POTENCY AND DEVELOPMENT STRATEGY OF SPOTTED BUFFALO IN SANGGALANGI SUBDISTRICT, NORTH TORAJA DISTRICT, SOUTH SULAWESI

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ABSTRAK

Penelitian ini bertujuan untuk melihat sifat reproduksi, potensi dan strategi pengembangan Kerbau Belang Toraja di Kecamatan Sanggalangi, Toraja Selatan. Penelitian dilaksanakan pada bulan Juli hingga September 2010 di Kecamatan Sanggalangi, Toraja Utara, Sulawesi Selatan. Penelitian menggunakan 90 peternak dengan metode *purposive sampling*. Data primer diperoleh dari hasil wawancara melalui kuisioner dan observasi terhadap peternak. Hasil yang diperoleh menunjukkan bahwa nisbah kelamin jantan-betina adalah 3:2, umur berahi pertama kerbau belang betina ialah 2,48 tahun, umur kawin pertama 2,87 tahun, lama berahi 23 jam, panjang siklus berahi 19 hari, *service per conception* (S/C) 1,85; angka kebuntingan 86,5% dan lama kebuntingan 387 hari. Umur induk beranak pertama ialah pada umur 3,74 tahun dan kerbau betina memiliki selang beranak 2 tahun. *Calf crop* kerbau yaitu 77 %. Tingkat kematian anak (mortalitas) sebesar 2,35% pada umur prasapih. Nilai estimasi dinamika populasi ternak kerbau Belang selama lima tahun mendatang ialah terjadi penurunan populasi sebesar 24.31% per tahun. Hasil analisis SWOT menunjukkan bahwa skor nilai untuk faktor internal sebesar -0,25, sedangkan untuk faktor eksternal 2,25. Hal ini berarti bahwa kedudukan atau posisi Kecamatan Sanggalangi' berada pada posisi *turnaround* sehingga langkah strategi yang perlu diambil untuk pengembangan Kerbau Belang, yaitu meminimumkan kelemahan yang ada untuk meraih peluang yang ada.

Kata kunci : kerbau belang, potensi, reproduksi, strategi pengembangan

ABSTRACT

The aim of this research was to analyze the reproduction performances, potency and development strategy of Torajan's spotted buffalo. This research was done from July to September 2010 in Sanggalangi' subdistrict, North Toraja district, South Sulawesi. Purposive sampling was applied to observe data. The primary data were taken by purposive sampling method and collected by interview of 90 farmers. Results showed that sex ratio of male-female was 3:2. The first estrus was 2.48 years old, the estrus period was 23 hours and the oestrus cycle was 19 days. The first mating was 2.87 years old with the conception period about 387 days. Furthermore, the first partus was at 3.74 years old, calving interval was 2 years. Calving rate and calf crops were relatively high. Calf crops were 77%, pre weaning mortality was 2.35%. Service per conception (S/C) was 1.85 and conception rate (CR) was 86.5%. The most livelihoods in North Toraja is farmer. Spotted Buffalo population declined 24.31 % per year. SWOT analysis showed that score for internal factor was -0.25, whereas external factor was 2.25. It was showed that the sub-district Sanggalangi is in *turnaround* condition, so the development strategy of Torajan's spotted buffalo has to minimize the weakness and reached the opportunities.

Keywords: development strategy, potency, reproduction, spotted buffalo

INTRODUCTION

Spotted Buffalo is one of the swamp buffalo's species. Indonesia is good habitate for buffalo's, because 40% of the areal is wet tropic (Praharani and Triwulaningsih, 2007). The national buffalo's population have been decreased for 4 years ago. The population declined from 2.128.491 heads in 2005 to 2,045,548 heads in 2009 (Ditjennak, 2010). North Toraja is the

development district area in Tanah Toraja-South Sulawesi. Sanggalangi area has 3.900 ha with the potential natural resources for buffalo's farm area. The potential spotted buffalo as livestock for traditional ceremonies need to be developed, especially because of higher price than other buffalo. Some studies were needed to analyze potential area according to local resources and carrying capacity in order to develop buffalo's farm. This research analyzed spotted buffalo productivity, potency and strategy to improve buffalo's population in Sanggalangi sub-district, North Toraja district, South Sulawesi.

MATERIALS AND METHODS

Materials

This research was done from June to September 2010 in Sanggalangi sub-district area, North Toraja district, South Sulawesi province. The amounts of farmers were 90 to describe farm management and reproduction characteristics of spotted buffalo. The questioner sheet, stationeries, and camera were used for the data collection in this study. Data were collected from spotted buffalo's farmer in Sanggalangi sub-district, North Toraja district. The purposive sampling method was used to get samples. The primary data was collected from the farmers by interview using questioner and observation.

Data Analysis

Descriptive analysis was described for the general location and potency of spotted buffalo in Sanggalangi sub-district for farmer, land, management, and profile of Sanggalangi district. The population was calculated by using Turner and Young (1969) :

$$N_t = N_{0x} e^{rmt}, rm = \frac{lnR_0}{Lt}$$

N_t = Number of cows production per t period

N_0 = Number of the first population

rmt = Population rate per t period

t = Time period

R_0 = Young stock replacement per cows all life

Lt = The first calving age per t period

Capacity of additional ruminant population (CARP) method is an approaching method to refer the capability or area capacity in providing foods for livestock. Value of CARP was calculated using following formula:

$$CARP (B) = BCR - Real\ Population$$

$$CARP (L) = BC(H) - Real\ Population$$

$$CCR = \frac{\left(\sum \frac{K.Le.15\ ton \frac{DM}{ha}}{year}\right) + \sum J.Li}{2.3}$$

$$CC (Hh) = \sum Hh \times \frac{3AU}{Hh}$$

Determination of CARP effective or CARP (E):

CARP (E) = CARP (Hh) if CARP (Hh) < CARP (FR)

CARP (E) = CARP (FR) if CARP (FR) < CARP (Hh)

K = Coefficient of availability of forage land

Le = land of forage production

J = Coefficient of uncultivated waste land area

Li = Fields of forage uncultivated production

15 ton/DM/Y = average of forage production in Indonesia

L = Labor

Hh = Household

AU = Animal Unit

FR = Forage resource

CCR = Carrying Capacity of Ruminants

CC = Carrying Capacity

DM = Dry Matter

CARP (LR) = CARP based on land resources

CARP (Hh) = CARP based on household

The SWOT (strength, weaknesses, opportunities, and threats) analysis was assesed by Rangkuti (2000).

RESULTS AND DISCUSSION

Sanggalangi sub-district was in North Toraja district area. Total area reached 3900 ha, and located on 119°EL and 3 °SL, in 809 meter on above sea level. The average of temperature in Sangalangi sub-district in 2009 was 23°C with the lowest temperature was 18°C and the highest temperature was 29°C. Humidity was ranged at 59-75%. In general, the temperature was 25°C at noon and 19°C in the night. Rain fall a year reached 2000-2700 mm/year, and wind speed reached 10-85 km/hour, the wind direction was always changing. (The North Toraja Ministry of Agriculture, 2008).

The human population in 2010 reached 10.929 people, consisted of 5.531 males and f 5.398 females, population density was 296 people/km^2. The most livelihoods in North Toraja were smallholder farmer.

Management System

Philipsson *et al.* (2005) stated that the production system must be considered in all aspects of the resources needed along with the outputs, both positive and negative. Moreover, the poor animal management several situations obviously resulted in large environmental variations. Feeding system practiced by the smallholders were classified as intensive, semi intensive and extensive grazing system. In the intensive system the animal are stallfed at all times from cut natural fodder plus concentrates. In the extensive grazing system the animal are let out to graze and no cut fodder is given, although some concentrates are provided in the evening. In the semi intensive- system, the animals have limited areas to graze and cut fodder is given at night (Hassan and Devendra, 1982). The Spotted Buffalo commonly was reared in the semi intensive system, Spotted Buffalo was shepherd in the cage's resort which called *bala.* The feed given consists of forage and uncultivated plant. Forage given in fresh form, such as King grass, field grass, and *alang-alang* that was 40 kg/day. In a day, the feed was given twice (37.78%) in the morning and afternoon, or three times (62.22%) in the morning, afternoon and evening.

Reproduction Characteristics

It is important to know the reproduction characteristics of spotted buffalos. Due to there are related breeding aspect and feeding management. The characteristics of spotted buffaloes in Sanggalangi district are presented in Table 1**.**

The success in animal reproduction depends on the number of conception rate. Conception rate of spotted buffalo in this research was 86.5%. Philipsson *et al.* (2005) stated that the low reproductive performance of tropical animals may largely be due to environmental factors, mainly nutritional and stresses. The sex ratio between male and female was 3:2 better than common data at 1: 8, due to this reason, buffaloes would show highly conception rate.

First oestrus of spotted buffalo's female was 2.48 year. Fahimuddin (1975) stated that the variation of puberty ages commonly was 2-4 years. The average duration of heat was 23 hours within the oestrus cycle of 19.5ays. In addition, the research showed that the first age conception was 2.87 years, and Service per conception (S/C) was 1.85 while the normally was 1.60-2.0 (Toelihere, 1981).

Table 1. The Reproduction Characteristics (n=90)

Reproduction Characteristics*	Results
Sex ratio between male: female	3: 2
First estrus (year)	2.48 ± 0.37
First age at conception (year)	2.87 ± 0.26
Average duration of oestrus (hour)	22.6 ± 8.32
Estrus cycle (day)	19.5 ± 7.48
Service per Conception (times)	1.85 ± 0.41
Conception rate (%)	86.5 ± 0.07
Conception period (day)	387.4 ± 27.20
Calving Rate (%)	89 ± 0.05
Calf Crop (%)	77± 0,58
Mortality (%)	2.35± 0.01
First age partus (year)	3.74 ± 0.17
Calving Interval (year)	2.04 ± 0.22

The conception rate (CR) of spotted buffalo was 86.5%. Toelihere (1981) stated that there are three factors influence to conception rate, those are fertile male, female and insemination technique. The average conception period was 387.4 days or 12.7 months. The conception rate was more influenced by farming management, feeding and climate condition (Toelihere, 1981).

The calving rate of spotted buffalo was 89%. Hardjosubroto (1984) reported that it was 54.69% in Indonesia. Calf crop is the percentage of the calf that lived when in the post weaning in a year. The calf crop in this research was 77%. Hasinah and Handiwirawan (2005) explained the factor causing the high number of calf crop was good farming management system, especially influenced by feeding management. Ibrahim (2008) stated no significant differences among feeding management for buffalo in several age of groups.

The first age partus of spotted buffalo's was 3.74 years while the first age was 2.87 years, and calving period was 12 months. Calving interval was 2.04 years or 24 months. Calving interval was influenced by reproduction ability, dry period and service per conception. Burton *et al.* (1994) stated that growth hormone was important for reproduction characteristics.

Capacity of Additional Ruminant Population

The number of capacity of additional

ruminant population (CARP) was –1124,72 AU. The negative point showed this area had not carried more ruminant or it could be stated that there was exceed ruminant reached 1124 AU but in fact it was known that in sub-district Sanggalangi has ability to carry population for 3180.25 AU in 2010. The effectiveness of CARP land area resources showed limitation of forage for ruminant in sub-district Sanggalangi.

CONCLUSION

The productivity of spotted buffalos in sub-district Sanggalangi was good enough seen from reproduction performance. Strategy to conserve the spotted buffalo is important to minimize the weakness in order to obtain the opportunity.

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