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BIRD AND MAMMAL RECORDS FROM THE SANGTHONG DISTRICT, VIENTIANE MUNICIPALITY, LAOS IN 1996

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ABSTRACT

Birds were surveyed in the Vientiane Forestry College Training and Model Forest (TMF) in Sangthong District, Vientiane, from mid-February to mid-March 1996. Incidental observations were made of large mammals. The original lowland forest of the area is heavily degraded except for very small patches, but a rich bird community still occurs. Populations of certain birds and mammals have been depleted by hunting. some to local extinction, although others notoriously sensitive to hunting remain, because of acceptance, unusual in Laos, by villagers of restrictions. Seventeen bird species of elevated conservation concern (Key Species) were found, and 10 of mammals; of these three and four, respectively, are considered Globally Threatened. All forest Key Species except one found were in semi-evergreen forest, comprising extensive logged areas now dominated by giant bamboo, and relict uncleared patches on hillocks and ridges in the centre of the TMF. Two large islands in the Mekong channel held five Key Species of bird not found in the TMF. The most important populations of Key Species in the TMF at a global level are Short-tailed Parrotbill *Paradoxomis davidianus,* Jerdon's Bushchat *Saxicola jerdoni,* a gibbon *Hylobates* as yet unidentified, Inornate Squirrel *Callosciurus inomatus,* Asian Elephant *Elephas maximus* and wild cattle *Bas* sp. As well as the above, populations of Pompadour Pigeon *Treron pompadora,* Rufous-throated Fulvetta *Alcippe rufogularis* and Plain Martin *Riparia paludicola* are nationally important. Bamboo Woodpecker *Gecinulus viridis* was widespread: this is the first confirmation of its occurrence east of the Mekong. There have been no similar surveys in Laos to the north of the site and such surveys would probably change the perceived importance of the TMF.

INTRODUCTION

A wildlife survey in 1996 assessed conservation concerns for incorporation into the management framework for the Training and Model Forest (TMF) of the Vientiane Forestry College, situated in Sangthong District, Vientiane Municipality, Laos (DUCKWORTH, 1996). Fieldwork concentrated on birds, with incidental observations of large mammals. Observations were directed towards assessing the status of Key Species, those of elevated conservation importance. Key Species of birds are taken from THEWLIS ET AL. (in prep.), in four categories: Globally Threatened and Globally Near-Threatened, both following COLLAR ET AL. (1994), At Risk in Thailand, following TREESUCON & ROUND (1990), and under National Historical Decline, a list specific to Laos generated from comparison of recent and historical status assessments. Mammals are classed as Globally Threatened, following GROOMBRIDGE (1993), or Regionally At Risk, following SALTER (1993).

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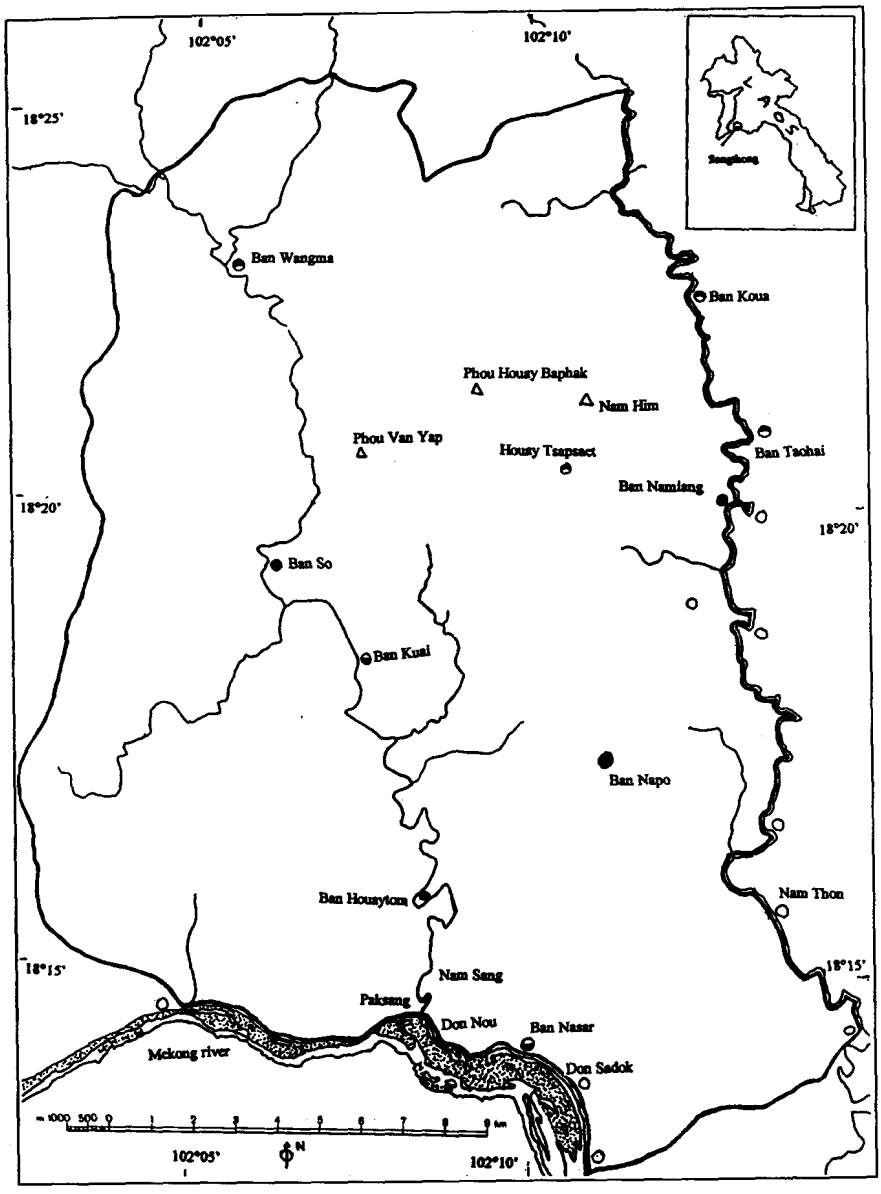

Figure 1. The Sangthong Forest showing physical features, villages, areas surveyed and places named in the text.

- ● Survey base: both seasons
- ◒ dry season survey base
- ◓ wet season survey base
- ○ village (not used as a survey base) (Ban)

river (Nam or Houay)

Training and Model Forest boundary

Systematics and nomenclature follow SIBLEY & MONROE (1990, 1993) for birds and CORBET & HILL (1992) for mammals. The term 'forest' covers both sustained post-logging regrowth, and relict areas which retain degraded original tree canopy, thus including all extensive tracts of bamboo and trees where the canopy was over 5% present. Not all would be considered forest by all surveyors (e.g. DUCKWORTH ET AL., 1993), but this was the most appropriate classification for the TMF. Forest types follow ROUND (1988). Scientific names are given in the text for birds and mammals only for species not in Tables 1 and 2. Altitudes and co-ordinates of sites outside the survey area are given in the gazetteer of THEWLIS ET AL. (in prep.).

SURVEY AREA

Proposed boundaries of the TMF (Fig. 1), whose central co-ordinates are approximately 18°20'N, 102°10'E, cover about 355 km^2. The Mekong at Paksang is at an altitude of 170 m a.s.l.; most of the TMF lies between 180 and 500 m, with the highest peak at 609 m. The terrain is mostly gentle, but small steep-sided hillocks are numerous in the central part of the area. Two major streams, the Nam Sang and the Nam Thon, cross the TMF, while the Mekong forms the southern boundary. All are navigable throughout the dry season and support several villages along their length.

Many minor tributaries of the two main rivers flow even in mid March, particularly in the heart of the TMF, but some streams of equivalent size in the flatter eastern fringe (e.g. around Ban Koua) are dry for several months of the year. This difference in water supply is reflected in the natural forest cover, which is semi-evergreen in the centre and mixed deciduous in the east and south. Few areas west of the Nam Sang were investigated. Almost all remaining timber was removed by State Forest Enterprise 9 during the 1980s (FOPPES, 1995) and no extensive primary forest is believed to remain in the TMF (W. EHRHARDT, verbally, 1996).

East of the TMF and the densely settled Nam Thon vallery, rises the Phou Phanang NBCA, a hilly National Biodiversity Conservation Area (NBCA) of unknown value for wildlife. To the south lies the Mekong river. To the north lie areas probably similar in habitat to much of the TMF. To the west, particularly at the latitude of Ban So, villagers report that after two hours' walk one enters unlogged forest which it takes at least eight hours to traverse. This area, known as Dong Phaken, was reported to hold large wildlife populations and therefore probably acts as a dispersal source for forest animals to the TMF.

The area lies in North Laos (sensu KING ET AL., 1975) and in subunit 10a (sensu MACKINNON & MACKINNON, 1986). Extensive forest remains in Laos in subunit 10a (BERKMÜLLER ET AL., 1995) but mostly well to the south. As a whole, forest cover in North Laos is highly degraded and fragmented (SALTER, 1993) and an area the size and condition of the TMF is more valuable than it would be in the South or Centre of the country. There is no appropriate surveyed site elsewhere in Laos with which to compare the wildlife and habitat of the TMF. Most comparisons are drawn with a reconnaissance survey of Phou Khao Khouay NBCA, northeast of Vientiane, in late 1994 (WCS, 1995e; DUCKWORTH ET AL., in press) and a more comprehensive survey of the Houei Nhang Nature Reserve in late 1992 (DUCKWORTH ET AL., 1994; THEWLIS ET AL., 1996). The

climax forest cover of Houei Nhang was probably similar to that of the TMF, but it is small (300 ha of forest) and only about 15 km north of Vientiane and so has lost most species of large mammal and many birds too.

METHODS

Fieldwork totalled approximately 8 weeks, 4 each in the dry and wet seasons (February–March and June–July respectively) and was based at 9 villages and one non-village site (Fig. 1). Most survey was by opportunistic daytime observation, usually on foot, sometimes by boat. The general protocol for fieldwork and analysis is detailed in DUCKWORTH ET AL. (1993). Observations on foot were mostly within 5 km of the base, with several much longer forays. Boats were paddled (rather than motor-driven) to facilitate detection of shy species. On foot, these were difficult to view because of the inevitable noise made walking through the forest; dry bamboo debris dominated the litter layer over large areas. A few hours of nocturnal surveys were performed, following the methodology in DUCKWORTH ET AL. (1994). Signs were studied when appropriate, but few specific searches were made. Appeals for trophies and fresh kills to be shown to the surveyor had variable success, probably because of the short time spent in most villages.

The status of each species was assessed on a five point scale:

A, abundant, over a dozen found daily.

C, common, found daily, usually fewer than a dozen.

F, frequent, found on at least half of days.

O, occasional, found on fewer than a half of days.

R, rare, found only once or twice.

P, present but status was not assessed.

L (prefix), the species was clearly much commoner in some areas than in others.

Species differ in their detectability, and since the assessment aims to indicate the species's status rather than how many were found, the raw contact frequency was modified in the light of the numerous factors listed in DUCKWORTH ET AL. (1993). Thus, for example, a shy bird of dense vegetation and lacking distinctive calls would probably be considered common if it was seen only once or twice a week.

Hunters were interviewed in five villages about large mammals. A discussion of strengths and weaknesses of this technique for surveying wildlife in Laos will appear elsewhere; because of the numerous problems of interpretation, no species recorded only by villagers' information can be confirmed as present in the TMF.

WILDLIFE OBSERVED

Overview of Wildlife Communities in the Area

Birds

The status of all birds found is given in Table 1. Forest birds were accorded the most survey effort (as relict forest is the most threatened habitat in the TMF and is likely to

harbour the most Key Species) but the list is probably incomplete for some groups typically difficult to survey: gamebirds (Phasianidae) and pittas *(Pitta)* are shy ground-living species and are difficult to see unless the observer can walk quietly through large areas with a good view through the understorey (no such areas were found), while woodpeckers and flycatchers are speciose groups primarily of the canopy. Evidence that detection difficulties were real comes from vocal pheasants and partridges: Grey Peacock-Pheasant and Scaly-breasted Partridge were both common in some areas (several were heard daily) yet neither was seen in the field even once. Ground-living species lacking distinctive calls, or with ones not known to the observer, may be equally common but pass undetected.

Among forest birds there were some notable absentees, probably due to hunting. These include imperial pigeons *Ducula,* hornbills (except Oriental Pied, and even that was in very low numbers), resident raptors and large waterbirds (villagers stated that Oriental Darter *Anhinga melanogaster* and White-winged Duck *Cairina scutulata* had disappeared recently. Populations of both have collapsed in Laos; EVANS ET AL., in press; THEWLIS ET AL., in prep.). All are conspicuous birds and the lack of records doubtless reflects a real scarcity or absence. The same suite of species was similarly absent or scarce at Phou Khao Khouay NBCA, another heavily hunted degraded forest close to Vientiane (DUCKWORTH ET AL., in press); they are all favoured quarry. Hornbills seem to be the birds of the region's evergreen and semi-evergreen forest which are most sensitive to human pressure (ROUND, 1984; THEWLIS ET AL., in prep.). Other quarry species persist: Scaly-breasted Partridge and Grey Peacock-Pheasant had similar distributions, mainly in the more remote north and west, and both have probably contracted in range from overhunting. Red Junglefowl was the only gamebird found to be widespread, as in other recent Lao surveys; but it was rather scarce, and indeed was unrecorded on the wet-season survey when, however, the areas supporting the largest numbers were not visited. Two species of green pigeon and Emerald Dove, all popular quarry, were widely distributed.

Among non-quarry species, there were also some notable scarcities, some perhaps due to the degraded nature of the forest. Woodpeckers were seen infrequently, recalling the complete absence of records at Houei Nhang (THEWLIS ET AL., 1996). There were no records of forktails. Scarlet Minivet and White-crested Laughingthrush, both visually conspicuous and vocal species, were each found only once. The latter is often at high densities in bamboo dominated areas, and both are common in degraded areas of Central and South Laos. Their rarity in the TMF is not easily explicable; neither was recorded at Houei Nhang.

Birds in cultivated and other non-forest areas were surveyed less fully. There were some differences between slash-and-burn and paddies (e.g. White Wagtails were common in the latter but absent from the former) and some local patterns (e.g. Red-whiskered Bulbul and Little Green Bee-eater were common around Ban Wangma but unrecorded elsewhere). Few Key Species were found in such habitats: only Blyth's Frogmouth (identification provisional), Hill Myna and, marginally, Rufous-throated Fulvetta. Several species very common in secondary or open habitats in Thailand (LEKAGUL & ROUND, 1991) were not found in the TMF, reflecting their scarcity or absence elsewhere in Laos: Chestnut-capped Babbler *Timalia pileata,* Yellow-eyed Babbler *Chrysomma sinense,* Ashy Woodswallow *Artamus fuscus,* Plain-backed Sparrow *Passer flaveolus* and Pied Fantail *Rhipidura javanica* are examples (DUCKWORTH ET AL., in press).

The distinct community on the islands of Don Sadok and Don Nou in the Mekong channel is typical of such a specialised habitat with simple vegetation structure: it has few species of which a high proportion are very common, and some are rare or scarce outside the habitat. The dense bushes on flat parts, submerged by turbulent water for several months the year, but resembling superficially a *Zygophyllum-Hamada* vegetated plain of eastern Arabia for the remainder, held very high densities of Jerdon's Bushchat, Plaintive Cuckoo, Greater Coucal, Streak-eared Bulbul, Oriental Magpie-Robin, Common Tailorbird, Plain Prinia and Yellow-bellied Prinia, with lower numbers of Blue-tailed Bee-eater, Pied Bushchat, Golden-headed Cisticola and a few other species. Both bushchats, the bulbul, bee-eater, cisticola and both prinia species were extremely localised or unrecorded in the adjacent dryland mosaic of cultivation, scrub and relict forest. Conversely, Grey-breasted Prinia, Stripe-throated Bulbul (and various other species) abounded from the cultivation up to the riverbank but were rare and unrecorded, respectively, in the channel.

Some hillocks in the channel above water all year, except for flash floods, and theirtrees supported a depauperate derivative of the bird community of the adjacent land, including visits by Pompadour Green Pigeon. Rocky outcrops within the channel hosted Wire-tailed Swallows, and the earth cliffs Plain Martins; both probably bred and in July over 300 of the former and over 100 of the latter were observed. These are the largest numbers seen in Laos in recent years of both species, which have declined in Laos (THEWLIS ET AL., in prep.). Sandbanks, open mud and pools held ducks, wagtails, Paddyfield Pipit and a few waders (migrant and resident), notably small numbers of River Lapwing and Small Pratincole. Human disturbance seemed too high for these breeding waders to reach their natural densities (see DUCKWORTH & TIMMINS, in prep.).

This is the only recently surveyed site in Laos with substantial fieldwork in both winter and summer, and thus where seasonality of occurrence can be assessed. Discussions on seasonality in THEWLIS ET AL. (1996) and DUCKWORTH ET AL. (in press) were based largely on a mix of observations from many areas. In the TMF in 1996, the following species declined noticeably between February–March and June–July: pond heron sp. (presumed Chinese)* (THEWLIS ET AL., 1996; DUCKWORTH ET AL., in press), Oriental Honey-buzzard*, Large Hawk-Cuckoo*, Brown-backed Needletail (THEWLIS ET AL., 1996), Fork-tailed Swift (DUCKWORTH ET AL., in press), Common Kingfisher* (THEWLIS ET AL., 1996), Black-winged Cuckooshrike*, Ashy Drongo, Hair-crested Drongo, Black-naped Oriole*, Maroon Oriole* (THEWLIS ET AL., 1996), Blue Whistling Thrush*, Verditer Flycatcher*, Grey-headed Canary-Flycatcher* (THEWLIS ET AL., 1996) and White Wagtail* (DUCKWORTH ET AL., in press). The following increased over the same period: Cinnamon Bittern*, Dollarbird*, swiftlet sp. and Black-backed Kingfisher* (DUCKWORTH ET AL., in press). Asterisked (*) species were recorded only at one season (although some summer visitors had begun to arrive by mid March, when the 'winter' survey ended) and thus may be complete migrants. Well-known migrant species (whose seasonality can be seen in Table 1) are not listed, nor are species with so few records that apparent patterns could be due to chance. Citations are to recent discussions of the species's seasonality in Laos.

Birds which occur in the TMF all winter cannot be distinguished from those which visit only on passage, because observations commenced in mid February. The extent of movement is unclear: some species may move long distances, while others may be short distance or altitudinal migrants. In this latter category probably fall also Lesser Racket-tailed Drongo,

Little Pied Flycatcher and Black-throated Sunbird, three species recorded infrequently in February–March but no subsequently; all typical of higher areas (KING ET AL., 1975; LEKAGUL & ROUND, 1991; THEWLIS ET AL., 1996). Little Ringed Plover and Jerdon's Bushchat left the Mekong channel between June and July as the water levels rose.

Mammals

Mammals (Table 2) were less well surveyed than were birds. Even squirrels and treeshrews were shy: numbers seemed low and were probably depressed by hunting. Black Giant Squirrel was not observed and is now, according to villagers, extremely rare in the TMF; it is notoriously sensitive to human pressure, at least in Laos (WANG ET AL., 1989; DUCKWORTH ET AL., 1994; WCS, 1995a–e). Monkey numbers were low compared with remote areas elsewhere in Laos, but records were widespread in view of the heavy persecution. The frequency of carnivore and deer footprints also seemed low. By contrast, the Elephant population was clearly healthy and substantial numbers of wild cattle were reported.

A small amount of work was carried out at night during the wet season. Around Ban Namiang, in 8 hours singles each of Leopard Cat and Common Palm Civet were seen; there were no mammalian sightings in $2^1/_2$ hours around Ban Houaytom. These encounter rates are very low compared with other areas of Lao lowland forest, where one mammalian contact per hour (excluding rats and bats) is usual (DUCKWORTH ET AL., 1994; WCS, 1995a–e). There has been no previous systematic night survey work in Laos in the wet season (so results from the TMF are not strictly comparable with those from elsewhere), but hunters at Ban Kuai confirmed that these rates were about average; on nocturnal hunting forays, they claimed to see one mammal (excluding rats and bats) about every 4 hours; they seemed astonished when told that elsewhere in Laos rates of one contact per 20 minutes are attainable. The low rate in TMF is very likely to be due to heavy hunting pressure and reflects the low sighting rates of diurnal squirrels.

Selected Species Accounts

Accounts are given for all Key Species, for three species representing an extension of known range and for two where a marked scarcity probably arose through harvesting. As well as the species documented here, villagers gave fairly convincing reports of several other Key Species of mammal.

Birds

Siamese Fireback *Lophura diardi* (Globally Threatened). A male by the Nam Sang between Ban Wangma and Ban So on 8 July. The species is easily overlooked (see above). Hunters reported that it was common in the TMF, at least around the Nam Sang north of Ban Kuai. It still occurs widely in Laos in forests below 500 m altitude (THEWLIS ET AL., in prep.), but presence in such a degraded area is noteworthy.

Grey Peacock-Pheasant *Polyplectron bicalcaratum* (At Risk in Thailand). Birds were heard almost daily when semi-evergreen forest was visited from Ban Wangma (both

sides of the Nam Sang), the Houay Tsapsaet and Ban Taohai, and once 2 km upstream of Ban So. Usually 1–2 birds were heard per day; the peak was 5. There were no records on the wet season survey, but, little time was then spent in areas where birds were heard in the dry season, and calling may have ceased (R.J. TIMMINS, verbally, 1996). These rather low numbers perhaps represent a population reduced by trapping. The species occurs widely in evergreen and semi-evergreen forests, even degraded ones, in Laos (THEWLIS ET AL., in prep.).

Red-collared Woodpecker *Picus rabieri* (Globally Threatened). A single flew over the Nam Sang in a degraded area several km upstream of Ban So on 15 February and a male was seen in relict semi-evergreen forest at Houay Tsapsaet on 3 March. Several wet season records indicated breeding in or near the TMF: one in bamboo-dominated relict forest near Ban Namiang (24 June), a family party including 1–2 juveniles, estimated to have left the nest less than a week previously, in streamside bamboo northwest of Ban Napo (30 June), a family with at least one juvenile in extensive mature bamboo west of Ban Kuai (3 and 6 July), and at least three (presumably also a family) in bamboo-dominated scrub west of Ban Houaytom (13 July).

This species is widespread in Laos but is common only in primary evergreen or semi-evergreen forest below 500 m a.s.l. (THEWLIS ET AL., in prep.), although it was found in highly degraded forest in February–March 1996 near the Nakai Plateau (R.J. TIMMINS, verbally, 1996). Prior to logging, the TMF was probably optimum habitat.

Bamboo Woodpecker *Gecinulus viridis*. Pairs were seen near Ban Wangma (two sites), Ban Namiang and Ban Koua in February–March. Singles were seen near Ban Napo and west of Ban Kuai in July, and pairs with young juveniles were found south of Ban Kuai (7 July) and near Ban Houaytom (12 July). All records were from giant bamboo, sometimes beneath a regenerating forest canopy. The wide spread of records suggests that the species occurs throughout areas of bamboo in the TMF.

Although listed (by implication) for all Laos by DELACOUR & JABOUILLE (1940), the only previous documented record of Bamboo Woodpecker for Laos, Cambodia or Vietnam appears to be a male collected at Muang Liep, Laos (18°29'N, 101°39'E; beside the Mekong about 60 km northwest of the TMF on 16 January 1919 (ROBINSON & KLOSS, 1931). These birds in the TMF may be the first records from east of the Mekong River, as it is not clear on which side the 1919 specimen was collected, although DELACOUR (1951) hypothesised that it was collected "probalement sur la rive droit du Mékong alors que [Pale-headed Woodpecker] *G. grantia indochinensis* se trouve sur la rive gauche". Over the South and Centre of Laos, Bamboo Woodpecker, which occurs in Burma, Thailand and Malaya (KING ET AL., 1975), is replaced by the closely-related Pale-headed Woodpecker (THEWLIS ET AL., in prep.). DELACOUR'S ambiguous statement concerning left and right river banks was probably intended to imply that he believed the 1919 specimen to come from west of the Mekong, but it may have been based merely on a belief that it would be unlikely to find the two species co-occurring.

Oriental Pied Hornbill *Anthacoceros albirostris*. Two fed in a fruiting fig several km upstream of Ban So (15 February), 3 flew over the Nam Sang 1 km upstream of Ban Houaytom (12 March) and birds were heard near Ban Wangma (21 February), Ban Taohai

(5 and 7 March), Ban Kuai (4 July), Ban So (10 July) and Ban Houaytom (13 July). These few records, for a distinctive species with a far-carrying call, and small groups reflect a low population at the time of the survey, probably as a result of hunting. It is the only hornbill not considered at risk in Thailand (TREESUCON & ROUND, 1990) or Laos (THEWLIS ET AL., in prep.) but as at Phou Khao Khouay NBCA (DUCKWORTH ET AL., in press) numbers are well below capacity.

Coral-billed Ground Cuckoo *Carpococcyx renauldi* (Globally Near-Threatened). Singles heard near Ban So (22 February) and Ban Napo (11 March) were in bamboo-dominated regrowth almost lacking mature trees. None was heard during the wet season. This species, notoriously difficult to see, calls seasonally in Laos; levels rise dramatically around early March and regular calling is probably finished by late May (THEWLIS ET AL., in prep.; R.J. TIMMINS, verbally, 1996). The timing of the survey thus did not allow a clear assessment of the status of this species. Records in such degraded habitat are unusual, although the species is widespread below 800 m (THEWLIS ET AL., in prep.).

Red-breasted Parakeet *Psittacula alexandri.* At least 6 parakeets near Ban Namiang on 28 February were this species; records of 2–3 parakeets around Ban Taohai on 5 March and Ban Koua on 7 March were probably this species. All were in *Lagerstroemia*-dominated forest, which was almost unvisited during the wet-season survey, when no parakeets were found. These very low numbers (healthy populations live as flocks of dozens) presumably result from sustained trapping: the species is one of the most popular cagebirds in Vientiane. In a recent analysis of threatened and declining birds in Laos, THEWLIS ET AL. (in prep.) suspected that this species had declined and contracted in range but historical data were insufficiently detailed to demonstrate this.

Crested Treeswift *Hemiprocne coronata.* Up to 6 were seen around 5 villages on 13 dates in all months, including a pair at a nest with eggs west of Ban Kuai on 3 July. These are the first records for North Laos of a species which was previously found in Savannakhet Province (common; BANGS & VAN TYNE, 1931; DAVID-BEAULIEU, 1949–1950) and the southernmost 4 provinces of Laos (locally common; OUSTALET, 1899–1903; ENGELBACH, 1932; THEWLIS ET AL., 1996; DUCKWORTH ET AL., in press). ENGELBACH (1932) and DAVID–BEAULIEU (1949–1950) commented on its attachment to dry dipterocarp forest, although it was recorded in the Northern Zone of Xe Pian NBCA which is composed of degraded mixed deciduous forest amid cultivation (THEWLIS ET AL., 1996). All recorded sites in Laos are in the lowlands.

Blyth's Frogmouth *Batrachostomus affinis* (At Risk in Thailand). One or two birds provisionally identified as this species were heard from trees within Ban So (late February) and around Ban Namiang and the Houay Tsapsaet (early March and late June). These calls have been heard at many sites in Laos (THEWLIS ET AL., in prep.) but are not confirmed as this species, which is not proved to occur in Laos. They match precisely the Blyth's Frogmouth calls recorded in MARSHALL (1978); P. D. ROUND (verbally, after listening to tapes from South Laos, to T. D. EVANS, 1993) agrees with this assessment.

Pompadour Green-Pigeon *Treron pompadora* (At Risk in Thailand). There were 5–6 records: at least 3 in a fruit tree several km upstream of Ban So on 15 February, and 4

probably of this species there on 26 February; a pair in a riverside tree at the upstream limit of the Ban So village area on 26 February; a male several km west of Ban Namiang on 2 March; at least one male near Ban Koua on 8 March; and a female in fruiting bushes growing on a Mekong sandbank at Paksang on 22 June. Many green pigeons were not identified to species, especially in the wet season, and the species may be considerably more common in the TMF than these records indicate.

These are the first field records in Laos for 50 years of a species formerly collected widely. DELACOUR & JABOUILLE (1940) listed it as occurring throughout Laos. Specific records, of 1–2, come from: Boun Tai (BANGS & VAN TYNE, 1931); Saravane and Pakxe (ENGELBACH, 1932); Ban T'Woi and Ban Hoi Mak (ROBINSON & KLOSS, 1931). Shot Pompadour Green Pigeons were found in early 1996 in Vientiane (W. G. ROBICHAUD, verbally, 1996) and Ban Lak–Hasipsong (R. J. TIMMINS, verbally, 1996); much wildlife from the TMF is taken to latter site for sale.

River Lapwing *Vanellus duvaucelii* (National Historical Decline). Two showing territorial behaviour on a Mekong sandbank at Paksang on 13 March. One there and 2 on another sandbank opposite Ban Nasar on 22 June. Three around Ban Nasar on 15 July. The three in June–July were all adults and it is unlikely that the species bred successfully in this area in 1996. The low density (all records probably involved only one group) probably reflects the large number of people using this site.

Small Pratincole *Glareola lactea* (At Risk in Thailand). Eight on 22 June and a fully-fledged juvenile on 15 July on a large Mekong sandbank 1 km downstream of Ban Nasar. It is noteworthy that it appears to have bred successfully in the area in 1996 while River Lapwing did not: in Laos Small Pratincole seems, of the two, to be more tolerant of human disturbance and still occurs in Vientiane and Savannakhet towns (THEWLIS ET AL., 1996; DUCKWORTH & TIMMINS., in press).

Collared Falconet *Microhierax caerulescens.* Singles near Ban So on 15 February and Ban Wangma on 19 February are probably the first records for North Laos. Previously, it was known in Laos from Kouays (an untraced locality in the South) (OUSTALET 1899–1903), Savannakhet Province (a resident breeder; DAVID-BEAULIEU, 1949–1950) and the southernmost four provinces of Laos, particularly flat areas of the Xe Kong basin (ENGELBACH, 1932; THEWLIS ET AL., 1996; DUCKWORTH ET AL., in press). In South Laos, the species is typical of edge areas around deciduous forests of the Mekong plains; occurrence in the TMF is thus not surprising.

Bar-bellied Pitta *Pitta elliotti* (Globally Near-Threatened). A recently fledged juvenile was shot near Ban Napo on 30 June. Conditions were not ideal for detecting pittas in the field. Recent surveys have found the species widely in South and Central Laos (THEWLIS ET AL., in prep.), but the only previous record from North Laos is from Lao Pako, another area of degraded bamboo-dominated forest near Vientiane (THEWLIS ET AL., 1996).

Brown-rumped Minivet *Pericrocotus cantonensis* (Globally Near-Threatened). A flock of at least 7 near Ban Namiang on 29 February and 1 March in degraded *Lagerstroemia*-dominated deciduous forest is the first record from North Laos; the few previous Lao records come from the Nakai–Nam Theun and Phou Xang He NBCAs in

Central Laos and the Xe Pian NBCA, the Tahoi region (the upper Xe Kong), near Pakxe and the north-east slopes of the Bolovens in South Laos (ENGELBACH, 1932; THEWLIS ET AL., in prep.). Most recent records were in deciduous forests, including degraded areas; the species may well be limited in the TMF to the eastern and southern margins.

Jerdon's Bushchat *Saxicola jerdoni* (Globally Near-Threatened). A very dense population was found in the Mekong channel in the dense scrub on the flat parts of Don Sadok and Don Nou. On 13 March, 21 singing males were located, on 22 June, 13 males, a female and a juvenile male and on 15 July a thorough survey of all land remaining above water (perhaps 10% of that in March) found only 4 males. Extrapolating from surveyed parts of the islands, the population is likely to exceed 100 pairs and may be in the order of 200 pairs. These are the first Lao records for over 50 years and the habitat differs greatly from that recorded previously in Laos. For example, the species was a common resident at Nonghet, a high valley (1500 m) dominated by rocks and tall herbs in place of the original forest and subject to frequent fires, frosts and fog (DELACOUR & JABOUILLE, 1927; DAVID–BEAULIEU, 1944). The habitats occupied by birds in Thailand, where populations have been reduced by drainage and clearence are more similar to that at Paksang: tall grass of riverine floodplains (ROUND, 1988). All Lao records and the threats to this population will be detailed elsewhere.

Hill Myna *Gracula religiosa* (At Risk in Thailand). Hill Myna was observed daily (up to 42 birds) around Ban Wangma. Small numbers (2–4) were seen along the Nam Sang between Ban So and Ban Wangma on four dates. Four flew over the Houay Tsapsaet on 4 March. These areas were barely visited during the rainy season, and the only records of the species were of seven near Ban Wangma and four over Ban So. This patchy distribution probably reflects heavy harvesting of the nestlings (it is one of the most popular cagebirds in Vientiane; THEWLIS ET AL. in prep.) pushing the species into the most remote areas. An elderly resident of Ban Kuai reported that, decades ago, flocks of over a hundred plundered the fruit trees around the village. Hill Myna was primarily in areas of forest edge, which occur throughout the TMF. Elsewhere in Laos, it has been recorded widely on recent surveys (THEWLIS ET AL., in prep.) and it is unlikely that its patchy distribution in the TMF arises through habitat preference.

Plain Martin *Riparia paludicola* (At Risk in Thailand). At Paksang, 2 on 14 February and 4, probably 6, on 13 March. Birds were moving in pairs and singing; some sexual chasing was observed. They probably breed in the sand cliffs exposed in the Mekong channel during the dry season. At least ten in the Paksang–Ban Nasar area on 24 June, and 81 and 103 there on, respectively, 14 and 15 July. The February–June counts represent minima; it is likely that 8 pairs were then in the surveyed area. Substantial numbers had evidently arrived from elsewhere by July. The only other recent Lao records of Plain Martin are of 1–2 in Xe Pian NBCA on 31 December 1992 and by the Mekong in Vientiane on 31 March 1996; it has declined in Laos, formerly being recorded widely as a common resident on the Mekong and major tributaries, including some areas recently surveyed (THEWLIS ET AL., in prep.).

Wire-tailed Swallow *Hirundo smithii* (At Risk in Thailand. At Paksang, 6–12 on 14 February, 13 March and 22 June are minimum figures; the birds showed much territorial

behaviour around the exposed rocks in the channel. In the Paksang–Ban Nasar area, 163 and 327 were seen on 14 and 15 July respectively. Both July counts were probably underestimates by up to half, as many swallows were too distant to identify to species. Many juveniles were present and, as with Plain Martin, many additional birds had clearly moved into the area between June and July. Recent surveys in Laos have found this species widely on large rivers with rocky islets, although not in the numbers found by some historical observers (DAVID–BEAULIEU, 1949–1950; THEWLIS ET AL., in prep.). It is difficult to assess the significance of the July numbers, by far the largest seen recently in Laos, due to the lack of rainy season observations elsewhere in Laos.

Rufous-throated Fulvetta *Alcippe rufogularis* (Globally Near-Threatened). This species abounded in all relict forest, even in deciduous areas, and was occasional in scrub over old cultivation. Up to nine groups (usually of 2, sometimes of 3, or, in June–July, 4) were found daily, but its song season started late in the dry season survey, and seemed to be closing during the wet season survey; on each day many non-singing birds were probably overlooked. On one occasion in March, one bird stimulated countersong from three neighbouring territories, all within 200 m, and during June and July, a persistently singing bird often elicited song from 2–4 others audible from the same spot. Observations during April would probably exceed frequently the 20 groups found per day at the Nam Ao forest, Nam Kading NBCA, which holds the densest known population in Laos (THEWLIS ET AL., in prep.). The species was, jointly with Buff-breasted Babbler in some areas, the commonest understorey babbler.

On 25 June, two barely-fledged juveniles (together with at least one adult) were seen; on 27 June, 2 adults vigorously mobbed the observer, suggesting that a nest was nearby; and on 6 July a nest with 3 hatching chicks was found in a rotting bamboo culm hanging 2.1 m over a small stream. Many further records of breeding could probably have been obtained had all birds heard been investigated.

A. r. major (identified to subspecies by location) occurs widely but rarely commonly in Central Laos, and always with a localised distribution; it seems sensitive to habitat degradation and has not been found in extensive degraded forest such as the TMF (THEWLIS ET AL., in prep.). However, in Tranninh province (North Laos), *A. r. blanchardi* was wiidespread and common in forest of any condition, but *A. r. major* occurred only patchily in the south (DAVID–BEAULIEU, 1944); *A. r. blanchardi* also occurs in degraded areas in Vietnam (ROBSON ET AL., 1993). The different subspecies seem to show varying habitat choice. The one in the TMF is not known.

Short-tailed Parrotbill *Paradoxornis davidianus* (Globally Threatened). One or two flocks were seen daily (when suitable habitat was surveyed) in mature bamboo northwest of Ban Wangma in February. A single was seen (in a mixed species flock) near Ban So on 27 February, 2 flocks were found between Ban Taohai and Ban Wangma, east to the Nam Him, in early March, and a flock of 3 was found in streamside bamboo near Ban Houaytom on 11 July. The largest confirmed flock held 8 birds, but estimates ranged to 15. These records probably reflect the distribution of this conspicuous species within the TMF accurately: centred in the north-west of the site with outlying records in mature bamboo to the south and east. There was no wet season fieldwork in bamboo areas holding the bird in the dry season.

The species has been observed at very few other sites in the world in recent decades, and the TMF appears to be the only one where it was shown to be common (see COLLAR ET AL., 1994; RANK, 1996; J. N. DYMOND, in ROUND, 1996; F. R. LAMBERT, verbally, 1995). The few other Lao records came from further north: Lo–Tiau and Houeisai (DELACOUR & GREENWAY, 1940) and Nam Kheung (DELACOUR & JABOUILLE, 1940) and a single individual in Xieng Khouang province at 1200 m in a mosaic of secondary forest and burnt scrub, apparently lacking extensive bamboo, in May 1996 (W. G. ROBICHAUD, verbally, 1996).

Mammals

Pangolin (common; probably Sunda Pangolin *Manis javanica* on the basis of range), Regionally At Risk.

Slow Loris *Nycticebus coucang* (common), Regionally At Risk (Pygmy Loris *N. pygmaeus,* Globally Threatened, was never claimed).

Pig-tailed Macaque *Macaca nemestrina* (Regionallv at Risk). A troop of at least 30 was seen on 29 June and 2 July, 2–3 km south-east of Ban Napo. The animals were in an area with many fruiting trees and were easy to see, by comparison with monkeys in most other parts of Laos. Residents of Ban Napo claimed that they did not hunt higher primates habitually: this is probably true, in view of the monkeys' approachability. Pig-tailed Macaque has been recorded widely in Laos on recent surveys (DUCKWORTH ET AL., 1994; WCS, 1995a–e).

Rhesus Macaque *Macaca mulatta* (Regionally at Risk). Troops were seen around Ban So and Ban Wangma on three dates and several km south of Ban Kuai on 5 July (at least 20 monkeys). Additional macaques not identified to species were seen or heard in each of these areas and northwest of Ban Napo on 11 March. All were in streamside bamboo. In July, a villager in Ban Napo had an infant Rhesus Macaque taken from the neighbourhood. Rhesus Macaque has been recorded widely in North and Central Laos on recent surveys (WCS, 1995a–e).

Langur *Semnopithecus* sp. (Regionally at Risk). A skin of recently shot animal seen several km upstream of Ban So was soggy with dew and lacked a head, preventing assessment of the tail-tip and head pelage characters necessary to separate Phayre's Langur *S. phayrei* from Silvered *S. cristata.* Phayre's Langur has a patchy distribution in Laos, while Silvered is known only from to the southern quarter of the country (DUCKWORTH ET AL., 1994; WCS, 1995a–e) and would be unlikely to occur in the TMF.

Gibbon *Hylobates* (Globally Threatened). At least 6 groups of gibbons were found around Ban Wangma in February, with 4 audible from the village itself. Another group was heard north of Ban So, on Phou Van Yap, on 8 July. Villagers claimed that they occurred very locally at scattered other sites in the TMF. In many large areas in South and Central Laos, gibbons, along with Black Giant Squirrel, are absent from heavily logged forest and isolated areas of little-disturbed forest (DUCKWORTH ET AL., 1994, 1995; WCS, 1995a–e). Their presence in the TMF shows that if not hunted they can inhabit heavily logged forest: villagers in the TMF were adamant that they did not kill the species because

of the risk of heavy fines. The species present was not established, other than that it is one where the male has pale cheek-tufts in the subgenus *Nomascus*. All species in this complex are under acute global threat with the exception of *H. gabriellae,* which occurs in Laos only well to the south of Vientiane (EUDEY, 1987; CORBET & HILL, 1992; DUCKWORTH ET AL., 1995).

Bears *Ursus* two forms, perhaps Sun Bear *U. malayanus* and Asiatic Black Bear *U. thibetanus;* both scarce; Globally Threatened.

Otters two forms, perhaps Smooth-coated Otter *Lutrogale perspicillata and* Oriental Small-clawed Otter *Aonyx cinerea;* both local, (Globally Threatened).

Dhole (Asian Wild Dog) *Cuon alpinus.* Scarce, (Globally Threatened).

Leopard Cat *Prionailurus bengalensis* (Regionally at Risk). One near Ban Namiang on 26 June at 03h30; villagers reported that this species was common, and it has been found in many other parts of Laos on recent surveys (DUCKWORTH ET AL., 1994; WCS, 1995a–e).

Asian Golden Cat *Catopuma temmincki* (Globally Threatened). An adult several km west of Ban Taohai on 7 March emerged from a clump of streamside bamboo at 11h00 and walked within an inch of the observer, who was sat silently and alone on a root. After a few seconds it turned and ran into the forest. Villagers reported that cats resembling this species were well distributed in the TMF. This is the only recent sighting of the species in Laos; however all cats except Leopard Cat have proved exceptionally difficult to see. The Vientiane Zoological Gardens near Nam Ngum kept in June 1996 4 individual Asian Golden Cats, all reportedly from northern Laos.

Asian Elephant *Elephas maximus* (Globally Threatened). Elephant signs (faeces, footprints and feeding signs) were found widely over the northern two-thirds of the TMF. During the dry-season survey, very fresh dung was found between Ban Taohai and Ban Wangma, and animals were seen by villagers in hills 2 km west of the Houay Tsapsaet and crossing the Nam Sang a few km north of Ban So. Villagers reported in total about 50 animals, in 3 herds, which made occasional visits even to the most disturbed parts of the TMF. Critical areas for Elephants include the complex of saltlicks around Ban Taohai, the extensive bamboo-dominated forest around Ban Wangma (both sides of the Nam Sang) and the Nam Sang north of Ban So. This population is of great national importance in view of recent population estimates from elsewhere in Laos (DUCKWORTH ET AL., 1994; WCS, 1995a–e).

Wild cattle *Bos* sp. (Globally Threatened). Signs of bovids claimed by villagers to be those of wild cattle were seen at the Ban Taohai salt licks and in long-abandoned paddies east of Ban Wangma. These might represent Gaur *B. gaurus,* but identification to species of signs and reports requires great care. Another named form, which showed some characteristics of Banteng *B. javanicus,* was reported. All informants were confused and inconsistent in their ideas of how to separate the two reported forms of wild cattle and their descriptions cannot be identified. Free-living water buffalo reported around Ban Wangma were probably the descendants of domestic animals abandoned when the village

was temporarily deserted 20 years ago. If previous claims (FOPPES, 1995) of 40–50 Gaur in the TMF are true, the TMF population would be among the most important known in Laos as Gaur has been reduced in Laos to isolated individuals or small groups in recenthy surveyed areas (DUCKWORTH ET AL., 1994; WCS, 1995a–e). No evidence for such a large number was found from the density of footprints, although villagers stated that in the areas visited the animals were not then present.

Black Giant Squirrel *Ratufa bicolor* (now extirpated over much of the TMF and as scarce and local as gibbons), Regionally At Risk.

[**Variable Squirrel** *Callosciurus finlaysoni* (Regionally at Risk). Small numbers of fiery red squirrels were found throughout semi-evergreen forest and bamboo areas derived from it, but not daily. In some areas of Laos up to 20 a day may be detected. Shyness precluded identification to species of many individual *Callosciurus* squirrels in the TMF, but the low numbers seen reflect evasive behaviour by the squirrels and a low population density, recalling the status of *C. inornatus* at Houei Nhang (DUCKWORTH ET AL., 1994). The species involved is not certain, but is probably the same as the red squirrel abundant in Champassak and Attopu. The latter was called *C. ferrugineus williamsoni* by OSGOOD (1932); CORBET & HILL (1992) included it in *C. finlaysoni.* A second form of red squirrel appears to occur locally around Vientiane as it turns up in markets, but it is not clear from where it originates. It is paler red than those of the TMF, with some dark banding on the body hairs, which the bright red form lacks. Specimens are necessary to establish the relationship between these two forms and to investigate if red squirrels in the TMF are indeed the same as those of south-west Laos.]

Inornate Squirrel *Callosciurus inornatus* (Regionally at Risk). In the dry season, 6 Inornate Squirrels were seen, all singly: 3 around Ban Wangma, one near Ban Namiang and singles near the Nam Him and on Phou Houay Baphak (both near Ban Taohai). Four were in fruit trees, 2 in bamboo; one fruit tree was in extensive mixed deciduous forest, the others in semi-evergreen derived regeneration. Additionally, a villager shot 2 at Ban Wangma. In the wet season, 4 were seen, again signly: 2 near Ban Namiang and singles near Ban Kuai and Ban So. One was in a large tree amid regrowth, 2 were in bamboo and one was in road-edge dense secondary growth. Additionally, a villager shot one near Ban Napo, a youth reportedly shot nine (and 6 red squirrels) in one day around Ban Wangma and a police team reportedly killed 20 *Callosciurus* squirrels (species not known) there on another day.

Small numbers have been found at several other sites surveyed recently in Laos (DUCKWORTH ET AL., 1994; WCS, 1995a–e), but numbers were nowhere sufficient to merit the view of early authors of it as the commonest *Callosciurus* of parts of Laos (OSGOOD, 1932; DEUVE, 1972) and the recommendation of DUCKWORTH ET AL. (1994) that the species be listed at 'Insufficiently Known' in the IUCN Red List is still appropriate. The co-occurrence of this species with the red squirrel is notable: forests north of the Isthmus of Kra usually hold good populations of only one species of *Callosciurus* (MOORE & TATE, 1965) and this is true in many areas in Laos south of Vientiane (DUCKWORTH ET AL., 1994; WCS, 1995a–e).

Table 1. Birds recorded in Sangthong District, Vientiane, 1996.

Species	Forest		Degraded		Paksang	Seasonality	Notes	Species
	winter	summer	winter	summer				
Scaly-breasted Partridge	LC	LC				RESIDENT		*Arborophila. chloropus*
Red Junglefowl	C		F			(RESIDENT)		*Gallus gallus*
Siames Fireback		P				(RESIDENT)		*Lophura diardi*
Grey Peacock-Pheasant	LC					(RESIDENT)		*Polyplectron bicalcaratum*
Lesser Whistling-Duck				O	C^{n}	UNCLEAR		*Dendrocygna javanica*
Spot-billed Duck					$C^{n, l}$	UNCLEAR		*Anas poecilorhyncha*
White-browed Piculet	C	C	F	F		RESIDENT		*Sasia ochracea*
Rufous Woodpecker	P	P				RESIDENT		*Celeus brachyurus*
Greater Yellownape	P					(RESIDENT)		*P. flavinucha*
Laced Woodpecker	P	P				RESIDENT		*P. vittatus*
Red-collared Woodpecker	O	F				RESIDENT		*P. rabieri*
Grey-faced Woodpecker	P^{mdf}					(RESIDENT)		*P. canus*
Greater Flameback	[P]	[P]				RESIDENT		*Chrysocolaptes lucidus*
Bamboo Woodpecker	LC	LC				RESIDENT		*Gecinulus viridis*
Black-and-buff Woodpecker	P	[P]				(RESIDENT)		*Meiglyptes jugularis*
Heart-spotted Woodpecker	P	P	P			(RESIDENT)		*Hemicircus canente*
Lineated Barbet	P^{mdf}	P^{mdf}				RESIDENT		*Megalaima lineata*
Green-eared Barbet	A	A	C	C		RESIDENT		*M. faiostricta*
Moustached Barbet	LC	LC				RESIDENT		*M. incognita*
Blue-eared Barbet	A	A	C	C		RESIDENT		*M. australis*
Coppersmith Barbet	F	F	C	C		RESIDENT		*M. haemacephala*
Oriental Pied-Hornbill	O	O				RESIDENT		*Anthracoceros albirostris*
Orange-breasted Trogon	C	C	O	O		RESIDENT		*Harpactes oreskios*
Red-headed Trogon	LC	P	O			RESIDENT		*H. erythrocephalus*
Indian Roller	LC^{mdf}	LC^{mdf}	C	C	$C^{f,m,n,l}$	RESIDENT		*Coracias bengalensis*
Dollarbird			R	LF		SUMMER	13 Mar	*Eurystomus orientalis*
Common Kingfisher	LC		LC		P^{f}	WINTER	W	*Alcedo atthis*
Blue-eared Kingfisher	LC	LC	LF	LF		RESIDENT	W	*A. meninting*
Black-blacked Kingfisher		F				SUMMER		*Ceyx erithacus*
Banded Kingfisher	C	C	O	O		RESIDENT		*Lacedo pulchella*
Stork-billed Kingfisher	LC	LC	LC	LC		RESIDENT	W	*Pelargopsis capensis*
White-throated Kingfisher			F	O	R^{l}	RESIDENT	W	*Halcyon smyrnensis*
Black-capped Kingfisher			R			(WINTER)	W, 16 Feb	*H. pileata*
Blue-bearded Bee-eater	LC		P			(RESIDENT)		*Nyctyornis athertoni*
Little Green Bee-eater			LA			UNCLEAR	V	*Merops orientalis*
Blue-tailed Bee-eater					$P^{m,n}$	UNCLEAR	13 Mar	*M. philippinus*
Chestnut-winged Cuckoo			P			(SUMMER)	13 Mar	*Clamator coromandus*
Large Hawk-Cuckoo	P		F			WINTER		*Cuculus sparverioides*
[Banded Bay Cuckoo]	[F]	[O]	[O]			UNCLEAR	*1	*Cacomantis sonneratii*
Plaintive Cuckoo	F	F	C	C	P^{m}, $C^{n,l}$	RESIDENT		*C. merulinus*
[Violet Cuckoo]		[P]				UNCLEAR		*Chrysococcyx xanthorhynchus*
Drongo Cuckoo	C	C	C	C		RESIDENT		*Surniculus lugubris*

Table 1. Birds recorded in Sangthong District, Vientiane, 1996 (cont'd).

Species	Forest		Degraded		Paksang	Seasonality	Notes	Species
	winter	summer	winter	summer				
Green-billed Malkoha	C	C	F	F		RESIDENT		*Phaeniccophaeus tristis*
Coral-billed Ground-Cuckoo	P					(RESIDENT)		*Carpococcyx renauldi*
Greater Coucal	O	O	C	C	$C^{m,n,l}$	RESIDENT		*Centropus sinensis*
Lesser Coucal			LC			(RESIDENT)		*C. bengalensis*
Vernal Hanging-Parrot	C	O	F	O		UNCLEAR		*Loriculus vernalis*
Red-breasted Parakeet	LF^{ndf}					(RESIDENT)	*2	*Psittacula alexandri*
Swiftlet sp.		LA	LF	LA	P^{m}	SUMMER, res?		*Collocalia*
Silver-backed Needletail			LF		$[P]^{l}$	UNCLEAR	*3	*Hirundapus cochinchinensis*
Brown-backed Needletail	A	O	A	O	$[P]^{f}$, $C^{n,l}$	WINTER, res		*H.giganteus*
Asian Palm-Swift	F	F	A	A	$F^{f,m,n,l}$	RESIDENT		*Cypsiurus balasiensis*
Fork-tailed Swift	P		LC	O		WINTER, res?		*Apus pacificus*
House Swift				O		UNCLEAR		*A. nipalensis*
Crested Treeswift			LC	C		RESIDENT		*Hemiprocne coronata*
Mountain Scops-Owl	C	C	C	C		RESIDENT		*Otus spilocephalus*
Oriental Scops-Owl			P			WINTER	24 Feb	*O. sunia*
Indian Scops-Owl	R	R				RESIDENT		*O. bakkamoena*
Collared Owlet	F	F	P			RESIDENT		*Glaucidium brodiei*
Asian Barred Owlet	C	C	C	C		RESIDENT		*G. cuculoides*
Brown Hawk-Owl	P	P	LC	LC		RESIDENT		*Ninox scutulata*
[Blyth's Frogmouth]	[P]	[P]	[P]	[P]		RESIDENT	*4	*Batrachostomus affinis*
Great Eared-Nightjar	P					UNCLEAR	*5	*Eurostopodus macrotis*
Nightjar sp.					P^{l}	UNCLEAR		*Caprimulgus* sp.
Spotted Dove		O	C	C		RESIDENT		*Streptopelia chinensis*
Emerald Dove	C	C	F	F		RESIDENT		*Chalcophaps indica*
Pompadour Green-Pigeon	O	[P]	O		R^{n}	(RESIDENT)		*Treron pompadora*
Thick-billed Green-Pigeon	C	[P]	F			(RESIDENT)	*6	*T. curvirostra*
White-breasted Waterhen			LC			(RESIDENT)	W	*Amaurornis phoenicurus*
Common Moorhen			LF			(RESIDENT)	W	*Gallinula chloropus*
Green Sandpiper			R		$P^{f,m}$	WINTER	W	*Tringa ochropus*
Common Sandpiper					$P^{f,m}$	WINTER	W	*T. hypoleucos*
Little Ringed Plover					$C^{f,m,n}$	LOWFLOW	W	*Charadrius dubius*
River Lapwing					$P^{m,n,l}$	UNCLEAR	W	*Vanellus duvaucellii*
Small Pratincole					$P^{n,l}$	UNCLEAR		*Glareola lactea*
Black Baza	R					(WINTER)	18 Feb	*Aviceda leuphotes*
Oriental Honey-buzzard	O		O			WINTER		*Pernis ptilorhyncus*
Black-winged Kite				R		UNCLEAR		*Elanus caeruleus*
Crested Serpent-Eagle	C	C	F	F		RESIDENT	*7	*Spilornis cheela*
Shikra	LC^{mdf}	LC^{mdf}	C	C	P^{n}	RESIDENT	*8	*Accipiter badius*
Collared Falconet			O			(RESIDENT)		*Microhierax caerulescens*
Falcon sp.			R			(WINTER)	*9	*Falco* sp.
Pond-heron sp.			LC		P^{m}	WINTER	W *10	*Ardeola*
Striated Heron	R					(WINTER)	W, 17 Feb	*Butorides striatus*

Table 1. Birds recorded in Sangthong District, Vientiane, 1996 (cont'd).

Species	Forest		Degraded		Paksang	Seasonality	Notes	Species
	winter	summer	winter	summer				
Cinnamon Bittern			R	P	Cn,l	SUMMER	W, 12 Ma	*Ixobrychus cinnamomeus*
Bar-bellied Pitta		P				(RESIDENT)		*Pitta elliotii*
Blue-winged Pitta		P				(SUMMER)		*P. moluccensis*
Banded Broadbill		R				(RESIDENT)		*Eurylaimus javanicus*
Silver-breasted Broadbill	F	O	O			RESIDENT		*Serilophus lunatus*
Long-tailed Broadbill	O	O				RESIDENT		*Psarisomus dalhousiae*
Asian Fairy-bluebird	LA	LC	LF	P		RESIDENT		*Irena puella*
Blue-winged Leafbird	LF	LF	O			RESIDENT		*Chloropsis cochinchinensis*
Brown Shrike			C		P^m	WINTER		*Lanius cristatus*
Burmese Shrike			R	R		RESIDENT		*L. collurioides*
Grey-backed Shrike			R			(WINTER)		*L. tephronotus*
Green Magpie	P					(RESIDENT)		*Cissa chinensis*
Racket-tailed Treepie			LC			(RESIDENT)	V	*Crypsirina temia*
Large-billed Crow			F	P		(RESIDENT)		*Corvus macrorhynchos*
Black-naped Oriole	O		O			WINTER	*11	*Oriolus chinensis*
Maroon Oriole	O		R			WINTER		*O. traillii*
Black-winged Cuckoo-shrike	C		F			WINTER	*12	*C. melaschistos*
Brown-rumped Minivet	P^{mdf}					(WINTER)		*Pericrocotus cantonensis*
Scarlet Minivet	R					(RESIDENT)		*P. flammeus*
Bar-winged Flycatcher-shrike	A	A	O	O		RESIDENT		*Hemipus picatus*
Black Drongo			P			UNCLEAR		*Dicrurus macrocercus*
Ashy Drongo	A	P	A			WINTER, res		*D. leucophaeus*
Bronzed Drongo	C	C	F	P		RESIDENT		*D. aeneus*
Lesser Racket-tailed Drongo	R					UNCLEAR		*D. ramifer*
Hair-crested Drongo	C	O	C	O		WINTER, res		*D. hottentottus*
Greater Racket-tailed Drongo	C	C	C	C		RESIDENT		*D. paradiseus*
Black-naped Monarch	A	A	C	C		RESIDENT		*Hypothymis azurea*
Asian Paradise-Flycatcher		R				UNCLEAR		*Terpsiphone paradisi*
Common Iora	O	O	R			RESIDENT		*Aegithina tiphia*
Great Iora	C	C	O			RESIDENT		*A. lafresnayei*
Large Woodshrike	R					(RESIDENT)		*Tephrodornis gularis*
Blue Rock-Thrush					P^m	(WINTER)	13 Mar. *13	*Monticola solitarius*
Blue Whistling-Thrush	LF					WINTER	W	*Myiophonus caeruleus*
Scaly Thrush	O					(WINTER)	W	*Zoothera dauma*
Red-breasted Flycatcher	O		A		P^f	WINTER		*Ficedula parva*
Little Pied Flycatcher	R					UNCLEAR		*F. westermanni*
Verditer Flycatcher	O		O			WINTER		*Eumyias thalassina*
Hainan Blue-Flycatcher	O					UNCLEAR		*Cyornis hainanus*
Hill/Tickell's Blue-Flycatcher	A	A	F	F		RESIDENT	*14	*C. banyumas/C. tickelliae*
Grey-headed Canary-Flycatcher	A		C			WINTER		*Culicicapa ceylonensis*
Rufous-tailed Robin	O					WINTER		*Luscinia sibilans*
Siberian Rubythroat			P			(WINTER)		*L.calliope*

Table 1. Birds recorded in Sangthong District, Vientiane, 1996 (cont'd).

Species	Forest		Degraded		Paksang	Seasonality	Notes	Species
	winter	summer	winter	summer				
Siberian Blue Robin	C		F			WINTER		*L. cyane*
Oriental Magpie-Robin	O	O	C	F	$A^{n,l}$	RESIDENT		*Copsychus saularis*
White-rumped Shama	A	A	F	F		RESIDENT		*C. malabaricus*
Common Stonechat			F			WINTER		*Saxicola torquata*
Pied Bushchat					F^{m}, O^{l}	UNCLEAR		*S. caprata*
Jerdon's Bushchat					$A^{m,n}$, O^{l}	LOWFLOW		*S. jerdoni*
Grey Bushchat			LF			WINTER		*S. ferrea*
Hill Myna	LA	P	LA	P		RESIDENT		*Gracula religiosa*
Velvet-fronted Nuthatch	F	F	F			RESIDENT	*15	*Sitta frontalis*
Plain Martin					$C^{f,m,n}$, A^{l}	UNCLEAR	W	*Riparia paludicola*
Barn Swallow	O		O		P^{f}, A^{m}, R^{n}, C^{l}	WINTER, res?	W, *16	*Hirundo rustica*
Wire-tailed Swallow					$C^{f,m,n}$, A^{l}	UNCLEAR	W	*H. smithii*
Red-rumped Swallow			O		F^{m}	WINTER	W, *17	*H. daurica*
Asian House-Martin			LC			WINTER	V	*D. dasypus*
Black-headed Bulbul	C	A	F	F		RESIDENT		*Pycnonotus atriceps*
Black-crested Bulbul	A	A	C	C		RESIDENT		*P. melanicterus*
Red-whiskered Bulbul			LA	P		RESIDENT	V	*P. jocosus*
Stripe-throated Bulbul	O	O	C	C		RESIDENT		*P. finlaysoni*
Streak-eared Bulbul				R	$C^{m,n,l}$	RESIDENT		*P. blanfordi*
Puff-throated Bulbul	C	C	O	O		RESIDENT		*Alophoixus pallidus*
Grey-eyed Bulbul	A	A	F	F		RESIDENT		*Iole propinqua*
Black Bulbul	R		R		P^{m}	(WINTER)	*18	*Hypsipetes leucocephalus*
Golden-headed Cisticola			P		$P^{n,l}$	(RESIDENT)		*Cisticola exilis*
Rufescent Prinia			LC	LC		RESIDENT		*P. rufescens*
Grey-breasted Prinia			LC	LA	O^{l}	RESIDENT		*P. hodgsonii*
Yellow-bellied Prinia			LC		$A^{m,n,l}$	RESIDENT		*P. flaviventris*
Plain Prinia					$A^{n,l}$	UNCLEAR		*P. inornata*
White-eye sp.	A		A		P^{m}	WINTER	*19	*Zosterops*
Asian Stubtail	LA		F			WINTER		*Urosphena squameiceps*
[Manchurian Bush-Warbler]			[P]			(WINTER)		*Cettia*
Bradypterus sp.			P			(WINTER)		*Bradypterus*
Lanceolated Warbler			P			(WINTER)		*Locustella lanceolata*
Thick-billed Warbler			C			WINTER		*Acrocephalus aedon*
Common Tailorbird			C	C	$A^{m,n,l}$	RESIDENT		*Orthotomus sutorius*
Dark-necked Tailorbird	C	C	F	F		RESIDENT		*O. atrogularis*
Dusky Warbler	A		A		P^{m}	WINTER	W	*Phylloscopus fuscatus*
Radde's Warbler	F		C		P^{m}	WINTER		*P. schwarzi*
Inornate Warbler	C		C		$P^{f,m}$	WINTER		*P. inornatus*
Greenish Warbler	C		C			WINTER		*P. trochiloides*
Pale-legged Leaf-Warbler	C		F			WINTER	W	*P. tenellipes*
Blyth's Leaf-Warbler	F		P			WINTER		*P. reguloides*

Table 1. Birds recorded in Sangthong District, Vientiane, 1996 (cont'd).

Species	Forest		Degraded		Paksang	Seasonality	Notes	Species
	winter	summer	winter	summer				
Sulphur-breasted Warbler	O					(WINTER)		*P. ricketti*
Golden-spectacled Warbler	C		C			WINTER		*Seicercus burkii*
Yellow-bellied Warbler	A	A	C	C		RESIDENT		*Abroscopus superciliaris*
Striated Grassbird			P			(RESIDENT)		*Megalurus palustris*
White-crested Laughingthrush	R					(RESIDENT)		*Garrulax leucolophus*
Abbott's Babbler	LC	LC	LC	LC		RESIDENT		*Malacocincla abbotti*
Buff-breasted Babbler	LA	LA	LF	LF		RESIDENT		*Pellorneum tickelli*
Puff-throated Babbler	C	C	F	F		RESIDENT		*P. ruficeps*
Large Scimitar-Babbler	P	P				RESIDENT		*Pomatorhinus hypoleucos*
White-browed Scimitar-Babbler	C	C	LA	C		RESIDENT	*20	*P. schisticeps*
[Buff-chested Babbler]			[A]	[A]		RESIDENT	*21	*Stachyris ambigua*
Grey-throated Babble	P	P				RESIDENT		*S. nigriceps*
Spot-necked Babbler	P	P				RESIDENT		*S. striolata*
Striped Tit-Babbler	A	A	A	A		RESIDENT		*Macronous gularis*
White-hooded Babbler	C	F	F	O		RESIDENT		*Gampsorhynchus rufulus*
Rufous-throated Fulvetta	A	A	F	F		RESIDENT		*Alcippe rufogularis*
Brown-cheeked Fulvetta	O	LC	R	P		RESIDENT		*A. Poioicephala*
White-bellied Yuhina	C	C	O	O		RESIDENT		*Yuhina zantholeuca*
Short-tailed Parrotbill	LC	R				UNCLEAR		*Paradoxornis davidianus*
Thick-billed Flowerpecker	LA	O	LA	O		UNCLEAR		*Dicaeum agile*
Yellow-vented Flowerpecker	P	P	P			(RESIDENT)		*D. chrysorrheum*
Plain Flowerpecker	LA	P	LA			UNCLEAR		*D. concolor*
Scarlet-backed Flowerpecker			P	P		(RESIDENT)		*D. cruentatum*
Ruby-cheeked Sunbird	LC	C	F	F		RESIDENT		*Anthreptes singalensis*
Purple-naped Sunbird	F	C		O		RESIDENT		*Hypogramma hypogrammicum*
Olive-backed Sunbird	C		C	[P]		(RESIDENT)		*Nectarinia jugularis*
Black-throated Sunbird	P					UNCLEAR		*Aethopyga saturata*
Crimson Sunbird	P	P	P	P		RESIDENT		*A. siparaja*
Little Spiderhunter	A	A	C	C		RESIDENT		*Arachnothera longirostra*
Eurasian Tree Sparrow			LA	LA		RESIDENT		*Passer montanus*
White Wagtail			LC		$C^{f,m}$, R^{l}	WINTER	W	*Motacilla alba*
Grey Wagtail	O		O		P^{m}	WINTER	W	*M. Cinerea*
Paddyfield Pipit			[O]		P^{m}	UNCLEAR		*Anthus rufulus*
Olive-backed Pipit	O		A			WINTER		*A. hodgsoni*
Pin-tailed Parrotfinch	P	LC				UNCLEAR		*Erythrura prasina*
White-rumped Munia			A	A	C^{l}	RESIDENT		*Lonchura striata*
Scaly-breasted Munia					$C^{n,l}$	UNCLEAR		*L. punctulata*
Chestnut Bunting			LC			WINTER		*Emberiza rutila*

A, abundant; C, common; F, frequent; O, occasional; R, rare; P, present but abundance not assessed; L (*prefix), local

Season: a single code in capitals indicates that the species was only recorded at that season; 'res' indates that the species was recorded in much lower numbers during the other survey period. Codes not in parentheses are derived from the survey data themselves; codes in parantheses are derived from previous literature, but the survey data fit such a pattern. WINTER, winter (Feb/March survey); SUMMER, summer (June/July survey); RESIDENT, resident (both surveys); LOWFLOW, low–flow season in the Mekong UNCLEAR, data do not suggest any seasonality, or contradict weakly previous literature. It is not possible, from the survey data, to distinguish birds present all winter from passage migrants.

Superscript for forest:^{mdf}, primarily or only in mixed deciduous forest.

Superscripts for Paksang:^{f}, on 14 February;^{m}, on 13 March;^{n}, on 22 June;^{l}, on 16 July.

[Provisional identification, to be checked against skins in the British Museum (Natural History)]

Notes:

W, strongly Associated with water.

V, recorded only at Ban Wangma.

Dates are given only for migrant species which were recorded only once, or for first dates for summer visitors.

*1 No birds were seen; Indian Cuckoo *Cuculus micropterus* was not ruled out from the calls heard.

*2 A few unidentified parakeets were seen and heard.

*3 May have been commoner; many needletails were not identified to species, especially in the wet season.

*4 See text for discussion of these calls.

*5 Not calling during survey period, so status assessment not possible.

*6 Many unidentified green-Pigeons were seen and heard; some were probably neither this species nor the former. Only one green-pigeon was identified to species in the wet season, but overal numbers did not differ greatly between the two surveys.

*7 Only one unidentified large raptor was seen; it was probably not this species.

*8 Many unidentified small accipiters were seen, but there was no positive reason to believe any other species was present.

*9 Either a hobby *F. subbuteo* or *F. severus* or a small Peregrine *F. peregrinus*.

*10 Likely to be Chinese Pond-Heron *Ardeola bacchus*.

*11 Slender-billed Oriole *O. tenuirostris* not ruled out on all birds, but some confirmed as Black-naped.

*12 Indochinese Cuckooshrike *C. polioptera* not ruled out on all birds, but some confirmed as Black-winged.

*13 A blue-bellied male.

*14 These two species cannot be separated in Laos on known field characters; both were probably present.

*15 Birds in degraded areas were all investigating nest sites in dead trees among recently cleared hai.

*16 Although a few birds were seen in June, it is unlikely that these breed in or near the site.

*17 Birds were of the typical Red-rumped Swallow form rather than Striated Swallow *H. striolata*.

*18 Most or all birds were of the white-headed forms *H. m. leucothorax* or *H. m. stresemanni;* at least some were the latter.

*19 Probably mostly or all Japanese White-eye *Z. japonicus;* this species and Oriental White-eye *Z. palpebrosus* are not clearly separable in the field.

*20 Birds were typical of the species and lacked streaks on the underparts in contrast to the situation to the east in Laos, where birds often show some streaking on the underparts and are doubtfully distinguishable from Streak-breasted Scimitar-Babbler *P. ruficollis*.

*21 Rufous-capped Babbler *S. ruficeps* not ruled out as field characters in Laos are not well known.

Table 2. Mammals recorded in Sangthong District, Vientiane, Laos, 1996.

Species	Identification	Forest	Degraded	Notes	
Northern Treeshrew	A	F	O	*1	*Tupaia belangeri*
Pig-tailed Macaque	A	P			*Macaca nemestrina*
Rhesus Macaque	A	O		*2	*Macaca mulatta*
[Pharye's Langur]	R (skin)	[P]			*Semnopithecus phayrei*
Gibbon sp.	A (heard)	LC			*Hylobates (Nomascus)* sp.
Common Palm Civet	A	P			*Paradoxurus hermaphroditus*
Leopard Cat	A	P			*Prionailurus bengalensis*
Asian Golden Cat	A	P			*Catopuma temminckii*
Asian Elephant	S	LC	P		*Elephas maximus*
Eurasian Wild Pig	S	LC			*Sus scrofa*
Lesser Mousedeer	A	P		*1	*Tragulus javanicus*
Sambar	S, R	P		*3	*Cervus unicolor*
Indian Muntjac	S, R, A (heard)	LC		*4	*Muntiacus muntjak*
[Wild cattle]	S	[P]		*5	*Bos* sp(p).
[Variable Squirrel]	A	[LC]			*Callosciurus finlaysoni*
Inornate Squirrel	A	LF	P		*Callosciurus inornatus*
[Chinese Striped Squirrel]	A	[F]		*6	*Tamiops maritimus*
Red-cheeked Ground Squirrel	A	F	P		*Dremomys rufigenis*
Large Bamboo-rat	A (captive)	P			*Rhizomys sumatrensis*
Bay Bamboo-rat	A (Captive)	P			*Cannomys badius*
Hodgson's Crested Porcupine	R (quill)	P			*Hystrix brachyura*
Siamese Hare	S		P	*7	*Lepus peguensis*

Species known only from villagers' reports and thus not confirmed to occur in the TMF :

Pangolin sp(p).		*Manis* sp(p).
Slow Loris		*Nycticebus coucang*
Dhole		*Cuon alpinus*
Bears		*Ursus* sp(p).
Otter sp(p).		*Lutrinae*
Binturong		*Arctictis binturong*
Mongoose sp(p).		*Herpestes* sp(p).
Black Giant Squirrel		*Ratufa bicolor*

Codes:
A, animal observed in the field; R, remains of animal seen; S, signs found. C, common; F, frequent; O, occasional; P, present but abundance not assessed; L, local. [Provisional identification]

Table 2 (continued).
Notes:
*1 Identified solely on the basis of range.
*2 Some macaques were not identified to species.
*3 Identified as this species on the basis of a shed antler seen in Ban Wangma, footprint size and vigorous denials by villagers that Brow-antlered Deer *C. eldi* occurs in the area.
*4 Trophies in villages were all of this species, although animals heard could not be identified to species.
*5 Probably Gaur *Bos gaurus*, but villagers' descriptions and observed signs allowed no firm identification.
*6 Similar in pelage and call to animals provisionally identified as this species at Houei Nhang.
*7 Also on islands in the Mekong at Paksang.

CONSERVATION IMPORTANCE OF THE AREA

The TMF supports 3 Globally Threatened birds and 4 Globally Threatened mammals (7 if villager' reports are included). One Globally Threatened bird (Short-tailed Parrotbill) is known from very few other sites in the world (only one is in Laos). A population of Globally Threatened wild cattle important for Laos may occur. Populations of Pompadour Pigeon, Rufous-throated Fulvetta, Inornate Squirrel and Asian Elephant are also of mid or high national importance. The Mekong channel supports the only breeding populations of Jerdon's Bushchat and Plain Martin known today in Laos. Although not a Key Species, the population of Bamboo Woodpecker is of regional importance as it is the only one known east of the Mekong.

The species richness and high populations of some Key Species mean that the area may approach the conservation importance of some of the NBCAs recently declared in Laos (BERKMÜLLER ET AL., 1995), especially if a larger area (including the Dong Phaken forest west of the TMF were considered. The TMF is, however, the most northerly site in Laos with an adequate recent wildlife survey; further work to the north may reveal that some of the most special species of the TMF are more widespread than can currently be assumed.

Wildlife conservation merits high priority among the various uses of the TMF. Conflicting uses coming from the training functions (which should themselves comprise conservation education) of the Vientiane Forestry College and the traditional rights of the villagers. The need for integration of conservation issues in management planning of the area (discussed in depth in DUCKWORTH, 1996) is enhanced by the paucity of forest in northern Laos, the proximity of the TMF to Vientiane (meaning that potential threats are high and that management is logistically easy) and the existence of some communities heeding wildlife law. This latter attitude is very rare in Laos and is the main factor responsible for the persistence of gibbons, elephants and wild cattle in the TMF; populations of all these animals have declined greatly from hunting elsewhere in Laos.

The important habitats are:

1. Tall semi-evergreen forest. Several small (under 50 ha) patches were found, each retaining an appreciable concentration of large trees. These were mostly on hillocks and ridges several km east of the Nam Sang, from Ban Kuai north to at least Ban Wangma, with one outlying area south-east of Ban Napo. Such habitat is likely to be crucial for pheasants, Pig-tailed Macaque, gibbon, Black Giant Squirrel, Asian Elephant and wild

cattle. Further Key Species, e.g. carnivores, are likely to be confirmed with additional work.

2. Tall mixed deciduous forest. By contrast with semi-evergreen forest, tall mixed deciduous forest remains extensive on flat land west of the Nam Thon and in the south of the area, close to the Mekong. It is dominated by *Lagerstroemia* species which have many holes in the bole and boughs, thus reducing greatly the commercial value of the timber (W. EHRHARDT, verbally, 1996). Brown-rumped Minivet was recorded in the TMF only in this habitat and further investigation might reveal further Key Species restricted to such forest.

3. Bamboo. Although the extensive areas of giant bamboo are probably secondary in origin, they are vital, particularly around Ban Wangma and Ban Kuai, for several Key Species, including Asian Elephant, Pin-tailed Parrotfinch and the only healthy Short-tailed Parrotbill population known in the world. Their importance for Red-collared Woodpecker is probably as a substitute for tall forest, rather than as a preferred habitat.

4. Streamsides. The Nam Sang and its several tributaries are likely to be the richest areas of the TMF and are particularly important for otters, Rhesus Macaque, large herbivores and probably also the remaining carnivore community.

5. Saltlicks. Saltlicks are important for ungulates: signs were found of use by Elephants, wild cattle, Wild Pigs, Sambar and muntjacs. The concentration around Ban Taohai is most important. Others were found or reported around Ban Wangma and Ban Koua. It is highly likely that there are others.

6. Don Nou and Don Sadok, two islands in Mekong channel in the Paksang–Ban Nasar area. The habitats exposed during the dry season support five Key Species not found elsewhere in the TMF, most notably the only population of Jerdon's Bushchat currently known in Laos.

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