Chapter 1

Introduction

Red Junglefowl is a common bird, which closely resemble to the domestic chicken we are familiar with. Indeed it is generally considered to be the ancestor of all domestic chicken (*Gallus domesticus*) lineage (Delacour, 1947).

It is defined by terrestrial and arboreal habits; 4 toes; 2 carotids; sternum usually white or monochrome; nidifugous downy young in which remiges grow rapidly and which soon fly (Sibley and Alquist, 1990). In both subspecies which occur in Thailand, the beak is black and the legs are gray and without feather. The male has a dominant seven rayed comb on its head while the female has a very small remnant; some criteria for pure red junglefowl says that the comb must be absent from the female (Brisbin, 1980).

Phylogenetic classification

Red junglefowl:

Kingdom Animalia

Phylum Chordata

Class Aves

Order *Galliformes*

Family *Phasianidae*

Genus *Gallus*

In this genus, 4 species are described (Howard and Moore, 1984);

1) *Gallus lafayettei* (Ceylon junglefowl) found in Srilanka.

2) *Gallus sonnerrati* (Gray junglefowl) found in west and south India.

3) *Gallus varius* (Green junglefowl) found in Java.

4) *Gallus gallus* (Red junglefowlconsists of five subspecies in the different locations.

4.1 *G.g. murghi* , Kashmir to Assam

4.2 *G.g. gallus,* Southern Indochina, Thailand

4.3 *G.g. spadiceus,* Southwest Yunnan, Northern Indochina, Burma and Malaysia.

4.4 *G.g. jabouillei,* Northern Vietnam

4.5 *G.g. bunkiva,* Java (Sumatra)

Red Junglefowl (*Gallus gallus,* Linnaeus) is a common species, which has been observed throughout Thailand. Two subspecies occur in the country, differentiated by their different ear lobe colors. *G.g.gallus* shows the white and *G.g.spadiceus* has the red color. The geographical distribution of these two subspecies is not clear since there is no reliable scientific report or survey have been published. In the Guide to the Birds of Thailand (Lekagul and Round), it is said that the race *gallus* junglefowl with whitish ear spot is found only in the eastern part of the country. It may be distributed in Khao Yai National Park where the subspecies has been reported and photographed (Koonkwamdee, 1995). In the photo, the cock has a yellowish leg which is different from the reported gray slate leg by Lekagul and Round (1991).

The subspecies *Gallus gallus spadiceus* with red earlobe distributed in the northern forest from Laos border down to the southwest along the Myanmar border through the Malay Peninsula. There is an evidence that both subspecies occur in the Khao Yai National Park area though distribution needs confirmation.

There is no study on the taxonomic support for the subspecies' difference so far. And there is only one group from Japan (Fumihito et. al, 1994) reported on their genetic study and concluded from DNA sequence data that it is the oldest genetic stalk for the worlds' lineage of domestic chicken.

In terms of economic and cultural importance to human civilization, the Red Junglefowl is arguably the single most important species of bird. Considering the problems of ornithological conservation in Southeast Asia, molecular genetic techniques may offer the best approach to evaluating both captive and wild populations (Brisbin, 1995).

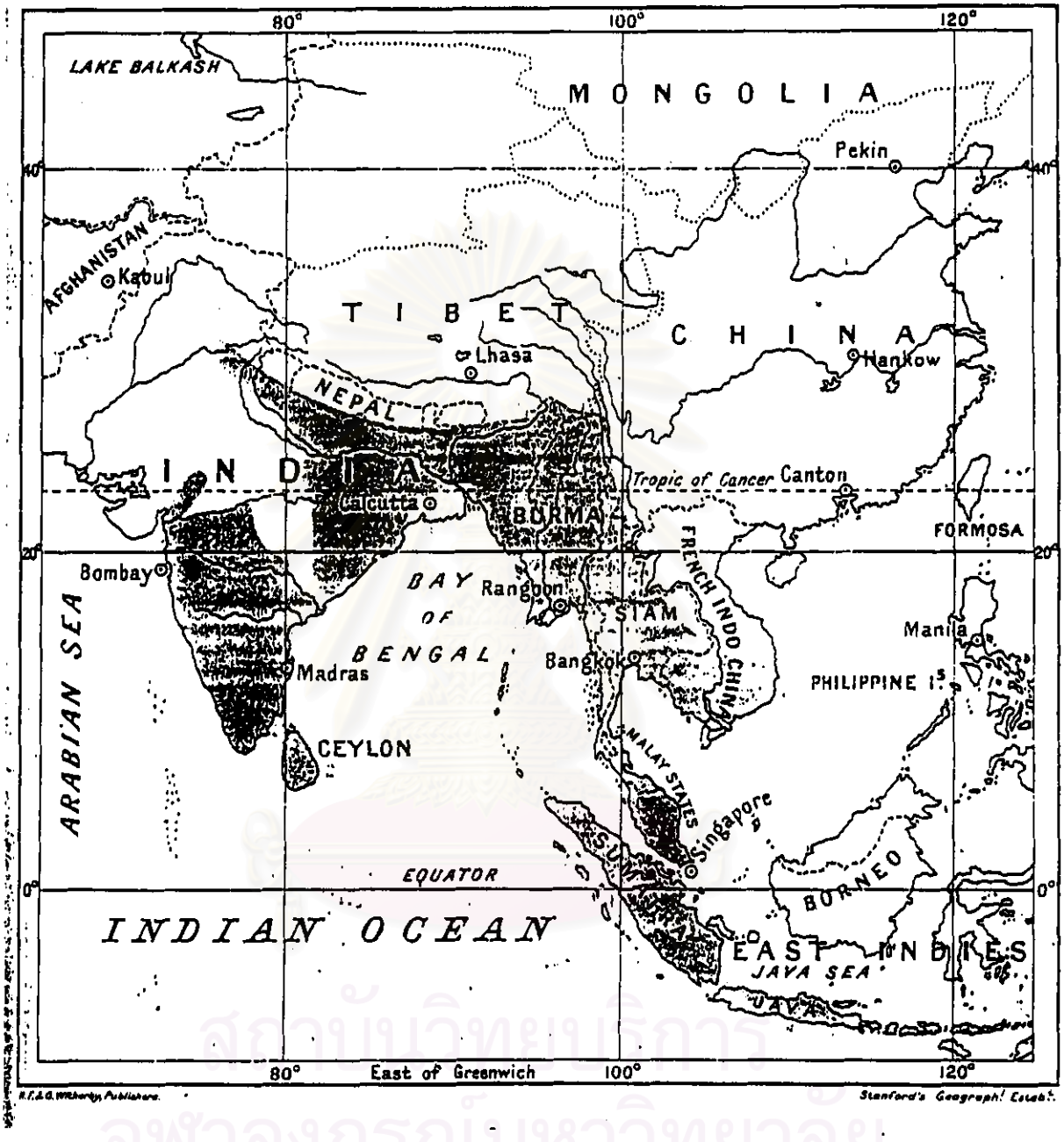

Figure 1.1 Distribution map of Red Junglefowl, (Beebe, 1921).

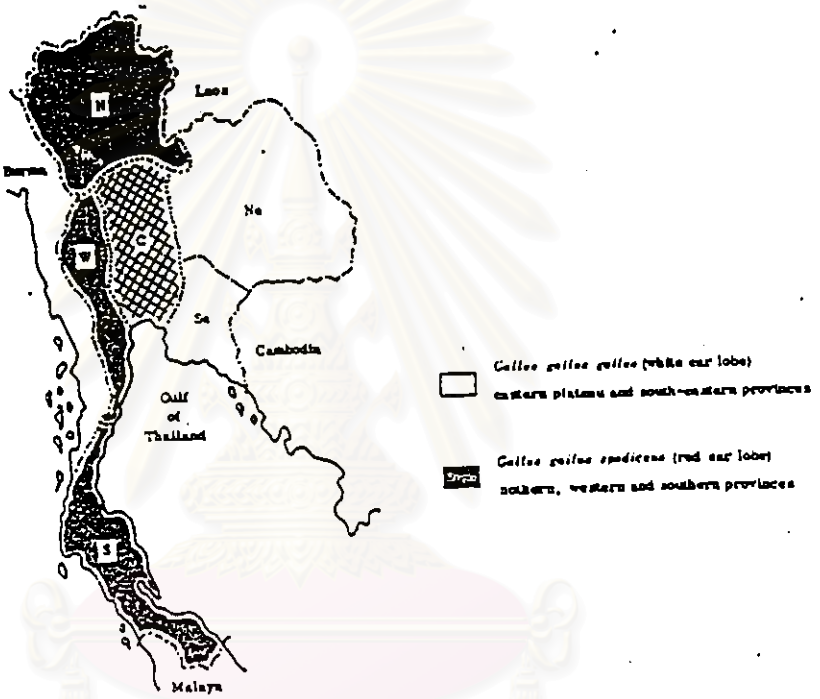

Figure 1.2 Distribution map of *Gallus gallus gallus* and *G. g. spadiceus* in Thailand.

a)

b)

Figure 1.3 The photographs of two subspecies of Red Junglefowl in Thailand.
a) *Gallus gallus gallus* male and female have white earlobe.
b) *gallus gallus spadiceus* male shows red earlobe.

Objectives

This study focuses on the genetic variation of the two subspecies of *G. gallus*, which occur in Thailand. This will serve as a tool to investigate, characterize and use the nucleotide sequence of the mitochondrial control region as a basis for systematic taxonomy and, if possible, get some idea about the species' population biology which could assist the conservation of the species.

Expected results

1. Morphometric analysis data for two subspecies of Red junglefowl in Thailand
2. Knowledge of their partial mitochondrial gene sequence.
3. Molecular systematic differentiation of the two subspecies based on the DNA sequence analysis.