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"Solidarity in a competing world — fair use of resources"

Farmers' Preferences for Native Bee Conservation Measures after Experiencing a Past Pollination Crisis

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Abstract

The occurrence of localised pollinator crises is not unlikely in Thailand, given its sustained deforestation rates and the four-fold increase of pesticide imports for agricultural application over the past decade. In fact, anecdotal evidence that we collected in Chanthaburi province seems to corroborate reports of past pollinator deficits attributed to pesticide overuse, which forced orchard farmers of this region to manage their crop pollination by renting bee hives or becoming beekeepers themselves. Beekeeping in Thailand, traditionally consisting of farmers capturing wild swarms of the eastern honeybee (*Apis cerana*) and/or colonies of stingless bees, has nevertheless originally mainly benefited farmers with hive products such as honey and with the additional income these products may generate. Thailand's agriculture could thus benefit from a policy that reconciles individual economic incentives of farmers, with the objective of conserving native pollinators and their habitats.

We conducted a discrete choice experiment (DCE) with longan (*Dimocarpus longan*) and rambutan (*Nephelium lappaceum*) farmers of northern and eastern Thailand respectively, to elicit their preferences for different proposed native bee conservation measures and their possible effect on the population of native bees. The coefficient estimates from a generalised mixed logit (GMXL) model suggest that farmers have heterogeneous preferences for the conservation policy attributes. Furthermore, part of that heterogeneity resulted from differences between subsamples of respondents, pertaining the variances of the unaccounted factors that influenced their choices (i.e. hetersocedasticity). In fact, significantly different variances were evidenced between those farmers who engaged in beekeeping and those who did not. Nevertheless, taking heteroscedasticity into account, the results suggest that the subsample of farmers who either engage in beekeeping or believe having experienced an insufficient crop pollination in the past had a higher preference for some of the conservation policy attributes. This result may hint at the possible benefits of warning farmers about the production losses that a pollination crisis may entail: implemented as a preliminary measure, it could increase farmers' willingness to invest in conserving the local pollinating fauna.

Keywords: Conservation, discrete choice experiment, native bees, pollination, Thailand

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