Mystery of the Lizards That Know the Way Home

By JAMES GORMAN JULY 6, 2015

Call it the case of the homing lizards.

It's a small mystery. No one of any species is murdered. But the central question is one that has prompted plenty of scientific research:

How do animals find their way home?

The lizards in this case are anoles — abundant, mostly small reptiles that thrive in the Caribbean. The species is Anolis gundlachi. The lead detective is Manuel Leal, a biologist at the University of Missouri. He has been studying the behavior of anoles for more than 20 years.

For about three years, Dr. Leal has been trying to understand how the anole finds its way back to its own territory after being carried into the rain forest. And as he told an audience in June at the annual meeting of the Animal Behavior Society in Anchorage, the case is far from closed.

First, a bit of background. Anoles are particularly abundant in the dense vegetation of the rain forests in Puerto Rico, where Dr. Leal studies them. Each species is tied to a very specific environment. For instance, many live on tree trunks, but only a particular part of the trunk.

Trunk-ground anoles live only in the space from the ground up to six feet or so. Trunk-crown anoles live above them, up to the crown of the tree. Twig anoles live way up high.

Several years ago, Dr. Leal was studying competition between two species. If he removed all of the trunk-ground anoles, he wondered, would the trunk-crown lizards extend their territory farther down the tree? He ran into a problem, however. He would take the trunk-ground lizards far from their home territory to make room for their upstairs neighbors, and then release them. But in a reptilian version of the children’s song, “The Cat Came Back,” the lizards wouldn’t stay away. “Lizards kept showing up in the territory that had just been scoured for lizards,” he said.
Dr. Leal wondered whether new anoles were appearing in empty territory or the old ones were returning. But how could a lizard that had never left home find its way back through 25 yards or so of dense rain forest?

First, he established that they do find their way back. A graduate student would take one, put it in a box, shake it to disorient the anole, walk about 80 yards or more away in a randomly chosen direction, shake the box again and let the lizard out. “The graduate students got lost,” Dr. Leal said, but not the lizards. It took them a few hours or a few days, but about 80 percent of them found their way back.

How did they do it? The box and the shaking ensured that an anole couldn’t keep track of the path it took. The dense rain-forest vegetation made it almost impossible for the lizards to be guided by visual cues, Dr. Leal said.

Some birds and insects can detect polarized light from the sun, which gives them a way to sense direction. And some animals can use Earth’s magnetic field.

So the team glued tiny magnets to the heads of anoles.

The lizards still came back. Same percentage. Same time period.

Then the researchers created caps with pieces of Ping-Pong ball, and attached them with surgical glue and cork as a cushion, to the heads of the anoles to interfere with polarized light that might reach an organ in the brain called the parietal eye. Some research has shown that lizards can detect polarized light with that organ, not with their

The team didn’t just block all light to the parietal eye, because it controls the daily rhythms of the lizard. Block it completely, Dr. Leal said, and “after a day they just stop moving.” They are normally quiet at night. If it is always night for them, they stay quiet.

And how did the lizards do with the Ping-Pong ball hats?

They came back. Same percentage. Same time period.

Finally, Dr. Leal’s team created computer simulations of random walks, on the idea that just by wandering at random, the lizards would arrive at home. The lizards in the simulation did not find their way home.

Dr. Leal, like a detective in front of a white board as he presented the puzzle in Anchorage, turned to the audience.

Did anyone else have an idea?

Of course they did. But no answers. The lizards don’t have a great sense of smell, and their hearing would be no better than their vision.
His next step is to attach a GPS tracking device to the lizards to see what kind of path they follow on their way home.

But he is so eager to hear theories about the homing lizard that he is sharing his email address. Anyone with a suggestion about how the lizards navigate or how their ability might be tested can email him at lealmizzou@gmail.com.

He will be in the field, with anoles, until mid-July. After that, he says, he'll answer any emails with promising ideas. Think of it as a tip line for science.

JULY 6, 2015

Cerner and MU extend health technology research agreement

BY DIANE STAFFORD
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Cerner Corp. and the University of Missouri have reached an agreement to extend a two-decade collaboration through 2025. The effort will extend their joint research in the electronic medical records industry.

The collaboration, centered at the Tiger Institute for Health Innovation in Columbia, began in 2009.

Projects to date have focused on “electronic visit” technology and improving patient access to electronic medical records. The Tiger Institute this year launched OpenNotes, a computer program that gives patients access to their clinic notes.

Cerner said the new Tiger Institute initiatives will include more emphasis on population health strategies designed to keep people healthier and thus reduce expensive medical treatments.

Another new initiative will be the Tiger Institute Leadership Academy for industry professionals.
Joanne Burns, senior vice president and chief strategy officer at Cerner and member of the Tiger Institute Board of Governors, said the institute’s ultimate goal is to improve the health outcomes of Missourians.

WHY NEWS EDITORS CAN’T IGNORE ONLINE COMMENTS

Posted by Nathan Hurst-Missouri on July 6, 2015

Because online comments can veer into political debates or other topics, news organizations don’t tend to consider them important.

Now, researchers find that editors and owners of news organizations may want to pay more attention to what their readers are saying about their news stories in order to better serve them.

Timothy Vos, an associate professor of journalism studies at the University of Missouri School of Journalism, says that readers value different journalistic traits as well as hold other expectations for journalists.

“Traditional journalistic values include traits such as objectivity, truthfulness, and accuracy,” Vos says. “Although most journalists were trained and brought up valuing these ideals, we found that many readers have an additional list of traits that they value in their news reporting.

“Although news organizations don’t necessarily need to readjust what ideals they find important, they should at least understand what their readers value, not only to serve them better, but also to maintain viability.”
For his study, Vos and colleagues examined thousands of reader comments on ombudsman columns of three national online news publications: the New York Times, Washington Post, and National Public Radio (NPR). They found reoccurring comments calling for journalistic ideals outside of traditional values, such as transparency.

Vos also found that readers often hold journalism outlets to basic social standards that are better applied to individuals rather than corporate entities. He found multiple occurrences of such adjectives as sanctimonious, self-absorbed, judgmental, inhumane, and lazy to describe entire news outlets. Vos says leaders of news outlets should be aware of how readers are judging their organizations.

“News organizations, like all businesses, are seeking to establish and build their identities,” Vos says. “In doing so, it is important to know how people view their brand and what standards they hold for you. News leaders need to understand how readers are anthropomorphizing their organizations by applying human adjectives to non-human entities. Understanding this phenomenon can help news organizations better evaluate and address how to best present their brands to the public.”

This study appears in Journalism: Theory, Practice and Criticism. Stephanie Craft, an associate professor at the University of Illinois, and David Wolfgang, a doctoral student at University of Missouri, are coauthors.
SPECIAL REPORT: Protecting information online from hackers

Lindsey Berning, Reporter

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COLUMBIA, Mo.- In an age where passwords are needed for nearly everything, it can be tricky keeping track of them all.

Experts recommend using password managers, but are they really safe?

Last month, LastPass, one of the most common online password managers, announced it was hacked. The hackers took account email addresses, master passwords, password reminders and more.

But IT experts Abc 17 News talked to said password managers are still one of the best ways to go and said users should not worry.

"According to all the reports, everyone who has an account with them should still be safe," Marcus Files with Nate's Computer repair said. "The form of encryption they use on the passwords that these hackers essentially stole, said they would take a great deal of time to break through. So nobody needs to be too concerned about losing their information. But they should change their master password because that's what's actually at risk now."

With LastPass, users have one master password to get into their account which stores passwords for every other login the user has. Users can enter their own passwords, or the site can generate a random complex one for you. All passwords are stored in an encrypted, or coded, form.

Prasad Calyam, an assistant professor for the University of Missouri Computer Science Department, said between work accounts and his personal life, he has hundreds of passwords.

"The scale of the work is in hundreds," Calyam said. "But definitely in terms of my personal life it's a few tens I would say."
Calyam said although they are necessary, passwords make you vulnerable.

"Unfortunately, if you ask any cyber security researcher, passwords are the worst thing that ever happened in how we access systems and applications and how we communicate with people with data and things like that," Calyam said. "But that's what we have today."

IT experts said the three top things you can do to protect your information online are: create a strong complex password, use two-factor authentication and change your master password often.

To create a strong password:

"It's all in the length of your password," Calyam said. "The longer it is and the more complex it is, in terms of lowercase, uppercase, special characters and you see this all the time when you're setting passwords, the more secure it is."

Use a combination of lowercase letters, uppercase letters, numbers and symbols. Calyam said your passwords should be eight to 12 characters, the longer the better. Do not use key combinations on the keyboard, for example "QWERTY" or "12345".

Two-factor authentication:

Those security questions you're asked is among the strongest measures out there.

"That ensures that they're sending the code to the right person, and it's actually you logging in," Files said. "And that's probably the safest way that's out there right now to ensure that your accounts aren't being hacked into."

Two factor methods can also be text messages or biometrics like a thumbprint scan.

Change master password often:

"Essentially there's not much you can do to prevent, to make a site 100 percent non-hackable," Files said. "Companies always create new kind of encryption methods, new kinds of security precautions, but there always seems to be someone out there that's just a bit smarter or a bit more capable of getting into them. So the best practice is that they ensure their users are updating their passwords."

Files recommended changing your password every three to six months. He said you should definitely change it more than once a year.
After the hack, LastPass prompted all users to update their master passwords and required all users logging in from a new device to verify their account through email. LastPass said it is also working with the authorities and security forensic experts to investigate the hack.

Both Files and Calyam said even though password managers are hackable, they are still safer than storing your passwords on your personal computer, writing them down or just storing a few in your head.


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**Arson numbers trending much lower than 2014 reports**

**By ALAN BURDZIAK**

Monday, July 6, 2015 at 2:00 pm

With only three reported in the first five months of 2015, the number of suspicious blazes in Columbia is on pace to be substantially lower than the 26 arsons fire marshals reported in 2014.

To determine the cause of a blaze, fire marshals first rule out accidental causes. When a fire appears to have been started intentionally, Columbia police begin a criminal inquiry and help investigate the potential arson.

“Fires are very destructive in nature,” Columbia Fire Department Assistant Chief Brad Fraizer said. “Determining how a fire was set, if in fact it was intentionally set, is very difficult.”

Causes such as improperly discarded barbecue coals, electrical mishaps, lightning strikes and other accidents or coincidences cause a majority of fires, Fraizer said. The presence of an accelerant such as gasoline near the fire can indicate that it was intentional, he said. Like many criminal inquiries, investigators conduct interviews, take samples and send materials for testing to the Missouri State Highway Patrol Crime Lab.
“There’s no set time those test results can be expected,” Fraizer said. “It can vary, and it can be a lengthy time.”

Police submit crime stats to the highway patrol on a monthly basis to include in the FBI’s Uniform Crime Reporting program. The latest available data on arsons are through May.

Columbia police Detective Steve Wilmoth said accidental fires sometimes can look like an arson, which complicates investigations. He recalled a recent incident in which a 17-year-old boy was the only person home when a pile of leaves ignited outside a trailer. Thinking he was going to get in trouble for underage smoking, the 17-year-old said he did not know what happened.

“I pulled him to the side, and I said, ‘Hey dude, you were smoking a cigarette, huh?’ ” Wilmoth said. After the detective assured the boy he would not be arrested for smoking, the teen admitted to tossing a cigarette in the leaves.

Motives for arson vary, with insurance fraud and retaliation among the most common, Wilmoth said. The latest arson-related arrest by police is suspected to be the latter. In one of Wilmoth’s cases, 60-year-old Mehrdad Fotoohighiam allegedly paid a man $500 to set a trailer in south Columbia on fire in December. A woman sleeping in the trailer at the time suffered serious injuries.

It took several months for the investigation to progress and for a warrant to be issued for Fotoohighiam, who was arrested June 28 and charged with first-degree arson. The man accused of setting the fire, James R. Hall, was arrested in January and faces the same charge.

Some people, Wilmoth said, just like to watch things burn. That was the case of Christopher Kelley, who was convicted in federal court of lighting fires in 2011 in buildings at the University of Missouri and Stephens College. Kelley appealed and asked for a new trial, but a three-judge panel in the Eighth U.S. Circuit Court of Appeals affirmed his conviction in May.

“We tend to call them firebugs,” Wilmoth said. “There’s really no motive.”

Late 2014 fires at a church and funeral chapel were ruled arsons and still are under investigation. Fraizer said early this year that there were similarities in fires at Bach-Yager Funeral Chapel on Nov. 16 and an Oct. 31 blaze at Parkade Baptist Church.

The 26 arsons in 2014 are the most since 2005, when the city recorded 28 in total.

There’s no way to predict arson, Fraizer said, and most of the incidents last year were individual cases.
“There’s no common denominator among them,” Fraizer said. “There have been a few that may have been related but nothing of any significance.”

Some 3.6 million students entered college for the first time in the fall of 2008, at the height of the Great Recession. Over the next six years, they transferred 2.4 million times, ricocheting between two- and four-year public and private colleges, often across state lines, according to a report being released Tuesday by the National Student Clearinghouse Research Center.

"This has huge implications for the growing number of states with performance-based funding," Afet Dundar, associate director of the research center and one of the report’s authors, said in an interview. Such formulas reward or penalize colleges based in part on the number of students they graduate or retain from year to year.

Without taking transfers into consideration, "these students are going to be left out of the calculations," Ms. Dundar said. Meanwhile, colleges could be financially penalized for successfully launching the academic careers of students who went on to graduate elsewhere.

More than a third of the students who started in the fall of 2008 transferred at least once by the summer of 2014, the report says.

Of those who transferred, almost half switched more than once.
The transfer statistics have changed little since the clearinghouse’s 2012 report, which said that a third of students who started in the fall of 2006 had transferred within five years.

Because students often lose credits and take longer to graduate after transferring, advisers may try to discourage them from moving.

"Given how often students are transferring, that advice isn’t realistic," Ms. Dundar said. Instead, "we need to figure out how to make those transfers hurdle-free."

The report defines student transfer and mobility as any movement from one institution to another, in any direction, whether or not credits are transferred.

Among the other findings:

Nearly one in five transfers among students who started in two-year public colleges, and nearly a quarter of transfers from four-year publics, occurred across state lines.

Students who had a combination of full- and part-time enrollment had the highest transfer and mobility rates, while exclusively part-time students were the most likely to stay put.

More than half of those transferring from four-year public colleges and more than 40 percent of those coming from four-year private colleges transferred to community colleges.

"We usually think about community colleges as points of entry for students," said Ms. Dundar. "But it’s also an important part of the pathway for many students who start in four-year institutions."

About a quarter of those moves happen during the summer, when students enrolled in baccalaureate-granting institutions take classes at their local community colleges to accumulate credits needed for graduation at a lower cost.

The report differentiates, however, between "summer swirl" and permanent transfers.

It also documents the number of students who transfer from community colleges to four-year institutions without first getting an associate degree. That puts them at risk of ending up empty-handed if they drop out later.
Nearly a quarter of the students who started at a community college transferred to a four-year institution within six years, according to the report. But only one in eight of those transfer students earned a certificate or an associate degree first — down from one in five three years ago.

That highlights the importance of what’s known as reverse transfer, a growing trend in many states in which two- and four-year colleges work together to ensure that students get credit for the courses they need to earn an associate degree.

The National Student Clearinghouse is trying to streamline that process through an automated data-transfer system.

Colleges seeking to bolster their completion numbers can get the most bang for their buck, the clearinghouse noted in an earlier report, by identifying students who dropped out just a few credits shy of a degree.

For all their bouncing around, students in the class that entered in the fall of 2008 struggled to reach the finish line.

Last year the research center reported that only 55 percent of those students had earned degrees or certificates six years later. That was a small decline from the previous year.

Compared with previous years, the students in this cohort were more likely to be older, attend part time, and enroll in community colleges and for-profit institutions.