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SHORT COMMUNICATION

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Daily activity of four elapomorphine snakes in south-eastern Brazil

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During fieldwork to prepare an inventory of the snake assemblage in a Cerrado region of south-eastern Brazil, one of us (AB) recorded the activity patterns of three elapomorphine (Dipsadidae, tribe Elapomorphini) species: *Phalotris lativittatus, Phalotris mertensi* and *Apostolepis dimidiata*. In addition, in this report we include the feeding of the elapomorphine *Elapomorphus quinquelineatus* from the Atlantic Forest which together provides some insights into the daily activity patterns of these four species under natural conditions.

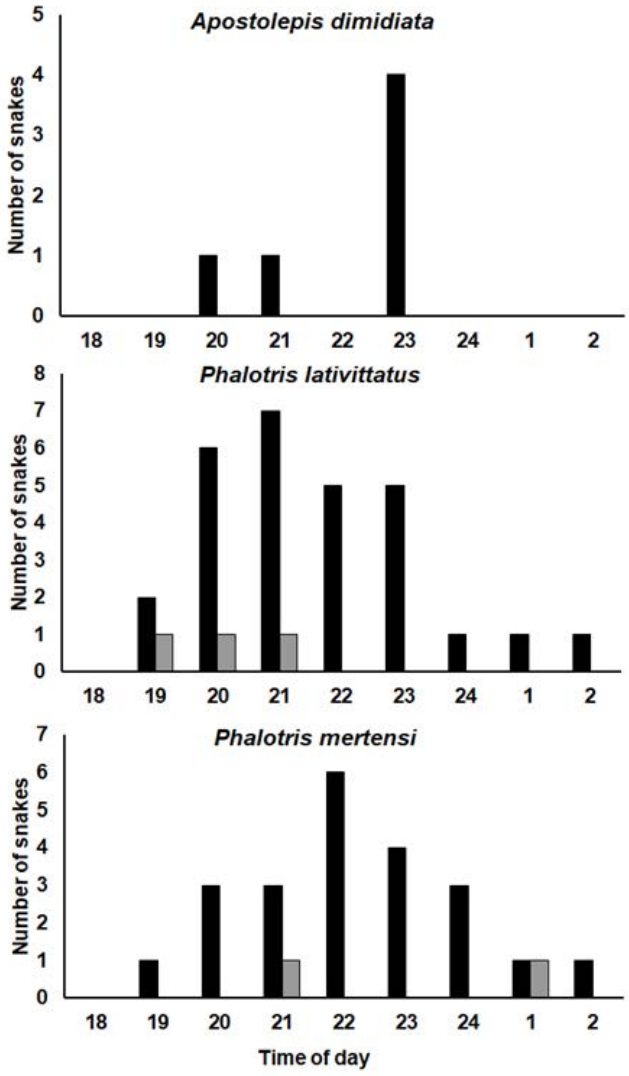

Figure 1. Observed activity patterns of three elapomorphine species in the Cerrado (south-eastern Brazil). Black bars represent adults and grey bars represent newborns (< 200mm).

The study area was in the Cerrado of the municipality of São Simão, state of São Paulo (21° 28' S, 47° 33' W; 650 m a.s.l., range: 530–960 m). This region encompasses three characteristic Cerrado vegetation types: forested savannah (Cerradão), tree savannah (Cerrado sensu stricto) and grassy-woody savannah (Campo sujo) (Veloso, 1992), as well as gallery forests that border streams and rivers. Parts of the municipality are also covered by eucalyptus and sugarcane plantations. Surveys for live or road kill snakes were made from a vehicle travelling at speeds of up to 40 km/h along four roads within the municipality - Chaffy Jorge, Capitão José Luiz de Oliveira e Silva, Conde Francisco Matarazzo and Rodovia Anhanguera. The surveys were undertaken during daylight (07:00 to 11:00 h) and at nighttime (18:30 to 02:00 h) throughout the rainy season from October 2020 to April 2021 and again from October 2022 to March 2023. A total of 5,388 km was sampled during the day and 6,050 km at night. The body size of observed specimens was estimated, with individuals measuring < 200 mm considered newborns.

Active snakes were recorded across all three vegetation types and some disturbed areas and included *P. lativittatus* (n = 30), *P. mertensi* (n = 21) and *A. dimidiata* (n = 6). Almost all specimens of *P. lativittatus* and *A. dimidiata* were found in preserved Cerrado areas (forested or grassy-woody savannah), with only one individual of *P. lativittatus* recorded in a sugarcane plantation. In contrast, individuals of

Figure 2. *Elapomorphus quinquelineatus* swallowing an amphisbaenian *Leposternon microcephalum* at 10:57 h.

P. mertensi were found in preserved Cerrado areas (n = 12), marsh or gallery forests (n = 5), and sugarcane or eucalyptus plantations (n = 5). All species were encountered only during nighttime sampling (19:00 to 02:00 h, Fig. 1).

The feeding record of *E. quinquelineatus* was documented by a trail walker (F.R. Silva, pers. comm.) in a preserved area of the Atlantic Forest at Parque do Atalaia, municipality of Macaé, state of Rio de Janeiro (22° 15' S, 42° 02' W; 230 m a.s.l). The specimen of *E. quinquelineatus* (total length ~500 mm) was found at 10:57 h on 5 August 2023 while feeding on an amphisbaenian *Leposternon microcephalum* on a forest trail. Both the predator and prey were on the surface, and part of the snake's body was covered by leaf litter (Fig. 2). The snake was starting to swallow its prey head-first, with its mouth still biting the amphisbaena's head. We estimate that the ratio of total prey length to predator snout-vent length was at least 0.7.

Elapomorphine snakes have been considered as both diurnal and nocturnal (Marques et al., 2015; 2017; 2019; 2023), but data from direct observations are scarce (Sawaya et al., 2008; França & Braz, 2013; Costa et al., 2010). The data presented here consistently show nocturnal activity for three species (*A. dimidiata, P. lativittatus* and *P. mertensi*). In captivity, some individuals of the elapomorphine *Apostolepis assimilis,* from south-eastern Brazil, exhibit exclusively or predominantly diurnal behaviour, whereas others exhibit intense nocturnal activity (Torello-Viera & Marques, 2017). However, activity patterns may be plastic, varying with environmental conditions (Torello-Viera & Marques, 2017; Abom et al., 2012; Banci et al., 2025).

The intrinsic activity patterns of the *Phalotris* genus remains unknown. However, unlike *Apostolepis*, species of *Phalotris* have always been reported as nocturnal (Marques et al., 2015; Sawaya et al., 2008), which is supported by this study. In contrast, diurnal activity—likely intrinsic at least for *Apostolepis*—has been observed in *Elapomorphus* spp. in nature. Our report of *E. quinquelineatus* feeding in daylight in the Atlantic Forest mirrors a previous report of the species preying on the same amphisbaenian species at around 10:00 h (Caramaschi & Niemeyer, 2012). Although *E. quinquelineatus* has also been observed moving at night (Costa et al., 2010), the two instances of daylight feeding contrast with the predominantly nocturnal activity of elapomorphine species in the Cerrado.

We suggest that the apparent difference in daily activity patterns among free-ranging elapomorphine snakes—*Apostolepis* and *Phalotris* (nocturnal) versus *Elapomorphus* (diurnal)—may be related to their distinct habitats. Although abiotic factors (humidity, temperature and insolation) may influence the time of activity, predation pressure may also play an important role.

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REFERENCES

Abom, R., Bell, K., Hodgson, L. & Schwarzkopf, L. (2012). Moving day and night: highly labile diel activity patterns in a tropical snake. *Biotropica* 44: 554−559.

Banci, K.R.S., Eterovic, A., Rosa, L.G.S. & Marques, O.A.V. (2025). Living in the darkside? Plastic activity in the *Bothrops jararaca* group (Serpentes, Viperidae). *Amphibia-Reptilia* (Advance Article). 14 pp. https://brill.com/view/journals/amre/aop/issue.xml).

Bernarde, P.S., Kokubum, M. & Marques, O.A.V. (2000). Utilização de hábitat e atividade em *Thamnodynastes strigatus* (Günther, 1958), no sul do Brasil (Serpentes, Colubridae). *Boletim do Museu Nacional* 428: 1−8.

Caramaschi, U. & de Niemeyer, H. (2012). Unsuccessful predation of *Elapomorphus quinquelineatus* (Serpentes: Colubridae) on *Amphisbaena microcephala* (Amphisbaenia: Amphisbaenidae). *Herpetology Notes* 5: 429−430.

Costa, H.C., Pantoja, D.L., Pontes, J.L. & Feio, R.N. (2010). Serpentes do município de Viçosa, Mata Atlântica do sudeste do Brasil. *Biota Neotropica* 10: 352−378.

Coutinho, L.M. (1990). Fire in the ecology of the Brazilian cerrado. In: *Fire in the Tropical Biota: Ecosystem Processes and Global Challenges*. 82−105 pp. Berlin, Heidelberg: Springer Berlin Heidelberg.

França, F.G.R. & Braz, V.D.S. (2013). Diversity, activity patterns, and habitat use of the snake fauna of Chapada dos Veadeiros National Park in Central Brazil. *Biota Neotropica* 13: 74−84.

Marques, O.A.V., Eterovic, A. & Sazima, I. (2019). *Serpentes da Mata Atlântica: guia ilustrado para as florestas costeiras do Brasil*. Editora Ponto A. 320p.

Marques, O.A.V., Eterovic, A., Guedes, T.B. & Sazima, I. (2017). *Serpentes da Caatinga: guia ilustrado*. Editora Ponto A. 240 pp.

Marques, O.A.V., Eterovic, A., Martins, M. & Sazima, I. (2023). *Serpentes da Amazônia: guia ilustrado*. Editora Ponto A. 320 pp.

Marques, O.A.V., Eterovic, A., Nogueira, C. & Sazima, I. (2015). *Serpentes do Cerrado: guia ilustrado*. Ribeirão Preto: Editora Holos. 248 pp.

Sawaya, R.J., Marques, O.A.V. & Martins, M. (2008). Composition and natural history of a Cerrado snake assemblage at Itirapina, São Paulo state, southeastern Brazil. *Biota Neotropica* 8: 127−149.

Torello-Viera, N.F. & Marques, O.A.V (2017). Daily activity of neotropical dipsadid snakes. *South American Journal of Herpetology* 12: 128−135.

Veloso, H. (1992). Sistema fitogeográfico. In: *Manual Técnico da Vegetação Brasileira*. Série Manuais Técnicos em Geociências. 272 pp.

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