

Gray whale strandings more likely during solar storms

Use Earth’s magnetic field to navigate

By JES BURNS
Oregon Public Broadcasting

Researchers are suggesting a new reason why seemingly healthy gray whales get stranded sometimes on shore. An analysis published Monday in the journal Current Biology found a high correlation between these kinds of stranding and radio frequency noise associated with solar storms.

Thousands of gray whales pass along the Oregon and Washington state coasts each year and a small percentage of those whales wash ashore during their West Coast migration. Most stranded whales are already dead or sick, weak or injured. But some are alive and there isn’t an obvious reason why they would have washed up.

Duke University researcher Jesse Granger looked at these kinds of cases over the past 30 years and compared them to when solar storms occurred.

“Solar storms are this huge outburst of high-energy particles that interact with the earth’s magnetic field. It can push the field around or it can potentially disrupt an animal’s — who’s trying to sense the magnetic field — ability to see it,” she said.

Whales are believed to use the earth’s magnetic field as a sort of map they use to navigate from breeding grounds south of California to feeding grounds off the coast of Alaska.

Granger’s analysis found that gray whales were more than twice as likely to get stranded during solar storms as they were at other times.



OSU Marine Mammal Institute
A western gray whale is pictured off Sakhalin Island, Russia. In the 1970s, scientists thought the western gray whale had gone extinct. Now researchers estimate that about 150 individual whales remain.

‘THE ANIMAL ISN’T ACTUALLY RECEIVING THE RADIO FREQUENCY NOISE. IT’S THAT THE RADIO FREQUENCY NOISE IS PREVENTING THEIR MAGNETIC RECEPTOR FROM WORKING.’

Jesse Granger | Duke University researcher

But it wasn’t because the storms were changing the map. Instead the strandings correlated with times when the solar storms created large amounts of radio frequency noise — think the fuzz you hear between stations on the radio.

“The animal isn’t actually receiving the radio frequency noise. It’s that the radio frequency noise is preventing their magnetic receptor from working,” Granger said.

Or put another way: A map isn’t useful if you can’t

see it.

Oregon State University marine mammal stranding coordinator Jim Rice says he is surprised by the findings.

“I wouldn’t expect something like that to be the case, although I wouldn’t rule it out of hand either. There’s a lot of things that happen that we aren’t aware of and we learn down the line that things are more complicated than they appear,” he said.

Rice says it’s very rare that living whales get stranded — in Oregon only a handful have in the past 30 years, and most of those were calves that were separated from their mothers.

He also says gray whales are experts at navigating coastal waters. It’s not uncommon to see them feeding in the surf zone, very close to shore.

“They know as well as anything out there probably, just how close they can get to the beach safely. And yet they avoid getting themselves into trouble for the most part. So the suggestion that they get disoriented ... I have a hard time accepting that would be the case, because I think they have so many cues that help them navigate,” Rice said.

Granger acknowledges that attributing whale strandings to solar storms is tricky. Because of the size and protected status of whales, testing directly how they navigate and how that navigation is disrupted is not really feasible.

“All we’re showing is that this is potentially another cause of stranding, but one of many,” she said. “At the very least we can say, ‘Oh, we’re in the middle of a solar maximum, perhaps we need to be a little more active about looking for these live strandings.’”

Watchdog report criticizes feds over Hanford cleanup

By COURTNEY FLATT
Northwest News Network

A new watchdog report says the federal government hasn’t done enough to prevent structural failures at the Hanford Nuclear Site’s aging facilities. The accountability report comes after a tunnel partially collapsed in 2017, where for decades the federal government stored highly contaminated radioactive waste.

The report from the independent Government Accountability Office says the U.S. Department of Energy has not found the root causes of the partial collapse of the waste-storage tunnel, and that failures in DOE’s investigation, inspections and maintenance of other aging and contaminated facilities is concerning.

Some buildings haven’t had people or other remote sensing inside in 50 years. The reports said that without those types of inspections, it’s hard to say whether another incident like the PUREX tunnel collapse could happen in the future.

In 2017, workers spotted a partially collapsed hole in the top of the PUREX Tunnel 1, prompting concerns of potential radioactive contamination. During the Cold War, the federal government used the PUREX Plant as a disposal site for rail cars filled with highly radioactive material.

In the end, no airborne radiation leaks were

detected, and no workers were hurt. The tunnel was sealed with grout several months later. Workers later sealed a larger second tunnel at the facility with grout, after fears it could also collapse.

Hanford was a major site of the nation’s plutonium production during WWII and the Cold War. It’s now one of the most contaminated radioactive waste sites in North America.

The accountability office report said the Energy Department has been aware of structural problems at the Purex Tunnel 1 since the 1970s.

Workers conducted physical inspections until 1991, when recommendations came to look at the tunnel again in 10 years. But the report notes a physical inspection in 2001 didn’t happen, and an assessment didn’t happen until after the 2017 tunnel collapse.

The Energy Department didn’t initiate a full investigation into the root causes of the Tunnel 1 collapse, even though the department required an investigation, the report said.

“By conducting a root cause analysis to determine any programmatic weaknesses that contributed to the collapse of PUREX Tunnel 1, and taking action to address any identified weaknesses, DOE would have greater assurance that another, similar event will not take place at Hanford,” the report said.

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