

by Greg Balogh

Lead and the Spectacled Eider



The large white eye patch and black "spectacle," markings that are most apparent in males, inspire the name for this marine duck.

Photo by Margaret Peterson/USGS

"Ursus, Come!" No response. Biologist Paul Flint was searching for duck nests on the Yukon-Kuskokwim delta. Again he called to his companion, more urgently this time. "Ursus, get over here!" Like Flint, Ursus, was a veteran nest searcher on Alaska's Yukon-Kuskokwim Delta (Y-K Delta). Unlike Flint, he was a Labrador retriever. And although he had not found a nest for a while, Ursus had just found something far more interesting and horrifying tucked under the overhang of a tidal slough cut bank.

Necropsy results confirmed Flint's suspicions. The spectacled eider that Ursus found had died of lead poisoning, the first such death confirmed. Alarm bells went off in wildlife managers' heads throughout the State. Were these isolated incidents? Where had these threatened birds picked up lead? Could lead poisoning be one of the causes of the astounding 95 percent decline in Y-K Delta spectacled eider numbers since the 1970's? And finally, if this *is* a problem, what can be done about it?

Authorities generally agree that lead poisoning is not the sole cause of the population's rapid decline, but it is likely a contributing factor. Perhaps more importantly, it seems to be a notable obstacle to the species' recovery on the Y-K Delta. The discovery of lead poisoning in spectacled eiders caught resource managers off guard. Why, you may ask, should lead poisoning in ducks surprise anyone? It's been happening to ducks throughout the world for decades. To fully appreciate how unexpected this find was, you have to know a little bit about the eider and where it lives.

To begin, the vast majority of spectacled eiders spend at least 40 weeks a year riding the waves and ice floes of the Beaufort, Chukchi, and Bering seas. Not a lot of lead pellets out there. When they're not far out to sea, the species breeds on arctic and subarctic tundra in northern and western Alaska—land that appears to be largely untouched. The condition of spectacled eider habitat in Siberia is less certain, but it is apparently good enough to host over 90 percent of the remaining world population. So where is the lead coming from?

Each spring, the Yup'ik Eskimos look forward to the arrival of hundreds of thousands of geese. The birds were traditionally a welcome source of fresh meat to natives that had subsisted on dried fish and seal oil for several months. As the regional Yup'ik culture became more and more affected by European and Russian culture, spring hunting took on added importance as a form of "cultural glue" to help hold rural native communities together. For this reason, the Federal and State governments did not actively enforce Migratory Bird Treaty Act prohibitions on spring waterfowl hunting by the Eskimos. (The act is now being revised to make spring waterfowl hunting legal for natives.)

Most Y-K Delta villagers exist well below the poverty level. Therefore, they have continued to use cheaper lead shot despite a 1991 nationwide ban on the use of lead shot for waterfowl hunting. The result of this prolonged use of lead shot has been the deposition of thousands of tons of spent lead pellets in eider habitat. Most of the pellets have been deposited near the

most heavily used (by eiders) coastal wetlands. These areas are frozen most of the year, so lead pellets deposited in these areas are likely to persist in the substrate for a long time. Geese and ducks ingest the pellets while feeding, and the lead enters their bloodstream during digestion.

Scientists with the U.S. Geological Survey's Biological Resource Division and the U.S. Fish and Wildlife Service have spent considerable effort studying the lead poisoning problem on the Y-K Delta. Tests run on spectacled eider blood samples indicate that 13 percent of females pick up lead during the 2-3 week interval between their arrival on the nesting grounds and the initiation of incubation. By the time their eggs begin to hatch, one in four spectacled eider hens have eaten lead. By mid-brood-rearing, an astounding 36 percent of hens have elevated lead levels in their blood. This creates an evolutionary conundrum for the birds. The longer they remain on land trying to breed and pass on their genes, the more likely they are to die of lead poisoning. Even the eider ducklings are subject to this toxic gauntlet. Nine of 43 spectacled eider broods studied contained one or more ducklings exposed to lead by 30 days after hatching. This observed number is likely low because it would not include any ducklings that died before the sample was taken.

So, what is being done about it? The first step in reducing the eiders exposure to lead was to halt the use of lead ammunition by hunters. Dozens of village meetings were held to explain to hunters that their choice of lead shot was hurting the animals. Once informed, most communities were anxious to be part of the solution.

The next step was to find a way to make the non-toxic alternative, steel shot, cheaper. To do this, the Fish and Wildlife Service began working with ammunition manufacturers on ways to get steel shot out to the villages at prices comparable to that of lead. This cooperative effort helped shrink the



A male spectacled eider in Savoonga, Alaska

Photo by Greg Balogh/USFWS

price discrepancy from several dollars a box in the early 1990's to about one dollar today.

Finally, to address the problem of what native hunters were to do with the lead shot that they already had in their possession, the Fish and Wildlife Service teamed up with Ducks Unlimited to provide a box-for-box swap of steel shot for lead shot.

Only after all of these efforts were made was law enforcement brought onto the scene. Beginning March 1, 1998, the possession of lead shot by waterfowl hunters was no longer tolerated, and its discovery by agents resulted in a fine. To date, the rate of compliance with the lead shot ban has been impressive.

The relative importance of lead in the decline of the Y-K Delta spectacled eider population continues to be studied. Clearly, lead is a problem for this species. Although there is little we can do about the lead that is out there, there is a lot we can do to keep more lead from entering the environment. For now, eider management will continue to be predominately an exercise in reducing human impacts on eiders.

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