

Tech

'Internet of animals'

Scientists trace bird migration with tech

TAKOMA PARK, Md., June 10, (AP): A plump robin wearing a tiny metal backpack with an antenna hops around a suburban yard in Takoma Park, then plucks a cicada from the ground for a snack.

Ecologist **Emily Williams** watches through binoculars from behind a bush. On this clear spring day, she's snooping on his dating life. "Now I'm watching to see whether he's found a mate," she said, scrutinizing his interactions with another robin in a nearby tree.

Once the bird moves on at season's end, she'll rely on the backpack to beam frequent location data to the Argos satellite, then back to Williams' laptop, to track it.

The goal is to unravel why some American robins migrate long distances, but others do not. With more precise information about nesting success and conditions in breeding and wintering grounds, "we should be able to tell the relative roles of genetics versus the environment in shaping why birds migrate," said Williams, who is based at Georgetown University.

Putting beacons on birds is not novel. But a new antenna on the International Space Station and receptors on the Argos satellite, plus the shrinking size of tracking chips and batteries, are allowing scientists to

remotely monitor songbird movements in much greater detail than ever before.

"We're in a sort of golden age for bird research," said Adrian Dokter, an ecologist at Cornell University who is not directly involved with Williams' study. "It's pretty amazing that we can satellite-track a robin with smaller and smaller chips. Ten years ago, that was unthinkable."

The device this robin is wearing can give precise locations, within about 30 feet (about 10 meters), instead of around 125 miles (200 kilometers) for previous generations of tags.

That means Williams can tell not only whether the bird is still in the city, but on which street or backyard. Or whether it's flown from the Washington, D.C., suburbs to land on the White House lawn.

Movements

A second new tag, for only the heaviest robins, includes an accelerometer to provide information about the bird's movements; future versions may also measure humidity and barometric pressure. These Icarus tags work with a new antenna on the International Space Station.

That antenna was first turned on about two years ago, "but there were some glitches with the power-supply and the computer, so we had to bring it down again with a Russian rocket, then transport it from Moscow to Germany to fix it," said Martin Wikelski, director of the Max Planck Institute of Animal Behavior, whose scientific team is honing the technology. After "the usual troubleshooting for space science," the antenna was turned back on this spring.

As researchers deploy precision tags, Wikelski envisions the development of "an 'Internet of animals' - a collection of sensors around the world giving us a better picture of the movement of life on the planet."

The American robin is an iconic songbird in North America, its bright chirp a harbinger of spring. Yet its migratory habits remain a bit mysterious to scientists.

"It's astounding how little we know about some of the most common songbirds," said Ken Rosenberg, a conservation scientist at Cornell University. "We have a general idea of migration, a range map, but that's really just a broad impression."

An earlier study Williams worked on showed some robins are long-distance migrants - flying more than 2,780 miles (4,480 km) between their breeding area in Alaska and winter grounds in Texas - while others hop around a single backyard most of the year.

What factors drive some robins to migrate, while others don't? Does it have to do with available food, temperature fluctuations or success in mating and rearing chicks?

Williams hopes more detailed data from satellite tags, combined with records of nesting success, will provide insights, and she's working with partners who are tagging robins in Alaska, Indiana and Florida for a three-year study.

Scientists have previously put GPS-tracking devices on larger raptors, but the technology has only recently become small and light enough for some songbirds. Tracking devices must be less than 5% of the animal's weight to avoid encumbering them.

In a Silver Spring, Maryland, yard, Williams has unfurled nylon nets between tall aluminum poles. When a robin flies into the net, she delicately untangles the bird. Then she holds it in a "bander's grip" - with her forefinger and middle finger loosely on either side of the bird's neck, and another two fingers around its body.

On a tarp, she measures the robin's beak length, takes a toenail clipping and plucks a tail feather to gauge overall health.

Then she weighs the bird in a small cup on a scale. This one is about 80 grams, just over the threshold for wearing the penny-sized Argos satellite tag.

Williams fashions a makeshift saddle with clear jewelry cord looped around each of the bird's legs. She then tightens the cord so the tag sits firmly on the bird's back.

When she opens her hand, the robin hops to the ground, then takes a few steps under a pink azalea shrub before flying off.

In addition to providing very precise locations, the satellite tags transmit data that can be downloaded from afar onto Williams' laptop. The data on older tags couldn't be retrieved unless the same bird was recaptured the following year - a difficult and uncertain task.

Wikelski hopes the new technology will help scientists better understand threats birds and other creatures face from habitat loss, pollution and climate change.

"It is detective work to try to figure out why a population is declining," said Ben Freeman, a biologist at the Biodiversity Research Centre at the University of British Columbia. Better information about migration corridors "will help us look in the right places."

A 2019 study co-written by Cornell's Rosenberg showed that North America's population of wild birds declined by nearly 30%, or 3 billion, since 1970.

Also:

WASHINGTON: The cicadas were flying. The reporters hoping to join the president in Europe were not.

Reporters traveling to the **United Kingdom** for President **Joe Biden's** first overseas trip were delayed seven hours after their chartered plane was overrun by cicadas.

The **Washington, DC**, area is among the many parts of the country that have been swarmed by Brood X cicadas, a large emergence of the loud 17-year insects that take to dive-bombing onto moving vehicles and unsuspecting passersby. There are trillions of them in the Washington, **Maryland** and **Virginia** region, said University of Maryland entomologist **Paula Shrewsbury**.

Even Biden wasn't spared. The president brushed a cicada from the back of his neck as he chatted with his Air Force greeter after arriving at Joint Base Andrews for Wednesday's flight.

"Watch out for the cicadas," Biden then told reporters. "I just got one. It just got me."

The bugs also tried to stow away on Air Force Two on Sunday when Vice President **Kamala Harris** flew to **Guatemala**. The cicadas were caught hiding in folds of the shirts of a Secret Service agent and a photographer, and escorted off the plane before takeoff.

The cicadas - which sing to attract mates with science-fiction-sounding hums - seem to be attracted to other noises, entomologists said.



Williams



A partially eclipsed sun peaks out from behind a cloud as it rises over Lower Manhattan in New York, Thursday, June 10. (AP)

Health

Many did not seek treatment in emergency

Heart, diabetes deaths soar amid COVID

NEW YORK, June 10, (AP): The US saw remarkable increases in the death rates for heart disease, diabetes and some other common killers in 2020, and experts believe a big reason may be that many people with dangerous symptoms made the lethal mistake of staying away from the hospital for fear of catching the coronavirus.

The death rates - posted online this week by federal health authorities - add to the growing body of evidence that the number of lives lost directly or indirectly to the coronavirus in the US is far greater than the officially reported COVID-19 death toll of nearly 600,000 in 2020-21.

For months now, researchers have known that 2020 was the deadliest year in US history, primarily because of COVID-19. But the data released this week showed the biggest increases in the death rates for heart disease and diabetes in at least 20 years.

"I would probably use the word 'alarming,'" said Dr. Tannaz Moin, a diabetes expert at UCLA, said of the trends.

Earlier this year, the Centers for Disease Control and Prevention reported that nearly 3.4 million Americans died in 2020, an all-time record. Of those deaths, more than 345,000 were directly attributed to COVID-19. The CDC also provided the numbers of deaths for some of the leading causes of mortality, including the nation's top two killers, heart disease and cancer.

But the data released this week contains the death rates - that is, fatalities relative to the population - which is considered a better way to see the impact from year to year, since the population fluctuates.

Causes

Of the causes of death for which the CDC had full-year provisional data, nine registered increases. Those included Alzheimer's disease, Parkinson's, chronic liver disease, stroke and high blood pressure.

Some of the increases were relatively small, but some were dramatic. The heart disease death rate - which has been falling over the long term - rose to 167 deaths per 100,000 population from 161.5 the year before. It was only the second time in 20 years that the rate had ticked up. This jump, of more than 3%, surpassed the less than 1% increase seen in 2015.

In raw numbers, there were about 32,000 more heart disease deaths than the year before.

Diabetes deaths rose to 24.6 per 100,000 last year, from 21.6 in 2019. That translated to 13,000 more diabetes deaths than in 2019. The 14% increase was the largest rise in the diabetes death rate in decades.

The death rate from Alzheimer's was up 8%, Parkinson's 11%, high blood pressure 12% and stroke 4%.

The CDC offered only the statistics, not explanations. The agency also did not say how many of the fatalities were people who had been infected with - and weakened by - the coronavirus but whose deaths were attributed primarily to heart disease, diabetes or other conditions.

Some experts believe a larger reason is that many patients did not seek treatment in an emergency because they feared becoming infected with the virus.

"When hospitalization rates for COVID would go up, we would see dramatic declines in patients presenting to the emergency room with heart

Pandemic shows risk of obesity, and the challenge of weight loss

NEW YORK, June 10, (AP): Jennifer Bergin was already obese and pre-diabetic before the pandemic, and learning she also had high blood pressure made her worry about how sick she might get with COVID-19. She began walking three hours a day, eventually losing 60 pounds.

"I just knew I was a prime candidate for getting it and not recovering," said Bergin, a 50-year-old resident of Charlotte, North Carolina. Now 170 pounds and 5 feet, 4 inches tall, she is no longer considered obese, but would like to continue improving her health.

Since the early days of the pandemic, health officials have warned that obesity and related conditions such as diabetes were risk factors for severe COVID-19. It was another reminder of the many underlying health issues often signaled by obesity - as well as of how stubbornly difficult sustained weight loss can be. Even faced with such risks, it's not clear how common Bergin's dramatic weight loss may be.

Across the country, countless people of all body sizes have either gained or lost weight during the pandemic. For some like Bergin, no longer commuting to an office meant more time for walking, eating out less and greater control over what she ate.

But for others, being stuck at home meant moving less and eating more because of stress, anxiety, depression - or just proximity to the kitchen.

The spectrum of weight changes underscores the complexities of obesity, including how much of a role a person's circumstances can play in their health, said Karen H. Yeary, an obesity researcher at the Roswell Park Comprehensive Cancer Center in Buffalo, N.Y. That's contrary to the notion that losing weight is just a matter of willpower, she said.

"It takes a lot of effort and energy to eat healthy and then to lose weight," Yeary said.

Another reason tackling obesity is so difficult: Weight gain often happens slowly over years, making it easier to dismiss as a health issue. In the US, an estimated one in four adults are considered obese, and another one in three are over-

attacks, stroke or heart failure," Dr. Donald Lloyd-Jones, a Northwestern University researcher who is president-elect of the American Heart Association.

Other possible explanations also point indirectly to the coronavirus.

Many patients stopped taking care of themselves during the crisis, gaining weight or cutting back on taking high blood pressure medications, he said. Experts said the stress of the crisis, the lockdown-related disappearance of exercise options, and the loss of jobs and the accompanying health insurance were all factors, too.

Increases in Kentucky, Michigan, Missouri, and West Virginia pushed the four into the group of states with the highest rates of death from heart disease, the CDC data showed. For

weight.

It's often not until a major health scare, like a heart attack or a notable deterioration in lifestyle, that people are motivated to lose weight, said Eric Plaisance, an obesity researcher at the University of Alabama at Birmingham.

And though the pandemic illuminated the risks of obesity, he said people were already used to hearing about how unhealthy it is to be overweight.

"It usually takes a much greater, life-changing event at a personal level," he said of what often triggers successful weight loss for people.

That was the case for Mickey Beatima, a 29-year-old Seattle resident who started trying to lose weight a couple months before the pandemic, when his diabetes led to eye problems.

"That really hit me," said Beatima, who is 5 feet, 8 inches tall and has gone from about 300 pounds to 170 pounds.

The pandemic accelerated his efforts by making weight loss easier. He was no longer getting takeout, going out with friends or gathering with his family for their customary feasts.

He also found solace in dancing to YouTube videos, and was motivated by the knowledge that getting healthier would reduce his risk for severe COVID-19.

"If I were to get it and I was still 300, I think it would be way more of a battle than if I got it today," Beatima said.

Christian Hains, a 42-year-old resident of Hammond, Indiana, also lost about 50 pounds during the pandemic, and at 180 pounds and 5 feet, 11 inches tall is no longer considered obese.

His weight had crept up over the years, peaking at around 230 pounds.

But it wasn't until he was diagnosed as diabetic around the start of the pandemic that he felt the urgency to make changes - especially since data was emerging that it was one of the conditions that was more likely to lead to severe coronavirus disease.

"All of those long-term scary things that can happen because of obesity no longer became long-term concerns," Hains said.

diabetes, similar changes happened in Indiana, New Mexico, West Virginia and some other Southern and Plains states.

The death rate from the nation's No. 2 killer, cancer, continued its decline during the year of COVID-19. It fell about 2% in 2020, similar to the drop seen from 2018 to 2019, even though cancer screenings and cancer care declined or were often postponed last year.

Lloyd-Jones' theory for the decline: Many of the virus's victims were fighting cancer, "but COVID intervened and became the primary cause of death."

Earlier research done by demographer Kenneth Johnson at the University of New Hampshire found that an unprecedented 25 states saw more deaths than births overall last year.



A health worker prepares a syringe of the AstraZeneca vaccine during a mass coronavirus vaccination campaign for public transport workers at the Kampung Rambutan Bus Terminal in Jakarta, Indonesia, Thursday, June 10. (AP)

Discovery

China ready to send 1st crew: The rocket that will send the first crew members to live on China's new orbiting space station has been moved onto the launch pad ahead of its planned blastoff next week.

The three astronauts plan to spend three months on the space station doing spacewalks, construction and maintenance work and science experiments.

The main section of the Tianhe, or Heavenly Harmony, station was launched into orbit on April 29, and a cargo spacecraft sent up last month carried fuel, food and equipment to the station in preparation for the crewed mission.

The Long March-2F Y12 rocket carrying the Shenzhou-12 spaceship was transferred to the launch pad at the Jiuquan Satellite Launch Center in northwest China on Wednesday, the China Manned Space Engineering Office said in a brief statement. Its tentative launch date is next Wednesday.

The space agency plans a total of 11 launches through the end of next year to deliver two laboratory modules to expand the 70-ton station, along with supplies and crew members. Next week's launch will be the third of those, and the first of the four crewed missions planned.

China said in March the astronauts training for the upcoming crewed missions were a mix of space travel veterans and newcomers and included some women. It has sent 11 astronauts into space to date, all of them pilots from the ruling Communist Party's military wing, the People's Liberation Army.

The first Tianhe crew will be all male, though women will be part of future crews on the station, according to **Yang Liwei**, who orbited Earth in China's first crewed mission in 2003 and is now an official at the space agency.

The Tianhe builds on experience China gained from operating two experimental space stations earlier in its increasingly ambitious space program. Chinese astronauts spent 33 days living on the second of the previous stations, carried out a spacewalk and taught science classes that were beamed down to students across the country.

China landed a probe, the Tianwen-1, on Mars last month that carried a rover, the Zhurong. It also has brought back lunar samples, the first by any country's space program since the 1970s, and landed a probe and rover on the moon's less explored far side.

Beijing doesn't participate in the International Space Station, largely due to US objections. Washington is wary of the Chinese program's secrecy and its military connections. (AP)

Archaeologists dig hilltop: Archaeologists are giving a grassy hilltop overlooking iconic Plymouth Rock one last look before a historical park is built to commemorate the Pilgrims and the Indigenous people who once called it home.

Braving sweltering heat, a team of about 20 graduate students enrolled in a masters program at the University of Massachusetts-Boston began excavating an undeveloped lot on Cole's Hill in Plymouth, Massachusetts, this week.

The National Historic Landmark site - which contains the first cemetery used by the Pilgrims after they arrived from England in 1620 and was a Wampanoag village for thousands of years before that - has been poked and prodded numerous times over the past century.

But now, as historical organizations reboot pandemic-stalled plans to construct a permanent memorial they're calling Re-

membrance Park, this could be the last chance to mine the soil for Native and colonial artifacts.

"Cole's Hill is among the most sacred land we've got," said **Donna Curtin**, executive director of the Pilgrim Society & Pilgrim Hall Museum, which owns the tract. "We want to make it more than just a grassy, empty lot. We want to engage people. And the archaeology is deeply wedded to the site."



Curtin



Yang

David Landon of UMass-Boston's Fiske Center for Archaeological Research, who's leading the effort, said he's confident his team will recover items of interest from the site.

"You don't always get the opportunity to do work at sites that are so significant," he said. "We know we're going to find stuff - there's no question about that. Anytime you start digging in Plymouth, you find interesting stuff." (AP)