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Sulfur Bacteria in Whiskeytown, California and Grackles in Louisiana

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February 7, 1999 - Tonight I have some answers to recent environmental mysteries, including the strange white substance found in water near Whiskeytown, California and the die off of birds in Louisiana.

But first, there is unsettling news this week from New England about a rare virus attacking salmon there. When the first boats from Europe arrived at American shores, there were millions of wild salmon in rivers from Maine to Connecticut. But now there are only a couple of thousand left. That is why this recent outbreak of "swim bladder sarcoma virus" - seen only twice before in salmon - is especially tragic. All the virus-infected fish came from Maine's Pleasant River. Biologists have quarantined hatcheries there and have had to kill hundreds of diseased salmon. Some scientists speculate that the virus has spread from commercial salmon farms along Maine's coast where every year thousands of fish escape from their crowded holding pens. Just as humans crowded together can spread disease more easily, those commercial fish carry diseases to wild salmon that have no immunity.

Another disease has been destroying birds on the West Coast. One of the worst outbreaks of Avian cholera in memory has killed more than 50,000 water birds in Northern and Central California -- including the rare and beautiful Aleutian Canada Geese that are already on the federal threatened species list. Fortunately, bird cholera is not typically transmitted to humans or other mammals. Scientists speculate that last month's cold weather caused birds to flock together in tight spaces of open water which may have spread the disease - just like the salmon crowded in those Maine commercial fisheries.

The American Association for the Advancement of Science met the end of January in Anaheim, California. Biologist James Porter, professor of Ecology and Marine Sciences at the University of Georgia, presented the latest findings about coral disease and death in the Florida Keys. Between 1996 and 1998, there was a 446 percent increase in disease at 160 coral sites along the Florida coast. One reef experienced a death rate of 62%! Dr. Porter said that: "nearly all of the killing pathogens are new to science. Corals are like the canary in the mine. They are telling us that the water where they live is becoming sub optimal for their existence. We don't know if what we are seeing is a natural cycle or if it is being caused by what human beings are doing to the planet."

Dr. Porter also said that about *10% of the coral worldwide has died* and if present trends and conditions continue, an additional 20 to 30 percent of the world's coral could be lost. New studies show that human viruses migrate into Florida coastal waters from the 1.6 million septic tanks in the state. Research confirms that within 24 hours of toilets being flushed, viruses and pathogens from those toilets are in the coastal waters. Many people are becoming infected with viruses and bacteria while playing in the ocean. And this septic tank pollution might also be related to the increase in the killing pathogens that have not been seen ravaging coral before.

Louisiana newspaper headlines this week were about, "Dying blackbirds rain

down on north Louisiana town" in the thousands. The facts are: the birds were grackles, not red-winged blackbirds. Thousands of grackles were on their normal migration south, but the official Louisiana Dept. of Wildlife and Fisheries and Dept. of Agriculture counted the dead birds at only about 500, not thousands.

What caused the grackles to drop into yards unable to walk, stretching and twisting their heads back before dying, as residents in Morehouse Parish reported? See interview with Veterinarian Epidemiologist Simon Shane below.

In California, Associated Press reported recently that a mysterious substance was discovered in two natural springs in the Whiskeytown National Recreation area about six miles west of Redding. One of the men who discovered the strange stuff is Bud Ivey, Chief of Natural Resource Management at the Whiskeytown National Recreation Area. I asked him to describe it.

Interviews:

1) Whiskeytown Mystery Substance

Bud Ivey, Chief of Natural Resource Management, Whiskeytown National Recreation Area: "OK, you're looking at a mass of stuff and if you think of hair on a dog's back and expand the size of hair to like 1/16th of an inch and 1 1/2 inches long, whitish, eggshell color - these are attached into the bottom of this soil and they're filamentous and in the stream of flowing water.

When you put your hand in the water and touched it, what did it feel like?

Like a little slime or barely perceptible to touch - very fragile.

Did it disappear where you tried to touch it?

You could actually lift it out, pick it out with your fingers, but then it looked kind of like cotton, real fine.

In the waater, did it make the stream look pure white for five or six feet?

For a few feet. In other areas, it didn't attach and you could see the soil beneath it.

Have you ever seen anything like this before?

No.

What is the weird stuff?

Three different labs determined it's a bacterium that gets its energy by taking electrons from hydrogen sulfide. It can only grow in water that has no oxygen. The Whiskeytown Springs have so much hydrogen sulfide you can smell it where the springs come out of the ground. And the water is so ancient, it's called "fossil water," dating back to the last ice age.

But why did the bacteria show up now?

We had a fair sized earthquake on Thanksgiving day. Is this organism the result of earthquake activity? Could it be related to volcanic activity? There's a lot of talk in our regional area. So they thought there might be a link there.

Do you mean the hydrogen sulfide could be related to some kind of volcanic activity set off by the earthquake?

That's possible. Or it could have been there all the time. I think the site where we found this stuff occurs on a naturally occurring and known site called the Hoagley Fault. We have other areas where we smell that hydrogen sulfide along the fault. And we have some other spring flows.

So this could be related to the fact that the earthquake might have jostled something that released more hydrogen sulfide into this spring than had been released before and that's why you found it?

Could be. Could be. Or it's been there for a long time and we didn't see it. I really don't know."

2) Grackel Deaths in Louisiana

One possible answer came this week from Dr. Simon Shane, Professor in the Dept. of Epidemiology and Community Health at the School of Veterinary Medicine, Louisiana State University in Baton Rouge. Dr. Shane has been on a team that has examined several of the dead grackles.

Simon Shane, D.V.M., Professor in the Dept. of Epidemiology and Community Health at the School of Veterinary Medicine, Louisiana State University, Baton Rouge, Louisiana: "There was no consistent bacterial infection. The microscopic examinations failed to show any signs which could be consistent with a bacterial or viral disease and again, subsequent toxic screens and examination of liver, kidney, muscle tissue, failed to reveal the presence of any toxin.

So, I came to the conclusion that what we were looking at here and in view of the fact that only a small percentage of the flock was involved, we were actually looking at birds that were dying of hypoglycemia, low blood sugar, and the sequence would be that these were immature birds making their first migration. If you remember that about 10 to 12 days ago, there was a very serious weather disturbance involving the southeast and extending northeastwards with very high wind and rain in fact, I think the storm spawned some tornadoes that caused some serious damage. I believe that the birds that were affected are the out flyers in the migration, the later birds, they were very severely buffeted and strained by the weather. And when they came in, they were devoid of any fat or energy reserves, went down on the ground, did not eat and they died.

In any migration there will be a % of birds that will die and in view of the fact that this is only appx. 400 to 500 out of twenty to thirty thousand birds that's not an excessive amount. What I think might have happened is that we may have had a clustering affect of these birds and instead of these 400 or 500 that died being spread out over a large area of uninhabited land, we may have had a few coming down or clustering in areas where people would see them and pick them up. But I personally do not regard this as a disease problem or a toxicity, based on the small number of birds involved, based on the complete absence of any lesions, the absence of any infected organism and the absence of any toxin that we could find in them.

How often have you in your work in veterinarian medicine heard of cases where birds suffered these kinds of deaths from low blood sugar?

There are parallels in poultry where chickens with low blood sugar will show pretty much the same nervous clinical changes.

Were you able to make any analysis of the blood in these birds to determine if in fact they were hypoglycemic?

No, unfortunately, all the birds I had looked at that have come in have been dead birds.

In your practice, have you ever seen grackles suffer this kind of die off before from a low blood sugar?

No, this particular connection has never been made. But I do know that grackles die off as well as many other birds die off during migration. It's the weak ones that die.

Right now it is a hypothesis of low blood sugar causing the bird deaths during migration, but you are not absolutely certain?

Yes, but I do know that when birds suffer low blood sugar, they will show clinical signs consistent with the descriptions that have been provided. And that is definite."

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