



Day 4: Flagstaff Festival of Science Junior Paleontologists My Favorite Weird Dinosaur

Mysteries of the Sickle-claw Dinosaur from Southern Utah

Welcome back, Junior Paleontologists! To find more about this program, read the first page of Day 1. The best way to participate is to download and print each day's activities, and use those sheets to find answers, draw or paint your ideas, or write a poem or story. We will call this your Junior Paleontologist Notebook or Journal.



Dr. Dave

Remember

- Dinosaur detectives: all answers are good ideas.
- Dinosaur artists: all art is good art.
- Dinosaur writers: all stories and poems are good stories and poems.
- You are welcome to ask questions and try out your ideas.

Keep everything you make in your Junior Paleontologist Journal. When the Museum of Northern Arizona opens to the public, take your Journal to the front desk, ask for an official MNA Junior Paleontologist badge, and go see the fossil displays.

At the end of today's activities, I will give you an email address where you can send questions, your answers, your art, or your stories and poems.

The Sickle-claw Dinosaur from Southern Utah

Our first dinosaur was *Coelophysis* from the Triassic Period. Our second was *Dilophosaurus* from the early part of the Jurassic Period. Our third was *Seismosaurus* from the late Jurassic Period. Today we will look at a dinosaur from the Cretaceous Period.

It is a very different dinosaur, with the very difficult name *Nothronychus*. Besides its strange name, this dinosaur might be the strangest, weirdest dinosaur in the world!

This is my favorite weird dinosaur because it is so strange, and because with a field crew I excavated it from southern Utah. This one is a little bigger than *Dilophosaurus* from Day 2, and much heavier. There is a complete skeleton on display at the Museum of Northern Arizona.

Let's have some fun with two very hard words: "*Nothronychus*" and "therizinosaur." This dinosaur's name is *Nothronychus*. Say it out loud: NO-throw-NIE-kus.

Practice that, say it three times in a row.

NO-throw-NIE-kus

NO-throw-NIE-kus

NO-throw-NIE-kus

This dinosaur has a family with other dinosaurs, all of them very weird. They are called the "therizinosaur" or THAIR-uh-ZINE-o-saur. The first part of the name sounds like the TH in "throw." Now say it three times in a row.

THAIR-uh-ZINE-o-saur

THAIR-uh-ZINE-o-saur

THAIR-uh-ZINE-o-saur

Now practice: say "*Nothronychus* is a therizinosaur" three times in a row. Congratulations, you are becoming a Junior Paleontologist

Secret: Grownups have a hard time with these two names. But I'm sure you can help them learn to say the names right away.

These dinosaurs are named for sickle claws from some relatives from Mongolia. They are called the "therizinosaurus."

What does *Nothronychus* mean? This dinosaur is named for claws on the front feet – the name means "slothful claw." The front feet both have three very sharp, curved claws, that look a lot like the claws of a tree sloth. The claws also look like a tool that farmers use called a "sickle" or a "scythe." This is a picture of a *scythe* that farmers use to cut grass or wheat, and a picture of a man cutting grass.



And here is a photograph of the claws on the front feet of the mounted skeleton at the Museum of Northern Arizona. The claws look like the claws on a house cat, but they are more than 10 times bigger, and just as sharp!



Dinosaur Detectives

Before we show the entire skeleton, try to imagine how *Nothronychus* used these claws.

Your ideas: _____

Hint: it is a mystery, and no one knows for sure!

Answer: The claws on *Nothronychus* are a mystery. They must have been used for gathering food, but even that is a mystery. Maybe they were used to gather leaves and stems from trees.

Did you come up with any ideas on how *Nothronychus* used those claws on the front feet? Here is a photograph of the skeleton from the front. From this angle it looks like the hands would reach out and grab you. But it doesn't look very fierce. Does this change your ideas on what the claws were for?

Have you ever seen a dinosaur that looks like this? Is it like *Coelophysis* or *Dilophosaurus*? Or is it like a long-neck (sauropod) or a *T. rex* or a *Triceratops*? In this standing posture the skeleton is 13 feet tall, that is taller than the ceiling in most homes.



This skeleton is on display in the lobby at the Museum of Northern Arizona.

Dinosaur Detectives

One of today's puzzles is to think about what this strange dinosaur ate. Look at the head and teeth. Can you even see the teeth? Can you see any teeth at all in the front of the mouth?

What do you think *Nothronychus* ate? Was it a meat eater? A plant eater?

Your answer: _____

Did you come up with answers? What did *Nothronychus* eat? Here are some more pictures that might help test your idea.



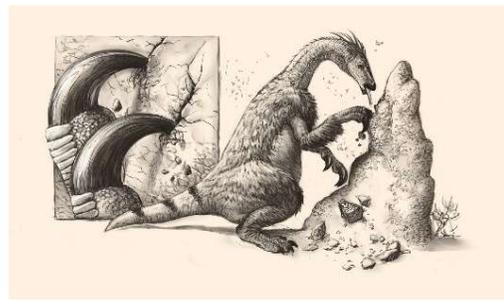
Some clues are the tiny teeth and small head and jaws. If you look closely, you see that *Nothronychus* has no teeth in the front of the upper jaws or lower jaws. And no big chompers like you would expect for a predator. The answer is still a puzzle. We think it must have been a plant eater, but what kind of plants? We don't really know.

Dinosaur Artists

Can you make a drawing of *Nothronychus* that shows how it used those claws and jaws for feeding? How did it gather food? How did it get the food to its mouth? Let's call this the CLAWS AND JAWS PUZZLE! Make your drawing here and be sure to put its name and your initials on the drawing. I would love to see your artwork!

Dinosaur Artists and Detectives: What is the answer to the JAWS AND CLAWS PUZZLE?

Answer: Did you think *Nothronychus* was a plant eater? Maybe and maybe not! Here are three paintings by artist Victor Leshyk that show what the head looked like and how *Nothronychus* might feed on leaves, or maybe even on ants and termites:



Dinosaur Detectives

The biggest puzzle of all: Which dinosaurs are its closest relatives? Look at the picture of the whole skeleton.



Can you see how big the rear legs are? And can you see how big the belly is? And how long the neck is? In Victor Leshyk's painting below you can see *Nothronychus*

swimming in the ocean. Can you see anything in this painting that might be a clue about its family?



Dinosaur Authors

Think about all the dinosaurs you already know. Write a story or poem in the space below about the dinosaur you think is a close relative of *Nothronychus*.

Dinosaur Artists

Draw a picture in the space below of the dinosaur that you think is a closest relative, like a cousin, to our *Nothronychus*. Be sure to put its name and your initials on the drawing.

Dinosaur Detectives, Artists, and Authors

Did you see anything in the painting that gave you a clue? Look carefully. Can you see the feathers???



This is one of the dinosaurs that is a relative of *Nothronychus*. Can you tell which dinosaur this is?



Yes! This is *T. rex*, with feathers! Meat-eating dinosaurs, called carnivores, all had feathers. These two drawings from the web show what *T. rex* looked like in life, with feathers. We know that *Nothronychus* had feathers too, because a small therizinosaur cousin from Asia has feather impressions in the rock attached to its skeleton. Surprise! *T. rex* and *Nothronychus* are also cousins.

Dinosaur Detectives: The answer to the question above about its family: The closest relatives of *Nothronychus* are the carnivorous dinosaurs like *Coelophysis*, *Dilophosaurus*, and *T. rex*. But, *Nothronychus* had one very big difference -- it was not a meat-eater, but instead ate plants.

Dinosaur Detectives and Dinosaur Artists

We have one more mystery: What is the bone that is V-shaped in the middle of the chest in this photograph of *Nothronychus*?



Detectives: What is this V-shaped bone?

Write your answer here: _____

Dinosaur Detectives and Artists

Can you think of another animal that has a bone like this? Make a drawing of that animal here and be sure to put its name on it.

Dinosaur Authors

Can you write a story or a poem in the space below about another animal that has a bone like this? Hint: think Thanksgiving!

Answer: That V-shaped bone is the wishbone, just like the wishbone in a Thanksgiving turkey. All birds have a wishbone.

Why is it important? Because it shows a direct connection to birds. Dinosaurs in the carnivore (meat-eater) category are the ancestors of birds.

Or, another way to say that is, "BIRDS are DINOSAURS."

Tomorrow: The BIG BROTHER to *Triceratops*!

You can send an email message to me at DavidDGillette2020@gmail.com. I would love to hear from you!