

**Arduino Lecture**  
**February 5, 2015 - h 16.00**  
**Aula Arduino - Polo Didattico di Scienze della Terra**

**COPE'S RULE AND THE BODY-SIZE EVOLUTION OF MARINE ANIMALS**

by **Jonathan Payne**

Cope's Rule proposes that lineages evolve towards larger body size over time. To test this hypothesis across all marine animals, we compiled a dataset of body sizes for 17,208 genera of marine animals spanning the past 540 million years. Mean biovolume across genera has increased by a factor of 150 since the Cambrian, while minimum biovolume has decreased by less than a factor of ten and maximum biovolume has increased by more than a factor of 100,000. Neutral drift from a small initial value cannot explain this pattern. Instead, most of the size increase reflects differential diversification across classes, indicating that the pattern does not reflect a simple scaling-up of widespread and persistent selection for larger size within populations.

