

Report says US should make less plastic to save oceans

By SETH BORENSTEIN
Associated Press

America needs to rethink and reduce the way it generates plastics because so much of the material is littering the oceans and other waters, the National Academy of Sciences says in a new report.

The United States, the world's top plastics waste producer, generates more than 46 million tons a year, and about 2.2 billion pounds ends up in the world's oceans, according to the academy's report.

If the current rise in plastics pollution continues, the world by 2030 will be putting 58.4 million tons into the oceans each year, or about half the weight of the fish caught in seas, the report said.

Recycling and proper disposal alone aren't enough and can't handle the problem, so the "United States should substantially reduce solid waste generation (absolute and per person) to reduce plastic waste in the environment," said the report by the independent body of scientists set up by President Abraham Lincoln to advise the federal government on big research issues.

The plastics issue can't be solved unless the country makes less plastic, designs it differently, keeps better track of it and cleans up more waste, and "that's why our number one recommendation is to reduce solid waste generation," said report chair Margaret Spring, chief conservation and science officer at the Monterey Bay Aquarium.

"We suggest that one way to reduce plastic waste would be to make less plastic," said oceanographer Kara Lavender Law, a report co-author who has conducted numerous studies about plastic waste. "Recycling cannot manage the vast majority of the plastic waste that we generate."

The panel provided a menu of potential ways to fix the plastics problem, starting with "national goals and strategies to cap or reduce virgin plastic production."

Virgin plastic is plastic that starts from feedstock that hasn't been used — namely, non-recycled material. The problem, the report said, is that "virgin plastic prices are artificially low due to fossil fuel subsidies, therefore virgin plastics are more profitable to produce" — and U.S. manufacturing of them continues to increase.

"More than 90% of plastics are made from virgin fossil feedstocks, which utilizes roughly 6% of global oil consumption," the report said. And this makes virgin plastic a climate issue as well as a pollution problem, said study co-author Jenna Jambeck, a University of Georgia researcher who focuses on waste issues.

While recycling "is technically possible for some plastics, little plastic waste is recycled in the United States," the report said, noting that materials put in plastics to change hardness or color make them too complex to recycle cheaply, compared to making new virgin plastic.

"One of the major barriers for recycling is



Caleb Jones/AP Photo

Plastic and other debris is seen on the beach on Midway Atoll in the Northwestern Hawaiian Islands in October 2019.

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the economics of virgin plastic and subsidization of the fossil fuel industry," Spring said.

The American Chemistry Council, which represents plastics manufacturers, lauded most of the academy's report, but it blasted the idea of limiting plastics production.

"This is misguided and would lead to supply chain disruptions, economic and inflationary pressure on already hurt consumers and worse environmental outcomes, particularly related to climate change," American Chemistry Council Vice President Joshua Baca said in a statement. The organization, which touted \$7.5 billion in advanced recycling projects since 2017, called for a study on greenhouse gas implications of raw materials used in packaging and plastic products.

The report's figures and recommendations make sense and are grounded in science, said Australian scientist Denise Hardesty who studies the plastics waste issue but wasn't part of the U.S. report.

"We don't want to keep doing beach clean-ups for generations," Hardesty said in an email. "Without a systems change, those (plastic waste) accumulating areas will continue — and will grow."

The issue is important because plastics cause "devastating impacts on ocean health and marine wildlife," the report said.

Fish, marine mammals and seabirds get tangled in plastics or eat them, get sick and frequently die, the report said. Looking at hundreds of studies, the report said of 914

marine species examined, 701 had problems with ingesting plastic and 354 of them got tangled in plastics.

And DNA studies show that some plastics — especially those exposed to wastewater — contain human and wildlife viruses and bacteria that can spread disease, the report said.

Plastic pollution is not just an ocean problem, but it's a problem in rivers, lakes and on land, Spring said, adding that the Great Lakes probably have a higher percentage of plastic pollution than the seas.

Researchers have been studying the issue for years but can't really say what percentage of the plastics produced by the U.S. ends up in the water because there are no monitoring and reporting requirements — and there should be, Law said.

The U.S. makes and exports plastics as well as imports it so the problem is global, the authors said.

"The United States produces the material, imports it, exports it, we all use it, we all dispose of it," Law said. "Being the major offender, we also have this opportunity" to fix the problem.

Sea turtle makes improvement after rescue

By LYNDA V. MAPES
Seattle Times

DES MOINES, Wash. — "Shi Shi" the rescued sea turtle is back in the swim, making steady improvement toward good health and a hopeful release back to the wild.

A green sea turtle, Shi Shi was near death when a Makah tribal member found the turtle Nov. 16, washed ashore on Shi Shi beach (pronounced Shy Shy). The turtle had been blown off course and would have died but for the quick thinking and caring of many people, from the tribe to federal agencies and several nonprofits.

The next day, the turtle was taken to the Seattle Aquarium, which marshaled a team that worked around the clock to stabilize and warm the turtle ever so slowly, no more than 1 degree every four hours, to avoid shocking the turtle's system.

The prognosis for the turtle's survival was initially dire. Caitlin Hadfield, senior aquarium veterinarian, pronounced the turtle "a little bit less mostly dead." But with the aquarium's intensive care, the turtle rallied.

So much so, that on Tuesday the turtle was taken to an animal hospital and rehabilitation center. There, on Thursday, the turtle had the first thorough physical exam since the move.

The first step of which was to fish the turtle out of the outdoor, heated tank at the animal hospital and rehab center run by the nonprofit SR3 in Des Moines.

Not so easy, with the turtle now quite lively, gracefully sweeping across the tank with a few flipper swipes, and bobbing up to the surface for a sip of air.

So as two volunteers slipped into the tank, Casey McLean, executive director of SR3, reminded them to face the turtle's head away: green turtles have quite a bite.

With a heave-ho, they got the turtle up and out of the tank and onto a pad, then lifted again onto a cart to wheel the turtle into the hospital. It was time for X-rays, an ultrasound, a round of antibiotics and fluids, and even some medication to get the turtle's gut working.

The turtle's shell is fingertip sensitive, and the turtle was awake and not sedated throughout the procedures. The turtle's shell was smooth to the touch, with the plates defined by ridges. The legs were glossy with scaled skin, like a snake.



Alan Berner/Seattle Times

Dr. Caitlin Hadfield helps guide 'Shi Shi' in a swimming session in a holding pool at the Seattle Aquarium in November.

The staff handled Shi Shi gently. But still, a thermometer inserted, well, where it always goes if not in the mouth, is as noticed by a turtle as anyone else. Who could blame the turtle for trying to flipper away.

But that moment soon passed, and the turtle settled back into waiting out the many procedures with reptilian calm, earned in some 100 million years on our planet as a species, *Chelonia mydas*.

Volunteers kept the turtle — which normally would never be out of the water — well moisturized, both on the shell and flippers, with the same gel used on people for ultrasound procedures, because it would not penetrate the shell's keratin.

What a shell it is, crowning a body that is perfectly shaped to ease through the water. Every feature of the turtle is shaped for fluid dynamics, from the shell wide at the top, narrowing to the back, the triangular shape of the head, to the sweeping arc of the front flippers.

In the wild, sea turtles are powerful swimmers, cruising along at about a mile per hour, and clocking better than 15 miles per hour at a sprint.

They can hold their breath for hours, as they snooze on the seabed. They are called

green turtles not because of their shell, but because of a layer of green fat under the skin, from eating primarily sea grasses and other plants.

No one really knows where this turtle is from, but the turtle — its sex is not known — is most likely from the population that nests on the beaches of Michoacán, Mexico. These turtles follow warm currents even far off the coast of Washington. But that's where the trouble can start, if there is a big storm.

This turtle probably during the last cycle of storms was carried shoreward into Washington's cold waters. Turtles can't moderate their body temperature and become so stunned with cold they cannot eat or swim.

Veterinarian Christine Parker-Graham began a series of X-rays, the images instantly showing on a laptop. There were the turtle's beautifully streamlined hands, like elongated versions of our own, suddenly revealed.

The x-ray showed pneumonia in the lungs — very common in cold-stunned animals. An ultrasound's grainy, swimmy images also revealed good news — the turtle's heart was pumping well, the kidneys looked good and there was just a bit of movement in the gut.

Wounds on the turtle's skin were healing well, a good sign, because it shows the immune system is working and the turtle has enough energy to heal. Parker-Graham cut away some of the injured flesh in a wound near a flipper, and daubed it with honey, a natural antibiotic.

"She looks good, really good, really improved, she is recovering nicely," Parker-Graham said.

The big concern is that the turtle still is barely eating.

To keep the turtle hydrated, the care team administered a mix of fluids including electrolytes, using a large syringe fitted to a tube and needle to sluice it under the turtle's skin.

The team also planned to give the turtle a smoothie of butter clams and herring through a feeding tube. Meanwhile, the turtle's tank was being cleaned, refilled with water, and warmed.

The turtle's body temperature, just 48 degrees when it arrived at the aquarium, had been perfectly restored to normal by the aquarium team. The thermometer registered 78.2 degrees during the turtle's exam: still just fine.

The turtle is not yet an adult, and weighs about 40 pounds. Its shell measures just under 2 feet long.

The plan now is to keep a close watch on the turtle, continue medications for pneumonia and wound healing, and the gastrointestinal tract. Caregivers will continue to offer a buffet of clams, herring and organic lettuce, cucumber and peppers.

Parker-Graham and McLean said the turtle is still fragile, and at any time there could be a turn for the worse. But if Shi Shi keeps up the steady improvement, the next stop in about a month is SeaWorld in San Diego, and then release back to the wild.

The turtle already has the imprint within of the beach where it hatched and scrambled into the sea, to begin life's journey, now more than a decade ago. Everyone helping the turtle is rooting for that journey to continue — all the way back to the sea.

But first, Shi Shi has got to eat. Anyone encountering a sea turtle on the beach should immediately call the West Coast Marine Mammal Stranding Network at 866-767-6114. Do not touch the turtle. Keep children and pets away. Call right away, it's a life or death situation, the turtle needs immediate care.