Chickadee Beak Deformities in Alaska

February 28, 1999 - This week, Interior Secretary Bruce Babbitt spoke before a federal Taskforce on Amphibian Decline and Deformities, now referred to as TADD. Babbitt said the entire Cabinet is concerned about "an increasing environmental threat showing up in unexplained declines, deformities and even disappearances of frogs, toads and salamanders -- species that have been on Earth for 350 million years."

Scientists are puzzled and at odds with each other about what is causing the worldwide decline in amphibians. On February 25th, a federal program was launched called "Frog Force." The goal is to get kids everywhere to search for deformed frogs, toads and salamanders and report them. The Frog Force Web Site is www.frogweb.gov. The best time to look for frogs is in the spring mating season which starts after temperatures stay in the 40s at night and continues for about two to three months after temperatures are warmer.

Biologists at the U. S. Geological Survey say they want to involve young people, and all the public because the work of monitoring what's happening to amphibians is too big for that agency to do by itself.

The Clinton administration wants to spend about $9 million next year to find more answers to the mystery of disappearing and deformed amphibians. Current theories range from disease and parasites, to pesticides and other toxic contaminants as well as increased UV radiation that results from the thinning ozone layer. Increased UV radiation can cause genetic damage and weaken immune systems which make the amphibians more vulnerable to disease and contaminants.

Like the multi-legged frogs, another mysterious deformity among wildlife is occurring in Anchorage, Alaska. For the past two years, there has been a dramatic increase in the number of black-capped chickadees suffering grossly deformed beaks. And the problem is spreading to other bird species. While most Alaska songbirds head south for the winter, chickadees survive the cold by eating a lot in the day and storing a thick fatty layer that helps keep them warm at night. Their average life span is about two years so whatever happened to produce the grossly deformed beaks in adult chickadees might have showed up in the environment two years ago.

The scientist in charge of researching this bird mystery is Colleen Handel, Research Wildlife Biologist at the U. S. Geological Survey's Alaska Biological Science Center in Anchorage. She talked to me this week about how she first learned of the chickadee abnormalities.

Interview:

Colleen Handel, Research Wildlife Biologist, U.S. Geological Survey's Alaska Biological Science Center, Anchorage, Alaska: "Approximately one year ago in January 1998, I had a report from a colleague of mine of a chickadee

with a deformed bill. In fact, she had had three birds with various types of deformities at her feeder here in Anchorage and was kind of puzzled by this. I went out and looked at the birds and they were indeed kind of strange and did a little research.

CAN YOU DESCRIBE WHAT YOU ARE LOOKING AT IN TERMS OF THE ANOMALIES?
Yes. Since then, the anomalies can be quite varied, after looking at several different birds and getting reports from a number of different people. But the original birds I looked at all had the upper mandible -- the upper portion of the bill -- was greatly elongated. The longest was about 2.5 inches long and sharply curved. And the lower mandible was also elongated and not curved and the bills were crossed.

A QUESTION ABOUT THESE CROSSED BEAKS. CAN THE BIRDS CONTINUE TO SURVIVE AND EAT WITH THESE HUGE CROSSED BEAKS?
Well, the birds do have difficulty feeding. I think many of them are alive mainly because people have bird feeders.

HOW MANY BIRDS IN 1999, INCLUDING THE CHICKADEES AND EXTENDING OUT TO THESE OTHER BIRDS, WOULD YOU SAY HAVE BEEN INVOLVED SO FAR?
Well, the ones that have been reported to me -- before last weekend, I had 45 black capped chickadees and one downy woodpecker. And since this weekend, I haven't been able to call everyone back. I have been inundated with phone messages and e-mail messages in response to the article in The Daily News. And I estimate I've received an additional 30 reports -- maybe more -- of black capped chickadees mostly from this winter.

GETTING UP TO 100 BIRDS RIGHT NOW.
That's correct, right. That to me is an alarmingly high number. It's what one would consider an epidemiological cluster of concern, for sure.

HOW WIDE SPREAD IS THIS IN FEBRUARY OF 1999? IS IT BEYOND ANCHORAGE ANYWHERE?
Well, again the reports that I have received so far have been as far north as 85 miles north of Anchorage and to the northeast to Sutton which is appx. 60 miles away from Anchorage and down to the Peninsula south of Anchorage which is appx. 85 miles south of Anchorage -- I've had two reports from there.

And then there is the interesting out lying cluster in King's Salmon which is a couple of hundred miles away from Anchorage. That was our earliest report which was in 1991. And then again we had reports from there in 1996, 1997 and 1998. So, again, there's always a possibility that there could be multiple causes behind what we're seeing. They may or may not be related in terms of all the sightings, but I'm at least looking for one common explanation for the majority of the sightings. It could be dietary deficiencies, disease, parasites, contaminants or least likely some genetic inherited abnormality.

WHAT ABOUT THE POSSIBILITY THAT INCREASED UV RADIATION FROM THE THINNING OZONE COULD HAVE AN EFFECT ON BIRDS JUST AS IT APPEARS THERE MAY BE A CONNECTION TO DISAPPEARING AND DEFORMING AMPHIBIANS?
That is another possibility. When you start looking at broader areas, we start looking for broader explanations. And I start to think about airborne contamination or UV radiation. A question that immediately springs to mind is why black capped chickadees and no other species. In the last few days I have received a few reports of other species with deformed bills in the area -- red breasted nut hatches, black billed magpies and stellar jays and I had one report of a downy woodpecker.

IS THERE ANYTHING IN TERMS OF THE ENVIRONMENT IN ALASKA IN THE PAST TWO YEARS THAT MIGHT BE ATTRIBUTED

TO THE BIRDS FEEDING AREAS AND WHAT THEY ARE INGESTING?
It's a little puzzling. A lot of the sightings have been congregated in the south portion of Anchorage where there has been a heavy infestation of Spruce beetles. Now Spruce beetle is a small insect that attacks large, mature White Spruce predominantly and there's been an epidemic in this entire south central region of Alaska.

HAS THAT BEEN RELATED TO GLOBAL WARMING?
There is a hypothesis that that is true because the insects -- their life cycle is shortened during hot drier summers which we have had lately and whether or not the weather patterns we have been seeing are related to global warming is of course debated hotly, but there is definitely some tree core evidence that there has been a global warming trend in the Arctic and that this (beetle infestation) could definitely be related.

THERE HAVE BEEN A LOT OF OTHER THINGS -- PERMA FROST MELTING AND THE BEETLE INFESTATION. AND HOW MIGHT A BEETLE CAUSE THESE LONGER CROSSED BEAKS IN A CHICKADEE?
Well, I'm not saying there is a direct connection. There is a possible connection for spraying to control the insects. Some chemicals that can be used include some organic chlorines such as Windane, and there is a possibility that such organic chlorines could cause this deformity. However, deformities are also occurring in birds 85 miles away from Anchorage where, to my knowledge, no real concentration of spraying for this insect. So, again, it might fit for the Anchorage area as a likely or possible explanation, but does not explain very well what's occurring in outlying areas.

In conjunction with the tissue analyses we are doing, we are also looking at -- there are maps of, for example, military sites or other sites known to be contaminated by various chemicals. And so we will be looking at overlaying that map with the map I am constructing right now of all the birds.

HOW LONG DO YOU THINK IT WILL BE BEFORE YOU CAN START ELIMINATING SOME POSSIBILITIES AND NARROWING DOWN TO WHAT MIGHT BE THE PROBLEM?
Well, the first thing we are screening for is disease. I've gotten some results back for the first series of birds I sent in and have found no significant results in blood chemistry which is an indicator of fighting an infectious disease.

THAT SORT OF ELIMINATES DISEASE IN THOSE BIRDS.
Right. And I hope our tests will show us that we have some inkling as to what is going on.

BUT RIGHT NOW, IT''S A COMPLETE MYSTERY?
Right now, it's a complete mystery. All of these hypotheses are being considered with equal weight. We will not rule out anything until we have evidence to do so."

More Information:

Cornell University's Laboratory of Ornithology has put the word out through North America to birdwatchers to stay on the alert for beak abnormalities. And to all our radio listeners, you can help in this bird watch, too. If you see anything unusual you think should be reported, call Colleen Handel at her USGS office in Anchorage. The phone number there is: Area Code 907-786-3418.

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