eastern Brazil, and may be regarded as a mortality factor for subterranean reptiles such as *L. wuchereri*. The sight of crested caracaras following plowing tractors and picking up unearthed reptiles and other animals is a common one in Brazil (Sazima and Abe 1991).

Heavy tropical rains and floods cause amphisbaenians and subterranean snakes to surface (pers. obs.), making them vulnerable to predation. This may be the case of a *Mesobaena huebneri* found in the gut of a wader, *Belonopterus cayennensis* (=*Vanellus chilensis*) in Colombia (Gans 1971b).

The only known specialized predators on *Leposternon* seem to be the similarly fossorial coral snakes (*Micrurus*). Boulenger (1885) reported on a *M. "lemniscatus"* (probably *M. ibiboboca*, see Campbell and Lamar 1989), which had eaten a *L. polystegum*. *Leposternon microcephalum* is the predominant prey in the diet of *M. corallinus* at several localities in the coastal rain forest of southeastern Brazil (O.A.V Marques and I. Sazima, unpubl. data). Some species of the fossorial snakes of the genus *Elapomorphus* also seem to specialize on amphisbaenian prey (T. Lema, pers. comm.; pers. obs.) but data are too limited to elaborate further.

The coral snake *Micrurus laticollaris* was found to prey on the amphisbaenian *Bipes canaliculatus* (Papenfuss 1982). Autotomized tails were found in 3-17% of 3820 specimens of three species of Bipes, and the tail loss was attributed to predation (Papenfuss 1982). Only two out of the 72 specimens of *L. wuchereri* (ca. 3%) had scars on the tail, which is short and does not autotomize. This small percentage of tail-scarred *L. wuchereri* (presumably survivors of predation attempts) may be viewed either as slight predator pressure (see Papenfuss 1982, for such a view on *B. biporus*) or, more likely, as evidence of low predation survival rates in an amphisbaenian with limited defenses.

Some amphisbaenians invoke obvious antipredator behaviors such as biting and thrashing (*Amphisbaena alba*, Gorzula et al. 1977), or displays of an easily broken tail (*A. fuliginosa*, Greene 1973; *A. mertensii*, and *A. vermicularis*, pers. obs.). *Leposternon wuchereri* appears to have a limited antipredator repertoire which includes simple escape movements and production of a foul odor. These behaviors are ineffective against both visually-oriented (birds) and olfactorily-oriented (mammals, snakes) predators.

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CLAUDIO ZAMPROGNO
Departamento de Biologia
Universidade Federal do Espírito Santo
29040-090 Vitória
Espirito Santo, Brasil

and

IVAN SAZIMA
Departamento de Zoologia
Universidade Estadual de Campinas
13081-970 Campinas, São Paulo, Brasil.

Why Do Snakes Sleep On The Vegetation In Central Amazonia?

Snakes are prey for diverse predators, from invertebrates to mammals (see review in Greene 1988). However, many studies of vertebrate predation fail to consider carnivorous invertebrates (McCormick and Polis 1982). For instance, snakes may be preyed upon by scorpions, spiders, giant waterbugs, ants, and centipedes although literature references are rare (Greene 1988; McCormick and Polis 1982). In an extensive review of snake predators, Greene (1988) provided references for nearly 160 snake species, yet only 12 were by invertebrates.

Many diurnal snakes, even exclusively terrestrial species, are found at night sleeping on leaves and branches of low vegetation in Amazonian forests (Dixon and Soini 1986; Duellman 1978; pers. observ.). By sleeping above the ground, these snakes are less vulnerable to terrestrial predators. During a study on forest snakes in Central Amazonia, I found evidence that predation by ants may be a risk factor in sleeping on the ground for some snakes, here illustrated by the vine snake, *Oxybelis argenteus*, an arboreal colubrid.

Observations were made from July 1991 to October 1992 in a primary forest reserve (Reserva Florestal Adolpho Ducke, Instituto Nacional de Pesquisas da Amazonia) 25 km north of Manaus, Amazonas, Brasil. About 90 man-hrs of exclusive snake searching were conducted each month, during different times of the day. Visual searches were conducted by walking slowly along forest trails; the search effort extended to all visually-accessible microhabitats. Additional snake sightings were made during other activities. Each captured snake was measured (snout-vent length and tail length), weighed, marked by ventral scale clipping, and released at the site of capture.

A total of 356 individual snakes of 41 species were found (45 by day, 311 at night). Three species of diurnal, terrestrial snakes were found coiled asleep on the vegetation at night: four *Drymoluber dichrous* (0.7-1.6 m above ground), nine *Liophis reginae* (0.3-2.3 m), and three *Liophis typhlus* (0.3-0.7 m). Several arboreal or semiarboreal, diurnal and nocturnal snakes were also found coiled asleep or resting on the vegetation at night (e.g., diurnal species: *Chironius* spp., *Oxybelis* spp., and *Pseustes* spp.; nocturnal species: *Dipsas catesbyi*, *Leptodeira annulata*, and *Tripanurgos compressus*). No snake was found sleeping on the ground during this study.

Evidence of the risk of sleeping on the ground was observed in *Oxybelis argenteus*. Eighty-seven sightings were made. During the day, snakes (N = 10) were found active on low vegetation, searching for small frogs on the forest floor. At night (N = 77) they were found coiled asleep on thin branches of shrubs and small trees and on horizontal palm leaves, 8-400 cm ($\bar{x}$ = 138.3, SD = 69.5) from the ground. All snakes found at night were at least 30 cm above ground, except one found 8 December 1991, that was only 8 cm above ground. This snake had approximately 200 mm of its tail resting on the leaf litter of the forest floor. This part of the tail showed several small bites clearly made by ants, probably a species of *Camponotus*. The proximal portion of the bitten tail had deep bites that went through the vertebrae. The snake had no apparent prey in the gut and behaved normally when manipulated, except that it could not move the bitten portion of the tail. On 14 January 1992 I again observed this marked individual on a shrub, 120 cm from the ground and 23 m from the site of the first observation. By then it had lost the bitten part of the tail and three vertebrae were exposed at the tail tip, with no evidence of regeneration. This individual was not seen again. (At a site 250 km north of Manaus, I observed bites similar to those described above made by *Camponotus* ants on the tail and body of several snakes that fell on pitfall traps raided by these ants).

At the study site, other terrestrial, diurnal animals were found on low vegetation at night (e.g., insects, spiders, frogs, and lizards). Strong predation pressure may have forced snakes and other animals to avoid sleeping on the ground. Although many terrestrial vertebrates that prey on snakes occur in Neotropical forests (e.g., Cunha and Nascimento 1978; Dixon and Soini 1986; Duellman 1978; Janzen 1983), invertebrate predators, including carnivorous ants and tarantulas, also may have contributed to this pressure (see McCormick and Polis 1982). Tarantulas (Theraphosinae) are able to eat small to medium-sized snakes in captivity (pers. obs.); these spiders and carnivorous ants both are very common throughout Amazonia. As proposed by McCormick and Polis (1982), group foraging by ants and the large size of tarantulas may facilitate predation on relatively large vertebrates.

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MARCIO MARTINS
Departamento de Biologia
Instituto de Ciências Biológicas
Universidade do Amazonas
69068 Manaus AM, Brasil.

Aerial Basking By Hatchling Freshwater Turtles

Many freshwater turtle species exhibit aerial basking behavior (Boyer 1965). Janzen et al. (1992) described three observations of basking by hatchling freshwater turtles (considered, as in the present study, to include turtles in their first full growing season) for the species *Chrysemys picta*, *Kinosternon odoratum*, and *Trachemys scripta*. They commented on the lack of reports of basking behavior in hatchlings, and were able to cite similar observations for only six other species (Table 1). They suggested that hatchling basking is more common than can be inferred from literature records, either due to researchers' inability to observe the phenomenon or their failure to report it.

TABLE 1. Reports of aerial basking by hatchling freshwater turtles.

Family	Species	Source
Emydidae		
	Chrysemys picta	Janzen et al. 1992; Vogt[1]; this study
	Clemmys guttata	Janzen et al. 1992[2]
	Emydoidea blandingi	Janzen et al. 1992[2]
	Graptemys flavimaculata	Vogt[1]
	G. geographica	Janzen et al. 1992[2]; Vogt[1]
	G. nigrinoda	Waters 1974; Vogt[1]; this study
	G. oculifera	Vogt[1]; this study
	G. ouachitensis	Vogt[1]; this study
	G. pseudogeographica	Janzen et al. 1992[2]; Vogt[1]; this study
	G. pulchra	Shealy 1976; Vogt[1]; this study
	G. versa	This study
	Pseudemys concinna	Vogt[1]; this study
	Trachemys scripta	Moll and Legler 1971; Auth 1975; Janzen et al. 1992; Vogt[1]; this study
Kinosternidae		
	Kinosternon carinatum	Vogt[1]
	K. leucostomum	Vogt[1]
	K. minor	Vogt[1]
	K. odoratum	Janzen et al. 1992
Trionychidae		
	Apalone mutica	This study
	A. spinifera	This study
Pelomedusidae		
	Podocnemis unifilis	Vogt[1]

[1]References attributed to Vogt are observations confirmed by hand capture while snorkeling (R. Vogt, pers. comm.).
[2]Cited as pers. comm. from D. Moll and E. Moll.