

## *Bitis gabonica*, Gaboon Viper

Assessment by: Luiselli, L. *et al.*



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## Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Reptilia	Squamata	Viperidae

**Scientific Name:** *Bitis gabonica* (Duméril, Bibron & Duméril, 1854)

**Synonym(s):**

- *Cerastes gabonica* (Duméril, Bibron & Duméril, 1854)
- *Echidna gabonica* Duméril, Bibron & Duméril, 1854

**Common Name(s):**

- English: Gaboon Viper, Gaboon Adder

**Taxonomic Source(s):**

Uetz, P., Freed, P. and Hošek, J. (eds). 2021. The Reptile Database. Available at: <http://www.reptile-database.org>. (Accessed: 1 June 2021).

**Taxonomic Notes:**

Molecular studies have indicated that the disjunct South African subpopulation is not substantially divergent from subpopulations to the north (W. Wüster and A. Barlow unpubl. data, 2007). The South African subpopulation is also morphologically similar to the closest subpopulation in Zimbabwe/Mozambique (e.g. Broadley 1990). The lack of genetic differentiation suggests that *Bitis gabonica* once had a large and continuous distribution that was fragmented only relatively recently, resulting in various isolated subpopulations such as the one in southern Africa. This subpopulation should be considered regionally important in terms of the overall conservation of the species and the maintenance of genetic variability. *Bitis rhinoceros* of West Africa is now treated as a full species and not a subspecies of *B. gabonica*, rendering the latter monotypic (Lenk *et al.* 2001).

## Assessment Information

**Red List Category & Criteria:** Vulnerable A2abd [ver 3.1](#)

**Year Published:** 2021

**Date Assessed:** October 24, 2019

**Justification:**

This species is considered to be Vulnerable due to population declines provisionally estimated to be as much as to 30% globally over the past 15-18 years (three generations) (particularly in Nigeria and the Democratic Republic of the Congo), based on inference both from reported rates of direct decline and from levels of exploitation for bushmeat and traditional medicine, and because the known causes of decline have not ceased.

## Geographic Range

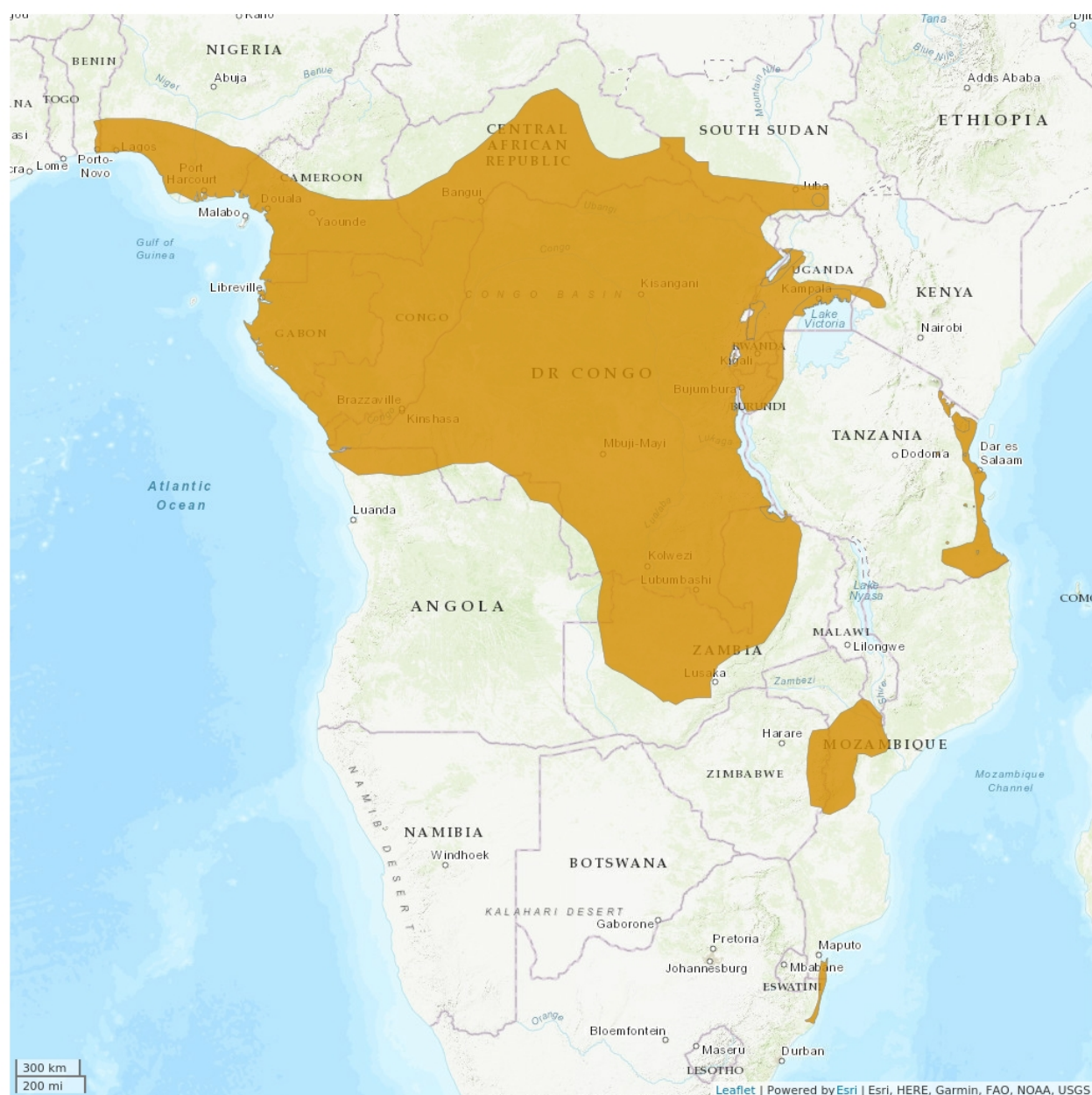
**Range Description:**

This species ranges from Nigeria to the Democratic Republic of the Congo (DRC) and Uganda, with sporadic records in South Sudan and disjunctly further east in Uganda, Kenya and eastern Tanzania, south to Angola and Mbala in Zambia (Spawls *et al.* 2018, Chippaux 2006, Penner *et al.* 2008, Warner 2009). Apparently isolated subpopulations occur in southeastern Africa as far south as coastal areas of northern Zululand (in eastern South Africa) (Branch 1998, Warner 2009). Along Africa's west coast, its range extends as far south as Gabon. West of the coastal savanna zone of Benin, it is replaced by the former subspecies *Bitis rhinoceros* (Chippaux 2006). Along Tanzania's east coast, it is restricted to coastal and montane forest fragments (L. Luiselli, J. Beraduccii, K. Howell, C.A. Msuya and W. Ngalason pers. comm.). It is found from sea level to 2,100 m asl. (Spawls *et al.* 2018).

**Country Occurrence:**

**Native, Extant (resident):** Angola; Benin; Congo; Congo, The Democratic Republic of the; Gabon; Kenya; Mozambique; Nigeria; South Africa (KwaZulu-Natal); South Sudan; Tanzania, United Republic of; Uganda; Zambia; Zimbabwe

# Distribution Map

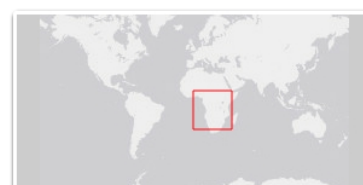


## Legend

■ EXTANT (RESIDENT)

## Compiled by:

IUCN (International Union for Conservation of Nature) and Conservation International 2019



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.

## Population

Within Central Africa, populations of this snake are believed to be declining, most especially close to urban or populated areas. A long-term study investigating the population trends of this species at Nigerian sites between 1995 and 2010 revealed a severe, rapid decline in a local subpopulation of this snake. Comparisons of mean numbers of individuals recorded annually at four well-protected sites between the "pre-crash" period (1994-1999) and those several years later (2005-2008) indicated a decline of 78.7 (males) - 81.9% (females) between 1999 and 2003, with no evidence of subsequent recovery (Reading *et al.* 2010). The causes of this decline cannot be established from these data (Reading *et al.* 2010), and consequently it is not clear whether these results can be extrapolated more broadly. As this study compared multiple snake species from varied geographic regions, and reported similar trends in most (Reading *et al.* 2010), it is likely that this reflects genuine decline rather than a natural fluctuation in this particular subpopulation. Anecdotal evidence from other sites in Nigeria report similar findings, but more robust data are needed to confirm these trends (G. Akani and L. Luiselli unpubl. data). This species is subject to pressure both on its habitat and directly on its population, and so while the scale of declines cannot be inferred with any certainty, the species is considered to be declining, at a rate provisionally thought likely to have been between 30-50% over the preceding three generations (generation length being a minimum of 5 years, the youngest age at which females mature; in South Africa generation length was estimated to be 6-8 years). The South African subpopulation is estimated to number between 2,000 and 3,500 mature individuals (Warner 2009); as most of the species' distribution in this country is protected its population here is presumed to be stable.

**Current Population Trend:** Decreasing

## Habitat and Ecology (see Appendix for additional information)

This nocturnal snake is found in moist and dry forests, including mature as well as secondary forests and forest-plantation mosaics consisting of Guinean savanna, rainforest and anthropogenic habitats (including both subsistence and agro-industrial plantations). Even gardens in towns surrounded by forest may be inhabited (Chippaux 2006, Luiselli and Akani 1999, Pauwels and Vande Weghe 2008). The snake is, however, more closely tied to rainforest habitats than most congeners (Bombi *et al.* 2011), and is lost rapidly from areas with no nearby forest or bush cover (L. Luiselli pers. comm. 2012). The South African subpopulation occurs mainly in coastal dune forest which occurs as a strip only a few kilometres wide along the coastline (Warner 2009).

This species feeds mainly on small mammals, however lizards, birds and frogs are also consumed by this snake (Luiselli and Akani 2003). It can eat even small forest antelopes (L. Luiselli and G. Akani, unpubl. data 2010). It is viviparous, giving birth to 13-15 young (Luiselli *et al.* 1998, Chippaux 2006). A precise estimate of generation length is unavailable, however females mature at 5-8 years of age (with reproduction taking place every 2-3 years) and males at 4-6 (L. Luiselli unpubl. data). Generation length is therefore a minimum of five years, but is likely to be somewhat longer (6-8 years).

**Systems:** Terrestrial

## Use and Trade

This species is found in the international pet trade; in Europe it was marketed at a low to moderate price for a snake, and it is not in high demand (J. Penner pers. comm. 2012). It was found advertised for sale

in larger numbers than any other African snake by Jensen *et al.* (2019), but numbers involved were low for such a widespread animal (235 individuals advertised for export between 2013 and 2017, across nine range states). It is widely-eaten by communities within its range, being a popular bushmeat in West and Central Africa, and is also used as a fetish and, heavily, in traditional medicine.

## **Threats (see Appendix for additional information)**

This species is exploited for the international pet trade (Auliya 2003), where it fetches moderate prices, but demand for vipers is limited and this is not a major threat. It is heavily harvested for food and sold in bushmeat markets, as well as for traditional medicine, and is one of the most prized species for both purposes in West Africa (L. Luiselli pers. comm. 2012). The skins of this species are also used for leather-type purposes (wallets, shoes, etc.). Habitat loss due to large-scale monocultures and plantation agriculture is an additional pressure, as this species cannot survive in areas without some native vegetation, and suitable ecotonal habitats are increasingly uncommon across much of this snake's range (L. Luiselli pers. comm. 2012). The causes of decline identified by Reading *et al.* (2010) in well-protected reserves in Nigeria are unclear, but while the habitat at these sites is protected, there may be some illegal harvest of animals (L. Luiselli pers. comm. 2012). Although modelling suggests that climate change will lead to an increase in the area of southern Nigeria and Cameroon climatically suitable for this species (Bombi *et al.* 2011), these models do not account for factors such as prey availability or competitive exclusion by other taxa (Bombi *et al.* 2011). In DRC there are reports of disease (porocephalus) causing localised loss of populations.

## **Conservation Actions (see Appendix for additional information)**

This species is not listed in the CITES Appendices, despite some demand in the specialist reptile market. Both international trade and harvesting for bushmeat should be monitored and possibly controlled with the imposition of quotas. Habitat loss should be limited. This species is found in protected areas, although population declines have been reported despite this protection (Reading *et al.* 2010). Molecular phylogenetic research on the different subpopulations is required.

## **Credits**

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**Authority/Authorities:** IUCN SSC Viper Specialist Group

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## Citation

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## Appendix

### Habitats

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

Habitat	Season	Suitability	Major Importance?
1. Forest -> 1.5. Forest - Subtropical/Tropical Dry	Resident	Suitable	-
1. Forest -> 1.6. Forest - Subtropical/Tropical Moist Lowland	Resident	Suitable	Yes
1. Forest -> 1.7. Forest - Subtropical/Tropical Mangrove Vegetation Above High Tide Level	-	Suitable	-
1. Forest -> 1.8. Forest - Subtropical/Tropical Swamp	Resident	Suitable	-
2. Savanna -> 2.1. Savanna - Dry	Resident	Suitable	-
3. Shrubland -> 3.6. Shrubland - Subtropical/Tropical Moist	-	Suitable	-
4. Grassland -> 4.5. Grassland - Subtropical/Tropical Dry	-	Suitable	-
4. Grassland -> 4.6. Grassland - Subtropical/Tropical Seasonally Wet/Flooded	-	Suitable	-
14. Artificial/Terrestrial -> 14.2. Artificial/Terrestrial - Pastureland	Resident	Marginal	-
14. Artificial/Terrestrial -> 14.3. Artificial/Terrestrial - Plantations	Resident	Marginal	-
14. Artificial/Terrestrial -> 14.4. Artificial/Terrestrial - Rural Gardens	Resident	Marginal	-

### Use and Trade

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

End Use	Local	National	International
1. Food - human	Yes	No	No
3. Medicine - human & veterinary	No	No	Yes
12. Handicrafts, jewellery, etc.	Yes	No	No
13. Pets/display animals, horticulture	No	No	Yes

### 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	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		

2. Agriculture & aquaculture -> 2.2. Wood & pulp plantations -> 2.2.2. Agro-industry plantations	Ongoing	Unknown	Rapid declines	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	-	-	Low impact: 3
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
4. Transportation & service corridors -> 4.1. Roads & railroads	Ongoing	-	-	Low impact: 3
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.1. Intentional use (species is the target)	Ongoing	Majority (50-90%)	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
7. Natural system modifications -> 7.1. Fire & fire suppression -> 7.1.1. Increase in fire frequency/intensity	Ongoing	-	-	Low impact: 3
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		

## Conservation Actions in Place

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

<b>Conservation Action in Place</b>
In-place land/water protection
Occurs in at least one protected area: Yes
In-place education
Included in international legislation: No

## Conservation Actions Needed

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

<b>Conservation Action Needed</b>
2. Land/water management -> 2.1. Site/area management
3. Species management -> 3.1. Species management -> 3.1.1. Harvest management
3. Species management -> 3.1. Species management -> 3.1.2. Trade management

## Research Needed

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

<b>Research Needed</b>
1. Research -> 1.1. Taxonomy
1. Research -> 1.4. Harvest, use & livelihoods
3. Monitoring -> 3.2. Harvest level trends
3. Monitoring -> 3.3. Trade trends

## Additional Data Fields

<b>Distribution</b>
Lower elevation limit (m): 0
Upper elevation limit (m): 2,100
<b>Habitats and Ecology</b>
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 5-8,6
Movement patterns: Not a Migrant

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