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Short communication

Observations on feeding behavior in the vesper mouse, *Nyctomys sumichrasti*

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The vesper mouse, *Nyctomys sumichrasti* (Rodentia: Muridae), is a nocturnal, arboreal, long-tailed, sigmodontine rodent. Although the vesper mouse is widely distributed, being found from Veracruz, México, to eastern Panamá, little is known of its life history.

On the evening of 30 January 1999, we observed an adult female vesper mouse feeding in a *Daphnopsis americana* (Thymelaeaceae) tree. Our observation was made at La Reserva Biológica Bosque Nuboso Monteverde, Puntarenas Province, Costa Rica (10°21′ N, 85°20′ W) at 1 550 m a. s. l. The habitat is Premontane Wet Forest/Lower Montane Wet Forest. We observed the mouse from 18.30 to 19.20 h and again on adjacent branches from 21.30 to 21.40 h.

The female vesper mouse (enlarged teats were clearly visible) was first observed on a horizontal branch approximately 7 m high and 2-cm in diameter in a 10-m *Daphnopsis americana*. The mouse grasped the branch with its hind feet and handled leaves with its front feet. Despite gusts of wind, which blew the branch and mouse more than 20 cm, the mouse continued to use only its hind legs to maintain its position on the branch. The long tail seemed to be used for balance; it was held straight behind the body and frequently touched branches or leaves.

When first observed, the mouse was chewing a *Daphnopsis* leaf. After several minutes, the mouse discarded the initial leaf and grasped a second leaf, detaching it from the twig entirely at the base of the petiole. The mouse fed on the second leaf for 13 min, holding it with the front feet and chewing and consuming the entire leaf, except for the midrib. When that leaf was consumed, another leaf was detached and consumed. On all chewed leaves examined, the sides of the leaf and the tip were chewed; however, the midrib was avoided and discarded (Fig. 1). We found 14 chewed *Daphnopsis* leaves beneath the tree, all chewed in this distinctive manner. We estimated most of the leaves we found to be from the evening of 30 January; however, some clearly were older and almost certainly dated to earlier feeding by the mouse in this tree. The *Daphnopsis* tree was flushing new leaves; all leaves chewed by the mouse and all chewed leaves found below the tree were young leaves, not mature older leaves.

Daphnopsis americana occurs in a variety of successional habitats in Monteverde and is commonly found in abandoned pastures, forest edges, and light gaps in forest interior. Thymelaeaceae is a family of highly toxic and poisonous trees and shrubs, and

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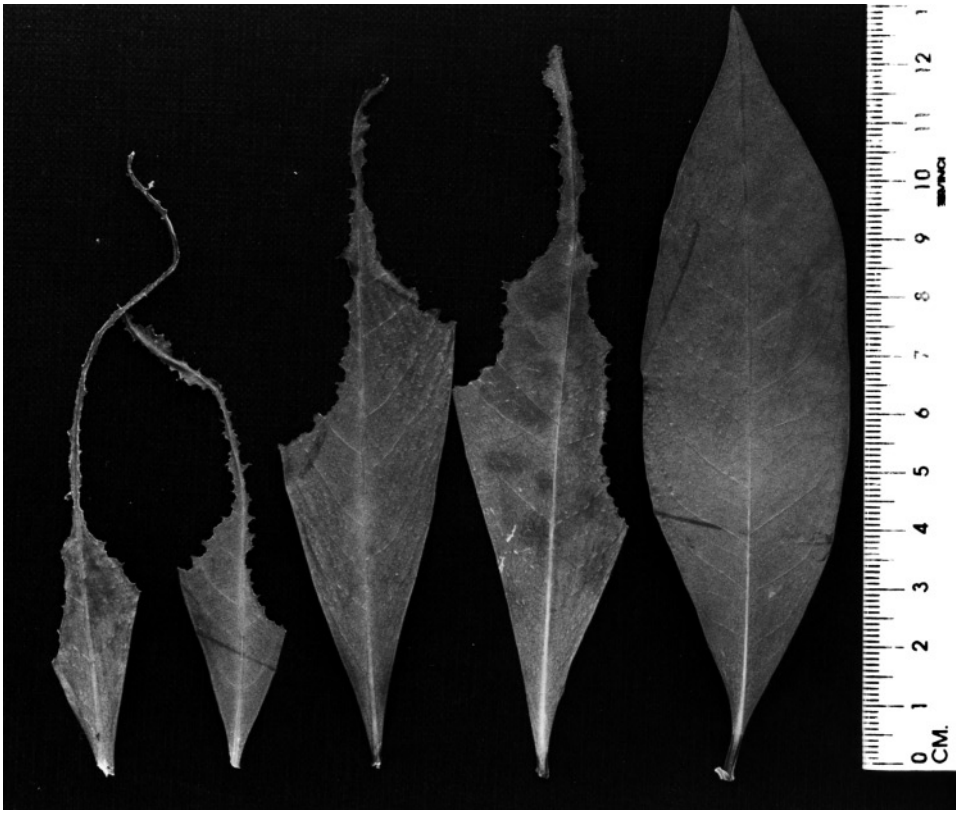

Fig. 1. Dorsal view of five leaves from a single *Daphnopsis americana,* four of which have been partially consumed and discarded by a vesper mouse, *Nyctomys sumichrasti*. The unaltered leaf on the right is included for size comparison. The characteristic chewing marks made by the rodent's paired incisors and the gap between the teeth are visible upon close inspection. The midrib was avoided by the mouse.

we found no damage on the leaves other than those clipped and removed by the *Nyctomys*. However, *D. americana* at Monteverde can be defoliated in April and May by caterpillars (Haber et al. 1996).

This observation of *Nyctomys* feeding on leaves is of particular interest in that *Daphnopsis americana* contains a variety of secondary plant compounds that are poisonous. There are very few Neotropical arboreal rodents known to be folivorous (Eisenberg 1978; McNab 1978), although the rodent fauna is diverse and includes a wide array of arboreal species. A high proportion of Neotropical trees and shrubs has a variety of secondary plant compounds, including many that are quite poisonous (Coley 1983), that effectively deter most herbivorous mammals. This may explain why so few arboreal rodents are folivores in the Neotropics. *Nyctomys sumichrasti*, at 70–85 g, is one of the smallest mammalian folivores now known, and is readily able to utilize *Daphnopsis* leaves, although the digestive and metabolic mechanisms remain unknown. The mouse was feeding on new leaves only. These recently flushed leaves almost certainly have a lower concentration of secondary compounds than do older leaves.

Although *Nyctomys sumichrasti* is uncommon throughout its range, vesper mice are not rare in the Premontane Moist Forest and Premontane Wet Forest of the Monte-

verde region of Costa Rica (Timm and LaVal 2000). Vesper mice occasionally are found in houses at Monteverde and will make nests in papers and clothing; however, they rarely consume human food, unlike all other species of native mice that invade houses (*Peromyscus nudipes*, *Reithrodontomys gracilis*, and *Tylomys watsoni*) (R. LaVal pers. comm.). Vesper mice previously have been reported feeding on fruit of madders (Rubiaceae), the understory shrub *Psychotria gracilis* (Rubiaceae), borage (*Cordia diversifolia*), avocados (Lauraceae), figs (*Ficus*), flowers, seeds, and insects (Genoways and Jones 1972; Langtimm 2000; Reid 1997). Genoways et al. (2002) recently reported that the closely related Yucatán vesper mouse, *Otonyctomys hatti*, is a highly arboreal frugivore.

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