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**Remarkable maternal behavior of Baird's tapir (*Tapirus bairdii*)
at Corcovado National Park, Costa Rica**

Dionisio Paniagua (1) and José M. Mora (2, 3)

(1) Surcos Tours, Puerto Jiménez, Puntarenas, Costa Rica. (2) Carrera de Gestión Ecoturística (GEC), Sede Central, Universidad Técnica Nacional (UTN), Costa Rica. (3) Department of Biology and Museum of Vertebrate Biology, Portland State University, Portland, Oregon 97207, USA. [correspondencia: josemora07@gmail.com]

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ABSTRACT

Baird's tapir (*Tapirus bairdii*) prefers habitats with bodies of water in the vicinity. On 3 December 2021, we recorded a female tapir and its calf crossing the Sirena River, Corcovado National Park, southwestern Costa Rica. The calf followed its mother when it entered the river; however, in the deepest part of the river, the mother submerged for a few seconds, and when it emerged, the calf was on top of her, continuing to move this way until they crossed the river. This behavior, therefore, could be a local adaptation to protect calves from predators such as crocodiles and bull sharks.

Keywords: calf, mammal, Perissodactyla, Sirena River, swimming

RESUMEN - Notable comportamiento maternal del tapir centroamericano (*Tapirus bairdii*) en el Parque Nacional Corcovado, Costa Rica. La danta centroamericana (*Tapirus bairdii*) prefiere hábitats con cuerpos de agua en las inmediaciones. El 3 de diciembre de 2021 registramos una hembra de tapir y su cría cruzando el río Sirena, Parque Nacional Corcovado, suroeste de Costa Rica. La cría siguió a su madre cuando entró al río, sin embargo, en la parte más profunda del río la madre se sumergió por unos segundos y cuando salió la cría estaba encima de ella, continuando así hasta cruzar el río. Este comportamiento podría ser una adaptación local para proteger a las crías de depredadores como cocodrilos y tiburones toro.

Palabras clave: cría, mamífero, nado, Perissodactyla, río Sirena

Baird's tapir, *Tapirus bairdii* (Gill, 1865), is found from Mexico (Hidalgo and Veracruz on the Caribbean coast and Guerrero and Oaxaca on the Pacific coast) south to Colombia (to the Magdalena River), from 0 to 3,600 m (Medici 2011; Schank et al. 2017). It is the only wild species of odd-toed ungulates (Perissodactyla) present in Costa Rica, where it is found throughout the country, from sea level to the high-

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est peaks (Mora 2000). It is a large, stocky, hooved mammal that weighs up to 350 kg: the largest mammal in Central America and the Neotropics in general (Reid 2009; Medici 2011). It is dark brown to dark gray in color, with sparse hair about 2 cm long over thick skin (2-3 cm; Mora 2000). The cheeks and throat are whitish, lighter than the rest of the body, as are the edges of the ears (Reid 2009). Calves have white spots on a brown or reddish background on the head and rows of white spots on the sides until they reach about six months of age (Lira et al. 2014).

Baird's tapirs generally live near rivers and prefer marshy or humid places; they are very good swimmers and excellent divers (Mora 2000; Reid 2009). This tapir spends part of the day lying in shaded thickets but also in mud wallows or standing water (Reid 2009). Tapirs walk on the bottom of lakes and other bodies of water, just as do hippopotami (Endo et al. 2019). Baird's tapirs prefer habitats with permanent waterbodies, diverse and dense undergrowth, riparian vegetation, low fire incidence, and low human presence and hunting pressure (Medici 2011). They frequently defecate in shallow water, but also form latrines in particular sites on dry land (Naranjo 2009). When streams and ponds are available, over 90% of the defecation occurs in permanent or seasonal waterbodies (Naranjo 2009).

Baird's tapirs feed on herbs, sprouts, and other types of vegetation, including aquatic vegetation, and also fruits and seeds (Nowak 1999; Reid 2009). They travel at night, sometimes over long distances, although they are active around dusk and dawn and also can be active during the day (Naranjo 2019). Although they are generally solitary, it is possible to find them in family groups; adults recognize and tolerate their offspring, even after separating (Medici 2011). The offspring remain nearby for 3–4 years, at least in Corcovado National Park (Medici 2011).

Baird's tapir is a facultatively polygamous species; after mating, it has a gestation period of 13–14 months (Medici 2011). Only one calf is born at a time, weighing 3–7 kg; it is precocial and follows its mother immediately after birth and remains with her for 12–18 months (Naranjo 2019). Females start to mate at 3–4 years old and have estrous periods lasting about 48 h every 50–80 days, with a minimum period between litters of 17 months (Naranjo 2019).

The habitat of Baird's tapir has been strongly reduced in area, and currently, the species is found almost exclusively in protected and remote areas (Medici 2011). In the last 4–5 decades, tapirs have lost more than 70% of their original habitat (García et al. 2016). In Costa Rica alone, 80% of the forest has already been eliminated by deforestation (Medici 2011). It is estimated that more than 30% of the tapir population has been lost in the last three generations, or approximately 35 years (Medici 2011). In addition to habitat loss due to deforestation and fragmentation, the species is affected by its low reproductive rate, slow population growth, hunting, mining, road accidents, and possibly diseases transmitted by domestic animals (García et al. 2016). Baird's tapir is classified as Endangered (EN) with decreasing populations on the Red List of the IUCN (García et al. 2016). It is in Appendix I of CITES and, in Costa Rica, is classified as endangered (SINAC 2017).

On 3 December 2021, we observed a tapir calf swimming across the Sirena river



with its mother. The Sirena River (latitude 8.4870069; longitude -83.6083315) is located in Corcovado National Park in the Puerto Jiménez district on the southwestern coast of the Osa Peninsula, Costa Rica (Fig. 1). This park, created in 1975, represents the largest remaining tract of lowland tropical rain forest in Central America and supports high biodiversity, including at least 140 species of mammals (Vaughan & Rodríguez 1997; Foerster & Vaughan 2002). The mean annual temperature at CNP ranges between 23 and 26.58°C depending on elevation (Foerster & Vaughan 2002). The rainy season extends from May to November, with 475 mm of precipitation month⁻¹, and the dry season from December to April, with 130 mm month⁻¹ (Vaughan 1981).

We were observing an adult tapir with its calf of about 4 months (Fig. 2), and at 06:38h (ca. 1 h after sunrise), the mother entered the river. It was followed by her calf. When they reached a deeper part of the river, they submerged for a few seconds, and when they emerged, the calf was on the back of the mother (Fig. 3). The mother finished crossing the river with her calf on her back. A video of the event can be seen at [Costaricaguide/Tik tok](https://www.youtube.com/watch?v=...).

Swimming has been well-documented in tapirs in general and Baird's tapirs in particular (Naranjo 2019). They are good swimmers, including at early age: young Baird's tapirs in captivity will spend almost 4% of their time swimming or bathing (Gilmore 2007). However, this behavior of the mother carrying its calf on her back across a river has not been observed or reported before. It is known that there are crocodiles (*Crocodylus acutus*) and even bull sharks (*Carcharhinus leucas*) in the Sirena River; this behavior, therefore, potentially could be a local adaptation to protect calves from these predators. Adult Baird's tapirs spent even more time than young swimming and bathing (Gilmore 2007). It is also possible that this is a common protective behavior learned in infancy that had yet to be observed.

Together with jaguars, crocodiles are one of the main predators of juvenile Baird's tapir (Naranjo 2009; Lira et al. 2014). Similarly, bull sharks frequent fresh waters, including rivers, and they are commonly found in estuaries and coastal lagoons (Tuma 1976; Daly et al. 2013). This euryhaline shark preys on dolphins and even land mammals, such as an unidentified sloth in the Nicaraguan lake (Tuma 1976), and they are known to capture marine turtles (Estupiñán-Montano et al. 2017). The preponderance of predators able to potentially prey on Baird's tapirs, adult or—particularly—young, therefore would support the hypothesis that the observed behavior likely is a learned protective behavior.

Baird's tapirs have a significant impact on the structure, productivity, and resilience of natural ecosystems, and as such are included within the guild of ecological engineers (ICF 2011). Predation of juvenile tapirs could have significantly impact on the local tapir population and as such the ecosystem functioning. Information on the ecology and behavior of Baird's tapir will help to understand the ecology of this species better and contribute to undertaking sound management actions.



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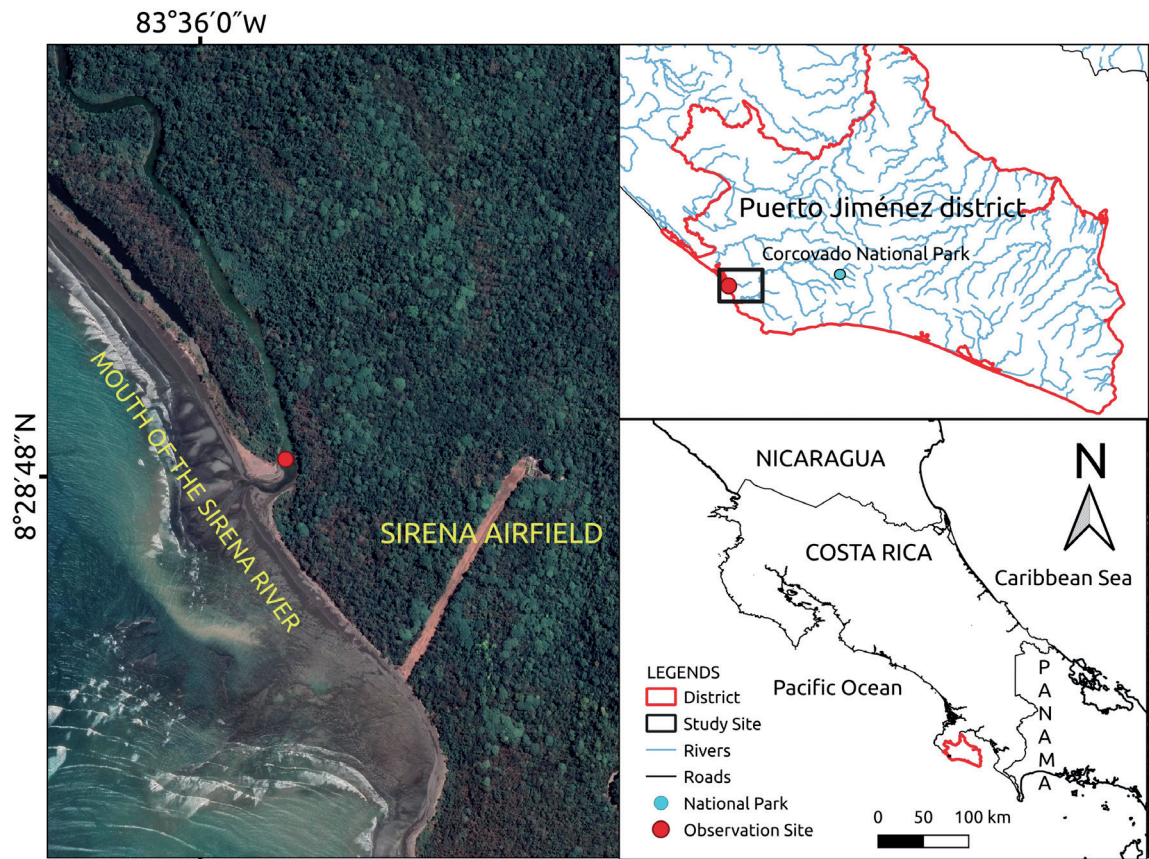


Figure 1. Site (red dot) where a Baird's tapir *Tapirus bairdii* crossed the Sirena River with her calf on her back; (latitude 8.4870069; longitude -83.6083315; sea level). Sirena sector, Corcovado National Park, Costa Rica. Map by G. Chaves.



Figure 2. A female Baird's tapir *Tapirus bairdii* and her calf at Sirena River, Sirena sector, Corcovado National Park, Costa Rica. Photo by Luis Obando.

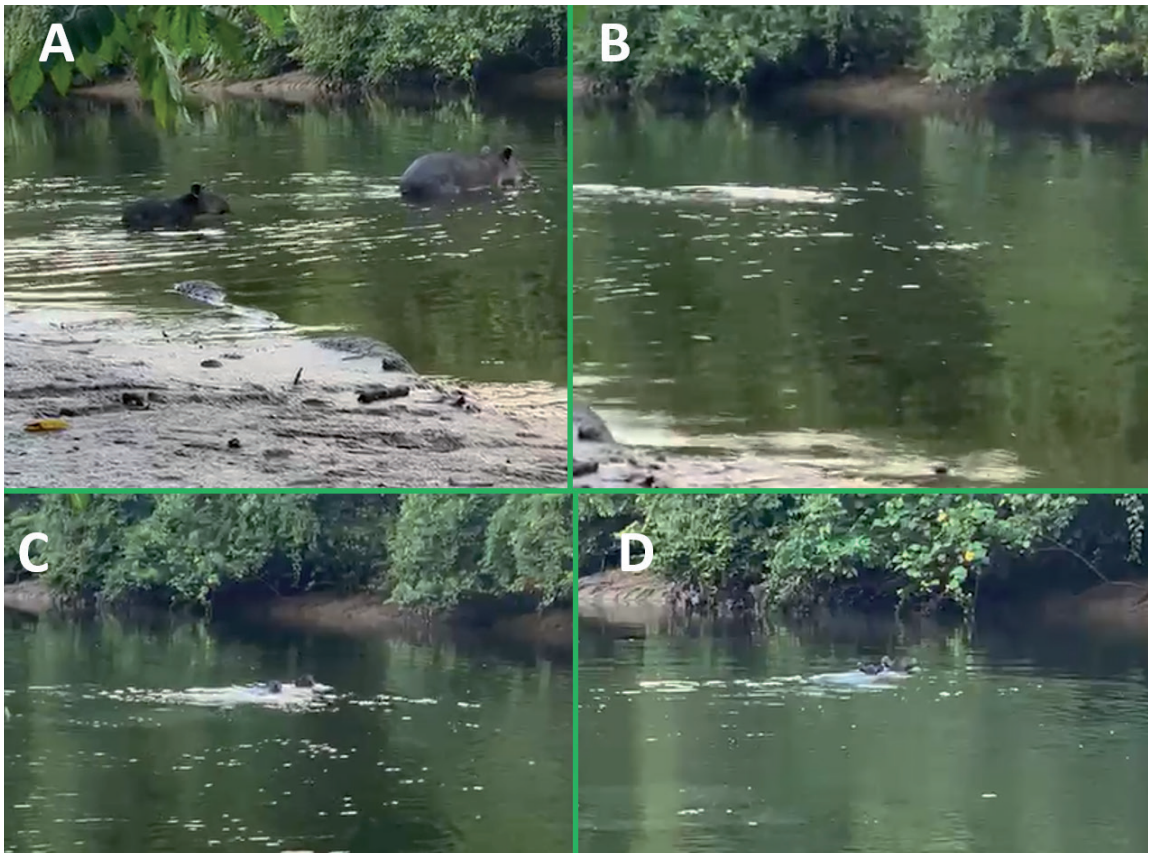


Figure 3. A) A calf of a Baird's tapir *Tapirus bairdii* following her mother into the Sirena River, Corcovado National Park, Costa Rica; B) both individuals submerged in transit at the deepest part of the river; C) the adult female emerging with her calf on her back; D) the adult female tapir swimming to the other side of the river carrying her calf on her back.

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