GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Anolis extremus***

Anolis extremus **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Reptilia		Polychrotidae

Common name zanndoli (English, Saint Lucia), Barbados anole (English)

Synonym *Anolis roquet* , var. *extremus* Garman, 1887
Anolis roquet extremus , Grant, 1959
Anolis roquet extremus , Schmidt, 1970
Anolis extremus , Schwartz & Henderson, 1991

Similar species

Summary Native to Barbados, *Anolis extremus* is a fairly large anole capable of competing with and / or displacing both native and other introduced anole lizards. This is best illustrated on St. Lucia where the native *A. luciae* has been displaced from urban and suburban locations. However, the limited distribution of *A. extremus* on St. Lucia has prevented it from becoming a serious threat.

view this species on IUCN Red List

Species Description
Anolis extremus is a fairly large, arboreal anole, with males growing up to 85 mm from snout to tail-base (Daltry, 2009). Colour is mossy green with dark brown or black markings and sometimes pale spots, mainly in the front half of the body. The front half may also have a lavender or grey hue with the head being blue grey or lavender (Daltry, 2009). Males have a dark ring around the eye and a yellow or orange dewlap with greenish scales (Daltry, 2009). Females are smaller, growing up to 60 mm from snout to tail-base. Colours are similar but duller and there may be a striped or obsolete pattern down the spine (Daltry, 2009).

Notes
Anolis extremus is one of three introduced anole species present on Bermuda, along with Graham's anole (see *Norops grahami*) and the Barbuda Bank tree anole (see *A. leachii*) (Wingate, 1965). The effects of these lizards, particularly *N. grahami* led to the introduction of the great kiskadee (see *Pitangus sulphuratus*) as a biocontrol agent in 1957. However, this biocontrol attempt was a failure, with *P. sulphuratus* playing a significant role in the population declines of native insect, bird and reptile species on Bermuda (Cheesman & Clubbe, 2007; Davenport *et al.*, 2008).
On Saint Lucia, *A. extremus* is one of two introduced anole lizards including Watt's anole (see *A. wattsi*) (Gorman, 1976) and on Trinidad, *A. extremus* was one of four introduced anole lizards including Watt's anole (*A. wattsi*), the bronze anole, (see *A. aeneus*) and Saint Vincent's tree anole (see *A. trinitatis*) (Hailey *et al.*, 2009); the presence of *A. extremus* however has not been reported on Trinidad since 1982 (Hailey *et al.*, 2009).

Habitat Description
On St. Lucia, *Anolis extremus* is found mainly in gardens, urban areas and adjoining patches of forest; it has not been recorded in deep forest (Daltry, 2009). Losos (1996) described *A. extremus* as an arboreal lizard, most likely found at eye-level on tree trunks and less frequently on tree branches.

Reproduction
The female *Anolis extremus* lays and buries one or two eggs in a shallow nest in the soil (Daltry, 2009).

Nutrition
The diet of *Anolis extremus* is very varied, including ants, spiders, crickets, cockroaches, grasshoppers, insect larvae, and occasionally fruit (Daltry, 2009). They are \"sit and wait\" predators that perch on tree trunks, branches and bushes, scanning the ground and undergrowth for prey (Daltry, 2009).

General Impacts
Anolis extremus affects the distribution of similar species, including the native *A. luciae* on St. Lucia (Gorman, 1976), and the introduced *Norops grahami* on Bermuda (Losos, 1996). On St. Lucia, *A. extremus* has led to the displacement of *A. luciae* from urban and suburban areas; however its distribution at present is too limited to pose a serious threat (Daltry, 2009). On Bermuda, *A. extremus* and *N. grahami* are ecologically similar enough to slow each others range expansion, but not similar enough to competitively exclude each other (Losos, 1996).

Management Info
Physical control: While eradications may be unfeasible for widespread *Anolis extremus* invasions on islands such as St. Lucia, Daltry (2009) suggests that hand removal may be successful for local control.
Biological control: On St. Lucia, *A. extremus* is preyed upon by the introduced mongoose (*Herpestes javanicus*), however this has not been enough to significantly impact abundance (Daltry, 2009).
Cultural control: Daltry (2009) makes several management recommendations for St. Lucia to prevent the spread of *A. extremus* to other offshore islands. These include: listing *A. extremus* as Unprotected under the Wildlife Protection Act; monitoring the spread of this species and be vigilant for signs that it is invading mature, natural forests; preventing *A. extremus* from invading the offshore islands, especially the Maria islands, by screening all boats and baggage; and supporting reptile conservation in other tropical countries by prohibiting, screening and removing anole lizards from exported cargo (Daltry, 2009).

Pathway
Most likely capable of dispersal as a stowaway on cargo ships (Wingate, 1965).

Principal source:

Compiler: IUCN SSC Invasive Species Specialist Group (ISSG) with support from the Overseas Territories Environmental Programme (OTEP) project XOT603, a joint project with the Cayman Islands Government - Department of Environment

Review:

Pubblication date: 2010-06-29

ALIEN RANGE

[1] BERMUDA
[1] TRINIDAD AND TOBAGO
[1] VENEZUELA
[1] SAINT LUCIA
[1] UNITED STATES

BIBLIOGRAPHY
17 references found for **Anolis extremus**

Managment information
Horn, Scott; Hanula, James L. 2006. Burlap bands as a sampling technique for green anoles (*Anolis carolinensis*) and other reptiles commonly found on tree boles. Herpetological Review. 37(4). DEC 2006. 427-428
Summary: Available from: http://www.srs.fs.usda.gov/pubs/ja/ja_horn011.pdf [Accessed 2 July 2010]

IUCN/SSC Invasive Species Specialist Group (ISSG)., 2010. A Compilation of Information Sources for Conservation Managers.
Summary: This compilation of information sources can be sorted on keywords for example: Baits & Lures, Non Target Species, Eradication, Monitoring, Risk Assessment, Weeds, Herbicides etc. This compilation is at present in Excel format, this will be web-enabled as a searchable database shortly. This version of the database has been developed by the IUCN SSC ISSG as part of an Overseas Territories Environmental Programme funded project XOT603 in partnership with the Cayman Islands Government - Department of Environment. The compilation is a work under progress, the ISSG will manage, maintain and enhance the database with current and newly published information, reports, journal articles etc.

General information
Bacon, Jamie P., Jennifer A. Gray; Lisa Kitson, 2006. Status and conservation of the reptiles and amphibians of the Bermuda islands. Applied Herpetology. 3: 323-344
Daltry, J.C. 2009. The Status and Management of Saint Lucia's Forest Reptiles and Amphibians. Technical Report No. 2 to the National Forest Demarcation and Bio-Physical Resource Inventory Project, FCG International Ltd, Helsinki, Finland.
Florida Fish and Wildlife Conservation Commission (FWC), 2010. Barbados Anole - *Anolis extremus*
Summary: Available from: http://myfwc.com/WILDLIFEHABITATS/Nonnative_BarbadosAnole.htm [Accessed 22 June 2010]
Giannasi, Nick; Roger Stephen Thorpe & Anita Malhotra, 1997. Introductions of *Anolis* Species to the Island of St. Lucia, West Indies: Testing for Hybrids Using Multivariate Morphometrics. Journal of Herpetology, Vol. 31, No. 4 (Dec., 1997), pp. 586-589
Global Biodiversity Information Facility (GBIF), 2010. Species: *Anolis extremus* Garman 1887, Barbados Anole
Summary: Available from: http://us.mirror.gbif.org/species/13497341 [Accessed 22 June 2010]
Gorman, George C., 1976. Observations on the Distribution of *Anolis extremus* Sauria Iguanidae on St. Lucia West Indies a Colonizing Species, Herpetologica, Vol. 32, No. 2 (Jun., 1976), pp. 184-188
Gorman, George C., Y. J. Kim, S. Y. Yang, 1978. The Genetics of Colonization: Loss of Variability among Introduced Populations of *Anolis* Lizards (Reptilia, Lacertilia, Iguanidae). Journal of Herpetology, Vol. 12, No. 1 (Feb. 27, 1978), pp. 47-51
Hailey, Adrian; Victor C. Quesnel and Hans E.A. Boos, 2009. The persistence of *Anolis trinitatis* as a naturalized lizard in Trinidad against hybridization pressure with *Anolis aeneus*. Applied Herpetology 6 (2009) 275–294.
Losos, Jonathan B., 1996. Dynamics of Range Expansion by Three Introduced Species of *Anolis* Lizards on Bermuda. Journal of Herpetology, Vol. 30, No. 2 (Jun., 1996), pp. 204-210
Macedonia, Joseph M. and David L. Clark, 2003. Headbob Display Structure in the Naturalized *Anolis* Lizards of Bermuda: Sex, Context, and Population Effects. Journal of Herpetology, Vol. 37, No. 2, pp. 266–276, 2003
Reptiles Database, 2010. *Anolis extremus* Garman, 1887
Summary: Available from: http://reptile-database.reptarium.cz/species.php?genus=Anolis&species=extremus [Accessed September 8 2010]
Strong, D., B. Leatherman, and B.H. Brattstrom. 1993. Two new methods for catching small fast lizards. Herpetological Review 24:22–23.
White, G.L. & Adrian Hailey, 2006. The establishment of *Anolis wattsi* as a naturalized exotic lizard in Trinidad. Applied Herpetology 3: 11-26
Wingate, David B., 1965. Terrestrial Herpetofauna of Bermuda. Herpetologica, Vol. 21, No. 3 (Sep. 24, 1965), pp. 202-218
Yang, Suh Yung; Michael Soule; George C. Gorman, 1974. *Anolis* Lizards of the Eastern Caribbean: A Case Study in Evolution. I. Genetic Relationships, Phylogeny, and Colonization Sequence of the Roquet Group. Systematic Zoology, Vol. 23, No. 3 (Sep., 1974), pp. 387-399