

# A confirmed record of Large-toothed Ferret Badger *Melogale personata* from central Laos suggesting syntopy with Small-toothed Ferret Badger *M. moschata*

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## Abstract

Large-toothed Ferret Badger *Melogale personata* and Small-toothed Ferret Badger *M. moschata* overlap in distribution over much of their range. Precise distributions are little known because visual distinction of the two species seems possible only through clear inspection of their skull and dentition. Thus, large parts of their joint range lack authenticated records for one or both species. A skull photographed in a poacher camp in July 2011 is the first record of *M. personata* from Nakai–Nam Theun NPA (and only the second precise locality record for Laos). A recent *M. moschata* record from similar altitude and habitat only 12 km away strongly suggests syntopy of the two species.

**Keywords:** Burmese Ferret Badger, Chinese Ferret Badger, Lao PDR, Mustelidae, Nakai–Nam Theun National Protected Area

**ບັນທຶກການໄດ້ຮັບການຢັ້ງຢືນ ຂອງ ໝາລິ່ງແຂ້ວໃຫ່ງ *Melogale personata* ພາກກາງຂອງລາວ ທີ່ບອກເຖິງພູມສັນຖານທີ່ຄ້າຍຄືກັນ ກັບ ໝາລິ່ງແຂ້ວນ້ອຍ *M. moschata*.**

## ບົດຄັດຫຍໍ້

ໝາລິ່ງແຂ້ວໃຫ່ງ *Melogale personata* ແລະ ໝາລິ່ງແຂ້ວນ້ອຍ *M. moschata* ຂອບເຂດການກະຈາຍຂອງພວກເຂົາທີ່ທັບຊ້ອນກັນຫຼາຍທີ່ສຸດ. ການກະຈາຍທີ່ຊັດເຈນແມ່ນທີ່ເປັນທີ່ຮູ້ຈັກກັນເລັກນ້ອຍ ເພາະວ່າ ຄວາມແຕກຕ່າງທີ່ສັງເກດຈາກທັງສອງຊະນິດ ຄ້າຍຄືກັນວ່າເປັນໄປໄດ້ພຽງແຕ່ຜ່ານການກວດສອບຢ່າງຊັດເຈນຂອງກະໂຫຼກຫົວ ແລະ ແຂ້ວຂອງພວກເຂົາ. ດັ່ງນັ້ນ ການບັນທຶກສ່ວນໃຫ່ງ ຂອງຂອບເຂດທີ່ຮ່ວມກັນຂອງພວກເຂົາຈຶ່ງຂາດ ຫຼື ຮັບຮອງຄວາມຖືກຕ້ອງຢ່າງໃດຢ່າງໜຶ່ງ ຂອງທັງສອງຊະນິດ. ຮູບທີ່ຖ່າຍກະໂຫຼກຫົວ ທີ່ຢູ່ໃນຕຸບຂອງພວກລ່າສັດ ໃນເດືອນ ກໍລະກົດ 2011 ແມ່ນການບັນທຶກທໍາອິດ ຂອງ *M. personata* ຈາກພະນັກງານ ປ່ສສະຫງວນແຫ່ງຊາດ ນາກາຍ-ນ້ຳເທີນ (ເປັນຄັ້ງທີສອງ ທີ່ມີການບັນທຶກສະຖານທີ່ທີ່ແນ່ນອນ ສໍາຫຼັບປະເທດລາວ). ການບັນທຶກລ່າສັດຈາກພື້ນທີ່ນີ້ ຂອງ *M. moschata* ຫ່າງຈາກກັນພຽງ 12 ກິໂລແມັດ ແລະ ຈາກຖິ່ນທີ່ຢູ່ອາໄສ ແລະ ຄວາມສູງທີ່ຄ້າຍຄືກັນ, ສະແດງໃຫ້ເຫັນຢ່າງຊັດເຈນວ່າ ທັງສອງຊະນິດແມ່ນຢູ່ໃນພູມສັນຖານຄ້າຍຄືກັນ.

Ferret badgers *Melogale* are endemic to Southeast Asia and neighbouring parts of China and South Asia. They remain poorly known in terms of their distribution, conservation status, taxonomy and ecology. In mainland Southeast Asia, two species are conventionally accepted to occur: Large-toothed Ferret Badger *M. personata* and Small-toothed Ferret Badger *M. moschata*. A third was recently described in Vietnam, *M. cucphuongsensis* Nadler *et al.*, 2011. Because of the difficulty of distinguishing the two species from field sightings or camera-trap photographs, and the reduction in specimen collecting, recent records are few. Most of the validated records (where skulls were examined) are of museum specimens. Over much of their range these date from the first half of the twentieth century and at least in some parts of Southeast Asia, these typically lack precise information on location, let alone habitat or altitude, having been bought in markets or brought to collecting expeditions by local people (e.g. Osgood 1932, Legendre 1936). Thus, each species's geographic distribution remains coarsely known, with habitat and altitudinal distribution even less well understood. Although they are clearly widely sympatric, the extent of syntopy (i.e. co-occurrence in similar habitat and altitude within the broad geographic range) is unknown.

As far as is presently known, morphologically the two can be confidently distinguished only by their skull and dentition (Schank *et al.* 2009). This means that many modern sources of records for other small carnivores, such as camera-trap photographs and direct sightings, cannot provide species-level identifications. In addition, widespread under-appreciation of the difficulty of visual identification results in many potential records (e.g. road-kills not salvaged as specimens) being examined and photographed without reference to the teeth (J. W. Duckworth *in litt.* 2013). Throughout their range, even single records of authoritative identification remain of value.

*Melogale personata* is classified as Data Deficient in the IUCN Red List of Threatened Species because of this paucity of recent confirmed records (Duckworth *et al.* 2008). Historical records came from India, Myanmar, Thailand, southern China, Laos and Vietnam (O'Donel 1917, Hinton & Fry 1923, Osgood 1932, Pocock 1941, Lekagul & McNeely 1977) with few to no recent confirmed records from each of these countries (Duckworth *et al.* 2008). The species was recently discovered in Bangladesh (Islam *et al.* 2008) and Cambodia (Schank *et al.* 2009), underlining how poorly its distribution is known.

In Laos, the only confirmed record of *M. personata* in

its natural habitat, with an exact locality, comes from Phou Hinpoun National Protected Area (NPA) at 17°30'40"N, 104°50'15"E, 200 m asl (Robinson & Webber 1998). In addition, two historical collecting expeditions procured many specimens on the Bolaven plateau (Osgood 1932, Legendre 1936, Robichaud 2010). On 28 July 2011, a poacher camp in the Thong Xet/Thong Khouang area in Nakai–Nam Theun National Protected Area, central eastern Laos, at 17°46'33.474"N, 105°30'09.317"E, approximately 870 m asl (Garmin GPS 60, datum Indian Thailand) (Fig. 1) was found to hold an incomplete skull of *Melogale*. The skull was photographed once (Fig. 2) but left behind given the logistical challenges of specimen preparation and transport during this particular wildlife survey. A. V. Abramov (*in litt.* 2013) confirmed the species as *M. personata* based on (i) the large size of upper premolar 4; (ii) the premolar 3 relatively larger than premolar 2; and (iii) the relatively small infra-orbital foramen. The very short nasal bone of the snout may also be typical of *M. personata*, differing from the more elongated one of *M. moschata* and *M. cucphuongensis* (Nadler *et al.* 2011). Other dental characteristics rule out *M. cucphuongensis* from the identification, according to characters as given in its original description (Nadler *et al.* 2011).

During a large-scale camera-trap survey in Nakai–Nam Theun NPA from 2006 to 2011, many photographs of *Melogale*



Fig. 2. Incomplete skull of Large-toothed Ferret Badger *Melogale personata*, Nakai–Nam Theun National Protected Area, central eastern Laos, 28 July 2011 (Photo: C. Nanthavong).

were taken. There were clear variations in fur coloration, from brownish-orange to light or dark grey, in the 101 notionally independent photographs of *Melogale* from that survey (Coudrat *et al.* *in press*). The taxonomic significance of this variation, if any, is unclear; it is currently believed that coloration varies within a single species of ferret badger (e.g. Schank *et al.* 2009, Nadler *et al.* 2011, Wong *et al.* 2011). The genus was photographed from about 580 to about 1,675 m asl (taken with Garmin GPS60 or Garmin 12 units) principally from the southern and northern areas of Nakai–Nam Theun NPA (Coudrat *et al.* *in press*). *Melogale* was photographed at two camera-trap locations near the record presented here (Fig. 1): within 5 and 3½ km away, at about 850 and about 900 m asl, respectively (all animals photographed at these two camera-trap locations were of a grey coloration). However, there remain too few data on morphological variation to identify species of ferret badgers from camera-trap photographs alone.

Although the skull was in a hunters' camp and could in theory have been carried in from another area, this is unlikely. Nakai–Nam Theun NPA is heavily hunted for the wildlife-meat and -part trades (Robichaud *et al.* 2009, Coudrat 2013) and teams of hunters, who are in the forest for many days at a time, consume in the field some of the animals they catch. The damage to the skull seemed to indicate that the animal had been butchered. The camp was along a small stream, but not along a trail. It had been abandoned a few hours earlier, based on a still fuming fire and fresh dog tracks in the stream. A load of yet unused wire snares were left behind on the roof top of the camp, suggesting this camp served as a base for the hunting season and hunters had the intention to visit the camp regularly. This area was intensively snared at the time of survey, coinciding with the rainy season when illegal hunting increases. It is thus highly implausible that the animal was trapped more than a few kilometers away from this hunters' camp. The altitude and habitat type in which the skull originated may be more open to question; altitude within a radius of 3 km of the record ranges from ~700 to 1,000 m asl (based on a 1:50,000 topographical map).

So far, among the ferret badgers, only *M. moschata* had been confirmed to occur in Nakai–Nam Theun NPA, from a skull found in a hunters' snare amid natural habitat, in 2009

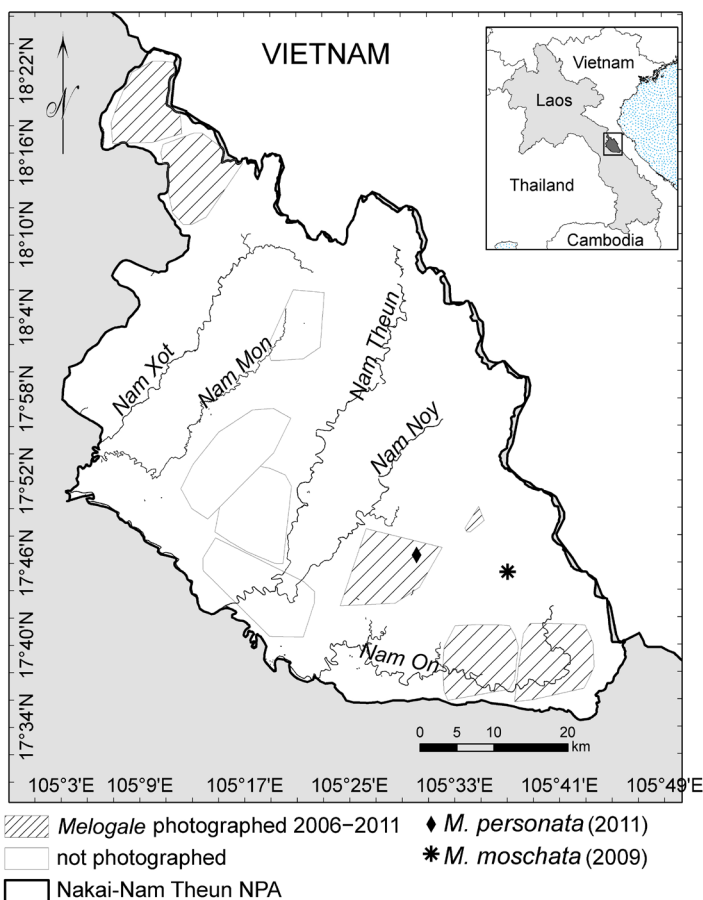


Fig. 1. Localities of ferret badger *Melogale* records in Nakai–Nam Theun National Protected Area, central eastern Laos. Skull-based Large-toothed Ferret Badger *M. personata* in 2011 and Small-toothed Ferret Badger *M. moschata* in 2009 (after Robichaud 2010). Camera-trap survey blocks from 2006–2011 indicate where *Melogale* (unidentified to species) was photographed and where it was not.

(17°45'20"N, 105°37'05"E, 980 m asl; Robichaud 2010) (Fig. 1). The two records in Nakai–Nam Theun NPA of *M. personata* and *M. moschata* were found 12 km apart, at about 870 m asl and about 980 m asl, respectively, and suggest within broad sympatry of both species, the likelihood of some level of syntopy. The potential ecological niche separation between the two species remains unknown. Many more records will be necessary to comprehend the distribution range of both species in mainland Southeast Asia. On current knowledge, this will require skull examination or genetic identification. As well as records from mainstream collection-based surveys, the present record is just one of a number of recent significant ferret badger records showing the values of opportunistic salvage collection or even just photography (e.g. Islam *et al.* 2008, Schank *et al.* 2009, Robichaud 2010). The common and widespread hunting practice in Laos and Vietnam with long lines of snares (Nooren & Claridge 2001, Coudrat 2013), provides wildlife surveyors or patrolling rangers the opportunity of photographing, collecting and/or later examining remains of trapped animals. Such hunting is illegal and is increasingly being reduced by effective management in some protected areas, including parts of Nakai–Nam Theun NPA (NT2 WMPA 2012, SWG 2013). In the interim, any encounter with ferret badger skulls in such traps should systematically be recorded in detail.

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### References

- Coudrat, C. N. Z. 2013. *Species distribution, abundance and conservation in Nakai–Nam Theun National Protected Area, central-eastern Laos*. Oxford Brookes University (PhD Thesis), Oxford, U.K.
- Coudrat, C. N. Z., Johnson, A., Johnston, J., Nanthavong, C. & Sayavong, S. in press. Conservation importance of Nakai–Nam Theun National Protected Area, Laos, for small carnivores, based on camera trap data. *Raffles Bulletin of Zoology*.
- Duckworth, J. W., Timmins, R. J., Long, B., Yonzon, P., Robertson, S. & Tran Quang Phuong 2008. *Melogale personata*. In: IUCN 2013. *IUCN Red List of Threatened Species*. Version 2013.1. <www.iucnredlist.org>. Downloaded on 16 October 2013.
- Hinton, M. A. C. & Fry, T. B. 1923. Bombay Natural History Society's mammal survey of India, Burma and Ceylon. Report no. 37, Nepal. *Journal of the Bombay Natural History Society* 29: 399–428.
- Islam, M. A., Chowdhury, G. W. & Belant, J. L. 2008. First record of the Large-toothed Ferret Badger *Melogale personata* in Bangladesh. *Small Carnivore Conservation* 39: 41–42.
- Legendre, S. J. 1936. *Land of the white parasol and the million elephants: a journey through the jungles of Indochina*. Dodd, Mead & Co., New York, U.S.A.
- Lekagul, B. & McNeely, J. A. 1977. *Mammals of Thailand*. Association for the Conservation of Wildlife, Bangkok, Thailand (revised 1988 printing).
- Nadler, T., Streicher, U., Stefen, C., Schwierz, E. & Roos, C. 2011. A new species of ferret-badger, genus *Melogale*, from Vietnam. *Der Zoologische Garten*, N. F. 80: 271–286.
- Nooren, H. & Claridge, G. 2001. *Wildlife in Laos: the end of the game*. Netherlands Committee for IUCN, Amsterdam, Netherlands.
- [NT2 WMPA] Nam Theun 2 – Watershed Management and Protection Authority 2012. *Law enforcement strategy for Nakai–Nam Theun National Protected Area*. Nam Theun 2 – Watershed Management and Protection Authority, Ban Oudomsouk, Nakai District, Lao PDR.
- O'Donel, H. V. 1917. Notes on the Burmese Ferret-Badger (*Helictis personata*). *Journal of the Bombay Natural History Society* 24: 819.
- Osgood, W. H. 1932. Mammals of the Kelley–Roosevelts and Delacour Asiatic expeditions. *Publications of the Field Museum, Natural History (Zoological Series)* 18: 193–339.
- Pocock, R. I. 1941. *The fauna of British India, including Ceylon and Burma. Mammalia*, 2nd edn, 2. Taylor and Francis, London, U.K.
- Robichaud, W. G. 2010. A field record of Small-toothed Ferret Badger *Melogale moschata* in Central Laos, and other recent records of ferret badgers from the country. *Small Carnivore Conservation* 42: 32–34.
- Robichaud, W. G., Sinclair, A. R. E., Odarkor-Lanquaye, N. & Klinkenberg, B. 2009. Stable forest cover under increasing populations of swidden cultivators in central Laos: the roles of intrinsic culture and extrinsic wildlife trade. *Ecology and Society* 14: 33–60.
- Robinson, M. F. & Webber, M. 1998. *Small mammal survey. Khammouan Limestone National Biodiversity Conservation Area, Lao PDR*. WWF, Bangkok, Thailand.
- [SWG] Saola Working Group 2013. *Assignment of a biodiversity protection technical advisor to Nakai–Nam Theun National Protected Area, Laos: phase 1 final report*. Report to the Liz Claiborne Art Ortenberg Foundation, New York, U.S.A.
- Schank, C., Pollard, E. H. B., Sechrest, W., Timmins, R., Holden, J. & Walston, J. 2009. First confirmed records of Large-toothed Ferret Badger *Melogale personata* in Cambodia, with notes on country records of *Melogale*. *Small Carnivore Conservation* 40: 11–15.
- Wong, A., Mohamed, N. S., Tu, F. Y. Y. & Wilting, A. 2011. A record of the little-known Bornean Ferret Badger *Melogale everetti* at Gunung Alab, Sabah, Malaysia. *Small Carnivore Conservation* 45: 23–25.

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