



BUSINESS AREA: SPATIAL SERVICES

## Case Study

# Migratory Birds as Connectivity Indicators

The Remote Sensing and Landscape Science team (part of the NSW Department of Climate Change, the Environment, Energy and Water), aimed to validate the habitat connectivity model from the NSW Biodiversity Indicator Program (BIP) using on-ground evidence.

This was primarily focused on observation records of nomadic bird species in NSW. The project focused on leveraging these bird records of common mainland species for their richness in data, spatial records, and ecological significance.

The study focused on validating habitat connectivity using the movement patterns of common bird species, including some pollinators. Sightings of these birds, collected and cleaned from multiple years, provide a rich source of field data to validate where connectivity is predicted to be high. The spatial relationship between these migratory birds and the habitat connectivity layer was examined, despite challenges like mixed resident and movement data, biased survey effort, and inaccurate records.

The project aimed to address epistemological challenges and assess whether the selected bird species use identified connectivity pathways, identifying potential gaps in the BIP connectivity model. The goal is to provide insights for improving the BIP habitat connectivity layer and assist the agency to assess connectivity mapping proposals.

**“The work Spatial Vision has done will help me to prime new research and development capabilities for high impact policy concepts and habitat connectivity.”**

**Dr. Tom Celebrezze**

**Director, Remote Sensing and Landscape Science • NSW DCCEEW**

## Customer Profile

[www.nsw.gov.au/departments-and-agencies/dcceew](http://www.nsw.gov.au/departments-and-agencies/dcceew)

## Organisation

Department of Climate Change, the Environment, Energy and Water (DCCEEW)

## Location

New South Wales, Australia

## Sector

Government - Science, Economics, and Insights Division

## Products

Spatial Analysis

## Solution

The project analysed bird observation and survey records across NSW, investigating migration patterns and utilising density-based clustering to assess connectivity outputs as per the NSW Biodiversity Indicators Program. Further examinations investigated observation bias through geostatistical methods, revealing disparities between effort and sightings, crucial for evaluating data reliability.

## Benefits

- Provide insights into the validation of BIP's connectivity layer, addressing challenges and determining whether migratory birds align with identified connectivity pathways.
- While data variability and bias made it difficult to reach definitive conclusions, it was clear that for some species, connectivity values changed during migration periods.