

Water Buffalo (*Bubalus bubalis*) Disease Surveillance in the Area that Adjacent to the Ujung Kulon National Park as the Habitat for the Javan Rhinoceroses (*Rhinoceros sondaicus*)

Zulfiqri¹, Gita Alvernita Andre¹, Kurnia Oktavia Khairani¹, Rois Mahmud¹, Diah Lukitaningsih²

¹WWF Indonesia Ujung Kulon Project, Banten, Indonesia; ²Livestock Agency, Pandeglang Sub District, Banten Province, Indonesia

*Corresponding author's email: zulfiqri@wwf.id

Keyword: *Bubalus bubalis*, disease surveillance, *Rhinoceros sondaicus*.

INTRODUCTION

Ujung Kulon National Park (UKNP) is one of the conservation area in Indonesia that has an original ecosystem that includes the flora and the fauna. Within the national park, lies the elusive wildlife that protected by the government, Javan rhinoceros (*Rhinoceros sondaicus*). Javan rhinoceros is one of the rarest mammals with the estimated 67 individuals remained [1]. Geographically, UKNP is surrounded by 19 buffer villages. The buffer villages' location is directly adjacent to the UKNP and the community's livelihood pattern depended on the UKNP as it has become the free-range location of their water buffalo. Thus, it adds up the occurrence of the cross infection risk factor between the water buffalo and other ungulate sympatric animals in the UKNP (Javan rhinoceros and banteng). Surveillance study in 2014 with the collaboration of WWF Ujung Kulon, Livestock Agency of Pandeglang Sub District, and Cornell University to the community's livestock in the buffer area of Rancapinang Village showed a significant prevalence of trypanosomiasis by 92% [2].

International Union for Conservation of Nature (IUCN) listed the Javan rhinoceros as the critically endangered (CE) or vulnerable to the extinction threats. One of the extinction threats is the disease outbreak, since until now the occurrence of the disease is assumed to be the causative factors of several Javan rhino's death incidence.

In 1982, 5 individuals of Javan rhino has been documented died suddenly and assumed to be caused by the infectious diseases (Hemorrhagic septicemia and anthrax) [3] and 14 Javan rhino's deaths in UKNP from 2000-2018, mostly the cause of the death is unknown.

MATERIAL AND METHOD

This study was conducted in Cegog Sub Village, Rancapinang Village, Pandeglang Sub District in 2017. The goal of the study is to see the health status of the community's water buffaloes

(*Bubalus bubalis*) and the historical analysis and the disease prevalence in the target area. The targeted diseases that became the subject of this disease surveillance are *Hemorrhagic septicemia*, *Brucellosis*, *Trypanosoma* (surra), and intestinal parasite. There are 104 samples that collected which consist of 104 blood samples (serum and whole blood), 99 fecal samples, 96 nasal swab samples, and 12 soil samples. The samples were sent to several diagnostic laboratory such as; Balai Besar Veteriner Bali for the Hemorrhagic septicemia examination (serum and nasal swab samples), Balai Veteriner Subang for Brucellosis examination (serum and blood smear preparation samples), Balai Penelitian Veteriner Bogor for the trypanosomiasis surra and intestinal endoparasite examination; whilst Diagnostic Laboratory Faculty of Veterinary Medicine Bogor Agriculture University was appointed to examine anthrax from the soil samples.

RESULT AND DISCUSSION

From the examination of the blood smear preparation result showed 9.61% prevalence of blood parasite from the total population of the sampled water buffaloes (10 individuals positive from the 104 sampled individuals). The blood parasite that identified in the examination is *Theileria* sp. Meanwhile there are 29.8% (31 individuals out of the total sampled individuals) prevalence of positively infected to the intestinal parasite. The intestinal parasites that identified in the fecal samples are *Fasciola* sp., *Paramphistomum* dan *Strongyloides*. Perhaps, the most astounding findings that we got during this study is the significant prevalence result from the trypanosomiasis surra examination, in which there are 87.5% seropositive prevalence (91 individuals out of the total sampled water buffaloes) of the trypanosomiasis surra. In addition, we didn't find any prevalence for the brucellosis, hemorrhagic septicemia, and anthrax. This result showed that in Cegog Sub Village until now is free from the brucellosis, hemorrhagic septicemia, and anthrax.

CONCLUSION

The result from the disease surveillance within the water buffalo population in Cegog Sub Village, Rancapinang Village showed high prevalence of trypanosomiasis surra that reflects there is a potential on the cross infection between the water buffaloes and the other ungulate sympatric animals (Javan rhinoceros and banteng), whilst the seroprevalence occurrence of hemorrhagic septicemia, brucellosis, and anthrax is not found during this study.

SUGGESTION

More profound follow up study regarding the sampling result is required. Looking at the significant disease surveillance result within the water buffalo population, the regularly monitoring of the water buffalo population's health status in Cegog Sub Village, Rancapinang Village is highly suggested to be proposed in the long term management action. The coordination between the affiliated policy makers (Livestock Agency of Pandeglang Sub District-Rancapinang Village and the UKNP Agency) is needed to be bridged regarding the concern of the community's water buffaloes that free-ranged by the community into the protected UKNP area. The follow up study can cover various themes such as the distribution pattern from the trypanosomiasis surra vector, the interaction pattern between the Javan rhinoceros and the wildlife, and the disease potential on the wildlife within the area can be used as the material for the management plan.

ACKNOWLEDGEMENTS

Thank you for the water buffalo farmer's community of Cegog Sub Village-Rancapinang Village, WWF Ujung Kulon, UKNP, Livestock Agency of the Pandeglang Sub District, Indonesian Research Center for Veterinary Science Bogor, Indonesian Research Center for Veterinary Science Bali, Indonesian Research Center for Veterinary Science Subang, Diagnostic Laboratory Faculty of Veterinary Medicine-Bogor Agriculture University, and all teams that have supported this study.

REFERENCES

- (1) __, 2018. *Press Release* Balai Taman Nasional Ujung Kulon tentang Populasi Badak Jawa tahun 2017. Pandeglang.
- (2) Khairani KO, Nydam D, Felipe MJ, McDonough P, Barry J, Mahmud R, Haryono M and RW Radcliffe. 2014-under review. Surveillance for hemorrhagic septicemia in buffalo (*Bubalus bubalis*) as an aid to range expansion of the Javan rhinoceros (*Rhinoceros sondaicus*) in Ujung Kulon National Park, Indonesia. *J. Wildl. Dis.*
- (3) [WWF/IUCN] World Wide Fund for nature/International Union for Conservation

Nature and Natural Resources. 1982. Mystery of dead Javan rhino. *The environmentalist* Vol 2(3): 265. http://www.rhinosourc center.com/pdf_files/117/1178934508.pdf