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falvarez@ib.unam.mx

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## Research note

# Aggressive coyote behavior toward a human being at Volcán Barva, Costa Rica

## Comportamiento agresivo del coyote hacia los seres humanos en el Volcán Barva, Costa Rica

Ivan Literák<sup>1</sup>✉, Johana Polášková<sup>2</sup> and Martina Literáková<sup>3</sup>

<sup>1</sup>Department of Biology and Wildlife Diseases, Faculty of Veterinary Hygiene and Ecology, University of Veterinary and Pharmaceutical Sciences, Palackého 1–3, 612 42 Brno, Czech Republic.

<sup>2</sup>BH Control, Kollárova 3, 73601 Haviřov–Podlesí, Czech Republic.

<sup>3</sup>Kartouzská 8, 612 00 Brno, Czech Republic.

✉ literaki@vfu.cz

**Abstract.** Coyotes occur in Costa Rica and their population is increasing. In August 2010, the first author visited Braulio Carrillo National Park and approached 3 coyotes. The unusual coyote behavior was analyzed using unique photographs and is ascribed primarily to maternal aggression that was possibly combined with fear-induced and territorial aggressions. As coyotes continue to adapt to suburban environments, and as their populations expand throughout Central America, coyote interactions with humans can be expected more often to occur in this region.

Key words: attack, carnivore, Central America, man.

**Resumen.** La población de coyotes Costa Rica va en aumento. En agosto de 2010, el primer autor visitó el Parque Nacional Braulio Carrillo y se acercó a 3 coyotes. Su comportamiento inusual fue analizado mediante fotografías únicas y atribuido principalmente a la agresión maternal, posiblemente en combinación con el miedo y la agresión inducida por la agresión territorial. Teniendo en cuenta la adaptación continua de los coyotes en ambientes suburbanos y el aumento de su población en Centroamérica, se pueden esperar casos frecuentes de interacción entre coyotes y seres humanos en esta región.

Palabras clave: ataque, carnívoro, América Central, hombre.

Coyotes (*Canis latrans*) are found throughout the continental United States and Alaska, almost all of Canada, south through Mexico and into Central America. They continue to expand their distribution and occupy most areas between 70° N and 8° N (Gese and Bekoff, 2004). Coyote attacks on humans and pets in North America, once thought to be rare, have increased in frequency over the past 15 years (Timm et al., 2004). Although coyotes are not abundant in Costa Rica, their population is increasing (Gese and Bekoff, 2004).

On 9 August 2010, the first author visited Braulio Carrillo National Park (NP), Sector Volcán Barva, Costa Rica. The entrance is at the altitude 2 600 m asl and about 3 km distant from the nearest village of Sacramento. There is a ranger station close to the entrance, and beyond it the protected mountain forest begins. On the opposite side, in front of the entrance, an abandoned cattle farm without domestic animals borders the park (10°07' N, 84°07' W).

At 2:00 p.m., he sighted 3 coyotes lying near the lake within the former pasture some 300 m in distance from the entrance to Braulio Carrillo NP. The coyotes were lying and sleeping a few meters from one another (Figs. 1a, 1b). He began to approach the coyotes. Most likely, the noise of his camera woke the first coyote (Fig. 1c), which sat up (Fig. 1d) and after a while stood up and took a few steps toward him (Fig. 1e). Then it looked at him, turned, and moved close to the lake and slowly away. It stopped for a moment at the edge of the pasture and again looked at him (Fig. 1f), then it continued into the bushes. In the meantime, the 2 other coyotes woke up, again sitting up at first, then standing up and looking at him (Figs. 1g, 1h). After about a minute, what was presumably the first coyote again appeared, but on the opposite site. It ran up to the 2 coyotes standing in the meadow in front of the man and made contact with them. It licked their faces and wagged its tail. The 2 coyotes reciprocated this contact behavior in relation to the first one. Shortly after this reception, one coyote turned to face the man. Its ears were turned downward, the hair on its back was erect, and the tail was

retracted downward. The 2 other coyotes stood alongside the first, one on the left, the second to its right (Fig. 2a). Both coyotes on the wings held their ears erect and their physiognomies were quite different from that of the coyote in the middle of this formation. Suddenly, they began approaching very directly toward the man. They were opening their mouths but without making any vocal sound (Figs. 2b, 2c). When they came to within a distance of about 8 m from the author, he stepped out from behind the tree where he was hiding, stood erect, raised his arms beside him, and shouted loudly at the approaching animals. They stopped, turned together, and then slowly left the meadow. One coyote stopped again for a moment before following the others into the forest (Fig. 2d). All 3 coyotes were of similar size, were fully grown, and manifested no apparent health problems. The human-coyote interaction lasted for about 5 min.

The direct observation and photographs were analyzed. Figures 1a and 1b: the coyotes have chosen a calm, safe and pleasant place for their mid-day rest and sleep. The pack of 3 coyotes is thought to consist of a mated pair and their grown-up offspring. Figures 1c–1f: the man approaches the coyotes and photographs from a spot nearest to the young coyote. In waking up, this young coyote most likely reacts in a way corresponding to its perceiving an unknown impulse, the nature of which it wants to assess. The coyote sharpens its attention and silently, cautiously determines that the unknown object has indicated interested in it. The coyote approaches the man, and, perceiving nothing particularly dangerous, does not warn the pack. But it is not entirely certain, and it moves into the brush to observe the man from another position and in a more hidden place. This coyote does not substantially resolve the situation with respect to the pack as it is young and inexperienced and that it does not know quite what to do, therefore waits in hiding to see what will happen. In the following photographs, this coyote is always at the back and/or to the side. Its expression is one of curiosity and neutrality. The tail of this supposedly young coyote is thinner than are those of the other coyotes, and it has no distinctive mane of hair.

Figures 1g–1h: the 2 coyotes have been disturbed and find that their offspring is missing. They notice the man and recognize him to be dangerous. They survey the vicinity of their resting spot. It is clear, based on the position of their ears, that they are listening closely for any sound that can help them to analyze the situation. The coyote at left appears tense, stunned, distrustful or annoyed (well visible closer up in Fig. 1g). We suspect this coyote to be the mother and that she is anxious about her absent offspring.

She is contemplating whether to attack the man for being too close to the pack. The coyote at right seems not to be so emotionally agitated, but he also is analyzing the situation. He is cautious, but already is approaching the man and staring directly at him (Fig. 1h).

Figures 2a–2d: the young coyote returns, immediately licks its parents, and shows them in this way that it is back and alright. The parents welcome it in the same way. Nevertheless, the mother remains nervous, apprehensive for her offspring, and fearful about having a man in close proximity. She initiates an attack, but the male who is possibly the father tries to calm his mate by a number of signals: the protruding tongue (visible in Fig. 2a), the specific position of the ears, the body posture, and partial closing of his eyes. Moreover, he intercepts her trajectory of motion. The young coyote observes the situation and seems curious. The female (at left in Figures 2b and 2c) has had to be held back. She does not like to accept the male's decision to not continue in an attack and to choose withdrawal and flight. They find the presence of an adult man to be a disturbing element and assess, however, that it would be better for them to avoid a direct conflict and to leave the place. The offspring remains all the time at the back of the pack, and its submissive position makes clear that it accepts the father's leadership and strategy.

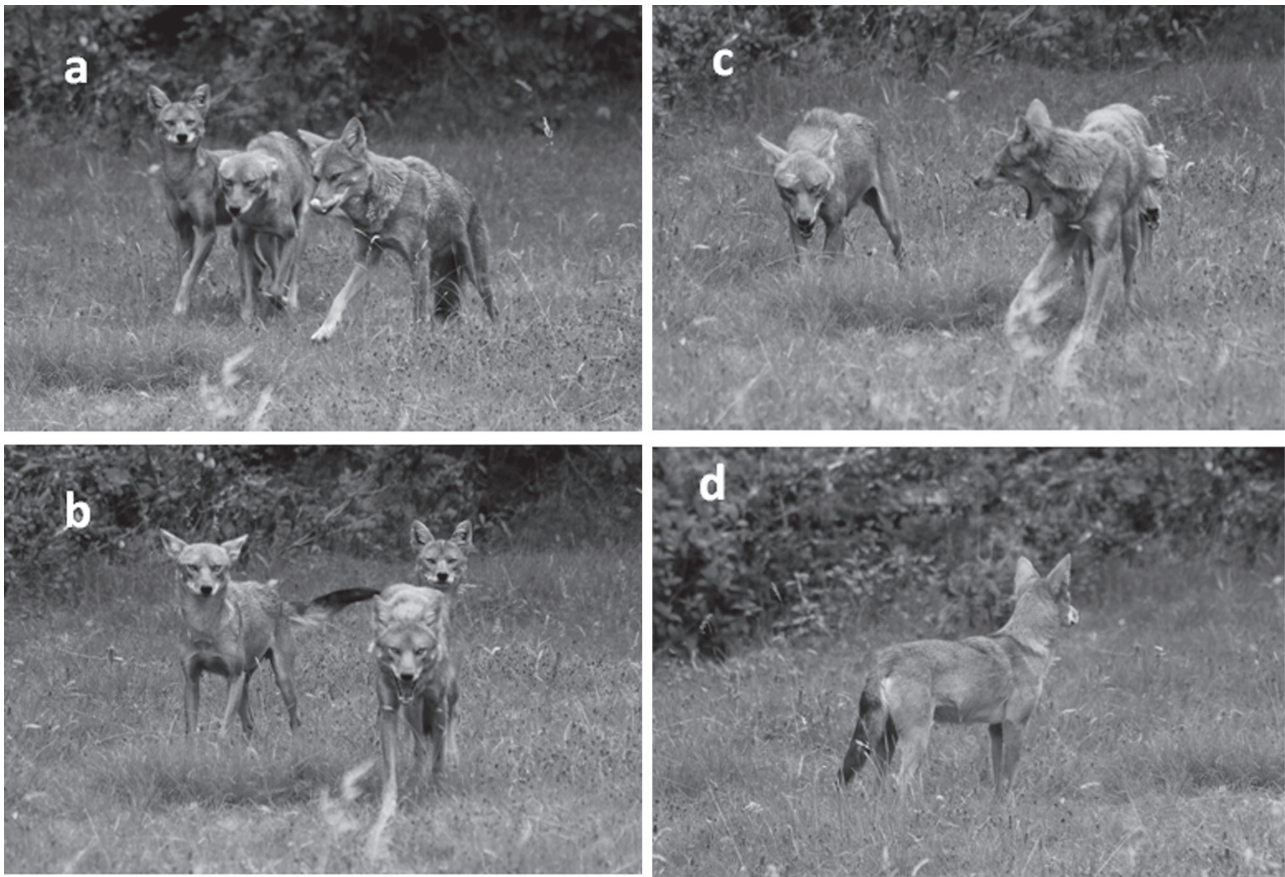
Motives for coyotes to attack humans could be hunger, protection of dens, or certain movements (in particular escape behavior) that elicit attack by coyotes (Timm et al., 2004). Attacks by animals are manifestations of aggressive behavior. The following categories of aggression can be distinguished: social- or dominance-related aggression among animals, territorial aggression, pain-induced aggression, fear-induced aggression, maternal aggression, and predatory aggression (Haupt, 2011). We suppose previously described attacks of coyotes on humans (Timm et al., 2004) may be categorized as resulting from predatory aggression. The coyote attack described herein was quite different, and we ascribe it primarily to maternal aggression that was possibly combined with territorial and fear-induced aggressions. The 3 coyotes or at least 1 (possibly the mother) probably had initiated the attack due to the fact that the critical distance for escape between her and the others and the first author had been invaded. As coyotes continue to adapt to suburban environments, and as their populations further expand and increase throughout Central America, coyote interactions with humans can be expected more often to occur in this region, including in Costa Rica.

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**Figure 1.** a, coyotes lying a few meters from one another. b, a coyote sleeping. c, a coyote who has just awoken. d, a coyote sitting. e, a coyote slowly approaching the photographer. f, a coyote stopped at the edge of the pasture and looking at the photographer. g, detail of the second coyote looking at the photographer. h, detail of the third coyote looking at the photographer.





**Figure 2.** a, the entire coyote pack. The middle animal has its ears turned downward and the hair on its back is erect. The other 2 coyotes have ears erect. b, coyotes approaching the photographer. c, the coyotes continue to approach the photographer. They are opening their mouths, but without making any vocal sound. d, one coyote stopped for a moment before following the others into the forest.

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