

# Appendix 1

**Definitions of conservation significance status for flora and fauna**

**Significant Species Management Plan**

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## Conservation status descriptions - Fauna

Status	Code	Description
<b>Categories used in EPBC Act</b>		
Endangered	E	A taxon is Endangered when the best available evidence indicates that it is considered to be facing a very high risk of extinction in the wild.
Vulnerable	V	A taxon is Vulnerable when the best available evidence indicates that it is considered to be facing a high risk of extinction in the wild.
Migratory	M	Species migrate to, over and within Australia and its external territories.
<b>Schedules of the Western Australian Wildlife Conservation Act 1950</b>		
Schedule 1	S1	Fauna that is rare or likely to become extinct.
Schedule 2	S2	Fauna that is presumed to be extinct.
Schedule 3	S3	Birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds.
Schedule 4	S4	Fauna that is in need of special protection, otherwise than for the reasons mentioned above.
<b>Priority Fauna Codes used by the Western Australian DEC</b>		
Priority 1: Taxa with few, poorly known populations on threatened lands.	P1	Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
Priority 2: Taxa with few, poorly known populations on conservation lands.	P2	Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
Priority 3: Taxa with several, poorly known populations, some on conservation lands	P3	Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
Priority 4: Taxa in need of monitoring	P4	Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.
Priority 5: Taxa in need of monitoring	P5	Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

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# Appendix 2

**Biological and ecological information on conservation significant species**

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## BIOLOGICAL AND ECOLOGICAL INFORMATION ON CONSERVATION SIGNIFICANT SPECIES

The following table summarises biological and ecological information for the significant fauna species recorded or predicted to occur at Mt Dove.

Species	Conservation Status (EPBC Act 1999)	Conservation Status (WA Wildlife Conservation Act 1950)	Description	Distribution and Habitat	Occurrence in Project Area	Level of Management
Northern Quoll ( <i>Dasyurus hallucatus</i> )	Endangered	Schedule 1	Dark grey to brown above with large white spots. The northern quoll is the smallest of the quolls, with a head-body length of 123 to 310 mm and a tail length of 127 to 308 mm. Males weigh from 340 to 1,120 g and females from 240 to 690 g.	The northern quoll is found in east and north Queensland, northern parts of the Northern Territory, the Kimberley and the Pilbara. Van Dyck and Strahan (2008) suggested that they were most abundant in broken country, rocky areas and open eucalypt forest within 150 km of the coast. In the Pilbara, the geographic distribution of northern quolls is considered fragmented, with its numbers in decline. They are found in a range of habitats including drainage lines, rocky scree slopes, gullies, ridges and eucalypt forests. Northern quolls utilise hollow logs, rock crevices, caves and hollows in mature eucalypt trees as denning habitat and for shelter during the day.	Recorded at Mt Dove from 15 locations during fauna survey and additional targeted surveys.	Species-specific; Standard.

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Species	Conservation Status (EPBC Act 1999)	Conservation Status (WA Wildlife Conservation Act 1950)	Description	Distribution and Habitat	Occurrence in Project Area	Level of Management
Pilbara Leaf-nosed Bat ( <i>Rhinonictis aurantia</i> )	Vulnerable	Schedule 1	Moderate sized bat with short fur, relatively small ears and a fleshy nose-leaf structure surrounding the nostrils. Weighs approximately nine grams. Distinguished by bright orange fur, especially on the front of the body. Several other colour variations can occur: pale/silver, lemon/yellow and fawn. It may be identified in flight from its orange colour in a spotlight beam.	Armstrong (2001) reported populations of <i>R. aurantius</i> around Marble Bar, Nullagine, Hillside station, Soansville, Tom Price, Paraburdoo, Red Hill, Millstream, Fortescue and the Barlee Range. Its geographic distribution appears to be divided into three distinct areas: mines of the eastern Pilbara – George Ranges, Hamersley Ranges in small colonies, and in the Gascoyne Ranges (Armstrong, 2001). Armstrong (2001) reported microhabitat conditions in two caves in the Barlee Ranges occupied by <i>R. aurantius</i> as having ambient temperatures of 22-28°C in winter and 25-34°C in spring and humidity varied appreciably from 26-94% in winter and 11-74% in summer. Known colonies in the Pilbara occupy abandoned, deep and partially flooded mines that trap pockets of warm, humid air in the mine's constant temperature zone.	Recorded at Mt Dove at three caves and one water source during fauna survey.	Species-specific; Standard.
Australian Bustard ( <i>Ardeotis australis</i> )	(Not listed)	Priority 4	Large (up to 1.5 m) upstanding bird that is mainly grey-brown and speckled with dark markings. Males have a bold black breast band and are generally larger than the females.	Johnstone and Storr (1998) reported the Australian bustard as occurring in most parts of Western Australia and often found in lightly wooded grassland, sand plains vegetated with spinifex, chenopod flats, low heath and farming country.	Recorded at Mt Dove during fauna survey.	Standard.



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Species	Conservation Status (EPBC Act 1999)	Conservation Status (WA Wildlife Conservation Act 1950)	Description	Distribution and Habitat	Occurrence in Project Area	Level of Management
Greater Bilby ( <i>Macrotis lagotis</i> )	Vulnerable	Schedule 1	The bilby has soft, blue-grey fur, distinct rabbit-like long ears, a long pointed snout and a crested black and white tail.	The Bilby's distribution has contracted to a few small populations in southern Northern Territory and south-eastern Queensland, and the Pilbara and Sandy Deserts of Western Australia. Bilby distribution is now largely restricted to the inland sandy deserts in two broad habitat types; mulga woodlands with lateritic red earth and spinifex grassland with high fire frequency, again with the red earth (Johnson, 1989; Southgate, 1990).	Not recorded at Mt Dove, from desktop study only.	Standard.
Brush-tailed Mulgara ( <i>Dasyercus blythi</i> )	(Not listed)	Priority 4	A small robustly built animal with a distinct black-haired bushy tail that is short and fattened at the base. Distinguished from the crest-tailed mulgara with a more brush-like tail and also two (rather than three) pre-molars.	Woolley (2005) has recently recognised two species of 'mulgara'; <i>Dasyercus blythi</i> and <i>D. cristicauda</i> . Currently, there are insufficient data to separate the spatial ecology, burrows and reproductive biology of these two species. Mulgara are distributed in the inland spinifex covered sandy desert and spinifex vegetated areas in the Pilbara and northern goldfields. Within these areas their distribution is patchy and it is most frequently confined to mature spinifex-dominated habitat (Gibson and Cole, 1992; Masters, 2003; Masters et al., 2003).	Not recorded at Mt Dove, from desktop study only.	Standard.
Crest-tailed Mulgara ( <i>Dasyercus cristicauda</i> )	Vulnerable	Schedule 1	Like the brush-tailed mulgara, the crest-tailed mulgara is small and robust with a distinct tail that is more crest-like in appearance. In contrast to the brush-tailed mulgara, this species has three pre-molars.	The crest-tailed Mulgara is limited to central Australia (Van Dyck and Strahan (2008) and recent consultation with the WA Museum (OES, pers. com., 2010) suggests that most mulgara species captured in WA are the brush-tailed mulgara.	Not recorded at Mt Dove, from desktop study only.	Standard.

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Species	Conservation Status (EPBC Act 1999)	Conservation Status (WA Wildlife Conservation Act 1950)	Description	Distribution and Habitat	Occurrence in Project Area	Level of Management
Bush Stone-curlew ( <i>Burhinus grallarius</i> )	(Not listed)	Priority 4	Grey-brown above and buff-white below with dark mark along the wing over a broader pale zone. The bill is blackish, the forehead white and the eyebrow is broad white over a thick black line from below the eye down the neck. Eye is large and yellow.	Johnstone and Storr (1998) reported the bush stone-curlew as being found in the western half of Western Australia and the Kimberley. It prefers lightly wooded areas but is absent from the sandy deserts and the interior east of Leonora and Southern Cross.	Not recorded at Mt Dove, from desktop study only.	Standard.
Ghost Bat ( <i>Macroderma gigas</i> )	(Not listed)	Priority 4	This carnivorous bat is the largest microchiropteran in Australia and is light to dark grey above and paler below with large ears that are joined. It has a simple leaf nose and large eyes.	Ghost bats in the Pilbara have been reported by Armstrong and Anstee (2000) as present in the Abydos Plain, Chichester Plateau, Gascoyne Ranges, George Ranges, Hamersley Plateau and Oakover Valley.	Recorded at Mt Dove during fauna survey.	Standard.
Grey Falcon ( <i>Falco hypoleucos</i> )	(Not listed)	Priority 4	A pale falcon with rich yellow eye ring, legs and feet. The tail is proportionately larger than that of the peregrine falcon and underwings are whitish with dark tips.	Johnstone and Storr (1998) recorded the geographic distribution of the grey falcon as the northern half of Western Australia, excluding the coastal area of the Pilbara. They went on to suggest that it is mostly found in lighted wooded coastal and riverine plains.	Not recorded at Mt Dove, from desktop study only.	Standard.

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Lakeland Downs Mouse ( <i>Leggadina lakedownensis</i> )	(Not listed)	Priority 4	Grey-brown with a white underside and up to 75 mm in length from head to body and a relatively short (45 mm) tail.	The lakeland downs mouse occupies a variety of different habitats including Spinifex and tussock grassland, amphire and sedgeland, <i>Acacia</i> shrublands, tropical <i>Eucalyptus</i> woodlands and stony ranges.	Not recorded at Mt Dove, from desktop study and in nearby surveys.	Standard.
Peregrine Falcon ( <i>Falco peregrinus</i> )	(Not listed)	Schedule 4	The peregrine falcon has a black crown and cheeks, white or buff underparts and finely black-barred underwings. Eye ring and legs are yellow.	Johnstone and Storr (1998) reported the peregrine falcon as being widespread including some off-shore islands. They are known to occur on a variety of habitats including cliffs along coasts, rivers and ranges and wooded watercourses and lakes.	Not recorded at Mt Dove, from desktop study only.	Standard.
Pilbara Olive Python ( <i>Liasis olivaceus barroni</i> )	Vulnerable	Schedule 1	A large python up to 6.5 m in length that is dark olive, yellowish brown with a paler ventral surface.	Pilbara olive pythons are found throughout the Pilbara and east to Mt Augustus and north to the Gregory Range. They are most often seen at night and are generally found around rocky areas, rocky outcrops and cliffs, particularly in the vicinity of watercourses and water holes, but they also shelter in logs, flood debris, caves, tree hollows and thick vegetation (Burbidge, 2004; Pearson, 2007).	Not recorded at Mt Dove, from desktop study only.	Standard.
Pin-striped finesnout ctenotus ( <i>Ctenotus nigrilineatus</i> )	(Not listed)	Priority 2	Slender skink with a simple pattern of 8 pale stripes. Limbs are orange brown with black stripes.	<i>C. nigrilineatus</i> is known from <i>Triodia pungens</i> hummock grassland at the base of granite outcrops near Woodstock (Wilson and Swan 2008). It has also been recorded at Abydos Plain in 2001.	Not recorded at Mt Dove, from desktop study only.	Standard.

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Rainbow bee-eater ( <i>Merops ornatus</i> )	Migratory	(Not listed)	Distinctive blue-green bird with a finely curved bill, red eye in a blue-edged black eyeline and an orange-yellow throat with a black crescent.	The rainbow bee-eater occurs in un-forested areas in southern Australia during summer then migrate north during the winter into northern Australia. The rainbow bee-eater is found across the better-watered parts of Western Australia. It prefers lightly wooded habitats, preferably on sandy soils near water. Rainbow bee-eaters are scarce to very common across their range depending on suitable habitat conditions.	Recorded at Mt Dove during fauna survey.	Standard.
Spectacled Hare-wallaby ( <i>Lagorchestes conspicillatus leichardti</i> )	(Not listed)	Priority 3	This species has distinct rufous rings around its eyes and is a small (up to 4.5 kg) wallaby. It has white tipped hairs and a clear white hip-stripe.	The spectacled hare-wallaby is found in the northern grasslands of tropical Australia and in the Pilbara (Van Dyck and Strahan, 2008). Ingleby (1991) reported that the spectacled hare-wallaby was rare in the Pilbara and Kimberley regions of Western Australia, although moderately common in the appropriate habitat in the Northern Territory.	Not recorded at Mt Dove, from desktop study only.	Standard.
Spotted Ctenotus ( <i>Ctenotus uber johnstonei</i> )	(Not listed)	Priority 2	This skink has a long tail with a pattern of stripes and spots and a laterodorsal series of pale spots. <i>C. u. johnstonei</i> has a well-developed vertebral stripe.	This species is known from hard reddish soils from interior Western Australia (Wilson and Swan 2008), although few records of the species are available.	Not recorded at Mt Dove, desktop only and from nearby surveys.	Standard.
Star Finch (western) ( <i>Neochmia ruficauda subclarescens</i> )	(Not listed)	Priority 4	A small pale olive-brown, white-spotted finch with red bill, forehead, face and throat.	Johnstone and Storr (1998) recorded the star finch being found around the western end of the Ashburton Fortescue and DeGrey Rivers in the Pilbara, and having a preference for long grass, rushes and shrubs around swamps, lagoons and permanent water bodies.	Not recorded at Mt Dove, from desktop study only.	Standard.

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Western Pebble-mound Mouse ( <i>Pseudomys chapmani</i> )	(Not listed)	Priority 4	A small (12 g) mouse that is typically distinguished by its stony mound. The western pebble-mound mouse is buff brown and similar to the relatively common sandy inland mouse, although it has a shorter tail, ears and feet.	Van Dyck and Strahan (2008) recorded the western pebble-mound mouse as endemic to the Pilbara of Western Australia. Biota (2005a) recorded active mounds on <i>Triodia</i> hill slopes (sites FMG01, FMG06, FMG07, FML02) and <i>Triodia</i> stony plains (FML03).	Not recorded at Mt Dove, from desktop study only.	Standard.
Woma or Ramsay's Python ( <i>Aspidites ramsayi</i> )	(Not listed)	Schedule 4	The woma python varies in colour from pale brown to yellowish brown with numerous irregular darker bands. The head neck and throat are never black.	The woma python occurs in arid zones of WA in woodland habitats, heathland and shrubland with spinifex.	Not recorded at Mt Dove, from desktop study only. Recorded within 22km of Mt Dove in 2010.	Standard.
<i>Ramphotyphlops ganei</i>	(Not listed)	Priority 1	<i>Ramphotyphlops ganei</i> is a moderately robust blind snake with completely dividing nasal scales that are clearly visible from above. Greyish brown above and cream below.	This species is thought to be associated with moist gorge and gully habitats and is known from widely separated areas between Newman and Pannawonica.	Not recorded at Mt Dove, from desktop study only.	Standard.

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Species	Conservation Status (EPBC Act 1999)	Conservation Status (WA Wildlife Conservation Act 1950)	Description	Distribution and Habitat	Occurrence in Project Area	Level of Management
Long-tailed Dunnart ( <i>Sminthopsis longicauda</i> )	(Not listed)	Priority 4	The long-tailed dunnart is distinguished from all other dunnarts by its tail which is more than twice the length of the head and body. It has a flattened head and a long pointed snout.	Van Dyck and Strahan (2008) recorded the geographic distribution of the long-tailed dunnart to include the Pilbara, the Great Victoria Desert and south-western Northern Territory. McKenzie <i>et al.</i> (2000) caught a number during their Carnarvon Basin regional survey, extending its geographic distribution in a westerly direction. Van Dyck and Strahan (2008) recorded individuals being caught on plateaus of boulders and stones near breakaways and scree slopes, vegetated with mulga and spinifex.	Not recorded at Mt Dove, from desktop study only.	Standard.

# Appendix 3

**DEC guidelines for the transport and temporary holding of wildlife**

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Department of  
**Environment and Conservation**

*Our environment, our future*



# DEC Nature Conservation Service

## Biodiversity

### Standard Operating Procedure

# Transport and temporary holding of wildlife

## *SOP No: 11.1*

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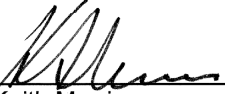
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### Approvals

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## 1 Purpose

In most situations, animals that are trapped are released at their point of capture shortly after being identified and required observations and measurements taken. However, certain circumstances, such as translocation or collection of live voucher specimens, involve the temporary holding and/or transport of live animals.

**This standard operating procedure (SOP) provides advice on the temporary holding and transport of wildlife using hard and soft containment methods.**

## 2 Scope

This standard operating procedure applies to the transportation of wildlife by Department of Environment and Conservation (DEC) personnel. It is of particular relevance to translocation of fauna for conservation purposes. It may also be used to guide wildlife transport and temporary holding undertaken of wildlife by NRM groups, consultants, researchers and any other individuals or organisations.

This SOP compliments the advice contained in SOP 10.1 Animal handling/restraint using soft containment. It does not cover the transport and temporary holding of livestock.

This standard operating procedure complies with, and expands on, Section 4.2 and Section 5.5 of the *Australian Code of Practice for the Care and Use of Animals for Scientific Purposes* (The Code). The Code also contains an introduction to the ethical use of animals in wildlife studies and should be referred to for broader issues. A copy of the code may be viewed by visiting the National Health and Medical Research Council website (<http://www.nhmrc.gov.au/>). In Western Australia any person using animals for scientific purposes must be covered by a licence issued under the provisions of the Animal Welfare ACT 2002, which is administered by the Department of Local Government and Regional Development.

## 3 Definitions

**Hard containment:** Use of hard materials to contain the movement of animals to assist handling and restraint.

**Soft containment:** Use of soft materials to contain the movement of animals to assist handling and restraint.

**Wildlife:** Free-living animals of native, non-indigenous or feral species including captive-bred animals and those captured from free-living populations (NHMRC, 2004).

## 4 Approved Methods

### 4.1 Temporary holding

There are many methods used to temporarily hold live animals (Table 1). The most suitable method will depend on the species being held and the duration of containment. In general, mammals and reptiles are best temporarily contained in cloth bags, frogs in plastic bags or container with some water, and birds in either cloth bags or holding cages. Soft containment methods are generally used for short to medium duration trips and hard containment methods are used for longer duration trips where greater security of animals required.

Table 1: Methods approved for temporary holding and transport of wildlife.

Containment type	Containment method	Used for
Soft	Zip lock plastic bag	Small frogs and reptiles
Soft	Freezer bag	Small frogs and reptiles
Soft	Calico bag	Small mammals, birds, frogs and reptiles
Soft	Hessian/jute bag	Medium sized macropods e.g. tammar
Soft	Heavy cotton or synthetic (e.g. polar fleece)	Small to medium sized mammals
Hard	Plastic container (ventilated)	Large frogs, tadpoles, frog spawn
Hard	Pet pack	Mammals and medium to large sized birds e.g. cockatoos
Hard	Cage trap	Mammals
Hard	Transportation box	Birds

In some cases hard containment methods may be used to store multiple animals held in soft containment bags so that they may be stacked for transport whilst maximising ventilation. However, they must be restrained within the hard containment so that the bagged animals are not able to roll and suffocate each other or restrict air flow. In the case of pet packs the containment bags can be tied to the diagonal corners of a pet pack.

## 4.2 Transport

Animals may be transported on the ground, by water or by air depending on the circumstances and distance needing to be travelled (Table 2).

Table 2: Modes of transport for movement of wildlife.

Transport containment method	Situation used
Air conditioned vehicle	Short and medium distances (less than 12 hours duration)
Air transport (Pressurised compartment)	Long distance or remote
Boat	Island to mainland or vice versa. Up or down rivers where road transport is less efficient.

There are a number of things to consider for each of these modes of transport and these are outlined in the following sections.

### 4.2.1 Ground transport by airconditioned vehicle

- (a) Ensure animals are well secured from escape or movement about the vehicle during travel.
- (b) Ensure that the temperature in the cargo space of the vehicle where the animals are held does not exceed 25 degrees C. A temperature thermometer with multiple sensors is recommended so that the temperature at the front and rear of the vehicle can be monitored by the driver.
- (c) Vehicles used to transport animals must be airconditioned and have a false bottom (in some vehicles there is no floor insulation from the heat generated by the vehicle exhaust system and this can lead to heat stress and potentially death).
- (d) Animals must not be placed in the boot or on the dash of a vehicle.
- (e) Never leave collected animals where they may be exposed to direct sunlight, get wet or get too cold.

### 4.2.2 Air transport

- (a) Ensure animals are well secured from escape or movement about the aeroplane or helicopter during travel.
- (b) Ensure that transportation by air is undertaken in accordance with *International Air Transportation Association (IATA) Live Animal Regulations*.

- (c) When transporting live animals by jet turbine helicopter, animals are to be placed in the cabin or if this is not possible then in a well-ventilated boot (free of other cargo), away from the heat of the jet engine exhaust and checked regularly. Secure boxes should allay any fear that pilots may have about animals escaping.
- (d) Ensure animals are not stowed in close proximity to exhaust gases or subject to radiated heat generated by the engine/s.

#### 4.2.3 Boat transport

- (a) Ensure animals are well secured from escape or movement about the boat during travel.
- (b) Ensure animals are stowed in a dry well ventilated location. Preference is to be given to placing the animals near the centre of the boat to provide for a better ride which is particularly important if experiencing rough sea conditions.

## 5 Procedure Outline

### 5.1 Construction of temporary holding containers

- (a) The containers must be designed, constructed and appropriately-sized for the purpose that they are being used.
- (b) The containers must be secure and escape-proof.
- (c) The container must provide adequate ventilation.
- (d) There should be adequate nesting or bedding material available appropriate for the species being transported.
- (e) An inner shelter within the transportation container must be provided if appropriate for the species (e.g. western ringtail possum being transported in a pet pack).

### 5.2 Care during temporary containment

- (a) Limit exposure of animals to sudden movements, extremes of temperature, noise, visual disturbance and vibration.
- (b) For most species the temperature should be kept to below 25 degrees C.
- (c) Food and water/moisture must be provided when necessary.
- (d) Ensure that animals are separated where there is incompatibility of species, age, sex or reproductive status.
- (e) Held animals should be monitored frequently for signs of distress, although this needs to be balanced against the desirability of limiting disturbance.
- (f) Prevent unnecessary handling.
- (g) Administer tranquilising agents by skilled personnel where appropriate.
- (h) Ensure animals are not left where they may be accidentally trampled or forgotten.
- (i) Mammals transported in pet packs and cage traps should be secured in calico bags prior to placement in transport device. Ensure that the pet pack is not so big that an animal can roll around in it leading to potential injuries.

### 5.3 Cleaning and disinfecting temporary holding containers

- (a) Temporary holding containers must be cleaned and disinfected after each use. Advice on cleaning and disinfection is available in Chapman *et al.* (2008).

### 5.4 Record keeping for transport of animals

- (a) Ensure that both suppliers and recipients of animals have satisfactory delivery procedures, with animals being received by a responsible person and appropriate paperwork is completed.
- (b) For translocations, ensure that a Translocation Proposal has been written in accordance with DEC's Policy Statement No 29 and approved.
- (c) If animals are being transported interstate then an export permit is required to be issued under the *Wildlife Conservation Act 1950*. Note that this permit will not be issued unless the State to which the fauna is being exported has approved the fauna entering that State.
- (d) Ensure temporary holding containers are adequately labelled e.g. "Caution – Live Animals" (Figure 1).



Figure 1 Labelled container for transport of a venomous snake.

- (e) Animals being transported to the WA Museum must have accompanying specimen data. An animal without data is useless for nearly all purposes for which it may have been collected.

## 6 Level of Impact

The impact of temporary containment and transportation of wildlife is potentially high given the animals are completely dependent on those responsible for their welfare. Transportation can cause distress due to confinement, movement, noise and changes in environment and personnel. The conditions and duration of the transportation must be managed to ensure that the impact on animal health and welfare is minimised.

## 7 Ethical Considerations

To reduce the level of impact of transport and temporary holding of wildlife on the welfare of animals there are a number of ethical considerations that should be addressed throughout projects involving these procedures. DEC projects involving the transport or temporary holding of wildlife will require approval from the DEC Animal Ethics Committee and where appropriate the following ethical considerations must be adequately covered in any Application for Approval to Undertake Research Involving Vertebrate Animals.

## 7.1 Biological and behavioural requirements of animals

Consideration should be given to both the biological as well as behavioural requirements of animals when subjecting them to containment or confinement for extended periods of time such as that required for transport.

In general animals are better able to cope with stress at low temperatures and low humidity. Transport should not occur if temperature cannot be maintained below 25 degrees C.

The extent of any distress will depend on the animals' health, temperament, species, age and sex, the number of animals travelling together and their social relationships, the period without food and water, the duration and mode of transportation, environmental conditions, particularly extremes of temperature, and the care given during the journey (NHMRC, 2004).

Consider the nature of the species being transported as some species (e.g. *Perameles bougainville bougainville*) may eat their young when being transported.

## 7.2 Duration of transport

Temporary containment should be of the shortest duration possible. Animals must be released within 24 hours of capture unless justification can be provided and is approved by the DEC Animal Ethics Committee.

If an extended travel or transport period is necessary (e.g. to transport live specimens to a museum) then animals need to be regularly checked, hydrated, faeces removed and provided with sufficient shelter whilst in temporary containment. Bags should only be used in such situations for a maximum of one week unless longer periods can be justified and have been specifically approved by the DEC Animal Ethics Committee. Animals being held any longer than two weeks should not be kept in temporary containers. They require appropriate husbandry such as a vivarium for reptiles or frogs, with appropriate heating and lighting, water, food and shelter. Such holding facilities would be classified as an animal housing facility and would need to be approved by the DEC Animal Ethics Committee.

Live animals collected for the museum must be lodged for processing as soon as possible. If this cannot be achieved then the animals should be examined and released or euthanased if appropriately trained personnel are available.

## 7.3 Unexpected deaths

If unexpected deaths or euthanasias occur then it is essential to consider the possible causes and take action to prevent further deaths. For projects approved by the DEC Animal Ethics Committee, unexpected deaths or euthanasias must be reported in writing to the Animal Ethics Committee Executive Officer on return to the office (as per 2.2.28 of The Code).

## 7.4 Spread of disease or parasites

Transport and re-use of equipment (e.g. handling bags) as well as the transport of animals pose the risk of also transporting novel diseases and parasites. Animals showing signs of disease or ill health must not be translocated (Chapman *et al.* 2008). Good hygiene practices should be maintained to reduce the risk of spreading pathogens or parasites between sites.

## 8 Competencies and Approvals

DEC personnel, and other external parties covered by the DEC Animal Ethics Committee, undertaking transport and temporary holding of wildlife require approval from the committee and will need to satisfy the competency requirements detailed in Table 1. This is to ensure that personnel involved have the necessary knowledge and experience to minimise the potential impacts of transport and temporary holding on the welfare of the animals. Other groups, organisations or individuals using this SOP to guide their fauna monitoring activities are encouraged to also meet these competency requirements as well as their basic animal welfare legislative obligations.



It should be noted that the details, such as intensity of the study being undertaken will determine the level of competency required and Table 3 provides advice for basic monitoring only.

Table 3: Competency requirements for Animal Handlers of projects involving transportation and temporary holding of wildlife.

Competency Category	Competency Requirement	Competency Assessment
Wildlife licences	1.1 Licence to take fauna for scientific purposes (Reg 17) OR 1.2 Licence to take fauna for educational or public purposes (Reg 15)	Provide SC (DEC personnel only) or SF licence number  Provide TF licence number
Animal handling and processing skills/experience	7.1 Experience in handling terrestrial mammal fauna  OR 7.2 Experience in handling terrestrial herpetofauna  OR 7.3 Experience in handling birds  AND (if relevant to project)  7.11 Training and experience in translocating fauna – identify species.  AND (if relevant to project)  7.13 Training and experience in the keeping of fauna for subsequent vouchering.	Personnel involved in transport and temporary containment of wildlife should be familiar with the normal behaviour patterns of the species that is to be retained. They should be familiar with the most appropriate containment methods for the species of interest to the project. This experience is best obtained under supervision of more experienced personnel.  Estimated total time in field: Minimum 2-5 years involved in similar projects

## 9 Occupational Health and Safety

Always carry a first aid kit in your vehicle and be aware of your own safety and the safety of others as well as the animals when handling.

It is recommended that a job safety analysis is undertaken prior to undertaking transport or temporary holding of wildlife for your project. This safety analysis should include the following considerations where relevant.

### 9.1 Driver fatigue

Driver fatigue is a concern when animals are being transported for translocation by road. Often drivers have been involved in trapping the animals and therefore may have worked long hours and had interrupted sleep. There are also long distances involved in some translocations which increase the risk of driver fatigue. Appropriate measures, such as regular rest stops or back-up drivers, should be utilised to minimise the risk of driver fatigue.

### 9.2 Containment of animals

It is important that the animals do not escape during travel and cause problems for the driver/pilot during transport. It is also important that the containers for the animals are stowed securely so that they do not move during transport.

### 9.3 Venomous or dangerous animals

Ensure containers holding venomous or dangerous animals are escape proof and clearly labelled, “Danger – Venomous Animal”.

## 10 Further Reading

The following SOPs have been mentioned in the advice regarding transport and temporary containment of wildlife. It is recommended that the following SOPs are also considered when proposing to undertake transport and temporary containment of wildlife.

SOP 10.1 Animal handling/restraint using soft containment

Wildlife Ethics Committee (2005) and Charles Darwin University Animal Ethics Committee (2006) also provide advice on the temporary containment and transportation of live animals.

## 11 References

Chapman, T., Sims, C. and Mawson, P. (2008). Minimising Disease Risk in Wildlife Management. Standard Operating procedures for fauna translocation, monitoring and euthanasia in the field. 2<sup>nd</sup> edition. Department of Environment and Conservation, Perth.

Charles Darwin University Animal Ethics Committee (2006). Guidelines for Field Research on Vertebrates. Charles Darwin University, Northern Territory.

NHMRC (2004). Australian code of practice for the care and use of animals for scientific purposes. National Health and Medical Research Council, Commonwealth of Australia 7th Edition.

Wildlife Ethics Committee (2005). Standard operating procedure for the transportation of live animals. South Australian Department for Environment and Heritage.