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Identification of Ectoparasites on Anoa Diversity type (Bubalus spp.) At the Anoa Breeding Center Balai Penelitian dan Pengembangan Lingkungan Hidup Kehutanan (BP2LHK) Manado

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Abstract

The parasitic disease often occur because of changes in the environment. One of the vectors of disease that are often found in animals is a type of ectoparasites. This disease can lead to decreased productivity of animals. This study aims to identify diversity of ectoparasites on Anoa in Anoa Breeding Center Balai Penelitian dan Pengembangan Lingkungan Hidup Kehutanan (BP2LHK) Manado. Samples were taken from 6 Anoa, the sample was divided into 2 types Ectoparasites Obligate and facultative. Ascertainment diagnosis done in 2 stages: the examination of clinical symptoms and laboratory examination. To determine the severity evenly emergence rate averaged ectoparasites / day. Ektoprasit have been found divided into three ordo, namely Diptera, Acari, and Coleoptera. Species most commonly found are from the family Muscidae included in the Order Diptera. Found bluebottle (Chryzomia bezziana), Haematobia exigua, Musca domestica, Stomoxys calcitrans, culcicoides, Chrysops java, Tabanus atratus, and mosquito Aedes sp and Ordo types are Alphitobius diperinus Coleoptera and Acari orders are Psoroptes sp and Rhipicephalus sanguineus. The results showed the type of facultative class Ectoparasites flies with the type of Stomoxys calcitrans, Haematobia exigua, Musca domestica, and Chrysomia bezziana have a degree of infestation is severe.

Keywords: Ectoparasites, Obligate, Facultative, Anoa (Bubalus spp).

Introduction

Anoa is one of endemic animals of Indonesia. The habitat of Anoa is just found in Sulawesi Island. there are two species of Anoa, there are Lowland Anoa (Bubalus depressicornis) and Highland Anoa (Bubalus quarlesi). According to Groves (1969) taxonomically, Anoa has family which is the same as cow or buffalo, so that people call Anoa as “kerbau cebo” (little Buffalo) because the size of Anoa is smaller and the behavior is wallowing in the mud and Anoa is an active animal in the morning until the evening when the the weather is cool.

Anoa is a endangered rare animal. The status of Anoa has been protected since 1931 according to organization of wild animal regulatory protection 1031 number 134and 266. The regulation is strengthen by the law number 5 in 1990 which is reinforced by the decree of ministerial decree of forestry number 301/Kpts-II/1991 and No. 882/Kpts-II/1992 and government regulation number 7 in 1999 (Irawan. 2011). Anoa is classified in Appendix 1 which means that Anoa is endangered fauna and Anoa can be sold for sale in exceptional circumstances. Anoa is one of Endangered species. Based on the IUCN Redlist 2009 data, population of anoa in Sulawesi Island is not more than 5000 Anoas. The numbers will reduce from year to year.

Now, the conservation effort of Anoa in the habitat (In-situ) and the conservation effort out of the habitat (Ex-situ) are conducted. One of the activities is in Research and Development of Living
Environment and Forestry (BP2LHK) Manado, which is well-known as ABC (Anoa Breeding Center). Many researches are done for recent years. The researchers are expected to increase the population of Anoa. However, the problems happen in Anoas which are in conservation organizations in Indonesia and abroad. The small amount of Anoas and the long time of reproduction cause inbreeding in Anoas which are kept Ex-situ can’t be avoid. One of the important thing that should be noticed in conservation effort of wild fauna is the aspect of the health. It is because there are many factors that can influence the health status of Anoa. One of factors that also needs to be noticed is the environment. If there is incompatibility of the environment, the diseases will happen easily. One of the diseases that is caused by the change of environmental is parasite. In general, parasite is divided in two classes. There are endoparasite and ectoparasite. Endoparasite is the parasite which enters the host body, the parasite can be worms and protozoa. Ectoparasite is the parasites which attack the host but it is just only on skin surface. The ectoparasite is like flies, mites, louses and mosquito (Suwandi, 2001).

According to Saim(2004), the types of ectoparasite are well-known as zoonosis vector. It is the disease which can spread from the animals to human and it is a fatal for the human and the animal itself. It can cause encephalitis because of louses and scrub typhus of the louses. Based on Djaidi (1900) the problem that can happen because of the louses is physical loss. The problem happens because the louses like suck the blood so that it causes anemia, break the skin and it causes itching and dermatitis.

**Materials and Methods**

The sample of this research is mice obtained from Faculty of Pharmacy, Hasanuddin University Makassar which is selected with quota sampling technique. The sample size was 15 mice with criteria: male; 8-11 weeks old; and the weighs from 30-35 grams.

Collecting the ectoparasite which was obligate (parasites that have the quality in all of their lives) was done by sweeping all of the body using palpation and brushing. Ectoparasites which were found sticking on the host body were put by using small tweezers carefully so that the body of the parasite was still intact. Whereas, the ectoparasites which were fallen down were stretched on the tray and the parasites were taken with small tweezers or small brush. The parasites which were in dermis skin were done by scrapping method (Zein dan Saim, 2001).

Collecting the ectoparasite which were facultative (parasites that have the quality in part of their lives) was done by using sweep net. There were two ways to use the sweep net, there were swinging the cough to the insects and swinging and sweeping.

The caught insects were kept in the tube that contained cotton that had been soaked in alcohol to kill the insects. Then the small insects would keep in object glass to be observed. The big insects were saved in transparent box with pinning method the identification would be done.

**Making The Preparation Method**

**A. Pinning Method**

The sample which was got was killed and stabbed by the straight pin in the part of its thorax. The wings of the insects were positioned spread, the legs of the insect were unfolded to ease the identification process. For the small insects, they can be put on the corner of triangle paper and it stick with the fast-dry glue. Then the labels were given to give the information about specimen location. The insects were saved into the insect’s box. The bottom of the box had to be soft to ease in pinching of needle tip. The specimen storage in the box was given camphor to avoid other small insects eating each other.

**B. Skin Scrapping Method**

Scrapping method was conducted by preparing the sharp blade or scalpel. After that, the scrapping was done in areas that were allegedly exposed the scabiosis or demodicosis. They are crusty, alopecia and deformities by using angled knife, the process of scrapping was done until the crusty came off and bleed. After that, the checking was done by soaking and mixing the result of scrapping with KOH 10%. The observation was done using the microscope with 40x-100x enlargement to make sure there are mites ( Sarcoptes scabiei, Demodex sp, Otodectes sp.) (Levine, 1994).

**C. Mounting Permanent Without The Dye**

The clearing was conducted. It was to release the pigment of death insects then they were entered into KOH 10% for 1 – 10 hours. The thick pigments that was found was the better result, or it can be done with other way. It was heated by the
boiling water with the adjustment of cuticle thickness (insects’ body seemed transparent). After that, dehydrated the samples using graded alcohol with the higher concentration 30-50-70-95-96% for 3 – 5 minutes and dip it into xylol or clove oil in a minute. Mounting or insects gluing in object glass by using sufficiently permount was closed by glass cover. Then the labeling was done and they were identified under the microscope with 40 – 100x enlargement. The lice, larvae, nymph and tick were entered into incubator by using thin chitin. After they were killed, they were saved in object glass then they were dried in incubator by using thin chitin. After they were killed, they were saved in object glass then they were dried with filter paper and they were given the labels.

Result and Discussion

The result of the observation toward ectoparasite types in breeding cages environment of Anoa in BP2LHK Manado showed many ectoparasite which were grouped in three ordo. There were Diptera, Acari, and Coleopteran. The most species types which were found were of muscalae family in Dipteral ordo. The researcher also found many samples in sweeping net method. There were bluebottle (Chrysomia bezziana), Haematobia exigua, Musca domestica, Stomoxys calcitrans, cull icoideis, Chrysops javana, Tabanus atratus and the the type of mosquito Aedes sp and ordo coleoptera which are alphitobius diperinus or it was well-known as the franky beetle. In taking the samples with scrapping method, it was found psoroptes bovis. In sweeping all the body of Anoa, it was found acari ordo, the kind of tick of Boophilus microplus and Rhipicephalus sanguineus lices.

The breeding cages were in BP2LHK office. Administratively, the location was in Kima Atas Village, Mapanget Sub-district, Manado. BP2LHK had 0.1 ha. It bordered with the gardens that were own by the Manado people. The position of the cages was higher than the other are. It caused the decreasing of puddle. Each Anoa has its own cage with the good sanitation where all irrigation is in front of and the back of the cages. The sanitation was cleaned every morning and evening. The feeding places was put near the cages. There were puddles in every cage. The cage also had cave for the Anoa’s hideaway, shelter and rail fence. Keeper cleaned the feces and feed every morning and evening.

The location of the cages had fulfilled the prevailing standard. It was so much better than the cages of beef cattle. It was because Anoa’s cages were higher than surrounding condition so that there were not puddle and water disposal process was easier. The cages were not close to public building or housing, at least the distance was 10 meter. The breeding did not interfere environmental health because the cages were rather far from public road and waste water was channeled well.

The incidence of the emergence of ectoparasites in anoa at BP2LHK Manado is influenced by several factors, namely
1. Anoa enclosure location close to shrubs and residents’ plantation, it is one of the optimal places for flies to breed,
2. The presence of a pond where anoa wallow and some puddles around the cage is a good place to breed various types of mosquitoes.
3. Anoa food in the form of fruits will invite flies if the fruit is left for some time in the place of feed.
4. Anoa bathing habits cause the entire surface of the skin becomes moist, according to (Jensen and Swift, 2006) damp places can cause the mites to survive more than 30 days.

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parasit pada mamalia kecil di
kawasan Tesso-Nilo Propinsi Riau.

Berbagai Penyakit Parasitik pada
Ternak. Bogor: Balai Penelitian
Ternak.

Pertumbuhan dan Ektoparasit Rusa
Timor (Cervus timores macassaricus
Heude, 1896) di Padang Savana Taman
Nasional Rawa Aopa Watumohai,
Propinsi Sulawesi Tenggara.