

Where did wolves become dogs? Maybe in 2 places

BY KARIN BRULLIARD
THE WASHINGTON POST

Where in the world ancient gray wolves morphed into early humans’ best friends has long been the subject of scientific debate. Some argue it happened in Asia. Others think it happened in Europe.

A new study posits a new idea that could throw everyone a bone: Dogs were domesticated in both regions, at separate times.

The claim remains just a hypothesis, according to the authors of a paper published Thursday in the journal Science. But they say their analysis of genetic and archaeological evidence makes it the best explanation for a long-standing conundrum that has been hard to solve in part because breeding has made today’s dogs, which all have roots in Asia, so genetically scrambled.

To come to this conclusion, the researchers, who are part of a major project on dog origins based at the

University of Oxford in Britain, looked at DNA sequences from the remains of 59 ancient European dogs ranging in age from 3,000 to 14,000 years old. But they also had a complete genome taken from a 4,800-year-old fossil of a dog’s inner ear bone, which was dug up at the Newgrange archaeological site in Ireland. They compared these to DNA from hundreds of modern dogs.

What they saw was a dramatic genetic split between the modern European and East Asian dogs. But when did it happen?

To figure this out, the Newgrange dog was key. Knowing its age allowed them to calculate a genetic mutation rate — or “calibrate an internal molecular clock,” said co-author Greger Larson, an Oxford evolutionary biologist. And that indicated that the East-West divide happened between 6,400 and 14,000 years ago.

This could mean that dogs were domesticated

first in East Asia and then migrated West, maybe with their new human pals. But the earliest archaeological remains of dogs found in Europe are at least 15,000 years old — before the split they calculated occurred. What’s more, a movement from East to West would have left a timeline of dog fossils scattered in the geographic area in the middle. And those haven’t been found.

“In between, we do not find any dogs earlier than 8,000 years old. We find human settlements there, but we don’t find dogs,” said lead author Laurent Frantz, an evolutionary geneticist at Oxford. “If dogs were domesticated only once and transported from east to west, we should find these gradients, and we can’t find it.”

So they hypothesized that two populations of now-extinct wolves, one in Europe and one in Asia, were domesticated independently. Dogs later migrated from Asia to Europe, and their



REUTERS | JUAN CARLOS ULATE

A stray dog is seen at Land of the Strays dog sanctuary in Carrizal de Alajuela, Costa Rica, recently. A new study explores the question of where dogs may have first been domesticated.

genetics pretty much engulfed the original dog populations in the West. They emphasize, though, that lots more testing, including of well-preserved ancient dog remains from Europe,

is needed to help prove it.

Dual domestication happened before, with pigs, Frantz pointed out. And though the explanation isn’t as neat as a single-origin tale, he said he thinks it

could serve to calm the east-west dispute that dogs canine science.

“I think what this paper is really showing is that these can be reconciled,” he said.



KEVIN JOHNSON | SANTA CRUZ SENTINEL | MCT

Ken Kimes drives a combine harvester through a field in Pascadero, California in 2012. Kimes founded Farm Fuel Inc. in 2007 with the aim of growing mustard for biofuel. A new clean technology to turn sunlight into liquid fuel could drastically shrink the need for large plantations to grow crops for biofuels.

Clean fuel to come from ‘bionic leaf’

BY CHRIS ARSENAULT
REUTERS

A new clean technology to turn sunlight into liquid fuel could drastically shrink the need for large plantations to grow crops for biofuels, while combating climate change, Harvard University researchers said on Thursday.

That could help protect food supplies and local people’s land rights, they suggested.

Dubbed “bionic leaf 2.0,” the technology uses solar panels to split water molecules into oxygen and hydrogen, the scientists said in a study published in the journal Science.

Once separated, hydrogen is moved into a chamber where it is consumed by bacteria, and with help from a special metal catalyst and carbon dioxide, the process generates liquid fuel.

The method is an artificial version of the photosynthesis process plants use to make energy from sunlight, water and carbon dioxide, scientists said.

If it becomes economically viable, the technology could replace oil wells or plantations where food crops are grown for fuel, the study’s lead author said.

“This (new energy source) is not competing with food for agricultural land,” Harvard University Professor of Energy Daniel Nocera told the Thomson Reuters Foundation.

Crops such as corn and sugar cane have been increasingly cultivated to pro-

duce biofuels. About 4 percent of the world’s farmland is used to grow crops for fuel rather than food, according to a University of Virginia study published in March.

Tens of thousands of small-scale farmers across Africa, Asia and Latin America have been displaced by plantations growing crops to make biofuels, according to GRAIN, a Barcelona-based land rights group.

The new technology could help protect their land rights while also reducing the greenhouse gas emissions that are warming the planet, Nocera said.

“The (land) footprint these solar panels need is about one tenth the size of what you would need for sugar cane,” he said.

If governments put a price on carbon dioxide emissions, the “bionic leaf” would appeal to investors as a cost-effective alternative energy source, the professor added.

Today, however, it remains cheaper to grow bio-fuel crops or extract fossil fuels than to produce renewable energy, Nocera said.

A carbon tax boosting U.S. gas prices to European levels — although not yet on the cards — would likely be enough to spur investment in the new technology, he said.

“Bionic leaf 2.0” converts solar energy into liquid fuel with 10 percent efficiency, far higher than the 1 percent efficiency seen in the fastest-growing plants that use a similar process, Nocera added.

are exempt. Antiques at least a century old are also exempt, but owners must prove an artifact’s age through a professional appraisal or some other document that can be verified, he said.

Ashe defended the rule as a bold attempt to reduce the illegal trade of ivory in the United States and the world fueled by wildlife traffickers. Ivory fetched prices as high as \$1,500 per pound due to demand in Asia. The demand was met by poachers who slaughtered an estimated 100,000 elephants “in just a three-year span” ending in 2014, Interior Secretary Sally Jewell said during an event in New York’s Time Square where a ton of confiscated ivory was crushed last year.

Dead tiger cubs found in Thai temple

REUTERS

BANGKOK — Thai wildlife authorities found 40 tiger cub carcasses in a freezer in Thailand’s Tiger Temple on Wednesday as they removed live animals in response to international pressure over suspected trafficking and abuse.

The Buddhist temple in Kanchanaburi province west of Bangkok had become a tourist destination where visitors snapped selfies with bottle-fed cubs.

But the temple has been investigated for suspected links to wildlife trafficking and abuse. A raid that began on Monday is the latest move in a tug-of-war since 2001 to bring the tigers under state control.

Tiger parts are used in traditional Chinese medicine.

The 40 dead tiger cubs were found in a freezer in a kitchen area, said Adisorn Nuchdamrong, deputy director-general of the Department of National Parks.

“Foreign volunteers at

the temple today told us about it and showed us the freezer. Perhaps they felt what the temple is doing isn’t right,” Adisorn said.

“They must be of some value for the temple to keep them,” he said. “But for what is beyond me.”

Officials wearing protective masks displayed the bodies of the cubs to media at the temple. Also on display was the body of a Binturong, a protected species commonly known as a bearcat, which the authorities found with the cub carcasses.

The temple said in a comment on its Facebook page that wildlife authorities had already been aware that the carcasses were in the freezer. The carcasses of cubs that had died had been kept, rather than cremated, since 2010 on the instructions of a former vet, it said.

Adisorn told Reuters the department had not previously known about the cubs.

“The temple has notified us when grown tigers die, but never the cubs,” he said.

Officials have moved 61



REUTERS

A dead tiger cub is held up by a Thai official Wednesday after authorities found 40 tiger cub carcasses during a raid on the controversial Tiger Temple. The popular tourist destination in Kanchanaburi province, west of Bangkok, Thailand, has come under fire in recent years over the welfare of its big cats.

live tigers from the temple since Monday, Adisorn said, leaving 76 still there.

Thailand has long been a hub for the illicit trafficking of wildlife and forest products, including ivory. Exotic birds, mammals and reptiles, some of them endangered species, can often be

found on sale in markets.

“It’s clear that the welfare of the tigers is not a priority and their lives are full of abuse and commercial exploitation for the entertainment of tourists,” said Jan Schmidt, Asia-Pacific Wildlife Adviser at World Animal Protection, in a statement.

Now even cowboy jobs may get automated

BY MATT MCFARLAND
THE WASHINGTON POST

An Australian professor is developing a robot to monitor the health of grazing livestock, a development that could bring big changes to a profession that’s relied largely on a low-tech approach for decades but is facing a labor shortage.

Salah Sukkarieh, a robotics professor at the University of Sydney, sees robots as necessary given how cattlemen are aging. The average age of a farmer in Australia is 52, according to the Australian Farm Institute.

Sukkarieh is building a four-wheeled robot that will run on solar and electric power. It will roam pastures alongside livestock and monitor the animals using cameras, thermal sensors and infrared. A computer system will analyze video footage to determine whether a cow is limping. Radio tags on the animals will measure temperature changes.

The quality of pasture will be tracked by monitoring the shape, color and texture of grass. That way, cattlemen will know whether they need to move their herd to another field for nutrition purposes. He plans to run trials later this year and is aiming for the final product to cost about as much as an ATV.

Machines have largely taken over planting, watering and harvesting crops such as corn and wheat, but the monitoring of cattle has gone through fewer changes.

For Texas cattleman Pete Bonds, a former president of the Texas and Southwestern Cattle Raisers Association, it’s increasingly difficult to find workers interested in careers watching livestock.



REUTERS FILE

Cattle graze at a farm in Noonamah, Australia. Ranchers are experimenting with robots and drones in their fields to monitor their livestock. Machines have largely taken over planting, watering and harvesting crops such as corn and wheat, but the monitoring of cattle has gone through fewer changes.

“It’s 110 degrees and you’re wearing a coat and bull-hide leggings and no air gets through,” Bonds said. “Getting a good enough man to be able to go through that brush and take it, there’s not any of them left.”

Younger cattlemen in Oklahoma are beginning to experiment with drones to remotely check on cattle

But Bonds doesn’t believe a robot is right for the job. Years of experience in the industry — and failed attempts to integrate technology — have convinced him that the best way to check cattle is with a human on a horse. Bonds, who bought his first cattle almost 50 years ago, still has each of his cowboys inspect 300 or 400 cattle daily and look for

signs that an animal is getting sick, such as a steer that doesn’t stretch when standing up.

Other cattlemen see more promise in ground robots. Michael Kelsey, executive vice president of the Oklahoma Cattlemen’s Association, said a roving robot that stays with livestock 24-7 could be extremely useful given rising concerns about cattle thieves. Cattle tend to be located in remote locations and their value has risen, making them appealing targets.

Kelsey said that the younger cattlemen in Oklahoma are beginning to experiment with another type of robot — drones — to remotely check on the location of cattle. Some use a drone’s thermal sensor to pinpoint the location of a missing cow that could be hidden in the brush.

Kelsey said the drones don’t stress the animals because cattle tend not to look

up. He mentioned there would be concern that a land robot could startle cattle, but he thinks that if one is carefully introduced, the animals would acclimate to it.

Sukkarieh’s plan for a robot goes a step further than the use of drones that Kelsey describes. His robot would be automated and operate independently, which would reduce labor costs. A cattleman would receive an occasional notification that a specific animal needed human attention.

But for some in the business, an influx of machines could remove some of the fun of raising livestock.

“A lot of times it’s the therapeutic side of what they do, going to check on their cattle,” said Tyler Dupuy, executive director of Kansas Cattlemen’s Association. “If you inject robots into the mix, then they wouldn’t have any interest in doing it anymore.”

Elephant ivory sales now illegal in US

BY DARRYL FEARS
THE WASHINGTON POST

A year after proposing a near-total ban on sales of products containing elephant ivory, the Obama administration made the rule final Thursday, ending a trade as old as the United States.

Selling ivory is now prohibited, with few exceptions, U.S. Fish and Wildlife Service Director Dan Ashe said Wednesday. Preexisting items manufactured with ivory such as musical instruments used in orchestras, furniture and items such as firearms containing fewer than 200 grams