

# Science for Environment Policy

## Breeding birds are better protected than wintering birds in Italian cropland

Researchers have pinpointed hotspots for birds in an agricultural region of Italy. These show that hotspots for wintering birds are different to those for breeding birds — yet it is often only breeding birds' locations that are considered in the design of protected areas. The researchers say their research highlights the importance of crop-dominated land for birds in the Mediterranean region.

Protected areas, such as those in the [Natura 2000](#) network, play an important role in preserving [biodiversity](#), and many conservationists argue that even more land should be protected. In Italy, protected areas tend to be concentrated in locations with little human activity and low economic value, such as mountainous regions.

Other areas are, therefore, missing out on important protection status, the researchers behind this study suggest. They argue that protected areas must be set up in agricultural parts of Italy and the rest of the Mediterranean region, and that human activity should be managed together with conservation as part of the same system.

The researchers explored whether a crop-dominated landscape could be an important region for bird conservation. In particular, they investigated which areas could be prioritised for protection. They focused on a study area in Apulia, Southern Italy, which is 5 406 km<sup>2</sup> in size; a third of it (32.4%) is covered with non-irrigated cereal crops. Olive groves cover 27.6% of the area. (Vineyards, urban areas, grasslands, pastures and fallows, orchards and forests comprise the majority of the remaining surface.)

The researchers conducted 264 bird surveys during wintering season (December–January — when northern hemisphere birds fly south to find milder conditions for survival) and 301 surveys in the breeding season (April–June) to assess diversity at these two important times of year. The surveys covered all the different types of land across the region.

A location was considered a hotspot if it had a high combined score (judged by the researchers) for the following three qualities:

1. species richness — the number of bird species detected in each survey
2. species rareness — whether a location contains birds that are less likely to be found elsewhere
3. species vulnerability — whether a detected species appears on the [Red List of Italian Breeding Birds](#), in Annex I of the [Birds Directive](#) and/or is a Species of European Conservation Concern (SPEC, as suggested by [BirdLife International](#))

(Similarly, coldspots were those with a low combined score for the same qualities.)

During the winter period, 124 species were identified, including many vulnerable species (24 Annex I, 31 Red List, 43 SPEC), with an average of 11.5 species per survey site. During the breeding season, 108 species were recorded, with an average of 8.3 species per survey site. Many of these were also vulnerable (27 Annex I, 35 Red List, 46 SPEC).

Winter hotspots were more likely to be in areas with marshes, rivers, water bodies and irrigated crops, whilst coldspots were in olive groves. Breeding-season hotspots were open areas, such as natural grasslands, pastures and non-irrigated cropland, whereas coldspots were in olive groves and orchards.

*Continued on next page.*



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**Source:** Chiatante, G. & Meriggi, A. (2016) The Importance of Rotational Crops for Biodiversity Conservation in Mediterranean Areas. *PLoS ONE*. 11 (2): e0149323. This study is free to view at:

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The breeding hotspots agreed well with the locations of existing protected areas in the region: 68.7% of hotspot land was protected; 45.9% of hotspots for wintering birds were in protected areas, which means that birds from the north searching for milder conditions over winter are not as protected as breeding birds. In contrast, only 2.1% of wintering coldspots and 1.3% of breeding coldspots were included in protected areas.

In general, olive groves might provide important food resources for birds; however, in this region they are intensively farmed and have no ground cover, which normally would provide seed and insect prey. The researchers highlight that such management of permanent crops, such as vineyards, olive groves and orchards, in particular during the winter season, can have negative effects on migratory bird species.

They conclude that crop-dominated landscapes in the Mediterranean are important for conserving bird diversity, with open areas of particular importance. The results highlight the need to consider wintering species when planning protected areas, as often only locations of breeding bird species are considered.

