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**WILDLIFE DIVERSITY ON THE PERIPHERY OF
DANAU SENTARUM NATIONAL PARK,
WEST KALIMANTAN, INDONESIA**

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Introduction

This paper presents data on faunal diversity derived from a year-long study of hunting patterns in an Iban community on the periphery of Danau Sentarum National Park (DSNP), West Kalimantan, Indonesia. These unique data on birds and mammals provide an important baseline for future conservation work in the area despite being somewhat dated (1993–1994). They are particularly important given the high level of illegal logging in the DSNP vicinity over the last five years. The study community is unique in the area for not allowing its preserved old growth forests to be logged, thus potentially providing refuge to wildlife fleeing surrounding logged forest (Meijaard et al. 2006). It is important to note that this study was not designed to measure faunal diversity but rather hunting patterns, although the data presented provide hints at that diversity.

Methods

DSNP is located in a remote area of West Kalimantan, Indonesia, and situated close to the Malaysian border of Sarawak, approximately 700 km inland from the provincial capital, Pontianak. DSNP is an area of interconnected seasonal lakes and seasonally flooded tropical forests with the water catchment consisting of lowland tropical forest in the hills and flooded forest in the low-lying areas. A patchwork of various forest developmental stages characterizes the former and is a result of commercial logging, swidden cultivation, and smallholdings of rubber and pepper. The altitude within the park is approximately 30–35 m above sea level, while the surrounding hills rise as high as 760 m. Daytime temperatures are consistently 26–30 degrees Celsius, with annual rainfall ranging between 3000 and 4000 mm. The driest months are usually July, August, and September.

The area was established as the Danau Sentarum Wildlife Reserve in 1985 (Giesen 1987), became Indonesia's second Ramsar Wetland of International Importance in 1994 and was upgraded to a National Park in 1999 (Giesen and Aglionby 2000). It remains, however, a "paper park" as the only effective management has ever been that of local indigenous communities (Colfer and Wadley 2001). The main part of the park comprises around 1250 km² (Aglionby and Whitman 1996) though the exact boundaries of the park remain unclear. The study area reported here (located in the hills northeast of the reserve core) may eventually be considered a transition zone, a buffer zone, or even part of the park core.

The permanent park population in 1995 (the most recent census) was 6,575 people, and the population density fluctuated seasonally between 5.3 and 6.4 persons per km².

(Aglionby and Whiteman 1996). Around 80% of the population were Muslim-Malay fisherfolk, while the remainder, and those occupying the park periphery and surrounding hills, were largely Christian Dayaks, the majority of whom were Iban. In the Batang Lupar District, part of which overlaps with the northeast portion of the park, the population density was 3.3 persons per km.² in 1995 (Kecamatan Batang Lupar 1995).

Study focused on the Iban longhouse community of Sungai Sedik located about 6 km. from the district administrative center and market town of Lanjak. The longhouse was a 14-household community containing about 98 residents during the period of study, with an average household size of 6 people. The surrounding territory claimed by the longhouse encompasses approximately 24 km.² and was a patchwork of forest succession, agricultural plots, rubber smallholdings, and specially preserved forest. Elevation ranges between around 100 to over 700 meters above sea level. The Sungai Sedik territory (with a density of 4.1 persons per km.²) was occasionally hunted by members of at least five other longhouse communities and residents of Lanjak. The estimated population density of the area around and including Sungai Sedik (about 322 km.²) was 5.1 persons per km.². The Sungai Sedik economy was based on swidden rice agriculture and male labor migration to Malaysia and Brunei.

Data on hunting were collected by the author in 1993–1994 using an interview schedule developed by himself, Carol Colfer and Ian Hood. It was administered immediately after every hunting trip for six one-month sampling periods distributed evenly over a year. Interviews were conducted in the Iban language. The hunters consisted of twelve men (over 15 years of age) and eleven boys (under 15 years), and they were asked a series of questions about hunts and their observations. (When there was more than one hunter on a trip, the men were interviewed separately as a cross-check.) Of interest here are their reports on animals encountered, both in terms of the number of encounters and the number of animals encountered. (An encounter is defined as any sighting of an animal, whether or not it resulted in capture.) Birds and mammals encountered but not captured were identified through the use of field guides (i.e., Smythies 1981, Francis 1984, Payne et al. 1985). Identification of captured animals brought to the longhouse was done by the author in order

¹ "Dayak" refers to the indigenous, non-Muslim inhabitants of Borneo; Dayaks who have converted to Islam generally become reclassified as Melayu or Malay, such as the Danau Sentarum Malays.

² In some earlier publications, this community was presented under a pseudonym, Wong Garai; this is no longer deemed necessary.

³ Questions concerned such things as time of day, duration of hunt, weather during hunt, location of hunt, locations traversed during hunt, type of environment in which animals were encountered, and animals encountered, shot at, and captured.

⁴ The numbers of animals hunters saw during encounters were usually estimates and may not accurately reflect numbers of animals in the area. Hunters reported (sometimes estimated) the numbers of animals seen at any one encounter, which might range from a solitary gibbon or hornbill to a troop of langurs or a horde of bulbuls. These numbers do not represent extant population sizes because particular animals might have been encountered more than once and therefore counted numerous times. They do, however, give some impression of the relative abundance of each species.

⁵ Species classification for birds has been updated following that used by MacKinnon and Phillips (1993).

to determine species, sex, relative age, and physical condition.

Men tended to hunt alone or with one or two companions, while boys invariably hunted in groups; occasionally a man would take a boy or two with him. In previous analyses of these data (i.e., Wadley et al. 1997, Wadley and Colfer 2004), boys' hunting was excluded because the author discovered early on that during periods when no data were collected, boys tended to hunt less. It was deduced that they were going out of their way to hunt during study periods, to bring back prey for analysis and identification. (This was not the case for adult hunting which is representative of the periods when no data were collected.) Thus the hunting done by boys is not representative of hunting patterns, but the data are included here because of their important observations on faunal diversity.

Hunting reported here was largely for subsistence. Iban preferred large-bodied mammalian prey (bearded pigs and deer), but were opportunistic about what animals they actually captured on hunts (Wadley et al. 1997). Although some game (particularly bearded pigs) were occasionally taken to the market town and sold, there was only one case of this during the study period (Wadley et al. 1997). The capture of five animals also occasionally occurred in the area, such as when hunters shot female orangutans or gibbons in order to capture their young for sale. No instances of this occurred at Sungai Sedik, although there were cases elsewhere.

Results and Discussion

Hunters encountered 102 species of birds from 27 families and 45 species of mammals from 16 families (Tables 1–2) in habitats ranging from fallowed secondary forest to old longhouse sites. Most encounters occurred in older growth forest of various kinds (see Wadley et al. 1997, Wadley and Colfer 2004) as hunters concentrated their efforts on locations most likely to contain or attract game. They did not systematically sample forest habitats, thus likely missing a number of animals.

Table 1. Sungai Sedik Bird List¹

Scientific Name	English Name	Iban Name	No. Encounters	No. Animals Sighted	Pos. ID ⁵
ACCIPITRIDAE	HAWKS & EAGLES	lang mukong	1	1	
Ictinaetus malayensis	black eagle				
PHASIANIDAE	PHEASANTS				
Rollulus rouloul	crested partridge	sengayan	5	12	
Lophura erythrophthalma	crestless fireback	sempidan	1	2	

Scientific Name	English Name	Iban Name	No. Encounters	No. Animals Sighted	Pos. ID ^a
RAIIDAE	RAILS				
<i>Amaurornis phoeniceus</i>	white-breasted waterhen	engkeruak	(2)	-2	*
COLUMBIDAE	PIGEONS & DOVES				
<i>Teron capellei</i>	large green pigeon	empuna' bedidi'	1	7	
<i>Teron curvirostra</i>	thick-billed green pigeon	empuna'	1	3	0
<i>Teron fulvicollis</i>	cinnamon-headed green pigeon	empuna'	(1)	(1)	
<i>Chalcophaps indica</i>	emerald dove	imbok	7	9	*
<i>Macropygia emiliana</i>	ruddy cuckoo-dove	imbok	(1)	(1)	
PSITTACIDAE	PARROTS AND PARAKEETS				
<i>Loriculus galgulus</i>	blue-crowned hanging-parrot	entilit	-1	(1)	
CUCULIDAE	CUCKOOS				
<i>Cacomantis merulinus</i>	plaintive cuckoo	tiup api	1	1	*
<i>Phaenicochaeus chlorophaeus</i>	Raffles' s malkoha	mendo' tiai	2	3	*
<i>Phaenicochaeus diardi</i>	black-bellied malkoha	mendo'	1 (1)	2 (1)	
<i>Phaenicochaeus curvirostris</i>	chestnut-breasted malkoha	mendo' sabang	1	2	
<i>Centropus sinensis</i>	greater coucal	hubut	2 (1)	4 (1)	*
<i>Centropus bengalensis</i>	lesser coucal	encelukup	(3)	(3)	*
	unidentified malkoha	mendo'	1	1	

Scientific Name	English Name	Iban Name	No. Encounters	No. Animals Sighted	Pos. ID ^a
STRIGIDAE	OWLS				
<i>Ninox scutulata</i>	brown hawk-owl	lang empelako	1	1	
TROGONIDAE	TROGONS				
<i>Harpactes whiteheadi</i>	Whitehead' s trogon	beragai	1	2	
ALCEDINIDAE	KINGFISHERS				
<i>Ceyx rufidorsa</i>	rufus-backed kingfisher	ensing	2	2	*
MEROPIDAE	BEE-EATERS				
<i>Merops viridis</i>	blue-throated bee-eater	kangkang kuso'	1	1	
<i>Nyctornis amictus</i>	red-bearded bee-eater	kangkang kuso'	2	3	
BUCEROTIDAE	HORNBILLS				
<i>Aceros comatus</i>	white-crowned hornbill	sentuku	4	7	*
<i>Aceros corrugatus</i>	wrinkled hornbill	kejako' / keku'	2	3	*
<i>Aceros undulatus</i>	wreathed hornbill	undan	1	2	
<i>Antraecoceros malayanus</i>	Asian black hornbill	berui'	1	1	
<i>Antraecoceros albirostris</i>	Oriental pied hornbill	berui'	1	2	
<i>Buceros rhinoceros</i>	rhinoceros hornbill	kenyalang	5	7	*

Scientific Name	English Name	Iban Name	No. Encounters	No. Animals Sighted	Pos. ID ^a
CAPTIONIDAE	BARBETS				
<i>Megalaima rafflesii</i>	red-crowned barbet	tegek	4 (1)	5 (3)	0
<i>Megalaima mysaccophanos</i>	red-throated barbet	tegek	1 (1)	3 (1)	*
<i>Megalaima pulcherrima</i> ^a	golden-naped barbet	tegek / tekarak	1	1	
<i>Megalaima australis</i>	blue-eared barbet	tekarak	5 (6)	51 (24)	*
PICIDAE	WOODPECKERS				
<i>Sasia abnormis</i>	rufus piculet	ketupung	3 (1)	3 (1)	*
<i>Picus puniceus</i>	crimson-winged woodpecker	belatok	1	1	
<i>Blythipicus rubiginosus</i>	maroon woodpecker	pankas belatok / kunprang empali	1	1	
<i>Celaus brachyurus</i>	rufus woodpecker	empali	1 (1)	6 (1)	*
EURYLAIMIDAE	BROADBILLS				
<i>Eurylaimus ochromalus</i>	black-and-yellow broadbill	ganggang kaka	1 (1)	1 (1)	*
<i>Cymbirhynchus macrorhynchus</i>	black-and-red broadbill	ganggang	(1)	(1)	*
PITTIDAE	PITTAS				
<i>Pitta moluccensis</i>	blue-winged pitta	burong pelandok	1	1	
CAMPEPHAGIDAE	CUCKOO-SHRIKES				
<i>Pericrocotus solaris</i>	grey-chinned minivet	ensulit	(1)	(3)	*

Scientific Name	English Name	Iban Name	No. Encounters	No. Animals Sighted	Pos. ID ^a
<i>Coraciina fimbriata</i>	lesser cuckoo-shrike		(1)	(1)	
CHLOROPSEIDAE	IORAS AND LEAFBIRDS				
<i>Aegithina tiphia</i>	common iora	tandok ulat	(2)	(2)	*
<i>Aegithina viridissima</i>	green iora	tandok ulat / kico'	2 (1)	2 (1)	*
<i>Chloropsis cyanopogon</i>	lesser green leafbird	penta daun	3 (11)	7 (24)	*
<i>Chloropsis sonnerati</i>	greater green leafbird	penta daun	2 (2)	4 (4)	*
	unidentified green leafbird		(1)	(1)	
PYCNONOTIDAE	BULBULS				
<i>Pyenonotus euliotus</i>	puff-backed bulbul	empulo'	1 (2)	1 (11)	
<i>Pyenonotus melanoleucos</i>	black-and-white bulbul	empulo'	3 (1)	14 (1)	
<i>Pyenonotus atriceps</i>	black-headed bulbul	empulo' jilin	3 (12)	16 (49)	
<i>Pyenonotus plumosus</i>	olive-winged bulbul	empulo'	7 (10)	48 (40)	*
<i>Pyenonotus brunneus</i>	red-eyed bulbul	raras	(1)	(2)	
<i>Pyenonotus erythrophthalmos</i>	spectacled bulbul	empulo' raras	2 (1)	16 (1)	*
<i>Pyenonotus simplex</i>	cream-vented bulbul	empulo' raras	1 (6)	2 (29)	*
<i>Pyenonotus goiavier</i>	yellow-vented bulbul	empulo'	(1)	(1)	
<i>Setornis criniger</i>	hook-billed bulbul	empulo'	6 (23)	14 (50)	*
<i>Tricholestes criniger</i>	hairy-backed bulbul	empulo' raras	3 (2)	11 (3)	*
<i>Ixos malaccensis</i>	streaked bulbul	empulo'	2 (4)	11 (17)	

Scientific Name	English Name	Iban Name	No. Encounters	No. Animals Sighted	Pos. ID ^s
<i>Totie olivacea</i>	buff-vented bulbul	empulo'	1	10	
<i>Hypsipetes flavula</i>	ashy bulbul	empulo' jugo'	(1)	(1)	
<i>Allophoixus bres</i>	grey-checked bulbul	empulo'	1	5	
<i>Criniger finschii</i>	Finsch's bulbul	empulo'	(3)	(4)	
	red-eyed or cream-vented bulbul	empulo'	(1)	(5)	
	unidentified bulbul	empulo'	5 (4)	76 (19)	
ORIOLEAE	ORIOLES				
<i>Oriolus xanhorus</i>	black-hooded oriole		1	1	
<i>Irena puella</i>	Asian fairy-bluebird	kanggan	9 (13)	11 (20)	*
CORVIDAE	CROWS				
<i>Corvus enca</i>	slender-billed crow	hurong ka'	(2)	(11)	
TIMALIIDAE	BABLERS				
<i>Malacopteron affine</i>	sooty-capped babbler	engkecong	1	2	*
<i>Macronous pilosus</i>	fluffy-backed tit-babbler	engkecong	3	13	
<i>Stachyris nigriceps</i>	grey-throated babbler	engkecong	2	5	
<i>Stachyris nigricollis</i>	black-throated babbler	engkecong	1	10	
<i>Stachyris leucotis</i>	white-necked babbler	engkecong	2	12	
<i>Stachyris maculata</i>	chestnut-rumped babbler	engkecong	1	1	

Scientific Name	English Name	Iban Name	No. Encounters	No. Animals Sighted	Pos. ID ^s
<i>Stachyris erythroptera</i>	chestnut-winged babbler	engkecong	(1)	(2)	
<i>Trichastoma bicolor</i>	ferruginous babbler	engkecong	(1)	(2)	*
	unidentified babbler		1	1	
TURDIDAE	ROBINS				
<i>Copsychus malabaricus</i>	white-rumped shama	nendak	2	3	
<i>Copsychus saularis</i>	magpie-robin	sernatau	(6)	(10)	*
SYLVIIDAE	TAILORBIRDS & WARBLERS				
<i>Orthotomus cuculatus</i>	mountain tailorbird	beriak	1	1	
<i>Orthotomus sericeus</i>	rufus-tailed tailorbird	beriak	1	1	
<i>Orthotomus ruficeps</i>	ashy tailorbird	kuci	(2)	(6)	*
<i>Phylloscopus borealis</i>	arctic warbler	kenyera	(1)	(4)	
MUSCICAPIDAE	FLYCATCHERS				
<i>Cyornis turcosus</i>	Malaysian blue flycatcher	senjujan	1	1	*
<i>Cyanoputa cyanomelana</i>	blue-and-white flycatcher				
<i>Rhipidura albicollis</i>	white-throated fantail	engkanyi	1	10	*
<i>Hypothymnus azurea</i>	black-raped monarch	senjujan	2 (1)	2 (1)	*
<i>Terpsiphone paradisi</i>	Asian paradise flycatcher	senjujan	2 (1)	2 (1)	

Scientific Name	English Name	Iban Name	No. Encounters	No. Animals Sighted	Pos. ID ^b
NECTARINIDAE	SUNBIRDS AND SPIDERHUNTERS				
<i>Aethopyga siparaja</i>	crimson sunbird	engkerasak	(5)	(5)	*
<i>Antheptes singalensis</i>	ruby-checked sunbird	kuncit mali / kuncit	(1)	(1)	*
<i>Antheptes simplex</i>	plain sunbird	engkerasak / kuncit	(2)	(2)	
<i>Nectarinia calcoetha</i>	copper-throated sunbird	kuncit	(3)	(12)	*
<i>Nectarinia sperata</i>	purple-throated sunbird		(1)	(2)	
<i>Arachnothera longirostra</i>	little spiderhunter	engkerasak	1 (1)	1 (2)	*
<i>Arachnothera grassrostris</i>	thick-billed spiderhunter	engkerasak	1	3	
<i>Arachnothera chryogenys</i>	yellow-eared spiderhunter	engkerasak	1	1	
<i>Arachnothera robusta</i>	long-billed spiderhunter	engkerasak	(1)	(2)	
DICAETIDAE	FLOWERPECKERS				
<i>Prionochilus thoracicus</i>	scarlet-breasted flowerpecker	kuncit	1 (4)	3 (4)	*
<i>Prionochilus xanthopygius</i>	yellow-rumped flowerpecker	kuncit kenali	3 (8)	16 (37)	*
<i>Prionochilus percussus</i>	crimson-breasted flowerpecker	kuncit	(4)	(15)	*
<i>Prionochilus maculatus</i>	yellow-breasted flowerpecker	kuncit	2 (5)	20 (23)	*
<i>Dicaeum chrysorrheum</i>	yellow-vented flowerpecker	kuncit pelandok	6 (12)	23 (76)	*
<i>Dicaeum concolor</i>	plain flowerpecker	kuncit	4 (11)	5 (35)	*
<i>Dicaeum cruentatum</i>	scarlet-backed flowerpecker	kuncit benang	1 (17)	3 (22)	*
<i>Dicaeum monticola</i>	black-sided flowerpecker	kuncit	1 (1)	5 (1)	*
<i>Dicaeum trigonostigma</i>	orange-bellied flowerpecker	kuncit	1 (9)	10 (31)	*

Scientific Name	English Name	Iban Name	No. Encounters	No. Animals Sighted	Pos. ID ^b
<i>Dicaeum everetti</i>	brown-backed flowerpecker	kuncit	(3)	(5)	
<i>Dicaeum trochileum</i>	scarlet-headed flowerpecker		(1)	(1)	*
	various flowerpeckers		(3)	(27)	
PTEROPODIDAE	WEAVERS/ MUNIAS				
<i>Lonchura fuscans</i>	dusky munia	pipit	(7)	(18)	*

^a Counts in parentheses are of boys' hunting.

^b Positive identification (Pos. ID) was done by the author during hunts or through examination of captured animals following hunts.

* This is a probable mis-identification as it is confined to northern Borneo according to MacKinnon and Phillips (1993:232).

Table 2. Sungai Sedik Mammal List^a

Scientific Name	English Name	Iban Name	No. Encounters	No. Animals Sighted	Pos. ID ^b
TUPAIIDAE	TREESHREWS				
<i>Tupaia glis</i>	common treeshrew	tupai	1	1	
<i>Tupaia montana</i>	mountain treeshrew	tupai	1	5	
<i>Tupaia gracilis</i>	slender treeshrew	tupai	2	3	*
<i>Tupaia minor</i>	lesser treeshrew	tupai	(1)	(1)	
<i>Dendrogale melanura</i>	smooth-tailed tree shrew	tupai	2 (2)	2 (2)	
PTEROPODIDAE	FRUIT BATS				
<i>Rousettus spinalatus</i>	bare-backed rousette	kusing / entamba	1	1	

Scientific Name	English Name	Iban Name	No. Encounters	No. Animals Sighted	Pos. ID ^s
<i>Pterlelor lucasi</i>	dusky fruit bat	kusing	2	200	*
EMBALLONURIDAE	SHEATH-TAILED BATS				
<i>Emballonura monticola</i>	lesser sheath-tailed bat	kesindap	1	50	*
HIPPOSIDERIDAE	ROUNDLEAF BATS				
<i>Hipposideros cervinus</i>	fawn roundleaf bat	kuca	1	100	*
VESPERTILIONIDAE	COMMON BATS				
<i>Kerivoula papillosa</i>	papillose woolly bat	kecu	1	100	*
<i>Tylonycteris robustula</i>	greater bamboo bat	kesindap	(1)	(15)	*
<i>Glischropus tylopsus</i>	thick-thumbed pipistrelle	kesindap	(1)	(5)	*
CERCOPITHECIDAE	MONKEYS				
<i>Presbytis melalophos cruciger</i>	banded langur	batch	2	15	*
<i>Presbytis frontata</i>	white-fronted langur	puan	11	40	*
<i>Macaca fascicularis</i>	long-tailed macaque	kera'	3	22	*
<i>Macaca nemestrina</i>	pig-tailed macaque	nyumbuh	16	200	*
HYLOBATIDAE	GIBBONS				
<i>Hylobates muelleri</i>	Bornean gibbon	empellau	11	24	*

Scientific Name	English Name	Iban Name	No. Encounters	No. Animals Sighted	Pos. ID ^s
PONGIDAE	APES				
<i>Pongo pygmaeus pygmaeus</i>	orangutan	malas	1	1	
SCIURIDAE	SQUIRRELS				
<i>Ratufa affinis</i>	giant squirrel	engkerabak	5 (1)	7 (1)	
<i>Ratufa affinis cothurnata</i>	giant squirrel	engkerabak	8 (1)	16 (1)	*
<i>Ratufa affinis sandakanensis</i>	giant squirrel	engkerabak			
<i>Callosciurus prevostii</i>	Prevost's squirrel	tupai bekarang / tupai po'	20 (4)	20 (5)	
<i>Callosciurus notatus</i>	plantain squirrel	tupai sibau	6 (6)	21 (8)	*
<i>Sundasciurus hippurus</i>	horse-tailed squirrel	tupai	1	1	
<i>Sundasciurus jentinki</i>	Jentink's squirrel	tupai pantok	10 (2)	32 (2)	
<i>Sundasciurus lowi</i>	Low's squirrel	tupai	3 (3)	7 (3)	*
<i>Lariscus insignis/hosei</i>	three- or four-striped ground squirrel	tupai sabang	7 (1)	34 (1)	
<i>Dremomys everetti</i>	Bornean mountain ground squirrel	tupai pekek	3	6	
<i>Rhinosciurus laticaudatus</i>	shrew-faced ground squirrel	tupai tanah	1	2	
<i>Exilisciurus exilis</i>	plain pygmy squirrel	pukang	2 (1)	7 (1)	*
<i>Exilisciurus whiteheadi</i>	Whitehead's pygmy squirrel	pukang	(1)	(1)	
<i>Rheithrosciurus macrois</i>	tufted ground squirrel	engkerampu'	1	1	*
	unidentified squirrel	tupai	2 (1)	5 (1)	

Scientific Name	English Name	Iban Name	No. Encounters	No. Animals Sighted	Pos. ID ^b
MURIDAE	RATS				
<i>Rattus argentiventer</i>	ricefield rat	cit	1	1	*
	Norway rat	cit	(1)	(1)	*
HYSTRICIDAE	PORCUPINES				
<i>Thecurus crassispinis</i>	thick-spined porcupine	landak	1	1	*
URSIDAE	BEARS				
<i>Helarctus malayanus</i>	sun bear	jugam	1	2	*
VIVERRIDAE	CIVETS				
<i>Paradoxurus hermaphroditus</i>	common palm civet	munsang	2	3	
<i>Paguma larvata</i>	masked palm civet	mecejang	1	1	
<i>Arctictis binturong</i>	binturong	enturun	1	1	*
<i>Arctogladia trivirgata</i>	small-toothed palm civet	munsang malong	12	17	*
SUIDAE	PIGS				
<i>Sus barbatus</i>	bearded pig	janit' kampung	28	97	*
TRAGULIDAE	MOUSEDEER				
<i>Tragulius javanicus</i>	lesser mousedeer	pelandok gasas	5	5	*

Scientific Name	English Name	Iban Name	No. Encounters	No. Animals Sighted	Pos. ID ^b
<i>Tragulius napu</i>	greater mousedeer	pelandok taujpin	1	2	*
CERVIDAE	BARKING DEER & DEER				
<i>Muntiacus muntjak</i>	Bornean red barking deer	kijang	17	21	*
<i>Muntiacus atherodes</i>	Bornean yellow barking deer	kijang bera'	1	1	
<i>Cervus unicolor</i>	sambar deer	rusa'	1	1	
	unidentified deer	kijang	1	1	

* Counts in parentheses are of boys' hunting.

^b Positive identification (Pos. ID) was done by the author during hunts or through examination of captured animals following hunts.

Table 3. Animals Identified at Sungai Sedik outside of Hunting Study

Scientific Name	English Name	Iban Name
<i>Birds</i>		
<i>Spizaetus cirrhatus</i>	changeable hawk-eagle	lang
<i>Ketupa ketupu</i>	buffy fish-owl	lang empelako'
<i>Sasia abnormis</i>	rufus piculet	ketupong
<i>Macronous gularis</i>	striped tit-babbler	engkecong
<i>Mammals</i>		
<i>Ptilocercus lowii</i>	pintailed treeshrew	tupai/cit
<i>Rhinolophus trifoliatius</i>	trefoil horseshoe bat	entawai
<i>Nycticebus coucang</i>	slow loris	bengkang
<i>Lutra sumatrana</i>	hairy-nosed otter	ringin

Table 3 lists animals encountered by the author outside of the hunting study during the years 1992–1994. Of particular interest is *Ptilocercus lowii*, a highly rare squirrel. A single

individual had entered the Sungai Sedik longhouse one night and was killed by a domestic cat. Despite its distinctive appearance and perhaps because it is both rare and nocturnal, not even the oldest hunters had ever seen one, except in the author's field guide (Payne et al. 1985). The residents were at a loss as to how to classify it exactly: some called it *tuwai* (squirrel) and others *cit* (rat).

A simple comparison was made of wildlife diversity at Sungai Sedik with that reported for the DSNP core and that of Gunung Palung National Park, also in West Kalimantan (see Wadley, 2002 for details). Measured in terms of species numbers, Sungai Sedik was, on the surface, less diverse overall than the core of DSNP. There were 224 species of birds from 47 families reported for DSNP. For mammals, DSNP had 39 species from 20 families reported. Compared to Gunung Palung, bird diversity was lower at Sungai Sedik with the former having 216 species from 40 families reported. Mammal diversity was similarly skewed with Gunung Palung having 73 species from 24 families reported. However, the proportion of species numbers was very similar among these sites (e.g., for birds: pigeons, cuckoos, hornbills, bulbuls, babblers, flycatchers, spiderhunters, and flowerpeckers; for mammals: treeshrews, monkeys, squirrels, and civets) with some exceptions (e.g., for birds: eagles and woodpeckers; for mammals: rats).

One factor in the differences between Sungai Sedik and Gunung Palung may have been environmental (e.g., Sungai Sedik's mosaic forest and Gunung Palung's old growth lowland forest). But the forests within DSNP, like those of Sungai Sedik, were not at all uniform. Sungai Sedik's proximity to DSNP suggests the method of study, with its focus on hunting and on hunters' unsystematic reports, as being important in explaining some of these differences. Nonetheless, Iban forest management — through the cycling of secondary forest for swiddening and preservation of various tracts of older growth forest — may promote some degree of biodiversity by creating a mosaic of forest habitats that differ in different plants and animals exploit, and by favoring organisms that are intolerant of old growth forest conditions. The resulting biodiversity may be different from that seen in extensive old growth forest as the comparison above suggests, all things being equal with data collection methods.

In the years since this study, there have been a number of important changes that have affected local habitats. Foremost among them is the growth in human population, both regionally and at Sungai Sedik, and a recent explosion in illegal logging. An increase in the number of households from 14 in 1994 to 20 in 2006 has resulted in an expansion of swiddening and an apparent shortening of the fallow cycle, thus reducing the extent of older secondary forest available to wildlife. This appears to hold true for the surrounding area as well.

After 1997, logging shifted from government-licensed concessions to being foreign-backed (Malaysian) and local community-led efforts (Wadley 2006). This illegal logging accelerated until 2005 when it was stopped by provincial and national police. In that short time, the lowland forests surrounding DSNP and forming its buffer zone were heavily cut (Dennis et al. n.d.), as were the community forests adjacent to Sungai Sedik. That community, however, effectively preserved most of its older growth upland forest, even stopping encroachment by logging operations across its watershed in 2004. The community's last remaining stand of swamp forest (about 10–15 ha) was logged in 2003, though it is likely that this would have eventually been converted to short-fallowed swamp rice fields. As one of the few places in the area with undamaged old growth forests, it is likely that Sungai Sedik's forest has come to serve as a refuge for animals displaced, at

least temporarily, by logging activities and forest degradation elsewhere.

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REVIEW ARTICLES

THE CONTRIBUTION OF DR. D. K. BASSETT TO BRUNEI HISTORIOGRAPHY

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In a lapidary critique of Southeast Asian historiography, Professor David K. Wyatt (1995) was able to identify only five English-language titles relating to the history of Brunei worthy of recommendation; and not even all of those were entirely satisfactory. Dr. Graham Irwin's *Nineteenth Century Borneo: A Study in Diplomatic Rivalry* (1955) is the oldest study to warrant the attention of the John Stambaugh Professor of Southeast Asian History at Cornell University. Next, Dr. (later Professor) D. E. Brown's *Brunei: The Structure and History of a Bornean Malay Sultanate* (1970) remains the "strongest and one of the richest accounts of the Brunei sultanate" and takes "a social and structural approach often preferable to drier listings of names and events." Professor Nicholas Tarling is represented twice, first by *Britain, the Brookes & Brunel* (1971), and then by *Satu and Sabah* (1978); the former is a "conventional account" whilst the latter "under-appreciates complex political and social dimensions of piracy" in the period. The fifth and final work to merit examination is Professor C. M. Turnbull's *History of Malaysia, Singapore and Brunei* (1989), written by "an acknowledged expert." No doubt Professor Wyatt's survey was already in press before he would have had an opportunity to assess the claims of Dr. Graham Saunders's *A History of Brunei* (1994; updated edition 2002) and Dr. (later Associate Professor) Haji B. A. Hussainiyya's *Sultan Omar Ali Saifuddin III and Britain: The Making of Brunei Darussalam* (1995).

Given that Professor Wyatt was concentrating on books, and books in the English language at that, his selection of the best secondary sources is not unreasonable. Nobody is likely, for example, to wish to contest pride of place being given to Professor Brown's peerless monograph. It would not be difficult to point out surprising omissions, such as important works by G. Braithwaite and L. R. Wright. In this short paper, however, I would like to highlight the research into the sultanate's past made by the late Dr. D. K. Bassett (1931-89), who, among other things, was Director of the Centre for South-East Asian Studies at the University of Hull, United Kingdom, from 1976 until 1988, shortly before his death. This is not to suggest that his name should have been included in Professor Wyatt's list, but rather that his scattered writings on Brunei well repay study.

Paradoxically, the late Dr. Bassett's first contribution was silence. Hence, in his seminal 463 page doctoral thesis on "The Factory of the English East India Company at Bantam 1602-82" (University of London, 1955), and its spin-off articles, Borneo is mentioned hardly at all; and, when it is, the focus of attention tends to be either Banjarmasin or Sukadana rather than Brunei. In other words, the northwest coast of Borneo was of negligible international commercial importance in the seventeenth century; and the hotspots