



Restoring wetlands for biodiversity and people

The case of flyway for migratory waterbirds



Wetlands
INTERNATIONAL

Wetlands as the keystones of Flyways

There are many types of wetlands around the world, all with their own set of specific values. These wetlands are part of a wider landscape and in many cases even part of connected systems that span large parts of the world. Such connections can be through water or through the migration of species like fish or birds. When an individual wetland or – even worse – a set of wetlands are degraded or lost, it weakens that wider system as a whole.

A special case is the one of flyways of waterbirds. These birds depend on the wetlands in their flyway to complete their migratory journey from the places where they breed, generally speaking, in the North, to the places they spend the rest

of the year, generally speaking further South. They depend on wetland sites along their way to stop over and fuel up and rest. Coastal wetlands with mudflats and adjacent habitats to rest are critical stepping stones in their annual journey and the Flyways can be seen as the connected network of these critical sites for breeding, for stopping over and for spending the non-breeding season.

Many wetlands, especially intertidal mudflats have been lost to coastal development over time and this has put pressure on the connectivity of flyways for migratory shorebirds around the world, leading to significant population declines. In a good number of cases this threat

has been acknowledged and significant conservation and restoration efforts have been put in place to bend the curve and safeguard the connectivity in the flyways. Some of these efforts are underway and many more are needed. As always it is becoming clear that restoring the ecological functioning and values is much more difficult (and expensive) than conserving them (maintaining them in a place where they exist), which in itself already provides an important lesson in terms of safeguarding critical areas.

From the above it follows that in restoration it is crucial to target specific values and processes to bring back the missing parts in the total system.

The need for wetland restoration

Wetlands occur all over the world and wherever they are, they provide ecosystem services for people and habitat for wildlife.

Nevertheless we have seen massive degradation and loss of wetlands in most cases due to land use change driven by development. Construction of ports, urban expansion, & development of large scale aquaculture, compounded by climate change, have resulted in conversion and degradation of critically important coastal ecosystems.

Realisation that this needs to be stopped and reversed has been emerging in many places and wetland restoration initiatives are taking place in quite a few places. While not yet at a sufficient scale the loss of values for people and biodiversity, these restoration activities are a very important

step. Especially if this restoration delivers optimally towards the recovery of the biodiversity and ecosystem values that had been lost.

Not all restoration is equally effective. Lessons have been learnt on this around the world and evidence for the success (or failure) of approaches has often been documented. This brochure intends to draw attention to the evidence-based approach to wetland restoration. It intends to help planners, designers and implementors to benefit from what has been learnt, to optimise the likelihood of success and the efficiency of achieving this.

Key Messages

- There is a strong need to restore wetlands, worldwide, for their values for people and nature
- In restoring wetlands it is essential to set clear targets
- In most cases these targets should reflect the ecosystem values before degradation of the wetland
- In designing the restoration approach it is very helpful to use proven successful methods (evidence based)
- Monitoring of biodiversity and ecosystem services (baseline plus progress monitoring) allow adaptive management.
- Good documentation allows taking stock of lessons learned and future building on successes.

Step-wise approach to evidence-based wetland restoration

- 1 Identify the area/habitat/landscape**
- 2 Get to know the area**
Establish a baseline for biodiversity and ecosystem value and conduct research to identify the causes of wetland degradation/loss and the loss of related biodiversity and ecosystem value
- 3 Set SMART targets**
for the restoration of the wetlands, in terms of restoring the lost values
- 4 Identify ways to achieve these targets**
By building on understanding of the area, on good practice and wetland restoration guidance
- 5 Develop a restoration plan**
that details the chain of actions that need to be taken to achieve targets.
- 6 Develop a monitoring strategy**
to assess the status of biodiversity and ecosystem value and to measure progress towards the targets
- 7 Start implementation of the restoration plan**
using nature-friendly and nature-based techniques where possible, and running the monitoring alongside it.
- 8 Evaluate the success of interventions**
after some time (e.g. mid-way the planned interventions) using the monitoring and other data, and assess whether changes to the intervention are needed to achieve the targets..
- 9 Adapt the restoration plan**
Depending on the scale and duration of the intervention this can be an iterative process.
- 10 Document the steps**
in a transparent and accessible way capturing the lessons learnt.

Yellow Sea coastal restoration

In the Yellow Sea region, significant areas of intertidal mudflat, critically important as feeding grounds for migratory waterbirds, have been converted to aquaculture ponds or have been overgrown by invasive *Spartina* cordgrass. The Chinese authorities have recognised the urgent need to address these problems. Key areas need to be restored to productive mudflats again, serving as good feeding and roosting grounds for shorebirds. Restoration targets are needed in terms of abundance and diversity of shorebirds to be supported by the mudflats and adequate food density in the soil. Removing aquaculture ponds and eradicating *Spartina* are important steps to achieve the desired impact but they should be considered as a means and not as the final objective of the restoration. This also implies that the way of working

in implementing the restoration is very important, because not all methods lead to the restoration of productive feeding grounds.

When the elevation of the restored area with regards to the tides is changed significantly, or the substrate is modified and 'foreign material' (like concrete) is left behind, it negatively affects the quality of the feeding ground and consequently the numbers of birds.

Monitoring of – at least – the number of birds (systematic bird counting) and of diversity and abundance of intertidal organisms in the soil that can serve as food sources (benthos sampling) needs to be put in place to assess whether the target is being achieved and the restoration plan is still valid.



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About

This brochure was produced by the Flyway Bottleneck Yellow Sea Project, an initiative by Wetlands International, in collaboration with the Chinese Academy of Forest Inventory and planning (AIP), under the National Forestry and Grassland Administration (NFGA) and funded by Arcadia – a charitable fund of Lisbet Rausing and Peter Baldwin.

The ambition of this project is to drive proper management, conservation and restoration of wetlands, especially as habitats of migratory waterbirds. We do so by

promoting political commitment, mobilisation of resources, driving collaboration and promoting best-practice approaches that support effective conservation and restoration. This work focuses at site, yellow sea and flyway levels. It implements solutions for practical habitat management and restoration at key sites; promotes the potential for replication at other sites; strengthens protected areas management and supports partnerships to leverage lasting outcomes for the biodiversity of the region.

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