Research Case Study:

Recovering Australia's migratory shorebirds

Millions of migratory shorebirds arrive in Australia each year to feed and put on energy reserves, after travelling thousands of kilometres from their breeding sites in the Arctic. Despite their protection under numerous agreements, international treaties, and federal, state, and local legislation, shorebird numbers continue to decline. The Recovering Australia's Migratory Shorebirds project will consolidate and analyse information on shorebird numbers, life cycle traits, and threats. It will explore how best to plan and implement effective recovery actions to ensure these migrants are better managed on Australia's shores, with a focus on the Great Sandy Strait of Queensland.

Background

Populations of many migratory shorebirds in Australia have significantly declined, with long term monitoring showing a 73% reduction in overall numbers between 1983 and 2006[1] and a recent national analysis revealing significant declines for 12 of 19 species studied[2]. Some of Australia's once common migrants are now listed as critically endangered under state and federal legislation.

The dramatic declines in shorebird populations is a serious conservation issue and one which requires actions at local, regional and international levels. Current knowledge suggests that loss of key stopover habitat in the Yellow Sea is the main cause of declines, but disruption to flood-dependent wetlands, declines in benthic invertebrates, and increases in shorebird disturbance along crowded coastlines may also be contributing factors, both in Australia and abroad.

The Recovering Australia's Migratory Shorebirds project aims to consolidate and analyse information on shorebird numbers, life cycle traits, and habitat requirements, and to evaluate existing management activities, policies, and legation in place to manage shorebirds in Australia and overseas. The findings will be applied to prescribe targeted recovery actions across both time and space.

Delivered through the Australian Research Council (ARC) Linkage Projects Scheme, with a range of other partners, the project builds on previous migratory shorebird research and reflects the high priority of government and natural resource managers to urgently develop scientifically robust management interventions to protect migratory shorebirds.

Curlew sandpiper, Andrew McDougall (QPWS 2010)

The East Asian-Australasian flyway which includes intertidal feeding grounds of the Great Sandy Strait in Queensland, Australia (EHP)

Objectives

The four year project (2016-2019) aims to investigate the drivers of decline of Australia's shorebird populations by addressing the following key questions:

- Why are migratory shorebirds increasing at some sites despite an overwhelming national decline?
- How effective are current policy and management mechanisms at conserving migratory shorebirds?
- How do we plan recovery actions for migratory species across time and space?

Investigations will be used to determine the most effective management activities to safeguard the future of Australia's shorebirds.

Great Sandy Strait, a Ramsar listed wetland located south east of Hervey Bay in Queensland, will be used as a case study for the project.

Great knot in the intertidal zone (Ken Jones)

Project activities

The project will undertake the following tasks:

- For the Great Sandy Strait, review and analyse literature and data and work with project partners to determine which mechanisms have been most effective at managing migratory shorebirds.
- Assess the effectiveness of different management actions based on their cost and timescale of success in both the Great Sandy Strait and various locations within the flyway.
- Identify factors limiting shorebird populations and contributing to their declines by modeling variation in shorebird abundance from historical time-series in relation to environmental variation (including changes in intertidal habitat availability) and site-level threats at approximately 30 sites across Australia.
- Assemble tracking and banding data across the flyway to determine bird migratory pathways and overlay protection areas, management activities, and expenditure to determine the effects of multiple jurisdictions on management success.
- Investigate which combination of on-site and off-site management actions deliver the best outcomes for shorebirds in Australia.
- Build a spatially explicit model of changes in abundance in response to specific management actions aimed at improving shorebird roosting and foraging habitats.
- Develop a comprehensive knowledge platform for the delivery of project information, integrated with existing tools and information.

Project participants and links

Delivered through the Australian Research Council Linkage Projects Scheme, the project is led by Dr Richard Fuller and Professor Hugh Possingham of the University of Queensland, with support from the Burnett Mary Regional Group (BMRG), Queensland Wetlands Program - Environment and Heritage Protection (EHP), and the Queensland Wader Study Group (QWSG).

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QLD WADER STUDY GROUP

The Queensland Wetlands Program supports projects and activities that result in long-term benefits to the sustainable management, wise use and protection of wetlands in Queensland. The tools developed by the Program help wetlands landholders, managers and decision makers in government and industry. The Queensland Wetlands Program is currently funded by the Queensland Government.

Contact wetlands@ehp.qld.gov.au
or visit www.wetlandinfo.ehp.qld.gov.au

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[1]Nebel, S., Porter. J. L., Kingsford, R. T., (2008). *Long-term trends of shorebird populations in eastern Australia and impacts of freshwater extraction*. Biological Conservation, 141 (4): 971-980.

[2]Clemens, R.S., Rogers, D.I., Hansen, B.D., Gosbell, K., Minton, C.D.T., Straw, P., Bamford, M., Woehler, E.J., Milton, D.A., Weston, M.A., Venables, B., Weller, D., Hassell, C., Rutherford, B., Onton, K., Herrod, A., Studds, C.E., Choi, C.Y., Dhanjal-Adams, K.L., Murray, N.J., Skilleter, G.A., Fuller, R.A., (2016). *Continental-scale decreases in shorebird populations in Australia*. Emu, 116: 119-135.

Mixed flock of shorebirds (Andrew McDougall)