



Science for Environment Policy

Balancing conflicting conservation goals takes time

Ecosystems are complex and managing them effectively can mean balancing conflicting conservation goals. In a recent US study in the San Francisco Bay area researchers examine the best strategies to eradicate an invasive plant while protecting an endangered bird that uses it for nesting habitat. They find that with a clear management plan both goals can be achieved, albeit over a longer timeframe.

In the 1970s a non-native species of cordgrass (*Spartina alterniflora*) was planted in the San Francisco Bay area in the US as a way of restoring the salt marshes that had been filled in or altered in the past. *S. alterniflora* then crossed with native cordgrass *S. foliosa* and the hybrid became invasive, eventually spreading across more than 300 hectares. An eradication programme started in 2005 and by 2011 around 92% of the invasive hybrid had been removed.

The California clapper rail (*Rallus longirostris obsoletus*) has been classified as an endangered species in the US, in immediate danger of becoming extinct. Clapper rails nest and forage in cordgrass and their numbers dropped by nearly half during the nine years the invasive cordgrass was being eradicated. Although native cordgrass was replanted in areas cleared of the invasive hybrid, it did not grow quickly enough to form the dense cordgrass meadows preferred by the bird.

The researchers investigated the most cost-effective management strategy that could achieve eradication of the invasive cordgrass while maintaining protection of the endangered clapper rail. They used information on the populations of invasive and native cordgrass from the nine-year eradication programme and calculated the costs of the damage caused by the invasive cordgrass and those of removing it, as well as the costs of restoring the native species.

The researchers found that the best solution required a three-stage management programme:

- 1) Removal of invasive cordgrass as quickly as possible to reduce the likelihood of further spread, until any further removal would harm the clapper rail by critically reducing its habitat. All of the annual budget should be used for this purpose.
- 2) Planting native cordgrass in areas that have been totally cleared, until there are sufficient plants to grow into the extensive meadows needed to support the clapper rail. Again, the entire annual budget should be used for this.
- 3) Carry on removing invasive cordgrass but at a slower pace, while the newly planted native cordgrass has a chance to establish meadows covering enough area to support the clapper rail. This whole process could take many years, possibly over two decades.

This approach can be used in similar situations where conservation goals are in conflict, say the researchers. They also caution that ecosystem managers might need to take longer to ensure several goals can be met as opposed to pursuing a single goal as quickly as possible.



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