

Chapter I

Introduction

Peafowl are very beautiful bird in the genus of the Gallo-pheasant family. Due to the beauty and attractiveness of peafowl are attractive to human, they are often hunted and traded either in Thailand or abroad.

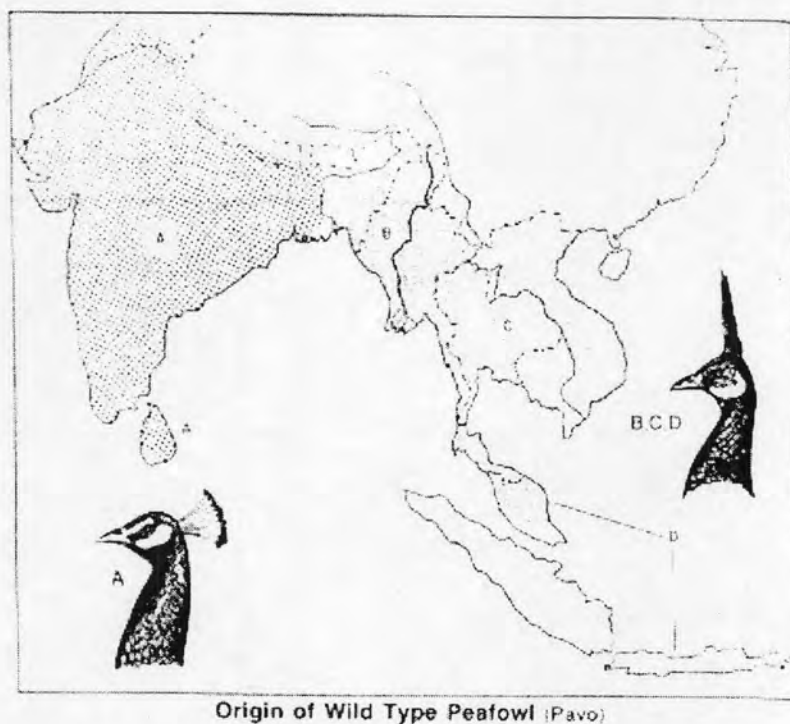
There are three species of Peafowl in the world, the first species is Congo Peafowl (*Afropavo congensis* Chapin, 1936) live in Congo, Africa, the second species is Indian Peafowl (*Pavo cristatus* Linnaeus, 1758) or Blue Peafowl is found in India, and the last species is Green Peafowl (*Pavo muticus* Linnaeus, 1766) which is distributed in southeast Assam through Burma and Thailand to the south China and southwards to the Malaysian peninsula and Java. Two Asian Peafowl characteristics are similar but Green Peafowl are much bigger than Blue Peafowl. The facial skin of Blue Peafowl is white while facial skin of Green Peafowl is blue and yellow. Crest of Blue Peafowl is fan shaped while crest of Green Peafowl stands nearly erect. Furthermore, body feathers of Blue Peafowl are blue and wings are with light black. The other feathers are brown. (Wayre, 1969)

The classification of Green Peafowl is:

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| Class | Aves |
| Subclass | Neornithes |
| Order | Galliformes |
| Family | Phasianidae |
| Genus | <i>Pavo</i> |
| Species | <i>Pavo muticus</i> (Monroe and Sibley, 1997) |

There are three subspecies of Green Peafowl; the first subspecies is Burmese Green Peafowl (*Pavo muticus spicifer* Shaw, 1804) distributed in the western Myanmar.

The second subspecies is Indo-Chinese Green Peafowl (*Pavo muticus imperator* Delacour, 1949) which is found in Thailand and Indo-China, and the last subspecies distributed in the southern part of Thailand from Kra until Java (Indonesia) is Javanese Green Peafowl (*Pavo muticus muticus* Linnaeus, 1766) (Wayre, 1969). The area of distribution can be seen in Figure 1.1.



The peafowl is native to India, Ceylon, Assam, Burma, Siam, Malaya, Java
 A. *Pavo cristatus*; B. *Pavo muticus spicifer*; C. *Pavo muticus imperator*
 D. *Pavo muticus muticus*

(Delacour, 1977)

Figure 1.1 Map showing geographic distribution of *Pavo cristatus* and 3 subspecies of *Pavo muticus*

Green Peafowl (*Pavo muticus*) is the only species that found in Thailand. This species consists of two subspecies, the Indo-Chinese Green Peafowl and the Javanese Green Peafowl. The first subspecies is distributed above of Kra and the latter is found beyond Kra to the most south (Deignan, 1963).

Green Peafowl (*Pavo muticus*) is classified as an endangered species reflected as small population sizes in Thailand. Once they were found throughout Thailand which altitude is below nine hundred meters above sea level except in the central valley of Chao Phraya and Southeastern of the northwest (Humphrey and Bain,

1990). Currently, IUCN (International Union for the Conservation of Nature and Natural Resources, 2008) is classified Green Peafowl as vulnerable species but in Thailand, Green Peafowl have been classified as protected animal and endangered species. Furthermore, they are classified as Appendix II by CITES (The Convention on International Trade in Endangered Species of Wild Fauna and Flora, 2008). Now, the numbers of Green Peafowl are declining, according to over hunting and habitat destruction. They are found only in protected area in northern part and western part (national parks - NP and wildlife sanctuaries - WS) such as Mae Yom (NP), Doi Phu Nang (NP), Huai Kha Kaeng - Thung Yai Naresuan (WS) and Huai Hong Krai Royal Development Study Center. The largest population of Green Peafowl is found at Huai Kha Khaeng wildlife sanctuary (Meckvichai *et al.*, 2007).

Wildlife conservation requires the genetic information for species survival. In addition, genetic variation in population level is the important information in a long run, because genetic variation is the essential quality for adaptation of animals to survival.

An indirect method to study genetic variation is studying morphological characteristics (e.g.: color, pattern of plumages and body dimension). This method is relatively simple, inexpensive and less time consuming. However, morphological characteristic is a product of the gene expression and gene-environmental interaction. So, environment may affect the expression of the gene, and effect to morphological traits. Furthermore, the result of morphological characteristic may be different from molecular genetic. As a result, the studies of genetic variation by morphological characteristic may not be sufficient. Another method of study is molecular genetic technique which is considered a direct method. Although, it is expensive, complex, time-consuming and demanding expertise, molecular genetic technique has availability for the studies of genetic variations because it can detect variation from direct DNA and explain the genetic variation better than morphological characteristic. Therefore, this method is now appropriate for solving many problems in many fields such as evolution, phylogeny, taxonomy, speciation, and genetic diversity.

Microsatellite DNA is a genetic marker that is very useful for studying the genetic variation, because it is a hyper-variable genetic marker, high mutation rate and can be detected genetic variation in species, populations and individuals.

At present, Green Peafowl are declined and viable population distributed in Thailand only in northern and western part. Therefore, it should be necessary to study genetic variation within and between two populations of Green Peafowl that found in northern and western part, by using eight microsatellite DNA markers. This result shows the present status of genetic diversity of Green Peafowl, and can be used as a plan to conserve these genetic resources in order to maintain genetic diversity for conservation management and be used for genetic information for future to maintain Green Peafowl population.

Objective

To study genetic variation within and between two populations of Green Peafowl from northern and western part of Thailand using eight microsatellite DNA markers.

Anticipated benefits

1. Obtain basic information of genetic variation within and between two populations of Green Peafowl from northern and western part of Thailand.
2. The information of genetic diversity of Green Peafowl at present status is known.
3. Provide basic information for making decision in wildlife management and maintaining the population of Green Peafowl.