Woodpeckers as Focal Species for an Ecological Network Design in the Po Plain (Northern Italy)

INTRODUCTION & STUDY AREA

The improvement of **connectivity** in highly fragmented landscapes is crucial for animal conservation in Europe. The **focal species approach**, based on the study of the requirements of the most sensitive species, allows the identification of the minimum spatial characteristics necessary to support local populations. In this study we designed an ecological network for woodland birds in the agricultural lowland landscape of the Province of Pavia - 2200 km² - using **woodpeckers** (lesser spotted woodpeckers *Dendrocopos minor,* great spotted woodpeckers *Dendrocopos major* and green woodpeckers *Picus viridis)* as focal species.

GREEN WOODPECKER

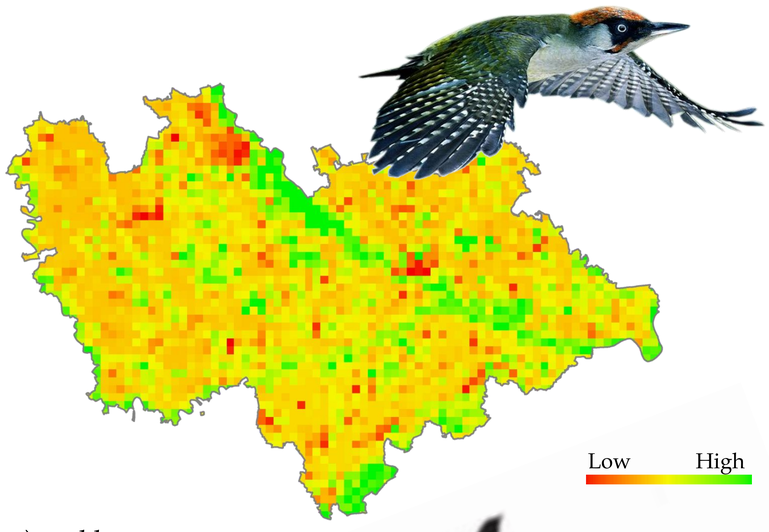
Principle variables (w = 1) of the average model:

✓ mean woodland patch size (+)

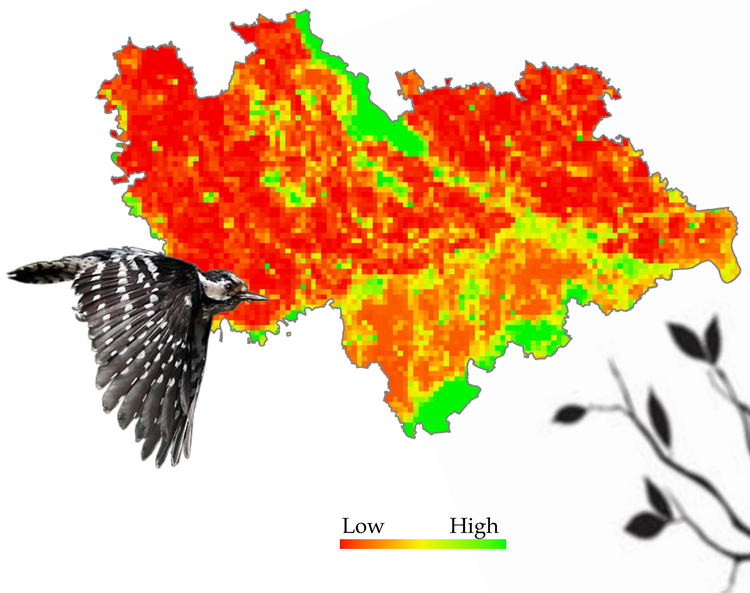
✓ number of woodland patches (+)

✓ tree row extension (+)

✓ urban areas (-)



Habitat suitability maps for green (*above*) and lesser spotted woodpecker (*below*)



LESSER SPOTTED WOODPECKER

Principle variable (w = 1) of the average model:

✓ % of natural forest in 1.5 km radius (+)

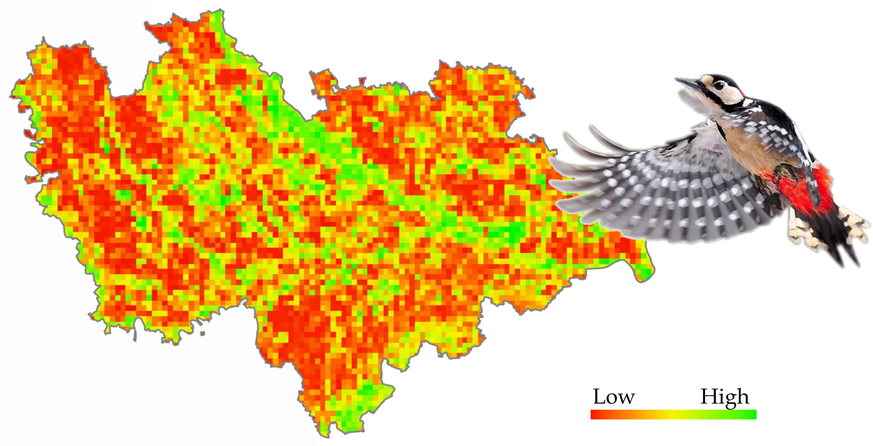
METHODS

✓ Presence data for the three woodpecker species were collected during spring 2014 in 22 protected areas. Point transect method with playback stimulation was used.

✓ Habitat suitability was evaluated by **generalized linear models** and **multimodel inference** handling data on land use, landscape metrics and surrounding context.

✓ Using the suitability maps generated for each species, a cumulative suitability map was created to investigate the best corridor network. The last was defined using **circuit theory** (Circuitscape 4.0), calculating connectivity between all pairs of core areas (pairwise mode). Core areas were defined using the **Core Mapper** tool (cost-weighted distance = 1500 m, minimum dimensions = 769759 m², suitability threshold value (0.75), moving window radius = 407 m).

Habitat suitability map for great spotted woodpecker (*below*)



GREAT SPOTTED WOODPECKER

Principle variables (w = 1) of the average model:

✓ mean woodland patch size (+)

✓ number of woodland patches (+)

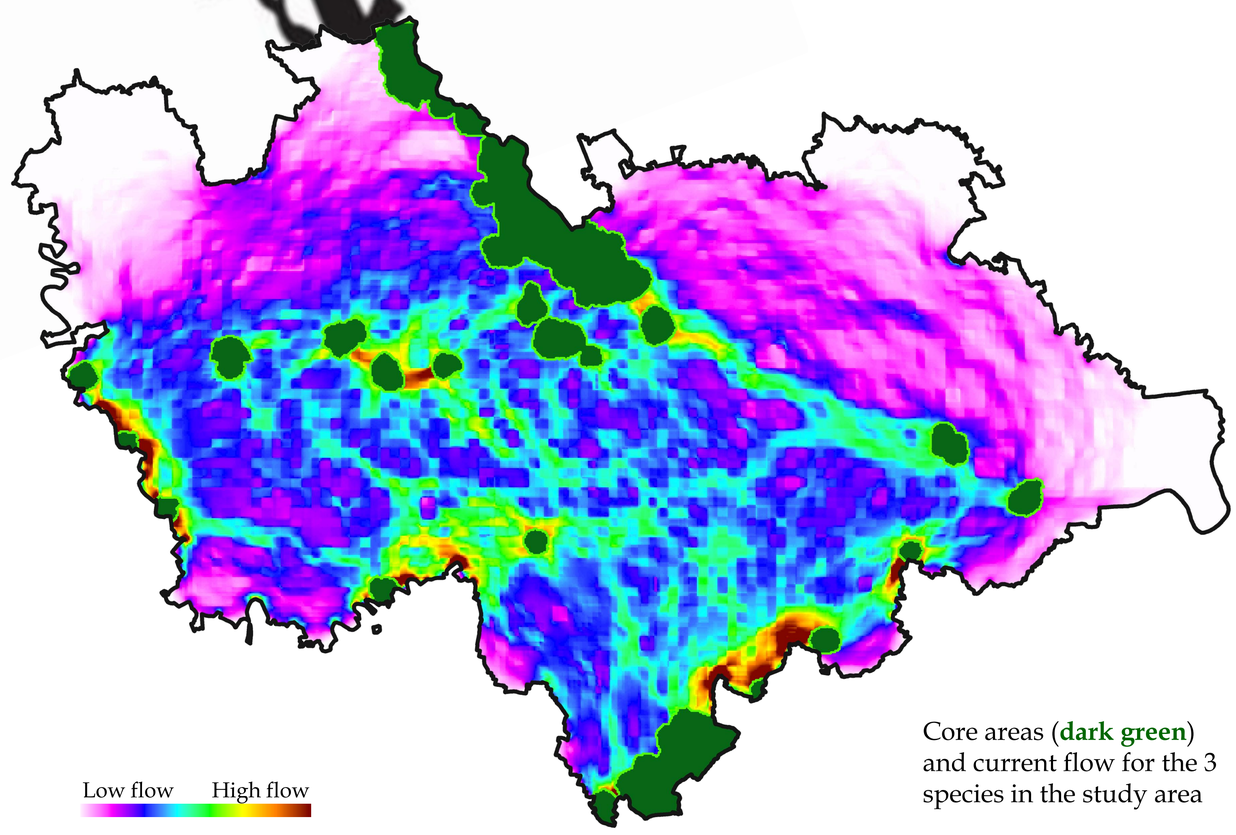
✓ tree row extension (+)

CONCLUSIONS

✓ In the matrix, wooded **riversides**, extended **agro-forestry plantations** and scattered **natural forest stands** appeared to be the best components of a corridor design for woodland birds.

✓ Two large core areas for woodpeckers were identified in correspondence with the extended natural forests along **Ticino river** and the first **Appenine hills**, in the far north and the far south of the study area. Several other smaller core areas were situated along the main rivers (Po, Sesia and southern Ticino) and in the western part of the province, where relative extended natural forests are still present.

✓ Although these findings appear to be in accordance with previous studies conducted in the same area regarding other woodland bird species (e.g. Eurasian nuthatches *Sitta europaea* and marsh tits *Poecile palustris*), **further research is needed** to improve present results.



Core areas (**dark green**) and current flow for the 3 species in the study area

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