

**Approved Conservation Advice for**  
***Liopholis guthega* (Guthega Skink)**

(s266B of the *Environment Protection and Biodiversity Conservation Act 1999*)

This Conservation Advice has been developed based on the best available information at the time this Conservation Advice was approved; this includes existing plans, records or management prescriptions for this species.

### **Description**

*Liopholis guthega* (Guthega Skink) is a medium-sized scincid lizard with a snout-vent length up to 111 mm (Donnellan et al., 2002). It is blackish-brown on the back and upper flanks with greyish-brown back and side stripes and numerous longitudinal rows of sharp, pale spots (Wilson and Swan, 2003). The colour pattern of juveniles is often more pronounced than that of adults. The Guthega Skink is similar in appearance to *Egernia whitii* and *Egernia montana* but is distinguished by having a shorter tail and the presence of a blackish, upper side, stripe, overlain by two or three series of light grey or cream dots (Donnellan et al., 2002).

### **Conservation Status**

The Guthega Skink is listed as endangered. This species is eligible for listing as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) as it has a very restricted geographic distribution of less than 5000 km<sup>2</sup>, which is precarious for the survival of the species (TSSC, 2010).

The species is listed as threatened under the *Victorian Flora and Fauna Guarantee Act 1988*. The species is also listed as critically endangered under the Victorian Department of Sustainability and Environment advisory list of threatened fauna.

The Guthega Skink is listed as protected under the *NSW National Parks and Wildlife Act 1974*.

### **Distribution and Habitat**

The Guthega Skink is known from two general locations above 1600 m altitude, in the vicinity of Mount Kosciuszko, NSW and from the Bogong High Plains, Victoria. They have been recorded in open *Eucalyptus pauciflora* (Snow Gum) woodland with grassy or shrubby understoreys, dry tussock grassland and tall and short heath (Donnellan et al., 2002). The extent of occurrence is estimated to be less than 5000 km<sup>2</sup>. This species occurs within the North East Victoria and Southern Rivers New South Wales Natural Resource Management Regions and in the Australian Alps IBRA Bioregion.

The distribution of this species is not known to overlap with any EPBC Act-listed threatened ecological community.

### **Threats**

The main current threats to the Guthega Skink are loss and degradation of habitat, predation and wildfire. Predicted climate change is likely to increase fire frequency and severity and vegetation changes that may further limit suitable habitat for the species. Historically, large tracts of habitat have been lost as dams and alpine resort villages have been constructed and expanded. Concurrent development of infrastructure such as roads, tracks and ski runs have also destroyed, fragmented or modified habitat.

Degradation of the species' habitat has resulted from grazing and trampling by cattle, feral horses, deer and pigs and the grooming of ski runs. This degradation of habitat can extirpate

the species from an area, or it can subdivide formerly continuous populations. The removal of cattle grazing from alpine national parks has been beneficial for this species.

Predation by foxes and cats is a current threat. Elevated levels of predation, due to the introduction of exotic predators, have not been quantified for the Guthega Skink. It is likely that these predators have a negative influence on the species, through direct loss of individuals and changes in lizard behaviour that may have a negative impact on populations. (e.g. loss of body condition can have a negative impact on a population's breeding success, particularly in cold climates). Continuing developments in alpine resorts and ongoing grooming of ski runs enhances exotic predator access and may further reduce Guthega Skink habitat and increase skink exposure to predators in occupied habitats.

The most likely catastrophic threat to the Guthega Skink is wildfire. Large fires in the Australian alps are not considered common, but two such fires have occurred in the last seven years (2003 and 2007). If wildfire degradation of habitat continues, a concurrent reduction in the numbers and geographic extent of Guthega Skinks is almost certain. Predicted climate change is likely to increase fire frequency and severity in this region.

Vegetation changes as a response to climate change may reduce available habitat for the Guthega Skink. An emerging threat resulting from climate change is the altitudinal movement of native species not previously regarded as resident above 1500 m. Known skink predators, such as kookaburras, have become regular subalpine residents in the past decade (Green and Pickering, 2002).

### **Research Priorities**

Research priorities that would inform future regional and local priority actions include:

- Design and implement a monitoring program or, if appropriate, support and enhance existing programs to determine population and fluctuations.
- More precisely assess population, distribution, ecological requirements and the relative impacts of threatening processes.
- Facilitate research on the biology, ecology and life history of the Guthega Skink to enhance knowledge of the species and identify and implement effective recovery actions.

### **Priority Actions**

The following priority recovery and threat abatement actions can be done to support the recovery of the Guthega Skink.

#### **Habitat Loss, Disturbance and Modification**

- Monitor known populations to identify impacts of key threats.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.
- Ensure there is no disturbance in areas where the Guthega Skink occurs, excluding necessary actions to manage the conservation of the species.
- Investigate formal conservation arrangements, management agreements and covenants on private land, and for crown and private land investigate inclusion in reserve tenure if possible.

#### **Trampling, Browsing or Grazing**

- Develop and implement management plans for the control and eradication of feral Horses (*Equus caballus*), Sambar Deer (*Cervus unicolor*) and Pigs (*Sus scrofa*) in the region. Implement the Kosciuszko National Park Final Horse Management Plan (DECC, 2008).

### Animal Predation

- Develop and implement a management plan for the control and eradication of Foxes (*Vulpes vulpes*) and Cats (*Felis catus*) in the regions where Guthega Skink occurs. Implement the New South Wales Threat Abatement Plan – Predation by the Red Fox (NSW NPWS, 2001), the Commonwealth Threat Abatement Plan – Predation by European Red Fox (DEWHA, 2008a), and the Commonwealth Threat Abatement Plan – Predation by Feral Cats (DEWHA, 2008b).

### Fire

- Develop and implement a suitable fire management strategy for the habitat of the Guthega Skink.
- Where appropriate provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigative measures in bush fire risk management plan(s), risk register and/or operation maps.

### Conservation Information

- Raise awareness of the Guthega Skink within the local community.
- Engage with private landholders and land managers responsible for the land on which Guthega Skink populations occur, particularly alpine resorts, and encourage these stakeholders to contribute to the implementation of conservation management actions.

### Reintroduction

- Investigate reintroduction of the species at the Smiggin Holes site.

This list does not necessarily encompass all actions that may be of benefit to the Guthega Skink, but highlights those that are considered to be of highest priority at the time of preparing the Conservation Advice.

### **Existing Plans/Management Prescriptions that are Relevant to the Species**

The Victorian Department of Sustainability and Environment (DSE) is developing an Action Statement for the Guthega Skink (Clemann, in prep. A). The document will provide information on previous management action and intended management action. It outlines research priorities and identifies threats to the species.

There are Victorian Action Statements for *Eulamprus kosciuskoi* (Alpine Water Skink) (Meredith et al., 2003), *Cyclodomorphus praealtus* (Alpine She-oak Skink) (Clemann, 2003) and *Pseudemoia cryodroma* (Alpine Bog Skink) (Clemann, in prep. B). Threatening processes and management actions for each of these threatened alpine lizards broadly overlap with those for the Guthega Skink.

The New South Wales Department of Environment, Climate Change and Water (DECCW) has developed the Kosciuszko National Park Final Horse Management Plan (DECC, 2008). In this plan, it recommends removal of feral horses from the Park in particular areas adjoining other Australian Alps national parks and reserves.

DECCW has developed the New South Wales Threat Abatement Plan for Predation by the Red Fox (NSW NPWS, 2001). The Plan is aimed at reducing the impacts of Red Foxes on threatened species. It identifies the Snowy Mountains Main Range and South West Slopes, Kosciuszko North as high priority sites for Fox control.

The Department of Environment, Water, Heritage and the Arts (DEWHA) developed a Threat Abatement Plan for Predation, habitat degradation, competition and disease transmission by Feral Pigs (DEH, 2005). The Plan is aimed at protecting listed threatened native species

from the impacts of Pigs. It specifies to quantify Feral Pig impacts on nationally-listed threatened species.

DEWHA has also developed Threat Abatement Plans for Predation by European Red Fox (DEWHA, 2008a) and Predation by feral cats (DEWHA, 2008b). The goals of the Threat Abatement Plans are to minimise the impact of foxes and Feral Cats on biodiversity, in particular protecting affected native species.

These prescriptions were current at the time of publishing; please refer to the relevant agency's website for any updated versions.

### Information Sources:

Clemann N (2003). *Flora & Fauna Guarantee* Action, Statement for the Alpine She-oak Skink *Cyclodomorphus praealtus*. Department of Sustainability and Environment, Victoria.

Clemann N (in prep. A). *Flora & Fauna Guarantee* Action Statement for the Guthega Skink *Liopholis guthega*. Department of Sustainability and Environment, Victoria.

Clemann N (in prep. B). *Flora & Fauna Guarantee* Action Statement for the Alpine Bog Skink *Pseudemoia cryodroma*. Department of Sustainability and Environment, Victoria

DECC (Department of Environment and Climate Change) (2008). Kosciuszko National Park Final Horse Management Plan.

Available on the internet at:

<http://www.environment.nsw.gov.au/resources/nature/KNPHorseManagementPlanFinal08.pdf>

DEH (Department of the Environment and Heritage) (2005). Threat Abatement Plan – Predation, habitat degradation, competition and disease transmission by feral pigs.

Available on the Internet at:

<http://www.environment.gov.au/biodiversity/threatened/publications/tap/pubs/feral-pig-tap.pdf>

DEWHA (Department of Environment, Water, Heritage and the Arts) (2008a). Threat Abatement Plan – Predation by European red fox.

Available on the internet at:

<http://www.environment.gov.au/biodiversity/threatened/publications/tap/pubs/tap-fox-report.pdf>

DEWHA (Department of Environment, Water, Heritage and the Arts) (2008b). Threat Abatement Plan – Predation by feral cats.

Available on the internet at:

<http://www.environment.gov.au/biodiversity/threatened/publications/tap/pubs/tap-cat-report.pdf>

Donnellan SC, Hutchinson MN, Dempsey P and Osborne W (2002). Systematics of the *Egernia whitii* species group (Lacertilia: Scincidae) in south-eastern Australia. Australian Journal of Zoology 50: 439–459.

Green K and Pickering CM (2002). A scenario for mammal and bird diversity in the Australian Snowy Mountains in relation to climate change. In Mountain Biodiversity: a Global Assessment. Eds. C. Koerner and E.M. Spehn. Parthenon Publishing, London: 241– 49.

Meredith C, Hudson S, Robertson P and Clemann N (2003). *Flora & Fauna Guarantee* Action Statement for the Alpine Water Skink *Eulamprus kosciuskoi*. Department of Sustainability and Environment, Victoria.

NSW NPWS (National Parks and Wildlife Service) (2001). Threat Abatement Plan for Predation by the Red Fox (*Vulpes vulpes*). NSW National Parks and Wildlife Service, Hurstville.

Available on the internet at:

<http://www.environment.nsw.gov.au/resources/pestsweeds/RedfoxApproved.pdf>

TSSC (Threatened Species Scientific Committee) (2010). Listing advice for *Liopholis guthega* (Guthega Skink).

Wilson S and Swan G (2008). Reptiles of Australia. 2<sup>nd</sup> Edition. Princeton Field Guides. New Jersey, USA: 218–219.