

## Threatened Species

# Action Plan No.6

## Corroboree Frog *Pseudophryne corroboree*\*

---

In accordance with section 21 of the *Nature Conservation Act 1980*, the **Corroboree Frog (*Pseudophryne corroboree*)**\* was declared a **vulnerable** species on 15 April 1996 (formerly Determination No. 29 of 1996 and currently Determination No. 89 of 1997). Section 23 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 the:

## Corroboree Frog *Pseudophryne corroboree*\*

### \* Special Note:

As a consequence of the very recent revision of the taxonomic status of the Corroboree Frog *Pseudophryne corroboree*, two species of corroboree frog are now recognised: the Northern Corroboree Frog *P. pengilleyi*, which occurs in the ACT and the Southern Corroboree Frog *P. corroboree*, which occurs in the Snowy Mountains. The Flora and Fauna Committee has recommended that the declaration *P. corroboree* as a vulnerable species be revoked, and replaced by a declaration of *P. pengilleyi* as a vulnerable species. This Action Plan has been drafted to take this proposed change into account.

## 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 Minister for the Environment, Land and Planning, 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 Corroboree Frog, 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.

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 to occur in the ACT region and is already recognised as vulnerable in an authoritative international or national listing.

2.2 Species is observed, estimated, inferred or suspected to be at risk of premature extinction in the ACT region in the medium-term future, as demonstrated by the following:

2.2.1 Current serious decline in population or distribution from evidence based on :

2.2.1.1 direct observation, including comparison of historical and current records.

2.2.3 Continuing decline or unnaturally extreme fluctuations in population or distribution, for a species currently occurring over a moderately small range or having a moderately small area of occupancy within its range.

## Species Description and Distribution

---

### DESCRIPTION

There are two closely related species of corroboree frog; the Northern Corroboree Frog *Pseudophryne pengilleyi* (Wells & Wellington 1985) (Figure 1), and the Southern Corroboree Frog *P. corroboree* Moore (Osborne *et al.* 1996). Both are in the family Myobatrachidae and are amongst the most distinctive and easily recognised Australian frogs (Cogger 1992). *Pseudophryne pengilleyi* is confined to the high country of the ACT and the adjacent Fiery Range in NSW, whereas *P. corroboree* is found only in the Snowy Mountains in NSW (Osborne 1989).

The frogs are small (adults 2.5 to 3 cm in body length), and are characterised by yellow and black dorsal stripes (Pengilley 1966, Cogger 1992). This pattern extends over the limbs and flanks. The ventral surface is broadly marbled with black and white or black and yellow. A large flat femoral gland is present on each limb.

Adults of *P. pengilleyi* differ from *P. corroboree* in having: (1) a pattern of dorsal stripes that are usually yellow with a green tinge (rarely yellow) or lime-green; (2) mid-dorsal light-coloured stripes that are less than half the width of the adjacent black stripe at mid-body; and (3) a significantly smaller body and tibia length (Osborne *et al.* 1996). Another difference, which is less obvious, is the longer first component in the advertisement call of *P. pengilleyi*. There are also consistent genetic differences between the two species (Roberts and Maxson 1989, Osborne and Norman 1991).

### HABITAT

The frogs use two distinct habitat types; a breeding season habitat associated with pools and seepages in *Sphagnum* bogs, wet tussock grasslands and wet heath, and a terrestrial non-breeding habitat in forest, sub-alpine woodland and heath adjacent to the breeding area (Pengilley 1966). During summer, the adult frogs breed in shallow pools and seepages within the breeding area, before returning to the adjacent woodland and tall moist heath at the end of the breeding season.

The breeding pools are characteristically shallow, and have relatively large surface areas, low water flow rates, and have a long duration (Osborne 1990). This allows the water in the preferred pools to become warmer during the day, possibly enhancing tadpole development.

Litter, logs and dense ground cover in the understorey of snow gum woodland and heathland provides overwintering habitat for subadults and adults (Pengilley 1966).



**Figure 1:** *P. pengilleyi*, Ginini Flats, Namadgi National Park, ACT. Shown four times actual size.

### **BEHAVIOUR AND BIOLOGY**

Like most frogs, the Northern Corroboree Frog has a two stage life cycle; an aquatic tadpole stage and a terrestrial post-metamorphic juvenile and adult stage. However, they differ from most other frogs in that their eggs are laid out of water, in moss or dense vegetation at the edge of the breeding pool. The embryos develop to an advanced stage within the egg capsule before hatching, and moving to the nearby pool.

Adult males move into the breeding areas during January and February, and call from small chambers in moss or other soft vegetation at the edges of the breeding pools. Females only enter the bogs briefly to lay their eggs in the terrestrial oviposition site, and then leave the breeding site. The males continue calling for a number of weeks, presumably to continue mating. They then leave the bogs during late February and March to return to the overwintering habitat (Pengilley 1966, Osborne 1988). The eggs are laid in a small clutch of about 25 eggs (range 16-40) (Pengilley 1973).

Tadpole development initially occurs within the egg, and the relatively advanced tadpoles emerge from the egg when they are about 15 mm in length (Pengilley 1966, Osborne 1991). Hatching occurs during autumn and winter during periods of high rainfall or snow melt. The pre-metamorphic period is critical for reproductive success, because the tadpoles and eggs are vulnerable to desiccation and pool-drying at this time.

Very little is known about the life-history of the frogs after they leave the pools as juveniles. Pengilley (1966, 1973) suggested that they remain in moist vegetation near the breeding pools for several months, where they feed on a wide variety of small invertebrates. As they grow larger, the juveniles leave the breeding area and move into the adjacent non-breeding habitat where it is thought they remain until they are adults. The diet of subadults and adults consists mainly of ants and, to a lesser extent, other invertebrates (Pengilley 1971a).

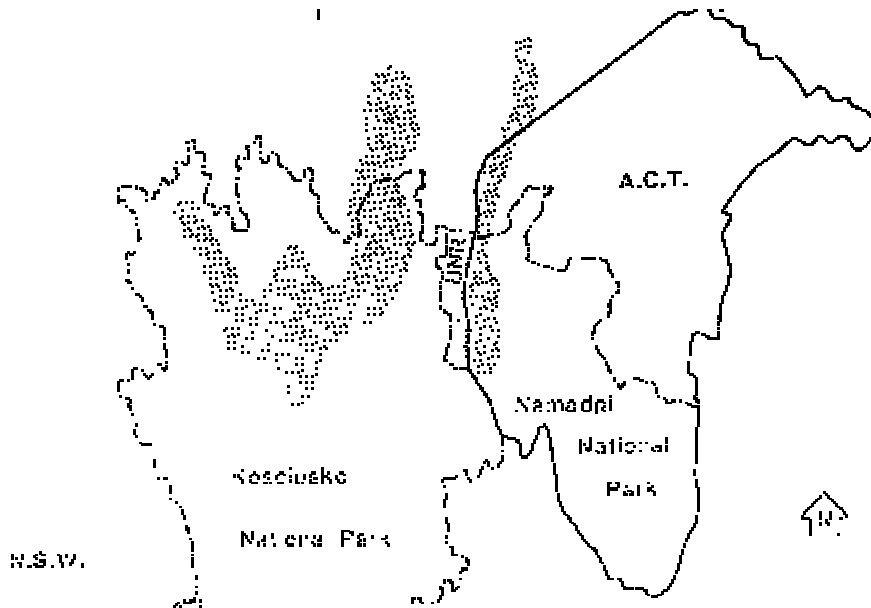
### **DISTRIBUTION**

The Northern Corroboree Frog has a high mountain distribution, occurring along the Brindabella and Bimberi Ranges from the summit of Mt Bimberi (ACT) in the south to near California Flats (NSW) in the north, and throughout the Fiery Range and Bogong Mountains in Kosciusko National Park and Buccleuch State Forest (Figure. 2). The species occurs over an altitudinal range from 900 to 1800 m.

In the ACT, the species occurs as two subpopulations (Osborne 1989), each represented by frogs that are genetically slightly different (Osborne and Norman 1991). The southern subpopulation is found only in the

subalpine zone (above about 1400 m), occurring along the Bimberi Range from near the summit of Mt Bimberi (the breeding site is located at 1840 m) northwards to Ginini Flats. This subpopulation occurs only within Namadgi National Park (ACT) and the adjacent Bimberi Nature Reserve in NSW, with the largest populations occurring at Ginini Flats and Snowy Flats in the ACT.

The northern subpopulation (characterised by having greener stripes) occurs further north at lower altitudes along the Brindabella Range from Bushrangers Creek in the ACT northwards to near California Flats in NSW (Figure 2). This subpopulation occurs in Namadgi NP, Brindabella NP and an area of land in NSW near the ACT border which is the responsibility of the Commonwealth. This area includes Coree Flats, an area with a substantial population of northern corroboree frogs.



**Figure 2:** Map showing the distribution for *P. pengilleyi* in the ACT region - the two shaded areas show their known range. Source: GIS Systems Division, NSW National Parks and Wildlife Service, Hurstville.

### Conservation Status

---

*Pseudophryne pengilleyi* is recognised as a threatened species in the following sources:

#### International

Vulnerable. - IUCN (1994) (as *P. corroboree*).

#### New South Wales

Vulnerable species. - (as *P. pengilleyi*): Schedule 2 of the *Threatened Species Conservation Act 1995*.

#### Australian Capital Territory

Special Protection Status Species. - Schedule 6 of the *Nature Conservation Act 1980*, Determination to be gazetted.

Vulnerable. - Section 21 of the *Nature Conservation Act 1980*, Determination No. 89 of 1997 (formerly Determination No. 29 of 1996) (as *P. corroboree*).

## Threats

---

The Northern Corroboree Frog is faced with a considerable inherent risk from disturbance because of its specialised life history. It has a very low clutch size, each female breeds only once each season, and the tadpoles are slow-growing, spending over six months in the shallow pools. Such a strategy reduces the ability of the species to recover quickly during favourable seasons, and places it at risk from any long-term disturbance which affects the breeding sites.

The frogs are completely dependent on continued water seepage into the shallow breeding pools. During the lengthy (approximately six months) period that the tadpoles are developing, they are vulnerable to mortality if the pools dry. Consequently, any disturbance that reduces flow into the breeding habitat is potentially detrimental.

Activities in the catchments of the breeding sites which may pose a threat include earthworks or road construction, and damage to soil, peat or vegetation.

Feral pigs are a threat as they disturb breeding areas in their search for food such as insect larvae and tubers (Alexiou 1983). Pigs also wallow in the bog pools and can disturb the breeding pools at the time they are being used by the frogs. Trampling by wild horses has caused extensive damage to some breeding sites by causing incision of the bogs, and altering drainage patterns (currently only in NSW) (see comments by Dyring 1992).

In some areas of NSW, exotic weeds, particularly blackberries, are smothering breeding sites. This is less of a problem in the ACT.

Wildfire can severely damage peat and bog areas, causing erosion and decreasing the capacity of the bogs to hold water (Good 1973; Clark 1986).

Drought presents a broader scale threat, and has been observed to prevent breeding, or to dry pools that contain developing tadpoles (Pengilley 1966; Osborne 1988, 1989).

There is considerable public interest in corroboree frogs, with many people expressing a wish to see them because of their bright markings. If human visitation to areas used as breeding sites increases there is a greater likelihood of people disturbing the frogs. This may occur through trampling of the pool edge vegetation, or by direct disturbance to the frogs.

The activities discussed above present obvious threats to the frogs. However, populations of both the Northern and Southern Corroboree Frog have declined considerably over the last ten years despite the implementation of measures to prevent the loss of breeding habitat from road construction, weed spread and the impact of feral animals (see Osborne 1991; 1996), and the absence of damaging wildfires.

In common with a number of other declining species of frogs in south-eastern Australia, the reason for the ongoing declines are not known (Mahoney 1996), and are the subject of continuing research.

Globally, including in parts of Australia, many locations where frog population declines have occurred are in wilderness areas, remote from human impact. There has been growing international concern about similar declines and extinctions of many populations of amphibians at high altitudes (McDonald 1990; Carey 1993; Fellers and Drost 1993; Hedges 1993; Hollis 1995).

Concern about global warming (Pearman 1988; Galloway 1988) has a particular significance for the conservation of cool-adapted species such as the Northern Corroboree Frog (Bennett *et al.* 1991). Due to its restricted high-altitude distribution, the species is likely to be particularly susceptible to climate change.

The depletion of the ozone layer and the consequent increase in ultraviolet radiation (UV-B) has been implicated as a possible cause of frog declines at higher altitudes (Blaustein *et al.* 1994). Its potential effects on Corroboree Frog populations are yet to be investigated.

## Major Conservation Objective

---

The objectives of this Action Plan are to:

- maximise the possibility of ensuring the survival, in the long-term, of viable, natural populations of *P. pengilleyi* at sites across the geographic range of the species in the ACT. This includes the need to maintain the natural evolutionary development of the species in the wild.

The objective is to be achieved through the following strategies:

- Participating in research, monitoring and experimental management aimed at identifying the cause of the continuing population decline, and preventing it.
- Protecting sites and vegetation communities that are critical to the survival of the species. This includes the Ramsar listed Ginini Flat Subalpine Bog Complex in the ACT, which is internationally recognised and is the stronghold of the ACT population.
- Managing activities in the catchments of breeding sites to minimise or eliminate any threat to frog populations.
- Increasing community awareness of the need to protect the frogs and their habitat.

## Conservation Issues and Intended Management Actions

---

### LONG-TERM POPULATION DECLINE

During the 1960's and 1970's the Northern Corroboree Frog was quite common in suitable habitat. Many breeding aggregations in the ACT region were reported to be very large, often consisting of many hundreds of individuals (Pengilley 1966; Osborne 1988). The frogs present at some of these breeding sites have been monitored regularly over the last ten years, and the results indicate a substantial decline has occurred, particularly in the Brindabella and Bimberi Ranges in and near the ACT. Observations over a shorter period in the Fiery Range indicate that there may not have been a substantial decline in this area (P. O'Brien, NSW National Parks and Wildlife Service, pers. comm.; B. Gay, State Forests of NSW, pers. comm.).

The causes of the overall decline are not known. Originally it was assumed that the decline was the result of drought that affected the region in the early 1980's, and that once conditions had improved, the frog population would recover (Osborne 1989). However, this has not been the case; many local populations have continued declining, or remained low for over a decade (Osborne 1991, 1996).

- Environment ACT (Wildlife Research and Monitoring) will continue to be represented on the Corroboree Frog National Recovery Team. This group has representation from all agencies responsible for management of land with corroboree frogs.

### LOCAL IMPACTS TO BREEDING AREAS

Localised human impacts are known to have had a deleterious effect on some breeding sites (Osborne 1991). Erosion from poorly maintained roads, and the spread of blackberries, have destroyed or damaged some sites (mostly in NSW) where the species occurred (Osborne 1988).

Livestock grazing and trampling may also have caused habitat deterioration, particularly in NSW. Trampling by livestock, including horses, increases erosion and causes incision of bogs (Dyring 1992; Wimbush and Costin 1979). Trampling by wild horses has caused considerable damage to breeding sites in the Fiery Range in NSW (W. Osborne and D. Hunter pers. obs). In some areas feral pigs have caused obvious disturbance to the habitat of the frogs including breeding areas, although the actual extent of impact on the ecology of the frogs requires further research.

- Environment ACT (ACT Parks and Conservation Service) will continue its program of pig control in Namadgi National Park including and around the Ramsar wetlands at Ginini Flats and other Northern Corroboree Frog breeding sites.

Bushfires also have the potential to impact on the frogs by burning vegetation and peat in breeding and non-breeding areas (Clark 1986), although the actual long-term effects of fire are not known. Osborne (1991) considered that autumn fires burning through woodland and heath surrounding breeding sites had

the greatest potential influence. At this time adult and subadult frogs have moved into these areas to feed and to find suitable over-wintering sites. Regular burning of understorey litter and grass cover in these areas, such as occurs during prescribed burns, is likely to reduce the shelter available to the frogs and make them more vulnerable to predation, dehydration or freezing.

A fire fuel management plan is currently being prepared by Environment ACT (ACT Parks and Conservation Service). This plan provides the basis for the protection of breeding sites by controlling the use of fire in the catchments of areas frequented by the Northern Corroboree Frog. Specifically the plan provides for:

- Maps of sensitive sites including all known breeding sites in the ACT. These maps will be available for use in fire emergencies.
- No deliberate burning in the area within 500 metres of each recognised Corroboree Frog breeding site.
- Restrictions on the use of heavy machinery to the minimum necessary for maintenance of existing roads and emergency access. Notwithstanding the above and wherever possible, heavy machinery will not be used within 500 metres of breeding sites. The bushfire suppression agency will be advised of this measure at the appropriate times. This Action Plan and the fuel plan cannot make a prescriptive statement on the use of heavy fire suppression equipment because the *Bushfire Act 1936* overrides the *Nature Conservation Act 1980*.

## GLOBAL CLIMATE CHANGE

Changes in climate may have a number of potential impacts on the biology of the frogs; these include altering the breeding season and changing the period required for egg and tadpole development, so that these events occur earlier or later than at an optimum time. Climate change is also likely to influence the hydrology of the breeding pools, and affect the growth and dynamics of vegetation in the breeding habitat. With warmer temperatures, or longer periods of drier weather during spring and early summer, the pools still containing tadpoles may dry before tadpole development is complete (Osborne 1990; Pengilley 1992).

- Environment ACT (Wildlife Research and Monitoring, and the ACT Parks and Conservation Service) will liaise with, and assist, the NSW National Parks and Wildlife Service and researchers in tertiary institutions in undertaking a coordinated research program to establish whether long-term changes in snow cover, precipitation patterns and temperature may have contributed to the ongoing population decline; this will be done under the general direction of the Corroboree Frog National Recovery Team (for both *P. pengilleyi* and *P. corroboree*).

Ultraviolet radiation (UV-B) has increased significantly in recent years due to increasing ozone (e.g. Jones and Shanklin 1995), and is likely to increase as reduction in ozone in the upper atmosphere continues. Although UV-B is implicated in frog declines at high altitudes (Blaustein *et al.* 1994), ultraviolet radiation is unlikely to affect *P. pengilleyi* adults, eggs and embryos because they are hidden within the moss and are unlikely to be exposed. However, the tadpoles may be at risk, as they are exposed in shallow, clear pools.

- Environment ACT will support research on the susceptibility of the tadpoles to ultraviolet radiation; this will be done under the general direction of the Corroboree Frog National Recovery Team (for both *P. pengilleyi* and *P. corroboree*).

## SURVEY

An extensive survey has been conducted to determine the distribution of the Northern Corroboree Frog in the ACT and northern Brindabella Range (Osborne 1990; Osborne unpublished data). This information provides a basis for selection of long-term monitoring and research sites, as well as for site protection and management.

- A survey data base will be developed to provide baseline survey information for the species. New searches will be conducted in any potentially suitable areas not yet surveyed.
- As part of the Corroboree Frog National Recovery Team, Environment ACT will participate in a joint ACT/NSW assessment of the distribution of the species.

## MONITORING

The continuing decline in populations of the Northern Corroboree Frog, and the disappearance of the species from a number of sites in the ACT region, is reason for considerable concern, and underscores the need for careful population monitoring.

It should be noted that Osborne (1991) cautions that any studies conducted on severely depleted local populations run the risk of causing further losses to those populations if physical searches are made for individuals. This is because the disturbance caused by searching through moss and other vegetation to find frogs may cause any males found to abandon their nest sites, and may dry the eggs.

- Environment ACT (Wildlife Research and Monitoring) will implement a program of population monitoring to assist recording long-term population trends, and to address hypotheses concerning the reasons for the declines.
- Monitoring will be conducted by suitably experienced personnel, and will follow procedures agreed by the Corroboree Frog National Recovery Team to allow for consistency of technique across the region.
- The monitoring program will be coordinated with other similar programs and the results will be made available to the Corroboree Frog National Recovery Team, who will provide general advice to relevant land managers.

## **RESEARCH**

There is considerable existing information on the biology and ecology of the Corroboree Frog. Distribution (Osborne 1989), breeding biology (Pengilley 1966, 1973), diet (Pengilley 1971a), population genetics (Osborne and Norman 1991) and habitat use (Osborne 1990) are reasonably well known. However, some important aspects remain unknown. Basic demographic information is lacking and further research is required on the ecology of juveniles and adults after they leave the breeding pools. Information still required includes estimates of embryonic mortality, tadpole survival, longevity, breeding age, and juvenile and adult mortality.

Other important aspects of research relate to the landscape processes that influence metapopulations, of particular importance in the conservation of this patchily distributed species. Research is required on the extent of movement between breeding sites by individuals and the effect of catchment hydrology on population persistence, particularly with respect to long-term survival during droughts. It is still not clear why the frogs choose particular breeding pools, and in what way hydrology and vegetation interact in the formation of pools.

Research is also needed to examine the possible influence of global climate change on the frogs, including the impact of ultraviolet radiation, changed precipitation patterns and global warming.

Both species of corroboree frog are currently the subject of ongoing research by the Applied Ecology Research Group (University of Canberra). This work has been funded by the NSW National Parks and Wildlife Service and is coordinated by the Corroboree Frog National Recovery Team (see Osborne 1996).

- Environment ACT will support, assist and encourage long-term research coordinated by the Corroboree Frog National Recovery Team aimed at developing a better understanding of: (1) basic population demography including breeding success and tadpole survival; (2) physical and biological properties influencing breeding pool formation and condition of breeding habitat in the ACT and (3) global climatic influences on the frogs.

## **CAPTIVE HUSBANDRY**

Given the recent extinction of a number of species of Australian frogs (Tyler in press), conservation biologists have recommended that efforts be undertaken to improve knowledge of captive rearing and breeding of declining or rare species, before the populations become too small for these efforts to succeed.

- Environment ACT will assess the need to develop procedures for artificial rearing of tadpoles and for captive breeding of adult Northern Corroboree Frogs in the ACT in response to expert advice or a proposal from the Corroboree Frog National Recovery Team.

## **MANAGEMENT OF GININI FLATS WETLANDS**

The most extensive breeding habitat for the Northern Corroboree Frog in the ACT occurs in association with the Ginini Flats wetlands complex, a system of interlinked subalpine Sphagnum bogs (Clark 1980) occupying approximately 125 ha (Lintermans and Ingwersen 1996). As a designated Ramsar wetland of international significance this area is managed primarily for conservation purposes within Namadgi National Park. The area also attracts a moderate amount of recreational use, both in summer and winter, which has the potential to conflict with the conservation of the frog population.

Osborne (1991) noted that the frogs are most vulnerable during two periods of their life-history; firstly the adult males and eggs are easily disturbed by people searching through the moss at the edges of pools, and secondly the tadpoles are entirely reliant on the continued presence of water in the breeding pools for a period of at least six months.

The survival of the Northern Corroboree Frog metapopulation in the Ginini Flats area depends particularly on the maintenance of the network of breeding pools and protection from disturbance of breeding adults and eggs. This will require careful monitoring.

- Environment ACT (Wildlife Research and Monitoring, and the ACT Parks and Conservation Service) will continue to monitor the Ginini Flats population of the Northern Corroboree Frog, including the condition of the general breeding habitat and breeding pools.
- A strict policy of protection will continue to be enforced.
- A policy will be developed to cover the activities of land managers, the general public and individuals undertaking research.
- Guidelines and a code of conduct will be prepared by Environment ACT for park access and interpretation, covering both private tour operators and employees of the ACT Parks and Conservation Service.
- Guidelines will be prepared by Environment ACT for the development and maintenance of any walking trails or vehicle management tracks located, or proposed to be built within the Ramsar wetland area.
- Any proposal for new trails will be subject to environmental assessment.
- Control of feral animals, particularly pigs, will continue as a high priority for Namadgi National Park including areas around the Ginini Flats wetland, and other Corroboree Frog breeding sites in the ACT.
- Feral horses, eradicated from Namadgi National Park in 1987, will not be allowed to re-establish within the Park.

In any feral animal control work, especially in regard to pigs, consideration will be given to ensure achievement of desired outcomes whilst avoiding deleterious side effects.

The fire fuel management plan being developed by Environment ACT will meet the requirements of the Namadgi National Park Management Plan for fire management planning. It will provide fire management policy and prescriptions for areas that include all Corroboree Frog habitat in Namadgi National Park. No burning will be planned for areas within 500 m of breeding sites.

Whilst it is impossible for either this action plan or the fire fuel management plan to rule out the use of heavy equipment near Corroboree Frog habitat during a bushfire, the fuel plan will identify the sensitivity of the breeding sites to this form of disturbance and will identify the means for this information to be made available to the people responsible for fire suppression decisions.

- Active management of known breeding sites and surrounding non-breeding habitat will include removal of exotic tree wildings and prevention of spread of blackberries and other invasive shrubs. Weed removal programs will recognise the need to utilise techniques and chemicals which have the least potential impact on the frog population.

## **Protection**

---

All but one of the known breeding sites for the Northern Corroboree Frog in the ACT occurs within Namadgi National Park (W. Osborne unpublished data). The single known site outside the park consists of only a few individuals, and occurs in an area surrounded by pine plantation (Blundell's Flat). The largest

populations occur in sub-catchments of the Cotter River above Bendora and Corin Dams. Public access and camping are restricted in these areas, which are managed primarily for conservation and water catchment protection.

- General guidelines for the conservation management of the Northern Corroboree Frog and its habitat in the ACT will be included in the Management Plan for Namadgi National Park (scheduled for revision commencing in 1997).

## **Legislative Provisions**

---

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

### ***Nature Conservation Act 1980***

The Nature Conservation Act protects native plants and animals. Activities affecting native plants and animals require a licence which may specify to apply to the activity.

- A person may not kill, take, keep, sell, import, export or interfere with the "nest" of a native animal without a licence.

Native plants and animals may be declared as *protected* or having *special protection status* in recognition of a particular conservation concern that warrants additional protection. Increased controls apply to declared species and licensing constraints are specified.

### Licence Conditions (SPS)

Special Protection Status (SPS) is the highest level of statutory protection and is conferred on species which are either threatened with extinction or are a migratory animal subject to an international agreement for their protection. Conservation requirements are a paramount consideration and only activities related to conservation of the species or serving a special purpose are permissible.

The Conservator of Flora and Fauna may only grant a licence for activities affecting a species with SPS where satisfied that the act specified in the licence:

- is required to be done for scientific, educational, propagative or other similar purposes;
- is required to be done for the purpose of protecting persons or property and will be conducted in a way that will, so far as is practicable, keep to a minimum any impact on the species concerned;
- is merely incidental to other acts, and will not appreciably reduce the chances of survival or recovery in the wild of the species concerned; or
- is of particular significance to Aboriginal tradition and will not appreciably reduce the chances of survival or recovery in the wild of the species concerned.

### Other Relevant Provisions

The Nature Conservation Act provides authority for the Conservator to manage Public Land reserved for conservation of the natural environment. Activities that are inconsistent with management objectives for nature conservation 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.

Section 47 of the Act allows the Conservator to give the occupier of land directions for protection or conservation of native plants and animals. This provision is relevant to the management of threats to the conservation requirements of a species or community of concern that occurs on leased land.

- The Ginini Flats *Sphagnum* bogs in Namadgi National Park, which provide an important habitat for the Northern Corroboree Frog, are listed as wetlands of international importance under the Ramsar Agreement. This Action Plan will, when read in association with the Management Plan for Namadgi National Park, provide the basis for ongoing management of Ginini Flats.

### ***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 and several of its provisions are relevant to the protection of flora and fauna.

- **Public Land** is reserved via the Territory Plan. Land reserved as wilderness area, national park or nature reserve has conservation of the natural environment as a paramount management objective. The Conservator of Flora and Fauna must prepare a **plan of management** setting out how management objectives are to be implemented or promoted.
- **Places of natural heritage significance**, including important habitat for native species, may be entered in the Heritage Places Register, with conservation requirements specified.
- **Environmental Assessments and Inquiries** may be initiated as part of the approvals process for defined land use and development decisions or activities prescribed as controlled. Assessments are required to address potential environmental impact, including threats to a species of flora and fauna, an ecological community or an area.

## Consultation and Community Participation

---

Environment ACT (Wildlife Research and Monitoring) is a member of the National Recovery Team that covers both species of Corroboree Frog (*P. corroboree* and *P. pengilleyi*). This Recovery Team was established in January 1996 to direct and facilitate surveys, monitoring, research, captive husbandry and regional conservation efforts. The membership also includes representatives from the NSW National Parks and Wildlife Service, State Forests of NSW, Victorian Department of Natural Resources and Environment, Snowy Mountains Hydro-Electricity Authority, University of Canberra, ACT Herpetological Association and the Amphibian Research Centre (Victoria).

Where appropriate, community participation with activities assisting the conservation of the Northern Corroboree Frog will be encouraged through groups such as the ACT Herpetological Association and the Frog and Tadpole Study Group (Sydney).

## Implementation and Review

---

### RESPONSIBILITY FOR IMPLEMENTATION

Environment ACT (Wildlife Research and Monitoring) will have responsibility for coordination of the implementation of this Action Plan subject to the availability of Government resources. Primary responsibility for conservation and management of the species within Namadji National Park and areas that are Territory Land will also rest with the ACT Parks and Conservation Service.

### EVALUATION

Implementation of this Action Plan will be a collaborative exercise between government agencies, landholders and the community generally. NSW participation will be critical in some cases. 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 (e.g. 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:

- establishment of monitoring of ACT populations and its coordination with NSW agencies;
- appropriate application in the ACT of research into breeding success and global climatic influences on the species; and
- protection of habitat, especially the Ginini Flats wetlands, with proper control of feral animals, and minimal impact generated by management and visitor activities.

## Acknowledgements

---

Material for the draft Action Plan was prepared for Environment ACT by Dr W. Osborne, of the Applied Ecology Research Group, University of Canberra. Officers of Environment ACT provided additional information, advice and comments.

## References

---

Alexiou, P.N., 1983. Effects of feral pigs (*Sus scrofa*) on subalpine vegetation at Smokers Gap, ACT. *Proceedings of the Ecological Society of Australia* 12: 135-142.

Bennett, S., Brereton, R., Mansergh, I., Berwick, S., Sandford, K. & Wellington, C., 1991. *The potential effect of the enhanced greenhouse climate change on selected Victorian fauna*. Arthur Rylah Institute for Environmental Research, Heidelberg.

Blaustein, A.R., Hoffman, P.D., Hokit, D.G., Kiesecker, J.M., Walls, S.C. & Hayes, J.B., 1994. UV repair and resistance to solar UV-B in amphibian eggs: A link to population declines? *Proceedings National Academy of Sciences USA* 91: 1791-1795.

Carey, C., 1993. Hypothesis concerning the causes of the disappearances of the boreal toads from the mountains of Colorado. *Conservation Biology* 7: 355-362.

Cogger, H.G., 1992. *Reptiles and amphibians of Australia*. Reed Books, Chatswood.

Clark, R., 1980. *Sphagnum growth on Ginini Flats, ACT*. Unpublished report to ACT Parks and Conservation Service, Canberra.

Clark, R., 1986. *The fire history of Rotten Swamp, ACT*. Unpublished Report to ACT Parks and Conservation Service, Canberra.

Dyring, J., 1992. Introduced animals in the Australian Alps with special reference to feral horses. *Review de Geographie Alpine*, pp. 409-423.

Fellers, G.M. & Drost, C.A., 1993. Disappearances of the Cascades Frog *Rana cascadae* at the southern end of its range, California, USA. *Biological Conservation* 65: 177-181.

Galloway, R.W., 1988. The potential impact of climate change on the Australian ski fields. In Pearman, G.I., (ed.) *Greenhouse: Planning for climate change*, pp. 428-437. CSIRO, Canberra.

Good, R.B., 1973. A preliminary assessment of erosion following wildfires in Kosciusko National Park, NSW in 1973. *Soil Conservation Journal of NSW* 29: 191-199.

Hedges, S.B., 1993. Global amphibian declines: A perspective from the Carribean. *Biodiversity and Conservation* 2: 290-303.

Hollis, G.J., 1995. Reassessment of the distribution, abundance and habitat of the Baw Baw Frog *Philoria frosti* Spencer: Preliminary findings. *Victorian Naturalist* 112: 190-201.

Jones, A.E. & Shanklin, J.D., 1995. Continued decline of total ozone over Halley, Antarctica, since 1985. *Nature* 376: 409-411.

Lintermans, M. & Ingwersen, F., 1996. Australian Capital Territory chapter. In Australian Nature Conservation Agency. *A directory of important wetlands in Australia*. Second Edition. Australian Nature Conservation Agency, Canberra.

Mahony, M., 1996. The decline of the Green and Golden Bell Frog (*Litoria aurea*) viewed in the context of declines and disappearances of other Australian frogs. *Australian Zoologist* 30: 237-247.

McDonald, K.R., 1990. *Rheobatrachus* Liem and *Taudactylus* Straughan and Lee (Anura: Leptodactylidae) in Eungella National Park, Queensland: Distribution and decline. *Transactions of the Royal Society of South Australia* 114: 187-194.

Osborne, W.S., 1988. *A survey of the distribution and habitats of Corroboree Frogs (Pseudophryne corroboree) in Kosciusko National Park: With a reference to ski resort development*. Report to NSW National Parks and Wildlife Service, Kosciusko District.

Osborne, W.S., 1989. Distribution, relative abundance and conservation status of Corroboree Frogs (*Pseudophryne corroboree*) Moore (Anura: Myobatrachidae). *Australian Wildlife Research* 16: 537-547.

Osborne, W.S., 1990. *The conservation biology of Pseudophryne corroboree Moore (Anura: Myobatrachidae): A study of insular populations*. PhD thesis, Department of Zoology, Australian National University.

Osborne, W.S., 1991. *The biology and management of the Corroboree Frog (Pseudophryne corroboree)*. In NSW. Species Management Report No. 8. NSW National Parks and Wildlife Service, Sydney.

Osborne, W.S. (1996). *Recovery plan for the Southern Corroboree Frog (Pseudophryne corroboree)*. NSW National Parks and Wildlife Service, Queanbeyan.

Osborne, W.S. & Norman, 1991. Conservation genetics of Corroboree Frogs, (*Pseudophryne corroboree*): Population subdivision and genetic divergence. *Australian Journal of Zoology* 39: 285-297.

Osborne, W. S., Zentelis, R. A. & Lau, M., 1996. Geographical variation in corroboree frogs, (*Pseudophryne corroboree*) Moore (Anura: Myobatrachidae): A reappraisal supports recognition of *P. pengilleyi* Wells and Wellington. *Australian Journal of Zoology* 44: 569-587.

Pearman, G.I. (ed.), 1989. *Greenhouse planning for climate change*. CSIRO, Canberra.

Pengilley, R.K., 1966. *The biology of the genus Pseudophryne (Anura: Leptodactylidae)*. MSc thesis, Department of Zoology, Australian National University.

Pengilley, R.K., 1971a. Calling and associated behaviour of some species of *Pseudophryne* (Anura: Leptodactylidae). *Journal of Zoology Lond.* 163: 73-92.

Pengilley, R.K., 1971b. The food of some Australian anurans (Amphibian). *Journal of Zoology Lond.* 163: 93-103.

Pengilley, R.K., 1973. Breeding biology of some species of *Pseudophryne* (Anura: Leptodactylidae) of the Southern Highlands, NSW. *Australian Zoologist* 18: 15-30.

Pengilley, R.K., 1992. Natural history of *Pseudophryne* species (Anura : Myobatrachidae) in the Southern Highlands of NSW, Australia. *Sydney Basin Naturalist* 1: 9-29.

Tallis, J.H., 1994. Pool-and-hummock patterning in a southern Pennine blanket mire II. The formation and erosion of the pool system. *Journal of Ecology* 82: 789-803.

Wells, R.W., & Wellington, C.R., 1985. A classification of the Amphibia and Reptilia of Australia. *Australian Journal of Herpetology Supplementary Series* 1: 1-61.

Wimbush, D.J. & Costin, A.B., 1979. Trends in vegetation at Kosciusko: 1 Grazing trails in the subalpine zone, 1957-1971. *Australian Journal of Botany* 27: 741-787

## List of Action Plans - December 1997

---

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 pinguicolla*) - an endangered species.

No. 4: A leek orchid (*Prasophyllum petilum*) - an endangered species.

No. 5: A subalpine herb (*Gentiana baeuerlenii*) - an endangered species.

No. 6: Corroboree Frog (*Pseudophryne corroboree*) - a vulnerable species.

---

### 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

This document should be cited as:

ACT Government, 1997. *Corroboree Frog (Pseudophryne corroboree): A vulnerable species. Action Plan No. 6.* Environment ACT, Canberra.