

## **Promoting landscape heterogeneity to improve the biodiversity benefits of certified palm oil production: evidence from Peninsular Malaysia**

### **ABSTRACT**

The Roundtable on Sustainable Palm Oil (RSPO) is responsible for the certification of palm oil producers that comply with sustainability standards. However, it is not known whether RSPO-certified plantations are effective in maintaining biodiversity. Focusing on Peninsular Malaysia, we show that both RSPO-certified plantations and uncertified large-scale plantations are characterized by very low levels of landscape heterogeneity. By contrast, heterogeneity measures were many times higher in palm oil producing smallholdings, despite their lack of RSPO certification. The low heterogeneity of large-scale oil palm plantations, including those certified by the RSPO, is likely to severely limit their value for biodiversity conservation. Uncertified smallholdings, in contrast, are much more heterogeneous and therefore hold substantially greater promise for the integration of palm oil production and biodiversity conservation than large-scale plantations. With oil palm agriculture further expanding, certification schemes should mandate producers to improve biodiversity conservation through landscape management that promotes greater landscape heterogeneity.

**Keyword:** Biodiversity; Landscape heterogeneity; Oil palm; Plantations; RSPO; Smallholdings