

## ABSTRACT

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### **Sustaining multiple ecosystem services and biodiversity: lessons from landscape ecology**

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Conserving biodiversity while sustaining multiple ecosystem services (benefits people obtain from ecosystems) has become a priority for landscape management worldwide. However, there is little consensus about the ways and scales at which biodiversity and different ecosystem services are linked and how landscape patterns influence these links. This presentation summarizes lessons from landscape ecology that aid this integration. Some ecosystem services (e.g., pollination, pest control, wildlife viewing, disease regulation) depend directly on biodiversity, whereas others (e.g., crop yield, timber production) are often associated with locally reduced biodiversity. No single landscape pattern can enhance all management goals simultaneously, but the kind, amount, distribution, and configuration of land cover are critical for evaluating synergies and tradeoffs between ecosystem services and biodiversity and managing for their sustainability. Using illustrative case studies from terrestrial and aquatic systems, insights are drawn regarding effects of spatial heterogeneity, scale, landscape context, and landscape connectivity. We demonstrate how approaches from landscape ecology can be used to identify: (1) keystone landscape elements that have disproportionate influence on biodiversity and ecosystem services; (2) spatial thresholds of connectivity that may lead to abrupt changes in biodiversity and ecosystem services; (3) synergies that promote biodiversity and ecosystem services on the same parcels of land; and (4) tradeoffs that will require spatial complementarity of alternative land uses and management over large areas to conserve biodiversity while sustaining multiple ecosystem services.