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COSTA RICAN NATURAL HISTORY

EDITED BY

Daniel H. Janzen

WITH
174 CONTRIBUTORS



12. Influence of *Arachnida* (millipede) with crab sp...
13. *Rana* National Park.
14. Adult female *Oryzias latipes* (white-tailed deer). Santa
15. Adult *Cnemidophorus* (beetle) (tiger). Santa Rosa National Park.
16. *Crocodylus* National Park.
17. Adult *Panurgus* (beetle) (tiger) in *Panurgus* swamp.
18. Adult *Cyrtus* (beetle) (tiger). Santa Rosa National Park.
19. *Rana* National Park.

1. Female *Rhododendron* (beetle) (tiger) in copula. Santa
2. Last instar caterpillar of *Rhododendron* (beetle) (tiger).
3. Defoliated fruit and seeds of *Pometia* (beetle) (tiger).
4. Adult female (beetle) (tiger). Santa Rosa National Park.
5. Adult *Dryobates* (beetle) (tiger) (speckled tree) swallowing
6. *Stelochrysis* (beetle) (tiger) (white palm) with leaves 6 to 8 meters
long, growing through late secondary succession. Santa Rosa
National Park.

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species (ca. 2 km on either side of rivers in Turner's 1975 study). Efficiency at finding and feeding on prey is fairly high, with a mean foraging time of about 2–3 h on any given night.

Vampires roost communally during the day in tree hollows, abandoned wells, caves, and such. Their roosts are easily distinguishable from those used exclusively by other bat species by the potent ammonia odor and by the dark orange, viscous "goo" (their excreta) on the roost walls and floor. When *Desmodus* shares roosts with other bat species, they are often found in the uppermost, most secluded areas. Both sexes roost together, and roost turnover for individuals can be very high when a number of potential roosts exist close by; but vampires have also been reported to use the same roost over long periods. Self-grooming and social grooming in the roost are common.

Although pregnant vampires can be netted in any month of the year, Turner's (1975) data suggest higher pregnancy rates for the wet season in northern Costa Rica, and this may be related to prey availability. Females can be captured that are both pregnant and lactating, indicating a postpartum estrous. In captivity, mothers feed young vampires blood from their mouths at 3 months of age, and juveniles visit prey with their mothers at 5 to 6 months of age (Schmidt and Manske 1973).

Through their unique feeding habits, vampires can transmit a number of diseases, the most serious, of course, being paralytic rabies. Annual losses in domestic stock from vampire-transmitted rabies virus are estimated at over \$100 million throughout Central and South America. *Desmodus* is known to survive the virus itself, and infection rates appear to be low in naturally occurring populations.

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- Chase, J. 1972. Role of vision in echolocating bats. Ph.D. diss., Indiana University.
- Greenhall, A. M. 1970. The use of a precipitin test to determine host preferences of the vampire bats, *Desmodus rotundus* and *Diaemus youngi*. *Bijdrag. Dierk.* 40:36–39.
- Schmidt, U., and Greenhall, A. M. 1971. Untersuchungen zur geruchlichen Orientierung der Vampirfledermäuse (*Desmodus rotundus*). *Z. Vergl. Physiol.* 74:217–26.
- Schmidt, U.; Greenhall, A. M.; and Lopez-Forment, W. 1970. Vampire bat control in Mexico. *Bijdrag. Dierk.* 40:74–76.
- Schmidt, U., and Manske, U. 1973. Die Jugendentwicklung der Vampirfledermäuse (*Desmodus rotundus*). *Z. Säugetierk.* 38:14–33.
- Turner, D. C. 1975. *The vampire bat: A field study in behavior and ecology*. Baltimore: Johns Hopkins University Press.

Didelphis marsupialis (Raposa, Zarigüeya, Zorro Pelón, Zorra Mochila, Opossum)

A. L. Gardner

Adults of *Didelphis marsupialis*, the largest marsupial in Costa Rica, approach 1 m in total length, of which the tail is about half. Very large adults may exceed 5 kg, but most weigh considerably less (0.8–2.5 kg.). The two color phases (gray and black) may be equally common, although the gray phase usually predominates. The fur is dense, with the guard hairs long and coarse. The lower legs are black. The sides of the head, snout, and underparts are paler than the rest of the body and may be stained yellowish to orange, presumably by secretions from midventral chest glands. The cheek is dark; individual hairs are pale basally, usually dusky tipped, and often tinged yellowish. The ears are bare, white-tipped in young but all black in subadults and adults. The tail is prehensile, thickly haired at its base (proximal 10%); the bare portion is black on the proximal half or more, with the rest white. Each foot bears five well-developed toes; the opposable, thumblike hallux is the largest. Females bear a pouch.

Normal dentition is fifty teeth: incisors, 5/4; canines, 1/1; premolars, 3/3; molars, 4/4 on each side. The only deciduous teeth are the last upper premolars. Teeth are fully erupted by 10 months of age. Greatest length of skull varies from 90 to 125 mm in adults. Opossums apparently grow throughout life, and males are consistently larger than females of equivalent age. Much of the differential in size between the sexes is due to the demands of reproduction (principally lactation), which diverts energy from growth processes in the female.

Cheek color is the easiest character to use when distinguishing *D. marsupialis* from its northern sympatric and similar-sized congener *D. virginiana* (Virginia opossum). The all-white-cheeked *D. virginiana* (fig. 9.13), while uncommon in Costa Rica, may be expanding its range and has been found as far south as Cañas.

Didelphis marsupialis is found countrywide below 1,500 m but is rare or absent at higher elevations. This nondiscriminating omnivore forages at night, usually along watercourses, and eats just about anything edible it encounters. Some have been found with their stomachs filled with coffee beans. *Didelphis*, among New World mammals, perhaps comes closest to being a commensal of man. In many areas the opossum's acquired dependence on refuse dumps as food sources concentrates the animals close to human habitations, where they also prey on poultry and fruit crops. Individuals are solitary except when breeding and do not defend territories. Opossums often travel more than 1 km per night. Den

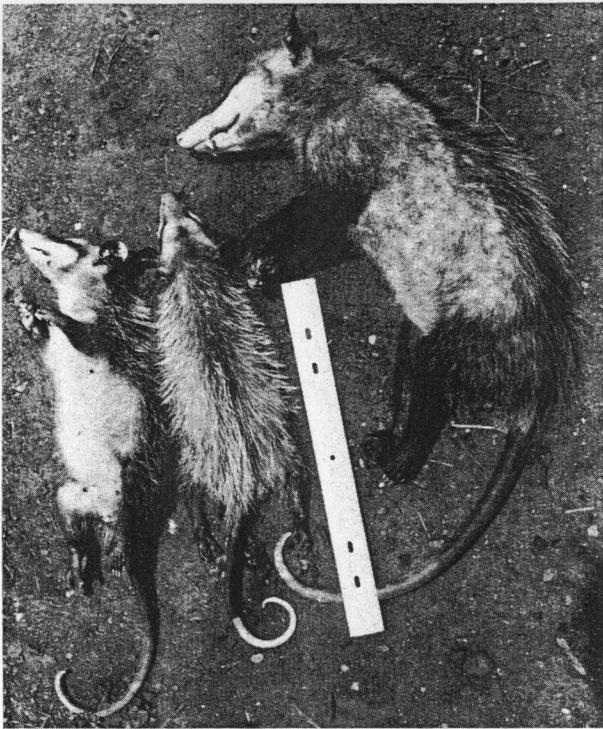


FIGURE 9.13. *Didelphis virginiana*, adult male (on right) with long canines (females have short canines), and two juveniles; these animals are very similar to *Didelphis marsupialis*, except that they have white to creamy white facial cheeks whereas the cheeks of *D. marsupialis* are tan to brown. June 1980, Santa Rosa National Park, Costa Rica (rule is 12 in long) (photo, D. H. Janzen).

sites include caves, rock crevices, hollow logs and trees, and abandoned dens of other mammals. Because the female has a pouch and carries her young, she is not restricted to fixed dens or nests during any time of the year.

Costa Rican *D. marsupialis* probably has two litters per year, with birth peaks in February and July and no reproductive activity between October and late December. Gestation is 12–13 days. Many more young are born (about twenty) that can be accommodated in the pouch (average number of teats is nine), and the average number of pouch young approximates six. After its journey from vulva to pouch, each young firmly attaches to a nipple, where it will remain for at least 60 days. Young are weaned at about 100 days of age. Females are reproductively mature at 7 months; spring-born females may breed during their first year.

Mortality is highest among newly weaned young. Predators include owls, snakes, and most mammalian carnivores. Opossums are well known for the variety and number of parasites they harbor; however, rates of loss to parasitism and disease are not known. They are highly resistant to crotalid venom. Whereas opossums are often

killed by humans to keep them from damaging poultry and fruit crops, many more are killed by vehicles.

The flesh of *D. marsupialis* is usually considered unpalatable, and they are not hunted for food. These opossums rarely put on appreciable amounts of body fat, in contrast to *D. virginiana*, which can become extremely fat and is often hunted for food.

“Playing possum,” a death-feigning response to strong threat, is not as common in *D. marsupialis* as it is in *D. virginiana*. Stereotyped bluff behavior includes gaping and hissing while slowly moving the head from side to side and shifting weight from one front foot to the other. This behavior may be accompanied by lunging toward the threat and biting. When aroused, *D. marsupialis* may respond by growling, hissing, flailing the tip of the tail, and (in males) snapping the canines together.

The opossums are capable climbers and spend considerable time foraging in vegetation.

Eira barbara (Tolumuco, Tayra)

D. H. Janzen

This chocolate brown to black mustelid (also called *Tayra barbara* in older literature) is found throughout Costa Rica below about 2,000 m elevation and ranges from central Mexico to tropical southern South America. An adult (fig. 9.14a) weighs about 5 kg and looks like a thin-haired, lanky, very large mink with a long and long-haired tail. The body hair is very short and the skin is darkly pigmented beneath the hair. The feet are not webbed, and they look like long-clawed mink feet. The dentition is like that of a mink or otter (fig. 9.14b).

Tayras are terrestrial and arboreal foragers but do not search in water (as do grison and otters). I have seen them up to 20 m off the ground in the crowns of large deciduous forest trees at Santa Rosa National Park, and I saw one walk down the straight, clean bole from a crown of a 40 m tree in Corcovado National Park. I watched one chase an adult agouti on a dirt road for at least 50 m (Rincón, Osa Peninsula, 1965), but the rodent outran it. When foraging on the forest floor they are very inquisitive, appearing to visually and olfactorily examine many crevices and holes. However, the two I watched for extended periods did not catch litter insects, and were not nearly as disruptive of the litter as are coatis. Tayras give the impression of searching for large prey items (presumably birds nests, carrion, lizards, fruit, or eggs). An adult was seen to pick up a 500-g ripe sapotaceous fruit on the forest floor and carry it away after making an aggressive display to the observer (Corcovado National Park). Tayras forage throughout the day, and in captivity they are active in the daytime and sleep at night.

In captivity they are highly omnivorous, eating eggs, chicken and goat meat and bones, papayas, pineapples,