

THE EXISTANCE OF RED JUNGLEFOWLS (*GALLUS GALLUS*) IN OIL PALM PLANTATIONS IN SELECTED STATES IN MALAYSIA AND THEIR MORPHOLOGICAL CHARACTERISTICS

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SUMMARY

An investigation was carried out to establish the existence of Red Junglefowl (*Gallus gallus*) populations in oil palm plantations and to study their morphological characteristics. This study which commenced from February to August in 2009 and 2010, took place in several oil palm plantations in the state of Johor, Selangor and Pahang, Malaysia. Twenty seven Red Junglefowls which comprised of seven adult males, six adult females, four juvenile males, three juvenile females, four male chicks and three female chicks were successfully captured throughout this study using the scoop netting method. The morphological study highly suggested the purity of the birds based on the characteristics exhibited. The birds were characterised by boat-shape body appearance, white or red ear lobe and slender greyish blue leg. Thus, this study offered some evidence that oil palm plantations are found to be suitable in sustaining and providing ample survivability for the species to exist in the future.

Keywords: Morphology, oil palm plantation, Red Junglefowl

Red Junglefowl (*Gallus gallus*) is believed to be the origin of all present domestic chicken and it is indigenous to Southern and Southeast Asia. Generally, it can be identified through certain phenotypic characteristics such as the boat-shape body appearance, white or red ear lobe, and slender greyish blue leg. The sexes are highly dimorphic where the presence of seasonal eclipse plumage is more prominent in males compared to the females. Nowadays, the rapid and extensive development of agricultural plantations unfortunately led to the disappearance of natural habitat for most of the forest-dependent wildlife. However, the Red Junglefowl has managed to adapt to this new plantation environment and continues to expand its colony into these accessible habitats. The growth of oil palm plantations actually provides a chance for some species to survive without any jeopardy especially to the birds. Wildlife conservation aspect is made known to many oil palm plantation companies, where the wildlife is fully protected and any illegal interruption is strictly prohibited which helps to shield this valuable creatures. In Malaysia, several studies have been conducted to study the population of Red Junglefowl in oil palm plantations but most of the reports were made based on distance study without acquiring the birds for detailed morphological identification. Therefore in this study, life Red Junglefowls were captured and morphological identification was done to determine the purity of the birds.

This study was conducted in several oil palm plantations owned by government agencies, private companies and individual smallholders particularly in the state of Johor, Selangor, and Pahang, Malaysia with the hunting permit approved by the Department of Wildlife and National Park (PERHILITAN). Random sampling method was done whereby the birds were caught using the scoop netting method. This study was performed from February to August in 2009 and 2010. The sampling was

done on the 15th to 25th of each month as at this particular period, the moon light is diminished and thus, provided a dark environment which helped in preventing the birds from flying away. The birds were handled properly to reduce stress and the morphological study was conducted through visualisation and the picture profiles and certain measurements were taken. Prior to the release, the spur of each bird was marked to prevent recapture.

Collectively, twenty seven birds were successfully sampled from the all of the 3 states. The birds comprised of seven adult males, six adult females, four juvenile males, three juvenile females, four male chicks and three female chicks (Table 1) and all the birds were captured by scoop netting method. The parameters of the birds were recorded and their morphological characteristics are shown in Table 2.

Table 1. Number of birds successfully captured throughout the study

Birds	No. of birds	Age (Month)
Adult Male	7	12-24
Adult Female	6	12-24
Juvenile Male	4	5-11
Juvenile Female	3	5-11
Male Chick	3	< 5
Female Chick	4	< 5
Total	27	

Morphological identification showed that most of the birds depicted typical characteristics of the pure Red Junglefowl as described in previous studies (Brisbin and Peterson, 2007; Salehatul, 2009; Madge and McGowan, 2002; Babjee, 2009; Johnsgard, 1999). The birds possessed the distinctive boat-shape body with horizontal posture (Figure 1), slender slaty blue tarsus (Figure 2a) and white ear lobes (Figure 1a). Among the adult males captured, four of them demonstrated seasonal eclipse

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Table 2. The means of characteristic parameters between sex and age of the Red Junglefowls

Group		Mean					
		Weight (g)	Body length (cm)	Wing length (cm)	Tail length (cm)	Tarsus length (cm)	Spur length (cm)
Adult	Male	901.6	39.4	24.7	21.7	8.7	1.9
	Female	498.0	30.1	18.8	12.6	7.2	-
Juvenile	Male	606.0	33.7	23.6	18.3	7.6	0.2
	Female	326.0	27.8	16.3	13.9	6.0	-

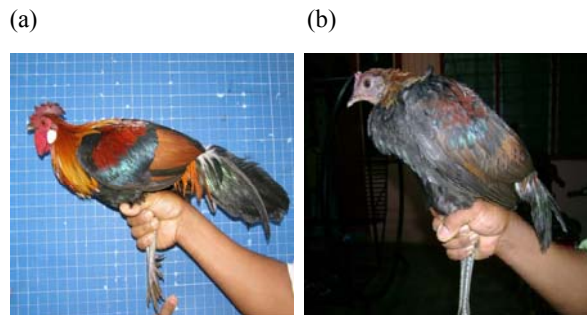


Figure 1. Boat-shaped body appearance demonstrated by (a) adult male during breeding season and (b) juvenile male Red Junglefowl



Figure 2. Prominent slender slaty blue tarsus

Figure 3. Eclipse plumage demonstrated by an adult male Red Junglefowl

plumage (Figure 3). These results were in accordance to the previous studies reported from several authors (Johnsgard, 1999; Madge, and McGowan. 2002; Babjee 2009). From all the birds that were captured and

measured, the male birds showed the average body weight of 901.6 g whereas the females at 498.0 g. The average male body length was 39.4 cm while for the female was 30.1 cm. The wing and tail lengths of male birds were at an average of 24.7 cm and 21.7 cm with the female showed an average of 18.8 cm and 12.6 cm respectively. The tarsi of male and female birds were at 8.7 cm and 7.2 cm, while the adult spur of male birds were at 1.9 cm in length. All of the captured birds were observed to have red, white or a combination of both colours of earlobes. The combs were single serrated with a pairs of wattles found in both male and female birds. The adult mature males were observed to have a large prominent red coloured comb (Figure 4b) in contrast with the females exhibiting small and pale combs (Figure 4a).

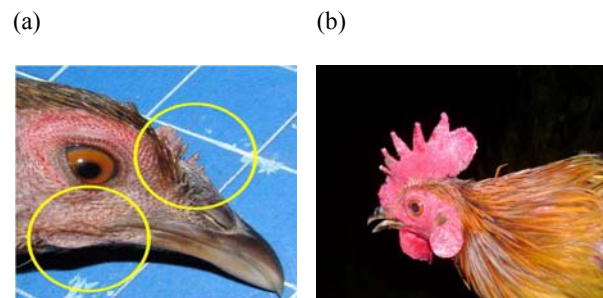


Figure 4. (a) An adult female Red Junglefowl with the presence of small comb and wattles (circle) (b) Red large prominent comb and wattles of matured male Red Junglefowl

The adult males have a very distinguished feathers colouration (Figure 1a). There was an assortment of different shades of red from the head and neck to the back of the body. The under part or background colour was black and the rump was dark reddish orange in colour. The tail feathers were noted to be metallic greenish black in colour. There were white fluffy feathers observed at base of the arched tail. In contrast, the female Red Junglefowl was dark brown in colour. Unlike the males, the under part or background colour was brown while the head feathers were observed to be dark brown to yellowish. The breast and vent were a lighter brownish colour. The tail feathers were also found to be dark brown in nature. The eclipse plumage or also known as the non breeding plumage which is generally found in adult males were observed to be have more black feathers unlike in the breeding season where the males are more colourful. The eclipse plumage (Figure 3) is one of the characteristics that only occur in the pure Red Junglefowl.

The size of the comb and wattles were smaller when compared between the breeding adult males and the juvenile males. However, to confirm that it is an adult male, the spurs should be seen clearly on both feet. The legs of wild caught Red Junglefowl are relatively slim with smooth texture and are generally dark slate blue in colour. Only male Red Junglefowls were observed to have the spurs. None of the female Red Junglefowls were found to have the spurs. Interestingly, in this study we noticed that the feathers from the pure Red Junglefowls were easily detached when handled as compared to the village chicken. We believe this is a defence mechanism adopted by the birds to escape from predators. It was observed that when the netting method was used, this resulted in most of the birds losing some of the back, neck hackle and tail feathers which limits thorough morphological study. Despite of this drawback, netting method proved to be superior to the snare trapping method as it allowed for more sample variations. In conclusion, this study is in accordance with previous reports on the presence of Red Junglefowl populations in the oil palm plantations (Abdullah and Babjee, 1982; Arshad, 1999; Azhar *et al.*, 2007 and Platt *et al.*, 2009). Despite of the new environment, the birds have proven to be able to survive and adapt in the oil palm plantations. The conservation and continuity of the species in the future can be ensured provided that food source in the plantation is always available. Thus, the oil palm plantation is not only important for the sustainability of human but can also support the survivability other species like the Red Junglefowls

REFERANCES

- Abdullah, Z.H. and Babjee, S.A. (1982). Habitat preference of the red junglefowl (*Gallus gallus*). *Malaysia Applied Biology*. 11: 59-63.
- Arshad, M.I. (1999). An Ecology Study of Red Junglefowl (*Gallus gallus spadiceus*) in Agriculture area. Doctor of Philosophy thesis, Faculty of Forestry, Universiti Putra Malaysia.
- Azhar, B., Zakaria, M. and Leong, P.C. (2007). Estimating the island population density and abundance of red junglefowl (*Gallus gallus*): Biology indicator for sustainable managed oil palm plantation? *Malayan Nature Journal*. 59: 281-298.
- Brisbin, I.L. and Peterson, A.T. (2007). Playing chicken with red jungle fowl: identifying phenotypic markers of genetic purity in *Gallus gallus*. *Animal Conservation*. 10: 429-435.
- Johnsgard, P.A. (1999). Pheasant of the world 2nd. ed. Oxford University Press. Oxford 19. pp. 113-128.
- Madge, S. and McGowan, P. (2002). Pheasants, Partridges and Grouse. : Christopher Helm, London. pp. 92-297
- Platt, S.T., Condon, T.P., Tasirin, J.S., Hunuwu, I., Siwu, S., Jones, R.A. and Rainwater, T.R. (2009). Notes on Red Junglefowl (*Gallus gallus*) in northern Sulawesi, Indonesia with an emphasis on genetic introgression with domestic chicken. *Malayan Nature Journal*. 61: 23-33.
- Babjee, S.M.A. (2009): The Red Jungle Fowl of Peninsular Malaysia. Legasi Press, Kuala Lumpur.
- Salehatul, K.M.A. (2009): Description and the differences in the morphological features of the red junglefowl (*Gallus gallus*) and its domestic crosses. Undergraduate Final Year Project thesis, Faculty of Veterinary Medicine, Universiti Putra Malaysia.