

## Predation attempt by *Oxybelis aeneus* (Wagler) (Mexican Vine-snake) on *Basiliscus plumifrons* (Cope)

PAUL B.C. GRANT<sup>1</sup>, TODD R. LEWIS<sup>2</sup>

<sup>1</sup> 4901 Cherry Tree Bend, Victoria B. C., V8Y 1S1, Canada.

<sup>2</sup> Westfield, 4 Worgret Road, Wareham, Dorset, BH20 4PJ, UK. Corresponding author. E-mail: ecolewis@gmail.com

Submitted on: 2009, 31st August; revised on: 2010, 3rd March; accepted on: on2010, 13<sup>th</sup> March.

*Oxybelis aeneus* is a broadly distributed vine snake of the New World (Keiser, 1982; Savage, 2002). Its enormous range stretches from Arizona and southern Texas, through Mexico, Honduras, Belize, Guatemala, Nicaragua, Costa Rica, Panama, and into South America where it is found in Colombia, Ecuador, north-western Peru on the Pacific versant, and as far south as Brazil and Bolivia on the Atlantic versant (Keiser, 1974, 1982; Dixon and Soini, 1986; Keiser, 1991; Pérez-Santos and Moreno, 1991; Lehr et al., 2002; Savage, 2002; Hernandez, 2004; Uetz, 2006; Cisneros-Heredia and Touzet, 2007; AGFD, 2008). It is also found on Trinidad and Tobago and other islands such as offshore atolls around Belize (Campbell, 1998; Platt et al., 2002).

*O. aeneus* is easily recognised from other *Oxybelis* sp. vine snakes by its light-grey dorsum and black mouth lining. It is a common colubrid snake within its range, inhabiting open areas, grassland with scrub, forest edges, clearings within forest, abandoned pastures, riparian premontane wet forest, premontane rain forest, in addition to lowland wet and dry forest (Franzen, 1996; Savage, 2002). It is often encountered among vegetation at 0.3 m to 1.8 m perch heights (Franzen, 1996; Savage, 2002) and can occur in densities of up to 180 individuals per hectare. It is mildly venomous and possesses enlarged grooved back fangs (Savage, 2002; McConnell, 2008).

Dietary information for this species is mostly known and its wide prey base includes lizards, amphibians, arboreal mammals, small rodents, small birds and fledglings, insects and also fish (Henderson, 1982; Campbell, 1998; Savage, 2002; Hetherington, 2006). Studies indicate that lizards, particularly anoles, are important prey for *O. aeneus* (Keiser, 1967; Henderson, 1982; Wilson and Cruz-Díaz, 1993; Lee, 1996; Savage, 2002). *O. aeneus* has been reported to consume *Norops rodriguezii*, *Norops bourgeaei*, *Norops uniformis*, *Basiliscus vittatus*, *Iguana iguana*, *Sceloporus* sp., and a number of *Cnemidophorus* sp. (Campbell, 1998; Savage, 2002; Diener, 2007).

Here we document an attempt by an adult *O. aeneus* to kill a sub-adult *Basiliscus plumifrons* in a lowland wet *Manicaria* forest north of Tortuguero, Costa Rica (Myers, 1990; Lewis et al., in press). In June 2002 we were photographing a sub-adult *B. plumifrons* dur-



Fig. 1. *Oxybelis aeneus* grasping sub-adult *Basiliscus plumifrons*. Photograph by Paul Grant.

ing the day that was basking in a *Heliconia* sp. plant in edge habitat. Whilst taking the photo, an adult *O. aeneus* struck at the lizard from above and within a concealed area of vegetation behind the plant. The snake grasped the individual by the nape (Fig. 1). The lizard attempted to escape by dislodging the snake using its legs. However, it ceased struggling after a short duration, possibly from energy expenditure, partial asphyxiation, possible envenomation or some combination of the three.

Interestingly, the snake held the lizard in its jaws for 4-5 minutes before attempting to swallow. The snake, unable to swallow the lizard due to its large size, ceased consumption and dropped the lizard. After several minutes of subdued, immobile behaviour, the basilisk recovered and escaped into nearby vegetation. If envenomation occurred, it is possible that the lizard was able to overcome the snake's mild venom from its grooved rear fangs and/or did not receive a lethal dose.

The larger *Oxybelis fulgidus* that is found in similar habitats to *O. aeneus* has been recorded to have a similar diet of birds and lizards but has also taken larger lizard prey such as *Ctenosaura similis* (Hayes, 2002; Savage, 2002; Endo et al., 2007). Most snakes are physi-

ologically limited in the size of their prey choice by swallowing capability (Arnold, 1993) which could explain why the snake terminated consumption of the basilisk on this occasion.

#### ACKNOWLEDGEMENTS

We thank the Canadian Organization for Tropical Education and Rainforest Conservation, Ministerio de Recursos Naturales Energia y Minas, and Farnborough College of Science and Technology for permissions and assistance.

#### REFERENCES

- AGFD [Arizona Game and Fish Department] (2008): *Oxybelis aeneus*. Abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, Arizona.
- Arnold, S.J. (1993): Foraging theory and prey-size predator-size relations in snakes. In: Snakes: Ecology and Behaviour, p. 87-115. Seigel, R.A., Collins, J.T., Eds, McGraw Hill, New York.
- Campbell, J.A. (1998): Amphibians and Reptiles of Northern Guatemala, the Yucatan, and Belize. University of Oklahoma Press, Norman.
- Cisneros-Heredia, D.F., Touzet, J.-M. (2007): Ecuadorian distribution of snakes of the genera *Oxybelis* (Wagler, 1830) and *Xenoxybelis* (Machado, 1993). *Herpetozoa* **19**: 188-189.
- Diener, E. (2007): Die Erdspeitznatter *Oxybelis aeneus* und die Lianennatter *Leptophis mexicanus* als Prädatoren der Schwarzleguane *Ctenosaura similis* und *C. bakeri*. *Elaphe* **15**: 59-62.
- Dixon, J.R., Soini, P. (1986): The Reptiles of the Upper Amazon Basin, Iquitos Region, Peru. Milwaukee Public Museum, Milwaukee.
- Endo, W., Amend, M., Fleck, L.C. (2007): *Oxybelis fulgidus* Prey. *Herpetol. Rev.* **38**: 209.
- Franzen, M. (1996): Ökologische und morphologische Aspekte einer Costaricanischen Population von *Oxybelis aeneus* (Wagler, 1824) (Serpentes: Colubridae). *Herpetozoa* **9**: 121-131.
- Hayes, F.E. (2002): Predation on birds by snakes in Trinidad and Tobago. *J. Trinidad and Tobago Field Nat. Club* **2002**: 59-61.
- Henderson, R.W. (1982): Trophic relationships and foraging strategies of some New World tree snakes (*Leptophis*, *Oxybelis*, *Uromacer*). *Amphibia-Reptilia* **3**: 71-80.
- Hernandez, R.A. (2004): Geographic distribution: *Oxybelis aeneus*. *Herpetol. Rev.* **35**: 84.
- Hetherington, T.E. (2006): *Oxybelis aeneus* Diet. *Herpetol. Rev.* **37**: 94-95.
- Keiser, E.D. Jr. (1967): A monographic study of the Neotropical vine snake, *Oxybelis aeneus* (Wagler). Unpublished doctoral dissertation. Louisiana State University, Louisiana.
- Keiser, E.D. Jr. (1974): A systematic study of the Neotropical vine snake, *Oxybelis aeneus* (Wagler). *Bull. Texas Mem. Mus.* **22**: 1-51.

- Keiser, E.D. Jr. (1982): *Oxybelis aeneus* (Wagler). Cat. Amer. Amph. and Rept. **305**: 1-4.
- Keiser, E.D. Jr. (1991): Bibliography of the genus *Oxybelis* Wagler (Serpentes: Colubridae). Smithsonian Herpetological Information Service, Washington **86**: 1-45.
- Lee, J.C. (1996): The Amphibians and Reptiles of the Yucatán Peninsula. Cornell University Press, New York.
- Lehr, E., Kohler, G., Streit, B. (2002): Die herpetofauna von Mittelperu entlang eines transektes von der pazifischen Küste bis in die Hochanden. Faunistische Abh. Mus. Tierkunde, Dresden **22**: 361-392.
- Lewis, T.R., Grant, P.B.C., Garcia-Quesada, M., Ryall, C., LaDuke, T.C. (in press): A preliminary botanical study of Caño Palma Biological Station, Tortuguero, Costa Rica. Checklist.
- McConnell, G.J. (2008): *Oxybelis aeneus* envenomation. Herpetol. Rev. **39**: 356.
- Myers, R.L. (1990): Palm swamps. In: Ecosystems of the World, p. 267-278. Lugo, A.E., Brinson, M., Brown, S., Eds, Elsevier, Oxford.
- Pérez-Santos, C., Moreno, A.G. (1991): Serpientes de Ecuador. Monogr. Mus. Reg. Sci. Nat. Torino. **11**: 1-538.
- Platt, S.G., Meerman, J.C., Rainwater, T.R. (2002): *Oxybelis aeneus* (Wagler): an addition to the herpetofauna of Turneffe Atoll, Belize. Herpetol. Bull. **82**: 30-31.
- Savage, J.M. (2002): The Amphibians and Reptiles of Costa Rica. University of Chicago Press, Chicago.
- Uetz, P. (2006): EMBL Reptile Database. Electronic Database accessible at <http://www.reptile-database.org> (Online). EMBL Heidelberg, Germany. (accessed: October 2005).
- Wilson, L.D., Cruz-Díaz, G.A. (1993): The herpetofauna of the Cayo Cochinos, Honduras. Herpetol. Nat. Hist. **1**: 13-20.