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NOTES ON BEHAVIOUR OF NEW GUINEA SINGING DOGS (*CANIS LUPUS DINGO*)

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ABSTRACT

This paper gives an account of some aspects of New Guinea Singing Dog behaviour in a wild population in the Mt. Stolle area, Sandaun Province, including movement, diet and reactions with cassowaries. The account is based on indirect monitoring methods and incidental observations complimented by local knowledge.

INTRODUCTION

The New Guinea Singing Dog, *Canis lupus dingo*, in the truly wild state is a rare mammal whose taxonomic placing is not fully established. However, it is thought to be a subspecies of the domestic dog - wolf complex of animals (Brisbin *et al.*, 1994). Its current distribution in the wild in terms of genetically pure populations is now limited to higher elevations and subalpine habitats which is viewed as a consequence of habitat destruction at lower levels and introgression with domestic breeds (Brisbin *et al.*, 1989; Brisbin *et al.*, 1994). Very little has been written about the behaviour of this dog in the wild. This note documents some aspects of New Guinea Singing Dog behaviour recorded during a study into its foraging ecology between October 1993 and October 1994.

LOCATION AND METHODS

The study was conducted at the Mekil Research Station in the Mt. Stolle area (location: 4° 45' S; 140°, 40' E; altitude range: 1200m - 2800m) of the Sandaun Province of Papua New Guinea (Figure 1). Mt. Stolle is situated between the Drei Zinnen Mountains to the west and the Thurnwald and Star Mountain complexes to the south. The Sepik and May river flood plains are located to the north and east respectively. Approximately 60 km of undulating bush trails criss-cross the study area which is placed on the steep south-western and south-eastern slopes and summit areas of Mt. Stolle. The study site is about 20 km^2 in area and can generally be described as a lower to mid montane, mossy, cloud forest. Compounded with the already difficult terrain, there are some sections where the undergrowth seems impenetrable due to the combination of an uneven forest floor caused by an accumulation of fallen logs and the lattice of the bamboo thicket, *Nastus productus*. From 2,000 m to the tree line the vegetation becomes predominantly coniferous (Morren: pers. comm) while alpine grassland and shrubbery comprise the vegetation of the summit areas which are dominated by Podocarpaceous species and stunted growths.

Dog presence and activities were monitored by surveying the trails through the forest weekly using indirect means such as footprint trails, urination spots (dark-coloured stains on moss), faeces, dog sounds, markings and disturbances at refuge sites and prey nests and prey kill sites. When these signs were detected, every nearby possible shelter site was thoroughly checked and

examined for signs of occupation. These included checking for diggings, dog hairs entangled on the interior surfaces of these sites, fresh dog scent, toothmarks on twigs and shrubs growing within the site, footprints and disturbed floor surfaces revealing the resting spot of animals.

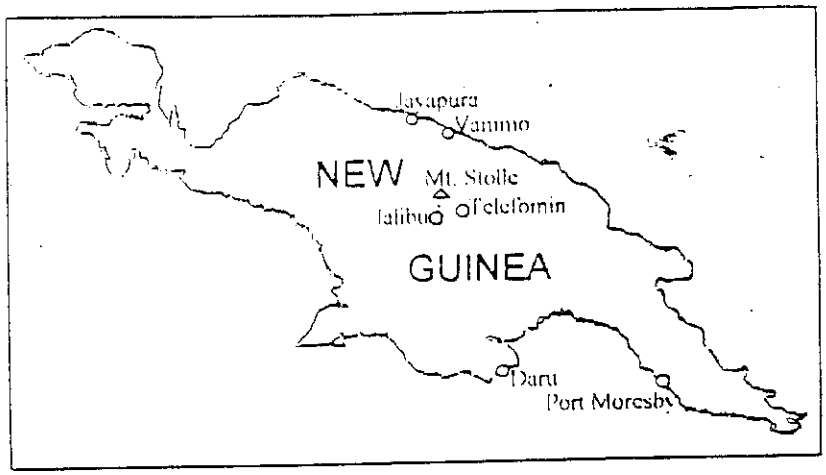

Figure 1. New Guinea showing the location of Mt. Stolle.

RESULTS

Activity and home range

I observed signs of dog activity (i.e. faeces, footprint trails, urination spots, disturbances at shelter sites, diggings and clearings at potential prey sites, kill site evidences and dog calls) to be spread out through all the months, except for October 1994. However, I believe that the population is quite low or highly mobile in terms of the day to day and weekly frequency of dog activities.

Four recently used sleeping sites were located. At site 1, 5 months elapsed before fresh evidences of dog occupation were again observed followed by a month's absence and then no more signs of habitation afterwards. At site 2, signs of habitation were observed 1 month later and then no more since. Site 3 was used again after 7 days and then not since while site 4 was abandoned.

Daniels (1983) observed that the homesite of free-ranging urban dogs in North America was usually contained within the animals' sphere of activity. The above absences by dogs from their sleeping sites may indicate their sensitivity to human intrusion into their spheres of activity or that the dogs are highly mobile. Observations on the behaviour of captive animals (Brisbin *et. al.* 1989) and other related aspects of the New Guinea Singing Dog behaviour imply that they forage alone in the wild. This raises the issue of multiple refuges or sleeping sites used by a single animal within its home range.

Habitat preferences

Observations within the study site indicated that wild dog activities were more evident or pronounced in certain sections of the forest. The favoured sites were those sections of the forest with older and bigger trees which are hollowed, providing nesting and sleeping sites for potential prey such as cuscuses and ringtails (local informants and pers. obs). The below-ground-level cavities formed by the extensive network of roots of these older trees offer potential nest sites for prey. The intense accumulation of fallen leaves provides construction materials for rodents' and other related terrestrial mammals' nests.

There are indications that the dogs show preference in their choices for sleeping sites. The 5 sites observed were towards elevated, well-drained and well-sheltered sites which seemed to be protected from flash-flooding during rainy periods. These five sites were depressions on rocks and cliff walls resulting in the formation of alcoves. The average dimensions being: height, 1 m; length, 3 m; width, 0.5 m.

Table 1: A provisional list[1] of food items of the New Guinea Singing Dog's diet.

Food item	Scavenged from other predators[2]	Scavenged from Traps[3]
MAMMALS		
Phalanger carmelitae	*	
Phalanger vestitus	*	
Phalanger matanim	*	
Phalanger sericeus	*	
Phalanger gymnotis	*	
Spilocuscus maculatus	*	
Spilocuscus rufoniger	*	
Dorcopsulus vanheurni	*	*
Dendrolagus dorianus	*	*
Dendrolagus goodfellowi	*	*
Thylogale bruijni	*	*
Peroryctes raffrayana		
Microperoryctes longicauda		
Echymipera kalubu		
Echymipera rufescens		
Echymipera clara		
Tachyglossus aculeatus		
Zaglossus bruijni		
BIRDS		
Casuarius benneti	*	*
Megapodius freycinet		*
Aepypodius arfakianus		*
Talegalla fuscirostris		*
FRUITS[3]		
Elaeocarpus sp#1		
Elaeocarpus sp#2		
Pandanus sp.		
Artocarpus sp.		
Microcos sp.		
Ficus sp.		
LEAVES		
Graminae (grass sp.)[4]		

[1] Information gathered from field observations and local informants
[2] New Guinea Harpy Eagle
[3] Determined from faecal-derived seeds and local informants
[4] Information obtained from local informants

Diet

Apart from the cases reported below, I have no direct evidence as to what particular prey species are taken by the dogs but studies based on scat analysis are underway and will be reported later. Table 1 gives a provisional list of potential food items. Canids are also known to show preference towards a certain prey taxa (Sillero-Zubiri & Gotteli, 1995). Therefore, it should be interesting in future dietary studies, to determine if this tendency also exists for the New Guinea Singing Dog. Such information would be helpful to the conservation effort in areas inhabited by this predator.

Mian hunters report that Singing Dogs are known to feed on fallen fruits. Local informants reported that there are seasonal elevational "migratory movements" shown by the dogs which are correlated with the fruiting of certain of their preferred food plants. Fruit consumption is well documented in other canids (Brunner *et. al.*, 1975). Mian hunters often construct blinds under selected fruiting trees, i.e: *Artocarpus* sp. and *Elaeocarpus* spp. to hunt birds such as cassowaries, brush-turkeys, pigeons plus a variety of mammalian consumers but they have also seen and speared dogs at such sites. Gautier-Hion *et al.*, (1985) observed that large fruiting trees also served as focal points for terrestrial predators. From this evidence it would be safe to assume that New Guinea Singing Dogs, like other terrestrial predators, might be attracted by the convergence of potential prey at these sites apart from actually eating the fruit.

After examining prey (cuscus) remains at three kill sites, I concluded that the New Guinea Singing Dogs are scavengers on the kills of other predators such as the New Guinea Harpy Eagle *(Harpyopsis novaeguineae)*. I suspected scavenging rather than "piracy" was more likely because the symptoms of the Harpy kills, which are outlined below, were clearly visible. Brown (1976) also reported that more than half of mammalian prey (body parts) caught by raptors and dismembered before consumption is available to scavengers. The Harpy has been observed to reserve a portion of a bigger catch for a later meal, (local information and pers. obs) and the dogs may benefit from this. At one kill site, cuscus fur was piled onto a heap which is characteristic of an eagle's "cleaning" procedure, (Bailey, 1988; Brown, 1976). At the same site dog footprints were observed among the cuscus carrion. This observation was particularly interesting because the prey (cuscus, *Phalanger carmelitae)* had been radio-collared by another field worker. Further evidence which suggested that the cuscus was first killed by an eagle was the removal of the tightly banded but still intact radio-collar from around the prey's neck (i.e. without the severing of the fixed band). A close examination of the radio-collar didn't indicate any tooth or beak marks. This can be attributed to a New Guinea Harpy Eagle's practice of "beheading" its prey (local information and pers. obs). This is congruous with Bailey (1988) who accounted that Birds of Prey such as falcons decapitate their prey before eating. The radio collar apparently slid off unimpaired at the disassociation of the head. Further validation of a dog's part involvement was evidenced by the scattering of the prey's remains over an area of more than $60m^2$. This contrasts with an eagle's feeding procedure which is generally focussed (Bailey,1988) as a measure for guarding the catch. Local informants have also made mention of the dogs obtaining food from carrion caught in neglected hunter traps and stray hunter kills.

Reactions with cassowaries

An interesting observation was that the Dwarf Cassowary *(Casuarius benetti)* and the New Guinea Singing Dog tended to use the same shelter sites, presumably in the absence of each other. This was indicated by fresh cassowary droppings observed at sites which also produced fresh signs of dog habitation. Both use the same game trails as demonstrated by coincident cassowary and dog footprints and hunters capturing

Singing Dogs when setting cassowary-targeted traps on selected trails (locals information). Cassowary - Singing Dog interactions may go beyond sharing spacial resources. A personal account was given by a Mian hunter who told of a wild dog carcass which he encountered during a hunting trip. He saw that the dog was ripped open on the flank just above one of its hind legs and speculated from his knowledge of cassowary behaviour that a cassowary had "kicked" and tore apart the dog's abdominal cavity. Inferences from local knowledge suggest that the dog would be the most likely instigator of this confrontation since cassowaries are more defensive than aggressive.

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