Conservation MAGAZINE
Conservation Magazine

Mystery In Alaska

Beak deformities striking wild birds at record rate

The alarming case of the cross-billed chickadees – and crows, nuthatches and woodpeckers — began at two birdfeeders. In 1998, Alaskan biologists got reports of chickadees with grossly elongated beaks snacking at feeders in two widely separated parts of the state. Soon, birds with similar deformities began showing up across Alaska and nearby regions. Now, in two studies, researchers report documenting the highest rates of gross deformities ever recorded in wild bird populations. Nearly 30 species appear to be affected, but scientists can't say what is causing the birds to grow long, Pinocchio-like beaks and tangled, crossed and curled bills.

"The prevalence of these strange deformities is more than ten times what is normally expected in a wild bird population," says research biologist Colleen Handel of the U.S. Geological Survey. "We have seen effects not only on the birds' survival rates, but also on their ability to reproduce and raise young." Handel is an author on both studies, which appear in the *The Auk*.

Bird researchers have long collected scattered reports of beak abnormalities. But "the sudden appearance of a large geographic cluster of morphological abnormalities in a wildlife population can be an early sign of a much larger underlying ecological problem," the team of academic and government researchers notes. When birds with twisted beaks started showing up around the Great Lakes in the 1970s, and in California wetlands in the 1980s, both problems were traced back to contaminants. So Alaskan researchers were alarmed when their birds started showing odd beak growth, and launched a broad investigation.

To estimate just how prevalent the problem was, for instance, they erected nest boxes across the state in 2000 and then spent 4 years carefully examining both parent and hatchling Black-capped Chickadees (*Poecile atricapillus*) for deformities. From 2001 to 2008, they netted thousands of birds during the winter. They also scoured the literature for past reports, and mapped where the deformed birds had been seen.

Overall, they documented 2,160 deformed Alaskan Black-caps – and 31 elsewhere – with some of the sightings dating back to 1991. They also documented 435 birds from 29 other species with deformed bills, with crows, woodpeckers and nuthatches being the most common. On average, about 6.5% of the Black-capped chickadees they captured each year showed deformities, but abnormalities were almost never seen in young birds.

In a related study of crows conducted in 2007 and 2008, researchers estimated that, on average, 16.9% of the birds had deformities. Together, the two studies have documented "the highest rate of gross deformities ever recorded in a wild bird population," the authors note.

In the Black-capped study, about 80 birds that had normal beaks when they were first captured showed deformities when they were captured again a year or more later. One bird's upper beak had grown in just one year from about 8 millimeters long to more than 21 millimeters – an astounding average of 0.13 millimeters a day. In 8 other cases, however, birds that had deformed beaks one year later showed normal bills.

Such findings, "coupled with the low prevalence of abnormalities in juvenile birds, suggests that either this is an acquired condition or there is a delayed expression of a congenital condition," the authors write. So far, however, they can find no clear cause of the disorder, although studies are continuing. To read the papers, view pictures of the birds, and report any deformed beaks you see, go to: http://alaska.usgs.gov/science/biology/landbirds/beak_deformity/index.html. ***– David Malakoff* | November 15, 2010**

Sources: Handel, C., Pajot, L., Matsuoka, S., Van Hemert, C., Terenzi, J., Talbot, S., Mulcahy, D., Meteyer, C., & Trust, K. (2010). Epizootic of Beak Deformities Among Wild Birds in Alaska: An Emerging Disease in North America? *The Auk, 127* (4), 882-898 DOI: 10.1525/auk.2010.10111

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Image U.S. Geological Survey