

Action Statement No. 256

Eastern She-oak Skink *Cyclodomorphus michaeli*
Flora and Fauna Guarantee Act 1988



© The State of Victoria Department of Environment and Primary Industries 2014



This work is licensed under a Creative Commons Attribution 3.0 Australia licence. You are free to re-use the work under that licence, on the condition that you credit the State of Victoria as author. The licence does not apply to any images, photographs or branding, including the Victorian Coat of Arms, the Victorian Government logo and the Department of Environment and Primary Industries logo. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/3.0/au/deed.en>

Cover photo: Peter Robertson

ISBN 978-1-74146-082-7 (pdf)

Accessibility

If you would like to receive this publication in an alternative format, please telephone the DEPI Customer Service Centre on 136186, email customer.service@depi.vic.gov.au via the National Relay Service on 133 677 www.relayservice.com.au. This document is also available on the internet at www.depi.vic.gov.au

Disclaimer

This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Eastern She-oak Skink *Cyclodomorphus michaeli*

Description

The Eastern (or Mainland) She-oak Skink *Cyclodomorphus michaeli* (Wells and Wellington 1985) is a member of the family Scincidae (skinks). It is a large and slender skink with smooth body scales, short limbs and a relatively long tail (90-120% of the snout-vent length) and obvious ear openings. Each limb has five fingers or toes, with the third toe slightly longer than the fourth (Wells 2007). The Eastern She-oak Skink is typically pale or dark brown, olive or reddish, while its flanks are paler. The ventral surface is usually a paler shade of the main body colour. It also has an obscure pattern produced by scales with dark posterior or lateral margins, tending to the transverse or longitudinal from nape to tail tip. There is a broad dark vertical bar from the eye to the lower lips and the snout tip is usually dark. Such patterning is usually more pronounced in juveniles. Mean adult snout-vent length (SVL) is in the range 130-174 mm (Cogger 2000; Wilson and Swan 2013). A detailed summary of the variation in colouration and pattern in this lizard (and its congeners) is provided by Shea (1995) and Wells and Wellington (1985).

Distribution

The Eastern She-oak Skink is patchily distributed along the eastern Australian seaboard between East Gippsland in Victoria and New England, NSW, although there is an isolated population in the Blue Mountains, NSW (Department of Environment and Primary Industries, 2014; NSW Department of Environment and Heritage 2012; Shea 1995).

In Victoria, the Eastern She-oak Skink appears to be restricted to East Gippsland east of Orbost. Most of the records for this lizard were sourced from public land; there are several records for the Croajingolong National Park (Croajingolong Biosphere Reserve) and scattered records from State Forest (Drummer, Wingan, Merremingger, Tamboon State Forests).



Eastern She-oak Skink (Peter Robertson)

Habitat

The Eastern She-oak Skink is found in a variety of habitats, from edges and clearings in sclerophyll forests to sandy coastal heaths and dense tussocks bordering wetlands (Lindenmayer *et al.* 2008; Sass ; Schulz and Magarey 2012; Wilson and Swan 2013). It appears to prefer areas where ground cover is dominated by grass tussocks, and it shelters in these tussocks as well as beneath leaf-litter, logs and discarded rubbish (Lindenmayer *et al.* 2002; Shea 2004). There appears to be much overlap in the lizard's preferred habitat with that of the threatened Ground Parrot (*Pezoporus wallicus*).

Life history and ecology

Little is known of the biology of the Eastern She-oak Skink. It is secretive and rarely observed, reflected in relatively few records (and specimens). While it is reported as drawing heat from other objects in its environment, and is largely active during dusk and dawn (Wells 2007), the species is known to bask and is likely to be active during the day (P. Robertson, Wildlife Profiles Pty Ltd, pers. comm; Shea 1995).

Eastern She-oak Skinks give birth to live young (viviparous). Mating probably occurs in late winter or early spring, ovulation probably occurs in mid-late spring followed by gestation of 2-3 months before the birth of young in mid-summer. Different litter sizes have been reported, from 4-19 (Shea 1995), although about six young is most likely (Wells 2007).

No information on diet is available for this lizard, but it is likely to be similar to that of other similar-sized or related skink taxa: food is taken opportunistically and dominated by animal matter, primarily arthropods, with some vegetable matter also ingested (Brown 1991; Greer 1989).



Distribution in Victoria (Victorian Biodiversity Atlas DEPI 2014)

Conservation status

National conservation status

The Eastern She-oak Skink (*Cyclodomorphus michaeli*) is not listed as threatened under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*.

Victorian conservation status

The Eastern She-oak Skink (*Cyclodomorphus michaeli*) is listed as threatened under the *Flora and Fauna Guarantee Act 1988*.

The Eastern She-oak Skink (*Cyclodomorphus michaeli*) is considered Near Threatened in Victoria according to the Advisory List of Threatened Vertebrate Fauna in Victoria (Victorian Department of Sustainability and Environment 2013).

Threats

Records of the Eastern She-oak Skink are relatively few in Victoria and NSW, and originate before 1993 and 2000, respectively (Department of Primary Industries, 2014; NSW Department of Environment and Heritage 2012). The status of Eastern She-oak Skink populations is not known as there have been no targeted surveys. Major threats to this lizard are likely to be habitat loss, fragmentation and degradation, predation, environmental weeds and climate change. Timber harvesting and associated activities, such as road construction and maintenance, may also be threats to the persistence of this lizard. Fire (both planned burns and bushfire) and fire management activities may also threaten the Eastern She-oak Skink.

These threats are likely to be causing a decline in its population status, though the impact of these threats on the status of the Eastern She-oak Skink either singly or in combination is unknown. This lack of information on the population status and the impacts of threats on the Eastern She-oak Skink means that there is little specific information to inform strategic responses and actions.

Standard threat	Source of Threat	Explanation
Carnivory	Animals – cats, dogs and foxes	Feral and domestic cats, along with other introduced predators, dogs and foxes, have regularly been reported to injure small reptiles or take them as prey (Barratt 1998; Brown and Triggs 1990; DEWHA 2008; Dickman 1996; Lunney <i>et al.</i> 1990; May and Norton 1996; Read and Bowen 2001; Shine and Koenig 2001; Triggs <i>et al.</i> 1984). Feral carnivores may also prey on Eastern She-oak Skink.
Inappropriate fire regimes	Fire - season or time Fire - frequency	In NSW the Eastern She-oak Skink is found in forests that have not recently been disturbed by fire (Lindenmayer <i>et al.</i> 2008). This finding indicates that it may be many years after fire before habitat is considered suitable for the Eastern She-oak Skink. More research is required in Victoria to determine, how the Eastern She-oak Skinks presence relates to habitat structure, a function of successional stage. The timing, frequency and intensity of planned burns needs to consider the best available information on how fire impacts the Eastern She-oak Skink (see intended management actions for further information).

Loss of important habitat features	<p>Construction/ maintenance - fuel breaks, road, rail or utility</p> <p>Timber harvesting</p>	<p>The construction or maintenance of fuel breaks (usually for fire suppression), roads, tracks and timber harvesting have a potential impact on the habitat of the Eastern She-oak Skink through the removal or disturbance of surface vegetation, soil and debris.</p> <p>These actions may also have habitat fragmentation implications because of the potential to disrupt the continuity of suitable habitat at the local scale.</p> <p>Fuel breaks, roads, tracks and timber harvesting coups may also create barriers to Eastern She-oak Skink dispersal, with consequences for the genetic and demographic composition of a population. Roads may facilitate the spread of predators.</p> <p>The placement, construction and maintenance of fuel breaks, roads, tracks and timber harvesting needs to consider the best available information on the Eastern She-oak Skink (see intended management actions for further information).</p>
Loss of important habitat features	Weather - climate change	<p>The core distribution of the She-oak Skink is predicted to be reduced by ~77% under a scenario for <i>Tiliqua casuarinae</i> of +3o C and -10% rainfall across all months (Brereton <i>et al.</i> 1995), although this modelling was conducted on a single taxon that has since been split into several species.</p> <p>The extinction risks to lizards through climate change are predicted to be substantial in coming decades; lizards cannot evolve rapidly enough to track current climate change because of constraints arising from the 'genetic architecture of thermal preference' (Sinervo <i>et al.</i> 2010).</p>

Important populations

The Eastern She-oak Skink is historically known to occur in the following locations in East Gippsland. However, important Eastern She-oak Skink populations and habitat in Victoria are yet to be identified. The intended management actions address the lack of knowledge about important populations, habitat and threats.

Location name	Land manager	Catchment	Bioregion
<i>Croajingolong National Park</i>	Parks Victoria	EAST GIPPSLAND	East Gippsland Lowlands
<i>Merremingger State Forest</i>	DEPI	EAST GIPPSLAND	East Gippsland Lowlands
<i>Drummer State Forest</i>	DEPI	EAST GIPPSLAND	East Gippsland Lowlands
<i>Wingan State Forest</i>	DEPI	EAST GIPPSLAND	East Gippsland Lowlands
<i>Tamboon State Forest</i>	DEPI	EAST GIPPSLAND	East Gippsland Lowlands

Past management actions

There have been no targeted management actions for the Eastern She-oak Skink, although the lizard may have incidentally benefited from actions that have overlapped with its distribution. For example, general predator control.

Action	Result explanation
Survey	<p>Feral carnivores are opportunistic predators of small vertebrates, including reptiles. Regional-wide plans and projects that control introduced animals may help protect the Eastern She-oak Skink. Examples of currently operating plans and projects are:</p> <ul style="list-style-type: none"> • the regional invasive plants and animals plan, • the Southern Ark project which is implemented in East Gippsland by DEPI and Parks Victoria to reduce the number of foxes and assist the recovery of native wildlife, (www.dse.vic.gov.au/southernark).

Conservation objectives

Long term objective

The long-term conservation objective is to ensure the Eastern She-oak Skink can survive, flourish and retain its potential for evolutionary development in the wild.

Objectives of this Action Statement

- To increase knowledge of biology, ecology, threats and management requirements
- To secure populations or habitat from potentially incompatible land uses and/or reduce risk of catastrophic loss
- To maintain or improve condition of habitat and reduce threats to populations
- To maintain or increase community awareness and support

Intended management actions

To assist the conservation of the Eastern She-oak Skink, Department of Environment and Primary Industries (DEPI) will consider the following actions when developing regulation, investment strategies and ecological, fire and land management policies.

The intended management actions listed below are further elaborated in DEPI's Actions for Biodiversity Conservation (ABC) system. Detailed information about the actions and locations, including priorities, is held in this system and will be provided annually to land managers and other authorities.

Standard objective	Targets
To increase knowledge of biology, ecology, threat and management requirements	Knowledge of the ecology of and threats to Eastern She-oak Skink increased to understand distribution and population trends, and to identify and prioritise management actions.

Action	Details	Responsible agents
Conduct surveys to determine abundance and distribution	Survey known habitat and potential habitat to determine the abundance and distribution of the Eastern She-oak Skink.	DEPI
Map populations	Generate a map of known and potential Eastern She-oak Skink distribution to assist management.	DEPI
Identify core habitat	Analyse the characteristics of known lizard habitat in order to identify its core habitat and identify the occurrence of this within the lizard's known and projected distribution. In particular investigate the use of ground debris as habitat.	DEPI

Assess threats	Assess levels of likely threats to the Eastern She-oak Skink. Determine land management priorities using information in the Actions for Biodiversity Conservation information system or derived from research, and expert advice.	DEPI, Parks Victoria
Undertake threat monitoring	When known populations are found, monitor to improve knowledge of their relationship to possible threats such as fire management, bushfire, road construction, timber harvesting, introduced predators, environmental weeds and maintenance activities.	DEPI, Parks Victoria
Undertake habitat monitoring	When Eastern She-oak Skink habitats have been identified, periodically monitor and report on their condition and suitability. Incorporate into relevant strategies and plans, for further information see actions below.	DEPI
Ensure records of the species and locations are documented on the relevant databases	Source all available records of the Eastern She-oak Skink and confirm and ensure their inclusion in institutional databases, particularly the Victorian Biodiversity Atlas (DEPI).	DEPI
Undertake detailed population monitoring and collect demographic information	Once key populations of the Eastern She-oak Skink are identified, collect demographic information from these populations and track population status.	DEPI
Undertake population modelling and/or viability analysis	Once enough demographic data have been collected (see action above), model those data to determine the viability of the Eastern She-oak Skink, including the potential impacts of climate change.	DEPI

Standard objective	Targets
To secure populations or habitat from potentially incompatible land uses and/or reduce risk of catastrophic loss	Land use planning avoids and minimises incompatible land use impacts on the known habitat and populations of the Eastern She-oak Skink in Victoria.

Action	Details	Responsible agents
Provide input into regional fire management and operations plans	Ensure that locations of known or discovered populations are included in planned burning and fire suppression planning so that efforts can be made to minimise the impact of fire on these populations.	DEPI, Parks Victoria
Identify fire management priorities and develop detailed plan	When more information is known, incorporate Eastern She-oak Skink distribution and habitat requirements into strategic bushfire management.	DEPI
Incorporate actions to protect and/or manage item into relevant strategies and plans	Continue to update relevant strategies and plans when more specific information is available. These could include: Actions for Biodiversity Conservation database, National Recovery Plan and relevant action statements.	DEPI

Review and update forestry practice and zoning in State Forest	A strategic review of biodiversity management in Victoria's forests is underway and may change the way timber harvesting and threatened species are managed in the future.	DEPI
---	--	------

Standard objective	Targets
--------------------	---------

To maintain or improve condition of habitat and reduce threats to populations	Introduced predators and weeds reduced to a level that allows population increase in Eastern She-oak Skink.
--	---

Action	Details	Responsible agents
--------	---------	--------------------

Control introduced animals	Continue existing or undertake new control measures in key locations, including baiting of foxes and cats.	DEPI , Parks Victoria
-----------------------------------	--	-----------------------

Standard objective	Targets
--------------------	---------

To maintain or increase community awareness and support	Participation in community programs and activities such as government-supported conservation and land management programs, field days and survey and monitoring increased so that the community understands and supports conservation measures undertaken for the Eastern She-oak Skink.
--	--

Action	Details	Responsible agents
--------	---------	--------------------

Involve community groups and volunteers in recovery activities	Incorporate the Eastern She-oak Skink 'story' into community field days and encourage the participation of interested stakeholders or individuals in extension activities. The submission of new records or records confirming existing populations should be encouraged and supported.	DEPI
---	---	------

Promote awareness of item through communication with local community	Through relevant government-supported conservation and land management programs promote awareness of the Eastern She-oak Skink with the local community. Potential areas to promote the species include the Genoa River, Wallagaraugh River and Wangarabell Creek floodplains, and the Mallacoota area. Parks Victoria rangers should inform park visitors of the rarity, ecology and management requirements of the Eastern She-oak Skink.	DEPI, Parks Victoria East Gippsland CMA
---	--	---

References

- Barratt, D.G., 1998. Predation by house cats, *Felis catus* (L.), in Canberra, Australia. II. factors affecting the amount of prey caught and estimates of the impact on wildlife. *Wildlife Research* 25, 475-487.
- Brereton, R., Bennett, S., Mansergh, I., 1995. Enhanced greenhouse climate change and its potential effect on selected fauna of south-eastern Australia: A trend analysis. *Biological Conservation* 72, 339-354.
- Brown, G.W., 1991. Ecological feeding analysis of south-eastern Australian scincids (Reptilia: *Lacertilia*). *Australian Journal of Zoology* 39, 9-29.
- Brown, G.W., Triggs, B.E., 1990. Diets of wild canids and foxes in East Gippsland 1983 - 1987, using predator scat analysis. *Australian Mammalogy* 13, 209-214.
- Cogger, H.G., 2000. *Reptiles and Amphibians of Australia*, Sixth edition edn. Reed New Holland, Sydney.
- DEWHA, 2008. *Threat abatement plan for predation by feral cats*. Department of the Environment Water Heritage and the Arts, Canberra, ACT.
- Department of Environment and Primary Industries (DEPI), 2014. Victorian Biodiversity Atlas, retrieved June 2014. <https://vba.dse.vic.gov.au>
- Dickman, C.R., 1996. *Overview of the impacts of feral cats on Australian native fauna*. Report for the Australian Nature Conservation Agency. Australian Nature Conservation Agency, Canberra, ACT.
- Greer, A.E., 1989. *The Biology and Evolution of Australian Lizards*. Surrey Beatty & Sons, Chipping Norton.
- Lindenmayer, D.B., Claridge, A.W., Gilmore, A.M., Michael, D., Lindenmayer, B.D., 2002. The ecological roles of logs in Australian forests and the potential impacts of harvesting intensification on log-using biota. *Pacific Conservation Biology* 8, 121-140.
- Lindenmayer, D.B., Wood, J.T., MacGregor, C., Michael, D.R., Cunningham, R.B., Crane, M., Montague-Drake, R., Brown, D., Muntz, R., Driscoll, D.A., 2008. How predictable are reptile responses to wildfire? *Oikos* 117, 1086-1097.
- Lunney, D., Triggs, B., Eby, P., Ashby, E., 1990. Analysis of scats of dogs *Canis familiaris* and foxes *Vulpes vulpes* (*Canidae*, *Carnivora*) in coastal forests near Bega, New South Wales. *Wildlife Research* 17, 61-68.
- May, S.A., Norton, T.W., 1996. Influence of fragmentation and disturbance on the potential impact of feral predators on native fauna in Australian forest ecosystems. *Wildlife Research* 23, 387-400.
- NSW Department of Environment and Heritage, 2012. *Atlas of NSW Wildlife*. DEH, Sydney South, NSW.
- Read, J., Bowen, Z., 2001. Population dynamics, diet and aspects of the biology of feral cats and foxes in arid South Australia. *Wildlife Research* 28, 195-203.
- Sass, S. *Blueys in the bush: Short notes on the distribution and habitat of Tiliqua and Cyclodomorphus in New South Wales*, viewed 1 November 2013 < http://bluetongueskinks.net/wild/wild_bts.pdf>.
- Schulz, M., Magarey, E., 2012. Vertebrate fauna: a survey of Australia's oldest national park and adjoining reserves. *Proceedings of the Linnean Society of New South Wales* 134, B215-B247.
- Shea, G., 2004. Sheoak skinks (*Cyclodomorphus casuarinae* complex), In *Blue-tongued skinks: Contributions to Tiliqua and Cyclodomorphus*. eds R. Hitz, G. Shea, A. Hauschild, K. Henle, H. Werning. Matthias Schmidt Publications, USA.
- Shea, G.M., 1995. A taxonomic revision of the *Cyclodomorphus casuarinae* complex (*Squamata: Scincidae*). *Records of the Australian Museum* 47, 83-115.
- Shine, R., Koenig, J., 2001. Snakes in the garden: an analysis of reptiles "rescued" by community-based wildlife carers. *Biological Conservation* 102, 271-283.
- Sinervo, B., Méndez-de-la-Cruz, F., Miles, D.B., Heulin, B., Bastiaans, E., Villagrán-Santa Cruz, M., Lara-Resendiz, R., Martínez-Méndez, N., Calderón-Espinosa, M.L., Meza-Lázaro, R.N., Gadsden, H., Avila, L.J., Morando, M., De la Riva, I.J., Sepulveda, P.V., Rocha, C.F.D., Ibargüengoytia, N., Puntriano, C.A., Massot, M., Lepetz, V., Oksanen, T.A., Chapple, D.G., Bauer, A.M., Branch, W.R., Clobert, J., Sites, J.W., 2010. Erosion of lizard diversity by climate change and altered thermal niches. *Science* 328, 894-899.
- Triggs, B., Brunner, H., Cullen, J., 1984. The food of fox, dog and cat in Croajingalong National Park, south-eastern Victoria. *Wildlife Research* 11, 491-499.
- Victorian Department of Sustainability and Environment, 2013. Advisory List of Threatened Vertebrate Fauna in Victoria - 2013. Department of Sustainability and Environment, East Melbourne, Victoria.
- Wells, R.W., 2007. Some taxonomic and nomenclatural considerations on the Class Reptilia in Australia. The genus *Cyclodomorphus* Fitzinger, 1843 with a new interpretation of the *Cyclodomorphus branchialis* species-group. *Australian Biodiversity Record* 2007, 1-23.
- 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.
- Wilson, S., Swan, G., 2013. *A complete guide to reptiles of Australia*. Fourth edition. New Holland Publishers, London, UK.

Customer Service Centre **136 186**

www.depi.vic.gov.au