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Frugivory of *Momordica charantia* (Cucurbitaceae) by *Ameivula ocellifera* (Squamata: Teiidae) in a coastal area of northeastern Brazil

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Several species of reptiles feed on both vegetative and reproductive plant organs (King 1996). However, owing to the consumption of leaves requiring morphological and physiological adaptations, the majority of plant items consumed by herbivorous and omnivorous reptiles are flowers, seeds and fruits in particular (Pough 1973, Cooper & Vitt 2002). Although fleshy fruits constitute an important food resource for many chelonians (Milton 1992, Moll & Jansen 1995, Liu et al. 2004) and some lizards (Traveset 1990, Valido & Nogales 1994, Hartley et al. 2000), the trophic habits of frugivorous reptiles have been historically understudied (Valido & Olesen 2007).

The interest in the ecology of lizards, and lizard-plant relationships in particular, has vastly increased over the last decades (Iverson 1985, Whitaker 1987, Willson et al. 1996), and recent studies have suggested that, in fact, lizards might play an important role in the life cycle of several plant species (Godínez-Álvarez 2004, Galindo-Uribe & Hoyos-Hoyos 2007, Valido & Olesen 2007). Despite the fact that most of lizards are primarily carnivorous, substantial plant consumption occurs in several families of Iguania and Scleroglossa (Cooper & Vitt 2002).

The consumption of fruits by lizards, other than incidental, may occur when typical food resources, such as arthropods, are scarce (Olesen & Valido 2003). Currently, more than 250 lizard species are known to be consumers of fruit, and several of these may play an important role as seed dispersers (Valido & Olesen 2007). Although most Teiidae lizards are thought of as carnivorous, consumption of fruits was reported for the genera *Ameiva* (Vitt & Colli 1994), *Cnemidophorus* (Vitt et al. 1997), *Kentropyx* (Vitt et al. 2001), and mainly for *Tupinambis* (Williams et al. 1993, Mercolli & Yanosky 1994, Castro & Galetti 2004). Herein we report the intentional frugivory of *Momordica charantia* (Cucurbitaceae or gourd family) by the teiid lizard *Ameivula ocellifera* in a coastal area of northeastern Brazil.

A survey was carried out on August 2010, during the dry season, at the Fazenda Maceió, São Gonçalo do Amarante municipality, west coast of Ceará state, northeastern Brazil (3°30'51" S; 38°55'10" W). The study area represents a typical coastal open habitat with shrubby steppe vegetation in a semi-arid climate and with rains occurring from January to May. We collected specimens of *A. ocellifera* using air rifles or rubber bands and deposited them in scientific collection Coleção Herpetológica da Universidade Federal do Ceará. At the laboratory, we dissected the individuals under a stereoscopic microscope to identify their sexual affiliations by means of gonad inspection and to analyse the contents of their digestive tracts.

We analysed the gut contents of 28 individuals of *A. ocellifera* of which 7 (25%), including 3 juveniles and

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4 adults of both sexes (4 males and 3 females), were noted to have consumed plant matter. Altogether, we found 10 seeds of *M. charantia* in the stomachs, all of them intact and apparently still undamaged with the exception of worn aryls. Four lizards had consumed only one seed each, but the other three had each ingested two of them. These seeds constituted 20 to 100% of the total volume ingested by the lizards. Our findings, in terms of number, frequency and volume of seed consumption, suggest that frugivory of *M. charantia* by *A. ocellifera* does not appear to be merely occasional.

Furthermore, during field collections, we observed several individuals of *A. ocellifera* foraging on clusters of *M. charantia* at heights of up to about 1.5 metres above the ground. One of these observations involved an adult male that was seen nibbling and licking at a mature fruit, and on another occasion, a recently captured specimen regurgitated an undamaged seed of *M. charantia* when it was handled (Fig. 1). These behavioural observations constitute factual evidence of an intimate relationship between *A. ocellifera* and *M. charantia* in the study area.

The diet of *A. ocellifera* primarily comprises arthropods, mainly insects, and has been studied in several habitats. In general, the Relative Importance Index suggests that Isoptera, Orthoptera, Aranae and insect larvae are the most important categories consumed by Cerrado (Mesquita & Colli 2003), as well as Caatinga (Menezes et al. 2011) and Restinga populations (Dias & Rocha 2007). At the Fazenda Maceió, the diet of *A. ocellifera* is mainly composed of insect larvae, coleopterans and hemipterans (Zanchi et al. unpubl. data). Regarding plant matter, the frequency of consumption of fruits and seeds by *A. ocellifera* is generally low, i.e., less than 10% (Menezes et al. 2011, Zanchi et al. unpubl. data), with the exception of a population from the Restinga of Dunas do Abaeté, in which fruits were present in 19% of the individuals analysed (Dias & Rocha 2007). In the present case, the frequency of consumption of seeds was higher than in all previous studies, with the phenomenon occurring in 25% of the individuals analysed.

We conclude that *M. charantia* may constitute an important food resource for the studied population of *A. ocellifera*, supplementing its primarily carnivorous diet, espe-

Figure 1. Mature fruit of *Momordica charantia* and a seed regurgitated by an adult individual of *Ameivula ocellifera*.

cially during the dry season when prey availability is low. Moreover, we found no evidence of damage to the seeds ingested, indicating a possible role of *A. ocellifera* in the dispersal of the seeds of *M. charantia*. To elucidate this hypothesis, germination tests with consumed seeds are required in order to evaluate the dispersal potential of the lizard and contribute to our understanding of the implications of this ecological detail.

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