



You Are Where You Live: Using the size of conodont dental tools to shed light on environmental conditions and community complexity

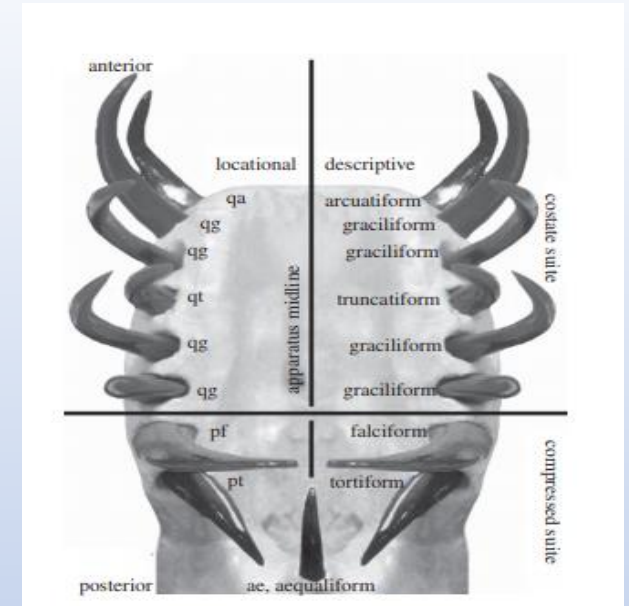
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Introduction

- One of the most versatile tools in a palaeontologists' "tool-kit" is body size analysis, which can be used to characterise and quantify a wide range of ecological and physiological traits.
- Body size analysis becomes essential when studying extinct organisms where few other clues to their ecology are available.
- An extreme example of such organisms are conodonts, which are hypothesised to be among the first predators. Here, changes are tracked through the Silurian Period using coniform conodont elements as a proxy for body size.



Murdock et al, 2013

Jump to:

Samples



Methods



Results

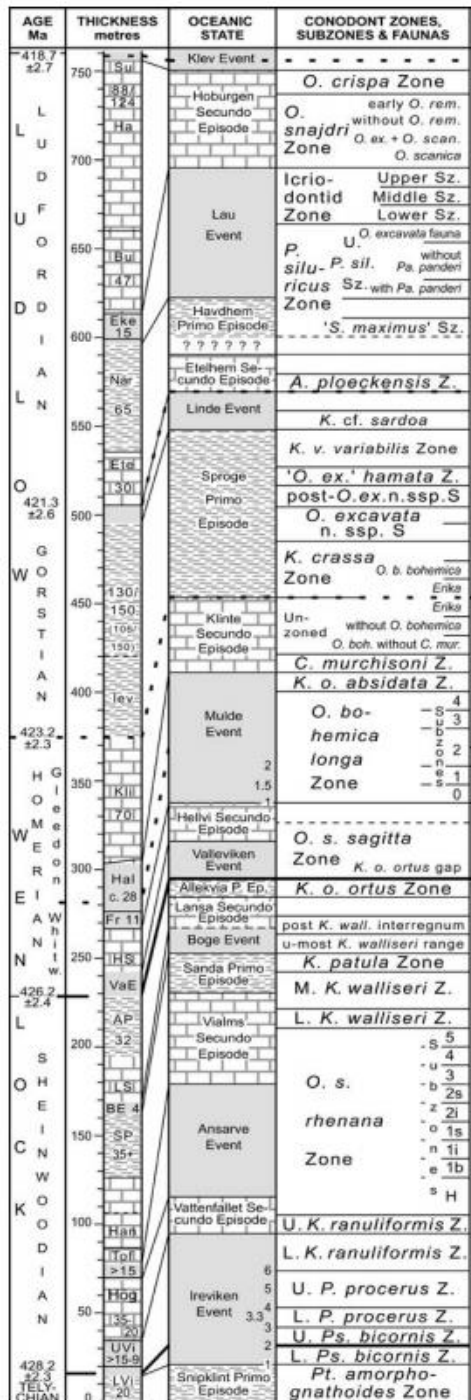


Conclusion



Samples

- All samples were collected in Gotland
- 14 Samples
- Between 428-418 mya
- 666 Elements
- For the analysis the samples were split into bathymetries, either deep or shallow



8: G14-18-OB1

7: EJ-16-11

6: EJ-16-6

5: EJ-15-407

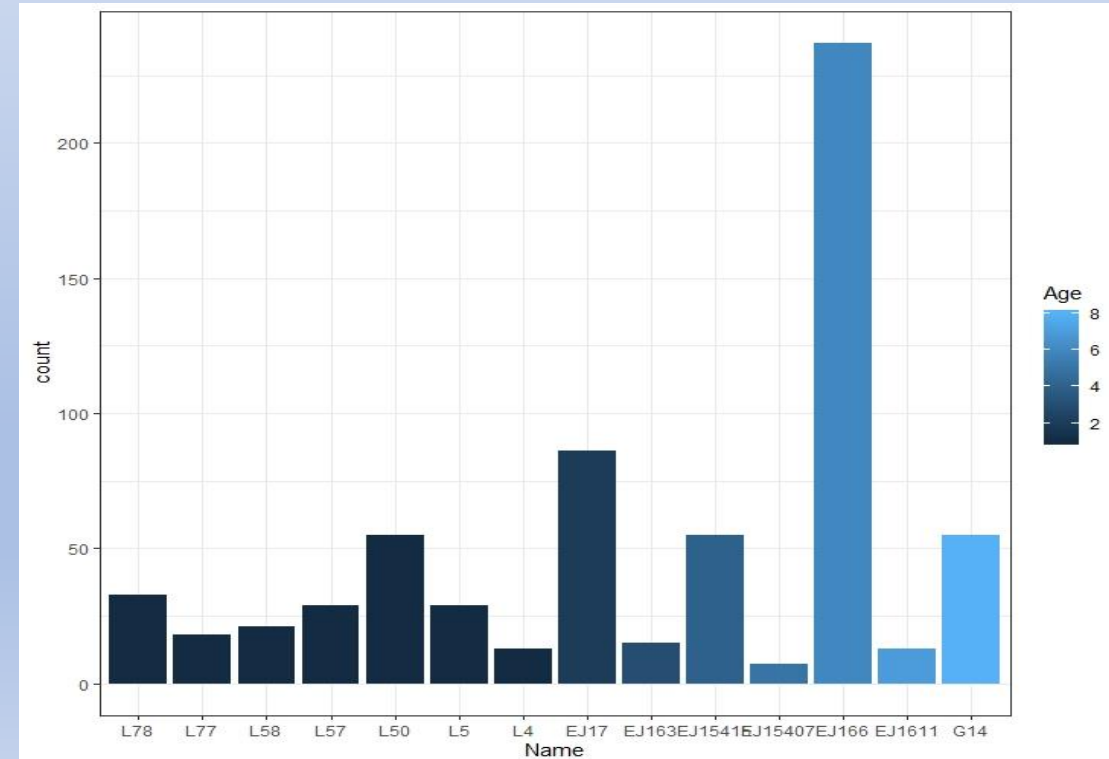
4: EJ-15-415

3: EJ-16-3

2: EJ-17-101

1: L4, L5, L50, L57, L58, L77, L78

Jeppsson et al. 2006



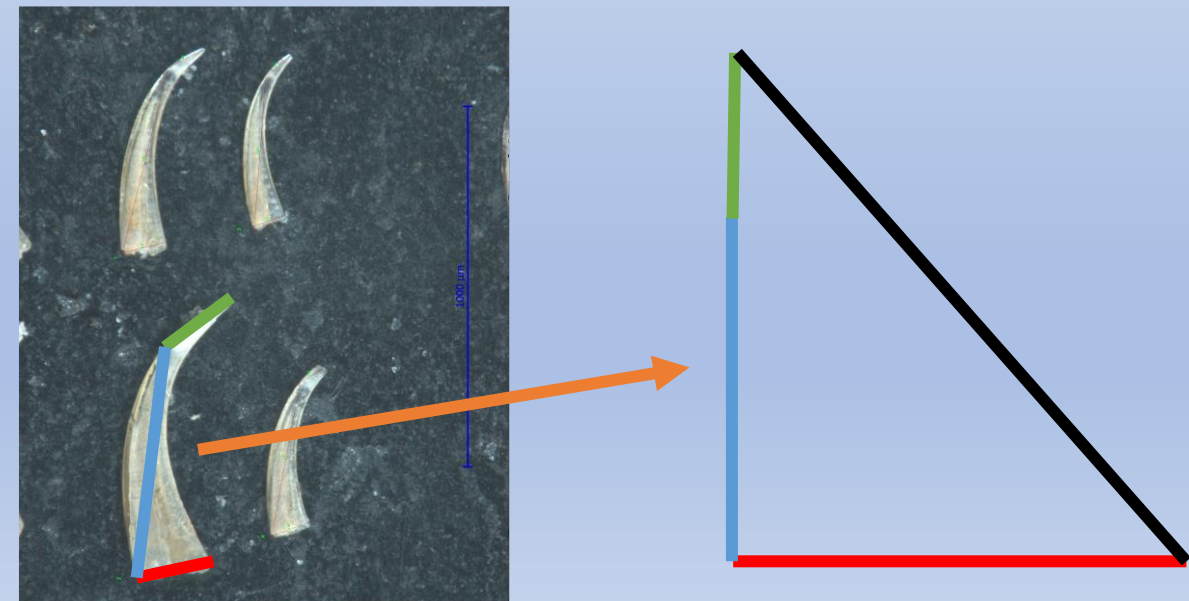
Method

Want to know more about FossilJ?
[Click here!](#)

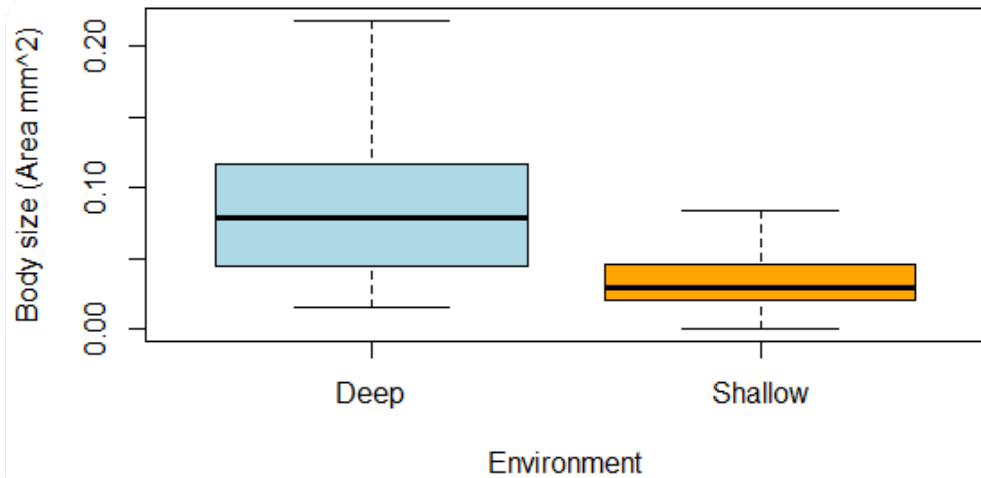


FossilJ allowed three lines to be drawn on each element as shown above. These lines were used to construct a triangle where the area was calculated and used as a proxy for body size.

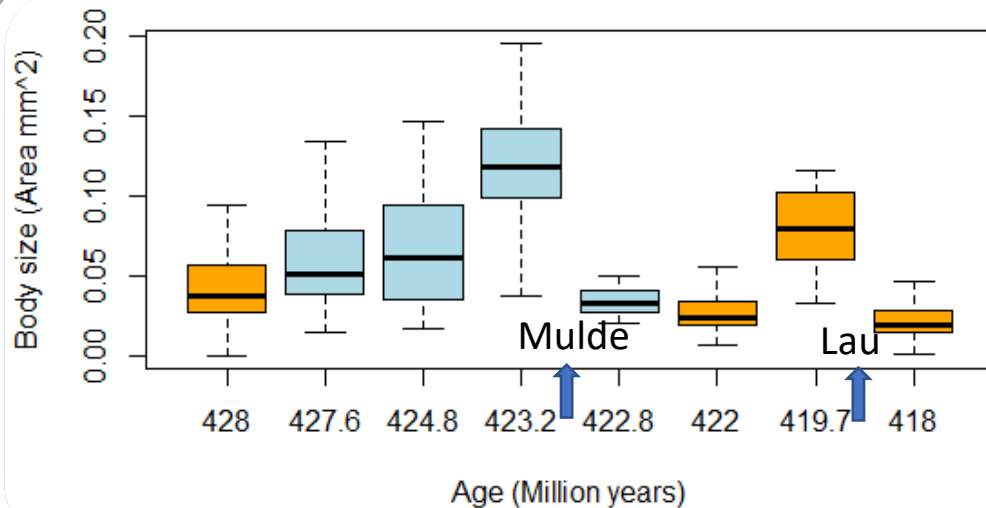
Samples were picked and sorted. Broken elements were not included. Samples were photographed and loaded into FossilJ a plugin for ImageJ which facilitates semi-automated measurement of two-dimensional images.



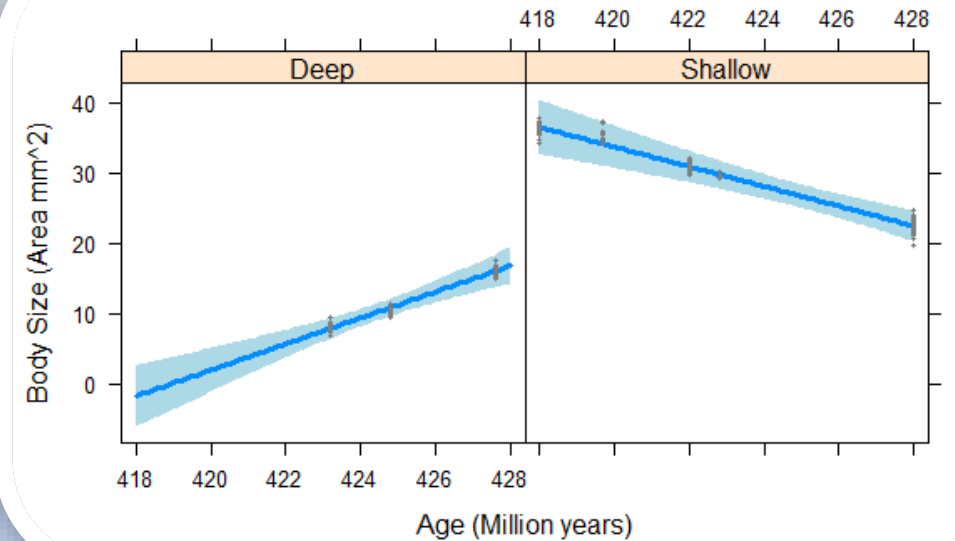
Results



Relationship between body size and bathymetry. Larger body size in deeper environment.



Showing body size through time. Major drop in body size across both the Mulde and Lau events



Generalized linear model. Shows an increase in body size through time for conodonts in a shallow environment. The opposite trend is seen for those in deeper waters.

Blue = deep environment
Orange = shallow environment

Conclusions

- This study suggests that:
 1. Conodonts in deep environments would have been larger compared to those in shallow environments.
 2. Signals from the Lau and Mulde events can be seen by a major drop in body size.
 3. Shallow environment conodonts showed to be increasing in body size with time while those in deep environments show to be getting smaller.

