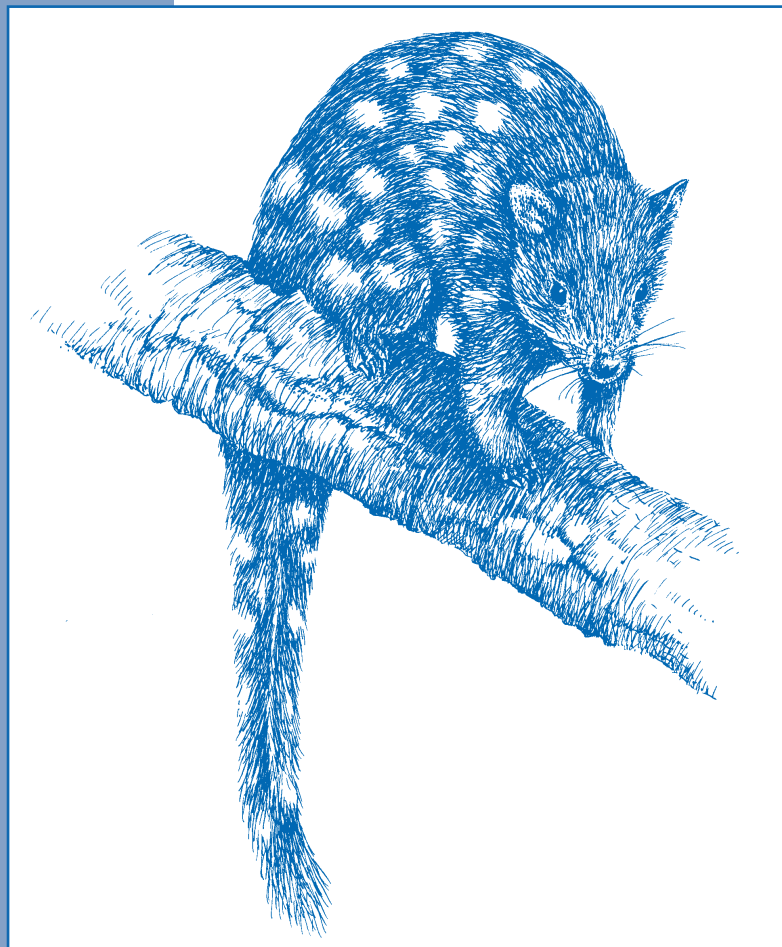


S

Spotted-tailed Quoll

Dasyurus maculatus

A vulnerable species



ACTION PLAN No. 30

In accordance with section 38 of the *Nature Conservation Act 1980*, the **Spotted-tailed Quoll** (*Dasyurus maculatus*) was declared a **vulnerable** species on 4 September 2003 (Instrument No. 265 of 2003). Section 40 of the Act requires the Conservator of Flora and Fauna to prepare an Action Plan in response to each declaration. This is the Action Plan for:

Spotted-tailed Quoll *Dasyurus maculatus*

Preamble

The *Nature Conservation Act 1980* establishes the ACT Flora and Fauna Committee with responsibilities for assessing the conservation status of the ACT's flora and fauna and the ecological significance of potentially threatening processes. Where the Committee believes that a species or ecological community is threatened with extinction or a process is an ecological threat, it is required to advise the responsible minister, and recommend that a declaration be made accordingly.

Flora and Fauna Committee assessments are made on nature conservation grounds only and are guided by specified criteria as set out in its publication '*Threatened Species and Communities in the ACT*', July 1995.

In making its assessment of the Spotted-tailed Quoll, the Committee concluded that it satisfied the criteria indicated in the adjacent table.

An Action Plan is required in response to each declaration. It must include proposals for the identification, protection and survival of a threatened species or ecological community, or, in the case of a threatening process, proposals to minimise its effect.

This Action Plan was prepared by the Conservator of Flora and Fauna in accordance with the *Nature Conservation Act 1980*, in consultation with the Flora and Fauna Committee.

While the legal authority of this Action Plan is confined to the Australian Capital Territory, management considerations are addressed in a regional context.

Criteria Satisfied

2.1 The species is known or suspected to occur in the ACT region and is already recognised as vulnerable in an authoritative international or national listing.

Species Description and Ecology

DESCRIPTION

The Spotted-tailed Quoll (or Spot-tailed Quoll, Tiger Quoll, Spotted-tailed Native Cat, Tiger Cat) *Dasyurus maculatus* is the largest of the six living quoll species (including subspecies) and the largest marsupial carnivore on mainland Australia. Other quoll species such as the Northern, Eastern and Western Quolls, have all declined on mainland Australia, and the related Tasmanian Devil and Thylacine have become extinct in the last few thousand years.

There are two described subspecies of the Spotted-tailed Quoll: *Dasyurus maculatus gracilis*, confined to northern Queensland, and *Dasyurus maculatus maculatus* described here. There is also a distinct Evolutionarily Significant Unit restricted to Tasmania that has been proposed for reclassification as another subspecies (Firestone *et al.* 1999 and Firestone *et al.* 2000).

Male quolls have a head and body length of 380–760 mm, a tail length of 370–550 mm and weigh up to 7 kg (average 3 kg). Females have a head and body length of 350–450 mm, a tail length of 340–420 mm and weigh up to 4 kg (average 2 kg). The fur ranges from rich rufous brown to dark above, pale below, with



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conspicuous white spots of varying size over the body and tail (Edgar and Belcher 1995).

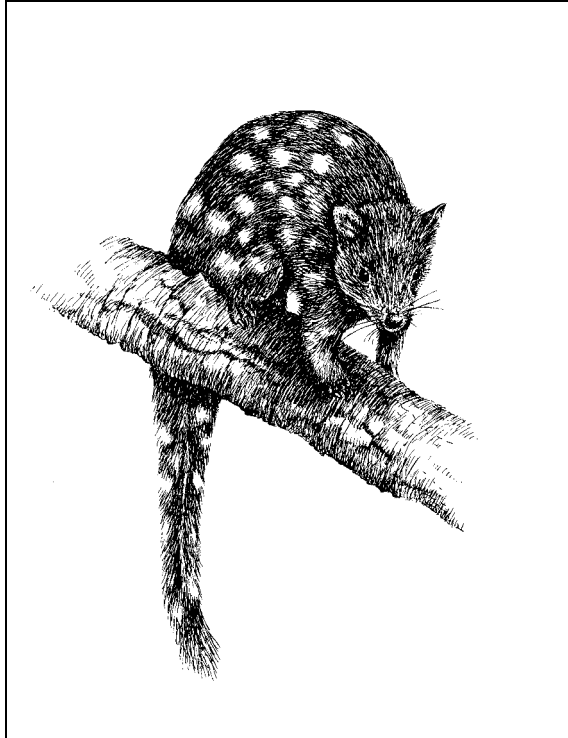


Figure 1: Spotted-tailed Quoll
Dasyurus maculatus maculatus.

HABITAT

The Spotted-tailed Quoll is recorded from a wide range of forested habitats, including rainforests, wet sclerophyll forest, lowland forests, River Red Gum forests, dry 'rainshadow' woodland, sub-alpine woodlands, coastal heathlands and inland riparian forests (Edgar and Belcher 1995; Green and Scarborough 1990; Jones and Rose 1996; Mansergh 1995).

The species appears to favour areas with a relatively complex understorey, often in association with complex rock formations, hollow-bearing trees, rocky escarpment and/or fallen logs or burrows for den sites.

BEHAVIOUR AND BIOLOGY

The Spotted-tailed Quoll is primarily a carnivore, that preys on medium-sized mammals including possums, gliders and rabbits. Other prey includes small mammals, birds, reptiles and invertebrates (Belcher 1995). It is also known to prey on domestic poultry and to scavenge on carrion (Edgar and Belcher 1995).

It is usually nocturnal, but will bask in the sun and on occasions has been known to be diurnally active (Edgar and Belcher 1995). The species is generally solitary and occupies large home ranges, in the order of many

hundreds to a few thousand hectares (Belcher and Darrant 2004; Claridge *et al.* 2005). Within its home range, this species has 'latrines' where it defecates, which are likely to define territories (Edgar and Belcher 1995) and also act as places of 'advertisement' (Kruuk and Jarman 1995).

Mating takes place from April to July. The average litter size is five, and the young remain in the pouch for about seven weeks, becoming fully independent at around 18 weeks (Edgar and Belcher 1995).

DISTRIBUTION

The former distribution of the Spotted-tailed Quoll was south-eastern Queensland (Bundaberg to Chinchilla), eastern NSW (including the ACT), Victoria, South Australia and Tasmania (including some Bass Straight Islands), (Mansergh and Belcher 1992).

The current distribution includes:

- *Queensland*—south-eastern Queensland, restricted to Blackall/Conondale Ranges, southern Darling Downs (Stanthorpe to Wallangarra), Main Range (Goomburra to Spicer Gap), Lamington Plateau and McPherson/Border Ranges (Springbrook to Mt Lindsay) (Maxwell *et al.* 1996).
- *Victoria*—several disjunct populations including:
 - eastern Victoria (from the foothills and ranges north and east of Melbourne through to the NSW border);
 - north-eastern Victoria;
 - north-western Victoria;
 - south-western Victoria (centred on Mt Eccles National Park);
 - lowland East Gippsland and South Gippsland;
 - Otway Ranges; and
 - Central Victoria (including records from 1991 at Macedon Ranges) (NRE 2001).
- *New South Wales*—several disjunct populations occur between the Border Ranges and Blue Mountains/Illawarra; several populations between Grafton and Taree in north-east NSW through to the gorges and escarpments of the New England tablelands; numerous records in the coastal forests between Ulladulla and Bermagui. Intensive survey work has identified locally abundant populations in some areas of the Tallaganda and Badja State Forests and south-east forests, and forests of the coastal escarpment and the

rainshadow woodland of Kosciuszko National Park (South East Forests Spotted-tailed Quoll Working Group 2003).

Isolated records also exist from near Hay in Southern NSW, near Brewarrina in Northern NSW and Walgett (Long and Nelson 2004).

- *Tasmania*—in wet forests and scrub in the west and north of the island, although absent from the Tasman Peninsula (Rounsevell *et al.* 1991). The Tasmanian populations apparently form a separate Evolutionarily Significant Unit and have been proposed to be reclassified as a separate subspecies (Firestone *et al.* 1999 and Firestone *et al.* 2000).

Distribution in the Australian Capital Territory

In the mid 1800s, both *D. maculatus* and *D. viverrinus* (Eastern Quoll) were present in the ACT region and quolls were regularly seen in the Tidbinbilla Valley.

The introduction of strychnine to the Canberra district in 1861 is believed to have led to quolls being widely poisoned (Allan Fox & Associates, 1987). By 1971, *D. viverrinus* was considered to be extinct in the district (National Parks Association of the ACT 1971) and on the mainland as a whole (Maxwell *et al.* 1996). At this time, *D. maculatus* was recorded as occurring mostly in the timbered ranges of the ACT, including Tidbinbilla Nature Reserve.

There have been ten specimen records (animal (live or dead), hair, scats or DNA (ACT Vertebrate Atlas)) of the Spotted-tailed Quoll in the ACT since the 1950s, the most recent in 2004. These records are widely distributed across the ACT and include three within the suburban area. A survey conducted in 1999 and 2000 by Environment ACT failed to record the species in the ACT (Nelson *et al.* 2001). The species was recorded in May 2002, as part of a regional survey in Kosciuszko National Park, on the NSW-ACT border at Sentry Box mountain at the southern end of Namadgi National Park (James Dawson pers. comm.). In 2003 and 2004 a search for Quoll latrine sites confirmed the occurrence of the species at three locations in Namadgi National Park (two sites in the Gudgenby Valley and Orroral Valley) (Mark Dunford pers. comm.). Occasional sightings of the Spotted-tailed Quoll continue to occur across the ACT and surrounding region.

The limited confirmed records in the ACT probably reflect the elusive nature of the Spotted-tailed Quoll, rather than its actual distribution.

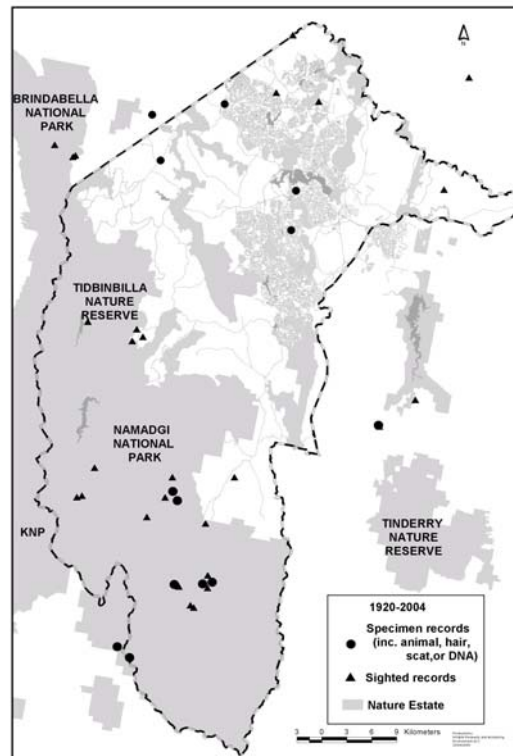


Figure 2: Records of the Spotted-tailed Quoll in the ACT region.

Conservation Status

Dasyurus maculatus maculatus is recognised as a threatened species in the following:

International

Vulnerable—IUCN (2000).

National

Endangered—Environment Protection and Biodiversity Conservation (EPBC) Act 1999.
Vulnerable—(Tasmanian population).

Australian Capital Territory

Vulnerable—Section 21 of the *Nature Conservation Act 1980*, Disallowable instrument No. 256 of 2003.

Queensland

Vulnerable—Threatened Species List 2000.

Victoria

Endangered—Schedule 2 of the Flora and Fauna Guarantee Act 1988.

New South Wales

Vulnerable—Schedule 2 of the NSW Threatened Species Conservation Act 1995.

South Australia

Endangered—Schedule 7 of the National Parks and Wildlife Act 1972 (although considered by state authorities to be extinct in SA).

Threats Across the Species Distribution

Habitat Loss, Fragmentation and Degradation

The loss, fragmentation, disturbance and degradation of habitat through clearing of native vegetation, timber harvesting and other forest management practices are probably the greatest threats to Spotted-tailed Quolls. It is not clear to what extent wildfires and prescribed burns are a threat to the species. It is likely that fire can have both a positive and negative influence, in that the availability of prey and refugia may be limited in the short term, but that in the longer term, fire may also accelerate the formation of tree hollows used by quolls and their prey (Long and Nelson 2004).

Competition and Predation

Competition and predation involving foxes, feral cats and wild dogs are suspected to suppress quoll populations (Edgar and Belcher 1995; Maxwell *et al.* 1996; Murray and Poore 2004), although the frequency or degree of impact on populations is unknown and it is possible that some interactions are positive for quoll populations. The distribution and abundance of foxes appears to be associated with patterns of land disturbance (Catling and Burt 1995), which combined, could have major impacts on quoll populations.

Poisoning

Spotted-tailed Quolls are carnivorous, and may be at risk during feral animal control programs through primary and secondary poisoning (Belcher 2000). However, there is currently considerable debate regarding the impact of these pest control programs on quoll populations (Department of Sustainability and Environment 2003). Belcher (1998), Glen and Dickman (2003) established that quolls could detect, remove and consume non-toxic FOXOFF baits. However, Körtner *et al.* (2003) demonstrated that while quolls regularly remove baits they rarely consume FOXOFF toxic baits. Murray and Poore (2004) showed that normal aerial baiting for dingoes and wild dogs with fresh meat baits resulted in high rates of bait uptake by Spotted-tailed Quolls. Control programs for all vertebrate pests must be managed to minimise risks of either primary or secondary poisoning to non target species.

Killing by Humans

Quolls have been known to be deliberately killed in rural areas due to their predation on domestic poultry (Maxwell *et al.* 1996). Road mortality is also a threat in some areas of the species range. However, it is not known to what extent these two threats affect quolls at the population level and it is unlikely that these play a significant role in the ACT.

Major Conservation Objectives

The major conservation objectives of this Action Plan are:

- to contribute to regional and national conservation of the species; and
- to maintain in the long-term, viable, wild population(s) of the Spotted-tailed Quoll *Dasyurus maculatus* as a component of the indigenous biological resources of the ACT.

This objective is to be achieved through the following strategies:

- co-operating with, and contributing to regional and national networks to ensure coordination of research, survey and monitoring programs;
- identifying and protecting habitat critical to the survival of the species in the ACT; and
- where appropriate, implementing management actions or methods required to protect the species and its habitat in the ACT.

Conservation Issues and Intended Management Actions

SURVEY/MONITORING/RESEARCH

Environment ACT has conducted surveys for Spotted-tailed Quolls in Namadgi National Park and a number of nature reserves (Tidbinbilla, Rob Roy Range and Googong Foreshores in NSW). A variety of techniques have been used during these surveys including searches for Quoll latrine sites and scats, searches for scats of other predators (which may contain Quoll remains) and the use of hair sampling tubes. Trapping has also been undertaken at a number of locations of likely Quoll habitat. Recent efforts have resulted in confirmation of the presence of the species, evidenced by scats, at two locations in Namadgi National Park.

- ⇒ Environment ACT will continue to co-operate with and contribute to regional and national networks to ensure coordination of research, survey and monitoring programs.

- ⇒ Environment ACT will conduct further surveys in likely Quoll habitat to gain an understanding of the species distribution in the ACT, and the feasibility of establishing monitoring programs for the species in the ACT.
- ⇒ Environment ACT will survey rural lease holders to gain information about Quoll sightings in rural areas adjoining potential Quoll habitat.

REQUIRED MANAGEMENT ACTIONS

Targeted feral animal control programs may benefit the Spotted-tailed Quoll through reduction of competition. However, due to the uncertainty about the uptake of poisoned baits by Quolls and the risk of secondary poisoning (and the degree to which individual animals are affected or killed) vertebrate pest control programs need to be implemented cautiously, with consideration of the possible effects on non-target species, including Quolls.

- ⇒ Environment ACT will ensure that all pest animal control activities in areas of known Quoll populations (or areas with high potential for Quoll occurrence) comply with current best practice prescriptions to minimise the risks of baiting programs on Quolls.
- ⇒ Environment ACT will incorporate into its Vertebrate Pest Management Strategies a consideration of the possible benefit to Quoll populations of control programs targeted at the Feral Cat and Fox.

Protection

Within the ACT, it is probable that most of the suitable habitat for this species exists in reserved areas such as Namadgi National Park, Tidbinbilla Nature Reserve, Googong Foreshores and the Murrumbidgee River Corridor. It is therefore unlikely that further areas will be required for the conservation of this species.

- ⇒ Environment ACT will manage or avoid habitat disturbance in reserved areas known to support Quoll populations. Particular care will be taken to protect areas around known latrine sites.
- ⇒ Environment ACT will incorporate the protection of rocky outcrops, riparian zones (and other critical habitat features) into fire management prescriptions within areas of known Spotted-tailed Quoll habitat.

Socio-economic Issues

Given that the species is most likely to occur mainly within nature reserves in the ACT, there are no foreseeable socio-economic issues associated with the protection of this species and its habitat.

- ⇒ Environment ACT will undertake a community consultation and public education program if its proposals for protection of the species involve land use changes.

Legislative Provisions

The following legislation is relevant to conservation of flora and fauna in the ACT:

Nature Conservation Act 1980

The *Nature Conservation Act* provides a mechanism to encourage the protection of native plants and animals (including fish and invertebrates), the identification of threatened species and communities, and the management of Public Land reserved for nature conservation purposes. Specified activities are managed via a licensing system.

Native plants and animals may be declared in recognition of a particular conservation concern and increased controls and penalties apply. Species declared as endangered must also be declared as having special protection status (SPS), the highest level of statutory protection that can be conferred.

Other Relevant Provisions

The *Nature Conservation Act* provides authority for the Conservator of Flora and Fauna to manage Public Land reserved for conservation of the natural environment. Activities that are inconsistent with nature conservation objectives are controlled. Special measures for conservation of a species or community of concern can be introduced in a reserved area, including restriction of access to important habitat.

Land (Planning and Environment) Act 1991

The *Land (Planning and Environment) Act* is the primary authority for land planning and administration. It establishes the Territory Plan, which identifies nature reserves, national parks and wilderness areas within the Public Land estate.

The *Land (Planning and Environment) Act* establishes the Heritage Places Register. Places of natural heritage significance may be

identified and conservation requirements specified.

Environmental Assessments and Inquiries may be initiated in relation to land use and development proposals.

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (Commonwealth)

The endangered status of the species under the *EPBC Act* means that the species is recognised by the Commonwealth as a matter of national environmental significance. Any action that is likely to have a significant impact on the species will need to be referred to the Australian Government Environment Minister for a decision as to whether assessment and approval is required. It is an offence for any person to undertake an action that is likely to have a significant impact on the south-eastern mainland population of the Spotted-tailed Quoll without approval.

Consultation and Community Participation

It is appropriate that the conservation of the Spotted-tailed Quoll and its habitat be promoted through provision of information to the public.

⇒ Environment ACT will maintain links with regional and national conservation networks.

⇒ Environment ACT will encourage appropriate community participation in activities associated with the conservation of the Spotted-tailed Quoll.

Implementation, Evaluation and Review

RESPONSIBILITY FOR IMPLEMENTATION

Environment ACT will have responsibility for coordinating the implementation of this Action Plan subject to government priorities and resources.

EVALUATION

The Action Plan will be reviewed after three years. The review will comprise an assessment of progress using the following performance indicators:

- completion of commitments that can reasonably be expected to be finalised within the review timeframe (e.g. introduction of a statutory protection

measure for a species; development of a management plan);

- completion of a stage in a process with a time line that exceeds the review period (e.g. design or commencement of a research program);
- commencement of a particular commitment that is of a continuing nature (eg. design or commencement of a monitoring program for population abundance); and
- expert assessment of achievement of conservation objectives of the Action Plan.

The review will be reported to the ACT Flora and Fauna Committee. This will provide Environment ACT and the Flora and Fauna Committee an opportunity to assess progress, take account of developments in nature conservation knowledge, policy and administration and review directions and priorities for future conservation action. The following conservation actions will be given priority attention:

⇒ maintaining links with national and regional networks to ensure coordination of research, survey and monitoring programs;

⇒ supporting and contributing to national and regional recovery efforts;

⇒ undertaking surveys in the ACT to identify suitable quoll habitat and establishing the species presence in those habitats, thereby gaining an understanding of the species distribution;

⇒ ensuring that all pest animal control activities in areas of known or potential Quoll populations comply with current best practice prescriptions to minimise the risks of baiting programs on Quolls; and

⇒ where appropriate, implementing any other identified management actions or methods required to protect the species and its habitat.

Acknowledgments

The illustration of the Spotted-tailed Quoll was prepared for Environment ACT by Lesley Wallington.

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List of Action Plans—August 2005

In accordance with Section 23 of the *Nature Conservation Act 1980*, the following Action Plans have been prepared by the Conservator of Flora and Fauna:

- No. 1: Natural Temperate Grassland—an endangered ecological community.
- No. 2: Striped Legless Lizard (*Delma impar*)—a vulnerable species.
- No. 3: Eastern Lined Earless Dragon (*Tympanocryptis lineata pinguicollis*)—an endangered species.
- No. 4: A leek orchid (*Prasophyllum petilum*)—an endangered species.
- No. 5: A subalpine herb (*Gentiana bauerlenii*)—an endangered species.
- No. 6: Corroboree Frog (*Pseudophryne corroboree*)—a vulnerable species.
- No. 7: Golden Sun Moth (*Synemon plana*)—an endangered species.
- No. 8: Button Wrinklewort (*Rutidosis leptorrhynchoides*)—an endangered species.
- No. 9: Small Purple Pea (*Swainsona recta*)—an endangered species.
- No. 10: Yellow Box-Red Gum Grassy Woodland—an endangered ecological community.
- No. 11: Two-spined Blackfish (*Gadopsis bispinosus*)—a vulnerable species.
- No. 12: Trout Cod (*Maccullochella macquariensis*)—an endangered species.
- No. 13: Macquarie Perch (*Macquaria australasica*)—an endangered species.
- No. 14: Murray River Crayfish (*Euastacus armatus*)—a vulnerable species.
- No. 15: Hooded Robin (*Melanodryas cucullata*)—a vulnerable species.

- No. 16: Swift Parrot (*Lathamus discolor*)—a vulnerable species.
- No. 17: Superb Parrot (*Polytelis swainsonii*)—a vulnerable species.
- No. 18: Brown Treecreeper (*Climacteris picumnus*)—a vulnerable species.
- No. 19: Painted Honeyeater (*Grantiella picta*)—a vulnerable species.
- No. 20: Regent Honeyeater (*Xanthomyza phrygia*)—an endangered species.
- No. 21: Perunga Grasshopper (*Perunga ochracea*)—a vulnerable species.
- No. 22: Brush-tailed Rock-wallaby (*Petrogale penicillata*)—an endangered species.
- No. 23: Smoky Mouse (*Pseudomys fumeus*)—an endangered species.
- No. 24: Tuggeranong Lignum (*Muehlenbeckia tuggeranong*)—an endangered species.
- No. 25: Ginninderra Peppercreep (*Lepidium ginninderrense*)—an endangered species.
- No. 26: Silver Perch (*Bidyanus bidyanus*)—an endangered species.
- No. 27: ACT Lowland Woodland Conservation Strategy. (*Supersedes Action Plans 4, 9, 10, 15, 16, 17, 18, 19, 20*).
- No. 28: ACT Lowland Native Grassland Conservation Strategy. (*Supersedes Action Plans 1, 2, 3, 7, 8, 21, and 25*).

FURTHER INFORMATION

Further information on this Action Plan or other threatened species and ecological communities can be obtained from:

Environment ACT
(Wildlife Research and Monitoring)
Phone: (02) 6207 2126
Fax: (02) 6207 2122
Website: www.cmd.act.gov.au

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