Petrodromus tetradactylus – Four-toed Sengi

Specialist Group web site and www.sengis.org for additional information.

This genus specifically is in need of a taxonomic revision that would assess the currently recognized 10 subspecies. Subspecies are characterised mainly by pelage colour and bristles under the tail. Two subspecies occur within the assessment region, *P. t. schwanni* in north-eastern Limpopo and *P. t. warreni* in northern KwaZulu-Natal. The subspecies in KwaZulu-Natal (*P. t. warreni*) lacks tail bristles, as opposed to other forms (Rathbun 2013). For general biological information, please consult Perrin and Rathbun (2013), Rathbun (2013) and Rathbun (2005).

### Assessment Rationale

This species is at the edge of its range within the assessment region where two disjunct subspecies occur: *P. t. schwanni* in north-eastern Limpopo and *P. t. warreni* in northern KwaZulu-Natal, both being restricted to intact riparian and coastal forest. The estimated area of occupancy for *P. t. schwanni* and *P. t. warreni*, based on remaining forest habitat, is 72 and 192 km² respectively. Although *P. t. warreni* at least may represent a South African endemic, further taxonomic resolution is required before we assess it separately. Overall, the species qualifies for Endangered B2ab(ii,iii,v) based on restricted area of occupancy (264 km² in South Africa) presumed small population size, and a continuing decline in woodland habitat as a result of human expansion over the past decade. In KwaZulu-Natal alone, there was a 7.6% loss of natural habitat from 2005 to 2011. As such, forest patches are likely to be severely fragmented, hindering dispersal of the species. Fragmentation further opens up forest patches for ongoing anthropogenic disturbances, such as incidental bushmeat hunting and removal of ground cover and thus represents a continuing decline in both mature individuals and habitat quality. However, the species occurs predominately in large, well-managed protected areas, including the Great Limpopo Transfrontier Park (*P. t. schwanni*) and the Lubombo Transfrontier Conservation Area (*P. t. warreni*), so net population decline is unlikely. Additionally, rescue effects are possible (see below). Thus we downlist to Near Threatened B2ab(ii,iii,v) The key intervention for this species is further protected area expansion (especially transfrontier expansion) and connection of remaining forest patches.

### Regional population effects

This species is the second-most widespread sengi in Africa, occurring from central and eastern Africa south to the north-eastern corner of South Africa. The assessment region thus represents the edge of its range. Although sengis are not long-distance dispersers, the presence of both subspecies in major transfrontier conservation areas, with presumably intact forest corridors, leads us to suspect rescue effects are possible. However, *P. t. schwanni* may represent a unique subspecies/species, in which case rescue effects are not possible. This should be investigated and may require reassessment.

### Taxonomy

*Petrodromus tetradactylus* (Peters 1846)

**ANIMALIA** - **CHORDATA** - **MAMMALIA** - **MACROSCELIDEA** - **MACROSCELIDIDAE** - *Petrodromus - tetradactylus*

**Common names:** Four-toed Sengi, Four-toed Elephant-shrew (English), Bosklaasneus (Afrikaans)

**Taxonomic status:** Subspecies

**Taxonomic notes:** In the past the single family was included in the order Insectivora, but now the family is in the monophyletic order Macroscelidea and the newly created super-cohort Afrotheria. Currently, there are 19 living species recognized in four genera. The soft-furred sengis or elephant-shrews include three genera: *Petrodromus* is monospecific, *Macroscelides* has three species, and *Elephantulus* contains 11 species. The four species of giant sengis belong to the genus *Rynchocyon*. The common name “sengi” is being used in place of elephant-shrew by many biologists to try and disassociate the Macroscelidea from the true shrews (family Soricidae) in the order Soricomorpha. See the IUCN SSC Afrotheria Specialist Group web site and www.sengis.org for additional information.

When alarmed they rapidly stamp their hind feet on the ground, which can be heard many metres away (Rathbun 2005).

<table>
<thead>
<tr>
<th>Regional Red List status (2016)</th>
<th>Near Threatened</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reasons for change</td>
<td>Non-genuine:</td>
</tr>
<tr>
<td></td>
<td>New information</td>
</tr>
<tr>
<td>Global Red List status (2015)</td>
<td>Least Concern</td>
</tr>
<tr>
<td>TOPS listing (NEMBA)</td>
<td>None</td>
</tr>
<tr>
<td>CITES listing</td>
<td>None</td>
</tr>
<tr>
<td>Endemic</td>
<td>Edge of Range</td>
</tr>
</tbody>
</table>

*Watch-list Data

When alarmed they rapidly stamp their hind feet on the ground, which can be heard many metres away (Rathbun 2005).
Distribution

This species is one of the most widespread sengis, occurring in forest, woodland, and thicket habitats in central and eastern Africa from DR Congo to northeastern South Africa. Their occurrence depends on the availability of suitable forest or woodland habitat with dense underbrush, which is discontinuous throughout their range (Skinner & Chimimba 2005). It is an edge-of-range species within the assessment region, occurring in woodland and forest habitats in Limpopo, KwaZulu-Natal and perhaps Swaziland. The subspecies Petrodromus tetradactylus warreni occurs in KwaZulu-Natal and may be a South African endemic form (Corbet & Hanks 1968), where their distribution is predominantly coastal (Rathbun 2005), whereas Petrodromus tetradactylus schwanni occurs in the riparian forests of the northern Limpopo and across the border to the north. Although it has not been recorded from Swaziland (Monadjem 1998), it may possibly occur there marginally in suitable forest habitats.

The estimated area of occupancy (AOO) globally is 2,485,700 km² based on censored minimum convex polygon with no consideration of fragmented habitat. The estimated global extent of occurrence is 5,700,000 km². Within the assessment region, the AOO is estimated to be 6,438 km² based on occupied grid cells. However, if we use forest and woodland areas as a proxy for occupied habitat (Mucina & Rutherford 2006), the estimated AOO for Petrodromus tetradactylus schwanni and Petrodromus tetradactylus warreni, based on remaining forest habitat, is 72 and 192 km² respectively; and thus 264 km² for the species overall.

Population

Although widespread, the species is often only locally common because it is restricted to closed-canopy forest, woodlands, and thickets. Little information is available on densities. In Afzelia habitat within Arabuko-Sokoke Forest (Kenya), the estimated density was 1.2 animals / ha (FitzGibbon 1995). Using this density for the estimate AOO within the assessment region yields 31,680 individuals. However, there is no evidence that it is abundant. For example, as there was no overlap between the home ranges of adjoining pairs in Tembe Elephant Park, KwaZulu-Natal, low population density was assumed (Oxenham & Perrin 2009). Further studies should be conducted to determine density estimates for both subspecies within the assessment region.

It often foot-drumms and thus attracts the attention of people in suitable habitat, but sightings are almost always...
of individuals. It builds and maintains characteristic and
distinct paths through the leaf litter that are often
composed of a straight series of clean oval patches, which
can be used as an indicator of presence.

**Current population trend:** Unknown

**Continuing decline in mature individuals:** Suspected

**Number of mature individuals in population:** < 31,680

**Number of mature individuals in largest subpopulation:** Unknown

**Number of subpopulations:** Unknown

**Severely fragmented:** Possibly, due to fragmentation of
forest habitats.

### Habitats and Ecology

Forest, dense woodlands, and thickets (Jennings & Rathbun 2001), where animals probably form
monogamous pairs (FitzGibbon 1995; Oxenham & Perrin
2009). They prefer habitats usually with surface leaf litter,
which makes it easy to identify their characteristic paths
that are usually composed of a straight line of oval bare
patches in the leaf litter. They are able to live in fallow
agricultural areas that have suitable cover and leaf litter,
invertebrates for food, and that are adjacent to
undisturbed habitats. They are omnivorous, but prey
mainly on invertebrates. This is the largest species of
sengi in the subregion (Rathbun 2005). They are active
during day and night and shelter in holes, termite mounds,
under fallen logs, hollow logs, patches of dense
underbrush or under roots of trees but do not build or use
nests (Jennings & Rathbun 2001). When alarmed they
rapidly stamp their hind feet on the substrate, which can
be heard many metres away, and may utter a loud shrill
squeak when in distress (Rathbun 2005). The common
name emanates from the fact that, unlike all other
members of the family, they have only four toes on their
hind feet.

### Ecosystem and cultural services:
None recorded.

### Use and Trade

FitzGibbon et al. (1995) documented subsistence hunting
in coastal Kenya, which is assumed to continue to the
present, but it is not known whether this species is hunted
in South Africa. Given the increase in the human
population along protected area edges in general
(Wittemyer et al. 2008), one could assume that hunting
pressure has increased, and may especially be prevalent
in KwaZulu-Natal where many rural communities surround
forest patches. However, bushmeat hunting of this species
may be lower than expected from relative density based
on model outputs (Rowcliffe et al. 2003).

### Table 2. Use and trade summary for the Four-toed Sengi (*Petrodromus tetradactylus*)

<table>
<thead>
<tr>
<th>Category</th>
<th>Applicable?</th>
<th>Rationale</th>
<th>Proportion of total harvest</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsistence use</td>
<td>Yes</td>
<td>May be opportunistically used in bushmeat</td>
<td>All</td>
<td>Unknown. Perhaps increasing with rural settlement expansion.</td>
</tr>
<tr>
<td>Commercial use</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Harvest from wild population</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Harvest from ranched population</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Harvest from captive population</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Table 3. Threats to the Four-toed Sengi (*Petrodromus tetradactylus*) ranked in order of severity with corresponding evidence (based on IUCN threat categories, with regional context)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Threat description</th>
<th>Evidence in the scientific literature</th>
<th>Data quality</th>
<th>Scale of study</th>
<th>Current trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.1 Housing &amp; Urban Areas: forest habitat loss and fragmentation from woodland clearing due to expanding human settlements.</td>
<td>Jewitt et al. 2015</td>
<td>Indirect</td>
<td>Regional</td>
<td>Continuing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GeoTerralmage 2015</td>
<td></td>
<td>National</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5.1.1 Intentional Use: opportunistic bushmeat hunting, especially around forest or protected area edges adjacent to rural communities.</td>
<td>FitzGibbon et al. 1995</td>
<td>Empirical</td>
<td>Regional</td>
<td>Possibly increasing with expansion of rural settlements and loss of woodland cover.</td>
</tr>
</tbody>
</table>

*The Red List of Mammals of South Africa, Lesotho and Swaziland*
Threats

There are no major identified threats range-wide, although habitat loss through woodland clearing and subsistence snaring may have impacts on local subpopulations in the assessment region. If we assume that both woodland clearing and subsistence hunting increase with rural population density and settlement expansion, it is suspected there is an ongoing loss of habitat and mature individuals, especially the forests of KwaZulu-Natal (see below).

Current habitat trend: Declining. Habitat loss is ongoing through woodland clearing, especially around protected area fringes (Wittemyer et al. 2008). There was a 7.6% loss of natural habitat from 2005 to 2011, with an average loss of 1.2% per annum in KwaZulu-Natal (Jewitt et al. 2015). Additionally, there has been an 8% and 1% increase in rural settlements in Limpopo and KwaZulu-Natal, respectively, between 2000 and 2013 (GeoTerraImage 2015).

Conservation

The species occurs in several protected areas (confirmed in northern Kruger National Park and protected areas in KwaZulu-Natal) within the assessment region, including Great Limpopo Transfrontier Park (P. t. schwanni) and the Lubombo Transfrontier Conservation Area (P. t. warreni). For example, they occur in Tembe Elephant Park (Oxenham & Perrin 2009), Isimangaliso Wetland Park and Bonamanzi Game Reserve. A comprehensive list of protected areas should be tallied. This species would benefit from protected area expansion to conserve woodland habitat and connect subpopulations existing in forest fragments. For example, a transfrontier conservation area in Maputaland that connects with the existing Lubombo Transfrontier Conservation Area has recently been proposed and would add 480 km² of linking corridors between forest habitats and potentially generate US$18.8 million from game ranching (Smith et al. 2008). Such a protected area network would undoubtedly benefit this species.

Recommendations for land managers and practitioners: Land owners and communities should reduce stocking rates to conserve undergrowth.

Research priorities:

- Field surveys to confirm occupancy rate across the assessment region. Continue to accumulate information on occurrence points (see www.sengis.org). Collect evidence to indicate population trends and status of habitats.
- Genetic and phenotypic analyses to determine whether, if any, species-complexes are present across its distribution south of the Sahara.
- Studies to determine the extent and impact of snaring in South Africa.

Encouraged citizen actions:

- Landowners can create conservancies to protect woodland habitat.

References


GeoTerraImage. 2015. Quantifying settlement and built-up land use change in South Africa.


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Details of the methods used to make this assessment can be found in Mammal Red List 2016: Introduction and Methodology.