Can we tell what unrelated animals are eating from the microscopic scratches on their teeth?

Jordan Bestwick (presenting author): University of Leicester, LE1 7RH. t: +44 (0) 794 722 6318. E: jb656@le.ac.uk
D. Unwin (University of Leicester), R. Butler (University of Birmingham), D. Henderson (Royal Tyrrell Museum), M. Purnell (University of Leicester)

1. Interactions with food items cause microscopic scratching of tooth surfaces
   - Soft diet = smoother surface
   - Hard diet = rougher surface

Foods with different material properties leave different types of surface texture, known as microwear

2. Examining microwear can uncover diets of poorly studied animals when compared with microwear from animals with known diets

Animals do not exist in isolation within ecosystems, yet many studies examine only one group of related animals at a time

2.1. Examining microwear can uncover diets of poorly studied animals when compared with microwear from animals with known diets

Animals do not exist in isolation within ecosystems, yet many studies examine only one group of related animals at a time

3. Methods

I. Choose nine species of bat, monitor lizard and crocodilian with diverse diets, taken from stomach/faecal content studies

3.3. Quantify microwear using 23 roughness features

4. Results

Animals with more vertebrates in their diet are on the left of the graph e.g. gharial

Animals with more food types in their diet are on the right of the graph e.g. long-fingered bat

4.3. Examining microwear can uncover diets of poorly studied animals when compared with microwear from animals with known diets

Animals do not exist in isolation within ecosystems, yet many studies examine only one group of related animals at a time

4.3.1. Examining microwear can uncover diets of poorly studied animals when compared with microwear from animals with known diets

Animals do not exist in isolation within ecosystems, yet many studies examine only one group of related animals at a time

4.3.2. Examining microwear can uncover diets of poorly studied animals when compared with microwear from animals with known diets

Animals do not exist in isolation within ecosystems, yet many studies examine only one group of related animals at a time

4.3.3. Examining microwear can uncover diets of poorly studied animals when compared with microwear from animals with known diets

Animals do not exist in isolation within ecosystems, yet many studies examine only one group of related animals at a time

4.3.4. Examining microwear can uncover diets of poorly studied animals when compared with microwear from animals with known diets

Animals do not exist in isolation within ecosystems, yet many studies examine only one group of related animals at a time

5. Implications

Key Finding: Microwear IS more strongly determined by DIET

This means:
1) We can understand the role unrelated animals play in ecosystems by looking at their microwear

2) Microwear from these modern animals can be reliably compared with microwear from extinct animals such as dinosaurs

What did I eat?