



Geological Society of Zimbabwe
Summer Symposium 2019



A new Late Triassic Fossil Vertebrate Assemblage from Zimbabwe

Key to the Understanding of the Origin of Dinosaurs

Chris Griffin as read by Tim Broderick
with

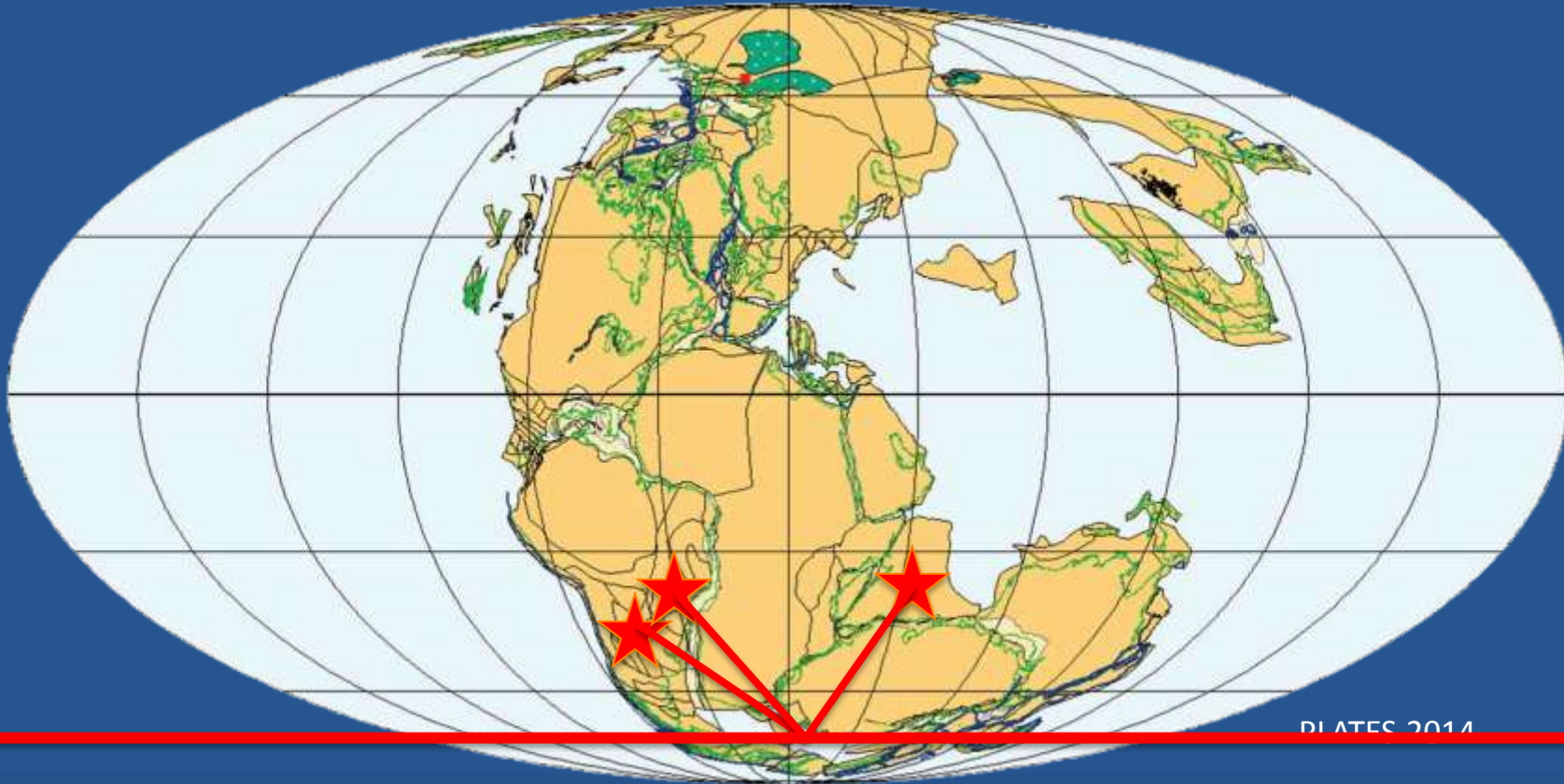
Darlington Munyikwa, Steve Tolan, Michel Zondo, Stirling Nesbitt,
Edward Mbambo, Hazel Taruvinga and Kudzai Madzana



The National Museums and
Monuments of Zimbabwe



The World of the First Dinosaurs (230 mya)





The First Dinosaurs



Rhynchosaurus

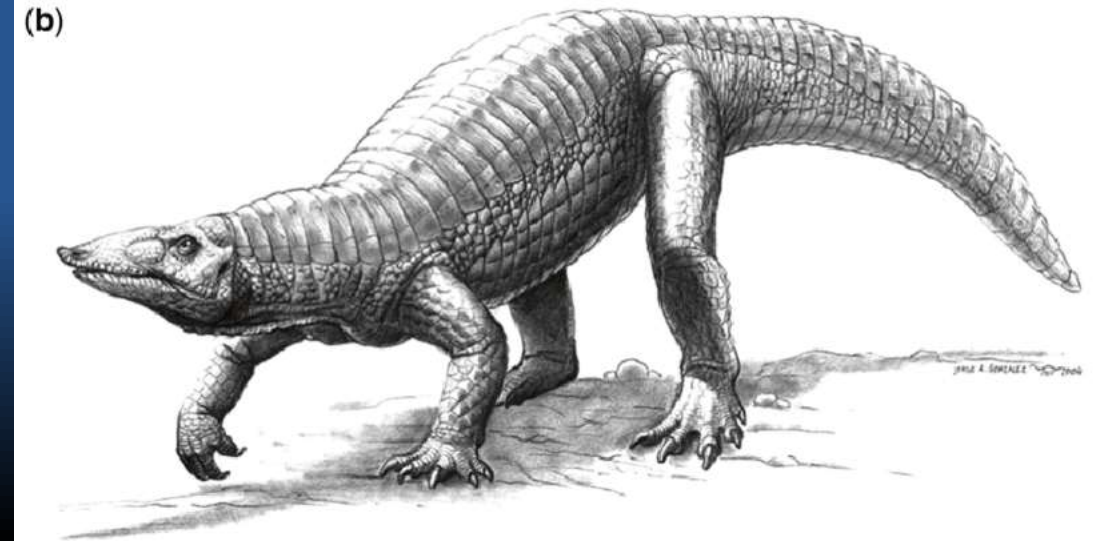
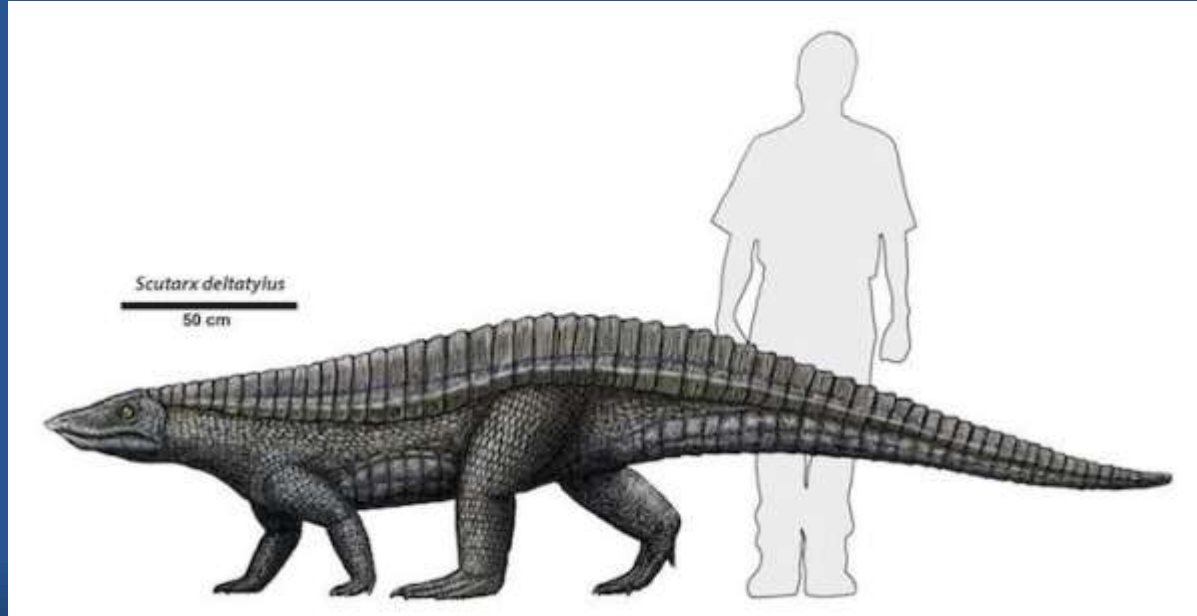


Cynodonts

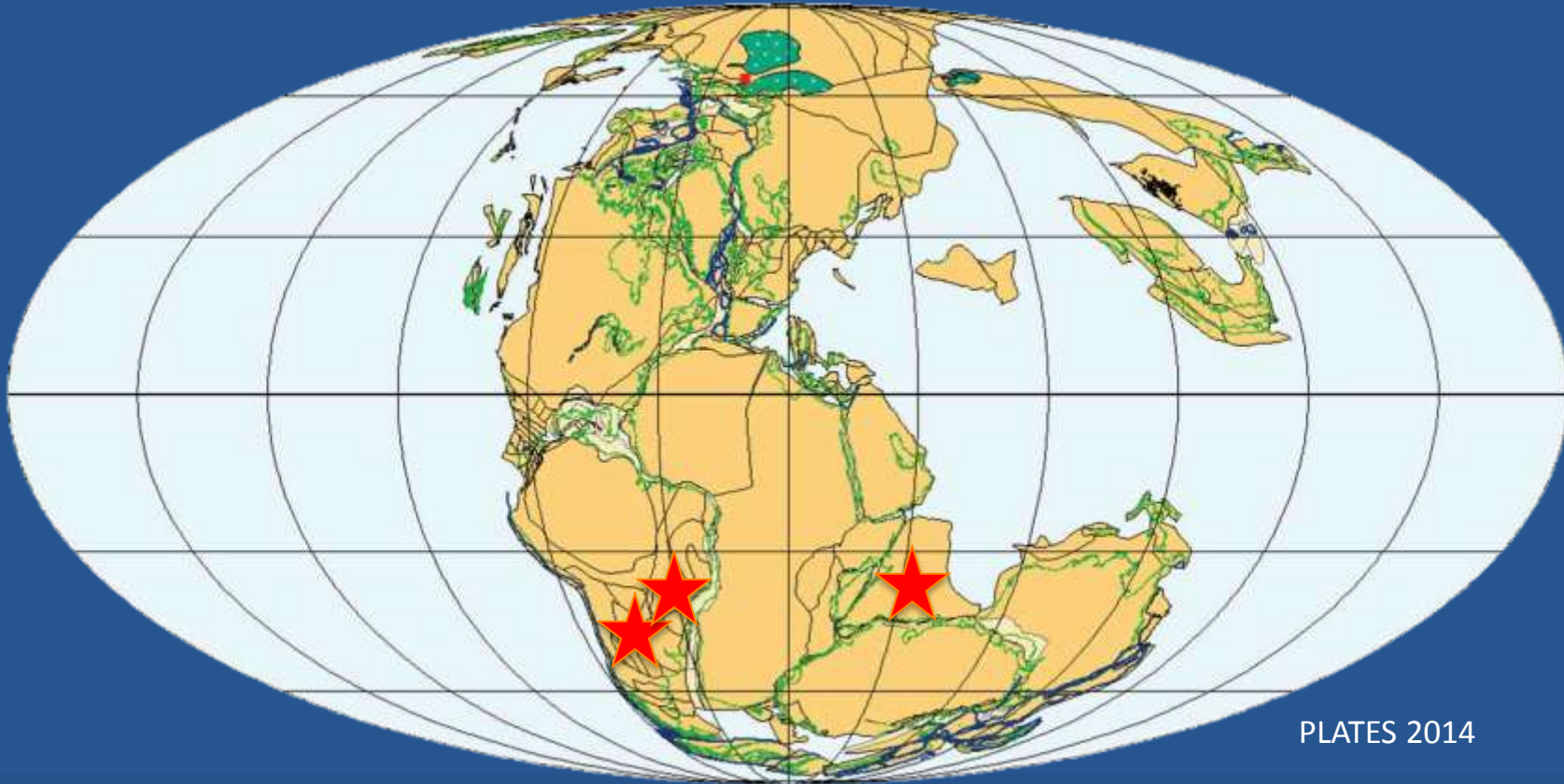




Aetosaurs



The World of the First Dinosaurs



Why are these animals only found in certain places?

The World of the First Dinosaurs



PLATES 2014

Climate bands follow
Whiteside et al. 2015

**FIRST RECORD OF TRIASSIC RHYNCHOSAURIA (REPTILIA: DIAPSIDA) FROM THE LOWER
ZAMBEZI VALLEY, ZIMBABWE**

by

M. A. B. ... P. M. O. ... L. W. K. ...

1992

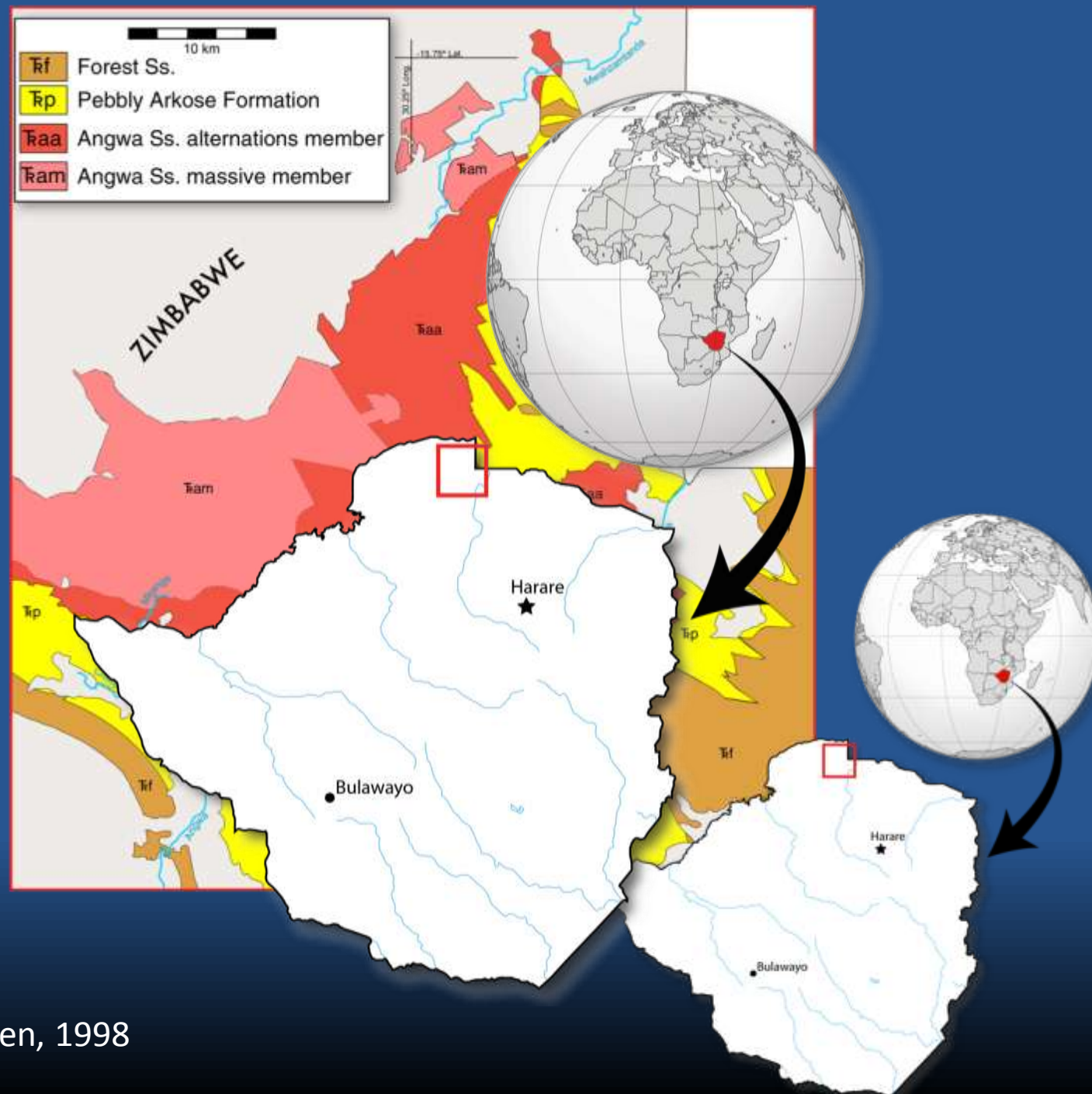
Were the earliest dinosaurs
prevented from spreading
throughout the world by these
climate bands?

1 cm

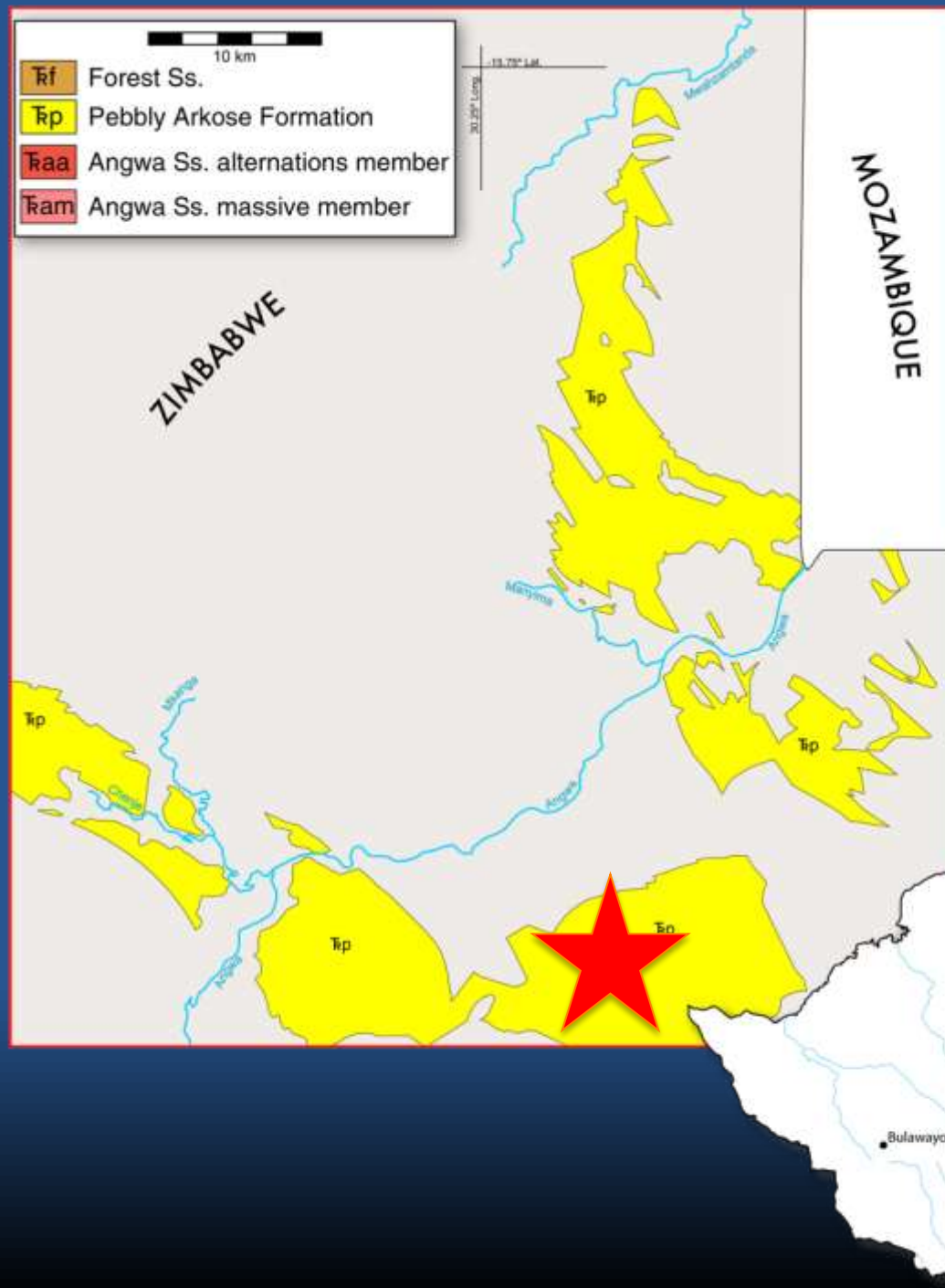
1 cm

Rhynchosaurs

Dinosaur?

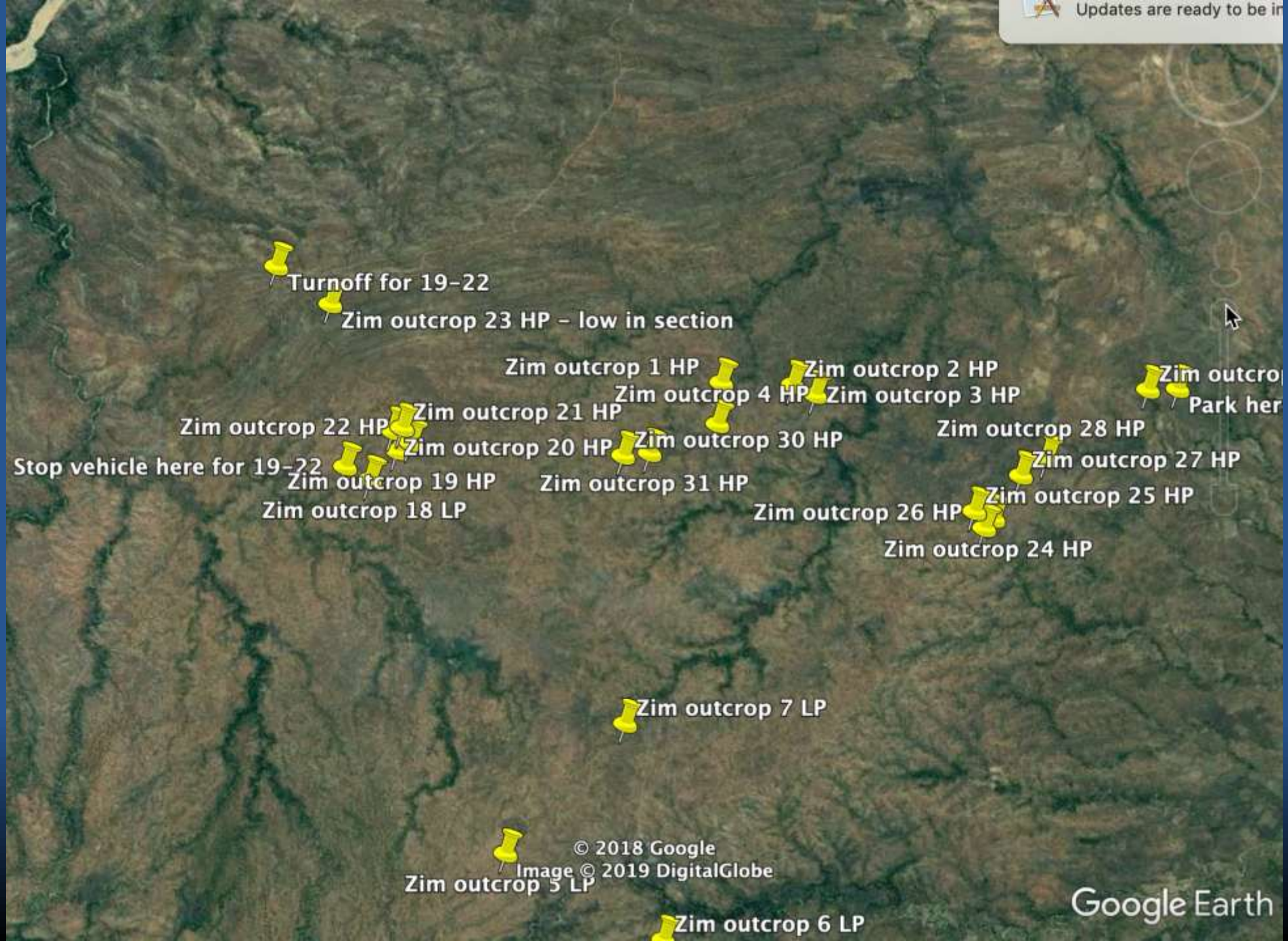


Geology after Oesterlen, 1998



The Pebbly Arkose Formation West of Mashumbi Pools





A New Animal Community from the Dawn of the Dinos!

- Collected over **1000 bones** within $\sim 0.5 \text{ km}^2$
- Mostly collected **surface**, only $\sim 1.5 \text{ m}^2$ actually excavated in 2017





Rhynchosaur

- Restricted to the time of the earliest dinosaurs
- Probably **new species** (based on teeth)





Rhynchosaur

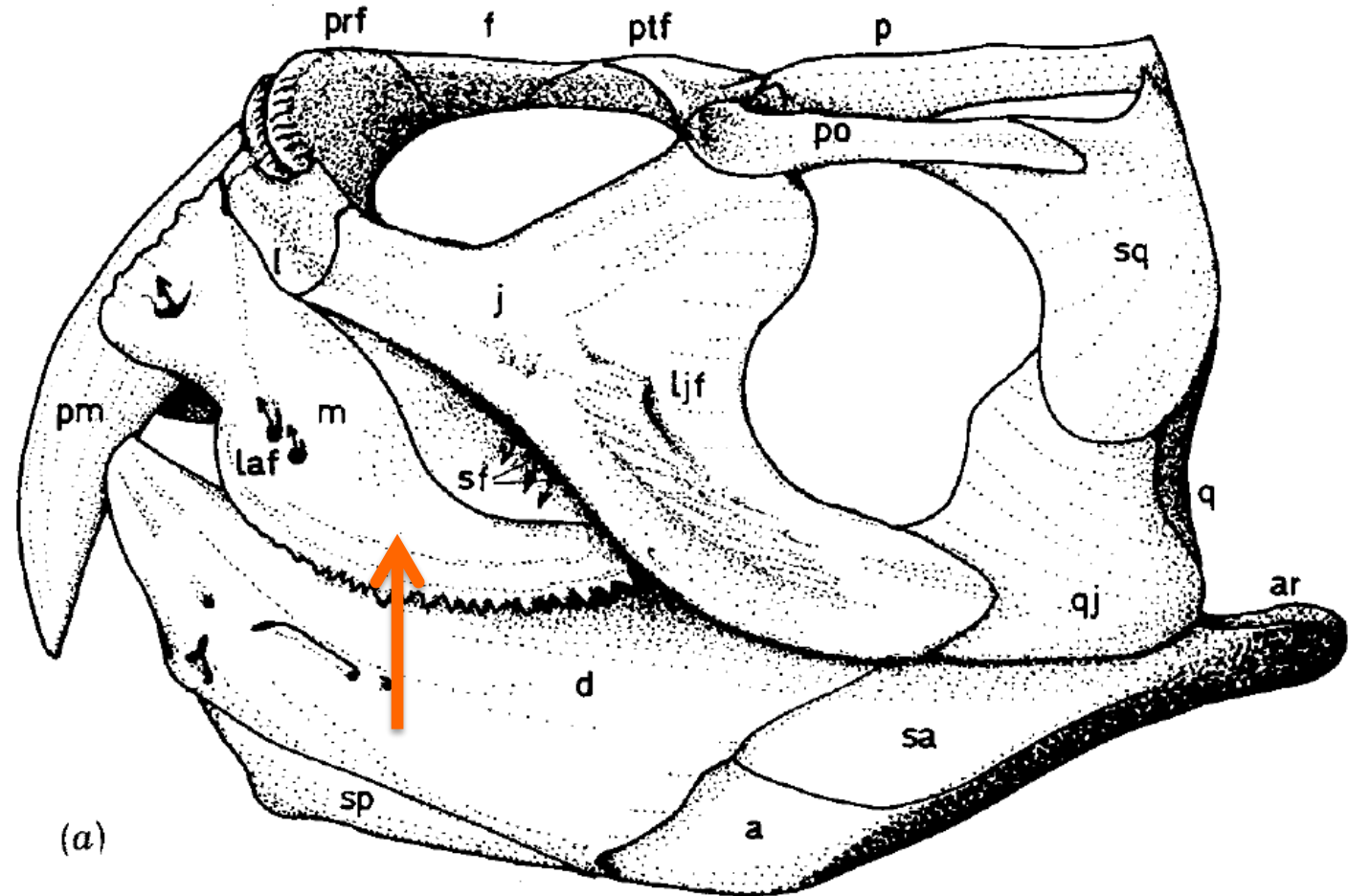
- Restricted to the time of the earliest dinosaurs
- Probably new species (based on teeth)



1 cm



Rhychosaur





Cynodont



1 cm

?Aetosaur



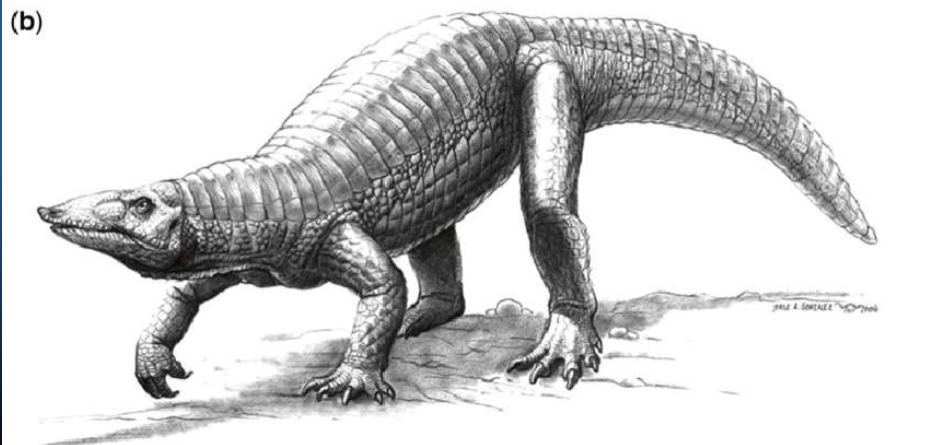
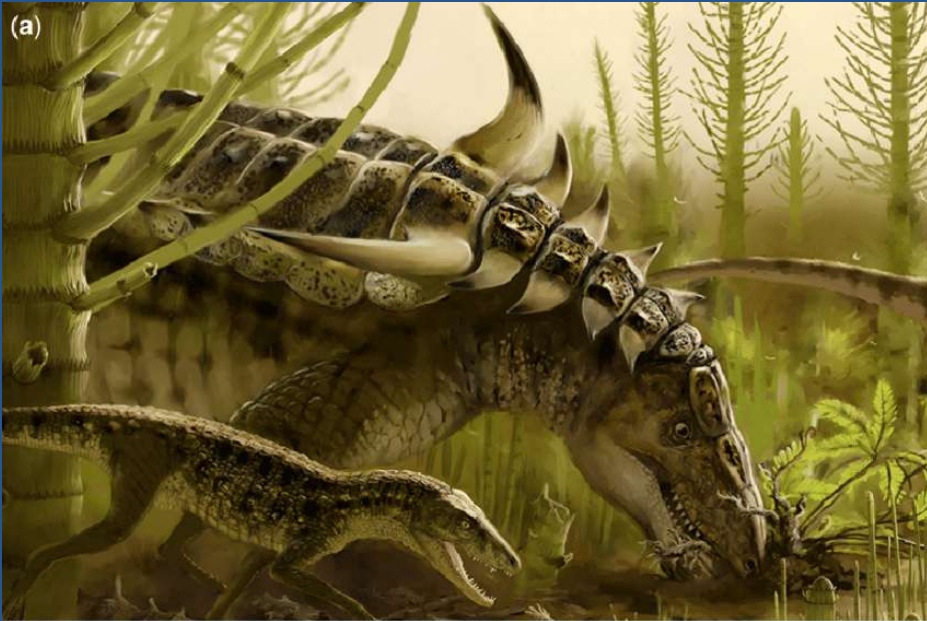
1 cm



1 cm

Brazilian aetosaur

Aetosaur! – 2019 excavation



2017
Expedition





Africa's Oldest Dinosaur!





Africa's Oldest Dinosaur!

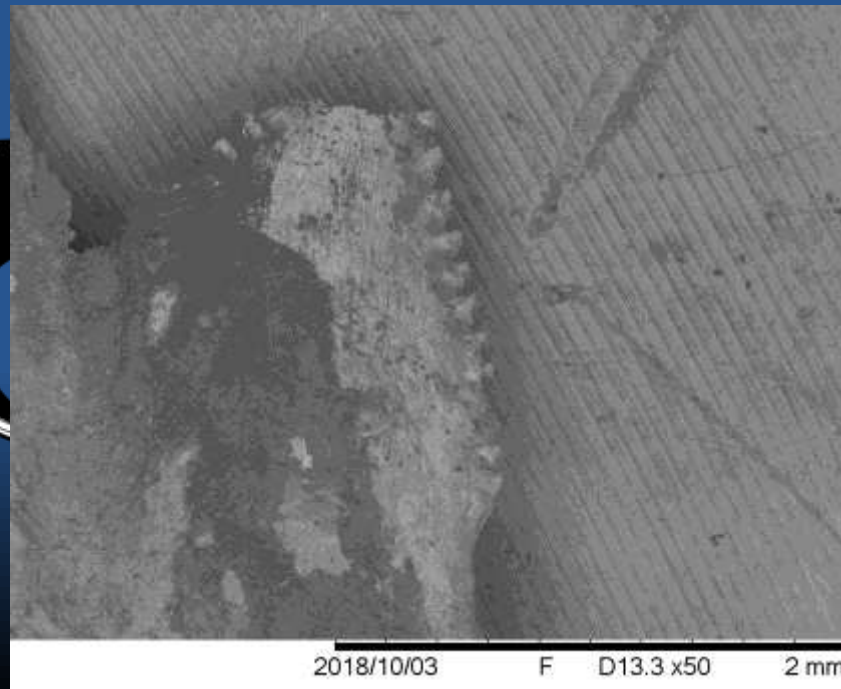


Artist: Andrey Atuchin, 2019



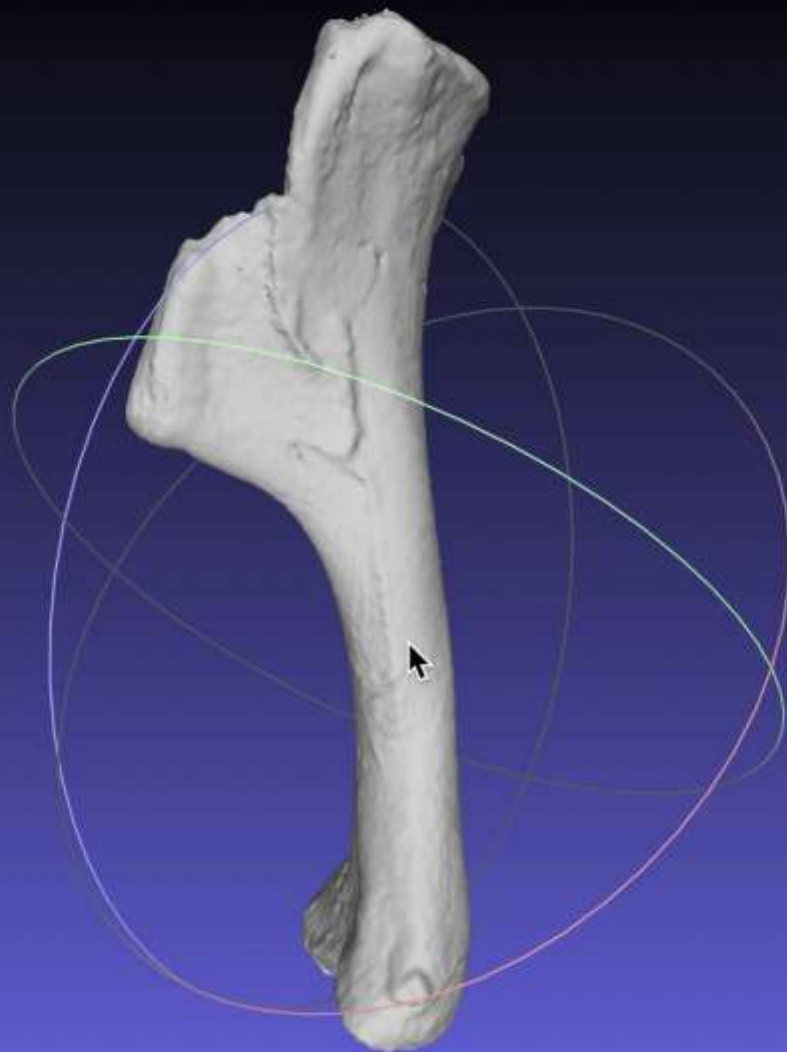
How do v

A 'Hatchet-shaped' **muscle scar** is a classic sauropodomorph characteristic



Dorsal surface of **tip of lower dentary** is ventrally declined

1 cm



FOV: 60
FPS: 84.0
BO_RENDERING

Mesh: Zim sauropodomorph_left humerus.ply
Vertices: 91,214
Faces: 182,412
Selection: v: 0 f: 0
VC FC WT

Just this year—a theropod dinosaur!



Just this year—a theropod dinosaur!



Herrerasauridae?
Fibular

Just this year—a theropod dinosaur!



Comparison between the head of our fibular with that of the VT mounted Alosaurus



It's huge—roughly 2m at the hip, 600kg

The World of the First Dinosaurs

Humid

Arid

Humid

Arid

Humid



Climate bands follow
Whiteside et al. 2015

PLATES 2014



The World of the First Dinosaurs

Humid

Arid

Humid

Arid

Humid



Climate bands follow
Whiteside et al. 2015

PLATES 2014

20 million years later...



The Field Teams

2017

A credit to
Mike Raath



Obverse: R25 (1oz. Ag 999)



Reverse: R25 (1oz. Ag 999)

2019



Acknowledgments

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