



Jack Dumbacher &lt;jdumbacher@calacademy.org&gt;

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## New virus a prime suspect in often-fatal beak disorder in birds

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Press Office <press@calacademy.org>  
To: Press Office <press@calacademy.org>  
Bcc: jdumbacher@calacademy.org

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### Newly discovered virus a prime suspect in mysterious, often-fatal beak disorder spreading to birds across the United States

*Avian Keratin Disorder causes debilitating beak overgrowth, preventing birds around the world from feeding and preening*

**SAN FRANCISCO (July 26, 2016)** – Scientists have uncovered a fascinating new clue in the global mystery surrounding wild birds with grossly deformed beaks. A team of researchers from the [California Academy of Sciences](#), University of California San Francisco ([UCSF](#)), and the U.S. Geological Survey ([USGS](#)) have identified a novel virus that has been linked to Avian Keratin Disorder (AKD), a disease responsible for debilitating beak overgrowth and whose cause has remained elusive despite more than a decade of research. This new virus—identified from Alaska and the Pacific Northwest—is being investigated as a potential cause of AKD and represents a critical step in understanding the emergence of this disease in wild bird populations around the world. The results are published today in the journal *mBio*.

“Take one look at a bird suffering from Avian Keratin Disorder, and you’ll understand the importance of stopping its spread,” says Jack Dumbacher, co-author and Academy curator of ornithology and mammalogy. “Birds must be able to feed themselves and preen their plumage by carefully spreading waterproofing oils on their feathers. When deformed beaks restrict them from these life-giving activities, birds become cold, hungry, and often die. We’re trying to understand the causes, origins, and distribution of this disorder.”

#### What is Avian Keratin Disorder?

Avian Keratin Disorder is characterized by dramatic beak deformities such as elongation, crossing, or curvature, and disables infected birds by severely impairing basic behaviors—including feeding and preening—that are crucial to their survival. First documented among a population of black-capped chickadees in south-central Alaska during the 1990s, AKD has seemingly spread into Canada and the Pacific Northwest, and similar deformities have also been reported in several species throughout the lower forty-eight states. The disease’s hallmark traits have recently been observed in regions as far-flung as Europe and Asia. Aside from chickadees, the other species most commonly affected are nuthatches, woodpeckers, crows, jays, and other members of the crow family.

“These beak deformities can severely handicap the affected birds, which suffer higher rates of mortality and raise fewer young than unaffected individuals,” says Colleen Handel, a co-author and scientist with the USGS who first discovered AKD in Alaska and began to document its distribution.

Previous AKD investigations ruled out a number of other possible causes including bacterial or fungal infections, many known avian diseases, human food sources, environmental contaminants, behavioral changes, or trauma that can affect how the beak looks and functions. When the team used new genetic techniques to screen for pathogens in samples from Alaska, they discovered a new virus previously unknown to science.

“This new virus is the strongest lead we’ve had so far as to a likely cause of the unusual cluster of beak deformities,” says Caroline Van Hemert, a co-author and scientist with the USGS. “Although we don’t know yet whether this novel virus is the culprit, it’s an exciting avenue for future research.”



Katie Jewett; [kjewett@calacademy.org](mailto:kjewett@calacademy.org)  
(415) 379-5130

*Images available upon request*

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