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LEOPARD (*Panthera pardus* L.) IN PURWODADI, TEPUS, GUNUNGKIDUL, YOGYAKARTA, INDONESIA

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ABSTRACT

Indonesia is a beautiful archipelago country. It has many habitat type and ecosystem. The most interesting area is karst. By its special characteristics like high concentration of calcium (Ca), makes karst area has a specific and uniquely ecosystem. Gunungsewu is the largest karst area in Indonesia. The surface ecosystem of karst (eksokarst) in Indonesia is very dry, however we can find Leopard (*Panthera pardus* L), especially in Southern part of Karst Gunungsewu. That is why we are interested to study about it. In this study, we use observation and interview method. From the temporally result (research still on progress), we know that in Purwodadi, Tepus area live two sub-species of Leopards, those are Spotted Leopard (*Panthera pardus pardus*) and Javanese Black Leopard (*Panthera pardus melas*) with porcupine (*Hystrix javanica*), squirrel (*Caloscurus notatus*), Mongoose (*Paradoxurus hermaphroditus*), and other small mammals and some birds as their prey. In some cases, we find Leopard eats the dead human body but they rarely eat cattle although it takes in the middle of the farms. The habitat of Leopard was fragmented. Now they only life in five fragmented part of karst Gunungsewu and their habitat degrade slowly from year to year. From the results, we can conclude that conservation in Karst of Gunungsewu especially in Purwodadi, Tepus, Gunungkidul is badly needed. It must be done soon because Leopard becomes extinct. We can use local wisdom to conserve it because it has proven can make a good interaction between human and Leopards in their habitat.

Keyword: predator, tropical, karst, Gunungsewu

INTRODUCTION

Karst is unique area. Not only about geomorphology but also about the biodiversity of flora fauna. The specific area with high concentration of calcium (Ca) and low water concentration in the surface make animal and plant develop their capability. Plant try to adapt their metabolism to survive in the high concentration of calcium, animal adapt their skin in the high temperature and low moisture, animal and plant adapt their morphology to survive in minimum water resources. This process called an adaptation. The adaptation of animal and plant in karst if done in long time can be speciation process. So not admirable if we find a many much of new variety of plant and animal, new structure of geomorphology, new physiology process, a new behavior, and may be a new species in karst.

Karst of Gunungsewu is largest karst in Java. It lay in East Java, Central Java, and Yogyakarta. The largest parts of Karst Gunungsewu is lay in Gunungkidul Sub-district. Some place in Karst Gunungsewu in Gunungkidul has a natural place like some area in Purwodadi, Tepus Gunungkidul. This place touched only by local people. It is because it have hard topography, so some people difficult to arrive in some area in Purwodadi. Local people have some local wisdom who care with the animal, so it conserve the wild animal in there especially Leopard (*Panthera pardus* L.). Leopard still exist in Purwodadi because the natural area, local people and local wisdom. We know it from local people's story. Some people meet with it especially in dry season.

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Some part of this place ought to conserve. It must be done because some animal like Leopard in karst area. If cannot be done, it can caused extinct some biodiversity in karst area. Reallity, Natural tropical karst forest cannot be find again in this area. It done because human activities, like mining, farming, residencing, introducing, tourism, etc. it can change microclimate and microhabitat in karst. as a top predator, we can use Leopard as bioindicator of ecosystem quality in Karst Gunungsewu. So that is the reason why me and all my friends in PPA-GK want to study about Leopard in ecosystem of Gunungsewu karst area. With result from this research we hope can collect the data of Leopard in Gunungsewu Karst Area, so we can know the ecosystem quality of Karst Gunungsewu. From this data, we hope can prove the important of ecosystem in Gunungsewu karst area as a place where the uniquely wildlife live, so people more care with this area.

MATERIALS AND METHODS

This research collect data of Leopard only in Purwodadi, Tepus, Gunungkidul administrative area. It done because human resources and others resources not enough to cover all Karst of Gunungsewu. We start this research in August 2010 till now. We start with unintensive because all of us is senior high school. We starting by collect the information from local people, then observe the some area where the meet with Leopard have high intencity, the final is set the camera trap and exploration. In early 2011 till now we collect data more intensive with social partitipation. In this research we use spesific form to collect data from local people, GPS to track and make a observation plan, mika plasticks to print the foot-print, pinset and clip plasticts to collect the feces, camera trap to get the picture of Leopard, herbarium kit, camera, sample kit and plastic clip to collect ecology data. All of this equipment place in one bag.this bag stand by in our basecamp, so if member will be collect only take this bag.

We divide Purwodadi in Eight main spot. We make this spot depend on local people information. This spot is highest intencity of meet between local people and leopard. For the first time we eksplore all place one by one. After that we observe some specific place and develop the area. So in this research we use mix from field observe and interview. This research unfinished yet because some place observed still. It is hard for not only because of resources, but also topography and our capable about science field method.

RESULTS AND DISCUSSION

From local people we know that 2 sub-species of Leopard life in Purwodadi. They are Spot Leopard (*Pathera pardus pardus*) and Black Leopard (*Panthera pardus melas*). 80% people see Spot Leopard and 20% see Black Leopard. From this data, we have assumption that Spot leopard bigger population than Black Leopard. But we not sure that spot Leopard has bigger population than Black Leopard, because from this data and from other journal says that black Leopard out from their nest more night than Spot Leopard and in the night Black Leopard difficult to see by our eyes in the middle of shrub. Most of them see the Leopard in the middle of their walking to their farm field (30%) or go home from the farm field (60%). 70% see the Leopard in the line between farm field and the hill or shrub field. 87% see the Leopard in the dry season and most of them see the Leopard in the August – October.

From the data we can conclude that the Leopard usually go to the farm field or make interaction with local people in dry season. It's because they looking for prey or try to get water. Most of people see or meet the Leopard in the sunset (5.00 pm – 6.15 pm). It's time to some people go home from field and the Leopard start to active.

Picture 1. Dry feces of Leopards in Tepus

Picture 2. Biggest Leopard foot print in Tepus

We got 8 spot where the most local people meet the Leopard. From camera trap, we cannot find the Leopard pictures, but from the spots, we find 8 feces and 5 foot print of Leopard. 8 feces we found in 5 area and 5 foot print in 3 spot. From feces, we predict that all of Leopard who have the feces is adult. But from foot print, we can know that one of Leopard have a child because we found one foot print adult with one foot print with little size (5,5 cm). we sure that it is the child of leopard and not from wild cat because this foot print printed in the same time. 6 feces we found in the way where it is the line between farm field and shrub forest and 2 in the middle of shrub. From 6 feces in the way, 4 feces we found in the cross way and 2 feces in the outside of the way. Feces is the sign to know the home range of Leopard, so we can know from the data that Leopard make a shrub forest as their home range. They out from their home range usually only for hunting, looking for prey, or looking for the water source. It is match with the information from local people that most of them meet with the Leopard in dry season. It is difficult for Leopard to get water and prey in karst Gunungsewu in dry season. Three foot print and 1 feces we found in the round of spring. All of feces and foot print in round of spring we get in dry season. All of foot print printed in the mud around of water from spring. So we can know that this spring is water source for Leopard in dry season. This area is very sensitive for conflict between Leopard and human, because most of local people (22 families) use this spring as water source. But most of people know it, so most of them take the water from this spring in the morning or in the afternoon. We try to take the Leopard picture by the camera trap in this spring, but we cannot get the picture till now. From the feces and foot print we try to observe and explore the area until 5 km to find their nest. But we cannot found it because our information too little. In some place, we found the big tree that we predict as their nest. We found some claw print in the tree but if we take the camera trap never get their pictures. Some local people says that they can see Leopards in the cave. In Siung Exploration programme 2010, we get 35 cave in Purwodadi. We observe it again and take the camera trap but never get the prove of existence and the pictures.

Picture 3. Long Tail Macaque (*Macaca fascicularis*) in Tepus, Gunungkidul

From the observation we can find other mammals like Java Porpucine (*Hystrix javanica*), Squirrel, *Tupaia* sp., *Manis javanica*, 2 species of *Megachiroptera* and 8 species of *Microchiroptera*, wild dog (*Cuon* sp.), wild cat (*Felis bengalensis*), dog (*Canis* sp.), cat (*Felis* sp.) and the biggest population is ling tail Macaque (*Macaca fascicularis*). And from the feces we can know that most of Leopard use Long Tail Macaque as their dominant prey (64%). The other prey that we found in the feces is Java porpucine (12%), *Tupaia* sp. (8%), birds (5%), and others hair (11%). From hair identification, we found most of the other hairs from the deer (*Cervus* sp.). but we not sure because we and other research never get the deer in middle south part of Karst Gunungsewu. the other point that make us wondering is the one foot print that we found in the middle of shrub. We get the foot print with bigger size than Leopard's foot print. The maximum size of Leopard's foot print is 15 cm, but we found one foot print with size 18 cm. some journal and book says, if the size has a size between 16 cm and 25 cm in tiger's mine. But we still use it as a data of Leopard's foot print because we never get the record of the tiger's existence in Karst Gunungsewu. Some old local people sure that in 1950 – 1984 they still can meet the tiger if they go to farm field and they can describe the characteristic with detail. But we still doubt it because it is untimely to conclude the foot print is the tiger's mine. One foot print being in stack condition between one and others, and we found long tail macaque's foot print between it. We predict that Leopard hunt the Macaque in this area where the macaque out from their colony because some factors (evicted or sick).

Picture 4. Cattle cage in the farm field in Tepus, Gunungkidul

The Leopard still exist in Purwodadi, Tepus not only about their habitat, but also about the harmony interaction with the human (local people). This harmony interaction because of the local people still use local wisdom as the unwritten law. Some people never touch some area because they believe that some area is the home for other life and some area is danger for human. From 7 area where never touch by local people, 3 area is the Leopard's home range. It is interesting because they know it from the ancient people who never get the study of ecology. The other local wisdom is some farm field must be leaved before 6.00 pm or they can lost or crazy. And this is match with the most nocturnal animals in Karst Gunungsewu who active 6.00 pm in early. The most interesting local wisdom is the cattle that leave in the farm field that very far with their home. Some places near with home range of carnivore like Leopard and *Cuon* sp. but they says that the cattle never attack or eat by the carnivore. We predict, it is because of the carrying capacity in this area is safe for wildlife. Some local people say that if they kill the wildlife like snake, porpucine, wild cat, or the others, 'Gerandong' will be attack their cattle. 'Gerandong' is the others creature who live in the middle of the shrub forest. But the real 'Gerandong' is the colony of wild dog. We know it from the foot-print in the round of the cattle's attack. From this data, we know that Leopard never attack the cattle, so we can conclude that long tail macaque population is enough as prey for Leopard. And Leopard use other wild animal as their prey so they are not attack the cattle.

Picture 5.Chalk mining in Tepus, Gunungkidul

With this research, we known that karst of Gunungsewu had many much unique species especially Leopards. But they were in the danger line caused by human activity and the environment change. Some people who never care with local wisdom and the environment like hunter, Calk and phosphate miner, tree cutter and the others still wokt their job. It can make environment degradation and habitat fragmentation for wildlife. Many human activity like over exploration, hunting, logging, tourism, ineffective water management, etc. caused destroy the karst ecosystem in Gunungsewu. This is our homework to solve this problem. We need the middle way, to make a win-win solution between human activity and ecosystem. We found it in local wisdom but know some people never care with it.

Me and my friends as a Gunungkidul civilians try to collect the potention in Gunungkidul like biodiversity and local wisdom. We try to make sample of environment management with society participation. We try it in Purwodadi, Tepus, Gunungkidul. With local civilians, we try to make field management and ecotourism. With personal approximation and use the local

wisdom issue. But we can conclude all of our trying because still on progress.

CONCLUSIONS

From this research we can know that Spot Leopard (*Pathera pardus pardus*) and Black Leopard (*Panthera pardus melas*) live in Purwodadi. The important thing for Leopard existence is prey and water resource. Leopards in Purwodadi eat Long Tail Macaque, Java porpucine, *Tupaia* sp. and birds. The Leopard still exist in Purwodadi because of habitat and local wisdom. They are in the danger line caused by human activity and the environment change. It can make environment degradation and habitat fragmentation. So habitat conservation in Gunungsewu karst area especially in Purwodadi, Tepus, Gunungkidul is badly needed. This research still on progress as we can.

REFERENCES

Carrington, R. 1981. *Mammalia*. Pustaka Time Life, Tira Pustaka, Jakarta.

Hoeve, W V. 1989. *Eksiklopedi Indonesia Seri Fauna: Mammalia I*. PT. Intermasa. Jakarta. pp. 17 – 21, 285, 286

Krebs, C. J. 2009. *Ecology: The Experimental Analysis of Distribution and Abundance. Sixth Edition*. Benjamin Cummings. New York

Lekagul, B., and Mc. Neely, J. A. 1977. *Mammal of Thailand*. Kurusapha Ladprao Press. Bangkok. pp.516, 517, 605 – 608

Mackinnon, K. 1992. *Nature's Treasurehouse The Wildlife of Indonesia*. Gramedia Pustaka Utama. Jakarta

Payne, J., M.P. Charles, P. Karen, and N.K. Sri. 2000. *Mammalia di Kalimantan, Sabah, Sarawak, dan Brunei Darussalam*. Sabah Society dan Wild Life Conservation Society. Jakarta.

Pough, F. H., J.B. Heiser, and W.N. McFarland. 1990. *Vertebrate Life: Third Edition.* Macmillan Publishing Company. New York. pp.725 - 818

Raharyono, D., and E.T. Paripurno. 2001. *Berkawan Harimau Bersama Alam*. The Gibbon Foundation dan PILI. Jakarta

Sakaguchi, N., M. Yoneda, J. Sugardjito, R. Effendi, L.N. Ladjar, and R. Suryaningrum. 1997. *Preliminary Research for the Conservation of Carnivores in Gunung Halimun National Park. In:* Yoneda, M., J. Sugardjito, and H. Simbolon. (editors): The Inventory of Natural Resources in Gunung Halimun National Park. Research and Conservation of Biodiversity in Indonesia Vol II. LIPI-JICA-PHPA. Bogor. p.63

Seidenstiker, J. 1976. *The Javan Tiger and The Meru Betiri Reserve A Plan for Management World Wildlife Fund 1196 Gland.* Switzerland and Direktorat Perlindungan dan Pengawetan Alam. Bogor.

Suyanto, A. 2003. *Mammals of Gunung Halimun National Park, West Java*. Puslit Biologi-LIPI. Bogor pp.78 – 79

Tinbergen, N. 1992. *Perilaku Binatang. Pustaka Alam Life: Edisi Kedua*. Tira Pustaka. Jakarta

Twesten, G. 1989. *Wildlife Ecology: A Guide to the Ecological Approach of Study the Wildlife of the Central United State*. Belleville. Illinois. pp. 491 – 501

Whitten, J. 1998. *Tropical Wildlife of Indonesia and Southeast Asia*. Periplus. Singapore.
Whitten, T., R.E. Soeriaatmadja, and S.A. Afiff. 1999. *The Ecology of Java and Bali*. Dalhousie University – Canadian International Development Agency. Canada pp.207, 214, 499, 685