NOTOMABUYA FRENATA. NEW FOOD ITEM

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***LIOLAEMUS CUYANUS*. SAUROPHAGY.** *Liolaemus cuyanus* is a diurnal, omnivorous, and psammophilous lizard endemic to the Argentinian Monte phytogeographic province (Cei 1993. Reptiles del Noroeste, Nordeste y Este de la Argentina. Herpetofauna de Las Selvas Subtropicales, Puna y Pampas. Mus. Reg. Sc. Nat. Torino.. Monografia XIV. 949 pp.). Prey categories that dominate its diet are Hymenoptera (Formicidae), Hemiptera, and Coleoptera, as well as seeds, fruits, and flowers (Moreno Azócar and Acosta 2011. J. Herpetol. 45:283–286). During a study of reproduction of this species, a whole individual of *Homonota underwoodi* (Phyllodactylidae; Fig. 1), was found in the stomach of an adult female (SVL = 66.2 mm; Herpetological collection Fundación Miguel Lillo, Tucumán, Argentina, FML30279), collected at 1700 h on 1 December 2010, in the Antinaco-Los Colorados Valley (28.8202°S, 67.3119°W, WGS 84; 1120 m elev.), La Rioja Province, Argentina. The prey item was an adult (SVL = 29.8 mm). This is the first record of saurophagy in *L. cuyanus*. As the predator is diurnal and the prey is crepuscular-nocturnal, the encounter might have occurred through use of the same refuge.

FIG. 1. Comparison of predator (*Liolaemus cuyanus*) and prey (*Homonota underwoodi*). Scale bar = 10 mm.

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***NOTOMABUYA FRENATA*. NEW FOOD ITEM.** *Notomabuya frenata* is a viviparous skink widely distributed in open areas of Brazil, Bolivia, Paraguay, and Argentina (Hedges and Conn 2012. Zootaxa 3288:1–244). Females are larger than males, and its diet, obtained from a Cerrado population from Valinhos, São Paulo state, southeastern Brazil, was considered generalist and including a large proportion of termites (Vrcibradic and Rocha 1998. J. Herpetol. 32:229–237). Here we describe the diet of this species based on 21 individuals collected in four localities of southeastern Brazil and report a new food item for this lizard.

Between October 2008 and June 2009 we collected 21 individuals of *N. frenata* in pitfall traps with drift fences in four areas of the Brazilian Atlantic forest in the municipalities of Bauru (N = 1), Gália (N = 7), Garça (N = 4), and Lupércio (N = 9), state of São Paulo, southeastern Brazil (Brassaloti 2010. Diversidade e estrutura de taxocenoses de anfíbios anuros em uma paisagem fragmentada no centro-oeste paulista. Unpublished MSc Dissertation. Universidade Estadual Paulista Júlio de Mesquita Filho, São José do Rio Preto, SP, Brazil). Lizards were euthanized in a CO_2 saturated atmosphere, fixed in 10% formaldehyde, and preserved in 70% ethanol. Voucher specimens were deposited in the herpetological collection of Escola Superior de Agricultura Luiz de Queiroz, Universidade de São Paulo, Brazil (VESALQ 1068–1085).

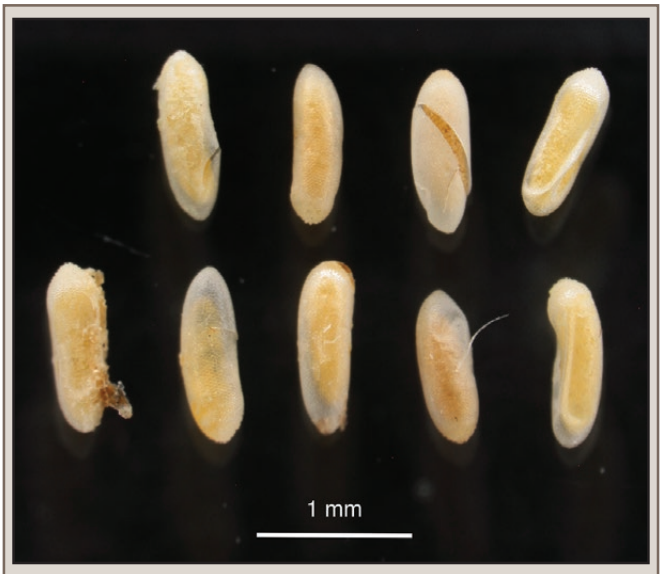

FIG. 1. Nine arthropod eggs found in the stomach of the skink *Notomabuya frenata*.

Lizards were dissected, and their gastrointestinal contents were analyzed under a stereomicroscope. Food items were determined to the lowest possible taxonomic level with the aid of dichotomous keys (spiders: Kaston et al. 1978. How to Know the Spiders. McGraw-Hill Science, Boston, Massachusetts. 288 pp.; insects: Rafael et al. 2008. Insetos do Brasil: Diversidade e Taxonomia. Holos Editora, Ribeirão Preto, São Paulo, Brazil. 810 pp.).

Twenty-seven food items belonging to eight prey categories were found in the stomachs (Table 1). The numerically most important item was insect eggs (present in only one stomach)

TABLE 1. Food items identified in the diet of the lizard *Notomabuya frenata* from southeastern Brazil.

Food items	Abundance of item (%)	Frequency of stomachs with item (%)
Arachnida		
Aranae	4 (14.8)	4 (33)
Pseudoscorpiones	1 (3.7)	1 (8)
Hexapoda		
Blattaria	2 (7.4)	2 (17)
Hymenoptera (non-ant)	4 (14.8)	2 (17)
Isoptera	5 (18.5)	1 (8)
Orthoptera	1 (3.7)	1 (8)
Insect larva	1 (3.7)	1 (8)
Arthropod eggs	9 (34.6)	1 (8)
Total	27 (100)	12 (100)

(Fig. 1), followed by Isoptera, Aranae, and Hymenoptera (non-ant). The more frequent item was Aranae. Two stomachs were empty, and the contents of seven stomachs could not be determined.

Despite the preference for spiders observed in our study, *N. frenata* could be considered an opportunist predator that may prey on social insects, like termites (the second more abundant prey item), if available, as reported for a large sample from Valinhos, São Paulo state, southeastern Brazil, where Isoptera was the most important item both in volume and in total number, and arthropod eggs were not recorded (Vrcibradic and Rocha, *op. cit.*). The presence of arthropod eggs in the diet confirms that this lizard is an active forager able to chemically locate immobile prey (Pianka and Vitt 2003. Lizards—Windows to the Evolution of Diversity. University of California Press, Berkeley. 333 pp.).

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***PHYMATURUS ZAPALENSIS*. DIET.** *Phymaturus* has been described as an entirely viviparous and strictly herbivorous genus (Cei 1986. Reptiles del Centro, Centro-oeste y Sur de la Argentina. Herpetofauna de las Zonas Áridas y Semiáridas. Museo Regionale di Scienze Naturali, Torino, Italy. 527 pp.; Espinoza et al. 2004. Proc. Natl. Acad. Sci. USA 101:16819–16824; Córdoba et al. 2015. Rev. Mex. Biodivers. 86:1004–1013). However, individuals of *Phymaturus zapalensis* feed on mealworms (*Tenebrio molitor*) in captivity. *Phymaturus zapalensis* is a medium-sized liolaemid lizard endemic to rocky outcrops within and around Laguna Blanca National Park in Zapala, Occidental District, Neuquén Province, Argentina (39.07088°S, 70.38864°W, WGS 84; elev. 824–1312 m). Herein we report on the first evidence of carnivory (insectivory) in wild *P. zapalensis*.

The stomach and intestine of specimens from the collection of the Centro Regional Universitario Bariloche (7 adult females including 2 pregnant individuals, 8 adult males, and 5 juveniles including 3 females and 2 males) were removed and examined under an Olympus SZ-PT40 stereoscopic microscope. The observations of the stomach and intestine of the 20 individuals showed the presence of plant parts in all samples, and the presence of insects in 75% (N = 15) of the sample. These results support our observations in captivity, and confirm that *P. zapalensis* is the only known omnivorous species in its genus. The high-energy omnivorous diet of *P. zapalensis* could explain the capability of females to breed annually, instead of the characteristic biennial cycle of other species in the genus (Boretto and Ibargüengoytía 2009. J. Herpetol. 43:96–104). If this difference holds, it may have consequences for growth and life history parameters, such as longevity, relative reproductive time, and proportion of adult life, allowing higher reproductive frequencies and higher investment in energy and biomass in each reproductive event, compared to congeners with an herbivorous diet (Boretto et al. 2018. J. Comp. Physiol. B 188:491–503).

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***PLESTIODON FASCIATUS* (Five-lined Skink). ECTOPARASITES.** *Plestiodon fasciatus* is widely distributed throughout the eastern United States and into southeastern Ontario, Canada. However, there are disjunct populations present in Minnesota, northeastern Iowa, and southeastern Wisconsin (Moriarty and Hall 2014. Amphibians and Reptiles in Minnesota. University of Minnesota Press, Minneapolis, Minnesota. 370 pp.). Although ectoparasites are known to frequently infect reptiles (Frank 1981. *In* J. E. Cooper and O. F. Jackson [eds.], Diseases of the Reptilia Vol. 1., pp. 359–383. Academic Press, London), very little is known about the ectoparasites that are present in Minnesota's reptiles and amphibians. Furthermore, very little is known about ectoparasites that are found on lizards in Minnesota. Here, we report baseline locality records of ectoparasites of *P. fasciatus* as well as prevalences from Minnesota and Wisconsin. Between 26 June 2016 and 11 August 2016, 14 *P. fasciatus* were collected by hand from Polk Co., Wisconsin and Renville Co., Minnesota. After collection, 10 (71%) of the lizards were found to be infected with chigger mites (lizard mean SVL= 58.5 mm ± 7.2 SD, range 48–71 mm). Only the 4 hatchling skinks were uninfected (lizard mean SVL= 32 mm ± 1.15 SD, range 31–33 mm). Several mites were carefully removed from infected lizards and were mounted on slides. We tentatively identified the mites as *Eutrombicula alfreddugesi* (Brennan and Goff 1977. J. Parasitol. 63:554–566). Within our samples, our morphological identification concurred with other identifications in a key published by Brennan and Goff (*op. cit.*). This ectoparasite has been reported in multiple reptiles and amphibians (Walters et al. 2011. Fac. Publ. H. W. Manter Lab Parasitol. 697:1–183). However, lack of comprehensive keys available for aid in the identification of ectoparasites could present difficulty in identifying other cryptic species. The high prevalence of chigger mites in our sample of *P. fasciatus* might be related to the close confinement of skinks during the summer months in Minnesota. *Eutrombicula alfreddugesi* is known to occur in areas of low to moderate temperature, high humidity, and low sunlight (Clopton and Gold 1993. J. Med. Entomol. 30:47–53), which could aid in the understanding of how these parasites find suitable hosts. In addition, after housing the skinks in the lab for ~ 7 days, mites were completely absent from all previously infected hosts. This occurrence is probably due to the larval stage dropping off the host before molting into the nymphal stage. Because of the large geographic distribution of this ectoparasite and its potential to infect a wide variety of hosts, it is important to document baseline data for lizards in both Minnesota and Wisconsin.

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