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Monday, January 30, 2006

Scientists fear unusual weather behind massive seabird die-off

By [ROBERT McCLURE](#)
SEATTLE POST-INTELLIGENCER REPORTER

Alone in the nest, the starving seabird chick looked a little woozy. Then it collapsed.

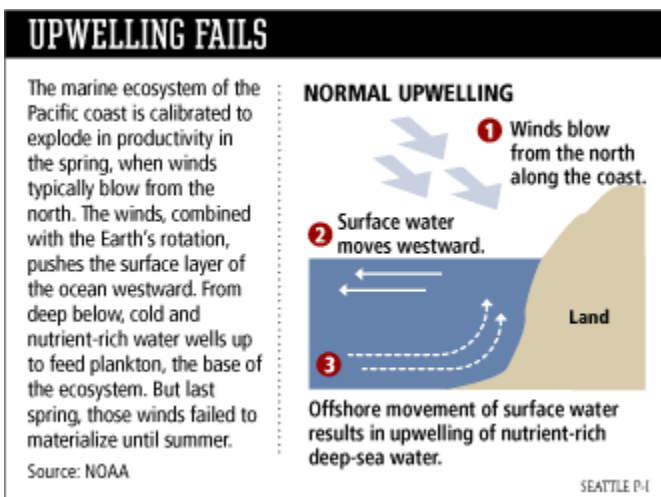
Hours passed before the desperate mother bird returned, a fish tail sticking out of her beak. Again and again she offered the fresh morsel. But it was too late -- the baby bird was dying.

"It's an ugly, gut-wrenching thing to watch," said University of Washington researcher Julia Parrish, who witnessed such a scene repeatedly last summer, hidden amid the cacophony of 6,000 nesting murrelets on Tatoosh Island off the Olympic Peninsula.

The murrelets' unusual mass starvation became a clue in a mystery unfolding along the West Coast.

Weather, scientists know, is the key to the puzzle. For some reason, winds and currents crucial to the marine food web just didn't happen on schedule last year.

Seabird breeding failures in the summer were preceded by tens of thousands of birds washing up dead on beaches in Washington, Oregon



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and California.

And Washington's largest colony of glaucous-winged gulls also sputtered: Where 8,000 chicks normally fledge, 88 did last year.

"The whole process broke down," Parrish said. "We don't know what happened."

Earlier this month, 45 researchers met in Seattle to hash out the cause.

Though they couldn't trace the source of the weird weather, many are warily eyeing the coming spring, wondering: Was that just a blip, an anomaly -- or is this what global warming looks like?

Recall that at this time last year, Seattleites were cooing about a string of sunny winter days -- if they weren't complaining about the lack of powder on the slopes at Snoqualmie. It was warm and dry. It marked the third year of above-normal ocean temperatures.

Then rain started pouring in early spring. At a time when the birds should have been making and feeding babies, a network of beachcombing citizen-scientists run by Parrish instead found them dead.

"It was the birds that were the first harbingers of this whole problem," said Bill Peterson of the National Oceanic and Atmospheric Administration, which set up the Seattle meeting.

The dramatic downturns among certain bird species didn't happen in a vacuum.

Researchers last year also recorded low catches of juvenile salmon and rockfish, and there were sightings of emaciated gray whales. Those findings were preceded by the first-time appearance in Washington of thousands of squid normally not found north of San Francisco. And a kind of plankton typically found near San Diego bloomed along Northwest beaches.

A scientist studying the longest-running set of indicators of Pacific Ocean conditions says we can expect this kind of thing to repeat as the planet warms and weather patterns are altered.

"There are all these unconnected reports of biological failures," said John McGowan of the Scripps Institution of Oceanography in La Jolla, Calif. "It's all the way up and down the coast. ... There's a lot of evidence there are important changes going on in the Pacific coast system."

'The smoking gun'

By the door to Parrish's office is a little sign: "I really need to stop depending on birds for important information. They're cute to look at but

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don't have much upstairs."

From her perch above a courtyard at UW's College of Ocean and Fishery Sciences in Seattle, Parrish directs the Coastal Observation and Seabird Survey Team. About 300 volunteers scour Oregon and Washington beaches for dead birds.

Based on monthly surveys, researchers estimated the dead birds numbered in the tens of thousands. Dominating the toll were the Brandt's cormorant and the common murre.

"They were clearly starving to death -- no fat, reduced musculature," Parrish said. "The smoking gun is no food."

Unlike migratory birds, they were stuck with what the Northwest coast had to offer. Unlike birds with wider-ranging diets, such as gulls, both rely almost exclusively on diving deep underwater for small schooling baitfish that also feed whales, seals, salmon and other animals.

At Tatoosh Island, it looked like the same story. The murrelets like fatty, nutritious sand lance, herring, surf smelt and eulachon -- the latter nicknamed "candlefish" because they're so full of oil that, when dried, they can be placed upright and lit to burn like a candle.

For a murre, eating those fish "is like popping little energy bars," Parrish said.

But last summer the murrelets brought back no sand lance and hardly any herring. Catches of the other two fish also were reduced. Instead Parrish's research team saw them toting fish like the Pacific saury, which they had almost never seen the birds eating in 14 years of watching them.

"The steak and chicken fell out of the diet," Parrish said. "It's like going to the grocery store and (seeing) there are only a few yucky things in the store. You adapt by using what's there."

The phenomenon was widespread. At Triangle Island in British Columbia and California's Farallon Islands, researchers saw a third seabird, the Cassin's auklet, show signs of starvation, said Bill Sydeman of the Point Reyes Bird Observatory.

The Farallon auklets started the breeding season late. Only half as many as normal even tried. Then they abandoned the nests.

"That's unprecedented in 35 years of studying Cassin's auklets on the Farallons" and unnoted in decades of anecdotal accounts before, Sydeman said.

In nearby waters, researchers found a 60 percent reduction from the last year in the birds' primary food, a tiny shrimplike crustacean called krill.

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Up in British Columbia, the birds eat a different form of plankton -- yet also had trouble raising young.

No one thinks a single year's breeding failure is a catastrophe for overall populations of the birds. They live many years.

But it was unusual and widespread enough to spark urgent questions.

"It's something having to do with food," Sydeman said. "We're all pretty sure."

Weather sparks meeting

Along the coast of Washington and Oregon, researchers think they know what happened: The wind didn't blow.

Usually in the spring, a weather maker called the Aleutian Low that throws winter storms our way moves north. Soon strong winds blow from north to south. Because the Earth is turning to the east, these winds push the surface of the Pacific to the southwest, leaving a little gap in the water near shore.

Water from deep in the ocean surges up to fill the gap. It's cold water, loaded with nutrients from dead plankton, dead fish, fish excrement and more.

"Basically, you can think of it as a lot of schmutz that settles to the bottom," Parrish said.

The cold water is fertilizer to the ocean garden. No cold water, no plankton. No plankton, no sand lance or other "forage fish" -- staples of many fish and birds.

Last year, though, the winds from the north didn't start in March or April as they normally do. Nary a wisp came until late May, and it didn't really get going good until mid-July.

The scientists' meeting in Seattle was organized to bring together oceanographers, atmospheric scientists, marine mammal experts, seabird biologists and researchers who model ecosystems and ocean circulation.

"The weather guys didn't really know what to say other than it was weird weather. That's not very satisfying," said Peterson, the oceanographer.

The term "global warming" oversimplifies a chain of coming changes -- some related to warming, some not, but happening simultaneously, scientists emphasize. Climate change is superimposed on natural cycles.

"We're all scientists. ... We want to know why, and if it could happen again," Peterson said.

Instead, they will write a series of scientific papers carefully documenting their observations.

A look at the past, said Scripps' McGowan, is telling: In the last 30 years, the top 300 feet of the Pacific warmed and became more dense.

Off Southern California, zooplankton are down 70 percent, fish larvae 50 percent, and there have been massive die-offs of kelp. McGowan's institution has studied ocean temperatures since 1919 and started a comprehensive Pacific monitoring project in 1949.

In Puget Sound, the number of seabirds dropped by nearly half since the 1970s. Nearly a third of seabird species are legally protected or candidates for protection.

"All kinds of things are changing, and the biology is responding in funny, non-linear, confusing ways," McGowan said. "Not everything has declined, but many things have."

Gulls abandon nests

The largest gathering of nesting seabirds in Washington happens every summer at Protection Island, between Sequim and Port Townsend off the northeast Olympic Peninsula. It's also the state's largest colony of glaucous-winged gulls.

There, researcher Joe Galusha of Walla Walla College has studied the gulls for 25 years. Last year the birds began gathering as usual. About 8,000 paired up, established nests and laid eggs -- just as always.

The gulls seemed to have no trouble gathering food -- unlike the murrelets at Tatoosh Island.

The gulls have a much less specialized diet than the murrelets, which may explain the difference, Parrish said.

Even so, most of the gulls later abandoned their nests.

Galusha thinks bald eagles may be to blame. When he started watching the gulls in 1980, the eagles' numbers were way down. Perhaps seven or eight harassed the 8,000 or so gulls by the early 1990s.

Their numbers grew gradually to the point that last summer, up to 38 different eagles menaced the gulls simultaneously.

Every time, the gulls had to take flight -- which burns energy. Most simply gave up.

In the end, 88 chicks were fledged where 8,000 to 10,000 normally are.

"We classify that as catastrophic reproductive failure," Galusha said.

Simple, right? Maybe not. Galusha and others still want to know why eagles are increasingly turning to Protection Island. Is their food supply also in flux?

"Next summer is key," Galusha said. "This may simply have been an aberration."

The Sea Doc Society, a University of California-Davis research arm, is about to fund a study by Parrish to investigate seabird diets in the Puget Sound region.

Nathan Mantua, a UW scientist studying the effects of climate change on the Northwest, said he will run climate simulations to see how often this kind of thing could have been expected in the past and how often we might expect it as man-made greenhouse gases alter the climate.

"We don't know if it's just a random thing or something we might expect to see more or less of in the future," Mantua said. "If you're thinking this is just an unlucky roll of the dice, how often will it happen again?"

WEIRD WEATHER

With ocean temperatures warming to unusually high levels over the last three years, scientists noted a string of unusual happenings affecting marine life from northern California to Alaska.

1. **Triangle Island:** Nesting success plummeted for the Cassin's auklet, a seabird, in 2005.
2. **Lake Washington and Ship Canal:** About half the 2004 run of sockeye salmon -- some 200,000 fish -- failed to materialize. Scientists suspect overly warm water was the cause.
3. **Whidbey Island:** A Humboldt squid, normally found in Mexico and southern California, turned up on the beach on Jan. 2.
4. **Protection Island:** Last summer, glaucous-winged gulls that normally fledge about 8,000 chicks produced only 88.
5. **Tatoosh Island:** Breeding started late for common murres last spring. Only about one-fifth fledged chicks, compared to up to four-fifths in a good year.
6. **Northwest Coast:** Tens of thousands of common murres and



Brandt's cormorants -- emaciated at a time of year they should be flush -- turned up dead on Oregon and Washington beaches in spring 2005.

7. **Southern Washington to Alaska Panhandle:** Numerous sightings of Humbolt squid, which normally lives off Southern California and farther south, in summer 2004.
8. **Northwest coast:** Gray whales migrating from Mexico to the Bering Sea had so exhausted their fat reserves that their bodies were misshapen as they passed by last spring.
9. **Northwest coast:** Scientists trawling for young salmon found counts extremely low in spring and fall 2005.
10. **Northern California:** Scientists trawling for young rock- fish found counts very low in 2005.
11. **Farallon Islands:** Auklets that abandoned their nests in unprecedented numbers. Where hundreds of chicks normally are produced, only a handful were in 2005. Lack of food is blamed.
12. **Monterey, Calif.:** Large number of seabirds found dead on beaches in spring 2005.

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