

Letter From the Desk of David Challinor  
March 2003

In the high latitudes of the northern hemisphere, many terrestrial mammals have a continuous circumpolar range. Polar bears, caribou (reindeer), wolves, wolverine, and moose are but a few examples. In the tropics, however, globe-encircling ranges for land mammals are exceedingly rare, especially within genera. Today the tapir family is an extraordinary example of one species whose habitat circles the globe; it lives in southern Thailand, Malaysia and Sumatra, and three closely related species inhabit the New World. Baird's tapir ranges from southern Mexico to Ecuador; the lowland tapir occupies much of Amazonia; and the rare mountain tapir inhabits the forested Andes of Colombia, Venezuela and Ecuador. This last species is the smallest and most gracile of all the tapirs and, unlike the others, has a soft woolly coat. This month's letter will speculate on how tapirs came to occupy two very different ranges on opposite sides of the globe, and what we have recently learned about these interesting animals.

Tapirs, rhinos and horses all belong to the odd-toed ungulates known as perrissodactyls. In the Tertiary era (from the present to 70 million years ago), the ancestors of rhinos and tapirs constituted a large and varied group, but now only a few have survived. All four tapir species look remarkably alike. The New World species vary slightly in size but all have uniformly brown coats. The Asian tapir is about the same size as its New World relatives, but has a white rump with black head, forequarters and legs. All kinds have a long, mobile nose and relatively small, rounded, white-trimmed ears. They have sharp teeth with long upper incisors equivalent to elephant tusks, but they do not protrude. As occurs in Indian rhinos, male dominance may be established by biting other males, thus sharp, unbroken incisors are important to them. Years ago at the Zoo a keeper learned to his sorrow the danger of a tapir bite: he was bitten badly by a Baird's tapir in our collection.

The tapirs' current wide distribution reflects the ancient (Eocene of 50 million years ago) range of the isctolophidae, whose fossils are geologically the oldest of all the ancestors of the relatives of the rhino/tapir family. Other families evolved in both the Old and New Worlds and by the Oligocene (25 million years ago), fossil finds indicated that the prototypes of today's tapirs were well-established in what is today Europe and North America. Remember that North America was still connected with Eurasia at the beginning of the Tertiary. It was in the Miocene (11 million years ago) that the split in the New and Old World tapirs probably occurred and, despite their hemispheric separation, both populations have changed little from each other or from their ancestors. The South American tapirs arrived there relatively recently as the land bridge joining North and South America arose only two and a half to three million years ago.

Of the four New World species, Baird's tapir is probably the best-studied due to the easy observation of them at the Smithsonian's Tropical Research Institute's Barro Colorado Island (BCI). When this large island (a former broad hill top) was created in 1914 by the closing of the Canal's Gatun Dam, perhaps a score or more tapirs fled the rising waters to seek refuge on the island. When WWI followed shortly thereafter, the scarce patrols of forest guards ceased and within a few years all the resident tapirs were poached. As early as 1929, island scientists introduced individuals to restore this large forest denizen, and others swam over from the mainland. More introductions followed in the 1950's and by the late 1960's one tapir family was regularly visiting the island's kitchen compound to feed from a box of stale white bread supplied by the station's cook. For some reason known only to the tapirs, they would not touch brown bread (a subject for a future dissertation perhaps). They came so regularly and for such a long period, about three or four of them at a time, that they all were given names and the station's scientists even established a genealogical chart. In the forest, tapirs are elusive animals, but when feeding at the breadbox, they were easy to approach and study. In fact, if the breadbox was empty when they arrived, a tapir would bang on the kitchen door with its forefoot demanding to be fed.

Once the tapirs returned to the forest, however, they would not touch bread even when they walked right by it on a trail—just why, we still do not know. Furthermore, when leaves of plants they normally ate in the forest were put in the breadbox, the tapirs carefully avoided them and ate only bread. Why? Again, we have no clue. They are finicky eaters even when browsing in the forest, normally taking only a few leaves from any one plant before moving to the next. They also at times relish certain local forest fruits, but if offered the same fruit at another time, they will reject it. When choice food is available at a specific forest site, Baird's tapirs will congregate to eat it, with considerable vocalizing and nose touching. Most of the time, however, with the exception of mothers and young, tapirs are solitary. They must consume large volumes of leaves to gain sufficient nutrients because plant leaves are only partially digested and thus easily identified in the tapirs' feces.

My first encounter with a wild tapir occurred on Barro Colorado in the early 1970's when I watched Napoleon, an adult male, feeding from the breadbox. From the light through the kitchen door I could see he was infested with ticks, many so engorged they looked ready to burst. In 1979 Karen Overall, a visiting researcher at BCI, observed a fascinating example of mammalian interspecific grooming to control ticks. Most of us are familiar with various primate species grooming each other, or tickbirds grooming rhinos, giraffes and other mega fauna in Africa. Interspecific mammal grooming is almost unheard of outside zoos. Dr. Overall, however, witnessed six separate incidents of coatis, a long-tailed raccoon-like mammal also attracted by the food handouts, feeding on ticks, particularly engorged ones, gleaned from the infested tapirs. The tapirs cooperated by rolling over so that the coatis could reach otherwise inaccessible ticks. Dr. Overall calculated that a coati could consume as many as 100 ticks in up to 20 minutes,

which would thus furnish about 300 to 400 mls. of blood for an animal this size. The eating of the ticks reduced the tapirs' risk of infection from the spread of blood-born protozoan pathogens within their family groups. Fortunately, the protozoans are host-specific and eating them does not infect the coatis. The conditions under which these coatis ate ticks off the tapirs on BCI were certainly not natural. The breadbox feeding was started to keep the tapirs away from the far side of BCI during the food-scarce dry season, when the risk of poaching was high. It would be interesting to see whether such grooming also occurs under more natural conditions in the forest. Were it observed there too, the behavior would much less likely be considered aberrant—triggered by the artificial feeding conditions.

There is one more story about the BCI tapirs (which, incidentally, still live on the island) that I would like to share with you. Tapirs and rhinos, as well as tigers, cheetahs and all cats of both sexes, urinate backwards; a characteristic that allows easy marking of territorial boundaries. Tapirs can aim with unbelievable accuracy from up to seven meters (22 ft.). I include this bit of biological trivia as a warning: never surprise a tapir because when disturbed, its instantaneous reaction is to aim its urine at you from whatever angle you approach it.

My office at the Zoo overlooks the paddock of Jambi and Rocan, a male and female Malaysian tapir. Both are zoo-bred—one from Minnesota, the other from Memphis—and they came to the National Zoo in 1985 when less than a year old. Although they have bred frequently, Rocan has never conceived. Tapir young of all species are delightfully marked with horizontal white stripes with white dots between them. It would be a joy to have a young one at the National Zoo but, meanwhile, I look forward to warmer days when Jambi and Rocan will leave their heated house to wander their large enclosure and take occasional swims in their tank, making my hours of animal watching even more pleasant. Such are the joys of being “Scientist Emeritus.”

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P.S. Much of the information on BCI's tapirs came from an article by Valery Terwilliger in *Biotropica* 10:211-220 (1978).