Project report

Conservation of endangered Primates in Central Java, Indonesia

Report to

Rufford Small Grant Foundation

Team Leader: Arif Setiawan,
Team Member: Tejo S.Nugroho, Y.Wibisono, Vera Ikawati, Tasuri
e-mail: wawan5361@yahoo.com
Affiliation institution: Wildlife Lab, Forest Resource Conservation Dept, Faculty of Forestry, Gadjah Mada University, Yogyakarta, Indonesia
2009-2010

Project summary

During July 2009 – November 2010, Javan gibbon (*Hylobates moloch*) research and conservation activities were conducted in Dieng Mountain, Central Java Indonesia. We have found 74 gibbons directly distributed on 9 various locations. We estimated gibbon population density in Sokokembang forest 4.49 individuals/km^2. Preliminary study on javan gibbon food resources and their role in seed dispersal recorded 25 species of fruits trees which consumed by the gibbons. We have conducted activities to promote javan gibbon conservation such as, school visit, poster distribution, and some popular publication at national level. Community conservation also has been initiated in Sokokembang village through Javan primate tour.

Introduction

Dieng mountain is the largest forest patch in central java (Nijman, 1998). Its home for all Javanese endemic and endangered primates species, silvery javan gibbon (*Hylobates moloch*),

Javan grizzled leaf monkey (Presbytis *fredericae*) and Javan silvered langur (*Trachypithecus auratus*) (IUCN, 2008; Nijman, 2001). These areas are the eastern most range distribution of Javan gibbon in Java, however research and conservation activities towards this lesser ape habitat's are received little attention, moreover these area are not included in the protected area system. Forest habitat areas which are not considered as protected areas are being exploited by people, and are threatening the survival of primates.

Due to threats to the survival of primates, conservation initiative ensuring their protection in fragmented and unprotected forest habitats is critically important. Sokokembang forest is one of the locations reported previously as highest Javan gibbon sub-population (Djanubudiman et.al, 2004). We have goal to conserve Javan gibbon population in this forest through assessment on their recent population distribution, and conservation education towards people surrounding Javan gibbon habitats. We have specific aim also to know the role of gibbon as seed disperser in Sokokembang forest. Results from this project are significant to raise conservation awareness that forest regeneration of local people's important trees are depends on primate to regenerate. Thus, studying this important relationship between primates and plants is crucial for both habitat and primate conservation.

Methods

a. Research

Study site located in Sokokembang forest for ecological study of Javan gibbon, and population distribution survey also conducted according to previous study in Dieng mountain by Nijman,2001 and Djanubudiman,2004. Study was prosecuted during dry season (July –October 2009). There is Wela River that originated from Dieng mountain stream down trough Sokokembang village head to Pekalongan city. Survey population was focused in Sokokembang forest through establishing transects system. We have seventh transect to survey population of Javan gibbon in Sokokembang forest ($\pm$3000 ha). These transects started from Wela River, heading to 40 o and 240 o from the north. We calculate gibbon density according to NRC, 1981, using maximum perpendicular distance. There were 5 transects in the left side of the river and two transect in the right side of Wela River. We followed a group of gibbon comprised of two individuals to record their feeding behavior based on scan sampling (Altman, 1974) at 10

minutes interval. We record what kind of food items consumed by the gibbon, and collecting the gibbon fecal clumps. We record their feeding behavior based on four category (resting, moving, and feeding) and we record their seed handling behavior (spit out, swallow, and destroying seeds).

Distribution survey also conducted to find out current distribution and threats of javan gibbon habitat across forest in Dieng Mountain. We visited locations which have visited by previous study (Nijman, 2001, and Djanubudiman, 2004).

b. Conservation Education Activities

Conservation education activities were conducted during July 2009 – January 2010. Firstly we conduct social survey among villagers within three villages around Sokokembang forest. The survey to find out about villagers perception on primate conservation, and to find out about their dependency toward forest resources. We selected randomly 75 villagers (25 people in each village) to be interviewed using questionnaire.

In Sokokembang village (comprise of 25 families) we joint to the villagers meeting every Thursday night, to socialize our work. We trained several families to prepare Javan primate tour in Sokokembang, as home stay and field guide for tourist who want to research or nature tourism. Together with the villagers we design Sokokembang primate ecological tour, which prepared for young visitors.

To raise conservation awareness and education we conducted conservation road show among villages and schools around Sokokembang forest, distributing posters and stickers towards key persons at regency level, district, village, local university, and local decision maker. To promote endangered primate conservation in Sokokembang and socialization we invite journalist from national news paper and TV program to make report on forest and primate in Sokokembang.

Result

a. Research accomplishment

1. Javan gibbon population and distribution in Dieng Mountain

Dieng Mountains located in four regencies (Pekalongan, Banjarnegara, Batang, and Temanggung) we have recorded 74 gibbons directly, in nine locations within Dieng Mountains area i.e (Sokokembang, Sikesod, Lebakbarang, Sigugur) and found new locations which not covered in previous survey i.e Alas Daon, and Kembang Langit (see map.1). These locations are remnants forested habitat in Central Java province, fragmented among forest plantation (pine, rubber and tea), roads, settlements, and agriculture. These locations also nearest villages to the forest where people also free to access and exploit natural forest resources. Javan gibbon localities and priority threats for both population and habitats presented in table.1

Table.1. Localities of Javan gibbon distribution and its threats in Dieng Mountains.

No	**Locations**	**Coordinate**		**Elevation**	**gibbon seen**	**Threats**
1	Sokokembang forest (kroyakan-sokokembang-tinalum)	07 05'51.0"	109 43'29.9"	470	**51**	1***;2***;3**;4***;5***
2	Sikesod	07 08'32.9"	109 49'26.9"	1462	x	1**;2*;3***;4**;5***
3	Linggo (yosorejo)	07 05'59.5"	109 35'49.2"	539	10	1**;2**;3***;4***;5***
4	Sigugur	07 11'05.7"	109 32'12.1"	866	x	1***;2**;3***;4***;5***
5	Sawangan Ronggo	07 08'03.3"	109 41'34.4"	730	4	1***;2**;3**;4**;5**
6	Bantar Kulon	07 06'29.4'	109 39'26.2"	364	x	1**;2**;3*;4**;5***
7	Alas nDaon	07 05'12.7"	109 39'20.9"	569	2	1***;2***;3*;4***;5***
8	Lebak Barang/Lolong	07 05'21.6"	109 38'49.7"	270	5	1**;2***;3*;4***;5***
9	Kembang langit	07 05'20.1"	109 48'27.3"	711	2	1**;2***;3***;4***;***

Information:

Threats:

1. Firewood collections
2. Agriculture expansion
3. Primates hunting (not only for javan gibbon)
4. Non timber extraction (bamboo, rattan, etc)
5. Birds and other animals hunting

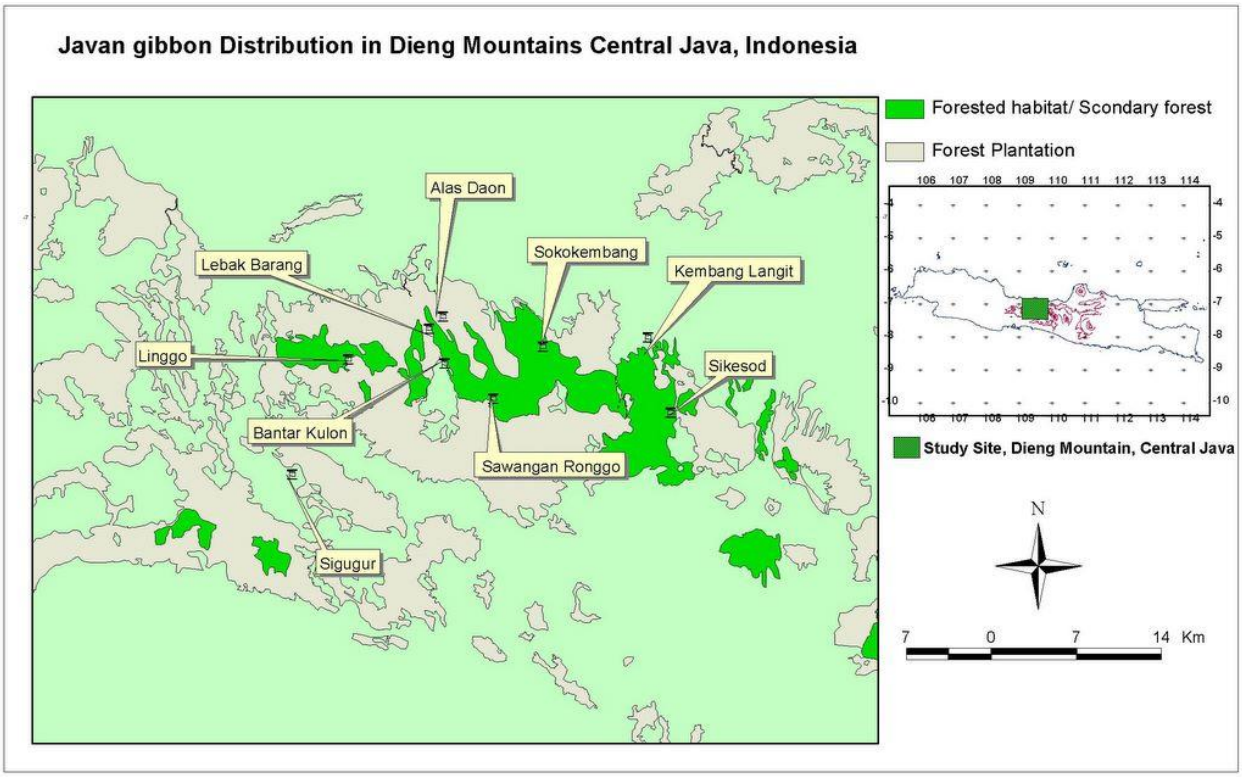
Intensity:

*** = high

** = medium

*= small

X = indirect information (gibbon calls)



Map.1. Javan gibbon distribution in Dieng Mountains, Central Java

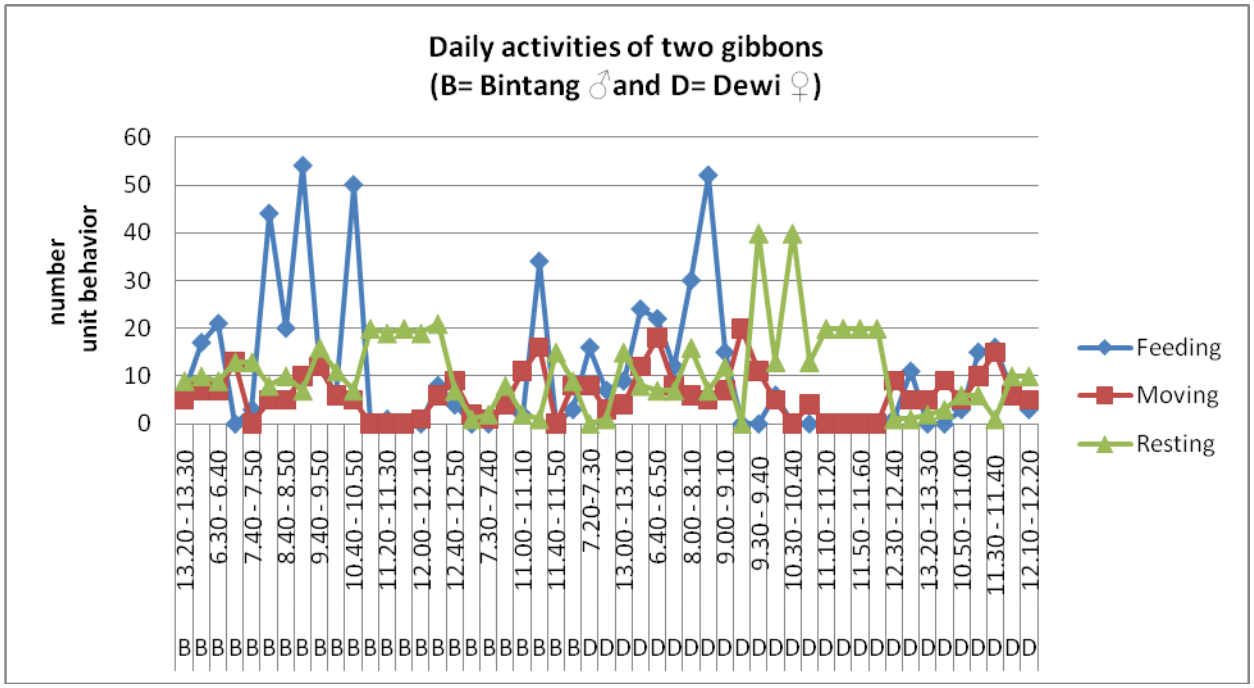
Javan gibbon population density in Sokokembang.

We have initiated Sokokembang forest as field site for Javan primate's study and conservation activities. In this forest (3000 ha) we have established transect system (seven transects, 1 km along). We have found 39 adults gibbon, 6 juveniles, and 4 infants. Based on line transect methods using maximum perpendicular distance (NRC, 1981) the gibbon density is 4.49 individuals/km^2.

We records gibbon population is higher than the last survey in Sokokembang forest (Djanubudiman, et.al, 2004), it's also justified from juveniles and infants during observation that we found, we have walked in the transect also much longer than previous study. Some locations need to be surveyed in more detail, to find out number the number of gibbon, in Sigugur, Kembang Langit, Alas Daon and Bantarkulon this forest already fragmented and not connected to the forest of Dieng mountains, however these location still have gibbons, moreover primate hunting also occurred. Threats for gibbon population and habitat are different among locations; it's also determining different priority for further conservation.

Ecological study

We followed a group of gibbon (named Bin tang and Dewy) and tried to habituate them, however due to geographical condition (steep slope) this group not easy to be observed completely. We able to follow for 510 minutes during dry season (July to September 2009). Feeding activities is most often observed both male and female gibbon however not significant different between male and female (Wilcoxon test, W = 139, p-value = 0.863).



Food resources of these gibbon dominanty fruits (97%), flowers (2%), and leaf (1%) based on 477 times observation. We recorded 25 species (locally identified or vernacular name) of forest plants which being consumed by the gibbons in Sokokembang (see table.2). These trees recorded during July 2009 to January 2010, or during end of dryseason to beginning of wet season in Java. From dungs collection we only found ficus species inside the dung. We have germinated these seeds and the result are seeds sprouting faster than the seed which are collected from under the trees. The trees which are spitted out by the gibbons are not success to germinate. The larger seeds (medium to big size) usually not ingested but spitted out by the gibbon.However collecting dungs is most difficult to be done, due to geographical condition, usually gibbon dungs droped at leaves above high tree. Gibbon sleeping site usually in the high trees and steep slope.

We observe seed dispersal during July to September,2009, at that time ficus fruits are found dominantly in the forest, thus why we only found a ficus seed in the dungs of the gibbons. Needs more time and more gibbons to be followed in the next research to gain information on seed dispersal by gibbon, and seasonal fruit availability also maybe influence the gibbon distribution in the area.

Table.2. list of Javan gibbon fruits

No	vernacular name	Family	fruits diameter	seed size/length
1	mbulu spre/ringin	Moraceae	1.8	small
2	mbulu soh	Moraceae	2.5	small
2	Sarangan	Fagaceae	3.2	Medium
3	Bendo	Moraceae	6.4	Big
4	Sentul		3.15	Medium
5	Antap	Sterculiaceae	5.1	Medium
6	Kayu Cangkok		3.89	Medium
7	Menteng	Euphorbiaceae	2.1	Medium
8	Kemaduh		0.5	Small
9	Rau	Sapotaceae	1.5	Medium
10	Bawangan		3.8	Big
11	Kayu x		1.7	
12	Kayu jubug			Big
13	Tanglar		3.19	Medium
14	Klalar besar		3.06	Medium
15	Mlelo		1.67	Medium
16	Manggis hutan		5	Medium
17	Kayu Jambon			
18	Jirek koji		1.7	Medium
19	Kayu dlimas			
20	Klengsar		1.4	Medium
21	Pasang	Fagaceae	2.67	Medium
22	Kayu Sapi			Medium
23	Mbulu krandan	Moraceae		Small
24	Gondang abang	Moraceae		Small
25	Gondang ijo	Moraceae		Small

small :0.1 - 0.3 cm

medium: 0.4 - 1.5 cm

big: > 1.6 cm

Villages and community survey

Descriptive statistic data shown that 96% of respondences (n=75) recognize very well all four primate species in the area Javan gibbon (*Hylobates moloch*), Javan grizlled leaf monkey

(*Presbytis fredericae*), Ebony leaf monkey (*Trachypitecus auratus*), dan Long tailed macaque (*Macaca fascicularis*), and only 22% of villagers which knowing of the most critically endangered primate, the Javan slow loris (*Nycticebus javanicus*). According to our interview there are 15 forest plants species which often used by local people mainly of wood construction, fuel woods, for foods, and medicinal plants and five of them as forest fruits also are consumed by villagers.

Conservation education activities

Several conservation activities are done during project period from July 2009 to January 2010, i.e:

1. Join with villagers every Thursday night (August – November 2009), to socialize our work and promoting primate and forest conservation among villagers
2. Inviting foreign researchers: a researcher Czech Republic and a researcher from Thailand, were came and spent several days with the villagers and short survey in the forest.
3. Popular publications: photos and articles related to Javan gibbon and Sokakembang forest are published nationally in newspaper on: 18 Nov 2009; 21 Nov 2009, see in this link and here.
4. Seminar: October 10,2009 preliminary result are presented at primate lecture faculty of forestry gadjah mada university
5. Environment education towards young people and school visit, conducted at December 21-24,2009, visited three villages and two schools, activities such us games, painting, watching environment movie, and tree planting. Totally 121 children were participated in this program. Link to the photos here. And other photos here.
6. Distributed Javan gibbon posters to key person in Central Java Province, head of regency (bupati), head district (Camat), head of village (Kepala desa), lecturer, and government agencies.
7. Research activities and Sokokembang forest received coverage from one of the national TV programs at (Jelajah Trans TV) January 4 - 10, 2010.
8. Until January 2010, we trained two villagers prepared for field guide for primate tour, and also there are two families which ready for home stay.

9. Presentation and publications:

1. A poster presented at SCCS (Student Conference Conservation Science), 16-18 June 20100, Bangalore, India

2. Oral presentation, presented at ATBC (Association Tropical Biodiversity and Conservation), 19-23 July 2010, Bali Indonesia.

3. Oral presentation, presented at IPS (International Primatological Society) XXIII Congress, 12-18 September 2010, Kyoto, Japan

Acknowledgement

We would like to thanks to Rufford small grant (Jane and Josh) who provide grant for this work, all people who participate, joint and support this work direct or indirectly, special thanks to our scientific advisor Dr.Djuwantoko at Wildlife lab, faculty of forestry, Gadjah Mada University, unfortunately he was die before this project end.

Literature Cited

Altman, J. 1974. Observational study of behavior: Sampling methods, Behavior 48, pp. 1–33

Djanubudiman, G., J. Arisona, M. Iqbal, F. Wibisono, G.Mulcahy, M. Indrawan and R. M. Hidayat 2004. Current Distribution and Conservation Priorities for the Javan Gibbon (Hylobates moloch). Report to Great Ape Conservation Fund, US Fish and Wildlife Service, Washington, DC, Indonesian Foundation for Advance of Biological Sciences and Center for Biodiversity and Conservation Studies of University of Indonesia, Depok. 25pp

Nijman V. 2001. Forest (and) primates. Conservation and ecology of the endemic primates of Java and Borneo. Tropenbos-Kalimantan Series 5. Wageningen: Tropenbos

Nijman, V. and B. van Balen. 1998. A faunal survey of the Dieng Mountains, Central Java, Indonesia: Status and distribution of endemic primate taxa. Oryx 32: 145–146.

National Research Council. 1981. *Techniques for the Study of Primate Population Ecology*. Subcommittee on Conservation of Natural Populations. National Research Council. National Academy Press, Washington, DC.