



First responders resource guide for seabird emergencies



ACKNOWLEDGEMENTS

NSW Environmental Trust

This project has been funded by the NSW Environmental Trust. The Trust is an independent statutory body established by the NSW government to fund a broad range of projects that enhance the environment of NSW. The Trust is administered by OEH.

www.environmentaltrust.nsw.gov.au

Office of Environment and Heritage NSW (OEH)

OEH is a division of the Department of Premier and Cabinet and develops and leads policy, reform and education in sustainability, biodiversity and native vegetation, coastal protection, and Aboriginal cultural heritage.

General enquiries:

02 9995 5000

Report pollution (24 hours, 7 days)

131 555

www.environment.nsw.gov.au

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DPI is a division within NSW Trade & Investment and works to develop and sustain diverse, profitable food and fibre industries, and ensures best-practice management of our natural resources.

General enquiries:

02 6391 3100

www.dpi.nsw.gov.au

Transport for NSW (TfNSW)

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General enquiries:

02 8202 2200

www.transport.nsw.gov.au

Maritime

Maritime is a division of NSW Transport Roads and Maritime Services and is responsible for maritime safety, and regulation of commercial and recreational boating.

For marine oil spills:

Queensland border to Port Stephens:

Maritime 13 12 56

Port Stephens to Catherine Hill Bay:

Newcastle Port Corporation 02 4985 8301

Catherine Hill Bay to Garie Beach:

Sydney Ports Corporation 02 9296 4001

Garie Beach to Gerroa:

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Gerroa to the Victorian border:

Maritime 13 12 56

www.maritime.nsw.gov.au

Australian Maritime Safety Authority (AMSA)

AMSA is a statutory authority with a primary function of preventing and combating ship-sourced pollution in the marine environment.

General enquiries:

02 6279 5000

Taronga Zoo

Taronga Zoo wildlife hospital and veterinarians provide world-class care and research on seabirds and other marine species.

General enquiries:

02 9969 2777

www.taronga.org.au

Australian Seabird Rescue Inc. (ASR)

ASR is a not-for-profit environmental community working to reduce the human impact on the marine wildlife. ASR is licensed through OEH.

General enquiries:

02 6686 2852

www.seabirdrescue.org

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INTRODUCTION

This guide is designed to inform licensed wildlife rescue personnel responding to entangled or injured seabirds and/or personnel participating in a seabird rescue response to a marine oil or chemical spill emergency. If you are reading this guide you will have joined a wildlife rescue group that is licensed by the Office of Environment and Heritage (OEH). Alternatively, you will be employed or contracted to a NSW State Government agency. This guide and the accompanying DVD will provide details of the resources available to first responders in seabird emergencies.

The guide draws together information regarding emergency seabird response guidelines and protocols available at local, state, national and international levels to support the first response to entangled, injured and oil-spill-affected or chemical-spill-affected birds on the NSW coast. The species in this guide are commonly found on NSW beaches, along waterways and on offshore islands.

Seabird is a general term applied to birds belonging to a number of different taxonomic orders (unlike the shorebirds, which all belong to the order *Charadriiformes*). Seabirds generally feed in saltwater, both from the water's surface and below it. Some may also feed over the shoreline and inland, most rest either on the shoreline, on the water or on offshore islands, and most breed on the ground or in burrows on offshore island colonies.

Shorebirds are birds that generally live in the intertidal zone or on the edges of wetlands, and spend most of their time close to the water. Most shorebirds migrate to the northern hemisphere to breed but some, like the Pied oystercatcher and the Beach stone-curlew, breed in Australia.

The most common seabird emergencies involve entanglements and injuries. Examples include:

- Entanglements in fishing line and fishing-related tackle, which may be difficult to see.
- Entanglements in debris such as plastic bags.
- Injuries caused by boat strikes, collisions with power lines or other infrastructure.

Oil and chemical spill response is managed under statewide emergency management structures. This guide will direct you to the policies, procedures and resources that are available to first responders in the event of an oil or chemical spill. In order to ensure this guide remains current, the information will be reviewed regularly.

1.1 NSW COASTAL BIRDS^(1, 2)

Cormorants



Pied cormorant 65-80 cm



Little black cormorant 58-65 cm



Little pied cormorant 55-65 cm



Great (black) cormorant 70-95 cm

Sub-family *Phalacrocoracinae*

Black or pied waterbirds that frequent estuaries, rivers, mangroves, coastal areas and rocky coastal islands.

- Long necks and tails.
- Short legs with all four toes joined by webbing.
- Hooked beak.
- Swim and dive for fish, yabbies and shrimp.
- Wings are not water repellent so they spread their wings to dry.
- Build a nest over water, breed most months.
- All common and nomadic.



WARNING

All cormorant species have razor-sharp beaks with a large hook at the end that can cause serious damage. Gannets also have an extremely sharp serrated beak. When handling a cormorant or a gannet ALWAYS wear welding gloves and protective glasses.

1.1 NSW COASTAL BIRDS

Terns



Crested tern 48 cm

Family *Laridae*

Terns generally have white breasts and bellies, grey upperwings, a forked tail, characteristic V-shaped wings, and a straight pointed beak. They are found in coastal areas, offshore islands, bays, estuaries and tidal inlets.

CRESTED TERN

- Stand-up crest, yellow beak, and black legs.
- Dive for fish; nest on offshore islands between March-December; common and sedentary, resident.

COMMON TERN

- Black beak and black legs.
- Skim for fish on the water's surface; breed in Siberia, migrate to Australia in October and depart in March.

LITTLE TERN

- Yellow beak, black eye-mask that extends to the beak.
- Dive for fish; migratory, breed in Australia between October and January, migrate to Japan in March.

FAIRY TERN

- Yellow beak, white face with black eye mask.
- Dive for fish; breed in Australia (November-February).



Common tern 38 cm



Little tern 25 cm



Fairy tern 27 cm

1.1 NSW COASTAL BIRDS

Gulls



Silver gull 35-45 cm



Juvenile silver gull



Kelp gull 55-60 cm



Juvenile kelp gull

Family *Laridae*

Gulls are opportunistic feeders found in small to very large flocks in a variety of habitats along the NSW coast. They generally breed in colonies on offshore islands and headlands between September and January.

SILVER GULL

- Familiar and ubiquitous, white body and tail with silver-grey upperwings, adults have red legs, beak and eye-ring, juveniles black legs, beak and eye-ring.
- Extremely varied diet including fish, invertebrates, seeds and eggs.
- Feed at water's edge and on the surface.
- Common, nomadic, breeds and lives in Australia.

KELP GULL

- Larger, white tips and spots on primary feathers, adults have a yellow beak with a red spot on the lower mandible and green-grey to yellowish legs, juveniles have a black beak and pale legs.
- Also extremely varied diet, able to dive briefly below the water's surface and drop molluscs onto hard surfaces to break open the shells.

1.1 NSW COASTAL BIRDS

Pelicans



Australian pelican 170-190 cm

Family *Pelecanidae*

The Australian pelican can be found at coastal beaches, estuaries, wetlands and waterways.

- Adults are black-and-white (juveniles brown-and-white) with a long hooked bill and fleshy pouch, and distinctive yellow ring around the eye.
- Feeds in shallow water on fish and crustaceans.
- Breeds after rains when water levels are sufficient, nest in colonies on the ground at inland waterways (notably Lake Eyre).
- Common, nomadic, travels long distances in V-formation, and uses thermals to soar to great heights.



Juvenile pelican

Penguins



Little penguin 30-33 cm

Family *Spheniscidae*

Little penguins are found in colonies scattered along the NSW southern coast. At only around 1kg they are the smallest of these flightless, southern hemisphere seabird species.

- Slate-blue back feathers and flippers with white underside, silver eye and black beak.
- Large webbed feet and modified wings (flippers) used to 'fly' through the water.
- Feed on fish caught underwater at sea.
- Nest in burrows in colonies, and breed between July and March.
- Moults between February and April, when they are not waterproof and must remain on land.

1.1 NSW COASTAL BIRDS

Migratory species – seabirds



Australasian gannet 80-90 cm, and juvenile (inset)

Gannets

Family Sulidae

The Australasian gannet is generally found foraging in coastal waters of NSW during winter when adults and juveniles migrate along the east coast from colonies in Bass Strait or across the Tasman Sea from colonies in New Zealand.

- Adults are white with black wingtips and dark webbed feet, a buff-yellow head with a bluish ring of skin around the eyes, and a blue-grey beak with striking black borders and small, **extremely sharp**, backward-pointing serrations; juveniles are greyish-brown with white freckling.
- Plunge dives into shoals of fishes.
- Breeds October to November.



Short-tailed shearwater 40-45 cm



Wedge-tailed shearwater 40-45 cm



Flesh-footed shearwater 40-45 cm

Shearwaters

Family Procellariidae

Shearwaters, also known as 'muttonbirds', are often found on coastal beaches following their long migration in October-November or prior to migration (usually fledglings) in May-June. Three types of shearwaters may be found on the NSW coast.

SHORT-TAILED SHEARWATER

- Smoky-brown with paler throat; beak slender and shorter than 3.5 cm; some may have white underwing; tail short and rounded; grey feet extend beyond the tail.

WEDGE-TAILED SHEARWATER

- Smoky-brown; beak usually dark grey but can be pale with a black tip; wedge-shaped tail that looks pointed in flight; flesh-coloured feet do not extend beyond the tail.

FLESH-FOOTED SHEARWATER

- Darker brown with brown underwing; large, flesh-coloured beak with dark tip; pale pink legs and feet that do not extend beyond the tail.

1.1 NSW COASTAL BIRDS

Migratory species – shorebirds



Bar-tailed godwit (37-45 cm)

Family Scolopacidae

The Bar-tailed godwit migrates from breeding grounds in north-eastern Siberia and spreads across the NSW coastline over summer. The return migration begins April/May and birds may assume breeding plumage at this time.



Eastern curlew (60-66 cm)

Family Scolopacidae

The Eastern curlew also breeds in Siberia and is found along the NSW coast as a non-breeding migrant between September-April/May. Usually seen alone or in small numbers. Note the long, curved beak.



Pacific golden plover (23-26 cm)

Family Charadriidae

The Pacific golden plover breeds from north Asia to west Alaska. It is found in NSW between August-April. Often seen in large flocks, in non-breeding white and buff mottled plumage. Some may show darker breeding plumage.



Red-necked stint (13-16 cm)

Family Scolopacidae

The Red-necked stint breeds in north-eastern Siberia/Alaska. Not normally seen with red neck plumage while in Australia. Often flies in tightly-packed wheeling flocks, in company with other waders. Note the hind toe.

COMMON ENTANGLEMENTS / INJURIES

2.1 YOUR SAFETY

Legal, liability and insurance issues will vary from state to state. In NSW, for example, the OEH regulate and license wildlife rescue and rehabilitation groups. These groups facilitate training and insurance coverage for first responders, and have reporting and codes of practise requirements as part of their licence conditions.

The group will ensure you are reliably informed with regard to the use of protective clothing and equipment; safe handling techniques for birds; understanding the hazards of zoonotic diseases and preventative measures; how to report potentially hazardous incidents; where first aid can be obtained; symptoms of poisoning that may occur in humans; understanding environmental regulations with regard to waste management⁽³⁾ (particularly for oil and chemical spill responses). Contact your regional National Parks and Wildlife Service (NPWS) or the NSW Wildlife Council (NWC) to join a group and access adequate training in your area.

The personal protective equipment (PPE) detailed below are used regularly and referred to throughout this resource guide.



General hygiene for humans

Clean and treat all human injuries such as cuts and abrasions immediately with a disinfectant (Iovone or Betadine). Wash hands thoroughly with warm water and soap prior to handling food or drinks for human consumption. An extended review of zoonotic diseases and preventative measures can be found in Walraven (2004) (see section 4.1 on page 41).

2.2 RECORD KEEPING

As well as the mandatory record-keeping stipulated by your licensing authority, your observations are valuable for all other wildlife carers involved with the rescue and rehabilitation of seabirds.

Information worth recording includes the following:

Remember to include protective clothing, gloves, hat and eye protection in your rescue kit.

1. Time, date, location of bird, injury, and the name and phone number of the person reporting the injured bird.
2. Capture technique used, difficulties faced.
3. Tide and weather conditions at the time of capture.
4. Gender, age (adult/juvenile), condition of bird, weight and beak length.
5. Treatment administered.
6. Food intake and medical requirements during care.
8. General observations made regarding behaviour and responses.
9. Date of death, euthanasia or release and any tag numbers.

You will find that keeping a daily diary specifically for your general observations is extremely valuable. It is important not to lose any of the hard-won knowledge you gain in your experiences. You may uncover some interesting patterns over time.

Carefully recording your activities may prove to be of immense benefit to you and your rescue group, and also to the conservation of species. Compiling knowledge about common species can also be very helpful in saving closely related species that are endangered or vulnerable.

2.3 COMMON ENTANGLEMENTS AND INJURIES⁽⁴⁾

Injuries

Hook(s) embedded

The most common injury to seabirds in coastal NSW is embedded fishing hooks. Check all birds carefully and completely for hooks, and be sure to thoroughly check the entire bird. Be aware that a hook may have worked well into the body – feel for tell-tale lumps. In many cases embedded hooks can be removed simply and easily in the field (see section 2.9 on page 25).

Carefully assess the condition and state of the bird for indications of systemic infection (heat, swelling, pus) or if the embedded hook is causing obstruction to breathing or normal function of the limbs.

If a hook has been embedded for some time it may be surrounded by necrotic matter that is trapped around the entry wound by a sealed off 'sinus'. Resembling compacted mud, this matter allows



X-ray of ingested hooks in a juvenile crested tern. Photo: ASR

easier removal of the hook but sometimes makes it difficult to ascertain the actual direction or point of the hook. Once the hook is removed, this matter should be expelled and the remaining 'sinus' flushed with antiseptic.

Entanglements

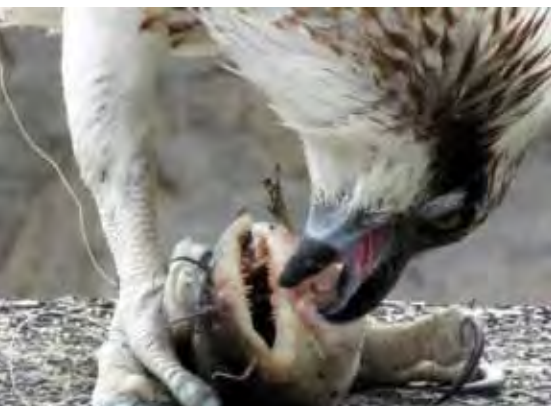
Entanglement in fishing line has been observed across all seabird species listed in this manual. Seabirds most often become entangled in fishing line while feeding. They also commonly become entangled in unattended set lines, and lines associated with active fishing. Pelicans will often chase the fisher folk's catch, rather than the bait. Seagulls and terns, however, are more likely to become entangled when the bait is being cast through the air or soon after it hits the water's surface. They are very agile in flight and hunt on the wing. Cormorants, which feed underwater, can become entangled in fishing line once the bait settles in the water.

Common cases of entanglement include line around legs, wings and beaks. Line entanglements may be evidenced by either a length of line trailing from the body or obvious mobility issues for the bird through the constriction of a limb. Line entanglements can cause constriction, blood loss, gangrene and/or the loss of a limb.

Seabirds also use discarded fishing line (often with hooks still attached) in their nest construction if it is available in their habitat. This behaviour puts adults and chicks at serious risk of entanglement in the nest. In some regions across NSW, electricity



Entangled Pied oystercatcher. Photo: ASR.



An osprey entangled in fishing line. Photo: Sergio Jacomy.



A pelican hooked by a gang hook. Photo: ASR.

providers donate time and equipment (cherry-pickers) to assist in clearing fishing line and other debris from highly-perched seabird nests. This cooperative arrangement prevents entanglements and injuries to vulnerable species such as the osprey.

2.4 PATROLS / CLUES TO ENTANGLEMENT AND INJURY

It is important to know the habits of your local seabirds, and the habitats they use. A map of your estuaries is a distinct advantage, binoculars and sunscreen are essential, and polarised sunglasses and dive boots are highly recommended. Build your local knowledge of roosting, foraging and nesting sites in varying weather conditions (birds will prefer wind protected spots); geographic locations where seabirds are most likely to become injured; and boat accessibility of your local waters during high and low tides. This can save a great deal of time when searching for an injured bird.

Regular patrols will develop your ability to recognise individual birds and become familiar with their normal behaviour. Patrols will also enable you to detect entangled and injured birds before infection or gangrene sets in. This can prevent a superficial injury from becoming an acute systemic infection. Keeping a log book of the species and numbers you see in your local area throughout the year will help you identify any unusual bird behaviour or sightings.

Most birds on the coast, especially pelicans and silver gulls, are familiar with human activity that rewards them with fish. This includes activities like boats returning to boat ramps, and people with buckets at cleaning tables, which usually attracts a feeding-frenzy of noisy seagulls (the first alert for other coastal birds).

Get to know your waterways by road and by boat. Stop at areas where you notice seabirds roosting, foraging or nesting. You will notice variations throughout the year and soon become familiar with what is normal in your area and how to access different parts of the waterway.



On patrol. Photos: Garry Fenton, ASR.

Local knowledge can help to alert you to an entangled or injured seabird before it is reported because you may notice it in an unusual place at an unusual time. Regular observation can also be helpful to catch the glint of a hook or fishing line trailing from a bird in an otherwise healthy-looking flock.

Record any seabird nesting activity you observe that may be at risk of human impact. You are likely to see the seabird species identified in this manual in many different colours according to their age and breeding status. Record observations about where seabirds retreat during storms and roost during fine weather. This information will greatly increase your response time when attending a seabird emergency.

The best time of day to patrol will depend on the tides and habits of fisher folk in your area. Seabirds often roost in places where they can keep an eye on locations like boat ramps and cleaning tables. Check with local fish co-ops and bait/seafood-processing establishments to find out if they dispose of fish offal and frames in the river system, and at what times. This is where you will often find injured birds because it gives them access to an easy feed. In most estuaries, simply turning on the tap at a cleaning table and behaving like fisher folk can draw seabirds to you. Luring birds out of the water will make it easier to see any entanglements or injuries normally below the water line.

Untidiness of plumage is usually an indication of disease, malnutrition, injury or parasitic infestation, as healthy seabirds are meticulous preeners. Flight feathers missing or in disarray may also be cause for concern.

A healthy bird will be symmetrical (balanced) with legs and wings operating equally and smoothly. Limping or jerky swimming action, where one leg is raised higher than the other, may indicate an entanglement or injury of the legs or feet. Raised or uneven wings could be cause for concern. Alternatively, they may indicate a bird expanding their 'personal space', cooling down, drying feathers and/or in a heightened state of alert. Always take a closer look.

Some seabird species lead a chiefly solitary existence so seeing them alone is not unusual. Other species, such as pelicans and silver gulls, are social birds and if they are seen swimming or sitting alone it may indicate poor health, particularly if a lone bird is being harassed by other animals.



This pelican is an example of a high capture priority. Photo: ASR.

2.5 CAPTURE PRIORITIES

The wildlife group you are registered with will have an active capture priority list prepared from reports and sightings of entangled and/or injured seabirds in your area of operation. This should include date and location; juvenile or adult; male or female; full description of injury, e.g. green hook, rusty hook, stainless steel hook, length of line trailing, from left/right wing, beak, etc.

If you identify several injured birds in a group, assess which bird has the most critical injury and attempt to capture that bird prior to any other. Injuries or entanglements that require quick action are those that would affect the ability to breathe or feed or be constricting a limb. The survival of these birds is already compromised.

Attempting the capture of a less-critical bird from the same group may jeopardise your chances of capturing a more critically-injured bird. Seabirds are likely to 'spook' following a capture attempt. Spooking happens when a bird has been frightened by a capture attempt and rapidly takes flight from the area, thereby alerting any other birds nearby. Spooked birds will be less likely to return to the area again for some time, possibly weeks.

2.6 THE RESCUE KIT

A few basic items that will enable you to deal with the common entanglements and injuries include:

- Bolt-cutters
- Clamping forceps
- Tweezers (rat-tooth and plain)
- Small scissors
- Disposable gloves
- Stitch-cutters
- Saltwater soap or 'Wet Ones'
- Boiled tap water
- Antiseptic ointment/solution/spray
- Lice spray and Vetwrap (bandages), available from your vet
- Rehydration fluid
- Bucket, water pistol, food dye
- Notebook and pencil
- Thick, black (xylene-free) marker pen



A well stocked rescue kit. Photo: ASR.

Ironically, a useful container for your rescue kit is a fishing tackle box. Attach a list of relevant phone numbers to the inside of the lid (vets, specialists and other rescuers). Include emergency numbers for ambulance, police, fire brigade and marine rescue.

While I have captured quiet pelicans in minutes by luring them with items such as a rolled up plastic bag, a five-dollar note, an empty tobacco packet and a wet handkerchief, I have also spent four hours in winter rains with four full fish-tubs of offal, only to return unsuccessful.

Lance Ferris (1956-2007)

It is helpful to keep the following in your car: sandshoes or reef shoes, wetsuit, towel, insect repellent, change of clothing, a plastic bag for wet clothing, a plastic bag for rubbish found, and heavy duty (washable) gloves for collecting fish scrap from seafood processing establishments. Sturdy welding gloves and safety glasses or goggles are **essential** for handling cormorants and gannets.

2.7 HANDLING⁽⁵⁾

Before you capture a seabird it is important to remember that it is stressful to the bird and handling should be kept to a minimum. It is essential that the handler does not try to comfort the bird by petting, cooing or stroking. Seabirds are not domestic pets and the stroking may feel good to the human but not to the bird. The handler should remain calm and all personnel treating the bird should speak quietly and refrain from sudden movements. Some birds may benefit from having their eyes covered although this varies between different species and different birds.

Handling techniques for different species

Six handling guidelines

- Immobilise the dangerous parts of the bird (beak, feet) with a firm hold. The rest of the bird's body should be restrained gently. Birds do not possess a diaphragm and rely on movement of the keel bone to facilitate breathing. This means they can be suffocated by being held too tightly. If the bird struggles it is important to avoid holding the bird more firmly.
- For safety reasons birds should be held at waist-height not near the handler's face.
- When handling birds with long legs the handler should hold the legs of the bird at the top of the femur where the legs and the body meet.
- Protect your eyes and other body parts from birds with sharp beaks and claws.
- Birds should not be held around the neck as breathing can be restricted and muscles damaged.
- Towels can be used to wrap around the bird's body and wings to aid restraint.

Penguins

Penguins' beaks are very sharp and can inflict nasty bites. The head can be immobilised in the palm of the hand and the bottom jaw held firmly with the fingers. Placing a hand over the eyes and around the top of the beak is also helpful. Flippers can be held firmly against the body or the bird tucked under the arm. Penguins are strong and need a firm hold as they will often struggle vigorously. Using a towel to wrap around the body of the bird can be helpful.

Shearwaters

Shearwaters have relatively long slender beaks with external nostrils positioned near the base of the beak. The short-tailed shearwater is commonly found beach-washed. The beak can be held closed with the hand positioned with the first finger on top and the thumb underneath. Alternatively, the head can be held from behind or in a shorebird hold with the head between the fingers and body resting in the palm of the hand. The wings should be held against the bird's body and wrapped in a towel.

Pelicans

Pelicans nares are partially blocked. They are mouth breathers and will become distressed with their beak closed, trying to force air through the small hole in the maxilla. They will sometimes struggle while being restrained and this is usually because the beak is being held shut or they are being held too tightly. When pelicans are held in the correct manner they will usually remain quiet. The bird should be held under the arm with the wings folded against the body. Pelicans have strong legs and feet which can be held up under the body or left unrestrained. It is sometimes difficult to hold the feet owing to the large size of the bird. The handler should wear long, thick trousers to prevent scratches. It is sometimes helpful for the handler to put the birds legs on a low stool or box to help distribute the weight. The beak should be held loosely from above, halfway down, leaving it slightly ajar.

Gannets

Gannets are plunge divers and do not possess external nostrils. They breathe through the sides of their beak, which should not be held shut. The point and the sides are razor sharp and should be avoided during handling. The head and beak should be immobilised first to avoid injury to the handler. It is useful to throw a towel over the head



Correct handling of a pelican. Photo: ASR.

initially and grasp the head and base of the beak through the towel with one hand, with the fingers under the mandible and the thumb on top of the head.

Alternatively, grasp the head from behind the back of the skull with the thumb and forefingers resting behind the eyes. It may be necessary to grasp the beak initially to get your hands in the correct position.

Gannets have strong feet and claws and these may be held up against the bird's body with the other hand. The bird should be held against the handler's body and under the arm without any pressure on the body. These birds have quick reflexes and will often bite the handler as soon as the grasp is released.

Cormorants

Cormorants use a very fast striking action to capture fish and it is important to ensure a handler's eyes are protected during capture and restraint. They breathe through the sides of their beaks and become distressed when the beak is held closed. Cormorants have a large hook at the end of their beak and their reflexes are extremely quick. It is useful to throw a towel over the head during capture and then secure the head with the fingers under the lower mandible and thumb on top of the head. In some cases the eyes will be covered by the hands, which can be beneficial. Cormorants can also be held from behind the head. They are much more fragile than gannets, however, and inclined to

wriggle out of the handler's grasp. The legs and feet are very powerful (with long claws), which requires the handler to restrain the feet and legs against the bird's body.

Gulls and terns

Gulls and terns can be restrained with a hold behind the head or with the head placed between the fingers and the wings held against the bird's body. The webbed feet and legs can be restrained by holding them at the top of the femur



Correct physical restraint of a seabird, with the head pointing in a safe direction and the beak NOT held closed. Diagram: Walraven (2004).



Correct handling of a seagull with line, hook and lure trailing. Photo: ASR.

or up against the bird's body. Handling techniques for other seabird species can be found in Hall (2000a) (see section 4.1 on page 41).

2.8 CAPTURE METHODS

Capturing a bird can be challenging, especially if it can still fly. If a decision is made that the bird needs to be rescued it is helpful to think about the way the bird may defend itself when approached and in which direction the bird may move to get away from the rescuers. If the bird is at the water's edge the rescuers will need to be between the bird and the ocean. If it is late in the day waiting until dark may be helpful although many seabirds are active at night especially petrels. Observations of the bird should be carried out before attempting capture to identify possible injuries and enable the bird to be caught without further injury⁽⁴⁾.

The materials needed for these capture methods can be sourced from around your home or from your local hardware store. The State Government also has some bird catching devices used for research, which could be considered when rescuing an entangled or injured seabird.

If rescuing a large seabird at least two people will be required, preferably three. Two people will be needed to restrain the bird and place it in a suitable transport box. Towels or blankets can be used to wrap around the bird to restrain the wings. The towel can be removed for transport⁽⁵⁾.

Tips and tricks to increase capture success⁽⁴⁾

Don't despair if your capture attempt is unsuccessful the first time. Patience is the key. Obtain as much fish scrap (frames) as you can from your local fish co-op or seafood retailer or collect it from anglers filleting fish at cleaning tables to lure your target seabird. Larger species of fish such as bream and flathead are suitable. Non-target birds can carry off smaller fish too quickly. Avoid using flake and other shark meat as a lure, years of experience suggests that many seabirds will avoid it. Don't waste your fish. There is nothing more frustrating than finally luring your target bird into position for capture and then running out of fish.

If your target bird is roosting some distance away, try to attract silver gulls with small pieces of fish and offal. The feeding activity of the gulls will soon attract other birds.



Using fish frames to lure local birds. Photo: ASR.



Adopt a non-predatory posture, allow the animal to come to you. Take notes and appear disinterested. Photo: Surfland Photography.

capture. This is predatory behaviour that birds are finely tuned to. Wear clothing that is reasonably tight fitting – something as simple as your open jacket catching on the wind may spook birds and ruin your capture attempt. Adopting predatory behaviour like creeping, sneaking or acting like a predator will scare birds off. Move slowly with fluid-like movements – any sudden change in your stature from, for example, squatting position to standing, will also cause alarm. If there are onlookers, politely explain what you are doing and reassure them about the process. Captures can be dramatic and unnerving for the public. Onlookers can also be noisy and their movements can disturb your attempt.

A water pistol or spray bottle with blue or green food colouring in the water is helpful in marking target seabirds, especially if you are alone. Spraying the bird with dyed water will enable you to find it easily in a flock. Avoid marking the head or neck as this can cause a bird to be ostracised from its social group. Instead, aim for the chest or wings. The dye will last for a couple of days.

Over the past two decades the following capture methods have been successfully developed and deployed to capture the species in this manual.

Provide the silver gulls with enough scraps of fish to keep them relatively calm and prevent them scattering. Their behaviour will directly affect other birds.

Windy days are not particularly suited for captures. Most estuarine birds, particularly, are easily spooked in these conditions and even poor fliers can become airborne without effort in strong winds. Night approaches to seabirds are impossible unless the bird is completely debilitated or at its nesting colony. White light confuses them, and approaches at night constitute a significant threat by an unidentified predator. If you need to conduct night activities use a red light to limit disturbance.

Avoid intense eye contact with birds, especially the one you're hoping to

In almost every case where I have landed on a pelican in the water, it has had sufficient time to turn away and raise its wings ready for flight.

Lance Ferris (1956-2007)

Beak grab

At almost every populated estuary pelicans will approach within arm's length and luring them with a fish may allow you to grasp their beak, especially around fish cleaning tables.

This method is particularly successful when there are other injured birds in the same group. When a pelican is successfully captured using this method other birds nearby generally appear to be oblivious to the capture and remain close. As a result, once the captured bird has been attended to, the opportunity may remain to capture another one. It is not unusual for rescuers to have the capability of capturing up to five injured pelicans at one location in an hour.



Above: Beak grab technique: note the left hand on the upper beak towards the head. Inset: Fingers are gently hooked inside the pouch. Right: Reach around the body of the bird and secure the wings. Photos: ASR.



To capture a bird by a beak grab, hold and wave the fish towards the pelican to lure it close enough to you so that it is able to reach out and take the fish from your hand. When the pelican attempts to take the fish by biting at your hand, hook your fingers gently into the lower beak (mandible) and gently pull the bird towards you while using your other hand to reach over and control the top beak. This process will become one swift movement with practice.

Use one hand to gently hold both beaks together remembering to place one finger between the upper and lower beaks. This leaves your other hand free to reach around the body of the bird, pull it towards you and secure the wings. This should leave you sitting comfortably with one arm around the bird's body, wings in close, and one hand controlling the beak. As soon as possible, move away quietly with the pelican to minimise disturbance to the remaining birds.

Toss'n'run

If the pelican you need to capture will come close, but will not reach out to take the fish from your hand, the toss'n'run method is very successful. Attract the birds as close as possible, within one or two running steps away. Begin by throwing fish into

the flock one by one, high into the air, several times. You'll notice that each time you do this the flock will all look upwards to the fish. At the right moment, when the birds are looking up, distracted by the fish, you're going to run in and grab your target bird.

As the pelicans look up, set your feet. Remember to avoid looking the bird in the eye and act like a fisher! This is a great time to have a helper who can quietly tell you if the bird is moving around in the flock without you having to directly look at it. As you run, be prepared to pull up quickly. Reach for the 'shoulders' of the bird and secure the wings as quickly as possible, a helper could run in and assist. Once you have the bird in hand, hold still for a few moments while the other birds settle then move to a quiet, shady location to make an assessment of your target bird.

Noose (foot snare)

This is a useful technique for any bird that can be lured. It has proven to be very successful when the target bird is timid, and other methods of capture are not an option. It can be used on a boat ramp, grass, or sand but having dry sand to cover and hold the line in place is advantageous. Try to set up your noose in an area with little traffic and politely inform any onlookers (who are often concerned about the welfare of the bird) that they can help by remaining still and quiet.

A noose (around 50 cm diameter) is made up of heavy-duty (80-100 lb) fishing line and attached to a rod or pole. Fish (or appropriate bait) is placed about a metre behind the noose. When you position yourself with the rod ensure there is clear space behind you. The target bird will step into the noose to access the food. A quick pull on the line causes the noose to encircle the bird's leg, capturing it. Stay calm and maintain your grip on the rod. As you jerk the rod backwards, you may need to step back to maintain your balance. When you snare the bird, maintain tension on the line between you and the bird as the loop can loosen very easily. Do not pull the bird towards you, but maintain tension on the line as you approach the bird. It is best if you have a helper to throw fish and confirm the bird's leg is in the noose

before approach. **Never leave the noose unattended once it is set.**

Construction

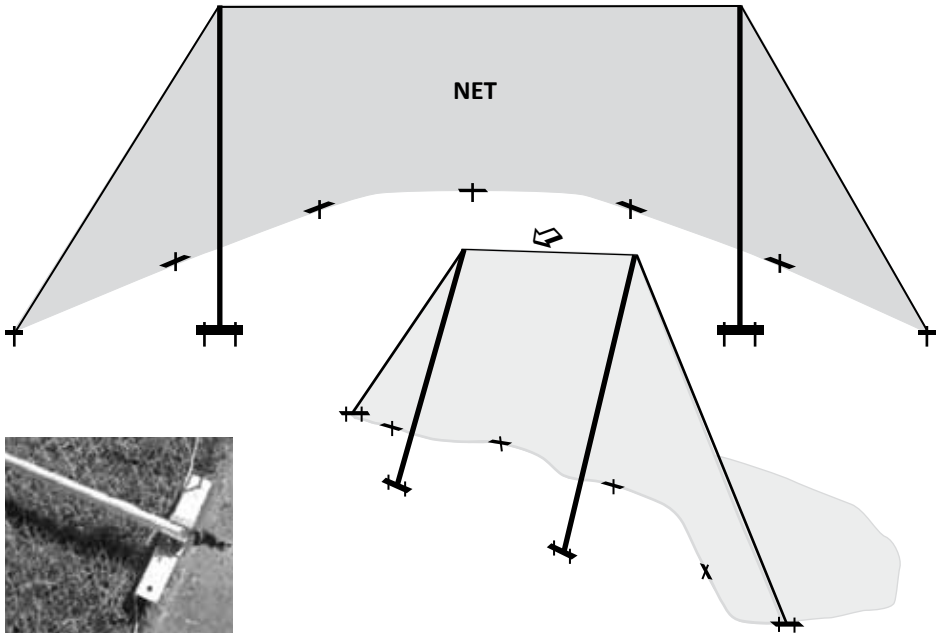
Construction

To construct your own noose you will need a 1.3-1.5 m length of 15 or 20 mm electrical



Setting up a noose on the beach.
Photos: ASR.





Steele's net design and operation. Above: An artist's impression of the net pulled up into the vertical position. Note the position of the pegs. Bottom left: The hinged pole. Two pegs either side of the plate secure this hinge to the sand. Photos: ASR.

conduit or similar – available from any hardware store; 12 m of 80 lb fishing line; and a 2mm brass ring (available from tackle shops, usually in packets of 10).

The Steele's net

This method is useful for catching very shy birds and small flocks of birds. It requires two to three people to operate. The method is modelled on cannon netting. The difference being that the net is manually pulled over the bird rather than being fired out over it.

The Steele's net facilitates a far greater capture area, at a distance from the rescuer that poses little or no threat to the bird. The Steele's net can be constructed to cover up to 16 sqm of capture area, as opposed to about 1 sqm with the noose. It can be set in the sand or grass.

Once the net is set for capture, fish is placed on the ground in the capture area to lure the target bird(s). When the bird enters the capture zone, the rescuer manually pulls the ropes to lift the net. The net lifts into the air from the water's edge towards the land. This action is critical. A bird's first response in this situation is to fly towards the water. By the time the bird becomes aware of the threat and tries to escape, it is trapped under the net.

Design and Operation

Two 25 mm PVC poles, each 2.5 m long, are placed on the ground, about 4 m apart, parallel to each other. Each pole is hinged onto a plate, which is pegged to the ground.

A lightweight net of about 4 cm²-mesh is attached to the rope (or smaller net if your targets are smaller birds). This is attached to the top of the poles and pegged to the ground at the sides and rear. The poles with net attached are then laid flat on the ground. A 'trigger' rope is attached to the top of each pole, leading back to the rescuer. These ropes can be 25 m or more in length. One operator can pull both ropes from a single point. On beaches, the net, poles, and rope can be covered with a light layer of dry sand, so as to be inconspicuous to seabirds.

The leap

This capture method is only for pelicans that will not leave the water. Do not attempt this capture method unless you are absolutely sure of success. A failed attempt may spook the bird for weeks and leaping is a high-risk activity for the rescuer. This approach is most effective from a wharf or jetty, as pelicans least expect an 'assault' of this kind. Always be aware of hazards below. The longer you take to make your attempt at capture using this method, the more suspicious the birds become and they may retreat out of reach.

To capture a pelican using the leap method, position yourself at your leap location and lure the birds in. Keep any non-target birds interested by throwing enough fish



A successful leap capture. Photo: Surfland Photography.

to promote some competition. This activity will draw your target bird close. Try not to feed it first. It may be satisfied with that amount and not return. When a pelican takes a fish it usually retreats to the rear of the group and may not return until it has completely swallowed the catch.

Keep in mind that pelicans can move very quickly and your leap will require a thrust of about half a metre beyond where you would expect the bird to be. When you feel the target bird is in reach, toss a fish. The brief moment that the bird is focused on the fish is your chance to leap.

Try to keep your eyes open at all times, thus ensuring a good catch and avoiding injury to the bird or yourself. Reach for the shoulders of the bird and make every effort to keep your centre of weight away from it as you enter the water.

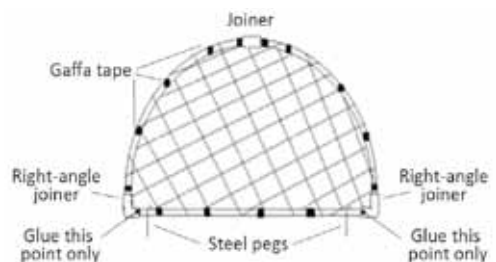
When you have a firm hold, gently restrain the beak with one hand, and control the wings. Be sure to keep the beak above the water line. Hundreds of pelicans have been captured using this technique with no injury being caused.

In some cases a bird may be particularly shy. If you make a leap attempt and miss, it is unlikely that you will get another opportunity to capture that bird or any other bird that has witnessed the attempt at that location on the same day. The entire group may spook and not return to that site for several hours. You may have some success by moving to another location if the case is extremely urgent but rest assured they *will* recognise you. Wear a different shirt and hat in order to change your appearance if attempting another leap on the same day.

D-net

This method is not effective in windy conditions and not particularly suitable for pelicans but it is ideal for other species that can be lured. It can be made any size, however, a larger area increases the chances of a successful capture.

Erect the net in a location that the target bird visits regularly. In some cases, it may take up to several days for the bird to accept the net as a non-threatening structure, particularly in isolated places where human interaction is not common.



D-net design and operation. Photos: ASR.

Secure the net to a tree or stationary object with a tethered line. The advantage of this capture method is that the tethered line can be of considerable length and thus distances the rescuer from the target bird. Place appropriate food under the net to lure in the bird. When the bird enters the capture area the net can be manually lowered onto the bird by releasing the tethered line.

The following instructions are for a D-net that is approximately 2 m wide and suitable for most species in NSW. The gauge of the mesh has proven to be the least susceptible to feather entanglement. You will need two 4 m lengths of 20 mm electrical conduit (each length has a flair at one end, which can be used as a joiner); one conduit straight joiner, and two right-angle corner joiners; about 3 m² of black net with mesh-size ~3 cm²; 50 m of nylon sash cord.

Construction

- Cut the conduit to length, fix the joiners and make the D shape as indicated. Only glue one side of the joiners, so that the D-net can be collapsed for transport.
- Lay the D onto the net, and cut out the net slightly larger than the D.
- Open the joiners, and thread the netting onto the D.
- Use gaffer tape near the joiners to stop the netting sliding around the conduit.
- Attach the sash cord to the netting.

Boat / Land pursuit

Requires two to three people.

Boat

If the injured bird can still fly but its flight appears impaired, a successful strategy is to keep the bird aloft by boat pursuit. It will likely become apparent after several minutes of chase that the bird is unable to fly well, tires easily, and may land and take



Boat pursuit being used to capture an injured bird. Photo: ASR.

off again a number of times prior to capture. When pursued in this manner, the bird will almost always fly above the water course. It is extremely rare for them to detour across land unless there is another area of water nearby. The boat's skipper should be skilled at a slow approach so the rescuer can retrieve the bird over the side of the vessel. A net with a long handle has proven useful in many cases.

Land

Many birds that are unable to fly can be captured by 'rounding them up' on land. In this case two or more people and a net with a long handle are an advantage, to prevent the bird from entering the water and reduce the duration of pursuit.

2.9 FIRST AID IN THE FIELD FOR COMMON INJURIES

Be aware that there may be additional injuries or entanglements other than the first one you notice. In all cases, delay cutting any line until you are sure you have found any and all hooks that may be attached. Always thoroughly examine the rest of the bird including inside the beak before you release it. Primary considerations are:

- Comfort: a cage or container large enough to enable them to stand up;
- Fluids: electrolytes should be on hand in case dehydration is suspected; and
- Lack of stress factors: no children or dogs nearby or radio/music playing in the car or slamming of car doors.

The following is a list of the most common conditions/injuries (in order of frequency), and first aid treatment.

Fish-hooks

Remove hook/s, by cutting off the barb and feeding the post through the wound. If the hook has been embedded for some time, often a clump or 'sinus' of necrotic matter forms around it. To some extent this encrustation can enable the easy removal of the hook without further damaging the surrounding flesh.

Flush out the wound with antiseptic following removal of the hook. Depending on the size of the remaining hole, a long-term antibiotic injection may be required. Seek veterinary advice if there is any sign of inflammation, swelling or infection, if the hook is swallowed, or deeply embedded. Be sure not to cut off any trailing line that is connected to the hook until veterinary advice has been sought.

Fishing line entanglement

Remove the line as quickly as possible. Seek veterinary assistance to have the line removed if the skin has grown over it. It is possible that blood vessels have formed over the line and the bird will require long-term rehabilitation. Also check to see if



Removing line in the field. Photo: ASR.



A hole this size in the pouch would require veterinary treatment and stitching. Photo: ASR.

a wing or leg is affected by lack of circulation. An affected limb will likely feel cold, appear discoloured and may have limited mobility. These cases will also require long-term specialist care.

Pouch problems in pelicans

The gular pouch should feel soft and dry to the touch. The pouch is lined with hundreds of blood vessels and is very sensitive. If there is a hole torn in the pouch that is larger than a 50-cent coin, it will require veterinary care. If the wound is recent, there may have been considerable loss of blood. If there is dark skin, similar to bruising, in or around the

wound-site, the bird will also require long-term specialist care. Dehydration can be indicated by a dry, flakey and/or wrinkly gular pouch and could be a symptom of a primary disease or condition, which would need to be investigated by a vet.

Paralysis

Seabirds sitting and doing nothing all day is not normal behaviour. Most reports of what turns out to be paralysis cite broken wings or legs as the injury because the bird is unable to move normally. In these cases a speedy response is critical to halt the fast acting neurotoxin that may be paralysing the bird. Many conditions and diseases may cause debilitating paralysis in all species of seabirds. These include pneumonia, botulism, aspergillosis or a host of other bacteria that can be fatal in a very short space of time. Keep the bird warm and seek veterinary assistance.

Broken bones

Broken bones needs veterinary attention as soon as possible. Satisfactory remediation of old breaks is extremely unlikely. Seabirds require a high level of physical fitness for survival in the marine environment. If you suspect a break, strap the affected limb with a bandage to avoid any further movement during transport.

Carefully examine the bird for injuries other than those you have identified. This will also allow some time for the bird to regurgitate before you put it in a vehicle⁽⁵⁾.

2.10 TRANSPORT⁽⁵⁾

Transporting seabirds even over short distances causes the bird high levels of stress. Broken and drooping wings should be strapped prior to transport as the bird may tread on the wing during transport. Feeding before transport should be avoided as seabirds will regurgitate when being moved even over short distances. Avoid transporting more than one bird in each box. Even siblings and parents should be separated as parent birds can accidentally stand on or crush their offspring due to the vehicular movement. Some species of seabirds are known to prey on smaller seabirds.

Temperature

An ambient temperature of approximately 25-27°C is preferred during transport. Travelling in the heat of the day should be avoided as the temperature inside a transport box in a hot vehicle may become much higher than anticipated. Extremes of cold must also be avoided. When transporting birds over long distances it can be useful to move them at night when they will sleep (although some species are nocturnal).

Ventilation

Ensure that the vehicle and the container are well ventilated. Strong cardboard boxes are perfect for transporting smaller seabirds because they are soft and do not damage the bird's feathers. Ensure boxes are not stacked too closely together and exhaust fumes must be avoided. Birds should be transported inside the car not outside on the tray of a utility where they are exposed to the weather, noise and pollution.

Noise

Avoid all unnecessary noise, such as radios, loud voices and traffic noise. Birds should not be transported in a car with a domestic pet. The pet may not damage the bird but the bird does not know that and will be stressed. Avoid leaving the box on the ground at the side of the road, train track or runway. The bird may feel threatened and will be exposed to vibrations, noise and fumes.

Transport boxes

The size of the container should correspond with the size of the bird but not be so large as to allow the bird to be thrown around. The strength and behaviour of the species should be taken into consideration when selecting a transport box. Birds should be able to stand and stretch their necks. Wing movement will be restricted and this is often necessary to prevent feather damage. Cardboard boxes are very useful and are soft enough to prevent feather damage, however, the base may need reinforcing if the floor becomes saturated. Ventilation is essential. If the cage is constructed of wire mesh, lining it with shade-cloth can prevent injuries to the beak and feathers⁽⁴⁾.

Some birds such as pelicans and large albatross require large cardboard boxes like those for transporting refrigerators. Since these are not always available, birds can



Ensure transport cages are appropriate to the size of the bird. Note the wire windows and front door of the cage are covered with shade cloth to prevent feather or beak damage to the bird during transport. Photo: ASR.

It is recommended that rubber matting be used as a base with folded towels placed on top of the rubber. It is important to provide a surface that is soft on the bird's feet but also provides something for them to grip with their toes and nails. Hessian sacking and towels with frayed edges are not suitable as the bird's toes can get caught in the weave and loose material may become caught around a leg or other parts of the bird. Newspaper is not recommended because it becomes slippery with faeces and can also harbour fungus.

It is essential that the bird's feather condition and waterproofing are protected during transport. Seabirds may be successfully treated for dehydration, infections, exhaustion, fractures, oiling etc but if their feathers are damaged during transport they may require euthanasia. Removing the damaged feathers and waiting for new feathers to grow is not an option due to the risk of secondary complications (and pain to the bird). Seabird species have many different moult cycles with some such as gannets moulting three or four primaries each year and suspending moult when breeding commences⁽⁵⁾.

be wrapped in a blanket and covered if they are too ill to stand. Large sports bags with zippers or specially designed carry mats can be used to restrain the body and wings of the bird leaving the head and neck out of the bag. If this is the transport method the bird will be exposed to visual stress during transport and it is advisable that the head be covered. One person should sit with the bird to prevent it damaging itself by throwing its head around. It is more than likely that birds will regurgitate during transport so towels should be available⁽⁴⁾. Be watchful of an upward tilt of the head, a lowering of the beak, and neck lengthening and shaking⁽⁴⁾. This indicates an immanent attempt to regurgitate.

Transport box floor covering

If the surface is abrasive or if the bird is unable to grip and is sliding around, the floor covering is inappropriate.

2.11 RELEASING BIRDS⁽⁶⁾

Physical and behavioural health of birds

- Except in simple cases of detanglement (where the bird is treated *in situ* and not taken into care) birds should be seen by a practising veterinarian prior to release to ensure that they have no clinical illness or injuries, and have fully recovered. Blood tests and parasite screening should be carried out to ensure that the bird does not pose a disease risk to the wild population.
- An experienced wildlife rehabilitator should observe the bird and thoroughly test for fitness, condition and behavioural suitability for release.
- Birds should recognise their natural food source prior to release. This may be difficult to assess in some pelagic birds but, generally, seabirds must be feeding on their natural diet before release.
- The bird's weight and body condition should be checked and recorded prior to release. Weight must be in the normal range for that species (see below).
- The bird must be waterproof and all feathers be in good condition. Body temperature of 38-41°C should be maintained after several hours in the water. Penguins should not be released during the moult.
- If appropriate, the bird should have had experience with others of its own species, and be behaving normally.
- The bird should have a knowledge of predators (when appropriate) and object to human handling.
- Salt tolerance must be reestablished prior to release and nasal gland secretions visible for pelagic birds.
- The bird should receive some form of identification prior to release to enable post-release monitoring.

Release weights for seabirds⁽⁷⁾

Resident seabirds

Pied cormorant: 1650-2000 g
 Little black cormorant: 800 g
 Little pied cormorant: 690-800 g
 Great black cormorant: 2500 g
 Crested tern: 335 g
 Common tern: 95 g
 Little tern: 55 g
 Fairy tern: 55 g
 Silver gull: 280 g

Kelp gull: 890 g

Pelicans: 3390-7350 g

Penguins: 950 g

Migratory seabirds

Australasian gannet: 2285 g
 Short-tailed shearwater: 500 g
 Wedge-tailed shearwater: 385 g
 Flesh-footed shearwater: 660 g
 Bar-tailed godwit: 190-400 g
 Eastern curlew: 700-900 g

Pacific golden plover 120-175 g

Red-necked stint 25 g

For migratory species, release weight depends on their migratory pattern so seek expert advice to confirm release weights. Some migratory seabirds boost their body weight by 40-70% before migration.

Release site or location

Unlike many species of terrestrial birds, it is not necessarily imperative that a rescued seabird be returned to the location that it was found. It could have been blown off-course several hundred kilometres by the time it was rescued. However, most cases are resident birds such as gulls, terns and cormorants that can be returned to their native territory with ease.

Whether you have treated a bird *in situ* and immediately released it or the bird has been in captive rehabilitation for some time, it may have difficulty flying immediately. Always release the bird on the beach or at the water's edge away from rocks. Most seabirds require wind to take off and should be released when good winds prevail. To release a bird at an unsuitable location would almost certainly cause the bird a degree of hardship. The normal range of the bird at any given time of the year needs to be established; the release site must be the correct habitat for that species, provide adequate food, and have the same species present. It is preferable that pelagic birds are taken out to sea for release. Some birds may rest on the water for some time before flying away.

Many seabirds can not become airborne unless the wind speed is approximately 25 knots or more. Headlands can provide a suitable updraft for the bird to take flight but it must do so unassisted. Birds will instinctively know if the weather conditions or their physical condition is not optimum. They may spend some time preening and inspecting the air currents before they take flight (up to an hour) so patience is necessary.

Other release considerations

- Time of year: if a bird is released at an inappropriate release site at the wrong time of year its chances of surviving more than a few days are minimal. In addition, time of year is an important consideration for migratory species.
 - Time of day: the general rule when releasing birds is, if the bird is diurnal, release one hour after dawn, following the first fever-pitch of feeding activity has dissipated. Similarly, nocturnal species should be released one hour after dark because there is intense competition for food at dusk.
 - Weather: weather conditions must be taken into account because some birds can not become airborne with wind speeds under 25 knots. Fine, still days are pleasant for humans to be at sea but are not ideal conditions for releasing seabirds. It can be beneficial and good safety practise to obtain a long-range weather forecast.
 - Gregarious species (such as silver gulls) may benefit from being released together.
- The release of a bird after treatment requires considerable thought, preparation and assessment. If the bird is to be given a second chance, all the rehabilitation and release considerations should be addressed.

MARINE OIL AND CHEMICAL SPILL

3.1 INTRODUCTION

It's impossible to predict where and when a marine oil or chemical spill is going to occur, how much will be spilt, what time of year, ocean conditions and which species of birds will be affected. The purpose of the following information is to describe how an incident like this would be managed in the State of New South Wales.

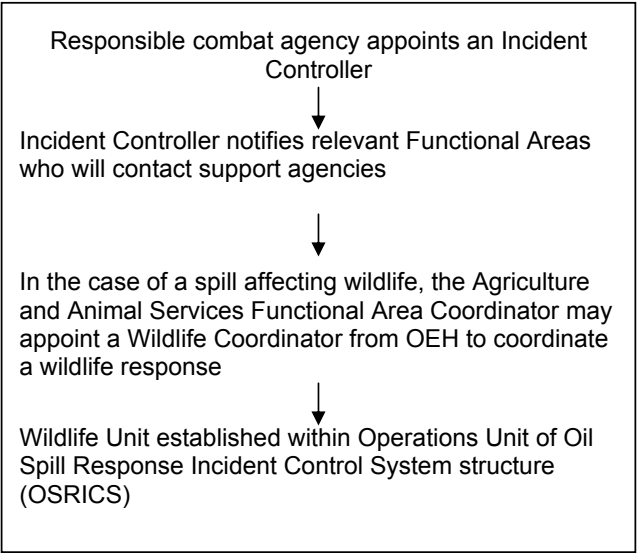
The NSW government and its supporting agencies, including wildlife rescue and rehabilitation groups, operate under the State Emergency Management Plan (EMPLAN). Under the EMPLAN a list of sub-plans help the State prepare, respond and recover from a variety of different emergencies.

Under the NSW EMPLAN and the National Plan to Combat Pollution of the Sea by Oil and other Noxious and Hazardous Substances (the National Plan) an individual subplan, the State Waters Marine Oil and Chemical Spill Contingency Plan (the Contingency Plan) has been developed. Under the Contingency Plan a number of functional areas provide support and resources to the Combat Agency for emergency operations in specialist fields, if required, and are activated by the Combat Agency. Animals in an oil spill, including birds, fall under the responsibility of the Agricultural and Animal Services Functional Area (AASFA). The AASFA is co-ordinated by NSW Department of Primary Industries (NSW DPI) who may be assisted by a number of specialist participating and supporting agencies in co-ordinating the Wildlife Unit. Links to policies and related documents are provided in section 4.3 on page 42.

In the event of a marine oil or chemical spill requiring an emergency seabird response, members of your group may be called upon to provide resources to the AASFA under the Wildlife Unit. A typical incident management team and wildlife operations unit structure are shown on the following pages (note that the Wildlife Co-ordinator falls under the command of the Operations Officer).

Following the *Iron Baron* incident in 1995 (see case studies in section 3.5 on page 38) the National Plan Advisory Committee recommended that the States introduce oil spill wildlife rehabilitation plans. These issues were again highlighted in 1999 with the *Laura D'Amato* spill in Sydney Harbour, which prompted an enquiry and subsequent report on the emergency response from the incident analysis team (see AMSA's *The Response to the Laura D'Amato Oil Spill: Report of the Incident Analysis Team*). The enquiry was used to improve arrangements and plans in readiness for any future incidents, including emergency seabird response and rehabilitation plans.

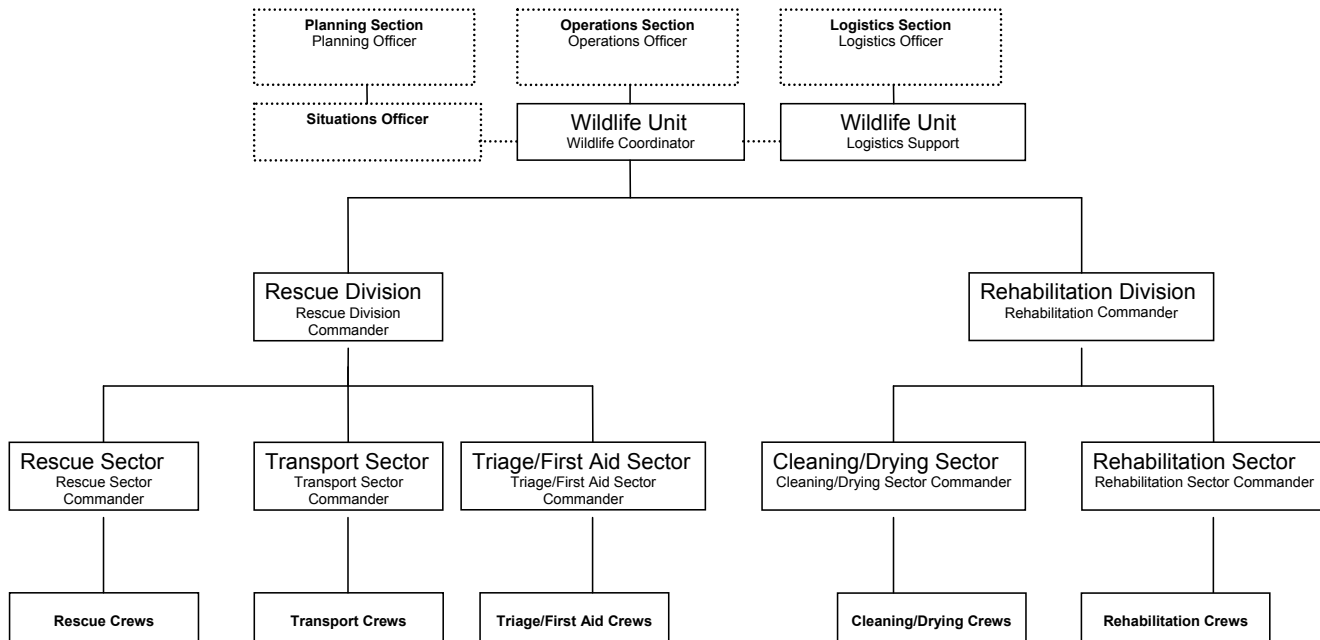
Oil or chemical spill notification flow chart⁽⁸⁾



Emergency seabird response notification flow chart. DPI.



Preparing for an emergency response following establishment of the Wildlife Unit. Photo: ASR.



A typical Wildlife Unit structure. Diagram: DPI.

3.2 PREPARING FOR AN EMERGENCY RESPONSE

The roles of supporting agencies

The EMPLAN designates a Combat Agency to control the operation. In NSW the designated combat agencies are the NSW Department of Roads and Maritime Services (DRMS) or a port corporation depending on the location of the spill incident. The AASFA Supporting Plan (<http://www.mpes.nsw.gov.au/content.php/558.html>) details the arrangements to assist animals more specifically than the Contingency Plan, such as in the event of a major oil spill that affects coastal birds. The participating and supporting agencies that are co-ordinated by NSW DPI include wildlife rescue and rehabilitation groups that have the capability to provide immediate relief and ensure animal welfare in the event of an emergency. They operate under a Memorandum of Understanding (MoU) with the AASFA under the Supporting Plan. Check with your group's management committee to find out if your group holds an MoU with NSW DPI, has the necessary training, and what resources they could or do provide in the event of an emergency.

The Australian Maritime Safety Association (AMSA) provides a generic list of possible roles for volunteers in an oiled wildlife response event. Wildlife response groups will be operating under NSW DPI policies and procedures, and are engaged as a Participating and Supporting Organisation under the AASFA Supporting Plan.

Training and resources

The best training available is to participate in regular drill exercises either within your group or in collaboration with other groups in your area. This ensures that existing and new volunteers and staff are familiar with the control structure, and



Washing oiled feathers in a wildlife response unit following a major spill. Photo: US Fish and Wildlife Service.



Multiple functional areas undertaking a drill exercise at Yamba Port 2009. Photo: ASR.

current training and methods, and provides the opportunity to network with other community groups. The NSW Government conducts regular regional drill exercises on a tri-annual basis. These include the participation of supporting agencies in a mock oil spill that triggers the EMPLAN and a requirement for emergency seabird response. Check with your group's management committee to see if there is a regular drill exercise on their calendar of events and find out how you can participate. In the event you or your group are called on to participate in an emergency response, on-site training will be provided that is specific to the particular emergency.

Oiled Wildlife Response Kits, provided by AMSA and maintained by each of the States under the National Plan arrangements, are located in each state. The kits can quickly be deployed to a spill site and contain all of the required equipment for the initial treatment of up to 100 birds. At the time of writing, the NSW kits are held at two sites; the veterinary equipment being located at Taronga Zoo and the operational equipment at Sydney Port Authority (within a mobile wildlife washing unit which is housed in a converted shipping container).

The washing unit is fully equipped with water heaters, a water softener, a pressurization pump, ventilation plant and electrical distribution board; plus a large working area with water outlets, ducted air extraction, lighting and floor drainage. The container can run up to three cleaning stations and has sufficient water capacity to run four more wash stations in an adjacent facility. The container can be deployed at short notice to a site that has access to water and power. The AASFA Coordinator (AASFAC) will request the deployment of the AMSA Oiled Wildlife Response Kit upon notification of an incident involving affected animals. The veterinary component of the kit, which is held and maintained by Taronga Zoo, should be deployed at the same time. See section 4.3 on page 42 for a link to more detailed information on the kits.

Determining your fitness to respond

There are some roles within the incident control structure that may require you to work in a hazardous environment. This could include conditions of excessive heat or cold that may be uncomfortable and tiring. Working in the bird response area can also be emotionally confronting. Participants need to be in peak physical and mental health. AMSA has produced an instructive DVD entitled *Safety First in Oiled Wildlife Response: An initiative of Australia's National Plan*. The DVD addresses the various aspects of working safely in oiled wildlife response. If you are considering participation in a spill response in the future then viewing of this DVD is highly recommended. See section 4.3 on page 42 for a link to the health and safety slideshow, presented at the Marine Incident Response for Wildlife workshops held across the state in 2011.



Responding to a spill can be a physically and mentally challenging experience. Photo: US Fish and Wildlife Service.

3.3 PARTICIPATING IN AN EMERGENCY RESPONSE

Rescue and rehabilitation of oiled birds

It is important for your own safety and the safety of colleagues and birds that you follow the direction of the team leader identified in the incident control structure. Appropriate response, rescue and rehabilitation methods will be chosen by team leaders. The methods are dependent on a number of variable factors such as type of oil, extent of spill, weather and ocean conditions, species of birds affected, and other

factors. Not all affected wildlife will necessarily be captured. The decision to capture will be made by rescue crews based on a range of considerations, with safety being paramount.

Wildlife rescue and rehabilitation groups involved in an emergency event can access the plans, policies, procedures, forms, role descriptions and safe work method statements for pre-emptive action, set-up and use of bird treatment facilities, search and rescue, triage and first aid online at the NSW DPI website listed in section 4.3 on page 42. It's a good idea to become familiar with these documents well before an incident occurs. Rescue and rehabilitation of oiled birds is substantially different from dealing with entanglements or injuries. You will find a list of published resources in section 4.2 on page 41.

3.4 RECOVERING FROM AN EMERGENCY RESPONSE

Documentation

Each functional area of the incident control structure will have reporting responsibilities during and after the incident. It is important that seabird rescue volunteers are able to provide as much accurate detail in their data as possible such as species identification, weight of bird, estimated percentage oil coverage, and any behavioural or clinical observations. The NSW DPI provides a wildlife rescue and release form, and these should be completed for each individual bird. This form is to accompany the bird from the time it is rescued until it is released or euthanased. Rehabilitation observation forms are to be attached to the wildlife rescue and release form during the rehabilitation phase. At the completion of the incident all forms are collated and the information is used to develop future emergency seabird response plans.

Debriefing

The health and safety of responders is the highest priority in any emergency response, and various debriefing sessions will look at the successes and challenges of rescuing and rehabilitating birds in each response. Debriefing sessions also provide an opportunity for feedback from volunteers in supporting agencies, and will contribute to future reviews of policies and procedures. It is important to take the time to attend debriefings, share your experiences, and address any residual physical or emotional distress/trauma that participating in the incident response may have produced.

Debriefing is important to assess the challenges and successes of an emergency seabird response. Photo: ASR.



3.5 MAJOR OIL SPILL CASE STUDIES⁽⁹⁾

World Encouragement Botany Bay 1979

At 8.55am on 10 September 1979 the tanker *World Encouragement* was conducting berthing operations at an Australian Oil Refinery (AOR) mooring at Kurnell in Botany Bay, NSW, when oil was noticed rising to the water's surface from beneath the ship. Initially, it was thought the ship had disturbed oil in the sediments, but soon oil was gushing to the surface and the crew determined that it was coming from a hole in the ship's hull. It was necessary to complete the berthing to allow enough draft so that oil could be transferred from the ruptured tank into the central slop tank, so although the ship's Master acted as swiftly as possible to transfer the oil and create a water seal in the tank, approximately 95 tonnes of Arabian Crude oil escaped into the waters of Botany Bay.

The NSW NPWS and Taronga Zoo arranged for the transport and cleaning of oiled birds. Around 50 birds were captured, cleaned and then released. Three captured birds subsequently died, and some oiled birds eluded capture so their fate was unknown. After three days, the response was wound down, response crews having removed or dispersed the bulk of the oil.

Iron Baron Hebe Reef Tasmania 1995

The Iron Baron, a 37,557 dead weight tonnage (DWT), BHP-chartered bulk carrier (built in 1985) grounded on Hebe Reef at the approach to the Tamar River, northern Tasmania at 1930 hours Eastern Standard Time (EST) on Monday 10 July 1995. The vessel had departed from the NSW port of Port Kembla on Saturday 8 July 1995, with a 24,000 tonne cargo of manganese ore that had been loaded at Groote Island, bound for the BHP-owned TEMCO facility at Bell Bay, which is located some 12 km inside the



Tamar River estuary and within the port of Launceston. Weather conditions prevailing at the time were north-westerly winds of 20-25 knots with two metre seas.

Shortly after the grounding, it was confirmed bunker fuel oil had escaped, which was later estimated at around 300 tonnes. The ship's crew were safely evacuated, and National Plan response arrangements were initiated. Weather conditions deteriorated and with the prevailing tidal conditions, oil impacted shorelines in the vicinity of Low Head. There was significant impact on wildlife, particularly little penguins.

A large wildlife collection, treatment and rehabilitation program was established at the pilot station complex at Low Head, north of George Town. Australian Seabird Rescue was called in to assist with the capture and handling of pelicans impacted by the spill.

Laura D'Amato Sydney Harbour 1999

On 3 August 1999 the *Laura D'Amato*, a 96,121 DWT, Italian-registered oil tanker was berthed alongside at the Shell Gore Bay terminal in Sydney to discharge its cargo of Murban light crude oil. Between 1826 and 1850 hours an estimated 250 to 300 tonnes of cargo was pumped into Sydney Harbour from the ship through an open sea valve system. These sea valves are normally closed. This was the largest ship-sourced oil spill in Sydney Harbour.



The Iron Baron. Photo: shipspotting.com

The prevailing conditions of a southerly wind and flood tide confined the majority of the oil to Gore Cove and Balls Head Bay, thus restricting the movement of the oil throughout the Harbour. Rapid reaction by the Sydney Ports Corporation duty operational crew and the Shell Gore Bay terminal staff had the vessel surrounded by boom by 1910 hours thereby minimising the spread of oil.

By 1930 hours the Sydney Ports Corporation oil spill response Incident Control Centre at Moores Warehouse, Millers Point was operational, with the Incident Commander in position and the overall Incident Controller mobilised soon after. There were around 20 reported sightings of oiled birds, and some marine invertebrates had been cleaned and released. The NSW NPWS advertised a dedicated phone number for reports of oiled birds and marine fauna. Sixteen oiled birds were caught and cleaned. Two cormorants died. Other oiled birds were sighted but not caught.

Night patrols in the Manly area also observed Fairy penguins leaving the water at night and returning to their burrows. Only two penguins required cleaning. Approximately 25 personnel and four vessels were used in this component of the response. At the time, there was no documented role for the NSW NPWS in oil spill response. Recommendations were made in the Incident Analysis Team Report to clarify these roles and responsibilities.



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4.3 INTERNET RESOURCES

NSW coastal birds

Byron Bird Buddies: <http://www.byronbirdbuddies.com.au>

Birds in Backyards: <http://www.birdsinbackyards.net>

Entanglements and injuries

Rescue and Intensive Care of Seabirds: http://www.awrc.org.au/uploads/5/8/6/6/5866843/seabirdrescueintensivcare_-_libby_hall.pdf

Capturing Pelicans and other birds that can be lured: <http://www.fourthcrossingwildlife.com/CapturingPelicans&OtherBirds-LanceFerris.pdf>

Marine oil and chemical spill

AMSA

The National Plan, oiled bird response kits, roles for volunteers, and case studies: <https://www.amsa.gov.au/>

NSW Ministry for Police and Emergency Services

EMPLAN, the Contingency Plan and the Supporting Plan: <http://www.mpes.nsw.gov.au>

NSW DPI

Policies and procedures for oil spill emergencies: <http://www.dpi.nsw.gov.au/agriculture/emergency/oil-spills/policies>.

Marine Incident Response for Wildlife (from the NSW workshop series 2011): www.seabirdrescue.org/emergency-management.

For general information on effects of oil on wildlife, impacts to seabirds including feathers and skin, internal organs, reproduction and populations: www.vetmed.ucdavis.edu/owcn

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Photography (other than attributed)

Front cover : Chris McFerran

Page 2	: Pied cormorant Little black cormorant Little pied cormorant Great cormorant	Surfland Photography Surfland Photography animals.timduru.org Creative commons
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Page 4	: Silver gull (adult) Silver gull (juvenile) Kelp gull (adult) Kelp gull (juvenile)	en.wikipedia.org IBC Steve Arlow, birdersplayground.co.uk surfbirds.com
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Printed by Sprint Print, Ballina NSW.

