Point Blue Publication Brief

Improving effectiveness of systematic conservation planning with density data

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With limited funding available, conservation of wildlife habitat must be prioritized. Also, in the context of climate change, it is critical we prioritize conservation at landscape scales to increase the chances species will have time to adapt their distributions and behavior.

Systematic conservation planning is a data-driven modeling process used to set landscape-level conservation priorities. This has traditionally relied upon species' presence/absence (occurrence) data to identify areas that are most important. Data on the abundance of individuals of each species is rarely used, since this data is usually not available at the necessary spatial scales.

We predicted that, if a larger data set of individual species' counts could be used, we could better prioritize conservation work and protect greater proportions of populations of individual species.

Using the Avian Knowledge Network and funding from the North Pacific Landscape Conservation Cooperative, we imported counts of over 900,000 birds from 23 different studies contributed by 17 partner organizations to California Avian Data Center.

We used these data to develop species distribution and density models covering coastal Northern California, Oregon, and Washington for 26 species of land birds representing four habitat types. We then mapped conservation priorities based on both the occurrence and density models, and compared the estimated population size of each species protected using the conservation priorities resulting from each approach.

As expected, we found that the prioritizations based on count data protected more individuals of each species than the prioritizations based on presence/absence data in the highest conservation priority areas.

In summary, we found that conservation priorities developed using occurrence data over-valued areas of lower conservation importance and undervalued areas of higher conservation importance relative to priorities developed using density models.

Main Points

We can design conservation plans that better protect species' populations when we use counts of individuals rather than only species occurrence.

Detailed data from many studies can be repurposed and combined to develop conservation priorities across large landscapes using tools like the Avian Knowledge Network.

Our study highlights the importance of researchers sharing their high-quality monitoring data more widely for establishing conservation priorities.

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