replace its waterproofing.

A hand held shower-head with warm-water coming out under pressure is the best way to ensure that the plumage is rinsed thoroughly, but if you don't have one, two or three rinses in containers of warm water (until all the soapy residue disappears) will do.

Wrap the bird in a clean towel but don't rub it and then release into a warm, draught-free area. We prefer not to use hair-dryers on penguins but with other species this may be necessary. Inexperienced volunteers may burn the penguin's feet, or other non-feathered parts of birds, and it is very stressful for the birds. Penguins are released into a pre-warmed, penned area with a small fan-heater directed at them (a barrier may be necessary to prevent them from getting too close) where they can shake and preen themselves - this reduces the handling time considerably (chick-rearing lamps suspended above a group of birds can also be useful). Remember that these birds are soaked to the skin - this is extremely stressful for an animal that has never felt water on its skin before, so don't hang around watching them.

When birds are dry they should be placed in large boxes and kept in a warmed area inside overnight or until they are well enough to go outside. A separate box for each bird allows problems such as regurgitation of food to be detected, prevents birds fighting and reduces the stress of being with a "stranger". Remember that the birds are not waterproof, as you have removed the natural oil from their feathers during the cleaning process so will become sodden if it rains, in addition, skin irritation may cause heat loss.

Feeding

All birds should be given 50 ml rehydration fluids until eating 150-250g of fish per day. (see General Care - Initial Treatment - Rehydration and Feeding).

If the bird starts regurgitating its food, it may have slight poisoning. Try increasing the rehydration and decreasing the amount of fish for a day. Also, 1-2 ml Tympanyl or paraffin oil may relieve the problem. If the regurgitation continues over a period of time, it may have a bacterial infection. Get it to a vet, or treat with an antibiotic for 5-7 days.

Waterproof Test

INITIALLY OILED BIRDS SHOULD NEVER HAVE UNSUPERVISED ACCESS EVEN TO SHALLOW WATER FOR BATHING OR SWIMMING EVEN IF THEY APPEAR "ALL RIGHT" AS THEY CAN DROWN

Studies have shown that chemicals from the oil may affect the motor areas of the brain. At 2 - 7 days after cleaning, healthy birds should be placed in a swimming pool (a child's wading pool will do) for 10 to 15 minutes, or until the feathers become waterlogged. The outer feathers should then be gently lifted to check the down (fluffy feathers that look like cottonwool) underneath. If this down is wet, the bird will also be wet and cold, and cannot be released. If the outside temperature is below 15⁰C the penguin should be returned inside until dry. The time taken to regain waterproofing varies according to the extent of oiling and efficiency in the washing process. Birds in the pool must be supervised at all times and watched for signs of hypothermia and panic. Panicking birds can drown very quickly if there is no obvious exit.

Ex-oiled birds should be tested in a pool for 3 hours and the down feathers checked prior to release. Any wet feathers mean the bird is not waterproof and should be kept longer. Increased lengths of swimming time are necessary.

Success Rate

The survival and release rate of wildlife in an oil spill is dependent on a number of variables. The proximity of the spill to the shore, the weight of the penguin on arrival and the type of oil are all factors. Out of all bird species, penguins are the most successful to rehabilitate after oiling.

Oil Spill Action Plan

It is a good idea to prepare your own oil spill action plan, to work in with the Department of Sustainability and Environment (DSE) and to review the State Plan to Deal with Wildlife Affected by an Oil Spill (DSE) to make sure it is still operable.

Eye Injuries and Infections

Symptoms

One dilated pupil, or cloudy surface of eye or eyelid, or weepy eye, or puncture wound, or misshapen pupil. A common cause of injuries to the eyes of penguins is a grass seed. Check around the socket gently and, if found, remove with tweezers.

Treatments

One dilated pupil - is probably a blind eye and untreatable. Consult a vet but remember that adult penguins need both eyes for the depth perception needed to catch fish underwater.

Cloudy eye or eyelid - Grass seed or infection. Bathe the eye with saline and see a vet for ophthalmic cream or drops.

Puncture wound – Consult a vet immediately to see if the eye is permanently damaged. If it is, the bird is not suitable for release.

Misshapen pupil - Check for lack of vision. Some birds cope perfectly well but it depends on whether the bird was born like it or whether it is a recent problem. Consult your vet.

Head Injury or Fox Bite

Symptoms

Head tilted to one side, or a dilated pupil, or bird falling over to one side (no balance).

Treatment

Check for small puncture wounds on one or both sides of the head or neck, just near the ears. If there are wounds and the bird is twisted, the bird has no chance of survival. Euthanase immediately. If there are no wounds, see a vet. Try an injection of cortisone or another anti-inflammatory drug to ease brain-swelling. If the bird improves a little but then plateaus, do not continue because the bird will never recover sufficiently to be released. If no improvement is obvious after two weeks (maximum) the bird should be euthanased.

Leg and Foot Problems

Penguins are very susceptible to foot problems because they have a very extensive circulatory system in their legs and feet. This network is extremely important in controlling body temperature - it is one of the main areas from which penguins can lose body heat. Any compromise to this circulation i.e. entanglement or infection will lead to withering and gangrene.

Treatment

Do not leave this problem untreated. Act quickly. We have found that Prednisolone (and Clavulox if the skin is broken) are the most effective forms of treatment. See your vet for dosage rates which will depend on the weight of the penguin.

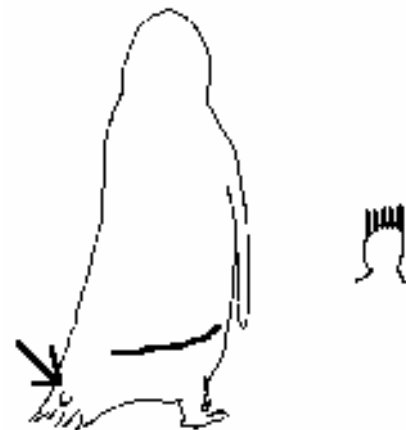
Propeller Injuries and Dog Bites

Symptoms

Large wounds in the back, tail or thigh. Usually deep and possibly showing tooth marks if dog or a deep, clean cut if propeller. (Propeller injuries are becoming increasingly common.)

Treatment

It is essential that there is no scar tissue left at the end of treatment as this will affect the birds' waterproofing.



Depending on the wound, suture immediately if possible (ensuring no feathers are turned into the wound) or let the wound heal outwards and then have the scar tissue removed and resuture later. This will take a long time (2 - 3 months). Clavulox should be given for 5 – 10 days to fight any infection. If the injury is close to the birds' tail, check to see if the preen gland (located 1cm up from the end of the tail and looks like a paintbrush, see above) has been cut. If it is damaged, it will atrophy and the bird should be euthanased.

Aspergillosis, Respiratory and Airsac Infections

Symptoms

Aspergillosis - Wheezing and vomiting

Upper Respiratory Tract Infection - Rattling in lungs and chest, wheezing but otherwise, seems quite well.

Viral or Bacterial Pneumonia - Wheezing or panting.

Treatment

Get your vet to test for Upper Respiratory Tract Infection by swabbing the trachea before beginning any treatment.

Aspergillosis - The fungus *Aspergillus* causes disease in captive and wild-caught penguins. Control primarily involves strict hygiene, supportive treatment for the birds and then the birds' own immune system overcoming the disease. This disease tends to only rear its head when the bird is under extreme stress i.e. during an oil spill, captive zoo populations etc.

The best way of avoiding this disease is to constantly work on minimising stress levels ie don't keep seabirds in a noisy or human environment (shower cubicle or bathroom) and ensure there are many hours in the day when the bird is left quiet and "safe".

The *Aspergillus* spores are ubiquitous; hay and straw, especially if moist, are prime areas for the fungi to grow (also newspaper) and should not be used. **Any infected birds must be kept isolated.** Rescued penguins should be housed on sand or rubber matting which can be kept clean (see General Care - Housing). **This disease is virtually impossible to reverse once caught and is extremely painful in the final stages, so, if suspected, consider euthanasia to stop the birds' suffering.**

Advice on prescription rates and methods of drug administration can be obtained from the Veterinarians at Melbourne Zoo (03) 9285 9300 or get your vet to contact us.

Penguins often persistently regurgitate their food when stricken with Aspergillosis.

Upper Respiratory Tract Infection (URTI) - This is relatively easy to identify (via a swab from the top of the birds' airway) and to treat. We have found that Clavulox for 5-7 days works. See your vet for prescription rates etc.

Pneumonia - Penguins with pneumonia may be given an injection of Levamisol at the commencement of treatment. This has been reported to stimulate the immune system of birds and to increase the effectiveness of treatment. (Dr. Andrew Tribe, Veterinarian, Melbourne Zoo). Treat as for URTI.

Ear Infections

Penguins have extremely sensitive ears and, any long-term infection can damage their ears to the point where their balance is affected and the bird cannot be released. The ear is an open round hole located on the side of the birds head

Symptoms

Swollen side of face or, smelly ears or, lack of balance.

Treatment

Firstly, check to see if the ear is clogged with ticks. If the ear has ticks inside it, dropper a Malathion (dog wash available from vets) solution into the ear for 2-3 days until the ticks are dead and can then be gently removed. At the same time, put the bird on Clavulox for 5 days - See your vet for prescription rates. If the ears are very smelly, rinse with saline and put the bird on a course of Clavulox. If, however the bird has no balance, try Clavulox but otherwise, treat as for Head Injury or Fox Bite.

Bumblefoot

Symptoms

Penguins should not be kept on a damp cement surface as they can develop bumblefoot. In this condition, the base of the birds' feet becomes calloused and blistered. These callouses can become infected and are almost impossible to treat. The callouses are usually brown or orange and are quite obvious.

Treatment

The best treatment is to release the bird as soon as possible because, once it is in the ocean; the callous will heal. Otherwise, prevention is the best solution. Always house penguins on clean sand or rubber matting that can be cleaned and dried every day. If the feet are swollen but no callouses are present, see Leg and Foot Problems.

Heat Exhaustion

Symptoms

At the Phillip Island Nature Parks, penguins suffering from heat stress are usually found when the moulting period coincides with hot weather (January to March). Penguins are usually found either stumbling around in the open or lying on the ground with their feet extended out the rear. The birds are often panting with their beaks open.

Treatment

The penguin should be cooled down either by gently dunking in a cool container of water or damping them down with the fine mist from a hose. They are also given a cold drink of Vy'trate solution (see General Care - Initial Treatment - Rehydration) and left in a box in a cool place for a few hours or until the outside temperature has dropped. If their condition is good, they should then be released back to where they were found (if there is no threat of predators). If they are found outside a breeding colony, they should be kept captive until the moult is complete.

Broken Bones

- * Flipper (Wing) - there is no chance for a penguin with a broken flipper as it is very fine cartilage-type bone and cannot heal strongly enough to "fly" underwater again. Euthanase immediately.
- * Pelvis or Hip - this also is a case of no release possibilities, so euthanase immediately.
- * Leg - we have released penguins with amputated legs and have found that some cope well (as they don't use their legs for swimming). They must, however, have a length of stump in order to be mobile on land. We have found that it takes a long time for the bird to develop a strong callous on the stump (2 - 3 months). The bird should be put on a course of Clavulox during the rehabilitation process. We have also successfully "pinned" penguin leg bones but this is a difficult process and should be done by an orthopaedic specialist.

- * **Beak or Jaw** - We have managed to release birds with previously broken beaks or jaws but it is dependent on where the break is and how severe. (These birds are extremely hard to feed in the early stages of healing.) Consult your vet for treatment.

CARE OF MOULTING PENGUINS

Unlike many other birds, penguins completely replace all their feathers at one time, once per year. At this time they are not waterproof and cannot swim.

From January to May, adult penguins with low-body weight may be found both onshore and beach-washed. These birds may be **pre-moult** (very old grey feathers), **post-moult** (bright new blue feathers) or, if feathers are being actively lost, **in moult**.

Penguins normally double their body weight before starting to moult and should weigh more than 1400g. The moulting process usually takes about 17 days (possibly longer if the bird has been injured or sick) before the bird is ready to go back to sea. At this time, the bird should weigh at least 1000g or 1 kg. If the bird has not finished moulting but is under 1100g, you should commence feeding until the end of the moult.

Pre-moult (very old, grey feathers).

These birds are often very hungry and will consume large quantities of fish - they should be given as much as they want - they may eat up to 400g per day. Once they start moulting (flippers double in width and feathers start falling out) they become more difficult to feed. Providing they are a reasonable weight at this time, they can be left unfed and their weight monitored until a weight of 1100g is reached when feeding should resume.

Great care should be taken when feeding birds during the moult so as not to damage the new feathers especially around the neck region.

Birds are not waterproof and should not be swum until they have all their new feathers.

Gentle spraying on a hot day is desirable to reduce the threat of heat stress which is increased due to the layer of fat surrounding the body. Birds will need to be kept for at least a week after they have gained their new feathers to ensure they are waterproof. (To test for this see - Common Problems - Oil - Waterproof test).

Occasionally birds of normal moulting weight (1400 - 2000g) will come ashore to moult in odd places e.g. under bushes and rock shelves out of the penguin colony. These birds should be taken into protective custody to prevent them being attacked by dogs and foxes. They should be left undisturbed at the rehabilitation shelter (except for weekly weighing) until their weight falls below 1100g.

During moult (rag-doll look where feathers are actively falling out)

Birds which are in moult will not need to be fed unless their weight is less than 1100g or they are still demanding food.

Post-moult (bright blue feathers and very white trailing edge of flippers)

These penguins are often very thin as they didn't put on enough weight before they started moulting. They should be treated as for starved birds (see Common Problems - Starvation)

and their weight should be built up to 1000g before release. Sometimes there is an underlying problem to explain why the bird did not gain enough weight to moult. (See Common Problems.)

SHORT-TAILED SHEARWATERS (MUTTONBIRDS)

Short-tailed Shearwaters or Mutton birds may be treated in the same way as penguins. If chicks are involved (usually late April and early May), feeding is simple and they can eventually learn to eat slivers of fish off the ground. If adults are involved however, feeding is extremely difficult as they can continually regurgitate their food. We make up a brew of pulverised pilchards which is then put through a “moulie”. We give the birds 80-100ml of the brew, 3 times per day. If adults show no signs of recovery, euthanasia should be considered.

Chicks should weigh over 500g prior to release. It is advisable to release birds as soon as possible because they have been known to develop leg paralysis under stress. To date we have found no remedy for this and the bird should be euthanased. Ideally, chicks or fledglings should be released from a burrow in their breeding area but if this is not possible, they should be released into the ocean from a protected beach (very small waves) at dusk or later.

PENGUIN WRECKS

Isolated reports of dead seabirds, including penguins can be expected during the autumn and winter months, but simultaneous reports of large numbers of birds may indicate that a major wreck has occurred. Large wrecks of seabirds should be reported to your local NRE office so that a record of the number of birds involved and samples for veterinary examination can be collected. The Arthur Rylah Institute has a draft contingency plan for dealing with seabird wrecks and may be contacted on (03) 9450 8600.

STRANDED SEALS

During the late summer and autumn, seals are often washed up. Seals should be approached with extreme caution - even the most sick or lethargic looking seal can summon up enough energy to give an extremely nasty bite and we urge you to call your local Department of Sustainability and Environment office or the Melbourne Zoo (03) 9285 9300. If you are bitten, irrigate the area with an antiseptic solution and see a doctor as soon as possible. Check that your anti-tetanus protection is current and explain that you have been bitten by a seal. Antibiotics should be prescribed and, in the case of deep wounds, overnight hospital observation may be necessary as seals carry large amounts of bacteria on their teeth and in their mouths and cases of septicaemia have been reported.

Small, dark-brown (pre-weaned) pups are sometimes washed from the breeding colony in storms. If the animal is at risk from people or dogs, it is possible to move the pup to a more isolated, safer area or, if the beach where it is found is near a breeding colony, and the pup is in good condition, it is possible to return it and put it in the water near the colony.

STRANDED WHALES OR DOLPHINS

Information on stranded whales or dolphins (dead or alive) is wanted by DSE. The following information comes from a brochure produced by the Australian National Parks and Wildlife Service.

Remember, rescue operations rely on early notification

Details such as number and size, exact location and condition should be given to DSE or the police. REMEMBER, keep clear. Stranded whales and dolphins are distressed and may lash about, particularly with their tails. They may injure persons too close, including persons rendering first-aid. Nevertheless, if you wish to help the whales or dolphins, keep them cool and wet, especially the tail and flippers. Cover with wet cloths. Keep sand, water and cloth away from the blowhole. Your local vet should be contacted and if he/she needs information on treatment, he/she can ring the Melbourne Zoo (03) 9285 9300. The Victorian Cetacean Strandings Network are also available on the Wildlife Victoria 24 hour emergency number 0500 540 000.

APPENDIX 1

Vy'trate is sold in 1 litre bottles. This is available from Veterinary Clinics and farm stock suppliers. For penguins, the Vy'trate should be diluted 45 ml warm water to 5 ml Vy'trate. Vy'trate should be stored in a refrigerated area.

APPENDIX 2

DivoPlusV2 detergent seems to be the gentlest and best detergent to wash oiled birds. Different organisations advise the use of different detergents. We have tried some and find that we have the best success with this one. It is available from JohnsonDiversey

JohnsonDiversey Australia Pty Ltd

29 Chifley St Smithfield NSW 2164 (02) 9757 0300

FREECALL 1800 251 738 FREEFAX 1800 626 322

APPENDIX 3

Tympanyl may be obtained from most local vets. It is used for sheep bloat and is manufactured by INTERVET.

APPENDIX 4

POSSIBLE INFECTIONS FROM BIRDS

Good hygiene practices are essential when working with birds.

- Always **wash your hands** after handling birds or cleaning aviaries
- Never put your hands in your mouth, eat food, or smoke until you have washed your hands.
- Leave autopsies to veterinarians whenever possible
- Wear gloves when handling dead birds, cats or foxes
- Do not breathe in dust containing bird excreta
- If you become sick especially with influenza like symptoms, allergies or respiratory disease, mention to your doctor that you work with birds
- Wash clothes contaminated with bird excreta or that are worn in the penguin hospital separate from other laundry

Possible infections include:

1. Chlamydiosis (Psittacosis, ornithosis)

Some bird species (particularly parrots and some sea birds) carry *Chlamydia psittaci*. In humans this produces chills, fever, headache, loss of appetite and generalised aches and pains. An irritating cough is common. The illness usually runs its course in 7 to 10 days. In severe cases, people with chlamydia may become delirious and lose consciousness. The fatality rate is very low in treated patients. People, older than 50 years of age are most likely to be severely affected. Pneumonia is common and sometimes infections result in heart disease. Signs of the disease usually start about 10 days after exposure to the organism. It may take up to a month. Transmission between two humans is extremely rare. So if you develop influenza like symptoms after working with birds tell your doctor as a blood test will be needed to confirm if the infection is due to chlamydiosis (Note: venereal chlamydiosis in humans is caused by a different (but related) organism which does not affect birds).

To avoid chlamydia

The chlamydia organism can be spread by direct contact or through the air. Where possible, you should avoid close contact with sick birds or contaminated dust or air. It is advisable not to do autopsies on your own birds because of the risk of this disease.

2. Bacterial diseases

On rare occasions, humans can become ill by contracting bacterial disease from birds. These diseases include liver and digestive upsets, avian tuberculosis and erysipelas.

Bacteria that cause digestive or liver disorders in birds that may also cause diseases in humans include *Salmonella*, *Yersinia*, *Campylobacter* and *Listeria*. *Listeria* may also cause nervous disorders.

Avoidance of infection:

Always wash your hands carefully before eating or preparing food (or smoking).

Kissing or close personal contact with birds should be avoided.

Wear gloves when handling dead birds for autopsy.

3. Fungal infections

Fungal infections rarely cause clinical symptoms in birds. However the high nitrogen levels in bird's droppings favour their growth. They accumulate in areas where bird droppings are left undisturbed for long periods of time e.g. penguin burrows.

Humans may be infected by inhaling or ingesting the fungi. Symptoms include: pneumonia, headaches, giddiness, visual impairment, lumps or lesions on the skin or elsewhere in the body or generalised ill health.

Avoidance of infection:

Care should be taken not to disturb droppings that have accumulated for a long period of time.

4. Protozoan infections

Toxoplasmosis

Tosoplasma gondii, the protozoan organism that causes toxoplasmosis, can infect a wide range of species of birds and animals.

In humans this organism is most dangerous to unborn children. If women are infected during early pregnancy, their babies may be born blind or mentally retarded. Adults with toxoplasmosis often have no symptoms but may show signs of general ill health.

To avoid toxoplasmosis: Humans usually pick up the disease by eating undercooked beef or through contact with infected cat excreta but it can also be picked up through eating undercooked poultry or while doing and autopsies on a bird, marsupial or cat with the disease. Cook all meat thoroughly before eating it and use gloves when handling dead animals. Pregnant women should be especially careful.

5. Allergic conditions

Apart from contracting infectious diseases from birds, humans may also develop disease if they are allergic to lice or mites, feathers or aviary dust.

Feather lice and mites

Lice and mites that live on birds will not normally survive for more than several days on humans, however, some people may be allergic to these parasites and may break out with skin irritations or develop asthma-like symptoms. The problem can be avoided by the use of appropriate insecticide to repel these external parasites and wearing protective clothing which can be removed and washed separately.

Feather allergies

Some people are allergic to feathers and develop asthma-like symptoms if they handle feather debris.

'Bird breeder's lung'

This condition has also been called 'pigeon fanciers lung' and is caused by an allergic reaction to aviary dust and bird droppings. Affected humans may cough, lose weight, have a fever and show difficulty in breathing.

People who are affected with this condition should avoid exposure to dust from dried bird droppings.

For further information see "Everybird" by Pat Macwhirter, Inkata Press 1987.