

## Fossil reveals 'buck-toothed toucan' that lived with dinosaurs

The discovery of a creature described as resembling a "buck-toothed toucan" that lived some 68 million years ago has upended assumptions about diversity in the birds that lived alongside dinosaurs. At less than nine centimeters (3.5 inches) long, the delicate skull of the bird scientists have dubbed *Falcatakely forsterae* might be easily overlooked. In fact, it almost was, sitting in a backlog of excavated fossils for years before CT scanning suggested the specimen deserved more attention. It turns out that its tall, scythe-like beak, while resembling the toucan, is something never before seen in the fossil record. Birds in the Mesozoic era—between 250 million and 65 million years ago—had "relatively unspecialized snouts", Patrick O'Connor, lead author of a study on the new creature, told AFP.

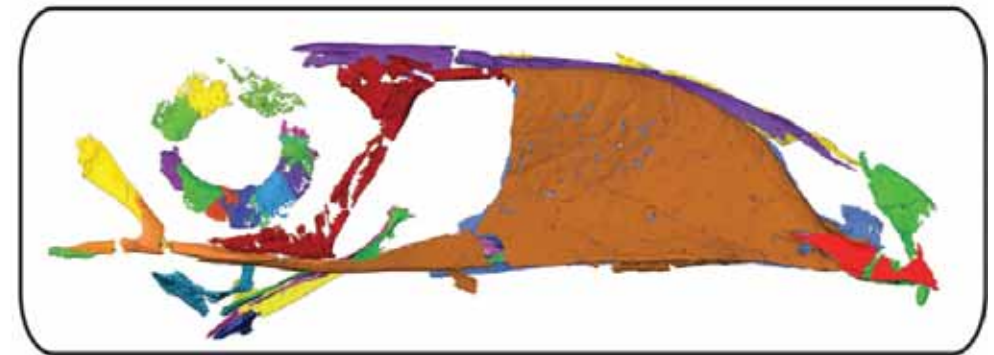
"*Falcatakely* just changed the game completely, documenting a long, high beak unlike anything known in the Mesozoic," added O'Connor, professor of anatomy and neuroscience at Ohio University. The skull, described in a study published Wednesday in the journal *Nature*, offered other surprises. While *Falcatakely* would have had a face quite familiar to us from such modern birds as toucans and hornbills, the bones that made up its face bear little resemblance to those modern creatures. "Despite an overall face shape similar to modern birds like toucans, the underlying skeleton is much more similar to non-avian theropod dinosaurs like *Deinonychus* and *Velociraptor*," O'Connor said. That "turns what we know

about Mesozoic bird anatomy upside-down."

### 'An almost comical profile'

Revealing these features was no easy task. The fossil was originally collected in 2010 in northwestern Madagascar. When researchers finally turned their attention to it seven years later, they faced a problem: the skull and beak were far too fragile to extract for examination. So the team used a form of high-resolution imaging and digital modeling to "virtually dissect" the bones. They then used 3D printers to rebuild the skull and compare it with other known species. What they found was an almost touchingly improbable animal, according to Daniel Field, of Cambridge University's department of earth sciences, who reviewed the study for *Nature*.

It is not just the unexpected bill, but the fact that the beak in the fossil is tipped with a single preserved tooth, possibly one of many the bird would have had. "These features give the skull of *Falcatakely* an almost comical profile—imagine a creature resembling a tiny, buck-toothed toucan," Field wrote. None of the approximately 200 bird species known from the period "has a skull resembling anything like *Falcatakely*," he added. For O'Connor, the discovery is evidence of the potentially enormous gaps that remain in our knowledge of the birds that lived alongside dinosaurs. "There is a span exceeding 50 million years where we know next to nothing about avian evolutionary history," he said.



This handout picture shows a photograph (up) and a scan produced by high-resolution micro-computed tomography ( $\mu$ CT) of the skull of a *Falcatakely* fossil, the latter technology used to help detect delicate bones that could not be extracted without damaging them. — AFP

Finding intact fossils of birds from the period is comparatively rare because their lightweight skeletons were generally too delicate to be well preserved. The research team, which has been working in the area of Madagascar where *Falcatakely* was found since the mid-1990s, is continuing excavations, and O'Connor is excited

about what else might be discovered. He also hopes to explore just why *Falcatakely* had the beak it did. "Did it relate to processing food? Acquiring prey? Was it used as a signal by other members of the species? There are many questions left," O'Connor said. — AFP

## Pakistan's lonely elephant Kaavan packs trunk for Cambodia

With music, treats and balloons, friends of Pakistan's only Asian elephant threw a farewell party for the creature ahead of its relocation to Cambodia following years of campaigning by animal rights activists. The plight of Kaavan, an overweight, 35-year-old bull elephant, has drawn international condemnation and highlighted the woeful state of Islamabad's zoo, where conditions are so bad that a judge in May ordered all the animals to be moved. Kaavan is set to be flown to a wildlife sanctuary in Cambodia on Sunday, said Saleem Shaikh, a spokesman for Pakistan's ministry of climate change, following months of veterinary care and a special training regime to habituate the elephant to a huge metal crate he will travel in.

But before flying out, the capital's animal lovers said goodbye, with performances from local bands who serenaded Kaavan ahead of the mammoth move. "We want to wish him a happy retirement," said Marion Lombard, the deputy mission leader for Four Paws International—an animal welfare group that has spearheaded the relocation effort. The Islamabad Zoo, where Kaavan has lived for decades since arriving from Sri Lanka, was decorated with balloons for the occasion and banners wishing the animal well. "We will miss you Kaavan," read one of the signs. Kaavan's plight was given a boost over the years by American pop icon Cher, who publicly campaigned for



A singer performs for Kaavan, Pakistan's only Asian elephant, during his farewell ceremony before travelling to a sanctuary in Cambodia later this month, at the Marghazar Zoo in Islamabad. — AFP photos

the elephant's relocation and called the decision to move him one of the "greatest moments" of her life.

Zoo officials have in the past denied Kaavan was kept in sub-standard conditions or chained, claiming instead the creature was pining for a new mate after his partner died in 2012. But Kaavan's behaviour—including signs of distress such as continual head-bobbing—raised concerns of mental illness. Activists also said Kaavan was not properly sheltered from Islamabad's searing summer temperatures, which can rise above 40 degrees Celsius (100 Fahrenheit). Kaavan's mate Saheli, who also arrived from Sri Lanka, died in 2012. — AFP



Musicians pose with Kaavan, Pakistan's only Asian elephant, during his farewell ceremony before travelling to a sanctuary in Cambodia later this month.



A wildlife caretaker feeds Kaavan, Pakistan's only Asian elephant.