

Procedure – Oil/Chemical Spill Wildlife Response – Pre-emptive Action

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1. Application / Scope

In the event of an oil or chemical spill at sea or on inland waterways (eg ports and rivers), it is possible that wildlife, usually birds but occasionally mammals and reptiles, will be affected, necessitating a wildlife response.

Containment of the spill by the combat agency and prompt clean-up by shoreline response personnel can help limit impacts on wildlife but other action can be taken to minimise casualties, such as pre-emptive capture of unaffected wildlife or the use of hazing (or scaring techniques) to deter wildlife from entering contaminated areas. The success of such actions will depend on a number of factors, including the availability of resources to sustain extended hazing efforts, the degree to which wildlife are attracted to the area, and the size and location of the spill.

Hazing techniques can involve the use of a variety of auditory, visual or other physical devices. The more methods that can be used the better but circumstances and resources will dictate which are the most viable and safest to use.

A timely, planned and coordinated response to pre-emptive action by involved agencies will provide the most effective result.

This procedure assists personnel involved in pre-emptive actions to avoid or reduce impacts on wildlife and to conduct activities safely. Refer to other procedures listed at the end of this document for other aspects of the response.

2. Abbreviations / Definitions

- Hazing – the use of deterrents or scaring techniques to keep wildlife away from contaminated areas.
- Pre-emptive capture – capture and removal of unaffected animals from likely impact areas

3. Resources / Equipment

- Aircraft, boats, jet-skis, all terrain vehicles
- Hazing devices – determined by circumstances and availability
- Appropriate personal protective equipment as determined by a risk assessment
- Nets or cage traps for capturing animals – type determined by species
- Materials for building pens if herding flightless birds (eg penguins)
- Containers for carrying captured wildlife
- Holding facilities for captured wildlife
- Adequately equipped vehicles for transporting captured wildlife to holding facilities if remote from capture site
- First aid kits and other safety equipment as determined by the JSA and the vehicles/craft used

4. Warnings

- Human health and safety and animal welfare must be the primary concerns during pre-emptive capture operations. Personnel required to handle animals need to be trained in animal handling and should be equipped with appropriate personal protective equipment as determined by a risk assessment for the tasks to be undertaken. Refer to the SWMS/JSA [Handling of Animals](#).
- Personnel may experience back strain, overheating, dehydration and exhaustion and should be rostered to take adequate rest breaks and provided with regular drinks.
- Hazing devices can present hazards such as accidental discharge, fire, exposure to loud noise, eye injuries and other injuries to personnel and bystanders. Such devices should only be used by trained personnel and where conditions make them safe to use. See SWMS/JSA [Using Wildlife Hazing Techniques](#) and [Working on and Around Water](#).

- Where hydrocarbon vapours occur, flammability or explosion hazards may exist and hazing devices that can cause heat or sparks (such as shot guns) should not be used.
- The use of aircraft, power boats, jet skis and all-terrain vehicles may be used to scare wildlife away from spill areas. This will require suitably trained and licensed operators who are aware of potential hazards and who exercise safe work practices. See SWMS/JSA for [Boating Operations](#), [Using & Transporting Quad/Motor Bikes](#) and [Driving Vehicles](#).
- Maintaining hazing operations over an extended period to prevent birds and mammals returning to spill areas can be resource intensive. This should be considered when determining whether and which hazing techniques are viable.
- Weather conditions may affect the effectiveness of various hazing methods and human safety. It may also be difficult to disperse wildlife from sheltered areas in bad weather.
- Personnel handling animals are at risk of bites and scratches and must have a current Tetanus vaccination.
- In populated areas, noise caused by hazing activities/devices may disturb neighbouring residents. Where this is likely, community liaison is recommended before operations commence.

5. Procedure

5.1 Planning considerations

Pre-emptive capture is not feasible for most wildlife species and would generally only be considered for birds, or possibly small mammals, such as Water-rats (*Hydromys chrysogaster*). Extended periods of captive care are stressful and can have detrimental impacts on wildlife. Pre-emptive capture should therefore only be undertaken if it is considered essential, eg when endangered or highly significant populations are involved and the risk of oiling is very high.

The Wildlife Coordinator will liaise with the Incident Management Team to evaluate the impacts of the spill and determine whether pre-emptive action is warranted and the priorities and methodologies to be used. An Incident Action Plan (IAP) will be developed with input from personnel who are familiar with the local wildlife species and habitats, the topography of the area, and the various hazing techniques. The plan should consider the following:

- The location and extent of the spill - this will provide an indication of the current and anticipated resources and personnel required.
- Identification of threatened environments within the affected area and the wildlife species likely to be present – this will help determine target areas, priorities and the most appropriate methods to employ. Local experts should be consulted regarding known roosting sites and high use areas for wildlife. Priority should be given to endangered species or species of special concern which will be identified in NPWS Regional Action Plans, the Oil Spill Response Atlas (OSRA) or the NPWS Wildlife Atlas, which are tools used by the Incident Management Team at responses.
- The limitations of pre-emptive actions – eg pre-emptive capture is not viable for all species and hazing activities are generally impractical over areas larger than 10-15 sq kms (due to equipment and personnel requirements).
- The availability of trained personnel - personnel involved in deterrence/hazing activities may need specific licensing or training for use of particular devices e.g. operating and crewing aircraft and boats, firearms, pyrotechnics etc.
- The availability of suitable uncontaminated areas into which unaffected wildlife can be hazed.
- The availability of facilities and resources to care for wildlife if pre-emptive capture is to be considered.

5.2 Pre-emptive capture of unaffected wildlife

Pre-emptive capture of wildlife will be carried out by Rescue Crews and will be coordinated by the Wildlife Coordinator. Pre-emptive capture is both labour and resource intensive because it involves

the handling, transportation, stabilisation and eventual release of the wildlife. The availability of resources will need to be considered when determining whether capture is a feasible option.

If animals are to be held at facilities near the capture site, those facilities need to be established in advance of capture attempts. Animals suffer stress when captured and the amount of time they spend restrained should be minimised.

5.2.1 Pre-emptive capture techniques for birds

Pre-emptive capture techniques for birds include:

- Herding birds into a fenced enclosure or corral – this is used for flightless birds, such as penguins. See Section 5.2.2 below.
- Setting mist nets – these are used for capturing birds in flight, from small species through to large shore birds. The nets are large panels of fine mesh, barely visible to birds, which are stretched horizontally between two posts to hold them upright and taut. One or more nets can be strung along a shoreline depending on the number of birds to be captured. The nets are set in locations that birds are known to frequent and the birds are flushed into the nets, either by the use of luring devices (such as bird call recordings) or through physical hazing methods. The birds become caught on the net itself or fall into one of the pockets or pouches which run along the length of the net. Different mesh sizes are suitable for different bird species and need to be selected according to the species involved. See Section 5.2.3 below for more information.

Mist nets can also be used as throw-nets to capture birds nesting at sites that are threatened by the spill. The nets are carried open and taut by two people and placed over the birds which are then removed from underneath the net. Mist nets can only be used by [‘A’ class bird banders](#) authorised to use them. See Section 5.2.3 below for more information.

- Using cannon nets – these are used for capturing birds where they congregate in large numbers eg at nests or feeding sites (ie birds not in flight). Explosives are used to fire projectiles which propel the net over the top of the birds preventing them from flying away. Training is more involved for the use of these than for mist nets and pre-emptive capture using this method may only be carried out by trained [‘A’ class bird banders](#) authorised to use them.

5.2.2 Herding birds into enclosures / corrals

This will be undertaken by Rescue Crews who must be trained in bird handling. Assistance may be required from the Marine Unit if boats are needed to herd birds from the water.

- This method involves the construction of an enclosure into which birds can be herded allowing them to be captured. For information on the construction and use of an enclosure/corral, see Chapter 3, pp 34-36 of [Wild Birds and Avian Influenza](#).
- Depending on the location, birds are herded by a line of personnel on foot who may be assisted by personnel in small boats if birds are in shallow water close to shore. The number of personnel required will depend on the number of birds involved. Hand-held poles and/or erected barriers can be used to guide birds towards the opening of the enclosure.
- Once all of the birds are inside the enclosure, the entrance is closed off.
- Birds should be placed in bags or boxes as soon as practicable and be prepared for transportation to holding facilities.
- Avoid chasing birds and subjecting them to repeated capture attempts as this causes stress and can prolong rehabilitation time.

5.2.3 Capturing birds in nets

This will be undertaken by Rescue Crews who must be trained in bird handling.

NOTE: Some species of shorebirds can suffer from post-capture stress. Consult shorebird specialists or an avian veterinarian before attempting capture.

- Hand nets may be used to capture birds on the shore or on the water. For procedures, see Sections 5.3 and 5.4 of [Oil Chemical Spill Wildlife Response – Search and Rescue](#).
- Details of other capture methods such as the 'beak grab'; 'toss 'n' run' and the use of nooses, Steeles' Nets and D nets can be found on the [Australian Seabird Rescue](#) website.
- Mist or cannon nets may be used depending on the species to be caught and their location. Persons using mist or cannon nets must have the necessary bird banding authority and capture endorsements from the [Australian Bird and Bat Banding Scheme](#).
- For detailed information about when and how to use cannon and mist netting, see Chapter 3, pp 42-47 of [Wild Birds and Avian Influenza](#).
- When selecting a suitable site to erect mist nets, considerations include:
 - the direction in which the birds are likely to arrive at or depart from the site
 - incoming tides and the likely depth of water if nets are to be set up over or close to water
 - access to the nets by personnel to remove the birds. Nets should be set low enough that personnel can safely reach affected birds but high enough so that the bottom pocket or pouch is off the ground to ensure birds do not hurt themselves by flapping their wings on the ground or become submerged if the nets are set over water.
- Nets tangle and catch easily and personnel should avoid wearing clothing or personal items that are likely to catch.
- Birds should be removed from nets as soon as possible – the longer they are in the net, the more tangled they become and the greater the risk of injury. Mist nets need to be checked at least every 20-30 minutes.
- Removal of birds should be done carefully and quickly (to minimise stress) by personnel trained in bird handling. The net should be approached quietly and calmly and distressed birds removed first.
- A common method of removing birds from nets is the Body Grasp Method. For details see [The Body Grasp Technique: A Rapid Method of Removing Birds from Mist Nets](#).
- Once removed from the net, birds are secured in bags or boxes ready for transportation to holding facilities.

5.2.4 Pre-emptive capture of water rats

Although usually found in fresh or brackish waters, Australian Water-rats (*Hydromys chrysogaster*) can be found in marine environments such as estuaries and coastal mangroves. They forage close to the shore line or in shallow water in search of fish, invertebrates, birds, frogs, crustaceans and molluscs.

Water-rats spend a lot of time on the surface of the water and are therefore at risk of contamination in the event of an oil or chemical spill. If the spill cannot be contained and is likely to impact on their known habitat, consideration may be given to pre-emptive capture. The decision to capture the animals should not be taken lightly and only considered if the potential for them to be affected by the spill is extreme.

Pre-emptive capture will be undertaken by Rescue Crews using the following techniques:

- Water-rats are captured using wire mesh cage traps, which are set at the water's edge or near burrows and baited with fresh or tinned fish. An ideal sized trap for capturing Water-rats is 30cm x 30cm x 60cm.
- Traps must be used in accordance with Sections 4.2.1 to 4.2.3 of [Animal Ethics Committee](#) guidelines.
- Captured animals will generally be taken to a temporary holding facility until such time as they can be released back into their natural habitat.
- Water-rats can be very aggressive and inflict serious bites. They should be transported to the intended holding facility in the cage and should only be removed by experienced handlers. Handlers must have a current Tetanus vaccination.

5.2.5 Species unsuited to pre-emptive capture

Cetaceans, sirenians, pinnipeds and marine reptiles can be affected by oil and chemical spills but are difficult to capture unless they are extremely distressed or emaciated. Unless they are already beached, pre-emptive capture is unlikely to be feasible and the most effective action is to employ one or more of the hazing techniques outlined in Section 5.3 below to drive them away from the spill site and into clear waters.

It may be useful to employ marine observers in areas where particular species are known to occur and experts should be consulted about the most appropriate hazing methods to use.

5.3 Hazing wildlife away from the spill site

Hazing activities will be coordinated by the Wildlife Coordinator and, depending on the methods to be used, will be undertaken by Rescue Crews and/or personnel from the Aviation Unit and the Marine Unit. The Wildlife Coordinator will liaise with the Incident Management Team to evaluate the impacts of the spill and determine which methods will be used and how they are deployed.

5.3.1 Types of hazing deterrents

Various types of hazing devices may be used to keep wildlife away from contaminated areas. Many are potentially dangerous and should only be used by personnel trained or licensed, as required, to use them. Devices can be used alone or in combination and include:

- Gas operated devices in which propane gas is exploded at timed intervals producing a loud directional noise (approximately 120dB). Devices should be placed above obstacles such as vegetation, to maximise effectiveness and the rear of the device, where the ignitor is located, should be sheltered from the wind. These devices are difficult to use on open water and are more suitable for use on land.
- Sound generating devices, usually battery operated, which can produce a range of sounds at varying intensity and frequency. Some are designed for use on water, can be launched from aircraft, boats or land and are fitted with radio beacons to allow easy detection of their position. Some may also be fitted with strobe lights.
- Pyrotechnics - including projectiles such as screamers and shell crackers launched from shot guns or pistols and producing a loud whistling noise, explosion and/or a flash of light.
- Helium balloons which can be used on shore or attached to floating devices in the water.
- Flagging and reflective tape which can be strung along shorelines. These devices move around and make flapping noises in the wind which scare wildlife away from the area.
- Scarecrows and predator models which can be constructed from a variety of materials. Inflatable versions are available that can be used on water.
- Fixed-wing aircraft or helicopters which can be used to fly over animals and deter them from entering contaminated areas. Aircraft can be effective over large areas and can reach remote areas which may be inaccessible by any other means. They can be useful for dispersing large concentrations of wildlife, especially birds. Helicopters are generally preferred because they are more manoeuvrable. Experienced pilots experienced in precision low-level flying are required. Hazing operations requiring the use of aircraft will need to be undertaken in collaboration with the Aviation Unit.
- Motorboats and jet skis which can be used to deter wildlife from contaminated areas or to herd them out to sea. They can be deployed rapidly in spill situations and can cover relatively large areas. They can also be used as platforms for the use of other hazing devices. Experienced, licensed boat operators are required. Hazing operations requiring the use of boats will need to be undertaken in collaboration with the Marine Unit.
- Land vehicles – all-terrain vehicles such as quad bikes and four wheel drives can be used to drive wildlife away. Air horns or sirens can be added to the vehicles for additional effect. Licensed operators are required.
- Remote-controlled aircraft, including aircraft with video surveillance equipment.

In bad weather, at night, or if staff are limited, automated devices, requiring only daily (or less frequent) checks may be most appropriate.

In order to minimise habituation to deterrent devices different hazing methods should be combined and the type, location and timing of deterrent devices should be changed frequently. The use of devices should be reinforced by human patrols when possible.

5.3.2 Limitations of hazing

- Species which are commonly found in environments associated with humans and human activity may be more difficult to haze, particularly if the deterrents chosen are similar to sights or sounds normally associated with that human environment.
- Deterrents can be expensive, are not always effective, are not always logistically feasible, and require well-trained personnel for effective deployment.
- Hazing generally works best in small, well-defined areas (e.g. small bays, harbours, inlets) where a variety of scaring devices can be used to surround the spill.
- Use of sound-emitting hazing devices may be unacceptable to local human residents.
- For large spills on water, devices used need to be highly mobile and able to affect large areas (e.g. sound-emitting buoys).
- Good results rely on operations covering the whole affected area for an extended period. Generally, hazing should not be started if it will not be possible to maintain the operation for the required length of time.
- It is important to ensure that clean, non-oiled areas are available into which the hazed animals can move, and where they will then be left undisturbed.
- It is difficult to haze birds in moult and a combination of techniques is likely to be needed for such activities.

(Adapted from the [Wildlife Information Network and Wildpro](#))

6. References

Policies

- NSW DPI policy - [Occupational Health and Safety in Emergency Management](#).

Procedures

- [Wildlife Response – Cleaning and Drying Wildlife](#)
- [Wildlife Response – Rehabilitation of Wildlife](#)
- [Wildlife Response – Release of Wildlife](#)
- [Wildlife Response – Scaling Down and Demobilisation Response](#)
- [Wildlife Response – Search and Rescue](#)
- [Wildlife Response – Set up and Use of Wildlife Treatment Facilities](#)
- [Wildlife Response - Transporting Wildlife](#)
- [Wildlife Response – Triage and First Aid](#)

Forms

- [Wildlife Rescue and Release Form](#)

Safe Work Method Statements / Job Safety Analysis

- [Boating Operations](#)
- [Driving Vehicles](#)
- [Handling of Animals](#)
- [Using and Transporting Quad/Motor Bikes](#)
- [Using Wildlife Hazing Techniques](#)
- [Working on and Around Water](#)

Role Descriptions

- [Rehabilitation Division](#)
- [Rescue Division](#)
- [Wildlife Coordinator & Logistics Support](#)

Information

- [‘A’ class bird banders](#)
- [Animal Ethics Committee Guidelines](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian Seabird Rescue](#)
- [Effects of Maritime Oil Spills on Wildlife](#), Australian Maritime Safety Authority
- [The Body Grasp Technique: A Rapid Method of Removing Birds from Mist Nets](#)
- [Wild Birds and Avian Influenza](#), Food and Agriculture Organization of the United Nations
- [Wildlife Information Network and Wildpro](#)

Legislation

- [Environment Protection and Conservation Act 1999](#)
- [National Parks and Wildlife Act 1974](#)
- [Threatened Species Conservation Act 1995](#)
- [Work Health and Safety Act 2011](#)
- [Work Health and Safety Regulation 2011](#)

7. Appendices