Chapter 1

Introduction and Objectives

Introduction

Sitta magna (Giant Nuthatch) is a small passerine bird in the genus *Sitta*, family Sittidae and order Passeriformes (Wallace, 1963). It has a pale grey central crown and broad black lateral head stripes (Figure 1). The crown–centre is a paler grey than the rest of the upperparts. There is no chestnut on the lower flanks, no buff wash on the under parts but females have washed buff under parts (Robson, 2002).

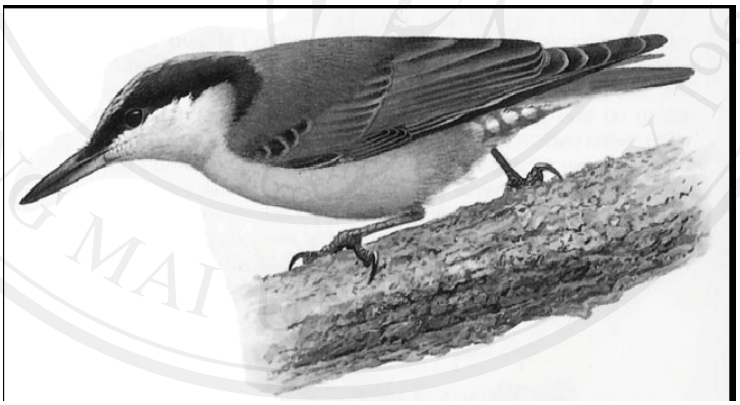

Figure 1 General characteristic of *S. magna* (IUCN Red List Category, 2009).

S. magna foraging pattern involves climbing on tree trunks and branches like woodpeckers and tree creepers (Pettingill, 1985). The species inhabits coniferous forest and mixed coniferous and broadleaf forest at 1,000-2,000m (Bird Life International, 2001). The coniferous forest and mixed coniferous in Chiang Dao Wildlife Sanctuary is

composed of *Pinus kesiya, Phyllanthus emblica, Gluta usitata, Lithocarpus polystachyus* etc.(Maxwell, 1998).

The species is distributed throughout three countries, Southern China, Western Myanmar and Northern Thailand (Figure 2). Thailand records are from high mountains, including Doi Pha Hom Pok, Doi Ang Khang, Doi Chiang Dao, Doi Suthep –Pui National Park and Doi Inthanon National Park, Chiang Mai Province (Bird Life International, 2001).

Populations of *S. magna* have been seriously reduced because their habitat, pine forest (800 -1,800 m from sea level), is being destroyed for fuel, wood production, rubber, tree plantations and agricultural development. The ecology of *S. magna* is poorly known. It is rare (Bird Life International, 2001) and research is required to generate the data needed for effective management. These studies address three major components of the species' ecology, i.e. foraging and breeding behavior, habitat characteristic and vocal communication. Chiang Dao Wildlife Sanctuary conserves 52,100 hectares for wildlife management and was established in 1978. This sanctuary was stipulated as an important area by the Important Birds Area Program in 1998, and supported Mrs Hume's Pheasant (*Syrmaticus humiae*) and Giant Nuthatch (*Sitta magna*) (Birdlife International, 2004). Therefore, Chiang Dao Wildlife sanctuary is a top priority for protection and needs effective management for endangered bird species.

Wildlife data, especially on birds, have been collected continuously under projects such as "Wildlife Observation in Chiang Dao Wildlife Sanctuary" supported by

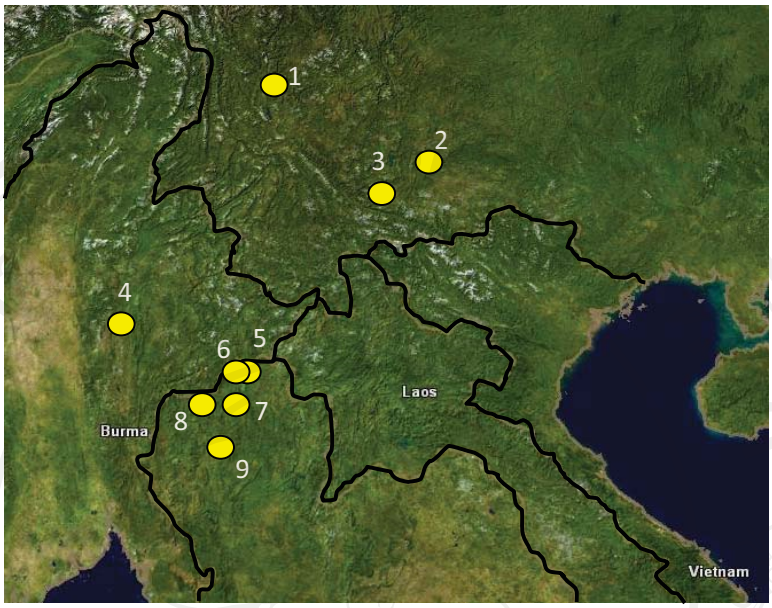

Figure 2 The species distribution is from Lijiang(1), Dongshan (2) and Longpeng(3) in South of China through Taunggyi(4) in Myanmar to northern of Thailand [Doi Pa Hom Pok (5), Doi Angkang(6),Doi Chiang Dao(7),Doi Mae Jok Loung(8) and Doi Inthanon(9)] (Birdbase hokkaido,2009).

DANIDA, and "Biodiversity Survey" supported by the Thai National Parks, Wildlife, and Plants Department (Saidee, 2006). These projects studied overall diversity and distribution of birds, but did not concentrate on particular bird species. Data on behavior, habitat and population ecology of rare wildlife species, such as the Long-tailed Goral (*Naemorhedus caudatus*) and Giant Nuthatch (*Sitta magna*) are lacking. Khao Yai National Park has a lot of hornbill habitats, Poonswad (1998) studied hornbill behavior, such as patterns and periods of reproductive behavior (laying, hatching and parental care), nesting behavior in tree cavities and call recordings for sonogram studies, to examine call

structure related to behavior. Although this research broadly covered hornbills in Asia, the results were used in Khao Yai National Park for management, so these hornbills remain safe.

S. magna in Chiang Dao Wildlife Sanctuary was endangering. The number of Giant Nuthatches (*S. magna*) has been reduced by forest destruction (Fort and Otter, 2004). General behavior observations, life patterns, behavioral frequencies, breeding behavior and foraging behavior should be studied, to compare each tree species used for foraging. The habitat of *S. magna* is pine forests at 1,500 meters elevation with tree species such as *Pinus kesiya*, *Phyllanthus emblica* and *Aporosa villosa* (Maxwell, 1998). This study was conducted to test the hypothesis that *S. magna* selects *Pinus kesiya* more frequently than other tree species. If this is true, the small number of *S. magna* can forage only on a single tree species (*Pinus kesiya*). Moreover, the vocal communication patterns were observed and responses to playback of local vs. distant contact call in *S. magna*.

Research Objective

To study the behavior, habitats and vocal communication of the Giant Nuthatch (*Sitta magna*) at Den Ya Kad Forest, Chiang Dao Wildlife Sanctuary, Chiang Mai Province.