

by Greg Balogh and
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Management in the Face of Uncertainty



Author Greg Balogh holds a male
spectacled eider.

USFWS photo

When the spectacled eider (*Somateria fischeri*) was listed as a threatened species in 1993, scientists knew very little about this enigmatic seabird. They were uncertain about total population size and even the location of the birds for nine months out of the year. Most critically, they didn't know why eider numbers were declining, only that they were. In just a few decades, a 95 percent decline befell the population on Alaska's Yukon-Kuskokwim Delta (Y-K Delta).

The paucity of data on this species meant that recovery planning would draw more on the team's collective wisdom and common sense than on knowledge of spectacled eider biology. It was a situation in which management had to meet uncertainty head-on.

Wildlife Management Begins With People Management

Due to the spectacled eider's remote habitats, encounters with humans are rare. Consequently, management options for this species are limited. Sport hunting of the species was probably never of much consequence, and ended in 1991, although subsistence hunting continued. This subsistence harvest is one of the few suspected causes of decline that can be managed. Spring waterfowl harvest in rural Alaska is illegal but has been generally tolerated by law enforcement officers out of deference to native culture and tradition. In an effort to reduce the harvest of spectacled eiders, Refuge Information Technicians (RITs) from the Yukon Delta National Wildlife Refuge explained the plight of the spectacled eider to villagers. They asked for the hunters' help in eider conservation, and

the hunters responded. The reported subsistence harvest of spectacled eiders dropped notably after 1992.

As an unintended consequence of decades of spring and fall waterfowl hunting, however, hundreds of tons of lead shot pellets have been deposited along the coastal wetlands of the Y-K Delta. Analyses of blood samples from Y-K Delta spectacled eiders revealed that both adults and young ingest this toxic shot, and that a portion of them die of lead poisoning as a result.

The nationwide ban on lead shot was not enforced on the Y-K Delta prior to 1998 for a number of complicated management reasons. With the observation of lead poisoning in eiders, however, the ban has been phased in and enforced. Steel shot clinics were held in villages all across the Y-K Delta to teach villagers how to shoot the new non-toxic loads, and to dispel the many myths regarding both lead and steel shot that persisted in rural Alaska. Refuge personnel offered steel shot to poor villagers in exchange for the cheaper lead shot they already had.

Filling in The Gaps

After addressing people management, scientists began filling in the 9-month-per-year gap in the species' life history. Radio and satellite transmitters attached to eiders from the three known populations (Y-K Delta, North Slope, and Russia) gave biologists the data that led to the discovery of important and remote molting areas off the northwest coast of Alaska and northeast coast of Russia. Then in 1995, scientists finally unraveled the mystery of where spectacled eiders spend the winter.

A signal from a long-silent satellite transmitter led biologists to a vast expanse of sea ice that contained numerous small cracks and fissures. These breaks in the sea ice contained huge concentrations of spectacled eiders, as many as 50,000 in a single flock. One aspect of this species' biology was finally working in the managers' favor. Apparently, nearly all of the spectacled eiders on the planet congregate in a 40-mile (64-kilometer) diameter area of the Bering Sea during winter. This created a unique opportunity for an inexpensive global census of the species. Recent winter surveys have placed the population at about 400,000.

Still Searching for the Smoking Gun

It turns out that about 90 percent of the world's spectacled eiders are from the Russian breeding population. The unexpected abundance of Russian eiders gave the species as a whole some breathing room this side of extinction. The fact remained, however, that the Y-K Delta population had been devastated. In keeping with the general theme of uncertainty regarding this species, the historic trend of the Alaskan North Slope population was still unknown. If historic population trends were known, scientists might be able to unravel the mystery behind the Alaskan decline. If the species' three populations fluctuated similarly, the force behind the change would likely be lurking in the Bering Sea, where the populations mix on the wintering grounds. If the three populations fluctuate independently, however, we would look to the breeding or molting areas for explanations.

Of course, given the absence of historic trend data, no such clues exist, but that has stopped few from hypothesizing about the cause of the decline. Perhaps spectacled eider populations suffered increased pressure from waterfowl predators when other waterfowl populations declined through the 1980's on the Y-K Delta. The growing human population on the Delta and the resulting abundance of garbage

could also be sustaining artificially high predator populations. A popular claim among indigenous peoples is that the government's research on the spectacled eider breeding grounds leads to nest abandonment and predation.

Any number of changes in the Bering Sea ecosystem could be affecting spectacled eiders. One theory looks to increasing populations of walrus and gray whales as competitors for food used by eiders during the months they are at sea. Unknown ecological changes could also be caused by excessive commercial harvest of Bering Sea fisheries. Recently described declines in bivalve distribution and abundance (perhaps due to global climate change or trawl fisheries) could be affecting the eider's food supplies.

Then there is the ubiquitous problem of environmental contaminants. The Bering Sea is almost certainly the source of the elevated selenium, copper, and cadmium levels detected in some eiders. Whether these elevated heavy metal concentrations are a serious problem to eiders, however, is unknown. The ducks probably acquire the metals from their marine food items, but the source of the metal is (as you may have guessed) unknown.

One of the few certainties in spectacled eider management is that the *uncertainty* can seem overwhelming at times. On the bright side, our knowledge of the birds' natural history is far more complete than it was just 5 years ago. We may never know for certain what factor or combination of factors caused the Y-K Delta population to plummet, but we have taken a few steps towards recovery of the species.

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