The functions of animal coloration are classically divided into three hypotheses: concealment, communication, and regulation of physiological processes (Caro 2005). In tree squirrels, considerable research has been conducted to understand the adaptive significance of color polymorphism. Red, brown and black phases are known in the Eurasian red squirrel, *Sciurus vulgaris*, with the frequency of each phase differing among the localities, and the polymorphic balance is stable for many years (Voipio 1969). Wauters et al. (2004) showed that red morphs were common in mixed deciduous forests whereas black morphs were found in alpine forests of dense spruce, which seemed to support a cryptic function. Cryptic functions were experimentally tested for melanism in the fox squirrel, *S. niger*, in a forest after a wildfire, and predator reaction played an important role in maintaining black morphs for a long time after wildfires (Kiltie 1989, 1992). As an example of a physiological function, black pelages were found to be longer and thicker than red pelages in *S. vulgaris*, so black morphs were considered more advantageous in cold temperatures (Voipio and Hissa 1970). In the eastern grey squirrel, *S. carolinensis*, heat loss and metabolic rates were lower in the black than in the grey morphs, which indicated the superior fitness of black morphs in the northern ranges (Innes and Lavigne 1979; Ducharme et al. 1989).

The pelage coloration of tree squirrels in tropical regions has seldom been investigated in spite of the fact that there is extensive polymorphism. Finlayson’s squirrel, *Callosciurus finlaysonii*, is one of the species having various color types within and among populations. This species is distributed in Myanmar, Thailand, Laos, Cambodia and Vietnam, and is divided into sixteen subspecies based on color patterns (Lekagul and McNeely 1977). The pelage coloration of *C. finlaysonii* is not only variable but also unusual, such as being all white, all black, or having combinations of various color patches, such as white, grey, black, brown or red. The environmental selection operating towards the pelage coloration of tree squirrels in tropical forests is expected to be different from that in temperate forests.

To understand the ecological functions of the unusual pelage coloration, we examined the color in four populations with different color types, then clarify whether there are color differences within the populations, and also compare pelage coloration with respect to sex, age, and season within a population.

**Methods**

We selected the study site based on the collecting locality of each subspecies of *C. finlaysonii* described in Moore and Tate (1965). However, we recently found that classification based on pelage color did not always coincide with that based on DNA sequence in several populations of *C. finlaysonii* (Kanchanasaka et al. in prep). Therefore, we defined the study materials not as subspecies but as population or locality in the present study. An ivory-white population (recorded as *C. f. finlaysonii* in Moore and Tate 1965) is only distributed on the island of Koh Si Chang, so we selected the secondary forests on the east coast of this island as trapping sites (13°08’N, 100°48’E, No. 1 in Fig. 1). The study site for black type population (recorded as *C. f. nox* in Moore and Tate 1965) is in the evergreen forests of the Khao Kheow Wildlife Conservation Station (13°14’N, 101°02’E, No. 2 in Fig. 1). We studied reddish brown population (recorded as *C. f. cinnamomeus* in Moore and Tate 1965) in the evergreen and mixed forests at the Kao Ang Runai Wildlife Sanctuary (13°24’N, 101°52’E, No. 3 in Fig. 1), and greyish white populations (recorded as *C. f. bocourti* in Moore and Tate 1965) in the dry dipterocarp and mixed...