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HABITAT AND LOCAL DISTRIBUTION OF JAVAN GREEN PEAFOWL (*Pavo muticus muticus* Linneaus 1758) IN BALURAN NATIONAL PARK, EAST JAVA

(Kajian terhadap Habitat dan Penyebaran Lokal Merak Hijau (*Pavo muticus muticus* Linneaus 1758) di Taman Nasional Baluran, Jawa Timur)

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RINGKASAN

Kajian terhadap habitat dan penyebaran lokal merak hijau Jawa dilakukan pada bulan Agustus 1994-Pebruari 1995 di Taman Nasional Baluran dengan areal kajian yang intensif di Resort Bekol. Metode yang digunakan untuk mengkaji habitat dengan pendekatan analisis vegetasi yang berkaitan dengan fungsi habitat sebagai tempat mencari makan, tempat berteduh, tempat bertengger, tempat kawin dan tempat bersarang. Kajian terhadap penyebaran lokal merak dilakukan dengan analisis banding dengan penelitian yang telah dilakukan sebelumnya. Dari hasil penelitian ini menunjukkan bahwa tempat terbuka yang didominasi rumput dan semak merupakan tempat penting untuk mencari pakan dan bertengger serta kelompok beberapa pohon-pohon di sekitar areal terbuka penting sebagai tempat bertengger. Tipe vegetasi yang penting sebagai habitat merak adalah hutan musim yang terdapat spot-spot areal terbuka yang ditumbuhi rerumputan dan semak, savanna serta ekotone hutan musim dan savanna. Sebaran lokal merak di Resort Bekol lebih terkumpul di hutan musim dan ekotone dari hutan musim dan savanna.

Keywords: habitat, local distribution, javan green peafowl, Baluran national park.

INTRODUCTION

Green peafowl (*Pavo muticus*) distributed in South Assam, Burma, Thailand, Indo-China, Malaya and Java (Delacour, 1977). Hoyo (1994) mentioned that bird have three subspecies; these are *Pavo muticus imperator* (Delacour 1949), *Pavo muticus spicifer* (Shaw & Nodder 1804) and *Pavo muticus muticus* (Linneaus 1758). *Pavo muticus spicifer* is distributed from North-East India and South-East Bangladesh to North-West Burma (probably extinct), meanwhile *Pavo muticus imperator* is distributed patchily in South of Burma to Isthmus of Kra and East through Thailand to South China, Vietnam and Laos. *Pavo muticus muticus* is distributed in Java and already extinct in the Malay Peninsula. The javan green peafowl (*Pavo muticus muticus*)is distributed nowadays locally and patchily in Java island (van Balen *et al.*, 1991).

King *et al.* (1980) described in general habitat of green peafowl as: open forest, secondary forest, riverine forest and forest edges. Mackinnon (1990) mentioned that habitat of green peafowl is composed of open forest with shrubs and bushes. In Ujung Kulon National Park, West Java, the green peafowl prefers open areas as grazing ground for feeding (Hoogerwerf, 1970). Kuroda (1936) mentioned that the peafowl favored more the arid area in East Java.

According to Hernowo (1995) the habitat types of the green peafowl in Java are monsoon forest, low land dry forest with patches grassland savanna and even teak plantation forests. Nowadays possible habitat to support these birds are forest reserves (National Parks, Game Reserves, Nature Reserves and Forest Protected Areas). The range of the bird has become locally restricted in every site of their local distribution.

Important problems to javan peafowl are poaching to the bird and their eggs cause on population decrease and degradation habitat due to human influence, e.g., collecting fire wood, change to agricultural land. Meanwhile to conserve these birds data on the population size in every site, behavioral pattern, habitat preferences, etc. are lacking. The data are very important in order to support the conservation effort for these birds. This paper deals with important habitat component including feeding and drinking site, roosting site, shelter, display area, nesting site and about local distribution of javan green peafowl related to habitat types.

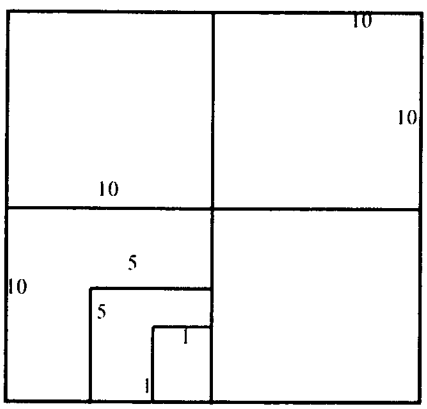
METHODS

Baluran national park covers an area of about 25 000 ha. It has a typical monsoon climate with a long dry season. The average dry period lasts about 7- 8 month of the year with less precipitation. The annual precipitation ranges from 900 to 1 600 mm per year (FAO, 1977).

Five vegetation types have developed in this park : monsoon forest, savanna, beach forest, mangrove, and sub-mountain forest-evergreen forest. Monsoon forest or deciduous forest covers more than half of Baluran national park. But savanna covers an area less than 20 % Baluran national park. Sub-mountain forest has developed in Baluran mountain and evergreen forest growth patch can be found near Bekol savanna grassland. Beach forest occur along coastal area and mangrove are found at Bilik, Lempuyang, Mesigit, Tanjung Sedano and near Bama.

Monsoon forest, savanna, beach forest and ecotone between them was selected as sample areas, where peafowls are found more abundant in this area. Intensive study was focused at Bekol resort from August 1994 to February 1995. Sample area was about 1 200 ha with 4 Km length and 3 Km width, which savanna area covered of about 40 % (480 ha), monsoon forest 45 % (540 ha) and beach forest 15 % (180 ha). The sample area was adjacent to Curah Udang-Bekol to the South until Hectometer (Hm) 85 to East near Popongan to the North until Bama and Kalitopo-Curah Udang to West close to Bekol. From those places were chosen three sample plots. Each vegetation type was represented by one transect of sample plot which consists of 10 subsample plots.

Peafowl habitat is dominated by vegetation. The sample plot was set on each type vegetation such as savanna (1 plot), monsoon forest (1 plot) and beach forest (1 plot). The shape of sample plots is described in Fig. 1.



Tree : 20 m x 20 m
Pole : 10 m x 10 m
Sapling : 5 m x 5 m
Seedling : 1 m x 1 m

Figure 1. Shape of each vegetation sample plot

Criteria
Tree : dbh (diameter at breast height) at least same or more than 20 cm
Pole : dbh 10 to 20 cm
Sapling : dbh less than 10 cm, height not less than 1.5 m
Seedling: height less than 1.5 m

To describe structure and composition of vegetation as peafowl habitat with quantative value, it was analyzed by using the **Importance Value Index** (IVI) method after Curtis and Cottam (1964) as follows :

$$IVI = RF + RD + RDo$$

Where :

RF = Relative Frequency, *RD* = Relative Density, *RDo* = Relative Dominancy

$$RF = \frac{\text{Frequency of a species}}{\text{Total frequency of all species}} \times 100\,\%$$

$$RD = \frac{\text{Total number of individual a species}}{\text{Total number of all species}} \times 100\,\%$$

$$RDo = \frac{\text{Total basal area of a species}}{\text{Total basal area of all species}} \times 100\,\%$$

Data were collected from trees, poles and sapling are : species, number, dbh (diameter at breast height), and height. Meanwhile for seedling only described : number and species. The species and number of herbs, shrubs and grasses were also recorded.

To describe roost sites, nesting site and feeding site used by green peafowl direct observation was done and its recorded such as : species of vegetation, height, number, frequency of used and some of habitat characteristics condition.

For described the food were eaten by the bird, analisis food content from green peafowl crop and gizzard were done (only one sample). Analysis of food content only described about percentage dry material.

Comparative study was done with other researchers (Mulyana, 1998 and Winarto, 1993) who had done the same topic and at the same location (Bekol resort). Beside habitat study, local distribution of green peafowl was observed base on the encountered with the bird on the habitat.

RESULTS AND DISCUSSION

1. Description of the peafowl habitat

Habitat preference and the abundance of green peafowl are correlated with stucture and vegetation composition. In general, monsoon forest is relatively poor in tree species and patchily with small open area. Many open areas are covered by grasses and shrubs.

Table 1. The importance value index (IVI) of vegetation analysis from sample plots in Monsoon Forest.

Species	Local Name	RF (%)	RD (%)	RDo (%)	IVI (%)
Tree					
1. *Acacia tomentosa*	Klampis	57,14	69,23	58.64	185,01
2. *Tamarindus indica*	Asem	07.14	3.85	17,18	28.17
3. *Cordia obligua*	Kendal	14,28	7,28	6.65	28,62
Pole					
1. *Acacia tomentosa*	Klampis	30.77	33,33	50.70	114.80
2. *Diospyros maritima*	Budengan	23,08	20,00	12.77	55.85
Sapling					
1. *Diospyros maritima*	Budengan	75,00	25,71	86,45	247,16
2. *Limonia acidissima*	Jerukan	25,00	14.29	13.54	52.83
Seedling					
1. *Acacia tomentosa*	Klampis	57,14	70,39		127.73
2. *Tamarindus indica*	Asem	42,86	29,41		72.27
Shrubs. Herbs. Grasses					
1. *Vernonia cinerea*		14,29	14,82		29,11
2. *Wedelia montana*		11,90	18,82		30,72
3. *Arundinella setosa*		09,52	15,29		24.81
4.*Scherechne punctulata*		11,90	12,12		24,02

Vegetation composition in this forest show, that klampis (*Acacia tomentosa*) dominated in the area sample with importance value index (IVI) of 185,01% (Table 1). Klampis is distributed over half of the sample plot in monsoon forest (RF 57,14%). Beside common, they are also dense (RD 69,23 %) compared with other trees. The important function of klampis for green peafowl is as roosting site. Usually this tree will be used by green peafowl when it is more than 7 m high.

The other important trees is asam with IVI (28,17 %), it is also used as a shelter tree, but if the height is more than 12 m it will be used as roosting tree, but less frequent than klampis. Besides as roosting trees, in the pole stage kendal and budengan, are important for preening activities and sheltering when the day is hot. The shrub and grasses form creates and together with a few tall tree, they are important as food component and nesting sites for green peafowls.

Baluran national park is characteristized by savanna. Due to invasion of *Acacia nilotica* life-forms in Bekol savanna have changed to resemble *Acacia nilotica* stands. Tall trees and open areas are quite few, because the savanna is almost completely occupied by *Acacia nilotica*. Open area is only present in small places bordering with beach forest and monsoon forest. The grasses and shrubs cannot grow under pole stage of *Acacia nilotica*. The open areas however, are important for the peafowl as feeding sites, nesting sites and display areas. Tree stage is dominated by mimbo and bukol with IVI (88,55 % & 79,74 %), but pole stage and sapling are dominated by *Acacia nilotica* (Table 2).

The important trees for peafowl are pilang, dead of gebang, and klampis is used as roosting sites. The other important trees are bukol and mimbo as shelter trees. The fruit of mimbo tree is one of the birds' diet during the dry season. The birds were observed feeding on fallen mimbo fruits several times (n < 10).

In general, the beach forest with the upper canopy has a nearly continous crown and very thin undergrowth. The beach forest has on average range of about 50 - 400 m width. Open area this forests is nearly less.

Vegetation of the beach forest is dominated by manting, pohpohan and gebang with IVI (67,64%, 36,40% and 22,36%, respectively) (Table 3). Even though in that area gebang is one of dominant trees, it is not used as a roosting trees by peafowls because the tree still alive with dense crown. The birds prefer dead gebang trees with an open crown for a roosting site. Usually, the green peafowl come to this area to drink. Some water holes were available in the beach forest formation at Bama, Kelor, Manting, Kalitopo and Sumberbatu.

Table 2. The importance value index (IVI) of vegetation analysis from sample plots in occupied of *Acacia nilotica*

Species	Local name	RF (%)	RD (%)	RDo (%)	IVI (%)
Tree					
1. *Azadirachta indica*	Mimbo	31,25	33,33	22,47	87,05
2. *Zizyphus rotundifolia*	Bukol	25,00	27,78	26,96	79,74
3. *Acacia leucophloea*	Pilang	12,50	11,11	17,20	40,81
Pole					
1. *Acacia nilotica*	Akasia	41,67	48,83	32,55	122,05
2. *Acacia tomentosa*	Klampis	16,67	17,39	17,38	51,44
3. *Zizyphus rotundifolia*	Bukol	16,67	17,39	15,32	49,38
Sapling					
1. *Acacia nilotica*	Akasia	55,55	75,00	77,37	207,92
2. *Zizyphus rotundifolia*	Bukol	22,22	12,50	11,68	46,40
3. *Flacourtia indica*	Rukam	11,11	6,25	8,03	25,39
Seedling					
1. *Acacia nilotica*	Akasia	71,43	76,20	147,63	147,63
2. *Acacia Leucophloea*	Pilang	14,28	9,52	23,80	23,80
3. *Azadirachta indica*	Mimbo	14,28	14,28	28,56	28,56
Shrubs, Herbs, Grasses					
1. *Ocimum santum*	Selasih	18,42	16,17		34,59
2. *Veronia cinerea*		18,42	18,09		36,51
3. *Thespesia lampas*		15,79	13,83		27,63
4. *Brachiaria mutica*	Merakan	5,26	12,77		18,03

Table 3. The importance value index (IVI) of vegetation analysis from sample plots in Beach Forest

Species	Local Name	RF (%)	RD (%)	RDo (%)	IVI (%)
Tree					
1. *Syzygium polyanthum*	Manting	18,42	20,90	28,31	67,63
2. *Buchanania arborescens*	Pohpohan	13,16	16,42	6,82	36,40
3. *Corypha utan*	Gebang	7,89	4,48	14,87	27,24
Pole					
1. *Guettarda*		20,00	33,33	21,03	74,63
2. *Tamarindus indica*	Asem	20,00	16,66	24,35	61,01
3. *Syzygium polyanthum*	Manting	20,00	16,66	23,25	59,91
Sapling					
1. *Corypha utan*	Gebang	44,44	64,29	69,37	179,10
2. *Syzygium polyanthum*	Manting	22,22	14,28	13,18	49,68
3. *Thespesia populnea*		11,11	7,14	8,91	27,16
Seedling					
1. *Syzygium polyanthum*		55,55	41,67		97,22
2. *Corypha utan*		22,22	33,33		55,55
3. *Azadirachta indica*		22,22	25,00		47,22

2. Feeding and Drinking Site

Frequently (n = 25), the peafowl was found feeding in open areas (grass and shrubs area) of the monsoon forest and the savanna or in their ecotone. Ten days observation at dry season (every morning 4.30 - 7.00 a.m) on the fruiting weringin tree (*Ficus microcarpa*), found about 5 - 8 birds feed on fruit of that tree. Three times I observed 3 - 5 female birds fly and perch on the tree to peck directly out the mature fruits. To choose the mature fruit the bird moved from one branch to the other. Meanwhile, other birds feeding the fallen fruit in the ground. Two adult males were found gathering for food on the fruiting trees during the breeding season, but they kept at a distance about 25 - 40 m from each other. Besides that tree, the peafowl was observed feeding on the fruit of krasak. Unfortunately, one female bird died after it had been caught, but it is inner organs could be used for some food analysis (Table 4).

Besides the plant material as listed in Table 4, one termite was found in the crop of the bird. Their diets composition is dominated by plant material, because the bird was caught in the dry season, where insects are less abundant than in the rainy season. At least 15 times, green peafowls could be observed feed on grasshoppers, crickets and other insects in open areas (grasses and shrubs area) during the rainy season. Meanwhile the food composition of green peafowl in Baluran national park depends on food availability which correlate with the season.

Table 4. The crop, gizzard and proventriculus content of an adult female green peafowl

Organs	Content	Weight (g)	Percentage (%)
Crop	Seeds (mixed)	3,78	10,75
	Flower	0,47	1,34
Gizzard	Small stones (mixed)	14,80	42,08
	Seed (mixed)	6,92	19,68
	Plant materials (rough)	6,16	17,51
	Plant materials (soft)	1,66	4,72
Pro Ventriculus	Small stones	0,44	1,25
	Seed mixed with plant materials (soft)	0,94	2,67
Total		35,17	

Note : the materials weight base on dry weight

According to Mulyana (1988), at least 33 species of vegetation consist of trees, shrubs, herbs and grasses are eaten by green peafowl in Baluran national park. From that species 15.15% were trees, 27.27% shrubs, 24.24% herbs and 33.33% grasses. The composition of their diet is vegetation fruits 8.62%, flowers 6.89%, seeds 29.31% and grasses 55.17 %. Green peafowls prefer the seeds of bayam ri (*Amaranthus spinosus*), the seeds and leaves of grasses empritan (*Eragrotis amabilis*), padian (*Shorgum nitidum*), jawan (*Echinochloa crusgalli*) and pring-pringan (*Pogonatherum paniceum*).

During the dry season at Baluran national park the condition became very harsh. The rainfall is quite low and nearly 7 - 8 months are dry. The water is limited and only available in certain places. In the sample area, water is available in Bekol, Bama, Kelor, Manting and Kalitopo, although during the rainy season water is available everywhere. During the dry season the peafowl, like many others species of the park, have to compete for this limited resource.

3. Roosting Site

Not all trees are used as roosting sites by green peafowl. The birds select certain trees for roosting. The trees are preferred for roosting was recorded like pilang (*Acacia leucophloea*), klampis (*Acacia tomentosa*), kepuh (*Sterculia foetida*), randu alas (*Bombax valetoni*), tekik (*Albizia lebekkoides*), krasak (*Ficus superba*), asam (*Tamarindus indica*), cangkring (*Erythrina fusca*), mimbo (*Azadirachta indica*), talok (*Grewia eriocarpa*) and dead of gebang (*Corypha utan*). The preference roosting trees is shown in Table 5.

Characteristic of roosting trees are

a. The trees are relatively tall (more than 7 m), higher than the trees in the surrounding area
b. The leaves are not so dense, rather open. Even dead trees with shaded leaves are used
c. The surrounding of the roosting trees is relative open or not far from the trees present the open area
d. The branches of the trees form a relatively upright angle to the stem
e. Usually, near the roosting trees accur other smaller trees.

The dropped faecals on the ground below a tree, indicated that the tree is used by the peafowl for sleeping. From these signs can determine also which twigs or branches were used.

According to Mulyana (1988), the green peafowl choose trees for roosting with sparse of branch and crown, such as pilang (*Acacia leucophloea*), klampis (*Acacia tomentosa*), kemloko (*Emblica officinalis*), mimbo (*Azadirachta indica*), weru (*Albizia procera)*, cempalok (*Bauhinia hirsuta*) and gebang (*Corypha utan*). Other trees are having an umbrella crown shape such as kesambi (*Schleichera oleosa*) and krasak (*Ficus superba*).

Pattaratuma (1976) mentioned that the peafowls in Baluran prefered pilang (*Acacia leucophloea*) for their roosting with height of 10 to 15 m. Hoogerwerf (1970) mentioned in Ujung Kulon, the green peafowls chose roosting trees which do not have dense leaves, like teak and palm tree.

Table 5. Roosting trees used by green peafowls (n = 152) inBekol, Baluran National Park

No.	Tree	Local Name	Frequency	Percentage
1.	*Acacia leucophloea*	Pilang	32	42,11
2.	*Corypha utan*	Gebang	14	18,42
3.	*Acacia tomentosa*	Klampis	8	10,58
4.	*Sterculia foetida*	Kepuh	5	6,58
5.	*Tamarindus indica*	Asem	4	5,26
6.	*Erythrina fusca*	Cangkrik	3	3,95
7.	*Albizia lebekkoides*	Tekik	3	3,95
8.	*Ficus superba*	Krasak	2	2,63
9.	*Bombax valetoni*	Randu alas	2	2,63
10.	*Azadirachta indica*	Mimbo	2	2,63
11.	*Grewia eriocarpa*	Talok	1	1,32

4. Shelter, Preening Site and Dusting Site

On hot days the green peafowl usually gets shelter under trees with luxuriant leaves or do not perch on a tree above 5 m. The trees have a function as a shelter site with the crown shape like an umbrella and they have branches with an angle upright to the stem. The trees recorded in the research as shelter trees are bukol, kendal, asam, talok, klampis, pilang, kesambi and mimbo.

According to Mulyana (1988), peafowl used trees with leaning branches for shelter like bukol, mimbo, talok, pilang, klampis, kesambi, kendal, kemloko, weru and cempalok. The trees were found in Baluran nearly similar to the roost trees as he has mentioned.

The preening activities began at roosting sites before the birds came down to the ground. Besides that, peafowl also continued preening again after feeding in the morning while sunning. They selected small trees with an open crown or they sat on stones, tree stumps or in dead fallen tree.

Four times, the peafowls were found dusting in the dry season. The dusting activities were using fine dusty soil. A peacock was seen dusting on the road side at HM 70. Dusting activities are important for peafowl to get rid of parasites.

5. Nesting Site

The green peafowl hen lays its eggs in the ground. The nest is placed between shrubs and grasses or direct on bare land at open areas with very few trees, or bordering open areas. Three nests were found in the savanna which is covered with *Acacia nilotica* that bordered with open area and shrubs. The distance between the three nests was about 45 to 260 m as shown in Table 6. One nest lain between piled up of residual *Acacia nilotica* where it was cut, and the other were situated at borders grasses and shrubs. Unfortunately, only one nest contained 6 eggs, the other were empty. Surely these eggs could be stolen by people.

Table 6. Nest position and distance between nest at savanna Bekol

Nest Position	Distance (m)	Number of Egg
First to Second	235	6
Second to Third	45	Empty
Third to First	260	Empty

Note : the second and third nest with empty egg were stolen by people

In the general the shape of the peafowl nest is oval with 30 cm width and 45 cm length. The size of egg on average was 70 mm long and 51 mm wide. The colour of egg is white, but after some days becomes brownish with spots, because the eggs are coated with soil.

The nest is built by female birds as very simple construction. The nest is a dish, directly scratched into the ground or frequently it is upholstered with few dead grasses or branches of shrubs selasih (*Ocimum santum*), as nesting material. The nest is placed not so hidden, but it is indistinct. When the wether is sunny, usually sunshines falls direct on the eggs if the peahen is absent.

Mulyana (1988) found three nests of green peafowl at Bekol savanna with an average distance to each other of about 95 m. Winarto (1993) found 6 green peafowl nests, two of them in Bekol (savanna), two nests in Asam Sabuk (monsoon forest) and the rest in Keramat (savanna), but he did not mention the distance between the nests. Both Winarto (1993) and Mulyana (1988) found 3 to 6 eggs in the nests.

From gathering three nests in certain places (distance between nest only 45 to 260 m), the condition was supposed might have several reasons. The first reason is that place an optimal condition for female bird to lay their eggs. Second might be between the female birds which laid egg in that places from one clutch size or same group.

6. Display Area

The male of peafowl is famous as a "dancer bird" (Delacour, 1977). During the mating season, the peacocks prefer open areas which are relatively clean and to attract the peachen by dancing. Several times, the peacocks was observed dancing in the open area in Bekol savanna (n = 10) or in the monsoon forest (n>15). The male was found also to dance on areas below tree, but free from shrubs and grasses. Even the peacocks were found (no less than 40 times) dancing on the road between Batangan to Bekol mainly from Hm 70 to Hm 114.

The peacocks select flat places, open areas and relatively clean from vegetation (shrubs, herbs and grasses) as display area. Those open places were not so large with a diameter of about 3 meter, with patchy grasses, shrubs and few trees.

The road from Batangan to Bekol is one of the best places for display area. It was registered at every distance from 50 to 300 m. The males standing in the road waiting for female bird in Hm 70 to Hm 114 Batangan - Bekol.

7. Local Distribution

Although the green peafowls are spread all over the park, the birds more abundant around Bekol Resort. Each habitat type showed a different abundance of the birds. The highest concentration was found in the area around Bekol as shown in Table 7.

Table 7. Abundance and local distribution of green peafowl within habitat types

Location	Habitat type	Bird number		
		(M'88)	(RW'93)	(JBH'95)
Bekol	monsoon forest-savanna, savanna, monsoon forest	66	19	61
Curah Udang	monsoon forest-savanna, savanna, monsoon forest	24	7	31
Bama, Kelor, Derbus	beach forest-savanna, beach forest-mangrove, beach forest savanna, monsoon forest	79	20	22
Curah Uling	evergreen forest-monsoon forest, monsoon forest-beach forest	32	8	34

Note : These data were modified from three researchers
(M'88) : Mulyana (1988)
(RW'93) : Rudy Winarto (1993)
(JBH'95) : Jarwadi Budi Hernowo (1995)

Mulyana (1988) found the highest number of green peafowl in habitat between savanna and beach forest (Bama, Drebus, and Kelor). But, from this observation, peafowls are more abundant in the monsoon forest and at the edge of the savanna and monsoon forest (around Bekol).

From this case it seems that there is a tendency of changed abundance in local distribution, probably due to less availability of feeding sites in the open area in the savanna. Nowadays the savanna at Bekol resort is occupied almost completely by *Acacia nilotica* in pole and sapling stage (Table 3). The trees cover all of the former of Bekol savanna, and there is only small chance for grasses and shrubs to grow, although they created the vegetation of the feeding sites for peafowls.

Referring to my field observation, the abundance and local distribution of green peafowl is connected to the availability of feeding sites, nesting sites, roosting sites and water resources. I found that in the monsoon forest these places are more abundant than in the savanna.

To fulfill the need of suitable habitat (available feeding site, roosting site and nesting site), the birds are encountered more in the ecotone of savanna-monsoon forest and beach forest-monsoon forest. The composition and vegetation structure has influenced the peafowl distribution in Baluran national park. Table 1 and 7 show that peafowls are more abundant in the monsoon forest than the other habitats. This case indicates that the birds prefer a rather open habitat. This finding is conformed with observations of Pattaratuma (1976), Mulyana (1988) and Winarto (1993).

CONCLUSIONS

The green peafowl prefers on habitat which is patchy in a mosaic form composed of grasses, shrubs herb and a few tall trees also close to water. In Baluran National Park, vegetation type and important habitat of the green peafowl are monsoon forest, savanna and ecotone of them.

Feeding site of the green peafowl is open area in savanna or monsoon forest where are dominated by grasses and shrubs. Roosting site are selected by green peafowl certain trees, where there is a tall tree surround open area which the leaves are not so dense and the branches a relatively upright angle to the stem. Nesting site is open area which dominated with grasses and shrubs

Display areas are chosen by peafowl is open area. Those open places were not so large with diameter of about 3 m and relatively clear from vegetation. The best places for display are in Baluran National Park is road from Batangan to Bekol mainly from HM 70 to HM 114.

The green peafowl are spread all over in Resort Bekol and the birds more abundant at habitat type of monsoon forest and ecotone between monsoon forest and savanna.

REFERENCES

Curtis, J.T. and G. Cottam, 1964. Plant ecology workbook. Burgess Publishing Co. Minneapolis.

Delacour, J. 1977. The pheasant of the world. (2nd Edition) Spurr Publication. Saiga Publishing Co. Ltd. Surr GU 26 GTD. England.

FAO. 1977. Proposed Baluran national park: Management Plan 1978 – 1982. Field Report of UNDP/FAO Nature Conservation and Wildlife Management Project. Food and Agriculture Organization. Bogor. Indonesia.

Hernowo, J.B. 1995. Ecology and behaviour of the green peafowl (*Pavo muticus* Linneaus 1766) in the Baluran national park, East Java, Indonesia. Faculty of Forestry Science. Georg August University Göttingen. Göttingen.

Hoyo, F. D. 1994. Handbook of the birds of the world Vol. 2. New world vulture to guinefowl. Barcelona.

Hoogerwerf, A. 1970. Ujung Kulon the land of the last javan rhinoceros. E. J. Brill Leiden. Netherland.

King, B.M. Woodcock & E.C. Dickinson. 1980. A field guide to the birds of South East Asia. Collin st James Place. London.

MacKinnon, J. 1988. A field guide to the birds of Java and Bali. Gajah Mada Press. Yogyakarta.

Mulyana. 1988. Studi habitat merak hijau (*Pavo muticus* Linneaus) di resort Bekol, taman nasional Baluran, Jawa Timur. Jurusan Konservasi Sumberdaya Hutan. Fakultas Kehutanan IPB. Bogor.

Pattaratuma, A. 1976. An ecologycal study on the green peafowl in the game reserve of Baluran, Banyuwangi, East Java – Indonesia BIOTROP SEAMEO Regional Center for Tropical Biology. Bogor.

Van Balen, D. Prawiradilaga, M. Indrawan, A. Marakarmah, I.W.A. Dirgayusa & M.A. Isa. 1991. Notes on the distribution and status of green peafowl on Java. World Pheasant Association- Worldwide Fund for Nature – Indonesia Programme. Bogor.

Winarto, R. 1993. Beberapa aspek ekologi dan aktivitas perkembangbiakan merak hijau (*Pavo muticus* Linneaus) di taman nasional Baluran, Jawa Timur. Jurusan Konservasi Sumberdaya Hutan. Fakultas Kehutanan IPB.