

Video Transcript: How Do We Know What Dinosaurs and other Extinct Animals Ate?

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To understand what extinct animals, such as dinosaurs, ate, we can compare their tooth types to the range of tooth types that we see with modern animals such as these carnivorous and omnivorous animals.

When we look at this tiger skull, we can look at aspects of its dentition, or its teeth to understand what it ate. So, when we look at these pointed and sharp teeth, we can see teeth that are very well adapted for slicing, shearing and cutting flesh.

Unlike the tiger, when we look at this omnivorous animal, which is a horse, we can see that its teeth are arranged in a nice flat, grinding surface. So, when the top and lower teeth fit together, they actually grind up plant material.

When we look at fossils, like this one, which belongs to an Allosaur, we can see teeth that are conical and re-curved backwards with sharp points and serrated edges. These kinds of clues tell us that this animal was a meat eating animal.

This fossil is the jaw of a Hadrosaur. On this side, you can see many of its teeth. When we turn it around, you can see a long, flat grinding surface. By comparison, we can infer that this animal was also a plant eater, just like the horse. It showed us very similar kind of dentition. This animal also ate plants and other tough fibrous material.

There are other kinds of clues. This tooth, which belonged to a sauropod dinosaur, shows different kinds of wear along its tip and along the sides. When we look at this under a microscope, we can identify pits and scratches. By comparing these patterns with those that we see in modern animals, we can better understand what extinct animals ate.

Sometimes we have direct evidence. Here we have the fossilized gut contents of an animal called Strobodon, which is an extinct dog-like relative. When this fossil was originally found, these bones were found right beneath its rib cage. When we look at the bones in detail, we can tell they belong to an extinct deer-like animal.

Because these bones are broken and show evidence of having been crushed by sharp teeth, we can infer that this was Strobodon's last meal.

Unique fossils like this one give us rare and direct evidence about what an extinct animal ate. In this case, something much more common in the form of coprolites, which are fossilized poop. Although coprolites are relatively common, unfortunately we don't always know what extinct animal produced them. In this case, we can look at the size and shape of this coprolite, which is concentric and banded towards one side along with its surface texture, and we see small vertebrae that belonged to a fish. This provides us with direct evidence that this extinct animal ate fish. These clues tell us that the individual that produced this coprolite might have been a crocodile or a shark.

We rely on a lot of different lines of evidence that includes inference, comparisons with modern animals, and occasionally, direct forms of evidence to understand what extinct animals ate.