



On mammals from the People's Democratic Republic of Laos, mainly from Sekong Province and Hongsa Special Zone

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Abstract

Mammal data and material were collected during a short stay in the People's Democratic Republic of Laos in the winter of 1993–1994. Most data are from the southern Sekong Province and the northwestern Hongsa Special Zone, from where practically nothing has been previously reported. Many localities are new, and add to our knowledge of species distributions. Of particular interest are *Megaerops niphanae* and *Taphozous saccolaimus*, which are reported from Laos for the first time; some new localities for *Pygathrix nemaeus*; two new records of *Prionodon pardicolor*; reports on *Panthera tigris* and *Nemorhaedus sumatraensis*; and records of *Leopoldamys edwardsi* and *L. sabanus*, *Maxomys moi*, *Berylmys bowersi* which is new for the Sekong Province region, and *Niviventer cf. tenaster* which is new for Laos.

Introduction

The mammal fauna of the People's Democratic Republic of Laos (further abbreviated as Laos) is not well known. No systematic collecting has been carried out. OSGOOD (1932) described several collections of mammals including specimens from 25 localities in Laos, representing some 90 species. Another valuable collection had been brought together by the Société Royale des Sciences Naturelles du Laos in Vientiane. It served as the basis for a number of systematic and zoogeographic accounts by J. DEUVE and M. DEUVE in the Bulletin of the Société (1963 a–b; 1964 a–d), culminating in the comprehensive work "Les mammifères de Laos" (J. DEUVE 1972). The collection of mammals and other animals and the library of the mentioned Société are believed to have been destroyed (Mr. JEAN DEUVE, pers. comm. 1994). Other important studies on mammals from Laos are those by PHILLIPS (1967), CHAZEE (1990), SALTER (1993), DUCKWORTH (1994), EVANS et al. (1994), and SCHALLER and RABINOWITZ (1995).

The present study contains taxonomic and geographic mammal data recently assembled in Laos by the author, as member of a team researching the use of non-timber forest products (BEER et al. 1994). The research was commissioned by the Dutch development cooperation organization Novib. The team stayed in Sekong Province from 3. 12. 1993 to 23. 1. 1994, and in Hongsa Special Zone from 31. 1 to 15. 2. 1994. Most observations in the present study are on mammals from Sekong Province, a number refers to Hongsa Special Zone, and a few to other localities.

Material and methods

Data on the occurrence of species and some material of hunted specimens have been collected during several dozen village interviews. Other material has been seen, and in some cases bought, in the markets of Sekong town, Saravane, Attapeu, Vientiane and Hongsa town, and some at an odd market stall

along Hong Khou Vieng in Vientiane. Altogether 111 specimens representing 44 species have been deposited in the Institute for Systematics and Population Biology – Zoölogisch Museum (ZMA) of the University of Amsterdam, the Netherlands. The study also includes notes on species which were not collected, and on six specimens of four bat species from Laos received by the institute in 1983. The identifications are the author's, except for *Niviventer cf. tenaster*, which have been identified by Dr. G. G. MUSSER, while Dr. J. FOODEN commented on a first analysis of the *Macaca* material. For identifications several handbooks for the region were consulted, notably PEENEN et al. (1969), DEUVE



Fig. 1. Maps of the areas visited in Hongsa Special Zone, northwest Laos (above), and in Sekong Province, southeast Laos (below). Localities of some of the smaller villages have been approximated. The names of some smaller rivers are:

1: Nam Ken; 2: Huay Chuang; 3: Nam Sip; 4: Nam Poay Ô.

(1972), LEKAGUL and MCNEELY (1988) and CORBET and HILL (1992). Generalized distribution maps including Laos have been published by LEKAGUL and MCNEELY (1988) and CORBET and HILL (1992). A number of localities are mapped (Fig. 1); not all could be traced with accuracy. Given measurements are in mm, and weights in g. Measurements have been abbreviated as follows: Bimalar width – BMW; upper tooth row – C*-M*; ear length – E; forearm length – FAL; greatest skull length (incisors excluded) – GSL; head and body length – HB; hindfoot length (claws included) – HF; interorbital width – IOW; palatal length – PL; post-rostrum length – PRL; rostrum length – RL; tail length (with/without tuft) – T; total length (with/without tail tuft) – TL; weight – W; zygomatic width – ZW. Bimalar width, rostrum length and post-rostrum length in primates have been measured as indicated by FOODEN (1969).

Results and discussion

Order Pholidota

Manis javanica Desmarest, 1822

Scales and nails of three Sunda pangolins caught near Tan Talang in 8. 1993 were offered for sale, in Dakchung (Noy) on 13. 12. 1993. Some of these were bought (ZMA 24.755). A live specimen from Dakrai was offered for sale in the same place on 14. 12. 1993. Of this specimen some pictures were taken. Another live specimen was offered for sale in the market of Sekong town on 21. 1. 1994. Villagers reported on the occurrence of pangolins (Sunda pangolins according to the map in CORBET and HILL 1992) near Ayun, Dakdan, Daklu, Prau Niai, Sang, Tangiung and Tjrok, all in Sekong Province.

Order Scandentia

Tupaia belangeri (Wagner, 1841)

A specimen shot near Hongsa town was offered for sale in the market of that town on 1. 2. 1994 (ZMA 24.702; TL: 390/360, T: 175/143, HF: 43.6, E: 19.1, W: 168). During our stay several other specimens of this species were seen in the same market.

Order Insectivora

Hylomys suillus Müller, 1841

Villagers reported on what probably belongs to this species at Dakdan and Rak, both in Sekong Province.

Order Chiroptera

Rousettus leschenaultii (Desmarest, 1820)

One specimen was collected by L. J. K. KLEIJN and K. POST on 15. 12. 1983 at Nam Ngum (ZMA 22.073). Two specimens from near Sekong town were offered for sale in the market of that town on 11.1, and another on 23. 1. 1993 (ZMA 24.840–42). A series of male *Rousettus* from Pha Deng, between Hongsa town and Muangngeun, offered for sale in the market of Hongsa town on 12. 2. 1994 also represented this species (ZMA 24.843–56; FAL 11 adult ♂♂: 76.6–85.0; W ditto: 80–98). On 18. 1. 1994, two specimens of *Rousettus*, probably of this species, were seen flying in broad daylight from a bamboo forest at the roadside a few km west of Tjrok in Sekong Province. Other specimens probably of this species were seen on 25. 11. 1993 at a roadside stall in Vientiane (origin: Vangviang), on 31. 1. 1994 in the market of Luangprabang (originating from a cave at the Mekong nearby), and on 20. 2. 1994 at the Vientiane day-market (origin unknown).

Cynopterus sphinx (Vahl, 1797)

Two specimens of this species were bought at Hongsa town market on 8. 2. 1994, originating from a forest east of the town, and two others on 14. 2. 1994, originating from Pha

Deng, a red rock formation at a few km from the town in the direction of Muangngeun (ZMA 24.836–39). Specimens probably belonging to this species were seen on 25. 11. 1993 at a roadside stall in Vientiane (origin: Vangviang).

Megaerops niphanae Yenbutra and Felten, 1983

Two ♀♀ were bought at Hongsa town market on 8. 2. 1994. They had been caught in a forest east of the town (ZMA 24.834–35) and are the first records of this species from Laos. Some measurements are (subadult ZMA 24.834, adult 24.835): FAL: 56.5, 58.0; E: 17.7, 18.8; W: 28, 27. The adult specimen was lactating. The subadult had a nycteribid fly, *Lep-tocyclopodia f. ferrarii* (Rondani, 1878), possibly a straggler from the preceding species.

Eonycteris spelaea (Dobson, 1871)

One immature specimen from a forest east of Hongsa town was bought in the market of this town on 8. 2. 1994 (ZMA 24.833).

Taphozous saccolaimus Temminck, 1838

Three ♂♂, with FAL: 76.7, 74.3 and 74.0 respectively, were collected by L. J. K. KLEIJN and K. POST at Nam Ngum on 15. December 1982 (ZMA 22.069–22.071). This species has not previously been reported from Laos. According to CORBET and HILL (1992), it differs from the other large *Taphozous* of the region, *T. theobaldi* Dobson, 1872, in a number of cranial and other characters, clearly separating the two. One of these characters, the form of the frontal region (concave in *theobaldi*, and not so in *saccolaimus*), appears not to hold true in this case. In specimen 22.069 (the only with extracted skull), the frontal region is inflated anteriorly but distinctly concave between the eyes.

According to SALTER (1993) *theobaldi* would be mentioned for central and southern Laos by LEKAGUL and MCNEELY (1988) and CORBET and HILL (1992). This is not correct. LEKAGUL and MCNEELY, (1988) mentioned Indochina as part of its distribution, and include a large part of Laos in their generalized distribution map. These maps have been compiled mostly from literature reports (Dr. J. A. MCNEELY, pers. comm. 1994) but I have not been able to trace the source for the occurrence of this species in Laos. CORBET and HILL (1992) do not mention or map *theobaldi* for Laos; localities in both Thailand and Vietnam on their map approach the extreme south of Laos.

Rhinolophus pusillus Temminck, 1834

A ♂ of this species was netted by L. J. K. KLEIJN and K. POST at Nam Ngum on 15. 12. 1982 (ZMA 22.154).

Pipistrellus tenuis (Temminck, 1840)

L. J. K. KLEIJN and K. POST collected a ♂, FAL: 30.1, at Thalet near Nam Ngum on 25. 8. 1982 (ZMA 22.170).

Order Primates

Nycticebus pygmaeus Bonhote, 1907

A specimen was caught at Dakmuan about 6 km east of Dakchung (Noy) during the night of 13./14. 2. 1994 and offered for sale in the latter town the next morning. It was bought by the author, photographed, and released in a forest near Dakbong. DUCKWORTH (1994) mentioned this species from the proposed protected areas Xe Piane and Phou Xang He, and has a study in press on his field sightings of the Pygmy loris in Laos (DUCKWORTH 1995).

Nycticebus species

The nearby occurrence of slow loris was reported in the villages of Dakdan, Daklu, Prau

Niai, Sang, Tangiung and Tjrok in Sekong Province, and in the villages Napong/Nam Ken, Huay Tjuang and Huay Sali in Hongsa Special Zone.

Macaca species

Five species of macaque are known to occur in Laos (FOODEN 1971, 1975, 1982 a, 1986, 1990; CORBET and HILL 1992; SALTER 1993): *Macaca mulatta* (Zimmermann, 1780), *M. f. fascicularis* (Raffles, 1821), *M. arctoides* I. Geoffroy, 1831, *M. a. assamensis* McClelland, 1840, and *M. nemestrina leonina* (Blyth, 1863). Our interviews yielded many indications of the presence of macaques: at the villages of Kunsei, Dakdan, Sang, Rak, Dakbol, Daklu, Tangiung, Prau Niai, Loy-Nua, Dakling, Tin, Vak Nua, and Tjrok in Sekong Province, and at Napong/Nam Ken and Phu Leng in Hongsa Special Zone. Many stories were heard relating crop raiding by groups of 10 to 100 monkeys, which must be macaques, and hunting such groups. A captive juvenile macaque was observed at Dakchung (Noy) and another at Tin. An adult was seen high above the ground in a bamboo forest along the Sekong River, between Loy Nua and Brak. Two captive young adults and a juvenile were observed in Hongsa town. As we did not know the species well and had only general literature with us, we did not always note all the data necessary for identification. Retrospective identification of species described in interviews or even of specimens observed has not been attempted. Efforts to identify five skulls – mostly incomplete – from Phu Tjé, Dakling and Vak Nua, purchased from hunters, offer more perspective.

Taxonomy of macaques is based for a large part on characters other than skull form and measurements (FA 1989). FOODEN (1991) mentioned glans penis morphology as the most important basis for modern macaque classification. Descriptions and illustrations of skulls of the individual species mentioned have been published by FOODEN (1975, 1982 a, 1988, 1990, 1991), FOODEN et al. (1985), and LEKAGUL and MCNEELY (1988), but there is no true comparative account. Therefore, distributional data (FOODEN 1971, 1975, 1982 a, 1982 b, 1986, 1990; FOODEN et al. 1985; DUCKWORTH et al. 1993, 1994; TIMMINS et al. 1993) has also been taken into account in assigning the skulls to species.

Macaca fascicularis (Raffles, 1821)

A skull of a ♂ shot in 12.1993 on Phu Tjé, a mountain near Tangiung with an altitude probably between 1 100 and 1 500 m (ZMA 24.916), and a skull of an immature ♂ shot in 1993 near Dakling, altitude c. 750 m (ZMA 24.917), are assigned to this species. In Dakling, people told that a hundred specimens are being killed each year (but these may include specimens of the next two species). If compared with the larger skulls described below, the malar bones in *fascicularis* are narrower, the palatum does not extend behind the tooth rows, and the tooth rows are more strongly curved. Measurements of the adult: GSL: ≥ 131 , C^1-M^3 : 44.7, ZW: 85.4. According to FOODEN (1971), the specimens are from the *mulatta* range, although the dividing-line between this species and the narrowly related *fasciculata* in this region appears to be tentative and less fixed than suggested by CORBET and HILL (1992). The present author had first thought to class the skulls as *mulatta*, but Dr. J. FOODEN commented (pers. comm. 21. 11. 1994) that the GSL of the adult specimen seems too large for *mulatta* at this latitude, where it is less than 120 in all specimens known to him, and where GSL in *fasciculata* apparently exceeds that in *mulatta*.

Macaca assamensis assamensis McClelland, 1840

A skull of an animal shot in 1993 near Dakling (ZMA 24.827) and a skull of one shot in 1993 near Vak Nua (ZMA 24.828) have been assigned to this species. The skulls are considered adult and male by dental wear and large canines or their alveoles. Some measurements are (24.827/24.828): GSL: 146.0/145.0; RL: 62.1/61.5; PRL: 94.1/93.5; BMW: 80.1/78.7; and ZW: 96.4/99.4. The present author had grouped these skulls as exceptionally

large specimens together with the next under *nemestrina* but Dr. J. FOODEN rather associates them with *assamensis*: “The evidence is somewhat ambiguous, but GSL and ZW seem to ally these specimens more closely with *M. a. assamensis* than with *M. nemestrina leonina*” (pers. comm. 21. 11. 1994). CORBET and HILL (1992) do not indicate *assamensis* for the Sekong Province region, but FOODEN (1982a) identified *assamensis* from Mhuang Tateng in southern Laos.

Macaca nemestrina leonina (Blyth, 1863)

A skull of a specimen shot in 1993 near Dakling (ZMA 24. 826) is assigned to this subspecies. Dr. J. FOODEN agrees with this placement (pers. comm. 21. 11. 1994). Some measurements are: GSL: 140.8; RL: 57.7; PRL: 91.5; BMW: 84.6; and ZW: 102.4. Some differences between this specimen and the ones assigned to *assamensis* are apparent: while in *nemestrina* GSL is smaller, ZW is larger, and hence its relative ZW. Also, its BMW is larger than in *assamensis*, and thus its relative BMW. Another difference is that the nasal opening in the present specimen of *nemestrina* is pointed anteriorly, while it is broad in the specimens of *assamensis*. The distribution of *nemestrina* as given by FOODEN (1975), extended by CORBET and HILL (1992), renders it perfectly likely that the species occurs in Sekong Province.

Semnopithecus cristatus (Raffles, 1821)

One skull without mandible and with incomplete dentition was purchased from a hunter who had shot the animal at Phu Tjé near Tangiung, in 12.1993, and is assigned to this species (ZMA 24.918). Other Laotian species of this genus do not occur as far south as Sekong Province (see FOODEN 1976, rather than CORBET and HILL 1992). Some measurements are: GSL: ≥ 107 , RL: 27.2, PL: 32.2, ZW: 67.1, BMW: 63.9. DUCKWORTH et al. (1994) report observations of *Semnopithecus* monkeys of the “*cristatus* group” from Xe Pian.

Pygathrix nemaeus (Linnaeus, 1771)

The Douc langur is represented by a damaged skull and mandible, from a forest near Ayun where the animal was shot in 9.1993 (ZMA 24.888) and by a damaged skull without mandible and with incomplete dentition of an animal shot in 1993 at about 20 km east of Dakling (ZMA 24.919). Some measurements are (ZMA 24.888/ZMA 24.919): GSL: $\geq 117.4/\geq 119.7$; RL: 39.0/39.1; C^1-M^3 (alveoles): 39.2/36.2; PL: -/42.3; ZW: c. 84/84.0; BMW: 79.6/76.0. The Dakling specimen differs from the Ayun specimen and from a specimen in the Nationaal Natuurhistorisch Museum in Leiden in its ZW, measuring 8.2 in the former, and 4.1 in the Ayun specimen. This seems too large for individual variation but the material is very limited and other explanations must wait.

In several villages the monkey with the red arms was specifically mentioned. Near Sang it had disappeared long ago, in Tangiung it was called rare, and near Prau Niai (the only village which claimed not to hunt), Loy-Nua, and Tjrok it was still found. Near Loy-Nua people mentioned groups numbering between 5 and 9 animals.

Hylobatidae

SALTER (1993) mentions five species of *Hylobates* Illiger, 1811 for Laos. Of these, *H. gabriellae* Thomas, 1909 occurs in southern Laos east of the Mekong, thus in Sekong Province, and *H. lar* (Linnaeus, 1771) in the north, west of the Mekong, thus in Hongsa Special Zone. We collected no material of gibbons, but many stories indicated their presence and on one occasion we heard one call. Gibbon characters frequently mentioned in interviews include their lack of a tail, their arboreal habits, and their being harmless to

crops. They were reported by the villagers of Dakdan, Rak, Dakbol, Tangiung (but there they had vanished), Prau Niai, Loy-Nua, Dakling, Vak Nua and Tjrok in Sekong Province, and at Napong/Nam Ken in Hongsa Special Zone, where gibbons were last observed 20 years ago. We heard a specimen call near Tin, on 17.1.1994. Several of the reports from Sekong Province mentioned that ♂♂ are black and ♀♀ red (Tangiung, Prau Niai, Loy Nua, Dakling), possibly indicating *Hylobates gabriellae*. The villagers of Dakling believe that ♀♀ are rare; in a group of seven gibbons there would be only one ♀. Their explanation is that ♀♀ kill female offspring. As a consequence, groups of ♂♂ would steal ♀♀. DEUVE (1972) recorded the mentioned species, as a subspecies of *H. concolor* (Harlan, 1826), from Sekong Province (then southeast Saravane Province). DUCKWORTH et al. (1993) and TIMMINS et al. (1993) provisionally identified gibbons from Phou Xang He and Dong Hua Sao as *H. concolor*, which in the taxonomy used by them includes *H. gabriellae*. In Dakdan the people mentioned a whitish-grey species and in Rak the colour was like that of "ling" (normally a macaque). In Napong/Nam Ken people remembered two forms: one black with white in its face, and one greyish white, which may indicate *H. leucogenys* Ogilby, 1840 and *H. lar*, respectively. A captive specimen of *H. leucogenys* was seen at Hotel Phousy in Luangprabang. DEUVE (1972) recorded this species, as subspecies of *H. concolor*, for Luangprabang Province.

Order Carnivora

Cuon alpinus (Pallas, 1811)

The Asian wild dog, red dog, or dhole (in French chien rouge or, quite confusingly, renard – the true fox is known from North Vietnam) occurs near Daklan, Ngondon, Daklu, Tangiung, and Loy-Nua in Sekong Province, and near Hongsa town (8–9 km from the town), Napong, Huay Tjuang, Huay Sali, Nam Sip and in the Muangngeun District in Hongsa Special Zone. A skull of an animal shot in August 1993 at Phu Tjé near Tangiung was obtained at that village (ZMA 24.798). Near Dakdan it is said to be rare and to hunt wild boar. In the District of Kaleum it is said to hunt in groups of 15–20 and to kill and eat goats "till the last one". In the Hongsa District, where it is considered an enemy of goats, pigs and cows, it was mentioned to us at Napong, Huay Tjuang, Huay Sali, and Muangngeun. In the region of Huay Tjuang a group of 20–30 would attack villages once or twice a year. At Huay Sali it was said to be numerous and to approach villages mainly in November and December when, in 1993, it killed six pigs. It is also known to hunt barking deer.

SALTER (1993) suggests that some of the village reports on dholes may actually refer to feral domestic dogs.

Canis aureus Linnaeus, 1758

Although the golden jackal is believed to occur only in the northwest of Laos by LEKAGUL and McNEELY (1988) and CORBET and HILL (1992), DEUVE (1972) also mentioned reports from the road Savannakhet-Sépone. It was also reported to be present in Daklan village and the District Kaleum in Sekong Province. The Kaleum District Committee told us that the species, called loup in French, hunts in packs of two or three, and kills many chickens. In the Hongsa District we were told that the loup, "a bit smaller than our domestic dog" is an enemy of goats and is known to occur at a distance of 8–9 km around Hongsa town and near Phu Nkut (not located) and Phu Leng. However, according to the Chief of Forestry of the subdistrict Hongsa, Mr. PINH, who knows the sound of the jackal from Huei Sai in Bokeo Province, it does not occur near Napong, at a few km from Hongsa town. Again, confusion with feral domestic dogs, or even with *Cuon alpinus*, cannot be excluded. Other team members saw two captive specimens of what they believed to represent this species in Vientiane.

Ursus thibetanus Cuvier, 1823

The Asiatic black bear possibly occurs near Prau Niai and Vak-Nua in Sekong province. People there claimed two species of black bear, the larger of which eats mais, sugar cane and bananas. A specimen of *Ursus thibetanus* is held in Hotel Phousy at Luangprabang in a very small cage. In Hongsa Special Zone there were several reports on the species' presence. At Napong people spoke of two species of bear. At Huay Tjuang we met with a man who had been severely wounded and handicapped by a large black bear ("as big as, or bigger than, man"; the other species was said to be much smaller), which was attacking the mais crop. At Nam Sip the small species was said to be more numerous than the large one. In the region, hunting of bears for traditional medicinal purposes appears to occur. Gall bladders but also all other parts of the bears were sold to Thailand. In the District of Muangngeun the species, called meuy, was reported to attack mais crops. While most of these reports must refer to the Asiatic black bear, confusion with the next species – especially by people who know only one species – can never be excluded. Furthermore, we were sometimes told of a third species: *Arctictis binturong* (Raffles, 1821) considered by some to be a bear while others sometimes added that it was not a real bear.

Ursus malayanus (Raffles, 1821)

The sun bear was reported by the villages of Tangiung, Prau Niai, and Vak-Nua in Sekong Province, and Napong, Huay Tjuang and Nam Sip in Hongsa Special Zone. Two skins of this bear were seen at the Morning Market in Vientiane on 27. 1. 1994. The sun bear is hunted by some not only for the traditional medicinal market but also as a competitor for honey.

Arctonyx collaris Cuvier, 1825

The hog-badger was reported, as mu lung, by the villagers of Huay Tjuang in Hongsa Special Zone, where it may be numerous in the region.

? *Melogale personata* Geoffroy, 1831

An animal reported by the villagers of Tangiung in Sekong Province as mu lung, not being longer than 40 cm and having a very strong odour when eaten, probably represents this species rather than the preceding.

? *Lutra lutra* (Linnaeus, 1758)

DEUVE (1972) reported the coarse-coated otter from the central provinces. According to LEKAGUL and MCNEELY (1988) it occurs only in the north and along the eastern border, but CORBET and HILL (1992) indicate that it would occur throughout the country. SALTER (1993) quoted a report claiming the species to be rare in the region. It is not possible to identify reported otters as belonging to this or to the next, smooth-coated species *Lutrogale perspicillata* (I. Geoffroy, 1826), which is larger, with larger feet, a more velvety coat, and a sharp throat demarcation (FOSTER-TURLEY et al. 1990). Reports from the villages of Dakdan and Daklu, and from the Kaleum District in the Province of Sekong may refer to *Lutra lutra*.

? *Lutrogale perspicillata* (I. Geoffroy, 1826)

Reports on otters from Napong and Huay Tjuang in Hongsa Special Zone may refer to this species. A stuffed specimen was seen in the Vientiane Morning Market on 27. 1. 1994.

Aonyx cinerea (Illiger, 1815)

This small, dark otter was reported by the people of Dakdan, Ayun, Daklu, and Tjrok in Sekong Province. In Ayun, a poorly preserved skin could be examined. According to the owner, skins fetch high prices in Vietnam.

Viverra zibetha Linnaeus, 1758

Descriptions by villagers of Napong and Huay Tjuang, both in Hongsa Special Zone, of a species called *njin hang kan* (niai) or *njin hang phu* (the *nen hang ka* of DEUVE 1972) refer to the large Indian civet.

Viverricula indica (Desmarest, 1817)

A live specimen of this species in the village Ban Yai, adjacent to Hongsa town, was shown to us on 14. 2. 1994, a day after its capture near that village.

Prionodon pardicolor Hodgson, 1841

A dead ♂ of the spotted linsang was offered for sale in Dakchun (Noy), near the place where it had been killed on 9. 12. 1993. The skull and skin could be secured (ZMA 24.710 b; TL: 760/735, T: 370/345, HF: 62, E: 34.3, W: >500). A second specimen was offered for sale in the market at Hongsa town on 13. 1994. It had been caught near Hongsa town during the first week of February. As it had been cleaned and smoked, the sex could not be determined. Its skull has been preserved (ZMA 24.711 GSL: 70.0, CBL: 68.2, ZW: 36.9, C¹-M¹: 24.2). SCHREIBER et al. (1989) list the species among those Viverridae "known or likely to be threatened" and remarked that this species seems to be rare everywhere in its distribution area. In Thailand, where it occurs in the north, it has not been seen since 1976, and likewise there are no recent records from any other country where it occurs except two from (northeast) India and one from southern China. In Vietnam, however, it may still be common. There, the species is offered in markets from time to time (SCHREIBER et al. 1989). The present records are of double interest: they are from a fourth country, and they suggest that also in Laos the species may still be rather common. (According to SI SOUN PHAN, a Junior Forestry Officer who assisted in cleaning the animal from Dakchun (Noy), animals of this type were offered from time to time in the Sekong town market.)

Paradoxurus hermaphroditus (Pallas, 1777)

The common palm civet was reported by the villages of Napong/Nam Ken and Huay Tjuang, in Hongsa Special Zone. Its occurrence in that region was confirmed by a smoked specimen from Kiugniu offered in Hongsa town market on 10. 2. 1994. The young adult specimen is extremely small (skull: ZMA 24.716; HB: c. 350, T: c. 395, GSL: 83.4, ZW: 43.9). CORBET and HILL (1992) give a GSL range of 90–125; in 7 ZMA specimens from Sumatra this range is 100.0–116.9, and in 7 of unknown origin it is 95.5–119.3.

Paguma larvata (Smith, 1827)

Three incomplete skulls of this species, of specimens shot in 1993, were obtained at Ayun and Tangiung in Sekong Province (ZMA 24.712/13/15). The single Tangiung specimen originated from Phu Tjé. Near Huay Tjuang, in Hongsa Special Zone, the species is frequently seen.

Arctictis binturong (Raffles, 1821)

The binturong was reported by villagers of Tangiung in Sekong Province and Huay Tjuang in Hongsa Special Zone. In both villages the species is considered a honey-eating bear. DEUVE (1972) mentioned the Laotian name *chon dam*, but in Huay Tjuang the name *mi hang koh* was used. The people there believe that the binturong never attacks people, that it cannot be killed with a knife, and that to defend itself against bees it greases itself with honey and rolls through sand. At Hotel Phousy in Luangprabang a specimen was held in a small cage.

Herpestes urva (Hodgson, 1836)

In Ayun and Tangiung in Sekong province the people knew an "otter" with dog's paws in-

stead of duck's paws (i. e. without webbed toes), which lives near and in water and eats fish. This probably refers to the crab-eating mongoose, a skull of which was secured at Ayun, near the site where it had been killed in 1993 (ZMA 24.714).

Prionailurus bengalensis (Kerr, 1792)

The leopard cat was well-known at the villages of Dakdan, Tan Talang, Ayun, Tangiung, and Tjrok in Sekong Province, and Napong in Hongsa Special Zone. Two incomplete skulls of animals shot in 1993 were obtained from near Ayun (ZMA 24.756/57). In some villages it was said to be numerous and to prey on domestic chickens.

? *Pardofelis marmorata* (Martin, 1837)

Villagers at Tangiung, Sekong Province, recognized the marbled cat from a picture and told us it lived near their village. This would confirm the distribution as given by LEKAGUL and McNEELY (1988) but contradicts the picture in CORBET and HILL (1992), which indicates a scattered distribution, covering only a part of (northwest) Laos. Confusion with the next species cannot be excluded.

Pardofelis nebulosa (Griffith, 1821)

In Sekong Province, only the Kaleum District Committee claimed the presence of the clouded leopard, which was said to be numerous. At Napong in Hongsa Special Zone the species was known but had since long disappeared. A skin was seen in the Morning Market at Vientiane on 27. 1. 1994 and another, not for sale, in a hotel in Vientiane.

Panthera pardus (Linnaeus, 1758)

At Ngondon and Dakbong in Sekong Province the panther is sometimes encountered. According to the Kaleum District Committee in the same province the species is plentiful in this district. However, its presence was confirmed only at the village of Vak Nua, while near Tjrok it did not occur. Near Napong in Hongsa Special Zone the species was also said to be absent. A skin was seen in the Morning Market at Vientiane on 27. 1. 1994.

Panthera tigris (Linnaeus, 1758)

The reports and stories on the tiger are numerous, both in Sekong Province and in Hongsa Special Zone. As noted by SALTER (1993), it is the most frequently reported livestock predator in rural Laos. It was reported to us in the villages of Daklan, Dakchun (Noy), Ngondon, Dakbong, Kun Sei, Dakdan, Sang, Tan Talang, Rak, Daklu, Tangiung, Prau Niai, Loy Nua, Dakling, Vak-Nua, and Tjrok in Sekong Province, and Napong, Huay Tjuang, Huay Sali, Nam Sip and Muangngeun in Hongsa Special Zone. In Attapeu Province, to which we paid a short visit, we were told that there were many tigers; in 1992 or 1993 one had visited San Sai. In Vak-Nua and Tjrok two species of tiger were distinguished: sua khong is large and yellow with black stripes, and sua lay is medium-sized and reddish with black stripes. The latter was considered the most dangerous one, attacking man and pigs. DEUVE (1972) mentioned both names for the tiger, without differentiation. The only direct field evidence observed by the team was a fresh foot print at Phu Kongkling Gnai (or Phu Kong Kring on other maps) in Sekong Province on 31. 12. 1993. With a greatest width of >13 cm there is no doubt as to its identity (STRIEN 1983). Several pieces of skin were seen in the Morning Market in Vientiane on 27. 1. 1994.

Sekong Province has an area of about 8 700 km² and a population of about 57,500, i. e. an average of 6.6 inhabitants per km². In the Dakchun District, with an unknown area (it is one of four Districts of the Province) and 16,000 inhabitants, there are altogether some 6 000 buffaloes, 500 cows and numerous pigs (BEER et al. 1994). According to the District Committee, it is not possible to give a reliable estimate of the number of tigers present in the District. A hundred times every year people of the District address the national

Table 1. Village reports on tiger visits

Village	Frequency	Observations	Livestock lost
Dakchun (Noy)	now and then	yes	
Ngondon	?	1973 (killed)	
Dakbong	monthly	rarely seen; many traces	considerable
Kun Sei	many attacks	many traces	buffaloes, pigs
Dakdan	5 in 1993	traces, no animals	5 buffaloes in 1993
Sang	regularly	seen once	buffaloes, pigs
Tan Talang	not often	none	few buffaloes
Rak	9 in 1993	17 Dec. 1993	9 (out of 30) buf- faloes in 1993
Daklu	1 or 2 times per month	?	every month; Nov. 1993: 2 buffaloes
Tangiung	4–6 times per year	not after 1979	buffaloes every 2–3 months
Prau Niai	2–3 times per year	?	2 or 3 animals per year
Kaleum town	5 or 6 per year	?	1961 and 1963: human victims
Loy-Nua	a few times every year	?	some animals every year
Dakling	many times per year	?	many animals
Vak-Nua	?	?	?
Tjrok	not many around	?	pigs
Napong	very rare; 1 or 2 per year	1993	2 buffaloes in 1993
Huay Tjuang	?	?	1993: 11 cows, 5 pigs
Huay Sali	rare; seen in vil- lages nearby	1 on 5–6 February '94	none since 4 year, but some pigs in villages nearby
No Kieng	sometimes	c. 5 February '94	salt licks
Nam Sip	?	?	in 1993 4 buffaloes
Muangngeun	not often	traces	yes

authorities with the request for permission to kill a tiger because of attacks on buffaloes or other livestock. In 7 or 8 cases every year, this permission is granted. As in Laos the tiger is a protected species (see SALTER 1993; BEER et al. 1994), a killed tiger becomes the property of the state, and skin and bones are handed over to the authorities, while the hunter receives 20% of the revenues. Only in Dakling, the villagers protected their buffaloes at night by putting them in enclosures next to the village, using salt as a lure. These enclosures were said to be effective.

The village reports are quite variable. Some data on the frequency of attacks on domestic animals are given in table 1. People connect these frequencies to the tiger's habits of covering large areas. In some cases single tigers were held responsible for attacks on the livestock of 5 or 6 villages in a given area, in others the villagers thought that they were dealing with a group of tigers. The attitude of the people vis-à-vis the tiger was generally quite tolerant. It was obvious that the regional presence of the species did not cause anything like fear in any of the villages. It should be kept in mind, however, that the tiger is a protected species and that we may not have been told the entire story. SALTER (1993) stated that tigers in Laos "are probably shot whenever opportunity permits".

The species is believed to move very cautiously, and is seldom seen or heard. People often assumed that tigers do not harm humans, and avoid direct confrontation whenever possible. According to the people at Tangiung, it prefers to hunt in silent, isolated places. On the other hand, we were told that tigers may approach or even enter villages (Dakbong, Kun Sei, Kaleum town, Loy-Nua, Napong, Huay Tjuang). Mr. KHEN SON, Head of Agriculture and Forestry of Kaleum District reported three cases of tigers killing people, including his uncle, in 1961 and 1963. The only other report of an accident was received from Mr. KHAMPHONE MOKMUANGSAM, Head of Agriculture and Forestry in Attapeu Province. In 1979 two travellers in the Province (precise locality not noted) had been attacked by a tiger, one of which had been eaten. The tiger in question may still be alive. DEUVE (1972) remarked that in Laos tigers rarely attack people, and that in some of these rare cases the tigers must have taken people for deer.

According to most reports, tiger attacks on livestock occur after dark. At Tangiung the people thought that the tiger prefers clear, moonlit nights to hunt. At No Kieng near Huay Sali, on the border between Hongsa Special Zone and Sayaboury Province, tigers come to salt licks (to locate prey?) preferably during waning moon. However, near Huay Tjuang in 1993 a tiger attacked cows on their daily walk to the village, between 14 and 18 h p.m., three times in that year. This tiger may have killed up to 4 cows per attack. In 1993, also during daylight, children of Loy-Nua discovered a tiger near their village which had seized a deer. They started screaming and chased the tiger away, after which adult villagers collected the deer.

To get rid of a tiger which has developed a taste for livestock, it may be chased away or killed. At one village, it was believed that tigers can not be killed, only chased away. On 17. 12. 1993 the villagers there trapped the tiger which had killed many buffaloes in 1993, and hit it four times with javelins before, severely injured, it could escape. To kill a tiger, it can either be shot or trapped and killed afterwards. We were told that the tiger normally comes back to its prey the night after the attack, which allows hunters to find it. However, in Daklu the people told us that tigers do not eat much, and in Tangiung tigers were believed never to return at all when man had set traps near their prey. In Napong a man told us that a tiger would jump on a buffalo's neck and not kill it at once but take it to the place where he intends to eat it.

The tiger has given rise to some mythological beliefs in Laos. In Dakchun (Noy) we were told that there is a secret society of people who are befriended with tigers and maintain telepathic relations with them. The tiger also enjoys the protection of the forest spirits. When the injured tiger mentioned in the preceding lines fled into the forest, followed

by its hunters, a large dead forest tree fell down. This was taken as a warning from the forest spirit, and the hunters returned home.

Some man-meets-tiger stories were rather fantastic. They can hardly be meant to be taken literally and probably contain some hidden meaning, like a wish to appear exceptionally brave, or a wish to be associated with the powerful tiger. In Napong, a man who lost two buffaloes to a tiger in 1993, related two such stories. In the first, a tiger enters the village to seize one of the pigs under the house of the speaker, who is in the house and on hearing an unusual sound jumps from the window, to land on the fleeing tiger which, pig in mouth and man on back, runs a few hundred meters before releasing the pig. In the second, a tiger chases a dog owned by the same man, the dog flees to its owner inside his house, the tiger enters the house, is frightened and jumps from the window and flees.

Order Cetacea

Orcaella brevirostris (Gray, 1866)

According to Forestry Officers in Sekong town two Irrawaddy dolphins were shot in the Sekong River near the town in 1990. The local people love the dolphins and normally do not hunt them.

Order Proboscidea

Elephas maximus Linnaeus, 1758

Most reports on the Asian elephant are negative and connect its disappearance with the war. During the war, elephant herds (and other large mammals) have been taken for military troops and bombed. During and after the war modern fire-arms were widely distributed and increasingly used for hunting. The following villages in Sekong Province reported its disappearance: Daklan; Dakchun (Noy), elephants last seen near the village in 1964; Ngondon; Sang; Tangiung (the last 5 to 6 killed in the early 1970s); Dakling, none seen since the war; Vak Nua, none seen since 1960; Tjrok, none seen since 1960. According to the Kaleum District Committee the species has been decimated during the war but does still occur in the district, where they move between the district and Saravane Province. The only village in the district reporting the presence of elephants was Loy-Nua. In Attapeu Province we were told there are still many elephants. In Hongsa Special Zone the species had disappeared from Napong since the war, from Ban Sali since 1973, from Nam Sang near Nam Sip, and from the Muangngeun District. In Ban Sali the people blamed both the war and hunters. Wild elephants kill tame elephants, thus wild elephants are being hunted.

Order Artiodactyla

Sus scrofa Linnaeus, 1758

Nearly all the villages where interviews were held reported on large numbers of wild boars visiting during the rice and maize harvests and causing considerable damage. Pali-sades are hardly effective and so are the villagers who try to chase them away or hunt them. At best, one or two specimens from the raiding dozens to hundreds are shot. Very large solitary specimens are also known. The species was considered dangerous. Near Daklan it had recently killed a hunting dog. In Kaleum District, Sekong Province, wild boars destroyed the wild stands of the medicinal plant *Smilax glabra*. In Hongsa Special Zone, wild boars from Oudomsay Province cross the Mekong River at night to visit the forests in October/November, when the wild nuts are ripe. A skull was observed at Pah Oh in Sekong Province, and two mandibles were obtained at Kiugniu in Hongsa Special Zone (ZMA 24.700/01).

Tragulus javanicus (Osbeck, 1765)

Two specimens of the lesser Malay mouse-deer were seen in a roadside stall in Vientiane on 25. 1. 1994. They had been trapped at Lak, a village 52 km from Vientiane in the direction of Luangprabang. Another specimen was seen in the market of Hongsa town on 3. 2. 1994.

Cervus unicolor Kerr, 1792

The sambar was reported in nearly all the village interviews. Near villages where hunting was an obvious occupation it tends to become rare. Trophies were seen in many houses and offices. Live specimens were seen in Dakchun (Noy), confiscated by the police at Dakmong on c. 25. 12. 1993, and in the enclosed compound of a house at Attapeu town on 10. 1. 1994. In the market of Sekong a live specimen was offered secretly for sale on 23. 1. 1994. The sale being unlawful, the animal was kept in another place. Reports on the species being harmful to crops were received only in the villages of Loy-Nua and Tjrok in Sekong Province. Elsewhere, its appearance in a cultivation seemed to be welcomed, as an excuse for hunting. In Huay Sali in Hongsa Special Zone, the people emphasized the damage it would cause to protected forests. In Huay Tjuang people told that the marketing of antlers had been an important activity. At present, fish trade has taken its place as such.

Muntiacus muntjak (Zimmermann, 1780)

The Indian muntjac or barking deer was reported in nearly all the village interviews, and appears to be an important item in the rural diet. Trophies of muntjacs are very common. A skull of an animal shot in 1993 at Phu Tjé was obtained at Tangiung and trophies at Dakchun (Noy), also in Sekong Province, and at Huay Sali in Hongsa Special Zone (ZMA 24.799/801). Near Dakdan and Tan Talang, the species had become rare, but elsewhere it was said to abound. Only in Loy-Nua and Vak-Nua in Sekong Province people reported on muntjac damage to rice crops. In Dakchun (Noy), Sekong Province, as well as Huang Tjuay, Hongsa Special Zone, we were told that when a person is preparing a field for planting (by burning the vegetation) and hears the cry of a muntjac, he or she has to quit that field and start anew in another site. In Huang Tjuay people added that this applies only to the first day of preparing, and that the sighting of a snake has the same meaning.

Bos sauveli Urbain, 1937

In only one village we received a report on this species. The 83-year-old chief of Ngondon remembered that there had been a herd of 3 to 4 kouprey in the forest near the village but the species had long disappeared. According to Mr. KHAMPHONE MOKMUANGSAM, Head of Agriculture and Forestry in Attapeu Province, there are sightings now and then of 1 or 2 kouprey in the western part of his province ("Il y en a assez."), but SALTER's (1993) account suggests that none of these sightings have been confirmed so far.

Bos gaurus Smith, 1827

In Sekong Province, the gaur used to occur but has disappeared near Daklan and Ngondon. Some other villages denied its presence: Dakchun (Noy), Dakdan, and Daklu. According to the Kaleum District Committee, a small group of gaur is seen two or three times a year. This was confirmed by reports in Loy-Nua and Tjrok, where the species still occurs. Near Tjrok one specimen out of a group of four or five was accidentally killed six years ago. The people told us that it was very difficult to observe the species. In Hongsa Special Zone, the species had disappeared near Napong and Huay Sali 20 to 30 years ago. However, near Huay Sali, where Mong hunters were blamed to still hunt the species, traces had been seen at Lake Nam Sang near Phu Pha Dai (or Padai?) some months ago.

Near Nam Sip, four specimens had been seen in early January 1994. The villagers of Nam Sip believe that gaur are protected by the spirit of the forest. When one kills a gaur, one may die, except the Mong. They mentioned Lake Nam Sang, as a place where in old times there were many gaur.

Nemorhaedus sumatraensis (Bechstein, 1799)

All serow/goral-like animals reported to us have been identified as this species. Parts of some butchered specimens and many trophies, some including large parts of the skull, have been seen, and several villages provided descriptions, all representing or indicating the larger southern serow and not the smaller Chinese goral, *Nemorhaedus caudatus* (Milne-Edwards, 1867).

The southern serow is found near Daklan, Tan Talang (where the local population was estimated at 12 specimens), on Phu Kongkling Gnai, near Tangiung, Prau Nai, and between Loy-Nua and Tjrok in Sekong Province. It has disappeared from Ngondon. In Hongsa Special Zone it was reported from Phu Kon Wa near Huay Tjuang, Phu Pahin near Huay Sali, and near Nam Sip. One trophy adorning a shop in Dakchun (Noy) but originating from near Daklan was obtained from the shopkeeper (ZMA 24.805).

Despite its legal protection, the species is still heavily hunted in several places. In one village in Sekong Province the remnants of two freshly killed specimens were seen and the same hunters had shot about 20 specimens in 1993 alone. In Tangiung, the people emphasized that they no longer hunted the southern serow, and in Nam Sip they claimed that numbers were increasing since the legal protection.

Southern serow horns can be found everywhere as trophies. They are also used for medicinal purposes, both in Laos and in surrounding countries. They were offered for sale in some villages, in the market of Sekong town (5 specimens on 23. 1. 1994) and in the Morning Market of Vientiane (many specimens on 27. 1. 1994). All were said to have been shot before the legal protection of the species.

In the cave Than Nyeung in Phu Pahin, a mountain near Huay Sali, female Southern serow are believed to gather to bear their young. The mountain is protected and people are not allowed to enter the cave.

Pseudoryx nghetinhensis Vu Van Dung, Pham Mong Giao, Nguyen Ngoc Chinh, Do Tuoc, Arctander and MacKinnon, 1993

Sekong Province being an unknown region it seemed worthwhile to show pictures of this species (the ones published with the original description by VU VAN DUNG et al. 1993) during our village interviews in the mountainous east. The species is apparently unknown here. SCHALLER and RABINOWITZ (1995), who recorded the species' occurrence in Laos, made it plausible that its southern limit is far north of Sekong Province.

Order Rodentia

Ratufa bicolor (Sparrman, 1778)

A tail of the black giant squirrel was seen and photographed at Ayun and two skulls of specimens killed in December 1993 at Phu Tjé were obtained at Tangiung (ZMA 24.727/28).

Callosciurus erythraeus (Pallas, 1779)

A ♂ of Pallas's squirrel was offered for sale in Dakchun (Noy) on 8. 12. 1993. A picture was taken of the whole animal, and the skull could be preserved (ZMA 24.720; TL: 475/420, T: 255/200, HF: 51.8, E: 23.7).

Callosciurus finlaysoni (Horsfield, 1823)

A ♂ of the variable squirrel was obtained from a road stall in Vientiane on 25. 1. 1994. It had been killed near Ban Lak, a village 52 km from Vientiane along the road to Luang-

prabang. The specimen represents the reddish brown variety with the underside considerably darker than the upperside. Its skull and skin were preserved; its tail plume is missing (ZMA 24.721; TL: 473, T: 235, HF: 57.0, E: 23.4, W: 331; testes small). Another ♂ was bought in the market of Hongsa town on 11. 2. 1994. It had been killed near that town. It represents the variety with full reddish brown upper and under parts and greyish flanks. Its skin and skull were preserved (ZMA 24.722; TL: 533/448, T: 303/218, HF: 55.4, E: 22.0, W: 295).

Callosciurus inornatus (Gray, 1867)

One ♂ of this squirrel was bought at a road stall in Vientiane on 25. 1. 1994. It had been shot near Ban Lak (see preceding species). Its skin and skull were preserved (ZMA 24.723; TL: 450/404, T: 235/189, HF: 47.4, E: 20.0, W: 260; testes: 15.3×9.1, in scrotum).

Tamiops mccllellandii (Horsfield, 1840)

One adult ♂, 1 adult ♀ and 1 probably subadult ♀ of the Himalayan striped squirrel were obtained in the market of Hongsa town on 7. February. They had been killed near that town, and are preserved in alcohol (ZMA 24.733/35; ♂, ♀, ♀: TL: 255/228, 244/209, 245/218, T: 134/107, 136/101, 134/107, HF: 28.2, 27.7, 27.8, E: 12.8, –, 11.3, W: c. 40, 40, 42). The species' presence near Hongsa is in line with its known distribution (MOORE and TATE 1965).

Tamiops rodolphii (Milne-Edwards, 1867)

One of two specimens of the Kampuchean striped squirrel trapped near Dakbong, Sekong Province on 14. December, a probably full-grown ♂, was obtained. It was photographed and preserved in alcohol (ZMA 24.732; TL: 250/220, T: 130/110, HF: 27, E: 13). MOORE and TATE (1965) mentioned as nearest localities for this species the Boloven Plateau in Laos and Quangtri Phuoc Mon in Vietnam (107° 10' E, 16° 35' N).

Tamiops maritimus (Bonhote, 1900)

One adult ♂ and two adult ♀♀ of this species were bought in the market of Sekong town, near which they had been killed, on 11. 1. 1994. They were preserved in alcohol (ZMA 24.729/31; W: 64, 61, 59). Records of this species from southern Laos are scant, Saravane being the only one mentioned by MOORE and TATE (1965).

Dremomys rufigenis (Blanford, 1878)

In Dakchun (Noy), Sekong Province, a ♂ of the red-cheeked squirrel taken near that village was eaten on 8. 12. 1993. The specimen was photographed and its skull secured (ZMA 24.725; TL: 390/350, T: 185/145, HF: 45.3, E: 21.0). Another ♂, killed near Hongsa town, was obtained in the market there on 11. 2. 1994. Its skin and skull were preserved (ZMA 24.726; TL: 404/368, T: 217/181, HF: 50.0, E: 21.0, W: 240).

Menetes berdmorei (Blyth, 1849)

A subadult ♂ of the Indochinese ground squirrel was bought in the market of Hongsa town on 1. 2. 1994. It had been killed near that town and is preserved as ZMA 24.724 (TL: 345/313, T: 175/143, HF: 43.6, E: 19.1, W: 168).

Petaurista philippensis (Elliot, 1839)

A ♂ and a ♀ of this flying squirrel, shot at Huay Vie, a river crossing the road to Dakchun (Noy) 10 km from Sekong town, were offered for sale in the market of Sekong town on 23. 1. 1994. The ♀ was secured and its skin and skull preserved (ZMA 24.736; TL: 105.5/100.7, T: 64.0/59.2, HF: 83.5, E: 44.9, W: 1975).

Mus caroli Bonhote, 1902

Many specimens of this mouse were trapped by children in Dakchun (Noy) on 1. 1. 1994. Eight were preserved in alcohol (ZMA 24.818/25). The species is called nu seeng or nu gee (but it is not sure that these names apply only to this species), and in the Dakchun District it is considered the most serious pest in rice fields.

Rattus nitidus (Hodgson, 1845)

The Himalayan rat is common and often trapped for consumption in the villages in the mountains in eastern Sekong Province. The species is frequently called nu dam (black rat). It often lives commensal with man but is also considered a serious pest in the rice fields. Specimens were obtained in Tan Talung (19. 12. 1993), Tangiung (28. 12. 1993) and Dakchun (Noy) (24. 12. 1993, 1. and 4. 1. 1994) (ZMA 24.746/49, 24.868/74). The black rat was furthermore reported at Dakbol, Prau Niai, Tjrok, all in Sekong Province. Some measurements of adult specimens (a ♂ from Tan Talang and a ♂ and a ♀ from Dakchun) are: TL: 375, 352, 360, T: 180, 164, 172, HF: 41, 39, 38, E: –, 21, 21.7, W: –, 168, 240. The Tan Talang ♂ had large descended testes. In Napong and Huay Sali in Hongsa Special Zone people also mentioned black rats but no specimens were available. This may refer to or include the same species (maps in LEKAGUL and McNEELY 1988; CORBET and HILL 1992).

Bandicota indica (Bechstein, 1800)

Large bandicoot-rats are frequently trapped and consumed or offered for sale in markets. A ♂ from Phu Lak (near Ban Lak, 52 km from Vientiane along the road to Luangprabang), was bought at a roadside stall in Vientiane on 26. 1. 1994 (TL: 432, T: 204, HF: 50, E: 29.9, W: 378, Testes small.) Other specimens were seen at the same stall and in the market of Hongsa town.

Niviventer langbianus (Robinson and Kloss, 1922)

On 2. 1. 1994 an immature ♀ of this rat was caught in a rice field at Dakchun (Noy) (ZMA 24.796; TL: 280, T: 149, HF: 28, E: 17.5, GSL: 33.1, M¹–M³: 6.0, IOW: 5.5, PL: 16.7, W: 60). On the same day, another immature ♀ was trapped in a rice field at Dakbong (ZMA 24.797; TL: 278, T: 139, HF: 28, E: 19, W: 56). The species is called nu deng (red rat) which name, however, applies to more than one species.

Niviventer cf. *tenaster* (Thomas, 1916)

A ♂ tentatively assigned to this species was collected at Ngondon, Sekong Province on 1. 1. 1994; only the skull could be preserved (ZMA 24.908; TL: 372, T: 212, HF: 34, E: 22, W: 81). Two ♀♀ were obtained on 2. and 3. 1. 1994 at Dakbong, Sekong Province and preserved in alcohol (ZMA 24.905/06; TL: 316/≥286, T: 170/–, HF: 29/32, E: 20/22.5, W: 69/90.5) and a further ♂ was obtained at Dakchun (Noy) on 3. 1. 1994 (ZMA 24.907; TL: 402, T: 228, HF: 33, E: 23, W: 115). All these rats were called nu deng, red rats, and they have been identified as *Niviventer* cf. *tenaster* after consultation with Dr. G. G. MUSSER, who suggested to await the results of an ongoing revision of the genus for a more definite placement. *Niviventer tenaster* is known from the highlands of Burma and Vietnam but has not previously been recorded from Laos.

Leopoldamys edwardsi (Thomas, 1882)

The genus *Leopoldamys* Ellerman, 1947 is represented in Laos by two species (MUSSER 1981; MARSHALL 1988; CORBET and HILL 1992), *edwardsi* and *sabanus*. However, these species are not well defined and in need of taxonomic revision (MUSSER 1981; MUSSER and NEWCOMB 1983). Differences in skull characters or dimensions are not appreciable (MARSHALL 1988; MUSSER 1981). Relative tail length, pelage colours, and altitudinal distribution seem to offer some clues. Unfortunately, 3 of our 4 specimens consist of skulls alone. They are assigned to *edwardsi* admittedly on scant grounds only.

Two specimens were presented by the villagers of Tan Talang on 18. 12. 1993. They had been trapped some days previously and were being dried over an open inhouse cooking fire. Their tails were lacking, their pelage was scorched, and their bodies were rotting. Only the skulls could be saved (ZMA 24.744/45). Another skull was obtained at the nearby village of Ayun, from the head of a rat that had been already eaten, on 19. 12. 1993 (ZMA 24.754). Only one of the skulls is of a fully adult specimen (ZMA 24.744; GSL: 59.5). Its dorsal pelage appeared to have been yellowish brown. Although our maps do not indicate these villages, and their exact altitude is not known to me, they are quite high up in a region generally between 1000 and 2000 m and potentially harbouring both species (CORBET and HILL 1992). According to CORBET and HILL (1992) *edwardsi* replaces the next species above 1000 m. This and its presumed fur colour led me to identify this specimen, and the others from this area, as *edwardsi*.

Leopoldamys sabanus (Thomas, 1887)

An adult ♀ of this large long-tailed reddish brown and white rat, trapped at Phu Lak, 52 km from Vientiane along the road to Luangprabang, was bought at a road stall in Vientiane on 26. 1. 1994 (ZMA 24.743). Phu Lak is in a low-lying region (200–500 m). According to the authors mentioned in the above account on *L. edwardsi*, the colours and relative body dimensions (TL: 572, T: 345, HF: 49.0, E: 31.2, W: 321) identify the specimen as *sabanus*.

Maxomys moi (Robinson and Kloss, 1922)

A specimen of this rat was obtained at Ayun on 20. 12. 1994 (ZMA 24.857; TL: 365, T: 185, HF: 37, E: 24, GSL: 42.9, ZW: 19.4, M^1-M^3 : 5.8). The species much resembles *M. surifer* (Miller, 1900) which is found all over Laos (CORBET and HILL 1992). *M. moi* and *surifer* show overlap in nearly all measurements, but *moi* differs, among other things, in having “bright, dense and soft pelage as opposed to the duller, spiny pelage of *surifer*” and “usually five plantar pads, as contrasted to six in *surifer*” (MUSSEr et al. 1979).

M. moi is only known from extreme southeastern Laos and adjoining Vietnam (CORBET and HILL 1992; SALTER 1993). SALTER (1993) suggests that it is found in the – Laotian – triborder area with Kampuchea and Vietnam. If the present specimen is identified correctly, its find extends the known distribution area of the species somewhat further north.

Berylmys bowersii (Anderson, 1879)

A ♂ of this large rat was trapped on the floor of a clear forest near the river Tag, 8 km from Tangiung, Sekong Province, on 28. 12. 1993; its skull and skin were bought from the trapper in Tangiung (ZMA 24.739; TL: 550, T: 285, HF: 58.9, E: ≥ 32 , GSL: 58.0, M^1-M^3 alveoles: 9.2, length diastema: 18.1). The people believed these rats to live in groups and to eat ple non, a kind of nut. But there was no consensus on its Laotian name. It was first called nu wai (rattan rat) but an elderly man said it was nu ploi, and that the rattan rat was still larger. A second ♂ was bought at Dakchun (Noy), also in Sekong Province; it had been trapped at Dakwang, at about 5 km south of Dakchung (Noy) on 4. 1. 1994 (skin and skull: ZMA 24.740; TL: 542, T: 274, HF: 58, E: 33.7, W: 449). These records are the first for southern Laos. They are about halfway the distribution of the genus in North Laos and that in South Vietnam as given by MUSSEr and NEWCOMB (1983).

Rhizomys sumatrensis (Raffles, 1821)

A skull trophy of the large bamboo rat was obtained at Pah Oh, a village along the road between Sekong town and Dakchung (Noy) on 5. 1. 1994 (ZMA 24.706). It had been taken on 31.12.1993 in an open forest nearby. The species is locally known to eat bamboo and said to be able to destroy whole bushes of it. Another skull was obtained at Vak-Nua on 17. 1. 1994 (ZMA 24.708). The ♂ of a couple taken on 20. 1. 1994 at Davee, a village

on the Lampan river, about a three-hour walk from Sekong town in the direction of Attapeu, was bought in the Sekong town market (ZMA 24.707; TL 520, T 133, HF 68.9, E 23.6, testes 26×16.5). The Laotian name for the large bamboo rat is nu on. The misleading French name in use in Laos for rodents of this type (including the following species) is taupe, in fact the name for insectivorous mammals of the genus *Talpa* Linnaeus, 1758.

Cannomys badius (Hodgson, 1841)

A skull of a specimen dug up at Phu Tjé near Tangiung in July 1993 was obtained at Tangiung (ZMA 24.705). According to the map in CORBET and HILL (1992) this would be the first record for South Laos. An adult ♀ and a juvenile of the lesser bamboo rat were obtained in the forest between Nam Ken and Kiugniu, in Hongsa Special Zone, on 4. 2. 1994 (ZMA 24.703/04; measurements of the adult ♀: TL: 293, T: 69, HF: 35.6, E: 10.7). Live specimens were seen in the Hongsa town market: 9 specimens on 7., 5. on 8., and 4 on 14. 2. 1994. The Laotian name for this species is tun.

Hystrix brachyura Linnaeus, 1758

A damaged skull of this porcupine, caught in 1993 near Ayun, was obtained on 20. 12. 1994 (ZMA 24.710 a). Quills of another specimen were seen at Dakchun (Noy) where they were used in weaving. The species was further reported from Sang, Daklu, Tangiung, and Tjrok in Sekong Province, and from Huay Sali and Nam Sip in Hongsa Special Zone. (In Rak, Prau Niai and Loy-Nua porcupines were known to occur but not specified.) In several villages, people reported that this species, called men, lives in self-dug holes in the forest.

Atherurus macrourus (Linnaeus, 1758)

A head of this species was bought from a hunter who had caught it near Ayun (ZMA 24.709). It was reported in the villages of Dakdan, Sang, Tangiung, and Tjrok in Sekong Province and in Huay Sali and Nam Sip in Hongsa Special Zone. In Sang the species is called to hon. Here and in other villages we were told that the Asiatic brush-tailed porcupine lives in caves, in groups of up to 20 specimens. It eats manioc and gnaws at palisades.

Order Lagomorpha

Lepus peguensis Blyth, 1856

A skull, a mandible and a half mandible of the Burmese hare were obtained at Ayun, all from near that village and caught in 1993 (ZMA 24.802/04). The hunter told us that this species had not always been there. He had seen it since a few years only but emphasized also that it was difficult to observe. It is possible that the species is in the process of spreading into cleared forest areas via cultivated valleys etc.

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vised on the identification of *Niviventer cf. tenaster*. The help of these four specialists has been indispensable and is gratefully acknowledged.

Zusammenfassung

Über Säugetiere aus der Demokratischen Volksrepublik Laos, hauptsächlich der Sekong Provinz und der Hongsa Sonderzone

Säugetiere aus der Demokratischen Volksrepublik Laos, hauptsächlich der Sekong Provinz und der Hongsa Sonderzone wurden im Winter 1993/94 während eines kurzen Aufenthalts in Laos gesammelt. Die meisten Angaben stammen aus der unbekannten südlichen Sekong Provinz und der nordwestlichen Hongsa Sonderzone. Viele Fundorte sind neu für die Wissenschaft und vermehren unsere Kenntnis von der Verbreitung der Arten. Besonders interessant sind *Megaerops niphanae* und *Taphozous saccolaimus*, die zum ersten Mal aus Laos gemeldet werden; einige neue Fundorte von *Pygathrix nemaeus*; zwei neue Funde von *Prionodon pardicolor*; Berichte über *Panthera tigris* und *Nemorhaedus sumatraensis*; und Funde von *Leopoldamys edwardsi* und *L. sabanus*, *Maxomys moi*, *Berylmys bowersii* (neu für die Sekong Provinz) und *Niviventer cf. tenaster* (neu für Laos).

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