



Horseshoe crabs are seen on a beach at the James Farm Ecological Preserve in Ocean View, Delaware. On a bright moonlit night, a team of scientists and volunteers head out to a protected beach along the Delaware Bay to survey horseshoe crabs. — AFP photos



A horseshoe crab is seen on a beach at the James Farm Ecological Preserve in Ocean View.



Horseshoe crabs spawn on a beach at the Ted Harvey Wildlife Area near Dover.

HORSESHOE CRABS - 'LIVING FOSSILS' VITAL FOR VACCINE SAFETY

On a bright moonlit night, a team of scientists and volunteers head out to a protected beach along the Delaware Bay to survey horseshoe crabs that spawn in their millions along the US East Coast from late spring to early summer. The group make their way up the shoreline laying a measuring frame on the sand, counting the individuals inside it to help generate a population estimate, and setting right those unfortunate enough to have been flipped onto their backs by the high tide.

With their helmet-like shells, tails that resemble spikes and five pairs of legs connected to their mouths, horseshoe crabs, or Limulidae, aren't immediately endearing. But if you've ever had a vaccine in your life, you have these weird sea animals to thank: their bright blue blood, which clots in the presence of harmful bacterial components called endotoxins, has been essential for testing the safety of biomedical products since the 1970s, when it replaced rabbit testing.

"They're really easy to love, once you understand them," Laurel Sullivan, who works for the state government to educate members of the public about the invertebrates, tells AFP. "They're not threatening at all. They're just going about their day, trying to make more horseshoe crabs." For 450 million years, these otherworldly creatures have patrolled the planet's oceans, while dinosaurs arose and went extinct, and early fish transitioned to the land animals that would eventually give rise to humans.

Now, though, the "living fossils" are listed as vulnerable in America and endangered in Asia, as a result of habitat loss



Laughing gulls feed on horseshoe crab eggs on a beach at the James Farm Ecological Preserve in Ocean View, Delaware.

and overharvesting for use in food, bait, and the pharmaceutical industry, which is on a major growth path, especially in the wake of the COVID pandemic. Recruiting citizen scientists helps engage the public while also scaling up the government's data collection efforts, explains the survey project's environment scientist Taylor Beck.

Vital ecological role

"Crabs" are something of a misnomer for the animals, which are in fact more closely related to spiders and scorpions, and are made up of four subspecies: one that inhabits the Eastern and Gulf coasts of North America, and the other three in Southeast Asia. Atlantic horseshoe crabs have 10 eyes and feed by crushing up food, such as worms and clams, between their legs then passing the food to their mouths.

Males are noticeably smaller than females, whom they swarm in groups of up to 15 when breeding. Males grasp females as they head to shore, where the females deposit golf ball-size clusters of 5,000 eggs for the males to spray their sperm on. Millions of these eggs, tiny green balls, are inadvertently churned up onto the beach surface, where they are a vital food source for migrating shorebirds, including the near-threatened Red Knot.

Nivette Perez-Perez, manager of community science at the Delaware Center for the Inland Bays, points out a vast band of eggs that stretch nearly the whole beach at the James Farm Ecological Preserve. As she gestures, aptly-named laughing gulls with bright orange beaks swoop down to feast. Like others in the area, Perez-Perez long ago succumbed to the crabs' charms. "You're so cute," she tells a female she has picked up to point out its



anatomical features.

Just flip 'em

Breeding is a dangerous business for horseshoe crabs as it's on the beach that they are at their most vulnerable: as the tide washes in, some end up on their backs, and while their long hard tails can help some right themselves, not all are so lucky. Around 10 percent of the population is lost each year as their exposed undersides bake in the Sun.

In 1998, Glenn Gauvry, founder of the Ecological Research & Development Group, helped start the "Just flip 'em" campaign, encouraging members of the public to do their part by gently picking up upturned crabs that are still alive. "Where it matters most of all, is changing the heart," he tells AFP on Delaware Bay's Pickering Beach, proudly sporting a "Just flip 'em" baseball cap festooned with

horseshoe crab pins. "If we can't get people to care and to connect to these animals, then they're less likely to want legislation to protect them."

Every year around 500,000 horseshoe crabs are harvested and bled for a chemical called Limulus Amebocyte Lysate, vital for testing against a type of bacteria that can contaminate medications, needles and devices like hip replacements. Estimates place the mortality rate of the process at 15 percent, with survivors released back to sea. A new synthetic alternative called recombinant factor C appears promising, but faces regulatory challenges. Horseshoe crabs are a "finite source with a potentially infinite demand, and those two things are mutually exclusive," Allen Burgenson, of Swiss biotech Lonza, which makes the new test said. — AFP



Abdullah Umari, 55 years old Afghan shepherd, gather sheep to be milked in Tunceli, in Dersim mountains, in the middle of the Eastern Anatolia Region.

High up in Turkish valleys, Afghan shepherds dream of home

In Turkish mountains so high the silver clouds almost touch the top of his head, the homesick Afghan shepherd prepares his baaing flock for a good shear. The pebbly valley around him was once full of Kurds, who staged a violently suppressed rebellion in Tunceli in the early years of the modern Turkish state. But the Kurds in the eastern Mercan Valley have been gradually replaced by Afghans, who fled here by foot and truck across Iran from the poverty and bloodshed back home. Now, with two decades of conflict behind them, some are thinking of going back, no matter the resurgent Taliban's hardline rule.

"Nobody would leave their country unless they had to," says Hafiz Hasimi Meymene, a 20-year-old with a fiancée impatiently waiting for him in Afghanistan. "We come here, make money through

shepherding, and send it to our families," he says. A handful of nylon tents are tied down to the hard ground around him, the Afghan families' new homes. A few men crouch in a shed, milking their sheep and goats. Their friend ushers the flock into a pen with a whack of a slender stick.

Mixed emotions

"Next year, I will return to Afghanistan. The war is over," Meymene says. "When the (Afghan) state was fighting the Taliban,



Suleyman Ezam Huseyni, a 29-year-old Afghan shepherd, walks to mountains with his donkey and two shepherd dogs near Tunceli.

the economy was hit hard. But now we are planning to return." President Recep Tayyip Erdogan estimates that 300,000 Afghans now live in Turkey, which also hosts 3.7 million people from war-ravaged Syria. Tunceli native Mustafa Acun says the locals have grown used to Afghans taking care of their herds. The 67-year-old works alongside them, making cheese and yoghurt from sheep's milk. "I mean, our children either cannot or do not want to do this job," he says looking up from his stool, tending to

some steaming pots over an open flame. It is surprisingly dangerous work.

'Love the mountains'

An old rifle hangs off one of the men's shoulders, the better to shoot the wolves and bears that come out hunting at night. This is also a good time to graze the sheep, which suffer in the baking sun. The rifle did not keep two of Abdullah Umari's animals from being torn apart and eaten by a bear the other week. "I take care of the flock like this," the 55-year-old Afghan said, the rifle casually swinging behind his back. "I have been here for seven years. I worked for three years and returned to Afghanistan. But then I decided to come here again," he recalls, glossing over the pain and danger of each voyage.

"God willing, if my health allows, I will go back to Afghanistan in August," when the summer heat begins to subside. But although 29-year-old Suleyman Ezam had not seen his Afghan wife and two little children for four years, says he will miss working as a shepherd in the Turkish mountains with his dogs. "I love the mountains," Ezam says after showing a photograph of his four-year-old daughter on his phone. "The mountains of Turkey are so beautiful." — AFP



Abdullah Umari, 55 years old Afghan shepherd, talks with children while owners milk sheep in Tunceli, in Dersim mountains, in the middle of the Eastern Anatolia Region. — AFP photos

White rhinos return to Mozambique park after 40 years

A Mozambican park welcomed its first white rhinos in 40 years on Friday after 19 of the threatened animals completed a 1,600-kilometre truck ride from South Africa, conservationists said. The rhinos were reintroduced to Zinave National Park in southern Mozambique under an initiative to restore wildlife and boost the local economy. Wildlife in the 4,000-square-kilometre haven was decimated by Mozambique's decades-long civil war, which ended in 1992, and by poaching.

"The return of the rhino allows for Zinave to be introduced as a new and exciting tourism destination in Mozambique," said Werner Myburgh, head of Peace Parks Foundation (PPF), the conservation group that led the project. Zinave is now the only national park in Mozambique to house all "Big Five" African game animals—elephant, rhino, lion, leopard and buffalo—Myburgh said in a statement.

Since 2015, 2,400 animals from 14 species have been released into the reserve. The rhinoceroses were hauled to Zinave from neighboring South Africa over several days in June, in what the PPF said was the longest-ever transfer of rhinos by road. On Friday, some of the animals were released from their enclosures into a sanctuary featuring extra security to protect them from poachers. The ceremony was attended by President Filipe Nyusi and Environment Minister Ivete Maibaze.

"The protection of biodiversity is a universal imperative and together we will continue to fight for the preservation of our natural heritage," said Nyusi. "Only then will future generations be able to enjoy the benefits of nature and join our mission of preserving our natural resources." — AFP