The reproductive characters of swamp buffalo in small holder farm in East Java, Indonesia

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Abstract. This research aims to analyze reproduction performances and characters of swamp buffalo in several districts of East Java province. Methods used survey in smallholder farmers level, located in selected districts areas with the high, medium and low population. Farmer as well as animals selected by snowball sampling of about 623 heads animals. The result shows that in general female reproductive performance is categorized as low. Variables observed show that the age of first mating is 31.12 + 6.01 month, pregnancy duration is 10.65 + 1.89 months, the age of first yearling 43.12 + 4.79 months, an estrus postpartum 5.79 + 3.73 months. The service per conception is categorized as high of 1.79 + 0.82 includes of the interval of birth is 14.45 + 3.73 Finally, buffalo reproductive efficiency is estimated as 85.51 + 16.09. Within traditional extensive breeding which swamp buffalo, in general, was reared in the group in both rice field area and dry land area. The problem of facing in reproduction performance is may be mainly because of limited female productivity in a population or the availability of male for breeding purposes. So, reproductive performance of swamp buffalo in East Java was categorized as lower than usual, mainly based on the interval of birth and service per conception.

1. Introduction
Buffaloes in Indonesia still have an important role in Indonesia, both as meat and labor providers, especially in the area where animal breeding centers are very adaptive with rice fields and swamp swamps or rivers. Buffalo has advantages concerning its ability to adapt to the environment with low feed quality. A severe problem in buffalo farms is a decline in population that is quite serious from year to year which is reported to reach 3% per year. In East Java province, currently, there is an estimated 27.3 thousand head. This buffalo animal is very specifically related to its reproductive character, especially those related to the emergence and lack of precise detection of lust. Buffalo productivity, in general, is also relatively low where one of the causes is the poor reproductive performance of livestock. These animals are generally maintained in the extension system in small groups of population, especially in the rice fields, where on the island of Java, the buffalo's native
habitat decreased with the development of the population and reduced significant rice fields. Besides, efforts made to increase the buffalo population are felt to be quite heavy because of environmental factors, namely the availability of land and also the availability of productive female parent seeds. The reproductive performance of buffaloes in an area is remarkable to note and improve if you want to keep these animals. Reproductive characters such as childbirth, open days, pregnant days and service per conception are significant.

2. Material and method
The research method used was field survey by collecting data and direct observation in the field as well as conducting interviews with buffalo owners with the help of questionnaires. Sample data is done with a snowball on farmers. The location of the study was in the central district area in East Java purposively based on high, medium and low population status, namely in Banyuwangi, Malang, Madiun and Ngawi Regencies. The total number of livestock used in this study was 623 adult buffaloes (age PI1, PI2, PI3, and PI4). Meanwhile, secondary data was obtained from the East Java Provincial Animal Husbandry Service. The variables observed were the age of the first marriage (month), the age of the first child (month) long pregnant (months) anesthesia length postpartum (month) and service per conception (times). The collected data is tabulated, classified and analyzed descriptively by the standard deviation average value and diversity coefficient. While the reproductive appearance of livestock is measured by the fertility index.

3. Results and discussions
The results of observations on the reproductive characteristics of adult female buffaloes in the East Java region are presented in table 1.

| No | Character of Reproduction                  | Average ± Standard Deviation |
|----|-------------------------------------------|------------------------------|
| 1. | Age of first breeding-mating (months)     | 31.83 ± 6.01                 |
| 2. | Length of the pregnant period (months)    | 10.65 ± 1.89                 |
| 3. | Age at first yearling (months)            | 43.12 ± 4.79                 |

The results of this study indicate that adult female buffaloes in East Java have reproductive characteristics of livestock that are not different from what has been reported so far ranging from 24 to 30 months [1]. Age variations of buffalo adults at the first age of marriage and childbirth are classified as having considerable variation, meanwhile the old buffalo pregnant is still not too large with several reports of previous research results in Indonesia [2, 3], so it can still be said to be normal for tropical conditions in livestock extensive traditional in Indonesia. The duration of the buffalo pregnancy shows that it is still within the normal range if it is explained that the length of pregnancy ranges from 10 - 11 months. The main problem of facing in reproduction performance is that it may be used for breeding purposes. Meanwhile, if measured based on physiological values, the performance of buffalo in East Java is classified as low (table 2).

The service per conception buffalo in East Java shows that being pregnant requires 2 - 3 times marriage. This figure shows that the S / C number that is less than ideal means that this result is still more than the report before the buffalo throne in Thailand [4] was 3.5 + 2.5 times. If based on the value of reproductive efficiency, the results obtained are 85.51 + 16, 09%, which is better than the results of previous studies in the Lumajang region of East Java, which amounted to 75.41 + 5.04 [5]. This figure seems to be still improved if you look at the number of an estrus per partum which is still very long at 5.97 + 3.75 months, which can still be shortened. According to [6], reproductive
efficiency, among others, is strongly influenced by the length of weaning of buffalo children and the distance of buffalo mating again after giving birth.

| No. | Character of Reproduction                        | Average ± Standard Deviation |
|-----|--------------------------------------------------|------------------------------|
| 1.  | Interval time of birth (months)                  | 14.45 ± 3.79                |
| 2.  | Service per conception (times)                   | 1.79 ± 0.82                 |
| 3.  | An estrus per partum (months)                    | 5.97 ± 3.73                 |
| 4.  | Reproduction Efficiency (%)                       | 85.51 ± 16.09               |

In field conditions, related to the distribution of buffalo livestock which are generally concentrated in small populations, the availability of males as collectors is crucial to prevent inbreeding. Data at the study site in East Java showed that total male was only about 25.44% or a ratio of 1: 4 [7]. The availability of males, isolated location, and uncontrolled natural service for inbreeding pressure, with possible adverse receptive homozygote characteristics [8].

4. Conclusions
In general reproductive performance of buffalo in East Java was categorized as lower than usual, mainly based on the interval of birth and service per conception. However, the reproductive level of female adult buffalo is categorized as normal if compared to others report in local Indonesia condition in the existing extensive agricultural system. Thus this result can be said to be still within reasonable limits. Improvement of reproductive efficiency can still be made by shortening the open days of buffaloes that are still long.

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