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Abstract

Keywords

1. Introduction

2. Methods

2.1. Habitat types and study site selection

 Table 1


2.2. Bee, flower and nectar surveys

2.3. Assessment of pollination services to wild flowers

2.4. Statistical analysis


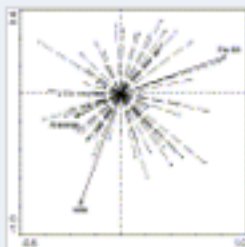
3. Results

3.1. Biodiversity of bees and flowers across habitats

 Table 2

3.2. Pollination services across habitats

3.3. Bee and flower community structure

 Table 3

Abstract

Mediterranean landscapes comprise a complex mosaic of different habitats that vary in the diversity of their floral communities, pollinator communities and pollination services. Using the Greek Island of Lesvos as a model system, we assess the biodiversity value of six common habitats and measure ecosystemic 'health' using pollen grain deposition in three core flowering plants as a measure of pollination services. Three fire-driven habitats were assessed: freshly burnt areas, fully regenerated pine forests and intermediate age scrub; in addition we examined oak woodlands, actively managed olive groves and groves that had been abandoned from agriculture. Oak woodlands, pine forests and managed olive groves had the highest diversity of bees. The habitat characteristics responsible for structuring bee communities were: floral diversity, floral abundance, nectar energy availability and the variety of nectar resources present. Pollination services in two of our plant species, which were pollinated by a limited sub-set of the pollinator community, indicated that pollination levels were highest in the burnt and mature pine habitats. The third species, which was open to all flower visitors, indicated that oak woodlands had the highest levels of pollination from generalist species. Pollination was always more effective in managed olive groves than in abandoned groves. However, the two most common species of bee, the honeybee and a bumblebee, were not the primary pollinators within these habitats. We conclude that the three habitats of greatest overall value for plant-pollinator communities and provision of the healthiest pollination services are pine forests, oak woodland and managed olive groves. We indicate how the highest value habitats may be maintained in a complex landscape to safeguard and enhance pollination function within these habitats and potentially in adjoining agricultural areas.

Keywords

Bee diversity; Ecosystem services; Pollination; Habitat disturbance; Mediterranean

Figures and tables from this article: