

decision brief

A guide to good environmental decision making



Bar-tailed godwit (*Limosa lapponica*) flock
Image: Rob Clemens

Conserving migratory species

planning for migratory networks across countries and continents

Many of the world's migratory species are now in serious decline. Addressing the causes of these declines presents a major conservation challenge. Migratory species rely on many different landscapes, often across multiple political boundaries. Even if we had the capacity to save habitat in distant parts of the world – far beyond our own borders – there's often enormous uncertainty about which part of the network of sites used by migratory species we should focus on.

Multiple sites, multiple challenges

Migrant species rely on multiple sites including breeding grounds, non-breeding grounds and the places they travel through between the two. This reliance on multiple sites makes migrants particularly vulnerable to habitat loss or degradation. In the extreme, if all individuals

of a species regularly move between two areas, the area in the worst condition will dictate the overall status of the species. Conservation measures taken in the less critical area may make little difference without corresponding action in the acute bottlenecks.

A future with migratory species

Large-scale conservation schemes are only just beginning to incorporate the needs of migratory species. This is not surprising, given the complex, multi-jurisdictional challenge of migratory conservation. However, the tools needed to take on this challenge are now available.

With a little care and some well-designed investment, it is a challenge we can meet. And, in doing so it is hoped, we will enable future generations to be able to experience the amazing and inspiring phenomenon that is wildlife migration.

Places such as stopover sites or drought refuges can also be crucial to a large proportion of the population even though they might be occupied only for a short period of time.

Conservation interventions for migrants need to take these connections between places into account and ensure that migratory species have the resources they need across their breeding grounds, non-breeding grounds and stopover sites or migration corridors. This can be difficult, particularly where migrants move across jurisdictions or habitats; however, it can be crucial for their long-term survival.

For example, the number of migratory shorebirds using the East Asian-Australasian Flyway – a flyway is a route used by many migratory species – has declined dramatically

in the past few decades, and evidence implicates habitat loss at important stopover sites in the Yellow Sea. Consequently, action to manage shorebird habitat elsewhere in the Flyway might fail to halt the decline of these birds unless corresponding management occurs at stopover sites in eastern Asia.

Similarly, the migratory leatherback sea turtle is declining as a result of a combination of egg-poaching at its nesting sites and mortality from both inshore fisheries and long-line fishing. As all three factors are jointly responsible for this loss, international restrictions on long-line fishing will not halt the decline of this species without corresponding effort at inshore locations and nesting sites.



Leatherback Sea Turtle (*Dermochelys coriacea*)
National Geographic CC. Image: Mike Nichols

Planning across networks

One of the key challenges in the conservation of migratory species is developing ways to design conservation plans across a complex network of sites. Conservation planning has tended to assume that the targets of management, such as species or ecosystems, are static in space and time.

However, the growing sophistication of conservation planning tools means it's now possible to incorporate the dynamic needs of migrants into our conservation plans. Spatial prioritisation software such as Marxan and Zonation have already been used to design conservation networks which manage migrants across the whole migratory cycle.

Some of the approaches we need for migratory species conservation have yet to be developed. We should be able to design solutions that maximise future evolutionary potential, or minimise the chance of random events (like cyclones or bushfires) wiping out populations. Such solutions, which will be needed to address the dual threats of climate change and habitat loss, might focus on the conservation of multiple sub-populations and dynamic migratory corridors.



Migratory shorebirds such as this Eastern Curlew (*Numenius madagascariensis*) have been experiencing worrying declines in recent years. Will people in the future be able to witness their amazing feats of migration?

Image: Dick Daniels Wikimedia CC

Planning for migratory species

In planning for the conservation of migratory species we must consider their reliance on multiple sites:

1. The place in worst condition affects the rest: The weakest link in the feeding, breeding and travelling chain will dictate the overall status of the species.
2. Migratory species are highly dynamic: Their requirements change over time so conservation plans must be designed to meet these needs over the whole migratory cycle.
3. Delay comes at a high cost: Postponing action to learn more may result in unacceptable losses. We need to weigh up the tradeoffs between learning and acting.
4. Collaboration is key: Countries and organisations need to work together to protect migratory species.

What do we know about migratory species?

A lot of the time we know a lot more than we think. Tracking studies, stable isotopes measurements and genetic studies can be used to gather information on the connections between parts of migratory species' ranges, though these approaches can be costly and time-consuming and require specialist knowledge. Luckily, we can often use expert knowledge to get a good approximation of migratory connectivity

between parts of a species range and use this to guide our conservation decisions when we have limited resources. Similarly, the use of decision-theoretic approaches and artificial intelligence can aid decision-making where data are scarce. These techniques can also demonstrate how to optimally allocate time and resources between learning and taking action across space and time.

First steps

Despite the size of the challenge of conserving our migratory species, many countries and conservation organisations are taking some of the first steps needed to ensure their ongoing survival. Initiatives such as the East Asian-Australasian Flyway Partnership (EAAFP) have been formed in an attempt to provide multi-country coordination. These involve multiple parties (governments, international non-government organisations [NGOs] and inter-governmental organisations) coordinating research and monitoring; undertaking education, public communication and outreach; building capacity of managers, decision-makers and stakeholders; and

developing and implementing networks of protected areas at key sites for migratory species.

Right now, countries around the world are working to increase the size and extent of their protected areas. This global push to expand protected areas is a key opportunity to fill in the gaps for migratory birds. For instance, the Bahamas recently announced new protected areas spanning over 2.83 million hectares – vital habitat for many migratory birds including the largest congregation of the endangered Piping Plover outside the United States, filling in a key gap in their conservation.

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Resources

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