

DISCOVERY OF THE YELLOW-BELLIED WEASEL *MUSTELA KATHIAH* IN THAILAND

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ABSTRACT

The first records of Yellow-bellied Weasel *Mustela kathiah* from Thailand are from sites in the country's north that are ecologically similar to where the species has been recorded in the neighbouring countries Lao PDR and Myanmar. The first record came from Doi Phahompok National Park, Chiang Mai Province. The dead animal, later deposited at the Thailand Natural History Museum, was misidentified as Least Weasel *Mustela nivalis* (never otherwise claimed for Thailand) and has been included under that name in some publications on mammals of Thailand. Two road-killed Yellow-bellied Weasels (one preserved) and one sighting come from Doi Inthanon National Park, Chiang Mai Province. A live-captured weasel and several sightings, all by day, were documented in Taksin Maharaj National Park, Tak Province. One sighting record from Thung Yai Naresuan Wildlife Sanctuary, Kanchanaburi Province, is south of the other records presented here. Most records came from hill evergreen forest and/or disturbed habitats at elevations above 1,400 m asl, but the Thung Yai sighting was in dry evergreen forest at 770 m asl. The scarcity of Thai records of Yellow-bellied Weasel does not necessarily indicate a genuine national rarity; it may simply have been overlooked by conventional survey methods. Least Weasel should be deleted from the list of mammals of Thailand.

Keywords: extension of known range, hill evergreen forest, Least Weasel, *Mustela kathiah*, *Mustela nivalis*, Thailand, Yellow-bellied Weasel

INTRODUCTION

Yellow-bellied Weasel *Mustela kathiah* occurs only in Asia, within which it ranges widely from northern India east through the Himalaya, much of southern China, and into northern Southeast Asia (CORBET & HILL, 1992). There are historical specimens from Vietnam, Lao PDR and Myanmar (e.g. OSGOOD, 1932; ABRAMOV, 2006; THAN ZAW *ET AL.*, 2008), but although the species is known south to the Bolaven Plateau (precise capture locality not known; within 14°42'–15°30' N) in Lao PDR (TIZARD, 2002), no historical records are

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known from adjacent Thailand, even though the country extends north to over 20°30' N. Therefore, Yellow-bellied Weasel is absent from the standard sources for Thailand's mammals (LEKAGUL & MCNEELY, 1977; PARR, 2005; FRANCIS, 2008). This paper documents several recent records from Thailand.

CHARACTERISTICS OF YELLOW-BELLIED WEASEL

Separation from other Southeast Asian Species

Several characters are useful in distinguishing Yellow-bellied Weasel from confusingly similar species, under field observation or in the hand. Skull features are not considered here because no Thai specimen has a prepared skull. Of the other weasels occurring in Thailand and neighbouring countries, there is no realistic chance of confusing Yellow-bellied Weasel with Siberian Weasel *M. sibirica* Pallas, 1773 or Malay Weasel *M. nudipes* Desmarest, 1822. Risks are higher with Stripe-backed Weasel *M. strigidorsa* Gray, 1853 and, particularly, Least Weasel *M. nivalis* Linnaeus, 1766. The latter is a wide-ranging Holarctic species that (*sensu lato*) is known in Southeast Asia only from a single specimen from far northern Vietnam (BJÖRKEGREN, 1942; ABRAMOV, 2006). GROVES (2007) considered that Björkegren's animal, and populations of 'Least Weasel' from south-central China, formed a complex of species distinct from Least Weasel, with the Vietnamese animal bearing the name *M. tonkinensis* Björkegren, 1942, but ABRAMOV & BARYSHNIKOV (2000: 397) had earlier maintained *M. tonkinensis* as "just a subspecies of *M. nivalis*". Two south-central Chinese taxa were also separated from Least Weasel by GROVES (2007; figured in his Plate 1), as *M. russelliana* Thomas, 1911 and *M. aistoodonnivalis* Wu & Kao, 1991; and indeed GROVES (2007) considered these two taxa to be more closely related to Yellow-bellied Weasel than to Least Weasel.

Given present levels of live-animal trade for the novelty pet market in South-east Asia, and the role of Bangkok as a regional node in such trade (e.g. NIJMAN & SHEPHERD, 2011) it is likely that occasional non-native small carnivores can be encountered at large in Thailand. This may even be especially in protected areas, because people release unwanted pets in them (LYNAM ET AL., 2006: 81, 82, 209), even though this is illegal. The genus *Mustela* is native to all continents except Antarctica and Australia and contains nearly 20 species (ABRAMOV, 2000). The basic colour pattern of Yellow-bellied Weasel, rich mid- to dark brown above and yellowish to rich yellow below, is shared by several *Mustela* species extant in South-east Asia. Of these, Stoat *M. erminea* Linnaeus, 1758 and Long-tailed Weasel *M. frenata* Lichtenstein, 1831 are readily distinguished from Yellow-bellied Weasel by, among other features, their black-tipped tails (Yellow-bellied Weasel never has a contrasting black tail-tip). Altai Weasel *M. altaica* Pallas, 1811 is similar in size, structure and colour pattern to Yellow-bellied Weasel (and has been considered conspecific with it), but its brown areas are markedly paler. Two Neotropical species are the hardest to distinguish from Yellow-bellied Weasel in field views, and, with one, probably even in the hand. Amazon Weasel *M. africana* Desmarest, 1818 has a longitudinal dark stripe centrally within the pale venter, and can safely be excluded from the specimen records here discussed, although perhaps not the sightings, given that the position of this stripe would make it difficult to see in the field. The very poorly known Don Felipe's Weasel *M. felipei* Izor & de la Torre, 1978 is distinguished from Amazon Weasel by its smaller dark ventral dark ventral stripe (RAMÍREZ-CHAVES ET AL., in press)

and thus is more similar to Yellow-bellied Weasel. A recent comprehensive review of Don Felipe's Weasel traced only six specimen and no non-specimen records from its small range in Ecuador and Colombia (RAMÍREZ-CHAVES *ET AL.*, in press). No specimens are held in Europe or South-east Asia but it seems very unlikely that the records reported here from Thailand are of this species. ABRAMOV (2000) stated that the yellow underside colour extends forward right to the chin. If this is a general character of the species, then this identification can be excluded from the Thai specimens. Nor have we been able to study specimens of Egyptian Weasel *M. subpalmata* Hemprich & Ehrenberg, 1833, endemic to a small part of Egypt; this is said to generally resemble *M. nivalis* (e.g. VAN ZYLL DE JONG, 1992), and thus presumably lacks strong yellow tones to the underparts. However, it seems vanishingly unlikely that either species could be responsible for these Thai records, given the very few records of each, and the lack of any evidence of significant weasel trade into Thailand.

There is also an outside chance that an observer unfamiliar with Yellow-throated Marten *Martes flavigula* Boddaert, 1785 might misidentify a poorly-sighted marten as a Yellow-bellied Weasel. The marten is much larger, more agile, longer-tailed and longer-legged than any Thai weasel, and shows a prominent face mask (unlike Yellow-bellied Weasel). Most or all martens in at least non-Sundaic Thailand show bright pale upperparts, contrasting with the rich deep brown of Yellow-bellied Weasel (and also with Yellow-throated Martens in some other parts of their range, such as Sumatra).

Colouration

Underparts (including underside of paws)

Yellow-bellied Weasel has a broad yellow patch from its throat extending past the front legs and along the venter. This yellow patch is obvious from the side view. Stripe-backed Weasel *M. strigidorsa* does not have such a broad yellow patch past the back of the front legs, but has a large yellow to creamy-white patch from the lower jaw along the throat, narrowing to a thin stripe extending along the midline of the chest and abdomen and end between the hind legs (e.g. STREICHER *ET AL.*, 2010; also unpublished photographs of a live captive in various postures kindly shared by R. Steinmetz). Björkegren's [Least] Weasel *Mustela (nivalis) tonkinensis* has the throat and chest sharply white and has the rest of the underparts white with a yellowish tinge (BJÖRKEGREN, 1942; GROVES, 2007: Plate 1). Yellow-bellied Weasel is most similar in general pelage colour to *M. (nivalis) aistoodonnivalis* and *M. (nivalis) russelliana*, particularly to the latter. Although both are significantly smaller than Yellow-bellied Weasel, this is difficult to judge on field views. In the hand, Yellow-bellied Weasel is readily distinguished from *M. russelliana*: the latter has the underside of the paws hairy and white, whereas Yellow-bellied Weasel's paws show neither of these characters (GROVES, 2007). These characters seem not to have been assessed in *M. aistoodonnivalis*, which presumably resembles *M. russelliana* in them. For the Thai field sightings here attributed to Yellow-bellied Weasel, *M. aistoodonnivalis* and *M. russelliana* cannot be conclusively ruled out. However, the presence of either of the latter two in Thailand would be highly surprising on zoogeographical grounds, and the Thai specimens are certainly Yellow-bellied Weasel.

Upperparts

Stripe-backed Weasel *M. strigidorsa* shows a regular narrow white dorsal stripe from the neck to the base of the tail. Even though this character is unique among weasels, sometimes it is hard to see under field condition. Good views are therefore required to be sure of its absence.

Size

Head-and-body length

Yellow-bellied Weasel has minimum head-and-body (165–280 mm; GROVES, 2007) larger than those of *M. aistoodonnivalis* (131–160 mm), *M. russelliana* (128–138 mm) and *M. tonkinensis* (200 mm). However, measurements for all three species from GROVES (2007) are based on small samples. The head-and-body lengths of the two Thai specimens of Yellow-bellied Weasels are far shorter than that of *M. strigidorsa* given by STREICHER ET AL. (2010), 185 and 195 mm vs. 340 mm, respectively, but, again their measurement is based on one sample. In any case, assessment of size during field views is difficult, and in-hand other features can be used to distinguish the species.

Tail per head-and-body ratio

The tail is longer relative to the head-and-body length in Yellow-bellied Weasel, 46–66%, than in *M. tonkinensis*, 38% (ABRAMOV, 2006; GROVES, 2007) but similar to that of *M. strigidorsa*, 59% (STREICHER ET AL., 2010). Specifically, the only known specimen of *M. (nivalis) tonkinensis* has a tail 45% of its head-and-body length, using original measurements (GROVES, 2007), or 38% based on ABRAMOV's (2006) re-measurements.

RECORDS

Doi Phahompok National Park, Chiang Mai Province

During a bird-watching trip to this mountain, which rises to 2,285 m, on 31 December 2000, a Yellow-bellied Weasel was found squashed on the road at Doi Pha Luang Watershed Management Station (20°00'56.20" N, 99°09'41.21" E) amid *Prunus cerasoides* plantations at 1,480 m (Fig. 1). It clearly represented no known Thai species, and the specimen was collected and presented to the Thailand Natural History Museum (part of the Thailand National Science Museum; hereafter THNHM). The specimen of this animal (THNHM-M-183) has been examined by JWD and WC, and photographs (in SUPPARATVIKORN, 2001) were examined by A. V. Abramov. All agreed that it was a Yellow-bellied Weasel and not a Least Weasel as originally published, based on the rich yellow colour of the foreneck and venter; overall size (head-and-body; 185 mm; SUPPARATVIKORN, 2001); and its relative tail length of 51% (tail of 95 mm; SUPPARATVIKORN, 2001). Although these are smaller than measurements of Yellow-bellied Weasel in CORBET & HILL (1992; minimum of head-and-body 200 mm; no tail measurements given), or for any adult Yellow-bellied Weasel specimen in GROVES (2007; minima of 207 and 131 mm) the ratio (tail: head-and-body), 51%, is within the range of that

species (50–70%, CORBET & HILL, 1992; 46–66%, GROVES, 2007). By contrast, the specimen has rather too proportionately long a tail for Least Weasel, according to figures (maximum 42%) in ABRAMOV & BARYSHNIKOV (2000) and GROVES (2007). It is far too large for *M. russelliana* (maximum head-and-body length 138 mm; GROVES, 2007) and rather too large for *M. aistoodonnivalis* (maximum, 160 mm; GROVES, 2007), especially given the likelihood that its measurements, taken on a partly dried and stiffened body, are somewhat smaller than would be fresh measurements. The underside of the paws were already deformed with drying, thus their colour is not now distinguishable. However, only very sparse hairs were found on the undersides of the 2nd–4th toes with none under the paws themselves.

Doi Inthanon National Park, Chiang Mai Province

(1) Photographs of the first Yellow-bellied Weasel record from Doi Inthanon National Park, a road-kill, were posted onto the website of the tourist community who are interested in the park (www.dointhanon.com) by TS, the Park's officer. The carcass was found in upper montane forest (i.e., hill evergreen) dominated by *Quercus* spp., *Shima wallichii* and *Magnolia* sp. with sparse grass interspersed with herbaceous growth, between Km 35 and 36 (18°30'42.12" N, 98°30'32.82" E, altitude 1,400 m) on 23 November 2008 (Fig. 2A, 2B). The carcass was buried after photographs were taken. Only a total length (from nose to tail-tip; 300 mm) was taken. However, five images in various postures show the relatively long tail typical of Yellow-bellied Weasel, and, by comparison with the grass leaves on which it lies, suggest an animal relatively large for the species, and thus far too big for Least Weasel or any of the three segregates mentioned above. Pelage colour and pattern is fully consistent with Yellow-bellied Weasel.

(2) On 20 May 2009 a road-killed, female Yellow-bellied Weasel was found by Taweewat Supindham on the Chomthong – Doi Inthanon road at Km 33 (18°31'09.24" N, 98°31'00.78" E) in hill evergreen forest with sparse grass interspersed with herbaceous growth at altitude 1,400 m. The specimen was presented to THNHM (THNHM-M-475) (Fig. 3). The measurements were taken as follows; head-and-body length 195 mm, tail length 142 mm, and ear length 8 mm. The ratio of head-and-body : tail (c. 73%) is slightly longer than ranges provided by CORBET & HILL (1992) and GROVES (2007) for Yellow-bellied Weasel, and also than that of the first specimen (THNHM-M-183). The undersides of the paws are rather greyish and not hairy, although very sparse hairs occur along the underside of the toes.

(3) A Yellow-bellied Weasel was observed by Rattapon Kaichid (*in litt.* 2011) while he was watching birds along the Ang Ka Nature Trail near the summit of Doi Inthanon National Park (roughly 18°31' N, 98°31' E) on 29 November 2010 at 09h30. The animal was watched for three minutes chasing small birds (Chestnut-tailed Minlas *Minla strigula*) up in small (3 m canopy) trees, descending to the ground to cross between trees, then disappearing into the crown of one such tree. The observer has seen Yellow-throated Marten many times at many places in Thailand and the excellent views allowed confident identification as a weasel, even though the behaviour seems a better fit for a marten than a weasel. A photograph in LONG & MINH (2006: Fig. 3) shows a Yellow-bellied Weasel climbing on a trunk; the species seems never to have been studied in the field and thus the extent to which it climbs is unknown.

Taksin Maharaj National Park, Tak Province

On 13 January 2010 at 06h00 a Yellow-bellied Weasel trapped itself in a conference room in the park's headquarters office (16°46'52.24" N, 98°55'43.40" E; altitude 1,400 m), which lies amid hill evergreen forest. It was caged easily and after being photographed (Fig. 4), was released. The weasels, once in a group of 4–5 animals, were seen a number of times by NK since 2003 in several locations within the park including the camping ground, the nature trail in hill evergreen forest and in a housing area, at altitude 1,400–1,500 m (Table 1). All the sighting records were made during daylight hours.

Table 1. Records of Yellow-bellied Weasel *Mustela kathiah* from Taksin Maharaj National Park, Tak Province, Thailand.

Year	Coordinates		Habitat type	Note
	Latitude	Longitude		
2003	16°45' 32.22"	98°55' 14.63"	Hill Evergreen + grassland	1 animal running around camping ground
2007	16°46' 50.59"	98°55' 37.68"	Hill Evergreen	1 animal found along nature trail at 13h00
April 2009	16°46' 52.24"	98°55' 43.40"	Hill Evergreen + grassland	4-5 animals running around the house in the Park headquarter
December 2009	16°46' 52.24"	98°55' 43.40"	Hill Evergreen + grassland	1 animal found running around the Park headquarter at 18h30
13 January 2010	16°46' 52.24"	98°55' 43.40"	Hill Evergreen + grassland	1 animal found & trapped inside the HQ building at 06h00
April 2010	16°46' 52.24"	98°55' 43.40"	Hill Evergreen + grassland	At 13h00 1 animal tried to kill a young rabbit in a cage: killed a rodent by searching in a hole
May 2010	16°45' 32.22"	98°55' 14.63"	Hill Evergreen	1 animal at 13h00

Thung Yai Naresuan Wildlife Sanctuary, Kanchanaburi Province

On 22 January 2011 at 11h53, while walking in dry evergreen forest along small stream, WC, Thane Dawrueng and Sitthisak Chansima found a Yellow-bellied Weasel (15°07'00.46" N, 98°53'28.60" E; altitude 770 m). The animal was biting a frog but released it, and fled, when we approached. We were examining the frog when the animal showed up again 1 minute later about 5–6 m away in the sunlight. We had a good look at the animal from several angles, long and close enough to be certain that the animal did not have a white stripe on its back.



Figure 1. Yellow-bellied Weasel *Mustela kathiah*, Doi Phahompok National Park, 31 December 2000 (specimen THNHM-M-183). Photograph taken by WC.



Figure 2. Yellow-bellied Weasel *Mustela kathiah*, Doi Inthanon National Park, 23 November 2008. Side (A) and dorsal (B) views. Photograph taken by TS.



Figure 3. Yellow-bellied Weasel *Mustela kathiah*, Doi Inthanon National Park, 20 May 2009 (specimen THNHM-M-475). Photograph taken by WC.



Figure 4. Yellow-bellied Weasel *Mustela kathiah*, Taksin Maharaj National Park, 13 January 2010. Photograph taken by NK.

Instead, we saw a broad and bright yellow patch running from the chin to the abdomen even from the side view (the animal was a bit higher, ca. 2 m, uphill, and there was no vegetation blocking the view). There was no mask on the face and no contrasting colour on its tail. Based on these characteristics the observed animal was surely *M. kathiah*.

DISCUSSION

Thai Yellow-bellied Weasel records come, with one exception, from the country's northern highlands (Fig. 5). The northern highlands of Thailand are ecologically similar to areas where Yellow-bellied Weasel has been recorded in Lao PDR (DUCKWORTH & ROBICHAUD, 2005) and Myanmar (THAN ZAW *ET AL.*, 2008), indicating that it was probably overlooked historically in Thailand. There is no reason to suspect the alternative, that the species is a recent colonist of the country. Similarly, the chance that the records stem from a clutch of escapes is highly unlikely given that the genus is not significantly traded in the country. These records, all but one from mountains over 1,400 m, accord with those from Lao PDR (1,100–1,550 m; DUCKWORTH & ROBICHAUD, 2005) and generally across its range (over 1,000 m; CORBET & HILL, 1992), although in the extreme east it apparently occurs much lower: in Vietnam there is a sight record at 50 m (although all other records with accurate altitude are from over 1,000 m; ROBERTON, 2007: 68) and in Hong Kong it occurs almost down to sea-level (SHEK *ET AL.*, 2007; M.W.N. LAU *in* IUCN, 2010). The Thung Yai Naresuan Wildlife Sanctuary record came from a different habitat from, and at much lower altitude and latitude than, the others: this should trigger, when further records are available, more careful consideration about the distribution of this overlooked animal in the country.

It is difficult to speculate on the national conservation status of the species based on these few records. Tropical Asian weasels are generally recorded only rarely by conventional mammal survey methods, even camera-trapping (DUCKWORTH *ET AL.*, 2006; ABRAMOV *ET AL.*, 2008), meaning that the scarcity of Thai records of Yellow-bellied Weasel does not necessarily indicate a genuine national rarity. Although the species was not assessed as a global priority species by the IUCN/SSC *Action plan for the conservation of mustelids and viverrids* (SCHREIBER *ET AL.*, 1989), and its IUCN Red List category is that of Least Concern (IUCN, 2010), Thailand is on the southern edge of its range and so it might be scarce, or even rare, and/or localised in the country. The southernmost record of *M. kathiah* from Thung Yai Naresuan Wildlife Sanctuary, a very well surveyed site from which no weasel of any species has been hitherto recorded, strengthens the suggestion that this species, and perhaps other weasels such as *M. strigidorsa*, have been overlooked by most surveys in the country, particularly the many large-scale camera-trapping efforts in the western part of the country (for example, CHUTIPONG *ET AL.*, 2011). This record also suggests that the Tenasserim Range may facilitate the dispersal of the species; if so, it may be found even further south, just as also has shown by a recent record of *M. strigidorsa* from Kuiburi National Park, Prachuab Khiri Khan Province (R. Steinmetz, *unpublished data*). The Thai records suggest that Yellow-bellied Weasel uses various habitats, ranging from hill evergreen through forest edge to grassland, including camping grounds and housing areas, with one record from much lower elevation (below 1,000 m) (Table 1). This suggests wide ecological tolerance, although further records are necessary to make a more informed judgement.

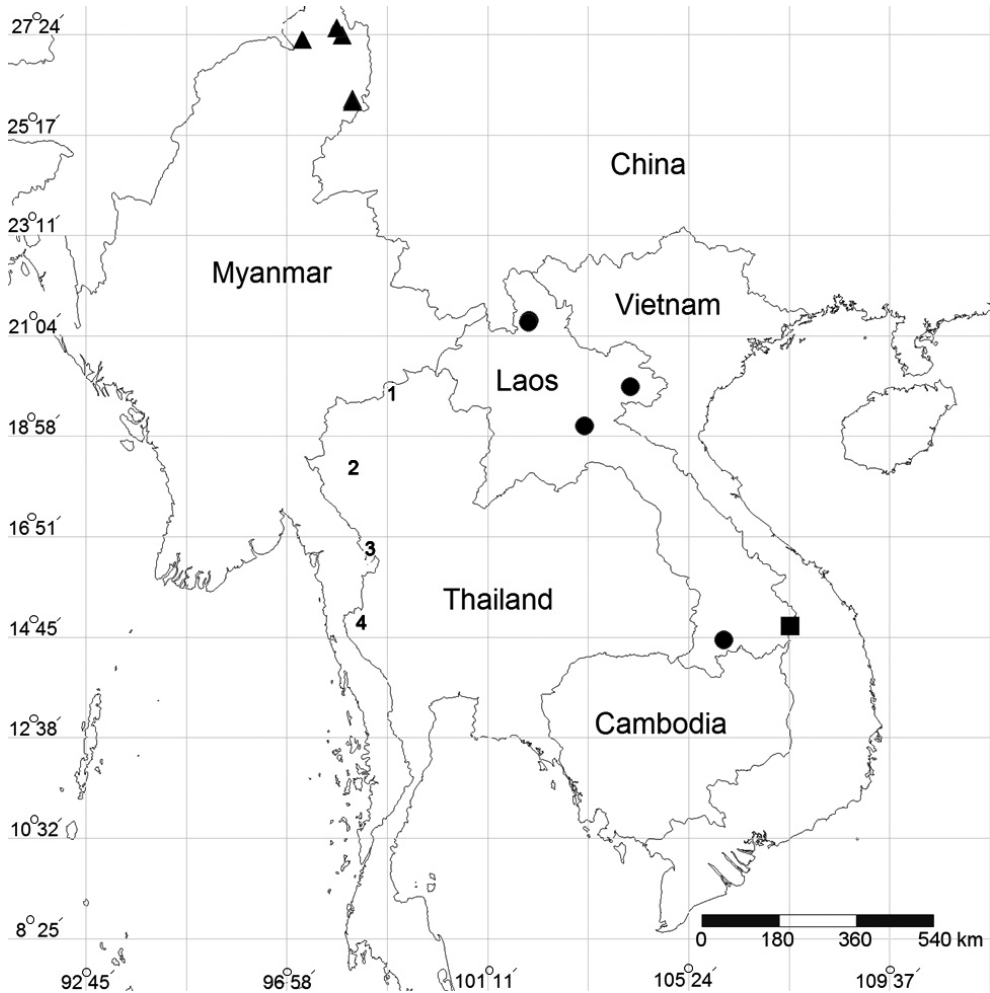


Figure 5. Map showing records of Yellow-bellied Weasel from this study and all known records from neighbouring countries of Laos, circle (DUCKWORTH & ROBICHAUD, 2005), and Myanmar, triangle (THAN ZAW *ET AL.*, 2008), and the southernmost Vietnam record, square, traced by DUCKWORTH & ROBICHAUD (2005). The symbols do not represent individual records, but general areas when there are several records from proximities of less than 25 km. For Thai records, the numbers represent locations or areas of the records: 1 – Doi Phahompok National Park, 2 – Doi Inthanon National Park, 3 – Taksin Maharaj National Park, and 4 – Thung Yai Naresuan Wildlife Sanctuary. Records from other countries on the map have not been collated or mapped.

Despite this pulse of records, Yellow-bellied Weasel remains sufficiently little known in Thailand and neighbouring countries that all records warrant publication and every opportunity should be taken to preserve further specimens, including the skull.

The Doi Phahompok specimen was initially identified as a Least Weasel (SUPPARATVIKORN, 2001). Unfortunately, Least Weasel has already been included in some publications on the mammals of Thailand, e.g. NABHITABHATA & CHAN-ARD (2005: 82). The belief that Least Weasel occurs in Thailand seems to stem entirely from the Doi Phahompok specimen discussed above. The species should therefore be omitted from future accounts of Thailand's mammals, barring further records of its occurrence.

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