

Short Note

New World Army Ants *Eciton burchellii* Kill and Consume Leaf-Litter Inhabiting Lizards in the Atlantic Forest, Southeast Brazil

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Army ants of the subfamily Dorylinae are pervasive and dominant invertebrate predators in tropical and subtropical terrestrial environments, and are famed for large colonies, nomadic behavior, mass foraging, and ecological impacts on communities^{1,2}. Their dramatic foraging raids dislodge, subdue and kill their prey, mostly arthropods, and the ants are able to tear apart large invertebrates^{3,4,5,6}. However, small vertebrates such as lizards and snakes are occasionally preyed on by some Old World species of the genus *Dorylus* and the New World *Cheliomyrmex andicola*^{1,5}. Bird nestlings, lizards and snakes are reportedly killed by the New World army ant *Eciton burchellii* but are not consumed, because the mandibles of these ants are considered as unsuitable to tear apart the tissue of vertebrates^{3,5}.

Despite the claims that *E. burchellii* does not consume small vertebrates^{3,4,5}, a raid of these army ants was recorded invading a house at a forest edge in Southeast Brazil, where the ants pursued, killed and consumed two exotic and synanthropic gekkonid lizards and a small snake⁷. Herein I report on two foraging raids of these army ants that displaced, killed and consumed native leaf-litter inhabiting phyllodactylid lizards, *Gymnodactylus*

darwinii in the Atlantic Forest of São Paulo coast in Southeast Brazil.

The encounters between the army ants raids and the lizards were recorded in a lowland Atlantic Forest at two localities (23°19'44''S, 44°52'53'' W and 23°20'00''S, 44°52'54''W) in Ubatuba, São Paulo coast, Southeast Brazil. These encounters were recorded on 6 November 2005 and 18 May 2007 from late morning to early evening. I observed the two encounters with unaided eyes and documented with photographs the ant swarm raids, the subdued and then killed lizards, and their consumption by the ants. During the observational sessions, I used the ad libitum and sequence samplings⁸, both of which are adequate for rare or unexpected events.

Both encounters herein reported between *Eciton burchellii* foraging raids and *Gymnodactylus darwinii* were under the canopy of the forest, near the edge. The army ants columns raided the leaf-litter accumulated on forest floor and occasionally swarmed at crevices (Fig. 1).

Insects and spiders were their most common preys, as usually stated in the literature^{3,4,5,6}, but the two lizards were found and killed during the raids as well. On 18 May 2007, a lizard on the forest floor was hit by a front of a foraging raid. The lizard fled to an open space near the forest



FIGURE 1. A foraging column of the army ant *Eciton burchellii* swarm at a crevice. Note light large soldiers that guard the raiding columns of dark workers.

edge but was quickly subdued by the biting and stinging, fast recruiting ants. Within minutes the ants partly covered the lizard's body (Fig. 2) and its tissue became gradually viscous, most probably due to the protease-laden venom injected by the stinging army ants¹. The consumption of *G. darwinii* lasted about 50 min, a time similar to that previously reported⁷ for the consumption of the exotic and synanthropic gecko *Hemidactylus mabouia*. After the ant cluster broke up, a wet and slightly gooey stain on the ground was the only remain of the lizard. On 6 November 2005, another *G. darwinii* was found by a foraging raid of army ants under a fallen log, where it was quickly dispatched and consumed the way described above. However, I was unable to take a clear photograph on this occasion due to the location of the lizard and the army ants swarming near the log.

The exotic and synanthropic gecko *Hemidactylus mabouia*⁷ and the native forest-dwelling *Gymnodactylus darwinii* (present paper) are the only lizard species whose killing and consumption by the New World army ant *Eciton burchellii* are presently recorded and substantiated. Both lizard species are subdued, killed, and consumed similarly, which may be due to their soft and easily torn skin and a generally delicate body constitution, characteristics of the Gekkonidae and Phyllodactylidae⁹. Whereas the gekkonid *H. mabouia* is a nocturnal lizard that dwells and hunts in manmade habitats^{10,11}, the phyllodactylid *G. darwinii* is a secretive diurnal lizard that dwells and hunts in the leaf-litter and under logs¹². Field studies on prey types of raiding *E. burchellii* and other New World army ants would probably disclose further species of leaf-litter inhabiting small squamates (lizards, snakes)



FIGURE 2. *Eciton burchellii* workers bite and sting a belly-up native, litter-inhabiting phyllodactylid lizard *Gymnophthalmus darwini*, whose tail broke in the course of its subduing by the army ants.

killed and consumed by these pervasive predators. As leaf-litter inhabiting lizard and snake fauna is much richer in the Amazonian Forest than in the Atlantic Forest in the Southeast Brazil^{13, 14, 15, 16}, further observations may be focused in Northern Brazil. Additionally, it would be instructive to observe if small vertebrates killed by *E. burchellii* are consumed in situ⁷, or abandoned as previously implied^{3,4,5}.

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