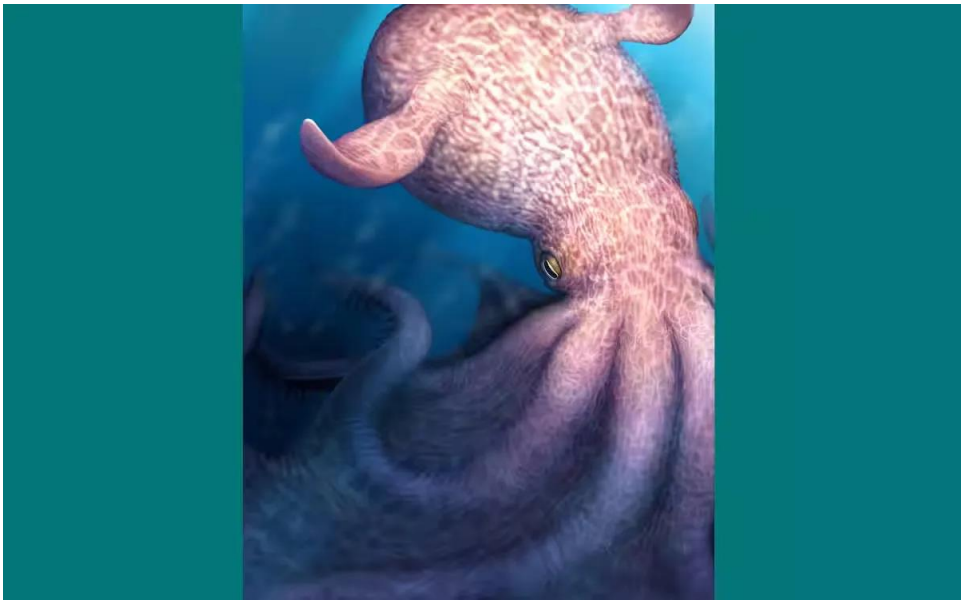
Giant Octopus May Have Ruled Cretaceous Oceans

海の生き物といえば、サメのような大きな魚を思い浮かべる人が多いかもしれません。ところが、はるか昔の海では、巨大なタコが食物連鎖の頂点にいた可能性があることが分かってきました。AIを使った化石の分析によって、これまでの常識が見直されつつあるようです。こうした発見は、私たちが昔の生き物や地球の歴史を知る手がかりになるのかもしれません。あなたは、何百万年も前の生き物を調べることにどのような意味があると思いますか。



1. Article

Read the following article aloud.

In the oceans of the Late Cretaceous, roughly 100 to 72 million years ago, a gigantic octopus may have occupied the very top of the food chain. Reaching up to 19 meters (62 feet) in length, the creature was identified through AI-based **analysis** by a team that included researchers from Hokkaido University. The findings were published on April 24 in the journal Science.

The discovery challenges a long-standing assumption in paleontology: that apex marine predators over the past 400 million years were always vertebrates.

Octopuses are invertebrates, so their soft bodies rarely fossilize. Their hard, beak-like jaws are an exception, and these can be preserved. Working with 27 **jaw** fossils from the Late Cretaceous, the research team developed two **techniques** to study them in detail.

Continued on next page.

Source: Giant Octopus May Have Ruled Cretaceous Oceans
Japan Forward

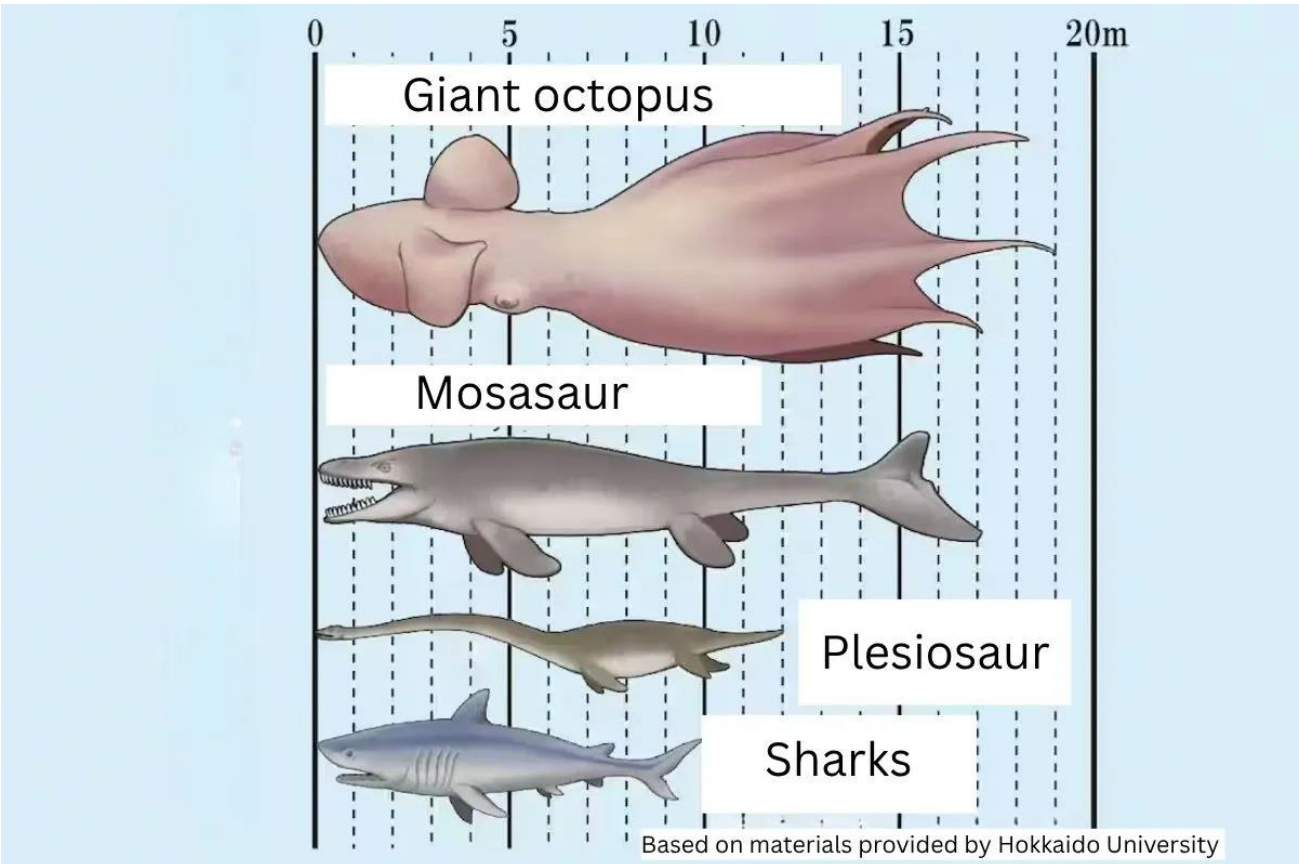
1. Article

They ground the fossils down layer by layer along with the surrounding rock, capturing thousands of cross-sectional images. The team also used a technique known as "digital fossil mining," in which AI reconstructs three-dimensional images from the data.

The largest jaw fossils measured about 10 centimeters (4 inches), and the full jaw likely reached around 15 centimeters when reconstructed—pointing to a ferocious carnivore capable of crushing hard-shelled or bony prey.

Estimates based on jaw size suggest earlier species ranged from 3 to 8 meters (around 10–26 feet) in length, while later species from around 86 million years ago may have reached 7 to 19 meters. That would put them on par with dominant predators of the era, including mosasaurs (up to 17 meters), plesiosaurs (up to 12 meters), and sharks (up to 10 meters).

Yasuhiro Iba, an associate professor of paleontology at Hokkaido University, said the findings mark a turning point for the field. "We are now able to see long spans of **evolution** and ancient ecosystems that we previously couldn't," he said. "Paleontology is entering a new phase."



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2. Key phrases and vocabulary

First repeat after your tutor and then read aloud by yourself.

1. analysis 分析
The bakery manager did a careful **analysis** of the sales data.

2. jaw 顎
Hiroaki's **jaw** hurt after he ate the very hard candy.

3. technique 技法
Annie learned a new painting **technique** in her art studio class.

4. estimate 推定
The clerk at the car shop gave me an **estimate** of the repair costs.

5. evolution 進化
Language shows slow **evolution** over many years.

3. Questions

Read the questions aloud and answer them.

1. **Describe the octopus: its size, the size of its jaw, and its strength.**
2. **What is important or special about the discovery of researchers at Hokkaido University?**
3. **What method was used to create 3D images?**
4. **Why is it important to study animals that lived millions of years ago?**
5. **Would you like to study ancient animals? Why or why not?**

4. 白亜紀後期の海では19メートルの巨大タコが食物連鎖の頂点に　化石をAI解析、常識覆す

今から約1億～7200万年前の白亜紀後期の海では、全長が最大19メートルにもなる巨大タコが食物連鎖の頂点にいたことが、北海道大などの研究チームによる人工知能（AI）での解析で分かった。4月24日付の米科学誌サイエンスで発表した。海の頂点捕食者は過去約4億年にわたり、背骨を持つ脊椎動物だったと考えられていたが、常識が覆された形だ。

背骨を持たない無脊椎動物のタコは、化石に残る骨がなく、太古の姿を探りにくい。一方、鳥のくちばし状の硬いあごは化石になる。そこで研究チームは、白亜紀後期のあご化石27点を解析した。高精度化のため、岩石ごと化石を薄く削りながら、断面画像を数千枚撮影。AIで化石の3次元像を作る「デジタル化石マイニング」も用いた。

その結果、タコのあごの化石は大きいもので約10センチで、復元するとあご全体は約15センチに達したことから、硬い殻や骨を持つ獲物をかみ砕く獰猛（どうもう）な肉食動物だった可能性が浮上した。あごの大きさから、古い種は全長3～8メートル、約8600万年前以降の新しい種は全長7～19メートルと推定。当時の海で頂点捕食者だったモササウルス（最大17メートル）やクビナガリュウ（同12メートル）、サメ（同10メートル）に匹敵する大きさだった。

同大の伊庭靖弘准教授（古生物学）は「これまで見えなかった長い時間の進化や大昔の生態が見えるようになり、古生物学は新展開を迎える」と話した。

出典：白亜紀後期の海では19メートルの巨大タコが食物連鎖の頂点に　化石をAI解析、常識覆す
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