Identification of *Protozoa Gastrointestinal* to the wildlife (tiger, rhino and elephant) and domestic livestock (cattle, buffalo and goat) in Way Kambas National Park, Lampung, Indonesia

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Gastrointestinal parasite interaction, especially protozoa, in the 37 villages adjacent to the buffer zone of Way Kambas National Park (WKNP) is a problem that should receive serious attention because some protozoa are zoonotic. The risk of transmission of parasites between wildlife populations (tigers, rhinos and elephants) and domestic livestock populations (cattle, buffalo, and goats) is great in this area. This study aimed to identify protozoa from faecal samples of wildlife and domestic livestock from around WKNP collected during the period February - July 2014 and October 2014 - February 2015. The sampling area included 36 locations (25 villages and 11 WKNP areas). Fecal samples were examined using the sedimentation and flotation methods for parasite identification and the analysis of potential zoonotic protozoa conducted through a literature study. Protozoa found in the buffalo, cows and goats are: Eimeria spp, Balantidium coli, Cycloposthium spp and Entamoeba coli. Protozoa founded in the Sumatran rhino and elephants are Balantidium coli and Cycloposthium spp. Protoza founded in the wildlife and domestic livestock are Balantidium coli and Cycloposthium spp. Possible parasite protozoa with a potential of zoonosis in this study are Eimeria spp, Balantidium coli, and Entamoeba coli.

Investigation of an emerging infectious skin disease in black rhinoceros (*Diceros bicornis*)

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Black rhinoceros (Diceros bicornis) are one of the most universally recognized and critically endangered of African wildlife species. They are the focus of regional conservation efforts, national pride, and a draw for economy-boosting ecotourism[1]. Threats to their survival are numerous –most notably from poaching and ecosystem destruction-and now an as yet undescribed emerging disease is being reported[2]. In recent years, a severe, ulcerative skin infection has been increasingly described in black rhinoceros, with a similar, previously unreported condition seen in the white rhinoceros (*Ceratotherium simum*) in Kenya[3]. The skin lesions are large, open sores, often on the legs and sides that progress to a grossly thickened and raised crusting of the skin. The lesions have spread to an increasing number of Rhinoceros, with unknown consequences to feeding behaviors, breeding, or susceptibility to secondary infections. Based on reports from the 1960s in South Africa and Kenya, filarial dermatitis in rhinoceros have been attributed to *Stephanofilaria dinniki*[4,5,6]. Biopsies from similar lesions in Zimbabwe taken from black rhinos in 1988 contained filarial nematode adults on histopathology, but the nematodes were never confirmed morphologically to be *S. dinniki*[6]. This organism has never been molecularly identified[7,8]. Indeed, though Stephanofilaria spp. are widespread parasites of hoofstock around the world, to the authors' knowledge no primers for this genus have been developed for molecular diagnostics purposes. The apparent expansion in host range to include white rhinos is extraordinarily concerning. Moreover, the vector(s) for this parasite have never been identified, leaving an open question regarding the effects of climate change. This investigation expands on the gross observations reported by Mutinda, et al. 2012 and details the histopathological and molecular evidence of a re-emergence of this rare pathogen in black rhinoceros

with extension to a previously unreported host species, the white rhino. Anthelminthic treatment protocol and subsequent resolution timeline for treated vs. untreated animals are also described.

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Health policy implications of tuberculosis in captive elephants and mahouts

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In the hands-on and open systems of captive elephant management in southern India, there are nearly a thousand captive Asian elephants and not less than 3,000 mahouts. Tuberculosis among the elephants and mahouts presents the risk of both inter and intra-species disease transmission. As part of a long-term research project, one time screening of more than 800 captive elephants and their mahouts was completed. Screening of elephants was done using serological tests and mycobacterial isolation on Lowenstein Jensen medium by culture of trunk wash from live animals and lung nodules from dead animals by a team of veterinarians. A team of medical physicians completed the tuberculosis screening of mahouts by clinical examination, chest X-ray evaluation, sputum culture and tuberculin skin testing. With the available results, we examined three different scenarios of tuberculosis transmission. First scenario is the risk of infection from a diseased mahout to an elephant. Second is the risk of infection from a diseased elephant to a mahout and third is the risk of infection from a diseased elephant to another elephant. Our preliminary results suggest evidence for inter-species tuberculosis transmission. Under the tropical climatic conditions in southern India, the risk of infection to a captive elephant from a diseased mahout seems to far outweigh the risks of infection to a mahout from a diseased elephant. Also, there seems to