Research project of counterparts funded at IPB

Name	Counterpart	Title
Yeni A. Mulyani, Novriyanti, Cory Wulan, Nabilla Khalida Abdillah	**B09**	Identification of birds potential for seed dispersers of invasive plant species in Taman Hutan Raya Sultan Thaha Syaifuddin (Tahura Senami), Jambi

Introduction

Ecosystem services provided by birds include the role of birds as seed dispersers. This role is vital for native plant species but seed dispersing birds are also likely to help disperse invasive alien species (IAS). This is a particular risk in degraded forest which has a high risk of invasion given the characteristics of invasive species that enable them to compete successfully with native species. One area that is becoming degraded is the Grand Forest Park of Sultan Thaha Syaifuddin, also known as Tahura Senami, in Jambi Province. In this area, degradation arises particularly because of fire. And major causes of fire are human factors such as burning of bulian (*Eusideroxylon zwageri*) stumps to produce charcoal, and long dry seasons (Figure 1a, b). The current land cover includes logged-over secondary forest, post fire forest and shrubs, oil palm plantations and some rubber plantations. Degradation of the forest habitat in the area has also led to the spread of invasive plant species. Among these is *Acacia mangium* that has invaded post fire forest, especially along the roadsides. The objectives of this study were to identify bird species that disperse seeds and to identify invasive plant species in four habitat types in Tahura Senami.

Methods

Our preliminary bird survey was in August 2018 and was followed by full surveys in November and in December 2018. Surveys were conducted using the exploration method and point counts to record bird species and their distribution. In addition to species and numbers, we also recorded all the activities of the birds and the substrates they used. Species identification followed MacKinnon and Phillipps (1993) and Robson (2000). Whenever possible, we recorded the characteristics of invasive plant species used by birds (e.g. type of fruit consumed). Trees were identified and counted in plots of 20 x 20 m^2, poles in plots of 10 x 10 m^2, saplings in plots of 5 x 5 m^2 and seedlings and undergrowth in plots of 1x1m2. Only undergrowth and shrubs were identified and counted in plantations (oil palm and rubber). Identification of invasive species followed Tjitrosoedirdjo et al. (2016).

Figure 1. Condition of the study area after a forest fire in October 2018

Results

In our surveys we recorded a total of 86 bird species in 28 families. The dominant family was Pycnonotidae (bulbuls). Bulbuls are generalists that feed mainly on fruits (berries) although they also eat insects. It is also noted that the area was used by six of the nine hornbill species known in Sumatra (MacKinnon and Phillipps 1993). Although most sightings were of hornbills passing by the forest area, the timing of sightings (evening and morning) indicated that hornbills used the habitat in Tahura Senami.

Our vegetation inventory for habitat types found 130 species 9 of which were categorized as invasive. Dominant invasive species that were found in all habitat types were *Melastoma malabathricum* syn. *Melastoma affine* (61%). *Clidemia hirta* was dominant and occurred in all habitat types. *Clidemia hirta* is an invasive species the distribution of which results from bird dispersal of seeds.

Among the bird species, there were 27 frugivores and species with a mixed diet of fruit and insects (frugivore-insectivores). The highest richness was in the forest (23 species), while the lowest was in rubber plantation (1 species). Sooty-headed bulbul was found in all the habitat types. Of the 27 fruit-eating birds, one species, Blue-crowned Hanging Parrot (*Loriculus galgulus*), does not act as a seed disperser because they crush the seeds along with the fruit. We therefore excluded this species from the category of dispersers.

Figure 2. (Clock wise from top left) White-crowned Hornbill (*Berenicornis comatus*) (a), Brown Barbet (*Caloramphus hayii*) feeding on *Acacia mangium* pods (b), and Black-crested Bulbul (*Pycnonotus melanicterus*) (c).

References

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