

# How to Survey and Conserve one of Big Mammals in the Tropical Rain Forest of Kalimantan?

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**Abstract:** Normally survey in the forest is during the daytime, when es the light from the sun come in to the forest floor. For some species is important to go through the forest in the night to make nicht survey in order to meet some activities of nocturnal species. The big sources of salt is the sea water. Around 130 mill. years ago is the sea water covered many terrestrial habitat included in the tropical areas. After that some of them left within the habitat (called as Sepan) and play an important role as a key mineral for surviving many big animals in the forest. Salt is essential mineral for many big mammals, since the scarcity of salt affected the distribution and reproduction of Rhinos, Elephant, Orangutan, Bear, Deer and others. There is an idea to prepare some places for salt licking (bring salt to research location from outside), which is part of wildlife management to prosper big mammals in the region.

## 1. Background

We are surprised by the finding of foot track of rhinos in February 2013, which was found by WWF Indonesia. This existence information is the following finding of the single information about Rhinos since 2002 at the same location in West Kutai regency, East Kalimantan (Boer, 2002). It is hard for one to convince people on this fact finding, especially for the lay people who have not been familiarized with the history of rhinos in Borneo island. For the wildlife science, finding the track of a certain animal is an excellent fact to proof the existing of that species. The proofing facts could be as foot track, dung, odor, voices and song, part of animal bodies, food etc. We never try to seek the big animals that is nocturnal in the night, since wethink about the darkness could not help us to clearly seeing by bare eye.

The nowadays availability of good forested land area at inland (at the heart) of Borneo makes the possibility of finding some species such as Rhinos is higher than before. Adding by the development of technology of camera trap, the possibility of detecting more species of animal also becomes better (Boer, 2008, Swann, et al, 2011). Therefore, the rare species', the extinct ones and endemic animals could be seen more and more. There are no hunting for rhinos since a long time is the reason why the population of rhinos becomes arrise again. It is noted that we have some big species such Elephant, Orangutan, Deer, Bear and others. The basic question was

how to conserve a megafauna such as rhinos or etc. which have been a wide homerange ? How large is the forest for protecting them ? how large should the population developed to be survived and any other questions around the viable population. Last but not least is the question about how to know the number of individual (population) exist and remain in the wild area that we will managed. At present we know also too little about the value of our natural land resources or the techniques of managing them. So we promote the salt water resources or Sepan as high value nature to be determine and managed in wildlife management in order to conserve a big mammals in low land tropical rain forest.

## 2. The Short History of a Big Mammals

From the pre-historic era, it is known that rhinos, elephant and tapir have truly existed in Borneo island. Food competition among them brought them to a condition of struggling for their lives, at least a competition to obtain minerals (salt) is thought as the key of the extinction of tapir and elephant. In 1900, hunting for rhinos and elephant increased, which then caused the decrease of their population. By this fact it is predicted that tapir and Sumatra elephant had already been extinct from Borneo. The decrease of hunting at the moment gives the opportunity for rhinos to regenerate but it is not the same case for elephant and tapir. But why do sumatra rhinos exist ? The process of extinction has been being running once again and most of them are of natural extinction, for Sumatra rhinos in particular. If our program to conserve this species at this chance is unsuccessful, that is by mitigating the negative effects of anthropogenous impacts on their lives, so the tragedy such as happened for Elephant and Tapir will be repeated for Sumatra rhinos in Borneo.

We had identified two locations in West Kutai, both of forest concessions areas, where we had obtained information of rhinos existence from local Dayak communities that live there. West Kutai is the place where the initial discovery of the rhino was made in August 2013. We believe that more individuals may still exist in this area based on some signs found during the field work. In Berau district, our search will be focused in and around a forest concession bordering with a palm oil plantation. A few months ago, we received information that rhino tracks were found in the palm oil plantation. So, the four locations that we will focus on for this study are within the districts of West Kutai, East Kutai and Berau.

The Sumatran Rhino (*Dicerorhinus sumatrensis*) is listed as Critically Endangered and it competes with the Javan rhino for the bleak title of the world's most endangered rhino species. The overall population of *D. sumatrensis* has declined by more than 80% with an estimated population of 250 individuals surviving in the wild and fewer than 400 total individuals in existence today. *D. sumatrensis* lives in isolated pockets in the dense mountain forests of Malaysia, Indonesia, and possibly Myanmar with Indonesia and Malaysia representing the only significant range countries (IUCN 2013).

Indonesia and Malaysia share two subspecies of *D. sumatrensis*. The subspecies *Dicerorhinus sumatrensis sumatrensis* is found mainly on Sumatra, with a total population of 170 to 230 individuals while *Dicerorhinus sumatrensis harrissoni* is found mainly in Tabin National Park in Sabah and Danum Valley (in Sabah, Malaysia). *D.s. harrissoni* was declared extinct in Indonesian Borneo (Kalimantan) in the early 90's but was astonishingly rediscovered in East Kalimantan in June/August 2013. Remote cameras that were set in West Kutai successfully captured pictures and video of one individual in an undisclosed location. The question is whether this is one rhino or a group of survivors. Most remaining populations of *D.s. harrissoni* are small and fragmented, causing a difficulty for breeding. In some cases, single rhinos had been found surviving alone in small fragmented forests. As *D.s. harrissoni* becomes rarer, it also becomes more difficult to find and count them. This situation causes a difficulty in any conservation program of this critically endangered species and makes it become a challenge. To avoid the Sumatran rhino from extinction, we need to know if rhinos persist in East Kalimantan and whether these populations can successfully intermix and breed.

The two principal threats facing the Sumatran rhino are poaching and reduced population viability due to fragmented populations (IUCN 2013). Hunting is primarily driven by the demand for the supposedly medicinal properties of rhino horns and other body parts. Recent research suggests that the Sumatran rhino is not negatively affected by minor habitat disturbance and low impact timber extraction and it has the ability to adapt to most forest conditions. This makes finding the remaining populations, protecting these populations and helping these populations to breed are the only chance we have to save the Sumatran rhino from extinction.

### **3. Using the Mud Wallow and Sepan (salt resources) as a Center of Monitoring the Animals for Conservation**

Many factors influence the performance of camera traps. Poor performance is usually caused by a combination of weather, user experience, user skill, unique field condition such as damage by animals, and poorly engineered equipment. Choice of trap sites where the camera traps should be established, is also little bit problem in the field. Finding the number of the mud wallows or spans where the salt available for many animals in the forest is an important roll in conserving many species and off course for establishing the camera traps. Mud wallow or span could be used as the central of monitoring the population and the species. Some species used the mud or span together, whether they part the time by using it or they used it at the same time. It is very interesting to see how some species of animals, big or small one, bird untill primates coming together or one by one to the mud wallow or span for saltlicking. For long time monitoring we should added the salt from out side to the sepan area inside the forest.

Mud wallow could be used also for counting the number of individual at the same and short time, such as Banteng or Rhinos in some area in East Kalimantan forest. The time that the animals come is the key to do the counting efficiently and also not to be disturbing and do not doing the bad attitude in the forest that all animals run away from us. There are two principles counting of animal at this developing method, i.e. firstly will be called as "Concentration count" i.e. counting the individual animals during the concentration number and time of the animal species and the secondly is the "mark recapture principle". Counting the individual of animals will be conducted through the establishing the camera trapping in one period of time. From experiences we could differentiate between individual from the result of camera trapping. Some of the principles that we should remind are : a). The number of individual photographed could be used as representative their population in the wild, b). The number of individual Marking that remarked by the next periode will be used as representative their number of individual by the first periode and photograph and c). The number of individual photographed will be paralel with their population in the wild. Important is also that some species are not difficult animals to reliably identify from good photographs based on stripe patterns on their flanks, limbs, face and even the tail, example by tiger (Karanth and Nichols, 1998).

So if  $N$  = The number of individual of animals that we will estimated, where  $P$  = The number of individual photographed at the first period of camera trapp establishing (Example 4 individual) and  $C$  = The number of individual rephotograph at the second period of camera trapp establishing (Example 2 individual),  $D$  = The number of total individual photographed at the second period of camera trapp establishing (Example 3 individual).

So,  $N : P = D : C$

$$NC = PD$$

$$N = PD/C$$

$$= (4)(3)/2 = 6 \text{ individual}$$

If the camera establishing during the long time (some period of time) for open population, the formula from Jolly & Seber (1965) will be useful.

## References

- Boer, C., Harrys, A.P., Fahmi, M. and Francis, K.D. 2002. Dipastikan Populasi Badak Masih Terdapat di Kalimantan. Sebuah laporan perjalanan investigasi awal keberadaan Badak Kalimantan. Laboratorium Ekologi Satwaliar, Fakultas Kehutanan, Universitas Mulawarman.
- Boer, C. 2008. The use of camera trapping for detecting terrestrial bird in low land tropical forest. Rimba Kalimantan. Fakultas Kehutanan, Univ. Mulawarman, Volume 13. No 2, Desember 2008.
- Boer, C. 2013. Memastikan ulang keberadaan Badak Sumatra di Kalimantan. Laporan Perjalanan. Laboratorium Wildlife Ecology and Biodiversity, Fakultas Kehutanan, Universitas Mulawarman.
- Crankbrook, Earl of. 1986. A review of fossil and prehistoric remains of rhinoceros in Borneo. Sabah Museum and archives Journals I (1) : 50 - 111
- Karanth, K.U., Michols, J.D and Kumar, N.S. 2011. Estimating Tiger Population from Camera Trap Data: Field Survey and Analytical Issues. Camera Traps in Animal Ecology. Method and Analyses. Springer.
- Payne, J. 1992. Why are Rhinoceros rare in Borneo Forest ? Forest Biology and Conservation in Borneo. Centre for Borneo Studies. Publication No. 2
- Payne, J., C.M. Francis, K. Phillips & S.N. Kartikasari. 2000. Panduan Lapangan Mamalia di Kalimantan, Sabah, Serawak dan Brunei Darussalam. WCS Indonesia Program dan The Sabah Society Malaysia. Jakarta.
- Yasuma, S. & M. Andau. 2000. Mammals of Sabah, part 2. Habitat and Ecology. Japan International Cooperation Agency and Sabah Wildlife Department. Kuala Lumpur, Malaysia.