

# CAT

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# news





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Royal Commission for AlUla



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**Cover Photo:** Arabian leopard at RCU Conservation Breeding Centre in Taif, the Kingdom of Saudi Arabia  
Photo: D. Chancellor

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# First record of a tailless puma within Cloudbridge Nature Reserve, Costa Rica

Throughout Costa Rican jungles, the puma *Puma concolor* is widely dispersed. At Cloudbridge Nature Reserve, located in a cloud forest of Pérez Zeledón, Costa Rica, pumas are frequently seen on the camera traps within the property. Until 2023, there were no records of a tailless puma in the database. Now, there have been two separate events captured on the cameras within the reserve. This is an acutely unusual event with limited literature about how this is caused. Globally, it is rare to have documentation of any tailless wild felid. Such little information requires further studies to understand the impact this may have on the individual and how this came to be. Cloudbridge will continue to monitor these cameras with anticipation of seeing the tailless puma again.

The puma is the second largest feline in the Americas, after the jaguar *Panthera onca* (Nielsen et al. 2015), with a vast geographical range from tropical rain forests to deserts (Redford & Eisenberg 1992, Nowell 1996). While the global population trend is decreasing, in 2014 the IUCN Red List of Threatened

Species listed the puma as “Least Concern” (Nielsen et al. 2015). The main threats towards this feline include anthropogenic actions like habitat loss/degradation and poaching (Wang et al. 2017). Throughout the Americas, several studies have been done to better understand the impact that habitat loss has had on

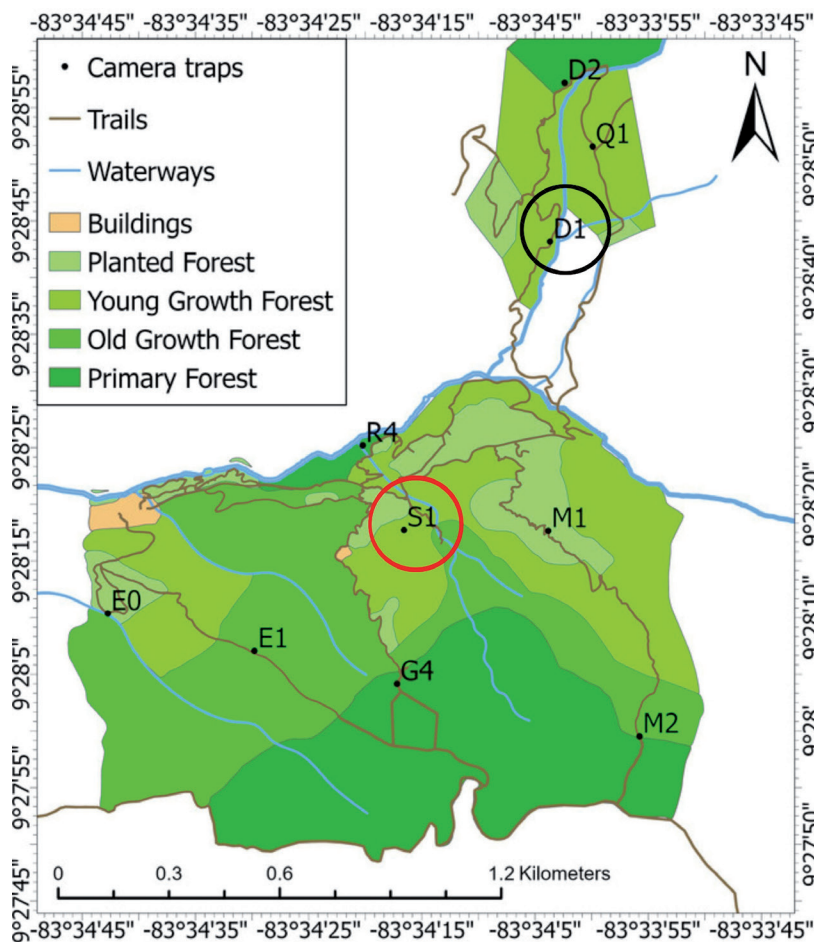
puma populations, and to increase human tolerance to their populations (Ávila-Nájera et al. 2018, Zorondo-Rodríguez et al. 2019). In Costa Rica, conservation efforts have included establishing publicly and privately owned reserves and national parks (SINAC n.d.). For example, Cloudbridge Nature Reserve (hereafter Cloudbridge) is a private reserve located in the Talamanca mountains of Costa Rica (9°28' 20.352"N / -83°34'39.4572"W), bordering the over 505.9 km<sup>2</sup> Chirripó National Park (Powell et al. 2022), which ultimately connects to the 1,938.5 km<sup>2</sup> La Amistad International Park (SINAC n.d.). Since 2002, Cloudbridge has purchased and reforested over 2.8 km<sup>2</sup> of land, implementing conservation practices by planting native cloud forest tree and shrub species (Cloudbridge n.d.). Now this reserve consists of mature, naturally regenerated, and planted forests (Powell et al. 2022). The reforestation success at Cloudbridge has contributed to the larger national and international biological corridor into Panamá (SINAC n.d.), supporting mammalian conservation efforts like for the puma (Wang et al. 2017).

A characteristic trait of pumas is having long tails, which can range from 61 cm to 74 cm in length (Reid & Zamora 2022). For felines in general, the main uses for their tail are balance, thermoregulation, and communication (Walker et al. 1998). Feline tails have reflexes like a limb, which respond quickly to stimuli, protecting it from damage (Walker et al. 1998). Additionally, tail use has been observed as crucial during locomotion, like jumping and shifting their weight; essential motions for hunting (Walker et al. 1998). As tails play an important role in maintaining equilibrium, the loss of a tail could potentially compromise these skills (Young et al. 2021).

## Tailless puma in Cloudbridge Nature Reserve

Cloudbridge has been conducting ongoing camera trap research since 2015 to monitor general species abundance and diversity. The protocol includes a total of 10 remotely triggered Bushnell (Trophy Cam E3 Essential, Overland Park, USA) infrared camera traps programmed to record 10 second videos. From October 2022 to April 2023, the methodology of data collection used was the placement of a random grid (1.2 km by 1.2 km, 300 m<sup>2</sup> per quadrant) for 92 days, then a non-random placement of the cameras for 92 more days to target high activity areas (i.e. obvious game trails; areas with high animal scat; natural bottlenecks). Biweekly, the batteries and

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**Fig. 1.** Map of Cloudbridge Nature Reserve, Costa Rica; symbols denote each camera trap placement from January to April 2023. The Sentinel camera trap placement (red; 9° 28' 17.7348"N, -83° 34' 16.5756"W) and Don Victor camera trap placement (black; 9° 28' 43.1796"N, -83° 34' 3.684"W) are circled (Map L. Ilott-Baudon).





**Fig. 2.** Camera trap images showing the two tailless puma events. Left: captured on 3 March 2023 on the Sentinel trail. Right: captured on 27 March 2023 on the Don Victor trail. (Photos Cloudbridge).

memory cards were replaced and the videos were revised.

Since 2022, 45 independent puma camera trap events have been recorded in the Cloudbridge database (Cloudbridge n.d.). In March 2023, evidence was captured for the first time of a tailless puma in the reserve in two separate events during the non-random camera placement. The first event was on 3 March 2023, at 6:57 h; the second event was 24 days later on 27 March 2023, at 17:35 h. The first recording was on the Sentinel trail (9°28'17.7348" N / -83°34'16.5756" W) while the second recording was located on the Don Victor trail (9°28'43.1796" N / -83°34'3.684" W), 1.1 km away from each other, as shown in Fig. 1. Displayed in Fig. 2 are images extracted from the camera trap videos of both tailless puma events. It was clear from the videos that the gender of this puma was a female due to the lack of male testes. The rarity of this event and consistency of tail length in both videos suggests that this is the same individual. Although unknown, a possible cause for being tailless could be from a genetic mutation, resulting in being born without it (Buckingham et al. 2013). Human interference (e.g. poaching, captivity) is unlikely due to the connection with large protected areas (SINAC n.d.). Interspecific species conflict is possible, but uncertain (Attenborough 2017).

### Tailless pumas around the world

Very limited literature could be found on other tailless pumas globally. One finding was recorded in Torres del Paine (Chile) in 2015, when a tailless puma cub was photographed (Stone 2015). Due to the young age and lack of injury marks, it is likely that this individual was born without a tail (Stone 2015); however, this is not known with certainty. Another viewing of a tailless puma was in Vancouver (Canada),

where a YouTube video displays a mother puma eating an elk with her two cubs, and the mother had no tail (Chantelle 2017). This Canadian puma has about 15 cms (6 inches) left of the tail, although the cause of the tail loss is unknown.

### Tailless felids around the world

There is also limited literature about other tailless species in the Felidae family, with only a handful of sightings in the last 20 years. In South Africa in 2005, it was found that a lioness *P. leo* had her tail severely injured by hyenas *Hyaenidae* spp., and chewed off the remains of her tail to "prevent an infection" (Attenborough 2017). Similarly, there was a jaguar captured via camera traps in Guatemala and Belize that was tailless (Broad 2020). The jaguar was seen with its tail in 2009, yet in 2011 the tail was gone, suggesting an injury occurred to the tail within those two years (Broad 2020). In an extremely rare occurrence, a snow leopard *P. uncia* was photographed without a tail. In every other regard, the snow leopard looked healthy and seemed to have adapted to its life without a tail (Snow Leopard Trust 2022). It is unknown how the tail was lost.

Tailless felids have also been seen when living in captivity. In the United States, a captive tiger *P. tigris* had her tail bitten off by a racoon as a juvenile, and tended to the wound on her own (Piniat 2011). Another tailless tiger was discovered living in captivity in Vietnam, likely as part of the illegal wildlife market (Ives 2021); however, it is unknown how that tiger came to be without its tail.

With such little information about what types of injuries could cause a feline to be tailless, it is difficult to know with confidence what the recovery and adaptation process looks like. There are currently no statistics that

show the likelihood of life or death after losing a tail.

### Conclusion

Considering the importance tails play in the lifestyle of a felid (Walker et al. 1998), surviving without a tail shows the great resilience of this family. Due to the rarity of these observations, when one is discovered, it is important to monitor and report them. Many populations of wild cats are decreasing (Nielsen et al. 2015, Bauer et al. 2016, Quigley et al. 2017), so better understanding these adaptations is crucial for improving their conservation success. Cloudbridge will continue this ongoing camera trap research of mammalian fauna, with hopes that the individual tailless puma will be seen again in the future.

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