

2018: Catastrophic year for monarch butterflies

■ Populations of the pollinators have plummeted

By **Jerry Painter**

(Idaho Falls, Idaho) Post Register

IDAHO FALLS, Idaho — Something catastrophically wrong happened in 2018 to monarch butterflies.

Idaho wildlife biologist Ross Winton spent years working with monarch butterflies. With the help of volunteers, he would carefully put a tiny tag the size of a paper hole punch on about 30 to 50 of the iconic insects each summer in the Magic Valley. Then during the summer of 2018 he could only find two to tag.

“I saw two monarchs all season,” Winton said of 2018. “Most of the folks I’ve talked to in the Boise area were seeing very similar results. ... It was a little disconcerting to be seeing that kind of a decline in one year.”

Last week the Xerces Society for Invertebrate Conservation issued a report finding that the population of monarch butterflies overwintering in California had fallen to the lowest level ever recorded.

The Western Monarch Thanksgiving Count found only 28,429 butterflies, an 86 percent fall from the previous year and a 99.4 percent decline from numbers counted in the 1980s. Overwintering butterflies in central and Southern California numbered about 4.5 million in the 1980s. The monarch population in the eastern United States, which migrates to Mexico, has declined by more than 80 percent in the last 20 years, but has not suffered the same fall in numbers this year, the Xerces Society says.

“To picture what this means for monarchs, imagine that the population of Los Angeles had shrunk to that of the town of Monterey,” said Emma Pelton, a monarch conserva-

tion expert with the Xerces Society. (Monterey, California, has about 29,000 residents, while Los Angeles has about 4 million.)

Monarch butterfly experts say much of the blame for the species’ demise can be aimed at habitat destruction, particularly in overwintering areas of California. Each year, the butterflies head south to winter mostly in either California or central Mexico. While most end up in Mexico, particularly those that spend their summers east of the Rocky Mountains, many also overwinter in habitat near Santa Cruz, California.

“Our best guess is that most of our Idaho monarchs are going to central and Southern California,” Winton said. “The connections we’ve had that we’ve documented for sure most of them have been from central California. ... They like to winter in a lot of the tall trees along the coast of California.”

But what’s happening in California as far as monarchs are concerned is alarming.

“A lot of the concern is focusing in on California,” said Beth Waterbury, retired wildlife biologist for Idaho Fish and Game in Salmon. Waterbury helped head up a monarch study in Idaho, collecting, tagging and documenting the species especially in eastern Idaho.

“Either loss of habitat or degradation of habitat on those overwinter sites (is key),” she said. “When those butterflies start dispersing in early spring they’re looking for milkweed and nectar resources not too distant from those overwinter sites. The focus right now is looking at availability of habitat in the California central valley or in the coastal foothills or the Sierra foothills and that



Terri Colby / ChicagoTribune-TNS

The two dark spots at the base of the monarch butterfly’s wings indicate that this one is a male.

apparently is lacking. That is looking to be the real break in the migratory chain this past year.”

Winton agrees. “In California and Mexico a lot of habitat has been lost where they tend to overwinter,” he said. “A lot of those big trees are either getting too old and not getting replaced and blowing over or they are getting removed, with city expansions, things like that. It really comes down to habitat.”

Waterbury said other contributing factors include wildfires, pesticides and hot weather. “Monarchs don’t do well or reproduce when it gets up to 90 degrees or hotter,” she said.

With the population vanishing, the Xerces Society has issued a call to arms in hopes of saving the species.

“It’s easy to give up when faced with news like this,” Pelton said. “But doing nothing is not an option.”

The Xerces Society for Invertebrate Conservation is calling on Californians to plant early blooming flowers and milkweed to fuel migrat-

ing monarchs on their paths to other states.

Waterbury said one thing working against the cause is a name.

“This is my name for milkweed, it should be called ‘monarch manna’ because it is so important,” she said. “There are these public attitudes because of the name having the name weed in it. So many people do not know that it is the only plant that monarchs will lay their eggs on.”

Some might wonder what all the fuss is over an insect?

“We want to conserve all of our biodiversity just on its own sake,” Waterbury said. “There is a role that monarchs play that is very important to humans and that is as a pollinator and if we don’t have pollinators on our landscape to pollinate our crops, to pollinate native plants, we’re going to lose about three-quarters of the plant species on this planet and a lot of our food resources.

“Monarchs are kind of a canary in a coal mine for a lot of other insect species, especially bees which are some of our primary pollinators.”

Farmers, ranchers asked to help monarchs

PORTLAND — Oregon agricultural producers can voluntarily help the monarch butterfly on their farms and ranches through a variety of conservation practices offered by the U.S. Department of Agriculture (USDA). This assistance comes at a critical time as recent reports show the western population of the monarch butterfly is at an all-time low.

Planting or protecting and increasing the size of native milkweed stands is critically important to rebuild the western monarch population.

Federal officials also recommend Oregon producers establish plants that bloom in late summer and early fall, as monarchs leave the region to return to overwintering sites along the California coast. These fall-blooming species include rabbitbrush, goldenrod, asters, and sunflowers.

The U.S. Natural Resources Conservation Service (NRCS) helps producers cover part of the costs for adopting these practices through the Environmental Quality Incentives Program and other Farm Bill-funded programs. NRCS accepts applications for conservation programs on a continuous basis. Producers interested in assistance are encouraged to contact their local USDA service center.

Robofish: Fakes help scientists gauge how dams affect real fish

By **Annette Cary**

Tri-City Herald

RICHLAND, Wash. — Mechanical fish developed in Richland have made their way through dams from Ice Harbor near Pasco to the Mekong River in Southeast Asia.

Now hundreds more are expected to be deployed around the world, thanks to an agreement to commercialize the technology developed at Pacific Northwest National Laboratory.

The fish are just 3.5 inches long, about the size of a larger salmon smolt.

But they are packed with instrumentation that can give scientists, and now dams and other hydro facility operators, an idea of what passing through dams is like for fish.

The Sensor Fish record about 2,000 measurements per second as they swim through the turbulent waters and turbines at hydroelectric facilities.

“The Sensor Fish provides information to help engineers design more fish-friendly turbines going forward,” said Daniel Deng, a laboratory fellow at PNNL.

On the journey of less than two minutes in the fast-moving water through a dam, they record acceleration, orientation, pressure and the

speed at which the sensor fish rotates.

The Sensor Fish developed by Pacific Northwest National Laboratory is now commercially available for studying the stresses on fish as they travel through specific dams around the world.

It allows dam operators to help understand the stresses on real fish, such as juvenile salmon, as they take a potentially wild ride through dams and then make improvements to structures.

PNNL began developing the Sensor Fish in the late 1990s to improve fish survival at the hydroelectric dams along the Pacific Northwest’s Columbia River Basin, including on the Snake River.

“The vast majority of juvenile salmon and steelhead passing through the turbines survive without injury in the Columbia River Basin,” Deng said. “Still we want to understand more about the injuries and mortality that do occur from abrupt pressure changes in dam turbine chambers.”

Fish can be hurt or disoriented by the turbulence of the water and the blades of a turbine can strike them, if that’s the route they take through the dam. But PNNL research with an early version of the Sensor Fish has helped show the pressure changes in the

dam turbine chambers that also can harm fish.

A fish traveling through a dam can experience an enormous drop in pressure in an instant and just as quickly return to normal pressure, according to PNNL.

The lab compares it to a human zipping to the top of Mount Everest in the blink of an eye.

The sudden pressure changes can injure or kill fish that depend on a balloon-like organ known as a swim bladder to maintain buoyancy at different depths.

The bladder shrinks as the fish goes deeper and pressures are greater and increases in size as the fish rise, instantly expanding four or eight fold in some species.

Data provided by the Sensor Fish can help to redesign dam turbines so they create less severe pressure changes while maintaining or even improving power production, according to PNNL.

The original design of the mechanical fish has been replaced by the second-generation of the Sensor Fish, which is smaller and more accurately captures the experience of a real juvenile salmon swimming through dams.

A prototype of the Sensor Fish is shown as it looked two decades ago as Pacific North-

west National Laboratory researchers worked to develop a technology that could collect data on the stresses on fish traveling through dams.

It is shaped not like a fish, but a small, clear cylinder with two weights. It can be programmed to drop the weights at a specific time, causing the Sensor Fish to pop to the top of the water after it makes its trip through the dam.

Flashing LED lights and radio signals allow them to be collected quickly from boats stationed nearby to be reused over and over again.

In recent years the Sensor Fish has been used by PNNL to collect data in the United States, Australia, France, Germany and Southeast Asia.

Growing interest in the device has led to a license agreement with Advanced Telemetry Systems of Minnesota to manufacture and market the fish and allow hydropower operators and other researchers to collect their own data.

Deng sees demand in the United States as aging dams are retrofitted with more fish-friendly turbines.

Many large U.S. dams were built in the 1970s or earlier and also are facing relicensing, which requires an evaluation of their environmental impact, including how fish fare when swimming through dams.

They can be used to collect data not only in passage through turbines but other

routes fish get through dams, including spillways and bypass structures.

They also could be useful for new hydropower facilities being built around the world.

“Many people in Southeast Asia rely on fish both for food and their livelihood,” Deng said after the Sensor Fish were used in a study on creating sustainable hydro in the Mekong River, which passes through Laos and Cambodia. “Hydropower is also a critical resource in the region.”

It’s why he does research — to make an impact on people’s lives, he said. With the Sensor Fish technology moving from the laboratory to commercial availability, the impact should grow.

NORTH

Continued from Page 1B

The U.S. National Oceanic and Atmospheric Administration and United Kingdom tend to update the location of the magnetic north pole every five years in December, but this update came early because of the pole’s faster movement.

The movement of the magnetic north pole “is pretty fast,” Chulliat said.

Since 1831 when it was first measured in the Canadian Arctic it has moved about 1,400 miles toward Siberia. Its speed jumped from about 9 miles per year to 34 miles per year since 2000.

The reason is turbulence in Earth’s liquid outer core. There is a hot liquid ocean of

iron and nickel in the planet’s core where the motion generates an electric field, said University of Maryland geophysicist Daniel Lathrop, who wasn’t part of the team monitoring the magnetic north pole.

“It has changes akin to weather,” Lathrop said. “We might just call it magnetic weather.”

The magnetic south pole is moving far slower than the north.

In general Earth’s magnetic field is getting weaker, leading scientists to say that it will eventually flip, where north and south pole changes polarity, like a bar magnet flipping over. It has happened numerous times in Earth’s past, but not in the last 780,000 years.

“It’s not a question of if it’s going to reverse, the question is when it’s going to reverse,” Lathrop said.

When it reverses, it won’t be like a coin flip, but take 1,000 or more years, experts said.

Lathrop sees a flip coming sooner rather than later because of the weakened magnetic field and an area over the South Atlantic has already reversed beneath Earth’s surface.

That could bother some birds that use magnetic fields to navigate. And an overall weakening of the magnetic field isn’t good for people and especially satellites and astronauts. The magnetic field shields Earth from some dangerous radiation, Lathrop said.



Trinity Health

General Manager Food & Nutrition Services, Saint Alphonsus Health System - Ontario & Baker City, OR

This is a Trinity Health position based at Saint Alphonsus, a member of Trinity Health. Functions as the General Manager responsible for the oversight and coordination of the day-to-day operations of the Regional Health Ministry's (RHM) Food & Nutrition Services (FANS) Department in a community hospital or single site setting. The Manager of Food & Nutrition Services is responsible for successfully coordinating and directing all activities within the department in a single campus environment. Assists in development and management of preliminary program budgets in collaboration with THS Regional Managers and RHM stakeholders. Works with all levels of senior leadership and management teams at RHMs and within the region. Develops and implements effective cost reduction plans and implementation processes that support Trinity Health and RHM FANS goals, objectives, strategies, policies, and procedures. Ensures cost reduction targets and productivity improvement objectives are met, while cultivating service/product quality and customer satisfaction. Ensures the Regional Manager, THS and RHM stakeholders are kept abreast of issues or problems impacting program efficiencies and effectiveness. Attracts, develops and trains talent to ensure program quality, sustainability, long-term growth, and development. Leads by exemplifying the mission, vision and values of Trinity Health and the Regional Health Ministry.

Production Manager/Chef Food & Nutrition Services, Saint Alphonsus Health System - Baker City, OR

This is a Trinity Health position based at Saint Alphonsus, a member of Trinity Health. Functions as the Operations Manager responsible for the direct supervision of supervisors and/or staff and coordination of the day-to-day operations in assigned area of the Regional Health Ministry's (RHM) Food & Nutrition Services (FANS) Department. The Operations Manager is responsible for successfully coordinating and directing all activities within the assigned area of the department. Assigned area(s) may include Retail Services, Production and/or Business Manager. Assists in development and management of preliminary program budgets in collaboration with the FANS General Manager. Assists the General Manager with implementation of effective cost reduction plans and processes that support Trinity Health and RHM FANS goals, objectives, strategies, policies, and procedures. Ensures cost reduction targets and productivity improvement objectives are met, while cultivating service/product quality and customer satisfaction. Ensures the General Manager and staff are appropriately kept abreast of issues or problems impacting program efficiencies and effectiveness. Attracts, develops and trains talent to ensure program quality, sustainability, long-term growth, and development. Leads by exemplifying the mission, vision and values of Trinity Health and the Regional Health Ministry. Ensures THS standards, guidelines and approved technology are appropriately and effectively used to support the department operations

Applicant registration

Submit an application at <https://www.saintalphonsus.org/careers/current-openings>. If needed, assistance is available to help through the application process.