

**ANOA ABUNDANCE IN LAMBUSANGO FORESTS, BUTON
AND THE INFLUENCING FACTORS**



Report to BKSDA Southeast Sulawesi, Kendari

by

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August 2006

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Summary

The anoa project was conducted from July to August 2006 in six node camps in the Lambusango forests, Central Buton. It concentrated on sign surveys of anoa. In the study area, 66.4 km transects were surveyed over a six week period. In addition, a number of exploratory walks between transects and away from base camps were made. Cow tracks and human trails were also recorded to see their influences on anoa track abundances. Signs of anoa were recorded on all transects despite substantial variation in forest type, quality and disturbance. Of the 6 node camps, camp Wabalamba supports the highest anoa abundances and camp Lapago the lowest. Anoa abundances were higher in area with more human trails, thus anoa might be a good indicator for disturb areas. However, anoa seems to avoid areas with high abundance of cow although such area also has more human trails. The number of faecal samples collected corresponded with track abundances.

Introduction

Anoa species are ones of the least studied species among the Asian ungulates. Even their classification into two species: the lowland *Bubalus depressicornis* and the upland species *B. quarlesi* is still debated and it is still uncertain whether the two species are sympatric or parapatric in their distribution (Burton et al. 2005). What is certain about these dwarf buffaloes, endemic to Sulawesi, is that both species are declining throughout their range, mainly due to hunting and habitat degradation (Manansang 1996). One of the remaining important conservation areas for anoa is the Buton Island in southeast Sulawesi. Both the lowland and upland anoas were thought not to have reached most of Sulawesi's small neighbouring islands except for Buton (Burton et al. 2005). Moreover, both anoa species were reported from the North part of the island making Buton as one of the only two places known to harbour both species. Lore Lindu National Park in Central Sulawesi is the other (Burton et al. 2005).

An effective monitoring programme that able to record any substantial changes in anoa populations is crucial to take appropriate management actions. Monitoring is a vital component of any conservation project so that the effect of management can be assessed. Population size is the most often used to describe the results of biodiversity assessment especially for monitoring purposes. Without population size data, conservation management is ineffective. Accurate estimates of population size as a function of environmental change and habitat disturbance are necessary to predict the long-term persistence of animal populations (Sutherland 1996). Unfortunately, an accurate estimation of abundance in a defined area is difficult for many species and requires considerable investment of resources and

time (Witmer 2005). It is particularly true for the anoa as previous attempts to estimate their population sizes using line transects and camera trapping have produced extremely low sighting rates which hindered robust density estimates (Mustari 2003, Riley et al. 2001a, b). Furthermore, as the rates of threats to animal populations almost always exceeding their population growth rates, immediate actions are needed before they become locally extinct. Thus, the monitoring data should also be collected and analysed immediately.

An alternative measure for wildlife monitoring that could be considered in many situations is the relative abundance of the species. Determining whether a species is present at a sampling location may be much less costly and time consuming than collecting information required for estimating density (MacKenzie & Nichols 2004). Furthermore, relative abundance may usually positively correlate with the population size and can be useful surrogate in rapid survey and monitoring programs.

Methods

Study site

The anoa monitoring programme is conducted in the Lambusango forests in central Buton (Figure 1). This forests area is important for the anoa because it is roughly estimated to harbour 5% to 10% of the world's population at about 100-150 individuals (Wheeler 2004).

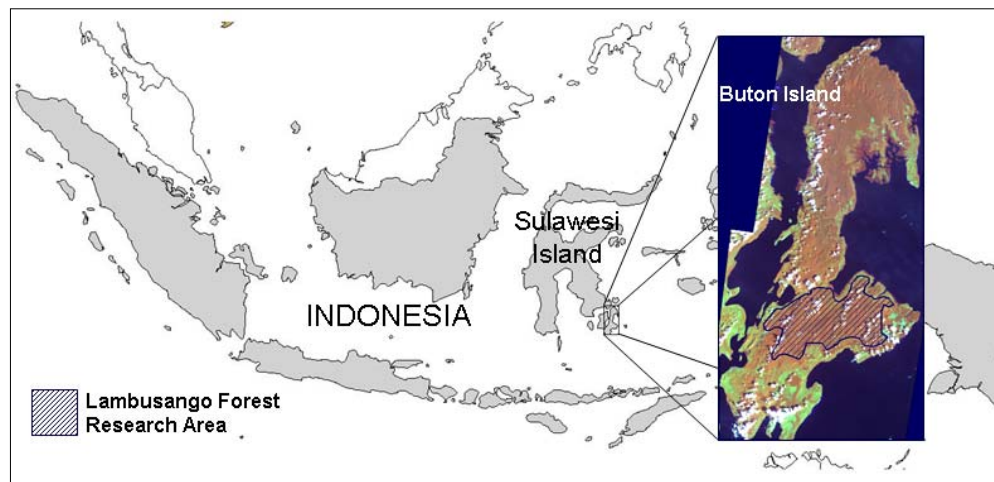


Figure 1. Lambusango forest research area, Buton, Southeast Sulawesi (Map by A. Widayati, UNN)

Monitoring surveys were conducted in 6 sampling nodes that cover a wide range of altitudes and topography in Lambusango forests (Figure 2). Four sampling nodes are situated within the Lambusango Forest Reserve, and 2 are within the adjacent limited production forests. Each sampling node consists of 4 parallel 3 km-transects, each is 1-km separated from another and marked every 50 meter. The Lambusango forests cover an elevation from 0 to 800 m above sea level and contain approximately 63,000 ha rainforest with diverse geology and topography. The

forests are very diverse, with relatively even distributions of tree species abundance, showing that the tree communities are not dominated by a few common species. In many parts of the forest, signs of current anthropogenic disturbances (e.g. clearance, selective logging, rattan collecting) and historical disturbance (e.g. regenerating forest, presence of introduced domestic plants) are found (Carlisle 2005).

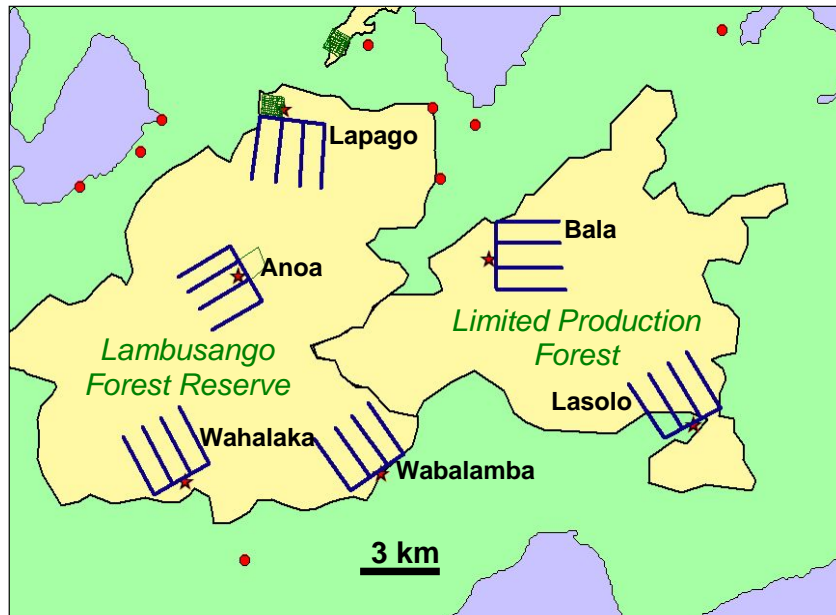


Figure 2. Locations of sampling nodes in the Lambusango forests area (Seymour 2005).

Data collection and analysis

The occurrence of anoa was determined from the presence of their tracks across the study area. Anoa tracks can be readily distinguished from other ungulates (cows and pigs) exist in the study area on the basis of their size and shape. The tracks of anoa were recorded every 50 meter along the transect lines during the months of July and August 2006. Each transect line was walked once at a pace of approximately 800 m per hour to look for anoa tracks. A set of tracks was recorded as a single count when moving across the path or clearly following the transect line. In the case of several tracks were seen in close proximity but crossing the path in different directions, they were regarded as separate sets of tracks.

In order to evaluate the effect of human and feral species disturbance to the anoa populations, the number of human trails and cow tracks within the study area were also recorded. Human trails were found in the forests usually across the transect lines. Cow tracks were recorded the same way as the anoas. The mean abundances of tracks and human trails were calculated every 250 metres. Faecal samples were collected for DNA analysis on the transects and from recce lines walked between transects.

Preliminary results

The 2006 survey results (Table 1) show that camp Wabalamba supports the highest anoa track abundances and camp Lapago was the lowest. Area with the highest human trails abundances was Wabalamba and the lowest was Lapago. Cows were recorded only in camp Wahalaka and camp Anoa. Abundances of anoa tracks were higher in areas with more human trails, thus anoa might be a good indicator for disturb areas. However, anoa seems to avoid areas with high abundance of cow tracks although such area also has more human trails.

Table 1. Mean abundances per 250 metres of ungulate tracks (anoa and cow) and human trails in the 6 node camps.

Camps	Km walked	Anoa tracks	Cow tracks	Human trails
Wabalamba	11.1	7.7	0	1.00
Anoa	12	3.9	0.8	0.06
Wahalaka	11.7	3.4	1.3	0.57
Lawele	11.3	3.3	0	0.20
Lasolo	11.3	2.9	0	0.16
Lapago	9.0	1.2	0	0.14

Faecal samples were collected from all camps. Corresponds with the track abundances in the 6 node camps, the highest number of samples were collected in Wabalamba and the lowest in Lapago (Table 2).

Table 2. Number of faecal samples collected in the 6 node camps in wet and dry seasons 2006.

Camps	Number of faecal samples	
	wet season	dry season
Wabalamba	4	25
Anoa	8	16
Wahalaka	12	10
Lawele	2	4
Lasolo	3	4
Lapago	-	2

Over this two months survey period, 5 anoas which two of them with infant have been seen in the Lambusango forest and there were no encounters with hunters.

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