

## Short Communication

# Monitoring without being monitored: how the Pallas's cat *Otocolobus manul* (Pallas 1776) avails of rocks

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**Abstract** - Behavioral observations and related images from eastern Mongolia, including a previously unreported maternal behavior, highlight a unique adaptation of the Pallas's cat as a "safety specialist", as suggested by ecological studies. A comparison is made with the sand cat *Felis margarita* (Loche 1858), which shares some morphological and behavioral traits but remains even less studied in the field.

**Key words:** camouflage, felids, field observations, maternal behavior.

**Riassunto** - Monitorare senza essere monitorato: come il manul *Otocolobus manul* (Pallas 1776) si avvale delle rocce.

Osservazioni comportamentali e relative immagini raccolte in Mongolia orientale, tra cui un comportamento materno precedentemente non documentato, evidenziano un adattamento unico del manul come "specialista della sicurezza", come suggerito dagli studi ecologici. Viene fatto un confronto con il gatto delle sabbie *Felis margarita* (Loche 1858), che condivide alcuni tratti morfologici e comportamentali ma rimane ancora meno studiato sul campo.

**Parole chiave:** comportamento materno, felidi, mimetismo, osservazioni sul campo.

The Pallas's cat takes the name of its monotypic genus, literally meaning "mutilated in the ears", from having its ears set wide apart and low on the sides of the head, which gives the ears a truncated appearance. However, its ears are well-developed in width, suggesting a trade-off between sharp hearing and inconspicuous ears. Pallas's cats typically inhabit the cold steppes of Central Asia, so not having prominent ears may serve this small cat not only as protection from heat dispersion but also as an aid to keep a low profile in open terrain to pass undetected by potential prey and predators. Barashkova *et al.* (2019) added the presence of rocky shelters to the continental cold

semiarid climate and the presence of colonial non-hibernating rodents, or lagomorphs, to highlight three common features of the highly diverse Pallas's cat habitats in Central Asia and adjacent areas. In a study of den selection, Ross *et al.* (2010) found that Pallas's cats preferred to have rocks and ravines rather than open steppes in their surroundings. Although they preferred to use burrows of the Siberian marmot *Marmota sibirica* (Radde, 1862) for short-term residence (especially for the thermal properties of such dens in winter), rock dens were preferred as maternal dens. The high selection of these cats for rocky habitats, with reduced predation risk but lower prey densities, suggested that predation risk dominated their behavior to such an extent that they could be labelled "safety specialists" (Ross, 2009). For these reasons, the Pallas's cat's adaptation to the rocks seems worthy of further attention.

While recent studies have added a great deal of information to the ecological knowledge of the Pallas's cat, direct behavioral observation is comparatively scarce in these quantitative studies. In this respect, the available information still mainly concerns captive subjects, as in Sunquist & Sunquist (2002). Pertinent to the present paper is that captive Pallas's cats attracted the observer's attention to how they moved across steep cliffs and rocky ledges in their exhibit: they "did not overtly leap from ledge to ledge but instead appeared to 'flow' from perch to perch on stocky little legs" (Mellen, 1989). The literature on the Pallas's cat is also lacking in images that allow the reader a direct appraisal of the behavior dealt with. Here, with the aid of images, I report on the handful of behavioral observations I obtained in eastern Mongolia (approximately N 46°26', E 112°52', 1000 m a.s.l.) during a private mammal-watching tour. From 24 to 27 September 2024, in daily sessions centered on sunrise and sunset, I could observe four Pallas's cats at three sites, all in an undulated terrain covered by short-grass steppe and interspersed with outcropping boulders. These cats preyed upon the superabundant Brandt's voles *Lasiopodomys brandtii* (Radde 1861). We were a group of four people without any concealment in the steppe. However, by detecting Pallas's cat from far through a telescope and then alternating our on-foot approach with frequent pauses, we often succeeded in observing them at a reasonably close distance for a while before their disappearance. Whenever possible, I videorecorded the cats in action for later analysis of their be-

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havioral sequences. Given that they often reacted to the human presence, a posteriori, I also obtained rough estimates (rounded to the nearest 10 m) of the distance from the observer by considering the relative size of the subjects in the original images. Like in the cited observation of captive Pallas's cats, these cats avoided abrupt movements on the rocks. They changed their posture extremely slowly while monitoring the observers. For example, a video showed that starting with only its head visible from behind

a boulder, a subject 10 m away took 23 seconds of continuous motion to disappear completely. The young Pallas's cat in Fig. 1, 20 m away, shows how the species' seemingly odd ears may work for "monitoring without being monitored": the ears are more depressed here than in the subjects in Fig. 2, 40 m away, probably due to more search for camouflage, but appear still well open for full hearing. Clambered in the crevice, the same subject further suggests its adaptation to pass unnoticed in rocky habitats

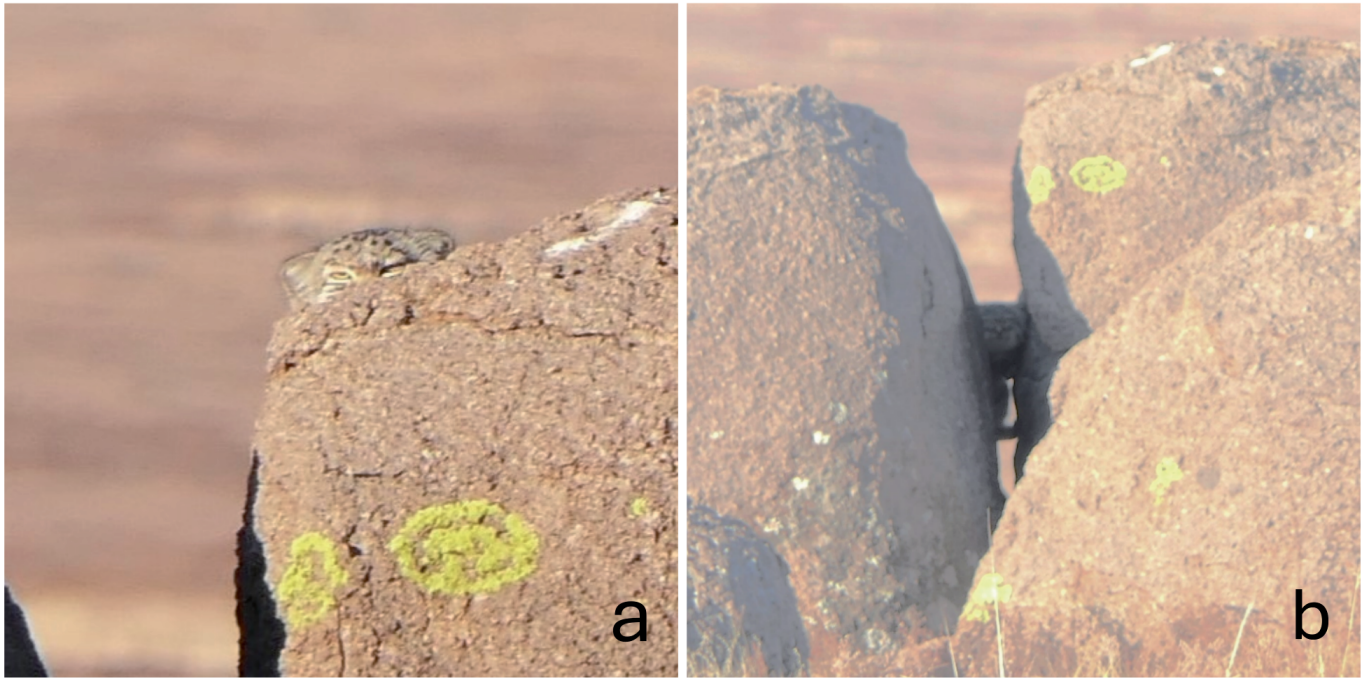


Fig. 1 – To pass unnoticed while monitoring the observers, (a) a young Pallas's cat keeps its ears slightly depressed but still well open, thanks to their low position on the sides of the head. (b) The same subject avails of the shadow of a rock crevice to keep a low profile, with the posture of a rock climber rather than that of a cat. / Per passare inosservato mentre monitora gli osservatori, (a) un giovane manul tiene le orecchie leggermente abbassate ma ancora ben aperte, grazie alla loro posizione bassa sui lati della testa. (b) Lo stesso soggetto usa l'ombra di una fessura della roccia per non dare nell'occhio, con la postura di un rocciatore piuttosto che di un gatto.



Fig. 2 – Tired of the observers, a female Pallas's cat attracts the attention of its well-grown kitten, who seems reluctant to leave an exposed position, by (a, c) flicking its tail and (b) hopping in the grass until the youngster takes cover between the rocks. / Stanca degli osservatori, una femmina di manul attira l'attenzione del suo cucciolo ormai cresciuto, che sembra riluttante a lasciare una posizione esposta, (a, c) sferzando la coda e (b) saltellando nell'erba finché il giovane non si ripara tra le rocce.

without losing environmental perception. The sequence of video frames in Fig. 2 illustrates how a young Pallas's cat may learn not to indulge in keeping an exposed position in the presence of a possible danger. Shortly before sunset, arriving from the steppe, the mother cat came up to the rocks where her kitten was sunbathing on the top of a boulder, apparently with no fear of the observers. A little later, she moved back and forth between the rocks and the grass four times within a minute, repeatedly flicking her tail and hopping toward the observers. Her seemingly playful behavior gradually induced the youngster to go down between the rocks. Both cats went out of sight, and only the mother reappeared on the rocks some minutes later.

These observations point to unique morphological and behavioral adaptations of the Pallas's cat to bare terrain with outcropping rocks, used both as shelters and elevated positions to monitor the surroundings. However, it would be interesting to assess how this specialization might work in unexpected habitats, e.g., in Iran, where Pallas's cats have recently been discovered in juniper woodland (Dibadj *et al.*, 2018). An interesting comparison might be with the even less studied sand cat *Felis margarita* (Loche 1858), which appears to be the most morphologically similar felid, having similarly placed, although more pointed, ears and similar skull traits (descriptions in Sunquist & Sunquist, 2002). Like the Pallas's cat, the sand cat has the habit of freezing low to the ground when chased far from possible shelters, but photographs usually show sand cats hidden in bushes instead of among rocks. This difference might be due to the sand cat's usual preference for lowland sandy deserts, even though in the Arabian Peninsula, it also occurs in rocky deserts (Banfield *et al.*, 2014). The sand cat is usually thought of as a more nocturnal animal than the Pallas's cat, but, according to Heptner & Sludskii (1972), "in the Karakum and Kyzylkum the sand cat leads a nocturnal life only in the hottest period of the year. In spring, autumn, and winter it may be encountered busily hunting during the day because it often catches diurnal rodents". Thus, it might be worth comparing

the behaviour of these two cats, paying special attention to how they might act as "safety specialists".

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