How Valuable Degraded Habitat To Forest Birds?  
A Case Study In Bachok, Kelantan

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Abstract

Conservationist always pays less attention to degraded habitat when selecting area for biodiversity conservation. This is because generally degraded habitats are unable to support many species compare to undisturbed habitat. In this study, we investigate how birds utilised degraded habitat based on its diversity and abundance. We conducted five visits (each comprise of three sampling days started from 0800 hours until 1800 hours) to the district of Bachok, Kelantan, Malaysia from June 2008 until May 2009. Study area is located less than three kilometres from the sea and comprise mainly of small villages intersperse with small trees or shrubs and cash crop areas. Direct observation method was used to record bird diversity in the study area. Each observation session lasted for 30 minutes and the session was rotated among eight predetermine sampling stations. A total of seventy species of birds were recorded in the study area. Most recorded birds are residents and insectivores, indicating that insects are abundant in the study area. In term of habitat utilisation, most birds associate with open and country habitats, garden and parks, mangroves, and forest birds. The presence of seven species of forest birds in this area demand further clarification since it have been recorded more than once (either at various sites or at different times), eliminating the possibility of misidentification or coincidence. There is a possibility that habitat losses or degradation at wider scale may force these species to adapt and utilise whatever remaining habitat for their survival. Consequently, these species will eventually be more resilience and would have higher survival rate in human dominated areas.

Keywords: forest birds, forest disturbance, habitat displacement, bird survival, Peninsular Malaysia.

Introduction

Most studies of tropical bird’s diversity were conducted in primary forests possibly because many resident species (at least 70%) in this region are partly or exclusively dependent upon this habitat. Furthermore, most of human-modified areas in the tropics have largely been considered hostile to biodiversity. Consequently, only a few conservation initiatives have focus on secondary forests, agro-forestry, or other human-modified areas. On contrary, recent finding suggests that more investigation needs to be conducted beyond than primary forest to better preserve biodiversity (Gardner et al. 2009). This is because ninety percent of the world’s tropical forests exist outside of primary forest and sixty percent of world’s remaining tropical forests are either degraded or secondary forests (Schmitt et al. 2009). Globally, it is reported that 42 tropical countries have more secondary forest or degraded habitat as its forest covers than primary forests (FAO 2009). In Malaysia, only 18.3% of its forests were covered by primary forest (out of 20.89 million hectares of forested area) and this figure keep deteriorating as deforestation rate accelerating. In other South-East Asian countries, the remaining primary vegetation varies from 3% in the Philippines, 5% in Indo-Burma, 8% in Sundaland and 15% in Wallacea.

Therefore, the fate of many species is depending on what happens to other habitats outside than primary forests. Among habitats that require further attention include secondary forest, agricultural areas, rural or human settlements areas, and other human-modified landscapes. Few studies have been conducted to assess the capability of degraded habitat in conserving forest birds (e.g. Wong 1986; Peh et al. 2005, 2006). The results indicate that degraded habitat can, in some cases, serve as surrogate habitats for some of the forest birds. Patterns of habitat use and occupancy suggest that degraded habitat in the region (which is primarily abandoned pasture) may only be valuable to forest birds after a specific level of regeneration.
and during certain times of the year. Therefore, degraded landscapes can act as good refuges for the forest birds if it were allowed to regenerate. Forest birds are more sensitive to disturbance because its survival depends on the availability of forest's resources. Among required resources include food and water, suitable nesting sites and nest materials, lack of predator and competitor, and suitable mating partner. Theoretically, any disturbed habitats would be able to harbour forest birds if they can supply these resources. For instance a good proportion of forest birds are able to survive in disturbed habitat in southern Johor (see Peh et al. 2005).

Although moderate number of biodiversity studies has been conducted on secondary forest, least research were carried out in other type of degraded habitats such as agricultural area or other human-modified landscapes. This is despite recent interest in the diversity patterns and conservation strategies for native species in agricultural area and human-modified landscape due to current global changes in land use. It is not known how valuable the agricultural lands and other rural human-dominated landscapes for biodiversity conservation especially to forest birds. Therefore, this study was designed to assess the significant of degraded habitat (human settlement, cash-crop, and shrubs habitats) in conserving forest birds. To achieve this objective, the abundance and species richness of degraded habitats were recorded.

Materials and Methods

The study was conducted in a rural area of the district of Bachok, Kelantan. The area is dominated by traditional villages and other human settlements intersperse with cash-crops areas. There is no forested area within the district but the adjacent district (Paser Putih) has few patches of forest reserves. Eight study stations (identified as site A to site H) with different physical characteristics were established within the study area. Among habitat available in study area include mangroves, open grazing fields (some with electrical pylon and cables), and shrubs (consist of small and large trees). A total of five visits (consists of three days each) were conducted to study area from June 2008 to May 2009. Direct observation method using binoculars (8 X 40 magnifications) was used to record bird species richness. Morning observation session started at 0730 hours until 1200 hours while afternoon observation session started at 1400 hours until 1830 hours. Each station was visited for 30 minutes before moving to next station. Any birds seen or heard will be recorded. Doubtful sightings were confirmed by repeated observations involving note-taking and drawings which later were identified using standard field guides (including Jeyarasingam & Pearson 1999). Each station was visited twice daily (one each in the morning and afternoon sessions) and proper schedule was established to ensured all stations were visited at different times. All observed birds were identified up to species level and secondary information related to each species (including habitat association and feeding guilds) was extracted from Jeyarasingam & Pearson (1999).

Results and Discussion

A total of 70 species of birds were recorded in study area. While resident species dominate the area (45 species or 64.29%), there are few representatives of introduced birds (three species), while migratory birds or bird that have both migrant and resident populations are represented by 11 species each (15.71%). Fifty two species recorded in the study area can be commonly found throughout Peninsular Malaysia, ten species are uncommon, and seven species are abundantly distributed. However, local distribution pattern for some recorded species are different from national distribution pattern. Some species that are abundant or commonly found throughout Peninsular Malaysia such as Eurasian Tree Sparrow (Passer montanus) and White-breasted Waterhen (Amaurornis phoenicurus) are uncommon or rarely found in study area. This difference is mainly due to availability of resources in the study area (Sodhi 2002). Interestingly, one of Malaysia’s rare species, Javan Pond-Heron (Ardeola speciosa) was also recorded in the area.

Availability of resources in each station play importance roles in attracting different bird species especially forest birds. Among all stations, only station E does not record any forest birds. The station is an open area with electrical pylon. Although it provides suitable vintage point for carnivores of open area or parks, the station does not have much resource for forest birds. More forest birds were recorded in station H (5 species), which have coconut
plantation, river mouth and shrubs. These kinds of habitats attract many insects and in return will draw insectivorous birds into the area. Other stations that managed to attract forest birds usually have shrubs, freshwater supply such as small stream and close to beach.

This result is predictable since most recorded species are birds that associate with open country, garden and parks, mangrove and lowland forests (Figure 1). It is understood that the composition of birds that associate with first three habitats should be recorded in higher number since the particular type of habitat are widely available in the study area. However, the presence of forest birds (lowland and low-montane forests) in the study area demands further explanation. Perhaps these rural habitats provide adequate resources for survival of forest bird. If this is true, the area can significantly contribute towards forest bird conservation programme. This revelation is not so shocking since some other areas such as human-dominated landscapes in Johor also harbour a moderate proportion of forest bird (Peh et al. 2005; Peh et al. 2006).

Figure 1: Composition of bird species recorded in study area according to their habitat.

Seven species of forest birds that were recorded in Bachok district are Chestnut-breasted Malkoha (Phaenicophaeus curvirostrisi), Greater Flameback (Chrysocolaptes lucidus), Greater Racket-Tailed Drongo (Dicrurus paradiseus), Green-billed Malkoha (Phaenicophaeus tritis), Rufous Woodpecker (Celesus brachyurus), Stripe-throated Bulbul (Pycnonotus finlaysoni), and Tiger Shrike (Lanius tigrinus). All species are resident (except Tiger Shrike), totally protected by Malaysian law (except Chestnut-Breasted Malkoha), and are commonly found throughout Peninsular Malaysia. However, only Green-billed Malkoha, Chestnut-breasted Malkoha, and Rufous Woodpecker were frequently observed in study area. In addition to general behaviour of the species, higher frequency of detection had ruled out possibility of misidentification or coincidence. Tiger Shrike for instance was observed in three stations, even only during single visit. Most likely it had used study area as stop-over site during its migratory journey. On the other hand, Stripe throated Bulbul and Greater-racket tailed Drongo were recorded twice in same station. Only Greater Flameback was recorded once. Some of the forest birds that were recorded in this study such as Chestnut-breasted Malkoha and Rufous Woodpecker were also recorded in degraded habitat in Johor (Peh et al 2006) and Negeri Sembilan (Wong 1985).

Sodhi (2002) postulated that frugivorous and insectivorous birds are more vulnerable to extinctions after forest disturbance due to decline in food supply. However, most forest birds that are able to survive in Bachok area are insectivores (32 species or 46%) while other feeding guilds were represented by less than nine species (Figure 2). Only Tiger Shrike is granivores while Green-billed Malkoha predating invertebrates from understory foliage. To properly understand this predicament, more information on relationships between the ecology of forest birds (depending on primary or old secondary forest to survive) and food abundance/density is needed.

Forest birds in Bachok indicate that they can survive in degraded habitat with increase human activity as long as food resources are available. Therefore these species have become less specific in choosing their habitat for survival and most likely become more resilience to
survive better in human dominated areas. Prolonged destruction on forested area surrounding study area may force these species to fully utilised available remaining habitat for survival. Disturbed habitat generally supports fewer species than primary forest especially in short term but it is reasonable to expect that restoration of secondary habitat would allow some amelioration of biodiversity loss. Tropical forest regeneration can be accelerated by planting fast-growing, fruit-producing trees, like figs, in the formerly forested areas. These trees would attract birds and bats which would deposit seeds from nearby forests onto the ground below. The dropping of these seeds would, in effect, return native forest species to the deforested patch.

Figure 2: Composition of bird species recorded in study area according to their feeding guilds.

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References