The conservation value of oil palm plantation estates, smallholdings and logged peat swamp forest for birds.

ABSTRACT

The expansion of industrial oil palm cultivation threatens tropical biodiversity globally, especially in developing countries. Driven by plans to generate economic revenue, large-scale plantations are emerging in Southeast Asia, Africa and Brazilian Amazon. However, the ecological impacts of the sector are poorly studied with respect to oil palm management system, and recommended conservation measures are based on limited data. We studied avifauna in oil palm landscapes in Peninsular Malaysia under different management systems (large plantation estates versus smallholdings) and age classes (uniform age versus mixed-age stands). We sampled 41 large plantation estates and 14 smallholdings, as well as 20 sites in an extensively logged peat swamp forest, the type of natural forest prior to conversion to oil palms. Compared with logged peat swamp forest, our results showed that forest conversion to oil palm cultivation may have eliminated 48–60% of bird species. We also found: (i) plantation estates and smallholdings supported similar bird assemblages but the latter supported significantly more species ($P = 0.007$); and (ii) despite reduced species richness in oil palm landscapes, we found high abundance of some individual bird species in specific types of stands including some forest, migratory, and wetland species. Conversion of natural forest to oil palm landscapes should not occur in the future through clearing of primary or secondary native forests. To complement conventional conservation approaches (e.g. the establishment of protected areas) in palm oil-producing countries, existing plantation estates and smallholdings should be managed in ways to promote improved conservation outcomes, although oil palm landscapes maintained a fraction of the original forest biodiversity. Managing habitat heterogeneity at both a local and a landscape-level is highly recommended in oil palm landscapes to maintain and/or enhance avian biodiversity.

Keyword: Bird assemblages; Management regime; Oil palm; Species richness; Stand age; Vegetation structure.