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The Ntumbe Dinosaur Tracksite, Chewore Safari Area, Zimbabwe: A place for new discoveries

by

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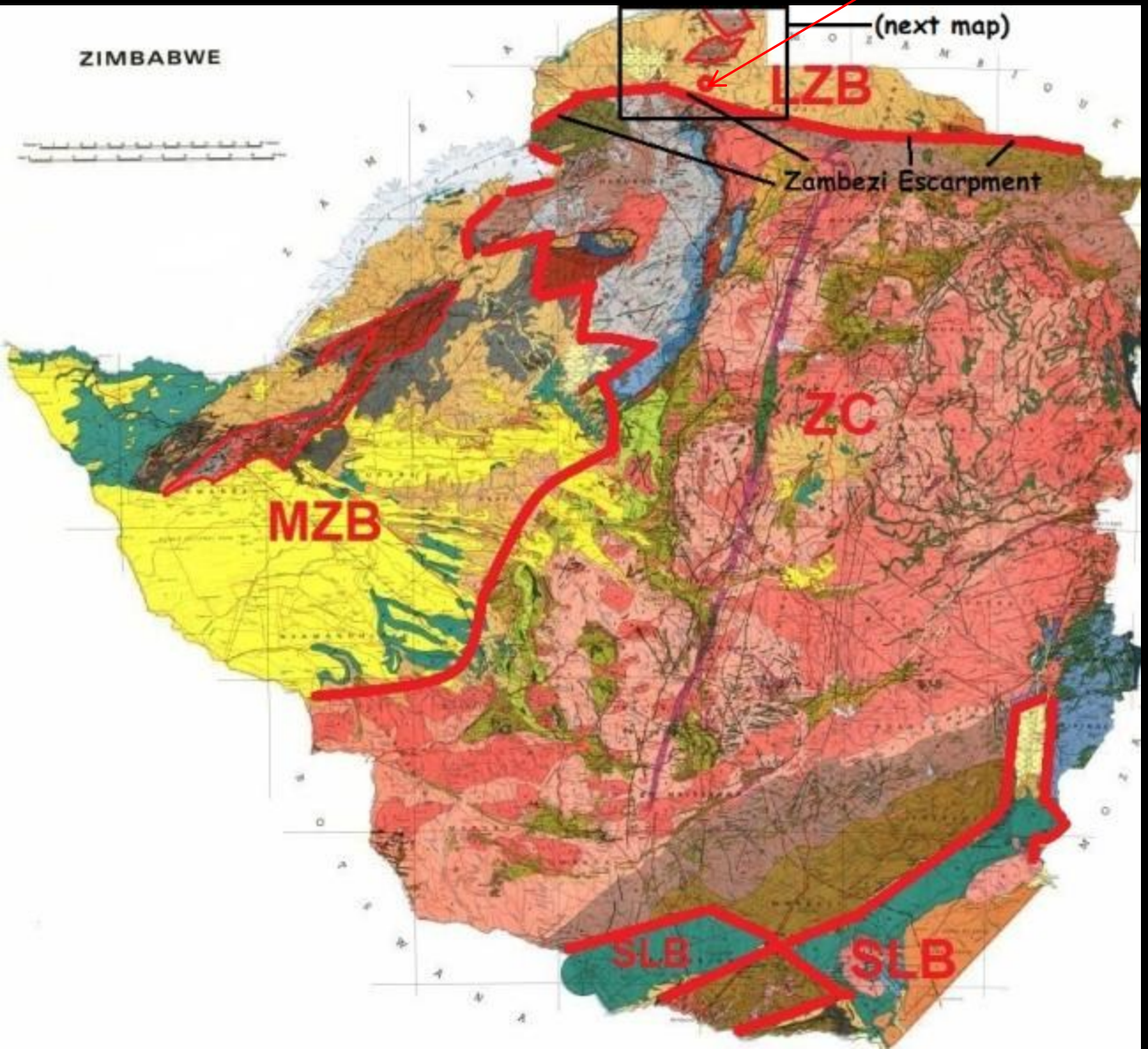
As read by Dr. Lara Sciscio, October 2017

Location in Zimbabwe



Location of the Chewore Dinosaur Tracksite in the central part of the Lower Zambezi Karoo Basin of Northern Zimbabwe

LZB = Lower Zambezi Karoo Basin

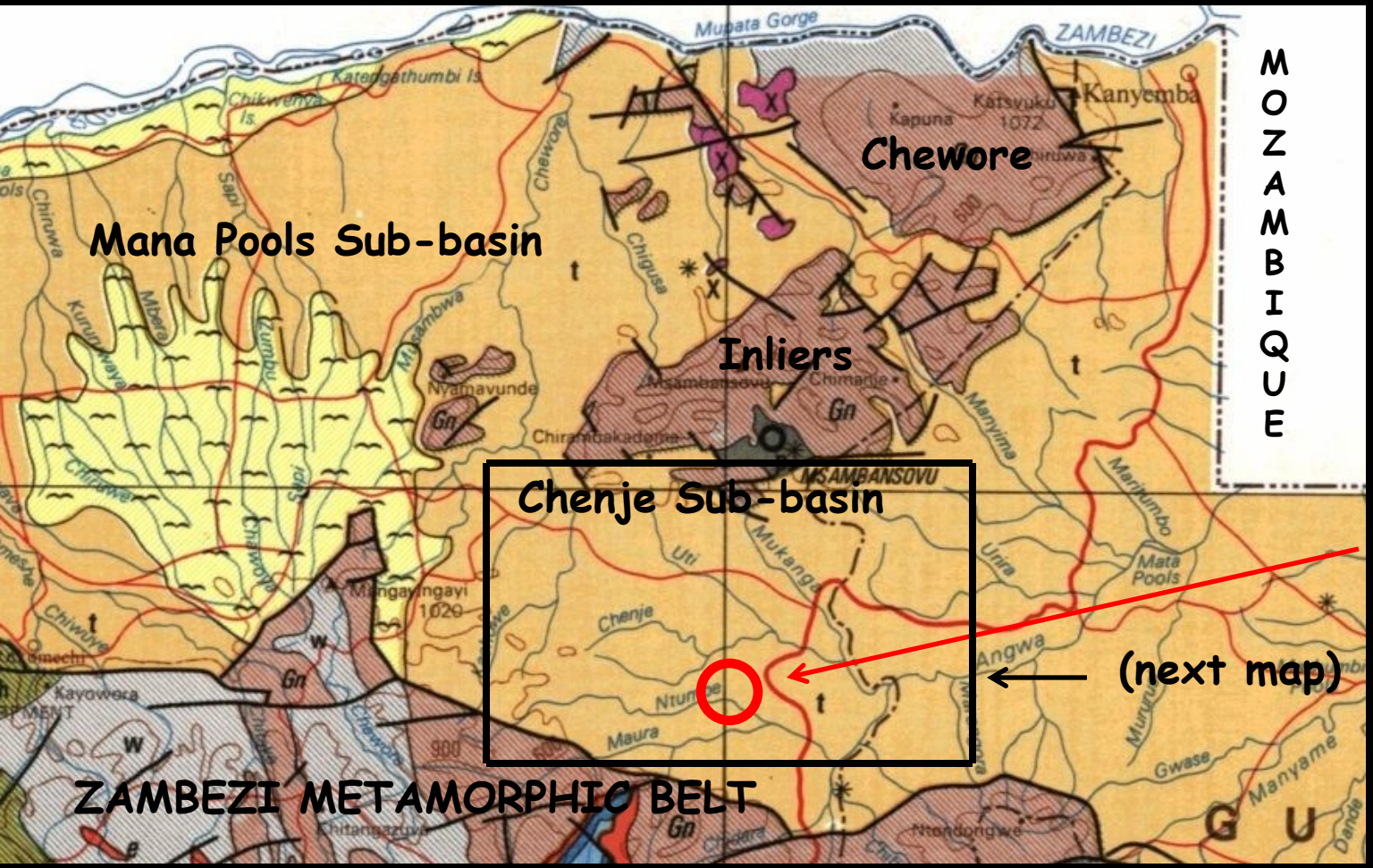
MZB = Mid-Zambezi Karoo Basin

SLB = Sabi-Limpopo Karoo Basin

ZC = Zimbabwean Craton

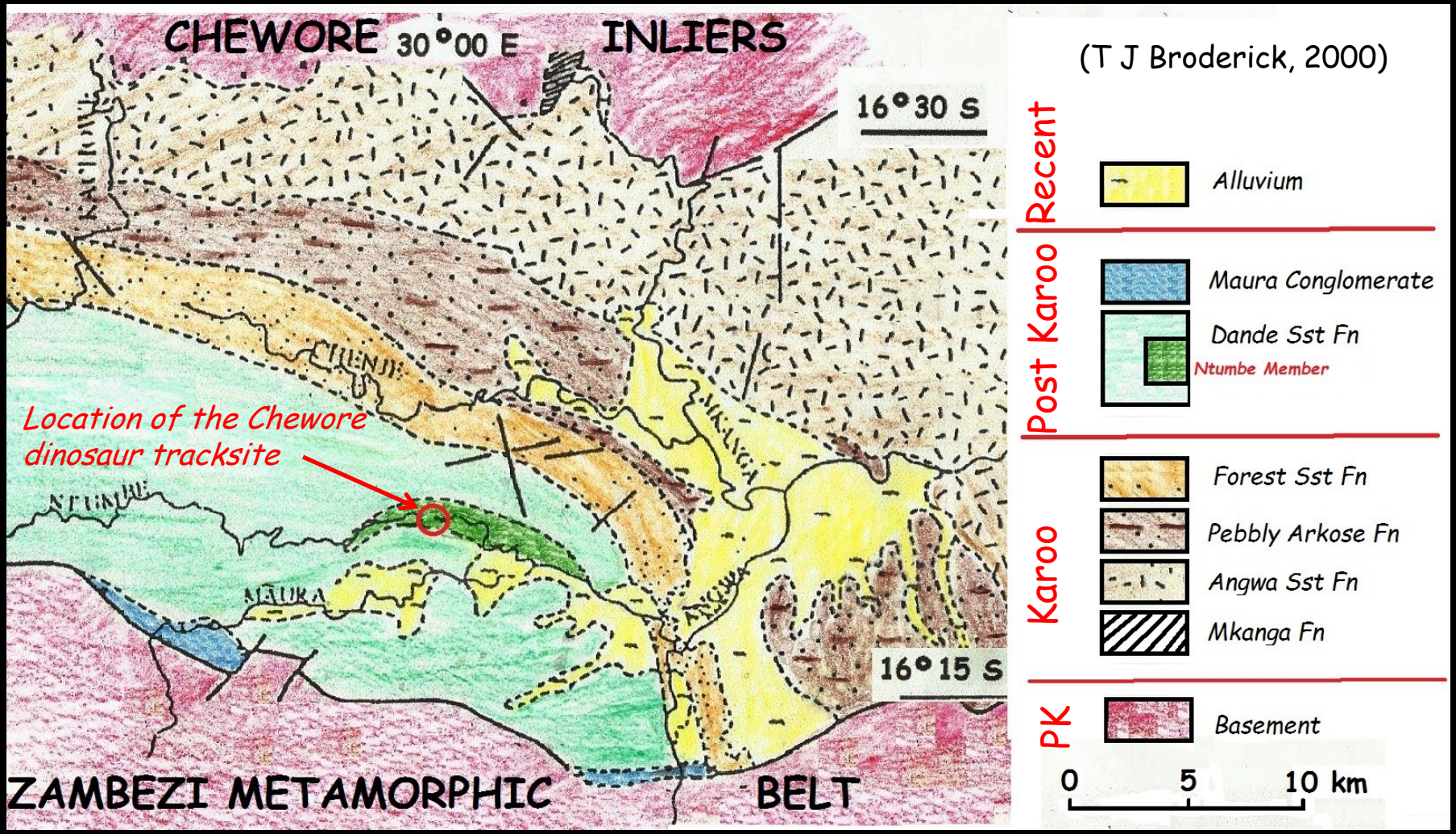
Location in the Lower Zambezi Karoo Basin :

In the Chenje Sub-basin of the Lower Zambezi Basin, between the Zambezi Metamorphic Belt and its escarpment and the Precambrian Basement of the Chewore Inliers.



Location of the Chewore dinosaur tracksite

Local Geology

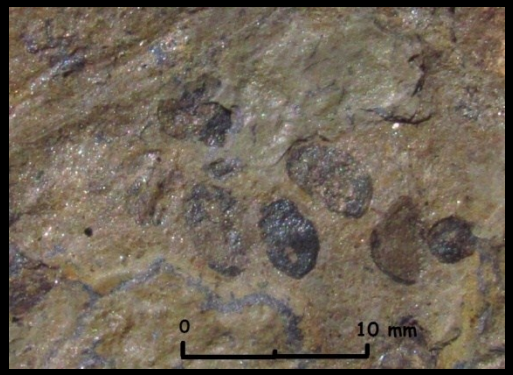


The dinosaur tracksite is found within the "Ntumbe Beds" of the post-Karoo Dande Sandstone Formation. They dip gently to the SSW. The age of the "Ntumbe Beds " is thought to be Mid- to Late Jurassic.

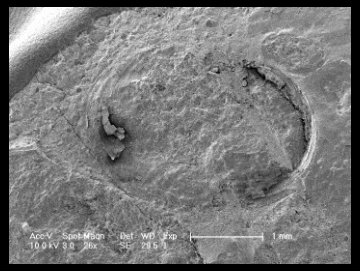
The "Ntumbe Beds"

The "Ntumbe Beds" are interpreted as a distal alluvial fan facies, reflecting the presence of seasonal meandering rivers and over bank wetlands. They comprise cross-laminated fine- to medium-grained sandstones preserving ripple-marks and desiccation cracks intercalated with green mudstone layers that contain freshwater conchostracans, and a flood sequence entombing the bones and scales of Lepidote fish.

Sandstone and mudstone interbeds showing rippled surfaces and sandy infill to desiccation cracks. Matt Carrano (Smithsonian) and Eric Roberts (James Cook University) in attendance.



Freshwater conchostracans

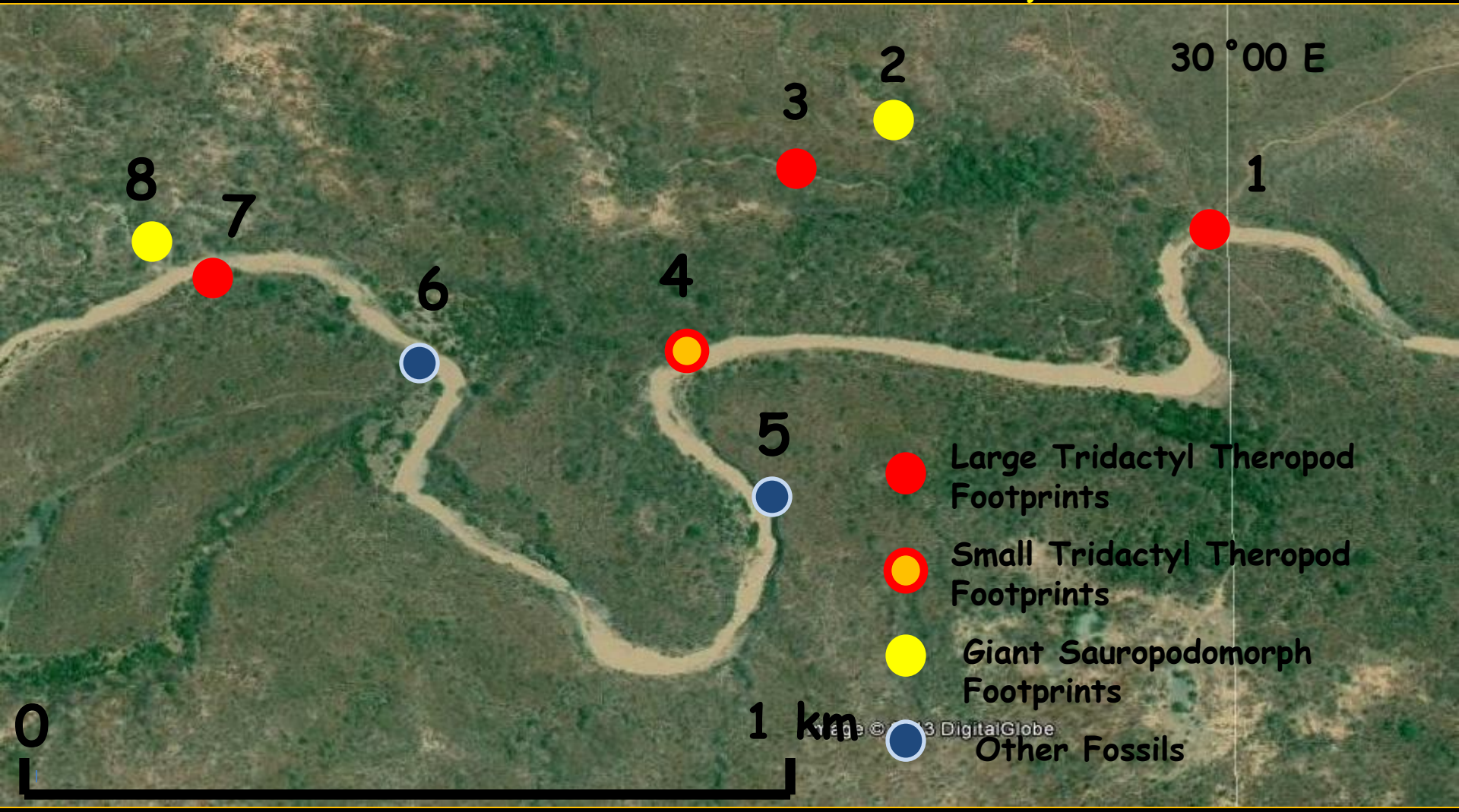


Electron Microscope detail

Lepidote fish scales

Fish bones

The 6 main Ntumbe River Footprint Sites

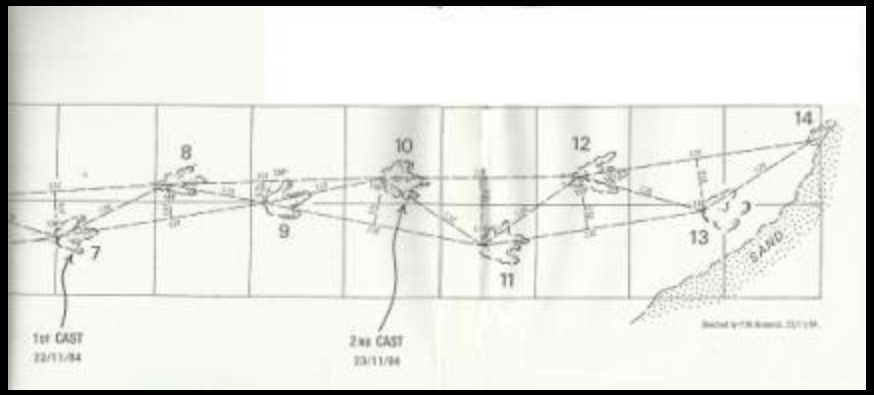


All main sites are located in an area of 1,5 x 0.5 kms. Some other sites with less than 4 prints are not shown here.

Tridactyl theropod footprints: Site 1

- The first bipedal theropod track was found in 1984 and surveyed by T.J. Broderick (in picture) in November. He described a 15 m-long succession of 14 footprints across a south-dipping sandstone pavement.

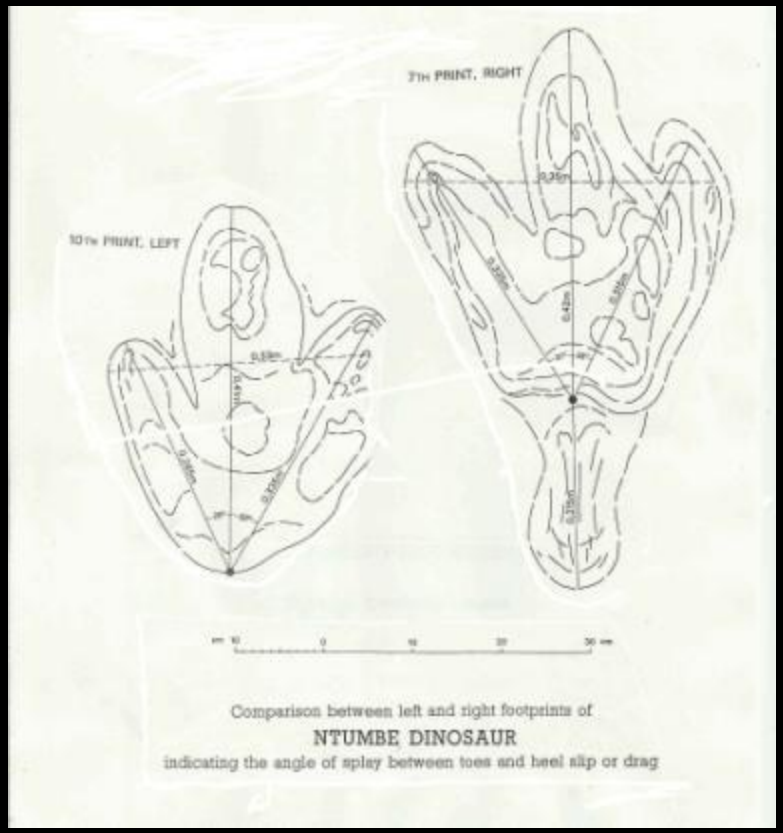
Site 1



The average width of the trackway is 0.47 metres.

The pace varies from 1.1 to 1.32 metres.

The stride is 2.11 to 2.45 metres



Prints on average are 40cm long from heel to toe, 33cm wide from toe to toe and 2cm deep.

They clearly show 3 forward protruding toes, which were clawed.

Many prints show evidence of either heel drag or slip, which averages 0.21 metres in length.

(T J Broderick, 1985. Technical Report, Geological Survey of Zimbabwe)

Site 1 – Operation Raleigh, 1990

- The site was excavated and 31 new prints were recorded from beneath the left alluvial bank and riverbed sand. The trackway was then visible over a length of 48m. Casts of rubber latex with glass fibre backing were made for the Zimbabwe Natural History Museum in Bulawayo.

Tridactyl theropod footprints : Site 3

- This site was found in 2000 or 2001 by National Parks Scouts.
- It extends over 150m on a 3 to 8 m-wide exposed pavement in a tributary stream. Eighty-seven prints, very similar in shape and size to those of site 1, lie in 4 successive locations and at the top of three separate fine-grained sandstone layers.

Site 3

The site was surveyed in 2001 by Dr. A. Ait-Kaci (left). Several trackways can be discerned with a general northerly travel direction (on the right, T J Broderick)

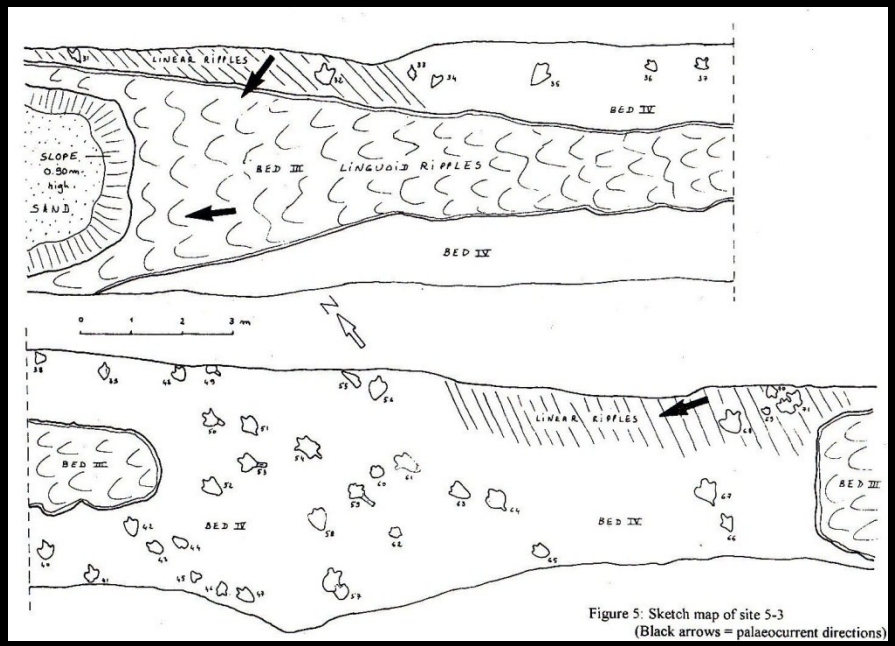


Figure 5: Sketch map of site 5-3
(Black arrows = palaeocurrent directions)

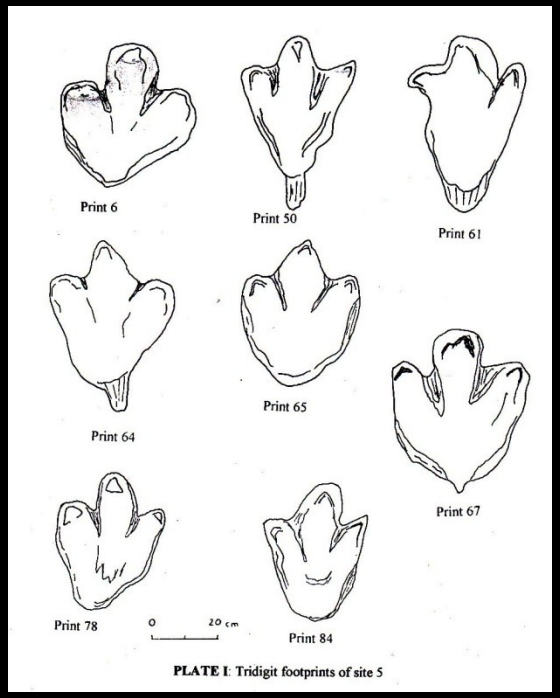


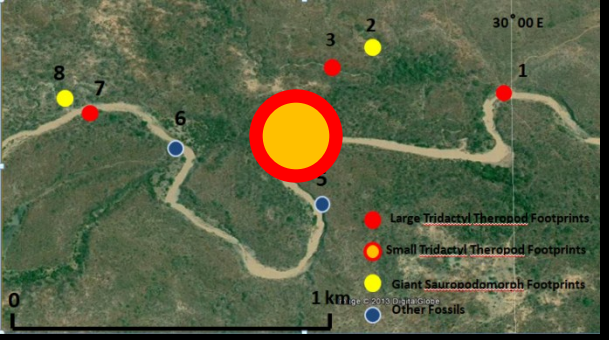
PLATE I: Tridigit footprints of site 5

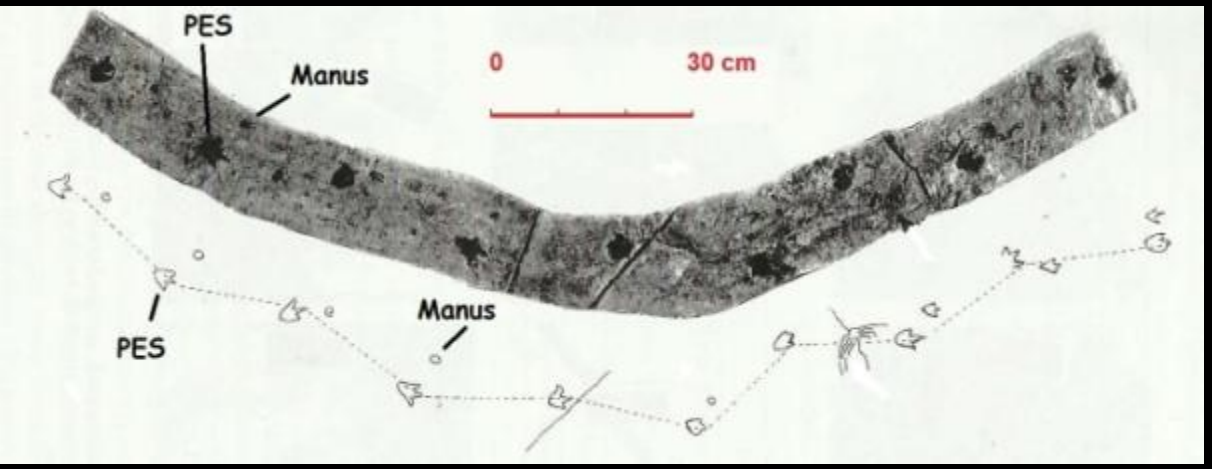
(Dr A. Ait-Kaci, 2002. Technical Report, Geological Survey of Zimbabwe)

Tridactyl theropod footprints : Site 7

Site 7 is located upstream on the right bank of the Ntumbe River and is very similar to Site 1. A thick sandstone pavement bears a dozen tridactyl theropod footprints forming a straight trackway, about 15 m-long. Near its termination, a rounded print (top right picture) could have been made by a Sauropodomorph dinosaur.

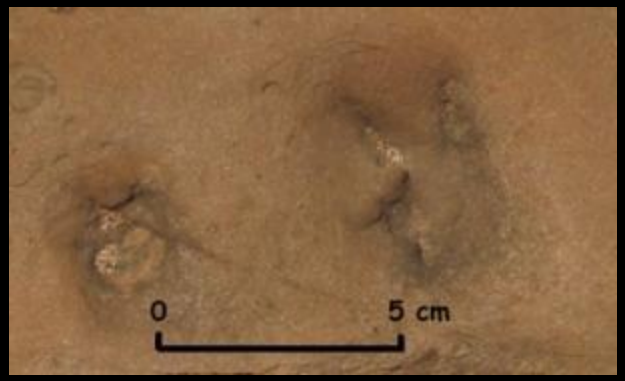
Very small tridactyl theropod footprints : Site 4

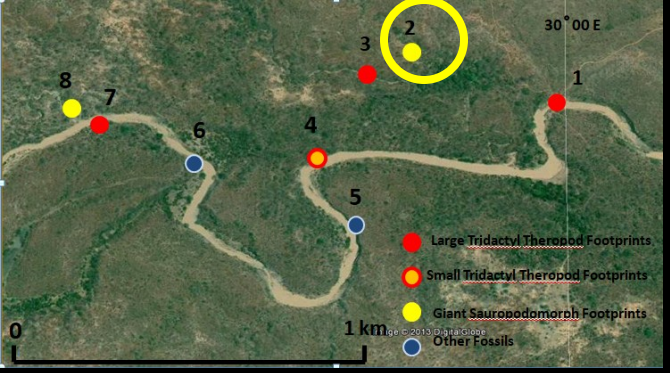




Cast of trackway showing pes and manus imprints

Site 4 is preserved on a single block of sandstone. A number of small tridactyl theropod footprints, less than 5cm in length, may reflect a nursery site (Lingham-Soliar and Broderick, 2000).



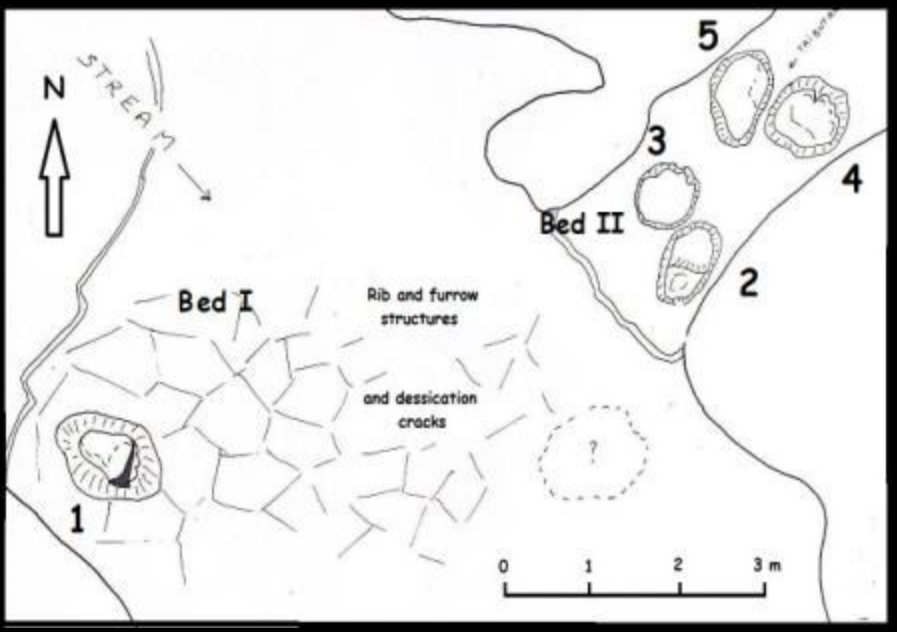


Sauropodomorph dinosaur footprints : Site 2

Print 1 of Site 2

In 2001, during his survey, A. Ait-Kaci discovered (on site 2) the first sauropodomorph dinosaur footprints in sub-Saharan Africa . A fairly well preserved footprint was 94cm in length including a 30 cm-long heel-drag. The maximum width was 56cm across and the depth was 20cm at the front. This showed the impression of 3 or 4 short toes, each less than 10cm in length. A raised ridge of fine-grained sandstone, 20 to 35 cm-wide and 5 to 15cm above the pavement surrounded the print. The ridge bulged forwards.

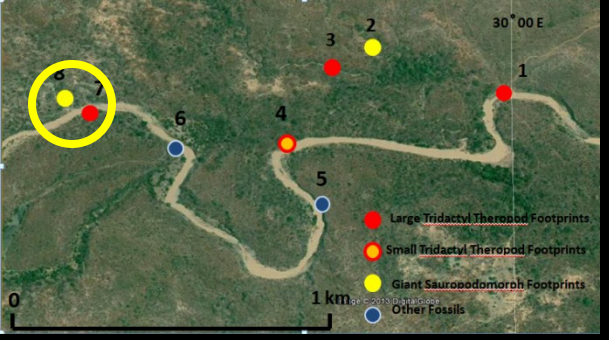
SITE 2



A few metres away to the NE, four other prints (2, 3, 4 and 5) are impressed on a slightly higher bed.

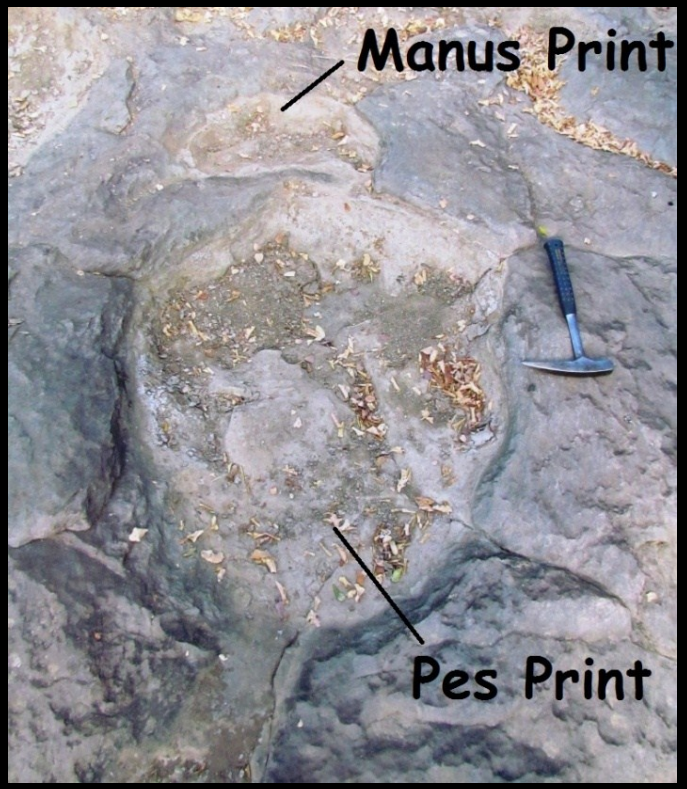
Print 3 of site 2

In 2003, Print 1 was unfortunately destroyed by elephants as the location is the site of a spring.



Sauropodomorph dinosaur footprints : Site 8

New sauropodomorph dinosaur footprints were found at site 8 by Mrs P. Broderick in 2007.
Site 8 comprises more than 6 large rounded Sauropodomorph pes prints, 80 to 95cm across with corresponding crescent-shaped manus impressions being clearly visible.



The remoteness of Chewore holds a brooding attraction in an area where new discoveries are commonplace, the proliferation of which has led to the Ntumbe Tracksite becoming a World-Class ichnological destination protected in a National Park setting.

Photo: Lucy Broderick