REPORT ON EXPEDITION/PROJECT/CONFERENCE

Expedition/Project/ Conference Title:	Megatransect Sumatra
Travel Dates:	08.06.2016 – 08.08.2016
Location:	Sumatra, Indonesia
Group member(s):	Iris Berger, Oliver Broadhead
Aims:	We will undertake a two-month expedition crossing the island of Sumatra on foot, cataloguing species as we encounter them, with the aim of comparing deforested areas with protected forests and giving a first insight into avian biodiversity in an area previously unexplored by scientists.

OUTCOME (not less than 300 words):-

Megatransect Sumatra

Introduction

The biogeographical region Sundaland, which Sumatra belongs to, is the third greatest biodiversity hotspot in the world (Myers et al., 2000). However, Indonesia has been estimated to have the highest rate of primary forest clearing globally, with Sumatra showing the greatest rate of loss out of all Indonesian island groups (Margono et al., 2014). Hence, drastic conservation management programmes are urgently needed.

In Sumatra 397 bird species are present with 6% of them being endemic (MacKinnon and Phillips, 1993). There are 11 national parks in Sumatra, however, even those areas are far from free from the impacts of illegal logging and poaching. Moreover, vast areas are completely unexplored by scientists and thus require urgent attention which was the motivation for this expedition.

This study was composed of two parts, where the first part was conducted in the pristine montane rainforests around Mount Lembu, Aceh, Northern Sumatra (N 04° 13’ 18.3” E 097° 26’ 05.9”, 3043m) and the second part involved traversing various landscapes of high human influence. A record of the species encountered allowed a comparison of avian biodiversity between the two areas and considering that, until now, no research has ever been conducted in the forests around Mount Lembu the data collected provides valuable insight into the importance of that region to conservation.

Methods

Part 1: Mount Lembu

A transect from the village Uring (N 04° 03’ 38.5” E 097° 27’ 47.9”, 835m) to the summit of Mount Lembu (N 04° 13’ 18.3” E 097° 26’ 05.9”, 3043m) and back again following the same route was conducted (23km each way). The route taken is illustrated in Figure 1.

Figure 1: Map of the route taken in the Mount Lembu area. The topography and position of camps is indicated.

Whilst birds and mammals were recorded if encountered, the study was mainly aimed at assessing avian diversity. This was mainly due to the pace by which we travelled and due to the abundance of birds. A representation of reptile and amphibian diversity would have required covering an extremely small distance and moving at night which was not feasible for this expedition. Due to the elusiveness and relatively low abundance of mammals, their diversity is usually ascertained with camera traps which were beyond our budget. Nevertheless, if we did encounter any mammals and we were able to identify them successfully (either by visual or acoustic signals) we did record them. The mammal identification guidebook Shepherd and Shepherd (2012) was used.

Since it is practically impossible to document every single bird encountered we followed MacKinnon and Phillipps' (1993) method. A list of every new bird species was made until a census of 20 species was reached and then a new list was started. A species was only recorded once in each list, but was noted again in subsequent lists. All species identified are listed, giving a value of the areas biodiversity, and the number of lists a species appears on gives an idea of its abundance. The strength of this system is that it is relatively independent of observer expertise, bird watching intensity, weather conditions and other factors. Species were identified using MacKinnon and Phillipps' (1993) guidebook and notes on GPS coordinates, altitude, habitat type, weather conditions, time and date, and any additional observations were taken.

<u>Part 2: Human influenced area</u>

The route taken was from Ketambe (N 03°39'05.165" E 097°40'45.337", 440m) to Barus (N 02°01'19.322" E 098°37'46.187", 8m), covering approximately 350km, and the methodology used was the same as for Part 1 (Figure 2).

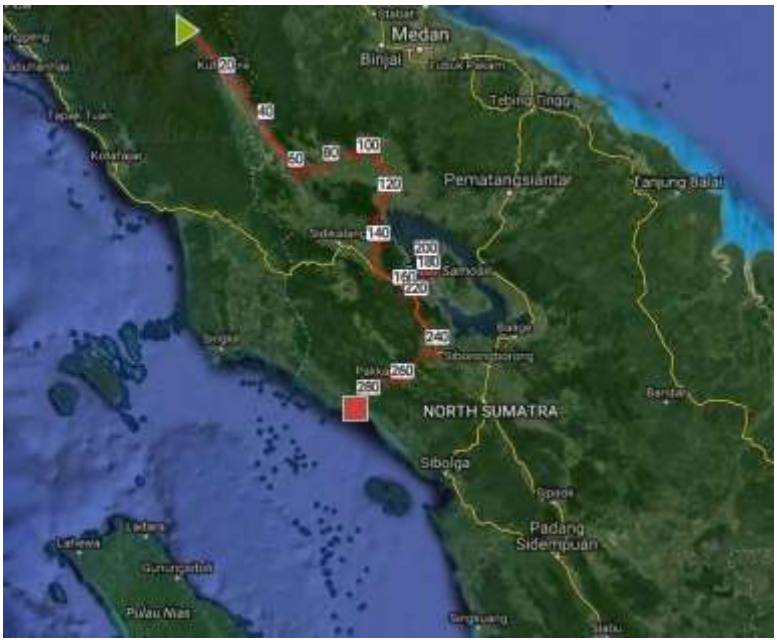

Figure 2: Route taken during the second part of the expedition crossing a range of areas under strong human influence.

Results

The raw data of the birds (Table 1-2) and mammals (Table 3-4) recorded can be found in the Appendix. The accumulative total number of species is 49 in the forests around Mount Lembu (out of 53 total recordings) and 42 in the strongly human influenced area (out of 55 recordings in total). This implies that 92.5% of the total recordings were a new species not recorded in a previous list in the pristine forests, whereas the value was merely 76.4% for the human altered areas.

Species that occur on many lists are very abundant and/or conspicuous of the respective local avifauna. In the pristine forests only four species were recorded more than once, namely *Alcedo euryzona* (Blue-banded Kingfisher), *Brachypteryx montana saturate* (White-browed Shortwing), *Dicrurus sumatranus* (Sumatran Drongo), and *Ficedula hyperythra* (Snowy-browed Flycatcher).

Information and the significance of the birds recorded in the forests around Mount Lembu is given below.

Collocalia maxima (Black-nest Swiftlet): Often found near limestone caves and their nests are often harvested for sale.

Acridotheres javanicus (Javan Myna): It is not native in Sumatra, but is probably the result of an escaped cage release in Medan area and is locally common. Often found near paddy fields and near open grassy fields.

Lonchura maja (White-headed Munia): Common and widespread, up to 1500m

Streptopelia bitorquata (Island Collard Dove): Probably an escape in Sumatra, usually rarely found above 600m and mainly found in mangroves, however, we sighted the species at 870m near paddy fields.

Copsychus saularis (Oriental Magpie-robin): Relatively common in villages and secondary forests up to 1500m.

Psilopogon pyrolophus (Fire-tufted Barbet): Usually found between 500 and 1500m foraging in the canopy. Whilst it is classified as Least Concern under the IUCN illegal capture for the pet trade have caused the population to decrease. The individuals we encountered were all killed by a shotgun carried back to Uring by five poachers.

Megalaima oorti (Black-browed Barbet): Common in montane forests between 1000 and 2000m, typically in the middle and upper canopy.

Alcedo meninting (Blue-eared Kingfisher): Found by freshwater streams up to 1000m.

Alcedo euryzona (Blue-banded Kingfisher): Similar habitats to the Blue-eared kingfisher, predominately sub-montane.

Muscicapa dauurica (Asian Brown Flycatcher): Up to 1500m, hilly or submontane forests preferred.

Cinclidium diana (Sunda Blue Robin): Known to be found in the undergrowth of high montane forests in low numbers in Sumatra (between 1100 and 1500m), albeit we recorded the species at 889m.

Copsychus malabaricus (White-rumped Shama): Up to 1500m in dense forests.

Dendrocitta occipitalis (Sumatran Treepie): Endemic to Sumatra. Found in tall forests from 400-2300m.

Myiophoneus melanurus (Shiny Whistling-thrush): Usually near water in primary hill and montane forests, between 800 and 3300m.

Brachypteryx montana saturate (White-browed shortwing): Extremely large range. Usually locally common between 1400 and 3000m, however, we sighted the species at 100m. Often near streams, but variable in its habitat.

Buceros bicornis (Great Hornbill): Whilst it has a large range, it occurs at low densities and is thus classified as Near Threatened. It is uncommon on Sumatra where it has shown a significant decline following recent devastation of the island's lowland forest.

Megalaima chrysopogon (Golden-whiskered Barbet): Forages in the canopy of trees. Patchy geographic range in northern Sumatra.

Stachyris rufifrons (Rufous-fronted Babbler): Rare in Sumatra.

Rhipidura javanica (Pied fantail): Thought to be present up to 1500m, however, we recorded the species at 2095m.

Pycnonotus leucogrammicus (Cream-striped Bulbul): Recorded at 2095m which is higher than the previously though range of up to 1900m.

Pycnonotus melanoleucos (Black-and-white Bulbul): A poorly known species with few records in Sumatra.

Dicrurus sumatranus (Sumatran Drongo): Common in lowland forests, however, we recorded it at 2425m.

Ixos malaccensis (Streaked Bulbul): The species is thought to be present mainly below 1200m, however, we sighted it at 2243m. Habitat loss has caused a population decline.

Dicrurus aeneus (Bronzed Drongo): Usually found in primary and secondary lowland forests up to 1400m, albeit we recorded it at 2243m.

Arachnothera longirostra (Little Spiderhunter): Again observed above the previously thought maximum altitude of 2000m.

Eudynamys scolopacea (Asian Koel): A widespread cuckoo keeping to dense cover.

Garrulax palliatus (Sunda Laughingthrush): Endemic to Sumatra and Borneo, found in the lower and middle canopy of montane forests.

Pericrocotus flammeus (Scarlet Minivet): Thought to be locally common in primary forest up to 1500m, but we sighted the species at 2243m.

Prionochilus percussus (Crimson-breasted Flowerpecker): Recorded at 2243m which is significantly higher than the previously though range of up to 1000m.

Ficedula hyperythra (Snowy-browed Flycatcher): Extremely large range.

Culicicapa ceylonensis (Grey-headed Flycatcher): Common in sub montane forests.

Stachyris chrysaea (Golden Babbler): Common in hill and montane forests between 800 and 3000m in Sumatra.

Ictinaetus malayensis (Black Eagle): Sparsely but widely distributed throughout the Greater Sundas.

Zoothera dauma (Scaly Thrush): Rare resident of the mountains in North Sumatra. Feeds on the ground in dense forests.

Enicurus leschenaulti (White-crowned Forktail): Usually confined to lowland and hill streams up to 1400m, however, we observed the species at 3043m.

Dendrocitta occipitalis (Sumatran Treepie): Endemic to Sumatra at altitudes of up to 2300m.

Pycnonotus zeylanicus (Straw-headed Bulbul): Found in the lowlands and hills, albeit we sighted it at 2325m.

Garrulax mitratus mitratus (Chestnut-capped Laughingthrush): A common bird in mountain forests.

Alophoixus bres (Grey-cheeked Bulbul): Thought to be local in lowland forests, active in the lower canopy.

Enicurus velatus (Lesser Forktail): In Sumatra common in hill and mountain forests.

Arachnothera flavigaster (Spectacled Spiderhunter): Generally found in secondary forests. Largest member of its family.

Loriculus galgulus (Blue-crowned Hanging Parrot): Common in lowland forests throughout Sumatra.

Dicrurus leucophaeus (Ashy Drongo): Common in open woodlands. Lives in pairs.

Halcyon smyrnensis (White-throated Kingfisher): Extremly wide range. Replacing the Collard Kingfisher as the common kingfisher in Sumatra.

Pycnonotus tympanistrigus (Spot-necked Bulbul): Endemic to Sumatra. Little is known about the species with habitat loss posing a threat.

Iole viresceus sumatranus (Sunda Bulbul): Locally common in sub-montane forests.

Dicaeum trigonostigma (Orange-bellied Flowerpecker): Common with a large range.

In order to compare avifauna between the two areas species discovery curves were produced. The analytical method recommended by MacKinnon and Phillips (1993) was followed. The cumulative total number of species recorded is plotted against the number of lists made, giving a species discovery curve where its steepness reflects species richness (Figure 3). Moreover, it gives an estimate of how many more species are likely to be found in that area if further observations were carried out.

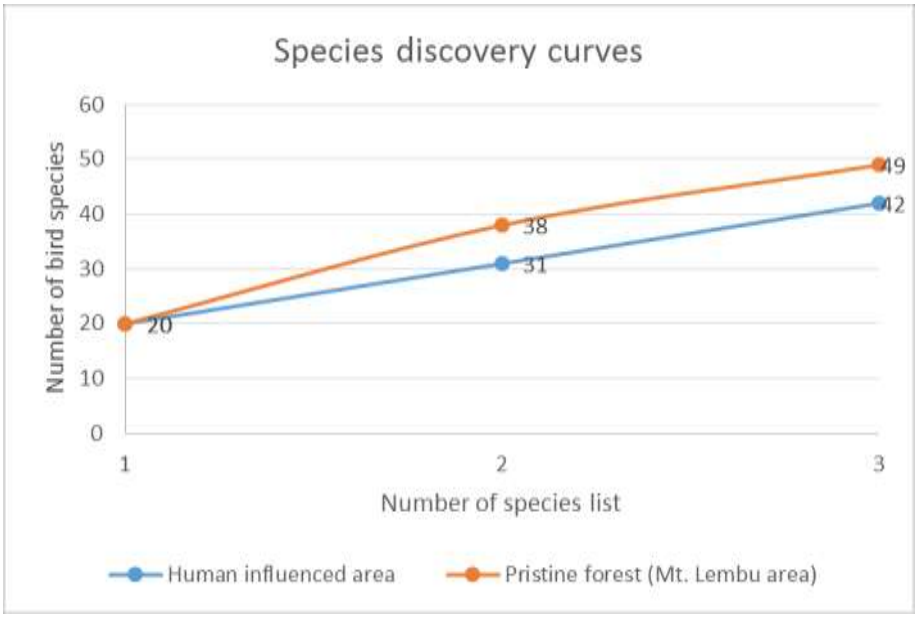

Figure 3: Species discovery curves reflecting local avifauna in the forests around Mount Lembu and in the areas strongly influenced by humans. In both areas 3 lists were recorded in total, with greater species richness being found in the forests around Mount Lembu (as indicated by a greater steepness of the slope).

Discussion and Conclusion

We recorded many species in the forests around Mount Lembu at an altitude notably higher than their previously thought maximum altitude they are found in. This information may be invaluable when assessing their species range, population dynamics, and their response to anthropogenic parameters. Their presence at higher altitudes than previously thought may indicate habitat destruction (or general unsuitability) at lower altitudes.

The species discovery curves show that species richness is higher in the pristine forests around Mount Lembu. However, the difference is possibly less great than it may have been expected. This may be due to the fact that the time spent and distance covered during the second part of the expedition was remarkably greater than in the first part. (350km compared to 46km). This may be distorted the species discovery curves significantly. The species richness in the pristine forest is greater despite this strong bias, indicating that the actual avian diversity is likely to be much larger in the pristine forests compared to the human altered areas.

The species composition between the pristine forest and the human-altered areas differs remarkably, highlighting the importance of conserving the forests around Mount Lembu as it is essential that species sensitive to anthropogenic influence have a refuge.

Appendix

Table 1: List of the bird species recorded during the first part of the expedition in the forests around Mount Lembu. Information on the GPS coordinates, elevation, habitat type, date, time, weather conditions, and any additional notes that were taken is given. There are three lists in total, the first two lists having 20 species each, whereas 14 species were recorded for the last list.

Pristine forest (Mt. Lembu area) - Birds							
Species	GPS	Elevation (m)	Habitat	Date	Time	Weather	Additional notes
LIST 1							
Collocalia maxima	N 04°04'03.4'' E 097°27'36.6''	870	paddy field	16.06.2016	11:50	90% cloud	very common, many dragonflies
Acridotheres javanicus	N 04°04'03.4'' E 097°27'36.6''	870	paddy field	16.06.2016	12:00	90% cloud	
Lonchura maja	N 04°04'03.4'' E 097°27'36.6''	870	paddy field	16.06.2016	13:00	90% cloud	
Streptopelia bitorquata	N 04°04'03.4'' E 097°27'36.6''	870	paddy field	16.06.2016	12:20	90% cloud	
Copsychus saularis	N 04°04'23.3'' E 097°27'24.0''	885	riverbed in cloud forest	16.06.2016	13:00	90% cloud	low water levels, hornet nests, *Mimosa pudica* present
Psilopogon pyrolophus	N 04°05'00.1'' E 097°27'34.4''	885	riverbed in cloud forest	16.06.2016	13:05	90% cloud	Dead, around 20 individuals, 5 poachers
Megalaima oorti	N 04°05'00.1'' E 097°27'34.4''	885	riverbed in cloud forest	16.06.2016	14:00	90% cloud	
Alcedo meninting	N 04°05'27.4'' E 097°27'35.8''	889	riverbed in cloud forest	16.06.2016	16:00	90% cloud	
Alcedo euryzona	N 04°05'27.4'' E 097°27'35.8''	889	riverbed in cloud forest	16.06.2016	17:47	90% cloud	
Muscicapa dauurica	N 04°05'27.4'' E 097°27'35.8''	889	riverbed in cloud forest	16.06.2016	18:10	90% cloud	
Cinclidium diana	N 04°05'27.4'' E 097°27'35.8''	889	riverbed in cloud forest	16.06.2016	19:10	90% cloud	
Copsychus malabaricus	N 04°06'20.4'' E 097°27'45.8''	911	riverbed in cloud forest	17.06.2016	08:00	90% cloud, light rain	
Pericrocotus spp.	N 04°06'20.4'' E 097°27'45.8''	911	riverbed in cloud forest	17.06.2016	08:00	90% cloud, light rain	

Dendrocitta occipitalis	N 04°06'21.2'' E 097°27'49.8''	1000	riverbed in cloud forest	17.06.2016	11:20	100% cloud	
Myiophoneus melanurus	N 04°06'21.2'' E 097°27'49.8''	1000	riverbed in cloud forest	17.06.2016	11:30	100% cloud	
Brachypteryx montana saturata	N 04°06'21.2'' E 097°27'49.8''	1000	riverbed in cloud forest	17.06.2016	12:10	100% cloud	
Buceros bicornis	N 04°06'21.2'' E 097°27'49.8''	1000	riverbed in cloud forest	18.06.2016	08:00	50% cloud	6 individuals, feeding on fruit
Megalaima chrysopogon	N 04°06'21.2'' E 097°27'49.8''	1000	riverbed in cloud forest	18.06.2016	09:30	50% cloud	
Stachyris rufifrons	N 04°08'16.7'' E 097°28'24.1''	2095	mossy cloud forest	19.06.2016	14:20	foggy	many *Nepenthes* pitcher plant
LIST 2							
Rhipidura javanica	N 04°08'16.7'' E 097°28'24.1''	2095	mossy cloud forest	19.06.2016	15:10	foggy	up and down movement of tail
Pycnonotus leucogrammicus	N 04°08'16.7'' E 097°28'24.1''	2095	mossy cloud forest	19.06.2016	15:15	foggy	
Pycnonotus melanoleucos	N 04°08'16.7'' E 097°28'24.1''	2095	mossy cloud forest	19.06.2016	16:00	foggy	
Dicrurus sumatranus	N 04°09'13.8'' E 097°27'17.8''	2425	mossy scrub	20.06.2016	13:37	60% cloud	v exposed ridge, stumpy trees, v windy, many *Nepenthes* pitcher plant
Ixos malaccensis	N 04° 11' 48.7'' E 097° 25' 44.2''	2243	cloud forest	22.06.2016	15:00	50%cloud	on branch by small stream
Dicrurus aeneus	N 04° 11' 48.7'' E 097° 25' 44.2''	2243	cloud forest	22.06.2016	11:00	50%cloud	riverbed, on branch
Arachnothera longirostra	N 04° 11' 48.7'' E 097° 25' 44.2''	2243	cloud forest	23.06.2016	07:45	70% cloud	on branch
Eudynamys scolopacea	N 04° 11' 48.7'' E 097° 25' 44.2''	2243	cloud forest	23.06.2016	08:00	70% cloud	low branch by river, curious, v close
Garrulax palliatus	N 04° 11' 48.7'' E 097° 25' 44.2''	2243	cloud forest	23.06.2016	11:20	80% cloud	hopping on branch
Pericrocotus	N 04° 11' 48.7'' E	2243	cloud forest	23.06.2016	15:00	100% cloud	large flock (20-30 individuals), calling

flammeus	097° 25' 44.2''						
Brachypteryx montana saturata	N 04° 11' 48.7'' E 097° 25' 44.2''	2243	cloud forest	23.06.2016	15:10	100% cloud, light rain	pair
Prionochilus percussus	N 04° 11' 48.7'' E 097° 25' 44.2''	2243	cloud forest	23.06.2016	15:15	100% cloud, light rain	female, bath in raindrops on fern
Ficedula hyperythra	N 04° 11' 48.7'' E 097° 25' 44.2''	2243	cloud forest	24.06.2016	14:00	100% cloud	low branches, around 2m away
Culicicapa ceylonensis	N 04° 12' 34.5'' E 097° 25' 40.8''	2606	cloud forest	25.06.2016	11:20	70%cloud	
Stachyris chrysaea	N 04° 12' 34.5'' E 097° 25' 40.8''	2606	cloud forest	25.06.2016	11:30	70% cloud	
Ictinaetus malayensis	N 04° 13' 15.0'' E 097° 26' 02.9''	3033	mossy cloud forest	25.06.2016	12:20	80% cloud	
Zoothera dauma	N 04° 13' 18.3'' E 097° 26' 05.9''	3043	mossy cloud forest	26.06.2016	14:10	40% cloud	
Enicurus leschenaulti	N 04° 13' 18.3'' E 097° 26' 05.9''	3043	mossy cloud forest	26.06.2016	14:30	40% cloud	
Dendrocitta occipitalis	N 04°09'00.5'' E 097°27'00.3''	2325	mossy cloud forest	28.06.2016	13:00	70% cloud	windy, 20m away from the top of the ridge
Pycnonotus zeylanicus	N 04°09'00.5'' E 097°27'00.3''	2325	mossy cloud forest	28.06.2016	13:10	70% cloud	
LIST 3							
Ficedula hyperythra	N 04°09'00.5'' E 097°27'00.3''	2325	mossy cloud forest	28.06.2016	13:15	70% cloud	
Dicrurus sumatranus	N 04°09'00.5'' E 097°27'00.3''	2325	mossy cloud forest	28.06.2016	13:15	70% cloud	
Garrulax mitratus mitratus	N 04°09'00.5'' E 097°27'00.3''	2325	mossy cloud forest	28.06.2016	14:00	70% cloud	
Alophoixus bres	N 04°06'21.2'' E 097°27'49.8''	1000	riverbed in cloud forest	29.06.2016	11:00	20% cloud	many butterflies, river level dropped compared to ascent
Enicurus velatus	N 04°06'21.2'' E 097°27'49.8''	1000	riverbed in cloud forest	29.06.2016	11:10	20% cloud	many butterflies, river level dropped compared to ascent

Arachnothera flavigaster	N 04°06'21.2'' E 097°27'49.8''	1000	riverbed in cloud forest	29.06.2016	12:10	20% cloud	many butterflies, river level dropped compared to ascent
Loriculus galgulus	N04°05'05'' E97°27'0.2''	912	riverbed in cloud forest	30.06.2016	06:30	10% cloud	observed from camp
Dicrurus leucophaeus	N04°05'05'' E97°27'0.2''	912	riverbed in cloud forest	30.06.2016	06:30	10% cloud	observed from camp
Alcedo euryzona	N04°05'0.01'' E97°27'34.4''	950	riverbed near paddy field	30.06.2016	08:20	10% cloud	
Halcyon smyrnensis	N04°05'0.01'' E97°27'34.4''	950	riverbed near paddy field	30.06.2016	08:30	10% cloud	
Pycnonotus tympanistrigus	N04°05'0.01'' E97°27'34.4''	950	riverbed near paddy field	30.06.2016	08:30	10% cloud	
Iole viresceus sumatranus	N04°05'0.01'' E97°27'34.4''	950	riverbed near paddy field	30.06.2016	11:00	10% cloud	
Dicaeum trigonostigma	N04°05'0.01'' E97°27'34.4''	950	riverbed near paddy field	30.06.2016	11:50	10% cloud	

Table 2: List of the bird species recorded during the second part of the expedition in the areas strongly influenced by humans. Information on the GPS coordinates, elevation, habitat type, date, time, weather conditions, and any additional notes that were taken is given. There are three lists in total, the first two lists having 20 species each, whereas 15 species were recorded for the last list.

Human influenced area - Birds							
Species	GPS	Elevation (m)	Habitat	Date	Time	Weather	Additional notes
LIST 1							
Harpactes orrhophaeus	N 03°39'05.165'' E 097°40'45.337''	440	cloudforest	06.07.2016	10:00	10% cloud	tourist trail, with guide
Reinwardtipicus validus	N 03°39'05.165'' E 097°40'45.337''	440	cloudforest	06.07.2016	11:10	10% cloud	tourist trail, with guide
Cuculus micropterus	N 03°39'05.165'' E 097°40'45.337''	440	cloudforest	06.07.2016	13:20	20% cloud	tourist trail, with guide
Ictinaetus malayensis	N 03°22'07.145'' E 097°40'46.386''	1055	farmland, small villages	07.07.2016	10:00	10% cloud	riverbed next to main road

Passer montanus	N 03°22'07.145'' E 097°40'46.386''	1055	farmland, small villages	08.07.2016	07:00	10% cloud	
Anthreptes simplex	N 03°22'07.145'' E 097°40'46.386''	1055	farmland, small villages	08.07.2016	07:10	10% cloud	
Acridotheres javanicus	N 03°22'07.145'' E 097°40'46.386''	1055	farmland, small villages	08.07.2016	18:00	10% cloud	on coconut tree
Collocalia maxima	N 03°20'01.133'' E 097°32'16.446''	801	farmland, small villages	09.07.2016	14:20	30% cloud	
Geopelia striata	N 03°20'01.553'' E 097°19'16.553''	844	cornfield	10.07.2016	15:10	40% cloud	
Columba livia domestica	N 03°50'22.543'' E 097°32'19.583''	844	farmland, small villages	11.07.2016	08:30	80% cloud	
Ixobrychus cinnamomeus	N 03°20'01.553'' E 097°19'16.553''		paddy field	12.07.2016	07:00	80% cloud	
Bubulcus ibis	N 03°20'01.553'' E 097°19'16.553''		paddy field	12.07.2016	07:00	80% cloud	
Lonchura maja	N 03°20'01.553'' E 097°19'16.553''		cornfield	12.07.2016	08:00	80% cloud	
Pycnonotus aurigaster	N 03°13'11.532'' E 098°12'16.713''		farmland, small villages	12.07.2016	11:00	70% cloud	
Lanius schach bentet	N 03°13'11.532'' E 098°12'16.713''		farmland, small villages	12.07.2016	11:00	70% cloud	
Oriolus chinensis	N 03°13'11.532'' E 098°12'16.713''		farmland, small villages	12.07.2016	11:00	70% cloud	
Dicrurus leucophaeus	N 03°13'11.532'' E 098°12'16.713''		farmland, small villages	12.07.2016	11:10	70% cloud	
Pycnonotus tympanistrigus	N 03°13'11.532'' E 098°12'16.713''		farmland, small villages	12.07.2016	11:10	70% cloud	
Amaurornis phoenicurus	N 03°11'01.532'' E 098°02'12.333''		reed bed	12.07.2016	16:30	80% cloud	
Elanus caeruleus	N 03°11'01.532'' E 098°02'12.333''		farmland, small villages	12.07.2016	17:00	80% cloud	

LIST 2							
Ardea sumatrana	N 03°04'21.192'' E 098°07'01.271''	590	Orange field	13.07.2016	07:00	80% cloud, light rain	close to village and erupting volano
Elanus caeruleus	N 02°57'00.000'' E 098°31'19.843''	1462	orange field	13.07.2016	15:00	30% cloud	
Streptopelia chinensis	N 02°57'00.000'' E 098°31'19.843''	1462	orange field	13.07.2016	16:00	20% cloud	
Geopelia striata	N 02°57'00.000'' E 098°31'19.843''	1462	orange field	13.07.2016	16:10	20% cloud	
Hirundapus giganteus	N 02°58'00.880'' E 098°31'19.843''	1462	orange field	13.07.2016	16:15	40%cloud	
Lonchura maja	N 02°58'00.880'' E 098°31'19.843''	1433	farmland, small villages	14.07.2016	07:20	70% cloud	
Passer montanus	N 02°57'40.233'' E 098°31'19.843''	1433	farmland, small villages	14.07.2016	14:10	50% cloud	
Acridotheres javanicus	N 02°57'40.233'' E 098°31'19.843''	1329	farmland, small villages	14.07.2016	15:10	50% cloud	
Lanius schach bentet	N 02°57'40.233'' E 098°31'19.843''	1329	farmland, small villages	14.07.2016	15:40	50% cloud	
Pycnonotus aurigaster	N 02°57'40.233'' E 098°31'19.843''	1329	farmland, small villages	14.07.2016	16:40	50% cloud	
Bubulcus ibis	N 02°43'46.233'' E 098°41'41.661''	944	paddy field	15.07.2016	08:30	70% cloud	Lake Toba
Egretta eulophotes	N 02°43'46.233'' E 098°41'41.661''	944	paddy field	15.07.2016	08:30	70% cloud	Lake Toba
Chrysocolaptes lucidus	N 02°43'46.233'' E 098°41'41.661''	944	tree by cornfield	15.06.2016	10:30	70% cloud	Lake Toba
Haliastur indus	N 02°43'46.233'' E 098°41'41.661''	944	paddy field	15.06.2016	17:10	70% cloud	
Ardeola bacchus	N 02°44'09.613'' E 098°47'18.098''	920	reedbed	16.07.2016	15:00	80% cloud, light rain	non-breeding
Amaurornis	N 02°44'09.613'' E	920	reedbed	16.07.2016	15:10	80% cloud,	

phoenicurus	098°47'18.098''					light rain	
Alcedo atthis	N 02°44'09.613'' E 098°47'18.098''	920	reedbed	16.07.2016	16:00	80% cloud, light rain	
Parus major	N 02°33'57.009'' E 098°39'02.038''	1080	paddy field	18.07.2016	11:00	90% cloud	
Pycnonotus zeylanicus	N 02°33'57.009'' E 098°39'02.038''	1080	paddy field	18.07.2016	11:10	90% cloud	
Halcyon smyrnensis	N 02°33'57.009'' E 098°39'02.038''	1080	paddy field	18.07.2016	11:15	90% cloud	
LIST 3							
Metopidus indicus	N 02°12'14.331'' E 098°41'33.122''	1123	paddy field	18.07.2016	14:00	80% cloud	
Pycononotus bimaculatus	N 02°12'14.541'' E 098°41'77.162''	1409	paddy field	19.07.2016	11:20	70% cloud	
Centropus rectunguis	N 02°12'14.541'' E 098°41'77.162''	1409	paddy field	19.07.2016	11:20	70% cloud	
Garrulax palliatus	N 02°22'13.521'' E 098°42'31.320''	1560	forestry, monoculture	19.07.2016	12:00	80% cloud	
Heterophasia picaoides	N 02°08'13.331'' E 098°42'21.340''	1550	forestry, monoculture	19.07.2016	12:20	80% cloud	
Hirundo tahitica	N 02°08'13.331'' E 098°42'21.340''	1120	montane forest	19.07.2016	15:30	80% cloud	
Passer montanus	N 02°09'13.333'' E 098°41'21.322''	1089	montane forest	19.07.2016	17:10	80% cloud	
Nectarinia jugularis	N 02°09'13.213'' E 098°41'11.144''	780	urban (village)	20.07.2016	07:00	90% cloud, light rain	
Bubulcus ibis	N 02°09'13.213'' E 098°41'11.144''	760	urban (village)	20.07.2016	08:30	90% cloud, light rain	
Egretta garzetta garzetta	N 02°09'13.213'' E 098°41'11.144''	710	urban (village)	21.07.2016	14:10	60% cloud	
Columba livia domestica	N 02°09'24.211'' E 098°41'12.154''	680	submontane rainforest	21.07.2016	17:40	60% cloud	

Streptopelia chinensis	N 02°09'09.576'' E 098°28'31.148''	535	submontane rainforest	22.07.2016	11:00	sunny, 10% cloud	forest in surrounding area
Oriolus xanthornus	N 02°06'19.358'' E 098°27'46.187''	493	submontane rainforest	23.07.2016	11:00	5% cloud	
Buceros rhinoceros	N 02°26'19.322'' E 098°27'46.187''	433	submontane rainforest	23.07.2016	12:00	5% cloud	2 individuals flying
Spilornis cheela malayensis	N 02°26'19.322'' E 098°27'46.187''	433	submontane rainforest	23.07.2016	12:00	5% cloud	

Table 3: List of the mammal species recorded during the first part of the expedition in the forests around Mount Lembu. Information on the GPS coordinates, elevation, habitat type, date, time, weather conditions, and any additional notes that were taken is given.

Pristine forest (Mt. Lembu area)- Mammals							
Species	GPS	Elevation (m)	Habitat	Date	Time	Weather	Additional notes
Symphalangus syndactylus	N 04° 11' 48.7'' E 097° 25' 44.2''	2243	mossy scrub	20.06.2016	19:20	dark	heard alarm sound, not seen, identification not 100% certain
Presbytis thomasi	N 04° 11' 48.7'' E 097° 25' 44.2''	2243	mossy scrub	22.06.2016	16:45	60% cloud	about 5 individuals, 5m away from tent, high on tree, possibly went to river to drink, feeding fruit/leaves on tree
Presbytis thomasi	N 04° 11' 48.7'' E 097° 25' 44.2''	2243	mossy scrub	24.06.2016	15:30	40% cloud	3 individuals (probably more), high up tree, alarm call when they saw us
Ratufa bicolor	N 04° 11' 48.7'' E 097° 25' 44.2''	2243	mossy scrub	24.06.2016	16:00	60% cloud	1 individual, 1m away from dried out river, near huge boulder and cave
Symphalangus syndactylus	N 04° 11' 48.7'' E 097° 25' 44.2''	2243	mossy scrub	26.06.2016	10:00	40% cloud	heard call by river, around 500m away, could not see
Presbytis thomasi	N 04° 11' 48.3'' E 097° 25' 44.1''	2325	mossy scrub	28.06.2016	13:00	70% cloud	

Table4: List of the bird species recorded during the second part of the expedition in the areas strongly influenced by humans. Information on the GPS coordinates, elevation, habitat type, date, time, weather conditions, and any additional notes that were taken is given.

Human influenced area- Mammals							
Species	GPS	Elevation (m)	Habitat	Date	Time	Weather	Additional notes
Presbytis thomasi	N 03°39'05.165'' E 097°40'45.337''	440	cloud forest	06.07.2016	11:00	10% cloud	tourist trail with guide, Leuser national park
Pongo abelii	N 03°39'05.165'' E 097°40'45.337''	563	cloud forest	06.07.2016	12:00	10% cloud	feeding on tree, feeding 1km from main road, Leuser nationalpark
Pongo abelii	N 03°39'05.165'' E 097°40'45.337''	503	cloud forest	06.07.2016	17:00	10% cloud	male juvenile, around 50m away from main road, feeding, Leuser nationalpark
Hylobates lar	N 03°39'05.165'' E 097°40'45.337''	503	cloud forest	06.07.2016	17:10	10% cloud	heard call, Leuser nationalpark
Hylobatidae spp.	N 03°04'21.192'' E 098°07'01.271''	590	cloud forest	13.07.2016	07:00	70% cloud	heard call
Macaca fascicularis	N 02°12'14.331'' E 098°41'33.122''	1123	paddy field	18.07.2016	14:00	30% cloud	

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