

# Abridged Threatened Species Nomination Form

For nominations under the Common Assessment Method (CAM) where supporting information is available, but not in a format suitable for demonstrating compliance with the CAM, and assessment against the IUCN Red List threat status.

## Cover Page *(Office use only)*

Species name (scientific and common name):	<i>Lerista lineata</i> (lined skink, Perth slider)
Nomination for (addition, deletion, change):	Addition
Nominated conservation category and criteria:	Endangered B1+2ab(ii,iii,iv)

WA Threatened Species Scientific Committee assessment of eligibility against the criteria:		
This assessment is consistent with the standards set out in Schedule 1, item 2.7 (h) and 2.8 of the Common Assessment Method Memorandum of Understanding.		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
A.	Population size reduction	<ul style="list-style-type: none"> <li>Insufficient information to assess.</li> </ul>
B.	Geographic range	<ul style="list-style-type: none"> <li>EOO and AOO meet area thresholds for Endangered.</li> <li>Continuing decline assessed with respect to further areas of remnant vegetation likely to be cleared.</li> <li>Known from many locations, including a number of conservation reserves and other protected areas with no significant identified threat. Greater than 10 locations.</li> <li>Fossorial species with small habitat requirements and limited natural colonisation capacity. Not severely fragmented.</li> <li><b>Does not meet criteria for B.</b></li> </ul>
C.	Small population size and decline	<ul style="list-style-type: none"> <li>No data on number of mature individuals.</li> <li>Insufficient information to assess.</li> </ul>
D.	Very small or restricted population	<ul style="list-style-type: none"> <li>Population likely to be &gt;1000 mature individuals, not highly restricted and not capable of becoming CR or EX in a very short time period.</li> <li><b>Does not meet criteria for D.</b></li> </ul>
E.	Quantitative analysis	<ul style="list-style-type: none"> <li>Insufficient information to assess.</li> </ul>

<b>Outcome:</b>			
<i>Scientific committee Meeting date:</i>	WA Threatened Species Scientific Committee: 22 June 2016		
<i>Scientific committee comments:</i>	See attached summary evaluation statement. Assessed as near threatened.		
<i>Recommendation:</i>	Not eligible for list.		
<i>Ministerial approval:</i>	N/A	<i>Date of Gazettal/ Legislative effect:</i>	N/A

## Nomination summary *(to be completed by nominator)*

<b>Current conservation status</b>				
<b>Scientific name:</b>	<i>Lerista lineata</i>			
<b>Common name:</b>	Lined skink, Perth slider			
<b>Family name:</b>	Scincidae	Fauna <input checked="" type="checkbox"/>	Flora <input type="checkbox"/>	
<b>Nomination for:</b>	Listing <input checked="" type="checkbox"/>	Change of status <input type="checkbox"/>	Delisting <input type="checkbox"/>	
1. Is the species currently on any conservation list, either in a State or Territory, Australia or Internationally? 2. Is it present in an Australian jurisdiction, but not listed?		Provide details of the occurrence and listing status for each jurisdiction in the following table		
<b>Jurisdiction</b>	<b>State / Territory in which the species occurs</b>	<b>Date listed or assessed (or N/A)</b>	<b>Listing category i.e. critically endangered or 'none'</b>	<b>Listing criteria i.e. B1ab(iii)+2ab(iii)</b>
International (IUCN Red List)		N/A		
National (EPBC Act)		N/A		
State / Territory	1. WA Priority List	19/02/2004	Priority 3	Poorly-known
	2.			
	3.			
<b>Consistent with Schedule 1, item 2.7 (h) and 2.8 of the Common Assessment Method Memorandum of Understanding, it is confirmed that:</b>				
<ul style="list-style-type: none"> <li>this assessment meets the standard of evidence required by the Common Assessment Method to document the eligibility of the species under the IUCN criteria;</li> </ul>			Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<b>Comments:</b>				
<ul style="list-style-type: none"> <li>surveys of the species were adequate to inform the assessment;</li> </ul>			Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<b>Comments:</b>				
<ul style="list-style-type: none"> <li>the conclusion of the assessment remains current and that any further information that may have become available since the assessment was completed supports or is consistent with the conclusion of the assessment.</li> </ul>			Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<b>Comments:</b>	<p>The nominators recommended that the species be listed as B2b(ii,iii,iv)c(iii), however the Species and Communities Branch (SCB) believes that the species is better suited to B1+2ab(ii,iii,iv) based on the information provided by the nominators. SCB recalculated the total EOO based on 2kxm2km IUCN grid method for 2006-2015 records, but both the nominators and the SCB conclusions of the current EOO meet the same criteria.</p> <p>Species and Communities Branch have made an assumption on the number of locations to meet the nominated category of EN, alternatively the nominator does refer to severe fragmented of habitat remnants.</p>			

Nominated national conservation status: category and criteria		
Presumed extinct (EX) <input type="checkbox"/> Critically endangered (CR) <input type="checkbox"/> Endangered (EN) <input checked="" type="checkbox"/> Vulnerable (VU) <input type="checkbox"/>		
None (least concern) <input type="checkbox"/> Data Deficient <input type="checkbox"/> Conservation Dependent <input type="checkbox"/>		
What are the IUCN Red List criteria that support the recommended conservation status category?	B1+2ab(ii,iii,iv)	
Eligibility against the IUCN Red List criteria (A, B, C, D and E)		
Provide justification for the nominated conservation status; is the species eligible or ineligible for listing against the five criteria. For <b>delisting</b> , provide details for why the species no longer meets the requirements of the current conservation status.		
A.	Population size reduction (evidence of decline)	<ul style="list-style-type: none"> <li>It is estimated that there has been an 86% loss of remnant vegetation in the EOO (reported as AOO) over the last 50 years since extensive clearing for urban development began. However, there are no estimates for actual loss of habitat, nor of population size and population size decline.</li> <li>No information to assess</li> </ul>
B.	Geographic range (EOO and AOO, number of locations and evidence of decline)	<ul style="list-style-type: none"> <li>(B1) EOO is estimated to be between 962-1,072km<sup>2</sup> (calculated using MCP clipped to coastline, from Swan River to Binningup and Swan River to Busselton) or 3,000 - 5,000 km<sup>2</sup> (based on Bush <i>et. al.</i> (2010) distribution account; calculated using the area of a polygon extending 25km inland from Swan River to Binningup and Swan River to Busselton).</li> <li>(B2) AOO is estimated to be 120 km<sup>2</sup> (2kmx2km grid, 2006-2015 records) or 261 km<sup>2</sup> (records and remnant vegetation).</li> <li>(a) Past, present and future extensive land clearing for urbanisation and infrastructure development has led to small pockets of remnant habitat. Each isolated patch of habitat is separated by large distances and the species likely has poor dispersal capabilities. Therefore, the species' remaining habitat is considered to be highly fragmented. Additionally, based on geographic location and threats, the species is only found at 3 locations: <ul style="list-style-type: none"> <li>Mainland: ongoing threat of habitat loss and degradation due to urbanisation and infrastructure development.</li> <li>Garden Island: ongoing habitat degradation due to Defence activities</li> <li>Rottnest Island: ongoing habitat degradation due to tourism related activities</li> </ul> </li> <li>(b) (ii, iii) 86% of remnant vegetation in the EOO (reported as AOO) has been lost in the past 50 years, with declines continuing due to ongoing urban expansion and infrastructure development. The remaining vegetation is often highly modified and degraded, with further threats from weed infestation and bushfires. This would relate to a decline in available habitat, but not quantified. (iv) It is projected that the number of locations will progressively decline,</li> </ul>

		because ongoing vegetation clearing of the already highly fragmented habitat will result in local extinctions. • <b>Meets criteria for Endangered B1+B2ab(ii,iii,iv)</b>			
<b>C.</b>	Small population size and decline (population size, distribution and evidence of decline)	• It is estimated that there has been an 86% loss of remnant vegetation in the EOO (reported as AOO) over the last 50 years since extensive clearing for urban development began. However, there are no estimates of population size and population size decline. • No information to assess/does not meet criteria			
<b>D.</b>	Very small or restricted population (population size)	• There are no estimates of population size. • No information to assess/does not meet criteria			
<b>E.</b>	Quantitative analysis (statistical probability of extinction)	• No information to assess			
<b>Summary of assessment information</b>					
EOO	Approximately 3,000-5,000km <sup>2</sup> (based on Bush <i>et. al.</i> (2010) distribution account) (calculated using the area of a polygon extending 25km inland from Swan River to Binningup and Swan River to Busselton)  962-1,072km <sup>2</sup> (calculated using MCP clipped to coastline, from Swan River to Binningup and Swan River to Busselton)	AOO	120 km <sup>2</sup> (2kmx2km grid based on 2006-2015 records)  176 km <sup>2</sup> (2kmx2km grid based on 1996-2015 records)  261 km <sup>2</sup> (Maryan & Gaikhorst, 2016) (based on records and remnant vegetation)	Generation length	2 years
No. locations	Interpreted as 3 (mainland and two islands)	Severely fragmented	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>		
No. subpopulations	5	No. mature individuals	Unknown but declining		
Percentage global population within Australia			100%		
Percentage population decline over 10 years or 3 generations			86% loss of vegetation in EOO in the last 50 years, but not specific to habitat		
<b>Threats (detail how the species is being impacted)</b>					
Threat <i>(describe the threat and how it impacts on the species. Specify if the threat is past, current or potential)</i>		Extent <i>(give details of impact on whole species or specific subpopulations)</i>		Impact <i>(what is the level of threat to the conservation of the species)</i>	
Habitat loss and degradation • The species is largely restricted to the Swan Coastal Plain, mostly within the highly developed southern Perth Metropolitan Area.		Entire		Severe	

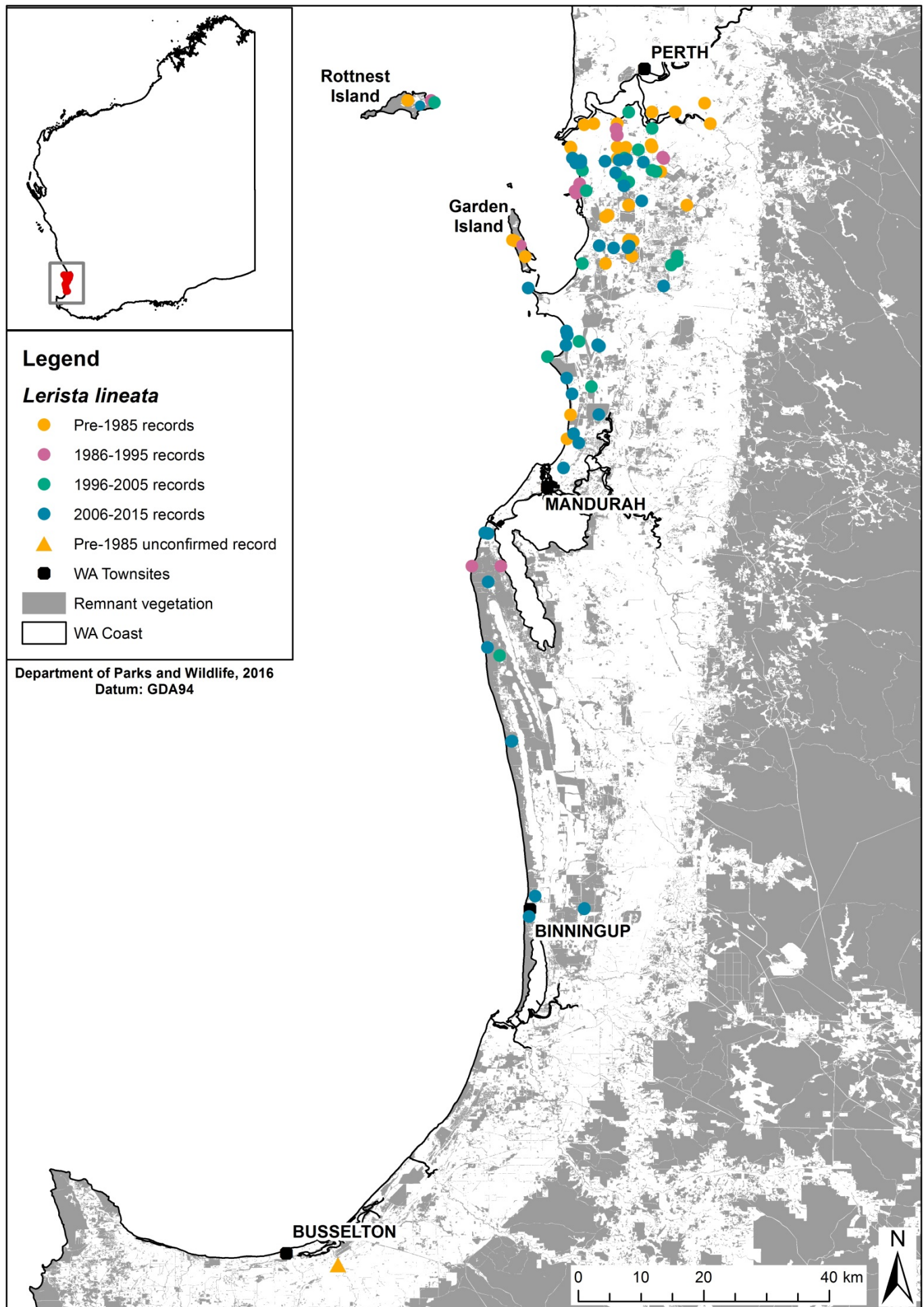
<ul style="list-style-type: none"> <li>• Extensive land clearing for urbanisation and infrastructure development has led to small pockets of remnant habitat which are highly fragmented and often have modified vegetation. The ongoing fragmentation and habitat loss is likely to result in local extinctions.</li> <li>• It is predicted that the metropolitan area will be home to 2.2 million people by 2026.</li> <li>• Past, present and future</li> </ul>		
<p>Increasing frequency and intensity of bushfires</p> <ul style="list-style-type: none"> <li>• The species likely has poor dispersal abilities and relies on litter ground cover and other debris for shelter, which makes it vulnerable to fire.</li> <li>• There has been an increase in purpose-lit fires in the Perth metropolitan area</li> <li>• Present and future</li> </ul>	Entire	Moderate to high
<p>Weed infestation</p> <ul style="list-style-type: none"> <li>• Further degradation of remaining habitat</li> <li>• Past, present and future</li> </ul>	Entire	Unknown
<p>Cat and fox predation</p> <ul style="list-style-type: none"> <li>• Past, present and future</li> </ul>	Mainland	Unknown
<b>Management and Recovery</b>		
Is there a Recovery Plan (RP) or Conservation Management Plan operational for the species?		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<p>List all relevant recovery or management plans (including draft, in-preparation, out-of-date, national and State/Territory recovery plans, recovery plans for other species or ecological communities, or other management plans that may benefit or be relevant to the nominated species).</p> <ul style="list-style-type: none"> <li>• N/A</li> </ul>		
<p>List current management or research actions, if any, that are being undertaken that benefit the conservation of the species.</p> <ul style="list-style-type: none"> <li>• Future taxonomic work to fully understand any levels of divergence between subpopulations.</li> <li>• Targeted surveys of species at significant areas of interest (e.g. Busselton area, Rottnest Island) to better define the species' current distribution</li> </ul>		
<p>List further recommended management or research actions, if any, that would benefit the conservation of the species.</p> <ul style="list-style-type: none"> <li>• Impose restrictions on and manage future clearing permits to prevent/reduce ongoing reduction and fragmentation of remaining habitat, particularly in the Perth Metropolitan area.</li> <li>• Improve quality of remnant habitat (including weed control and fire management) where significant subpopulations are located.</li> <li>• Ongoing cat and fox control</li> </ul>		

<b>Nomination prepared by:</b>	
<b>Contact details:</b>	
<b>Date submitted:</b>	25/03/2015 (submitted to Department of the Environment for EPBC Act listing)
<i>If the nomination has been refereed or reviewed by experts, please provide their names and contact details:</i>	
Dr Paul Doughty, WA Museum Dr Mike Bamford, Bamford Consulting	

Summary of subpopulation information (detailed information to be provided in the relevant sections of the form)						
Location (include coordinates)	Land tenure	Survey information: Date of survey and No. mature individuals	AOO	Site / habitat Condition	Threats (note if past, present or future)	Specific management actions
Swan Coastal Plain: Swan River to Mandurah	Various incl. freehold	2007-2015	94 km <sup>2</sup>	Extensive clearing and modification of remnant vegetation, highly fragmented	Habitat loss and degradation (past, present and future) Fire (present and future) Weed infestation (past, present and future) Cat and fox predation (past, present and future)	Manage future clearing permits Improve quality of remnant habitat Predator control
Swan Coastal Plain: Mandurah to Binningup	Various incl. National Park and freehold	2006-2015: very few records, not recorded at Yalgorup NP during recent surveys	146 km <sup>2</sup>	Vegetation within national park is in good condition, areas of extensive clearing and modification of remnant vegetation outside of NP	Habitat loss and degradation (past, present and future) Fire (present and future) Weed infestation (past, present and future) Cat and fox predation (past, present and future)	Manage future clearing permits Improve quality of remnant habitat Predator control
Swan Coastal Plain: Busselton	Various incl. freehold	1949 – 1 individual recorded but specimen not kept (i.e. cannot be confirmed).	0 km <sup>2</sup>	Extensive clearing and modification of remnant vegetation, highly fragmented	Habitat loss and degradation (past, present and future) Fire (present and future) Weed infestation (past, present and future) Cat and fox predation (past, present and future)	Manage future clearing permits Improve quality of remnant habitat Predator control
Garden Island	Department of Defence	1987 and 1995	10 km <sup>2</sup>	Extensive clearing and modification of remnant vegetation	Habitat loss and degradation (past, present and future)	Manage future clearing permits



					Fire (present and future) Weed infestation (past, present and future)	Improve quality of remnant habitat Predator control
Rottnest Island	Rottnest Island Authority	2015 – 3 individuals found	1 km <sup>2</sup>	Extensive clearing and modification of remnant vegetation	Habitat loss and degradation (past, present and future) Fire (present and future) Weed infestation (past, present and future)	Manage future clearing permits Improve quality of remnant habitat Predator control



**Figure 1:** Map of the historical and current distribution (Rottne Island, Garden Island, Swan Coastal Plain) of *Lerista lineata*, including the unconfirmed historical record in Busselton.

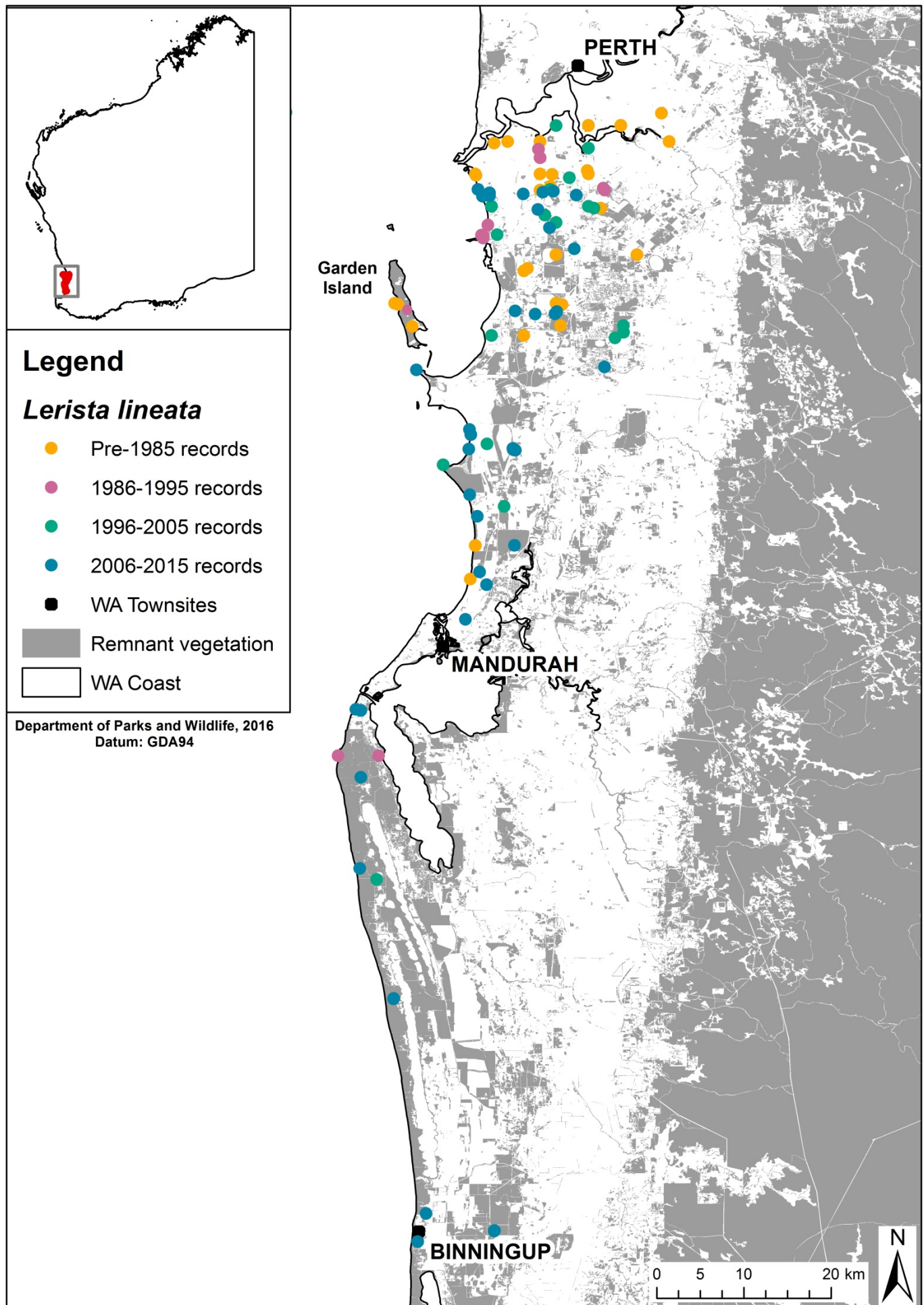
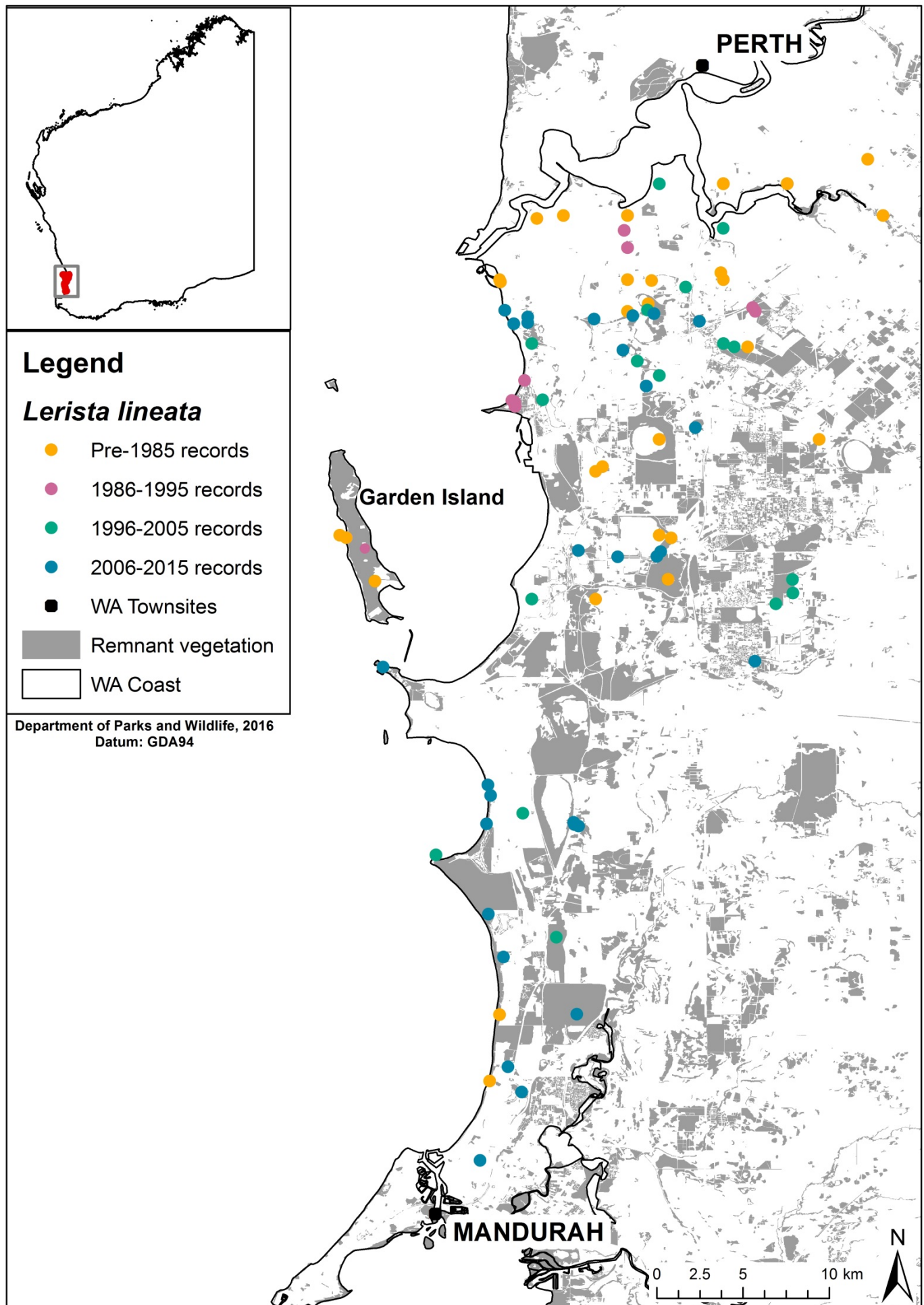


Figure 2: Map of current mainland distribution (Swan River to Binningup) of *Lerista lineata*.





**Figure 3:** Map of current mainland distribution (Swan River to Mandurah) of *Lerista lineata* showing details of the habitat loss and fragmentation.

## WESTERN AUSTRALIAN THREATENED SPECIES SCIENTIFIC COMMITTEE

### ***Lerista lineata*, lined skink. Nomination as Endangered**

*Lerista lineata* has been nominated as Endangered under the EPBC Act for consideration by the Commonwealth Threatened Species Scientific Committee. As the species is restricted to Western Australia, it has been referred under the Intergovernmental MOU to the Western Australian Threatened Species Scientific Committee (WATSSC) for assessment.

*Lerista lineata* has a small distribution on the southern Swan Coastal Plain, south of the Swan River and mostly near the coast. The nomination was under criterion B. The species does not meet criterion A (no data on population decline rate), criterion C (no data on number of mature individuals) or criterion D (population likely to be >1000 mature individuals, not highly restricted and not capable of becoming CR or EX in a very short time period).

EN under criterion B requires EOO <5000 km<sup>2</sup> and/or AOO <500 km<sup>2</sup>, no more than 5 locations or severely fragmented, and a continuing decline (extreme fluctuations is not relevant in this case). Vulnerable under criterion B requires EOO <20 000 km<sup>2</sup> and/or AOO <2000 km<sup>2</sup>, no more than 10 locations or severely fragmented, and a continuing decline

**EOO and AOO.** Using GIS Parks and Wildlife have estimated the EOO to be between 962 and 1072 km<sup>2</sup> (calculated using MCP clipped to coastline, from Swan River to Binningup (962 km<sup>2</sup>) and Swan River to Busselton (1072 km<sup>2</sup>) and the AOO is estimated to be 120 km<sup>2</sup> (2 km x 2 km grid, 2006-2015 records) or 261 km<sup>2</sup> (Maryan & Gaikhorst (2016) based on records and remnant vegetation). [The Busselton record is now considered unreliable and with no voucher, but its inclusion does not affect eligibility under criterion B.] Thus both EOO and AOO meet area thresholds for Endangered.

**Number of locations.** The nomination stated that there are 3 locations: 2 islands and the mainland. It also stated that on Rottnest Island *L. lineata* 'remains unrecorded for over two decades and has been previously documented 'locally extinct' (Storr 1984)'. However, NatureMap has a 2003 record from the Conservation Department, Rottnest Island Authority, and one of the nominators provided updated information that he had trapped three animals during a survey in 2015. For Garden Island the nomination states 'no recent surveys but recorded by Robinson et al. (1987); Brooker et al. (1995)'. Brooker et al. (1995) did use pitfall traps and detected *Lerista lineata* in 9 of 20 of their sites during Spring, suggesting that it was, at that time, reasonably widespread on the island.

Decisions on the number of locations are not straightforward where parts of the range have no significant threats. The over-riding threat driving the decline of *L. lineata* is land clearing, now mainly for urbanisation. Most of those parts of its range at Rottnest and Garden Islands and almost all of those parts of its range in conservation reserves and other protected areas on the mainland (Maps 1 to 4) have not and will not be cleared. Section 4.11 of the Red List Guidelines (version 12) state

When parts of the distribution are not affected by any threat, the following options will be appropriate under different circumstances: (a) number of locations is not used (i.e., the subcriteria that refer to the number of locations consequently are not met), especially if the unaffected area is more than half the taxon's range; (b) number of locations in the unaffected areas is set to the number of subpopulations in those areas, especially if there are several subpopulations; (c) the number of locations is based on the smallest size of locations in the currently affected areas; (d) the number of locations is based on the most likely threat that may affect the currently-unaffected areas in the future. In any case, the basis of the number of locations should be documented.

In this case (a) seems the most appropriate as more than half the species current range is unaffected by land clearing, being in conservation estate or areas proposed to be reserved under the 'Green Growth Plan'; therefore the number of locations cannot be used in the evaluation of the status of *L. lineata*.

Alternatives that could also be considered are (b) or (d) whereby the separate subpopulations are deemed to be separate locations (which may be impacted to a lesser degree by a range of factors such as recreation use, fire and introduced predators), which would then exceed the threshold limits for number of locations for EN or VU. So, whichever option is followed, the number of locations cannot be used to assign a threat category.

**Severely fragmented.** The term 'refers the situation in which increased extinction risk to the taxon results from the fact that most individuals are found in small and relatively isolated subpopulations ... These small subpopulations may go extinct with reduced probability of recolonization.' The nomination stated that the major threat to *Lerista lineata* is habitat loss, something with which WATSSC agrees. The nomination also stated 'As this species most likely has poor dispersal abilities and relies on litter ground cover and other debris for shelter the impact of intense and frequent bushfires may have a negative impact. We reiterate this point by highlighting the steady increase in deliberately-lit fires in the Perth metropolitan area which have been a frequent news topic'. WATSSC consulted Dr Richard How (recently retired from the WA Museum) who has surveyed reptiles in bush remnants near Perth and continues a long-term study of reptile communities at Bold Park. He advised that *L. lineata* occurred in several bush remnants near Perth including Mt Henry bushland (13 ha), Hartfield park (45 ha), Forrestdale Lake (45 ha), Jandakot Airport (c. 100 ha), Modong (155 ha) and Woodman Point (c. 170 ha), and that 'The immediate impacts of fire are devastating to litter-dwelling and arboreal reptiles... However, for fossorial forms, most escape the immediate impacts of fire and only after years, if ever, do their populations show a decline. That is the clear experience at Bold Park, where population recovery within the entire assemblage (25 spp.) took up to eight years'. [*Lerista lineata* does not occur at Bold Park as it is north of the Swan River; however, other *Lerista* species and other fossorial reptiles do.] This suggests that in Dr How's opinion fire will not cause an immediate reduction in population size for *L. lineata*. Clearly the species has survived fires over aeons; the question is whether it causes local extinctions in small vegetation remnants where re-invasion is unlikely. Noting that it has been detected in bush remnants as small as 13 ha (Mt Henry bushland has been isolated for many decades), this appears unlikely. There are no data to suggest that *L. lineata* is significantly impacted by introduced predators or recreational use of bush remnants.

*Lerista lineata* occurs in other bush remnants than those mentioned by Dr How, including Yalgorup National Park (Maps 1 to 4). While it is a fossorial species with limited reliance on migration and recolonization of subpopulations, most of the current range of *L. lineata* is in protected areas that will not be cleared and as these subpopulations do not appear under threat from fire, the species is not considered to be severely fragmented.

**Continuing decline.** Areas of remnant bush south of the Swan River continue to be cleared for urban development and some will be cleared under the 'Green Growth Plan'. As habitat loss is the major threat to *L. lineata*, WATSSC concludes that the species is affected by a recent, current and projected decline.

**Committee conclusion and recommendation.** WATSSC concludes that *Lerista lineata* does not meet criteria for Endangered or Vulnerable under criterion B. It possibly meets Near Threatened, as the Red List Guidelines state 'To qualify for the Near Threatened category, the taxon should be close to qualifying for the Vulnerable category. The estimates of population size or habitat should be close to the Vulnerable thresholds, especially when there is a high degree of uncertainty, or possibly meet some of the subcriteria'. In this case the species has a very restricted EOO and AOO and is subjected to a continuing decline and WATSSC therefore considers that its status is NT (approaching B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)).

The Committee recommends that *Lerista lineata* not be listed as threatened and remain on the Western Australian Priority Fauna List.