

Land Use Passion Enter Pollination Crisis Debate

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Abstract—*Land use and land cover are important determinants of the state of the natural environment. As a result, measures of land use and land cover change have been widely used as indicators of environmental condition and quality. The relationship between resource availability and biodiversity of consumers has gained particular attention with the increasing loss of biodiversity. Biodiversity losses have accelerated worldwide due to the overexploitation of natural resources, habitat destruction and climate change. The loss of natural habitat is a primary cause of the loss of terrestrial biodiversity. The maintenance of ecosystem services such as pollination will require a better understanding of each species' role and how species losses may affect them. Several studies have shown that pollinator visitation and diversity may be negatively influenced by habitat degradation and fragmentation as well as by agrochemicals. Losses in pollinator diversity or abundance may lead to a reduced seed set in plants. Parallel diversity declines in insect-pollinated plants and pollinators were reported from Britain and the Netherlands. Reduced flower diversity causes reduced pollinator abundance and diversity in small scale experimental plots. Thus, it is conceivable that declines in plant diversity, like those caused by land use intensification, may cause declines of flower visitor diversity due to mutual specialization and vice versa. Diversity and abundance of relatively more specialized flower visitors (bees and butterflies) decrease with increasing land use intensity and that this diversity decline is likely to represent an indirect effect of a lower diversity and altered composition of flowers. Preferred flowers differ among visitor species resulting in highly complementary interactions - a potential reason for the parallel biodiversity decline of consumers and resources. In turn, high complementarity of plant species in regard to their effective pollinators may cause a negative response of plant diversity to pollinator diversity declines.*

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