

Bradypodion pumilum, Cape Dwarf Chameleon

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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Reptilia	Squamata	Chamaeleonidae

Taxon Name: *Bradypodion pumilum* (Gmelin, 1789)

Synonym(s):

- *Lacerta pumila* Gmelin, 1789

Common Name(s):

- English: Cape Dwarf Chameleon

Taxonomic Notes:

Until about a decade ago some authors were still of the opinion that most populations of *Bradypodion* were subspecies of *B. pumilum* (Klaver and Böhme 1997, Nečas 2004). However, it is now commonly accepted that most of these are valid species (Branch 1998, Tolley *et al.* 2004, Tolley and Burger 2007). In addition, *B. pumilum* was considered to be represented only by the colourful morph typical of the Cape Town area. Other dwarf chameleons on the periphery of its distribution were of uncertain taxonomic status, but subsequent genetic studies (Tolley *et al.* 2006) showed that these should be considered as ecomorphs of *B. pumilum*. At least two ecomorphs exist: 'typical' (closed habitat) and 'fynbos' (open habitat). Hopkins and Tolley (2011) found that natural selection in open habitats limited body size as well as conspicuous features such as bright colours, while sexual selection in closed habitats favoured the development of ornamentation related to display. The 'renosterveld' morph (Tolley and Burger 2007) may actually be a hybrid between *B. pumilum* and *B. occidentale* (K.A. Tolley unpubl. data).

Assessment Information

Red List Category & Criteria: Vulnerable B1ab(i,ii,iii,v) [ver 3.1](#)

Year Published: 2017

Date Assessed: May 16, 2013

Justification:

Considered Vulnerable because of its restricted range (EOO = 13,407 km²), coupled with a continuing decline in size and quality of habitat and (by inference) the number of mature individuals [B1b(i,ii,iii,v)], and the fact that subpopulations in transformed areas are highly fragmented [B1a] and essentially isolated from subpopulations in protected areas. Chameleons in some fragmented areas are known to be genetically bottlenecked and gene flow between subpopulations is restricted (K.P. Hopkins and K.A. Tolley unpubl. data), decreasing the potential for recovery. In addition, climate model projections using the Intergovernmental Panel on Climate Change A2 and B2 scenarios (Houniet *et al.* 2009) suggest that this species could suffer a 60% loss in climatically suitable habitat in the 100 years. Although about 1,300 km² of its range is within protected areas (Driver *et al.* 2005), the remaining habitat is severely fragmented and transformed through urbanisation. In these impacted areas, some small, densely populated patches are known but these probably represent refuges. Chameleons of this species also

occur in some urban gardens. In the past, such records were numerous, but recent anecdotal information indicates that these occurrences have become relatively rare. This suggests that the majority of the urban environment (and thus, the majority of the distribution) is sparsely populated and that this species is in a population decline in these fragmented urban areas (although no quantitative assessment has been conducted).

Geographic Range

Range Description:

Endemic to the southwestern corner of the Western Cape, South Africa, extending eastwards onto the Agulhas plain (Tolley and Burger 2007). Introduced subpopulations in Namibia and Clanwilliam (Branch 1998) have not been re-discovered in recent years.

Country Occurrence:

Native: South Africa (Western Cape)

Population

The population is inferred to be decreasing and severely fragmented due to substantial urbanisation within this species distribution.

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

Occurs in a variety of habitats including fynbos, renosterveld, thicket, riparian vegetation and some exotic and native trees. Ecomorphs inhabit different vegetation types. The typical colourful form is often found in urban gardens, in the canopy of forest patches and in bushes and thicket. The fynbos form is associated with the montane and lowland fynbos of the Western Cape, while the renosterveld form is known from remnant patches of renosterveld north and west of Cape Town (Tolley and Burger 2007). This species is generally absent from agricultural landscapes (e.g. Tolley and Measey 2007).

Systems: Terrestrial

Use and Trade

Because of the colourful appearance of this chameleon, it is sought after locally and nationally as a pet. It is commonly taken from the wild by the public, despite this practice being illegal in the Western Cape (the province to which it is endemic). The CITES trade database indicates minimal numbers have been exported from South Africa over the last decades for pet trade (CITES 2013).

Threats (see Appendix for additional information)

The greatest current threat to this species is environmental change, primarily in the form of habitat loss and transformation through urbanisation and agricultural sprawl. According to the National Spatial Biodiversity Assessment (Driver *et al.* 2005), well over 50% of the historical natural habitat of *Bradypodion pumilum* is presently transformed. Although this species can persist in some fragments of the urban setting, it generally does not tolerate altered environments (e.g. Tolley and Measey 2007). Global climatic change model predictions using the 'worst case scenario' predict that the species' range will be reduced by about 50% by 2050 (Houniet *et al.* 2009). Although part of the range is in fire-prone habitat, the increased frequency of fires due to anthropogenic influences will impact it negatively. This is compounded by other threats such as predation by domestic cats in urban and rural settings, and deliberate translocation of chameleons. *Bradypodion pumilum* is popular with the general public as a pet, despite this being prohibited by conservation legislation. Specimens are often captured at one locality and released elsewhere, sometimes within the range of another chameleon species. This practice is of particular conservation concern because it leads to the mixing of gene pools among subpopulations and may result in hybridisation.

Conservation Actions (see Appendix for additional information)

Formulate and implement a Biodiversity Management Plan. Given that habitat loss, fragmentation and transformation are the most serious threats to *Bradypodion pumilum*, manage its remaining habitat wisely. Its new status of Vulnerable should influence future environmental impact assessments and the design and management of urban green areas and larger nature reserves. Conduct baseline studies investigating the dispersal abilities of this chameleon; these will be useful for making recommendations

regarding the linking of existing habitat fragments that promote dispersal and interbreeding. Conduct additional genetic studies mapping the presence and frequency of bottlenecked populations, to contribute to an understanding of the effects of fragmentation, and the formulation of a recovery plan within the urban environment. Focus public awareness on the negative impacts of translocating chameleons and encourage the planting of chameleon-friendly gardens to increase and link remaining suitable habitat. Extend this campaign to include public contributions of survey data to map the distribution (presence/absence) of chameleons in the urban environment.

Credits

Assessor(s): Tolley, K.

Reviewer(s): Bauer, A.

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External Resources

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Appendix

Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Habitat	Season	Suitability	Major Importance?
14. Artificial/Terrestrial -> 14.5. Artificial/Terrestrial - Urban Areas	-	Suitable	-
14. Artificial/Terrestrial -> 14.4. Artificial/Terrestrial - Rural Gardens	-	Suitable	-
3. Shrubland -> 3.8. Shrubland - Mediterranean-type Shrubby Vegetation	-	Suitable	-
1. Forest -> 1.9. Forest - Subtropical/Tropical Moist Montane	-	Suitable	-

Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	Unknown	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
1. Residential & commercial development -> 1.2. Commercial & industrial areas	Ongoing	Unknown	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	Ongoing	Unknown	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.3. Agro-industry farming	Ongoing	Unknown	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.2. Small-holder grazing, ranching or farming	Ongoing	Unknown	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.1. Unspecified species	Ongoing	Unknown	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		

Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions in Place
In-Place Land/Water Protection and Management
Occur in at least one PA: Yes
In-Place Education
Included in international legislation: Yes
Subject to any international management/trade controls: Yes

Conservation Actions Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions Needed
1. Land/water protection -> 1.1. Site/area protection
2. Land/water management -> 2.1. Site/area management
2. Land/water management -> 2.3. Habitat & natural process restoration
3. Species management -> 3.2. Species recovery
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.1. International level
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.3. Sub-national level

Research Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Research Needed
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.3. Life history & ecology
1. Research -> 1.5. Threats
1. Research -> 1.6. Actions
2. Conservation Planning -> 2.1. Species Action/Recovery Plan
3. Monitoring -> 3.1. Population trends
3. Monitoring -> 3.4. Habitat trends

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km ²): 3366
Continuing decline in area of occupancy (AOO): Yes
Estimated extent of occurrence (EOO) (km ²): 13407
Continuing decline in extent of occurrence (EOO): Yes
Population
Continuing decline of mature individuals: Yes
Population severely fragmented: Yes
No. of subpopulations: 4
Continuing decline in subpopulations: Yes
All individuals in one subpopulation: No
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 3-4

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