



Pyxis planicauda

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Taxonomy:

Kingdom ANIMALIA Phylum CHORDATA
Class REPTILIA Order TESTUDINES
Family TESTUDINIDAE

Scientific Name: *Pyxis planicauda*

Species Authority: (Grandidier, 1867)

Common Name/s:

English – Flat-tailed Tortoise, Madagascar Flat-shelled Tortoise, Flat-backed Spider Tortoise, Flat-shelled Spider Tortoise

French – Pyxide à dos plat, Pyxide à queue plate

Spanish – Tortue de Cola Plana

Synonym/s:

Acinixys planicauda (Grandidier, 1867)

Testudo morondavaensis Vuillemin, 1972

Testudo planicauda Grandidier, 1867

Assessment Information:

Red List Category & Criteria:

Critically Endangered A4acd ver 3.1

Year Published: 2008

Date Assessed: 2008-01-15

Assessor/s: Leuteritz, T., Randriamahazo, H. & Lewis, R. (Madagascar Tortoise and Freshwater Turtle Red List Workshop)

Reviewer/s: Rhodin, A. & Mittermeier, R.A. (IUCN SSC Tortoise & Turtle Freshwater Turtle Red List Authority)

Justification:

Pyxis planicauda has suffered a minimum of 32% essential habitat loss during the period 1963-1993, and habitat loss rates continue at a similar level, leading to a compound habitat loss of well over 70% in a three generation period. This habitat impact was compounded by the removal of at least 20-25% of the total estimated population of adults in the three-year period 2000-2002. Combined, this indicates a minimum of 60% population decline in the past two generations, with a further 30% anticipated for the next generation, qualifying the species as Critically Endangered under criterion A4acd. Population modelling predicting extinction before 2030 is no longer applicable as some of the the modelling assumptions are no longer operational.

History:

1996 – Endangered (Baillie and Groombridge 1996)

1994 – Indeterminate (Groombridge 1994)

1990 – Indeterminate (IUCN 1990)

1988 – Indeterminate (IUCN Conservation Monitoring Centre 1988)

1986 – Indeterminate (IUCN Conservation Monitoring Centre 1986)

Geographic Range:

Range Description: This species mainly occurs in fragments of dry deciduous forest in the region of Menabe between the Morondava and Tsiribihina Rivers. However, a small subpopulation occurs north of the Tsiribihina Rivers (Behler et al. 1993, Bloxam et al. 1993, Goetz et al. 2003).

At the 2001 Conservation Assessment and Conservation Planning (CAMP) workshop, *P. planicauda*'s extent of occurrence was estimated as less than 5,000 sq. km, and total area of occupancy was estimated as under 500 sq.km (CBSG 2001).

Countries: Native: Madagascar

Range Map: See Figure.

Population:

Based on density estimates, habitat reduction and trade figures it is believed that the total population of *P. planicauda* is less than 10,000 animals (Anonymous 2001). Recent surveys yield a calculated total population of over 16,000 animals, but the methodology used requires further data to confirm this number.

Summary of various *P. planicauda* studies (from CITES AC18 Doc. 7.1, 2002):

1991 - Kirindi - 8 km² surveyed - tortoises encountered on 54 occasions - 6.75 per km², but no data on recaptures — Quentin and Hayes (1991).

1996 - Kirindi - 20 km² / 20,000 ha surveyed - 12 tortoises in 11 days, 83% recapture - 0.6/km² — Bloxam et al. (1996). "main forest block":

- 0.5/ha (50/km²) — Durbin and Randriamanampisoa (2000).

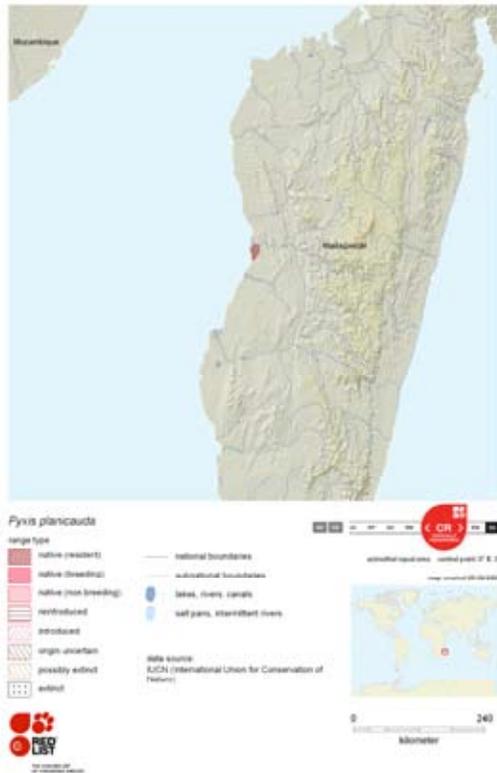
- 2-6/ha (200-600/km²) — Durbin and Randriamanampisoa (2000, as cited in CITES Proposal 12.55)

- 1/ha (100/km²) — Kuchling in litt. 2001, Rakotombololona (2001 cited in Rakotombololona & Durbin in litt. to SSC Wildlife Trade Programme, 23 Nov 2001).

Population Trend: Decreasing.

Habitat and Ecology:

The forests inhabited by *Pyxis planicauda* grow on loose sandy soils and the tortoises take refuge amongst the leaf



litter of the forest floor. They burrow and are inactive in leaf litter during dry season (late May through October), but become active in the wet season. They are crepuscular and seek shelter during mid-day (Durrell et al. 1989, Rakotombololona 1998, Gibson and Buley 2004). Tortoises feed on fallen fruits such as *Breonia perrieri* and *Aleathus greveanus* (Glaw and Vences 1994, Gibson and Buley 2004). Fungi and fallen flowers have also been reported as diet items (Goetz et al. 2003).

Adult *P. planicauda* reach a carapace length of 13.7 cm (Ernst et al. 2000) to 14.8 cm (Pedrono 2008). Based on information from Durrell Wildlife breeding center in northwestern Madagascar females do not reach maturity until ten years of age. Generation time was estimated at the 2008 Madagascar Tortoise and Freshwater Turtle workshop as at least 25 years. Mating occurs in the first half of the wet season and females produce 1-3 single egg clutches in the latter half of the wet season (Goetz et al. 2003, Pedrono 2008). Observation of nests in the wild, show incubation periods of 250-340 days (Razandrimilafinarivo et al. 2000).

Systems: Terrestrial.

Major Threat(s):

Pyxis planicauda is exclusively associated with closed-canopy dry forest and its major threat comes from habitat loss, particularly from burning and clearing for agricultural lands/cattle grazing, highway development, mining, and petroleum exploration (Tidd et al. 2001, Goetz et al. 2003, Bonin et al. 2006). Analyses of satellite imagery by Tidd et al. (2001) between 1963 and 1993 showed a

32% reduction in the primary dry forests. Deforestation rates have increased, and up to 50% of the 76,000 ha remaining in the southern portion of the tortoises range may be destroyed before 2010. A 50% reduction in the remaining 73,000 ha of habitat in the northern portion of its known range may occur by 2040 (Tidd et al. 2001), for a combined forest habitat loss estimated at over 70% in the period 1963-2040. Similar deforestation rates were documented by Harper et al. (2007).

Secondary pressure comes from collection for the pet trade (Goetz et al. 2003, Bonin et al. 2006); a pulse of exploitation for pet trade export removed about 4,000 adult animals during 2000 to 2002, representing 20 to 40% of the total number of adults (depending on total population estimates). The reproductive capacity and recruitment potential of this species are particularly low, even by tortoise standards.

The species is not consumed locally or traded locally-regionally.

Population modelling at the 2001 CAMP workshop (CBSG 2001) predicted extinction before 2030 based on rates of habitat loss and pet trade collection then in effect, but legal export trade is no longer permitted and thus the modelling assumptions are no longer valid.

Pyxis planicauda was recommended to be listed as Critically Endangered (CR A3acd + B1b) at the 2001 CAMP workshop (CBSG 2001).

Conservation Actions:

In 2003, *P. planicauda* was uplisted to CITES Appendix I from Appendix II (in which the tortoise had been listed since 1977; UNEP-WCMC 2007). This is generally perceived to have reduced exploitation of the species. The tortoise is protected nationally by Ordinance No. 60-126 of 3 October 1960, which regulates hunting and fishing and provides for the protection of nature, but the problem is that it is not stated what level of protection this legislation affords to *P. planicauda*, or how this is enforced (CITES AC18 Doc. 7.1, 2002).

The tortoise is protected at three sites within its range. It is protected in the special reserve of Andranomena 6,420 ha and in the Sites of Biological Interest of (1) Analabe 2,000-12,000 ha and (2) the Kirindy Forest (Morondava) 100,000 ha by private or local interests [CFPF] (Nicoll and Langrand 1989).

Pyxis planicauda is bred at the Durrell Wildlife chelonian captive breeding centre in Ampijoroa (Razandrimilafinarivo et al. 2000) and at a number of zoos around the world.

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