

The Fossil Insect Collaborative

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7 funded institutions, 2 federal collaborators and 1+ PEN





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*Digitize and make available
all the major collections of
fossil insect specimens in
the United States*





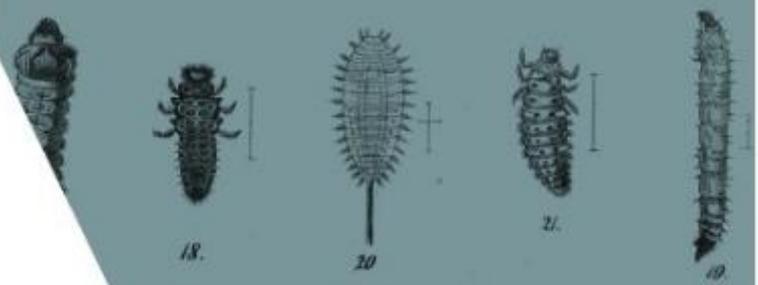
Digitization Goals

Project Dates: 2013 - 2017

- Database ~500,000 specimens
- ~77,000 digital images
- Data sharing
- iDigPaleo development



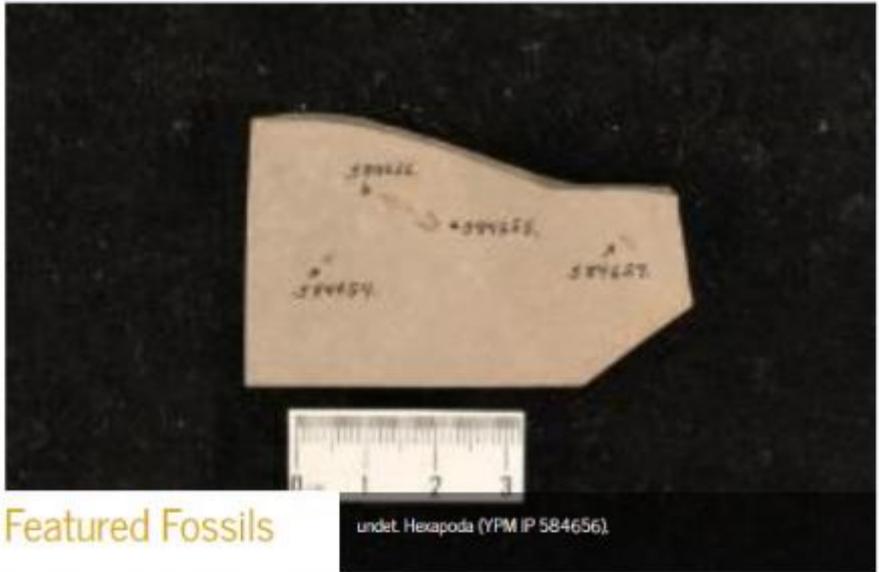
YPM-IP.1002 *Dunbaria fasciipennis* Holotype



News

Society for the Preservation of Natural History Collections Annual Meeting

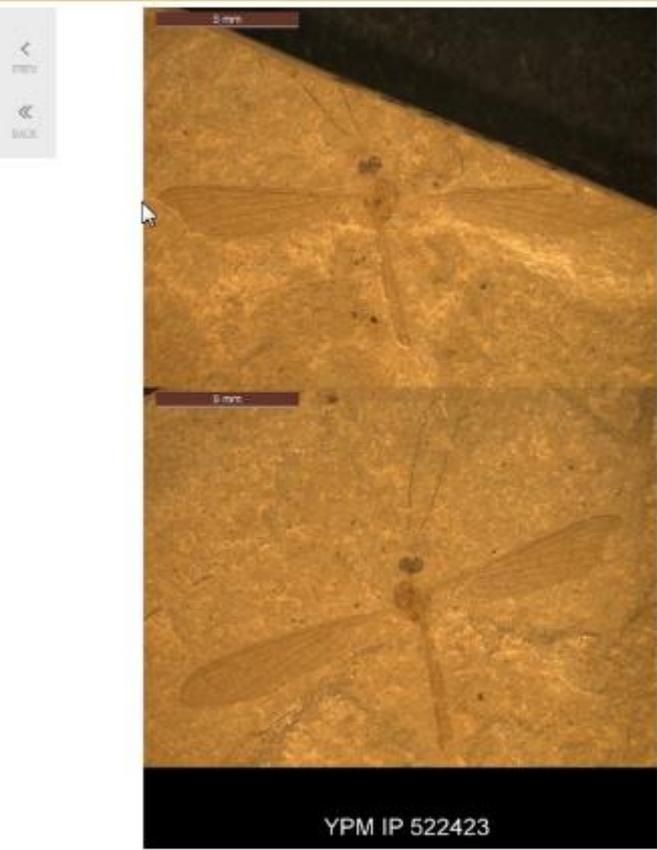
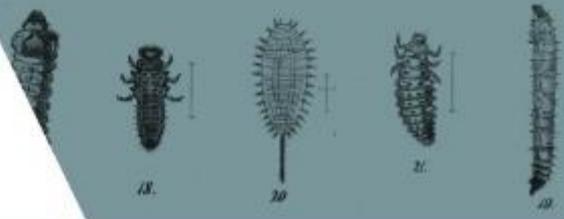
More



Featured Fossils

undet. Hexapoda (YPM IP 584656)





undet. Tipulidae; feather on slab with

True Flies, Mosquitoes and Gnats

YPM IP 522423

Yale Peabody Museum of Natural History

TAXONOMY

Animalia > Arthropoda > Insecta > Diptera > Tipulidae > Family

LOCALITY

North America > USA > Colorado > Garfield County > N end of Radar Dome

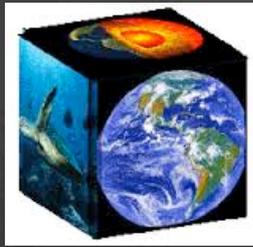


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-  COMMENTS (0)
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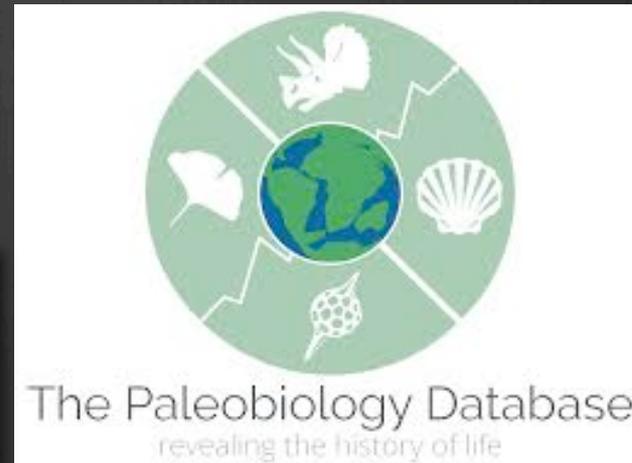
MAP

MEASURE

COMMENT



ePANDDA: Enhancing PAleontological and Neontological Data Discovery API

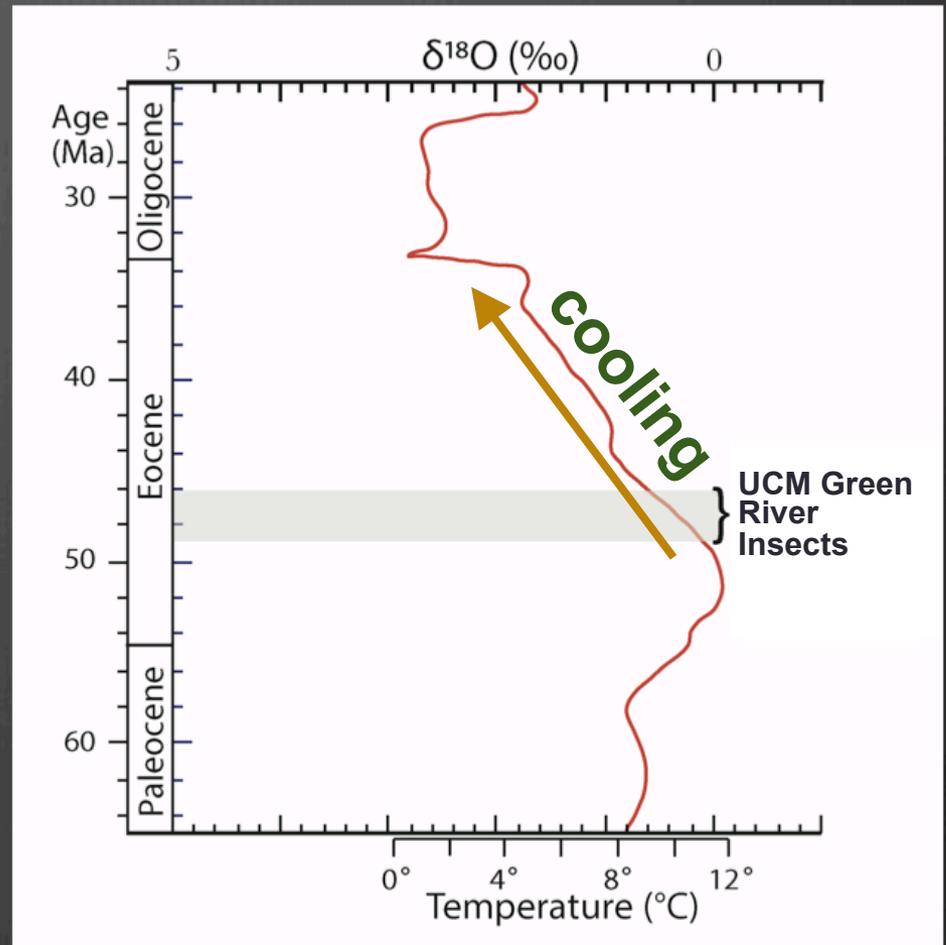
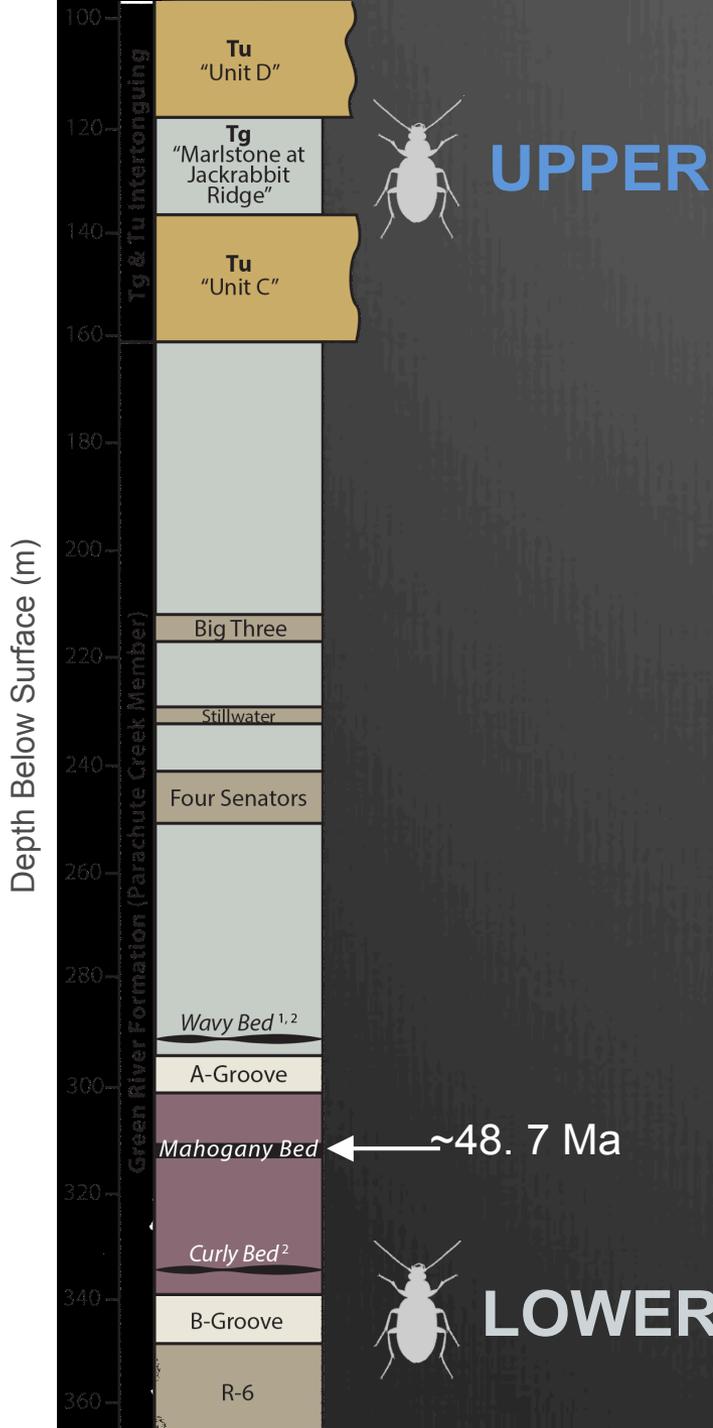


Research Goals



- Examine insect response to environmental change in deep time
- Examine evolutionary history of fossil insect groups and patterns of diversity in deep time





Modified from Zachos et al. (2001)

EXPLANATION

- Sandstone
- Marlstone
- Lean Oil Shale
- Rich Oil Shale
- Mahogany Zone
- Marker Bed

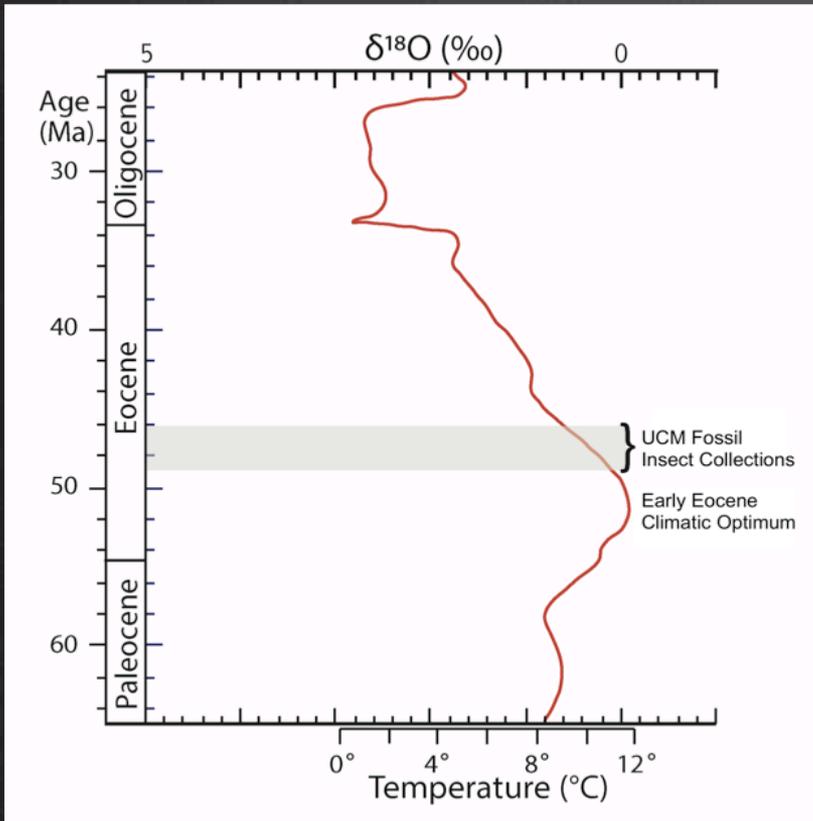
Tu Uinta Formation

Tg Green River Formation

Fossil Insect Localities

Cashion & Donnell (1972); Donnell (2010); Duncan (1997); O'Sullivan & Hail (1987); Smith et al. (2008)

Predictions



Decrease in species richness

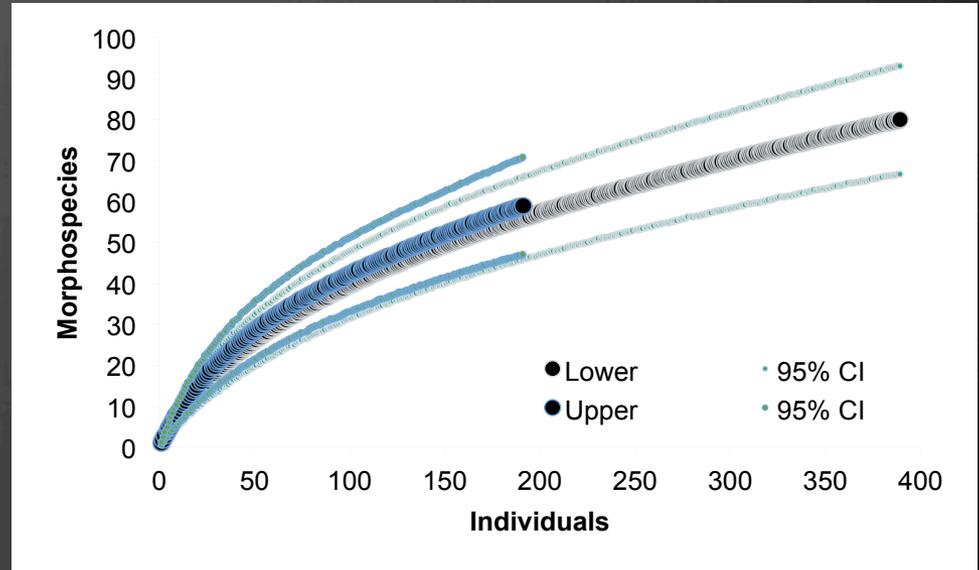
Shifts in relative abundance

**Compositional changes
(turnover)**

Richness

As global climate cooled, did the # of spp. change?

- All beetles pooled by locality
- Individual-based rarefaction



Total richness did not decrease.

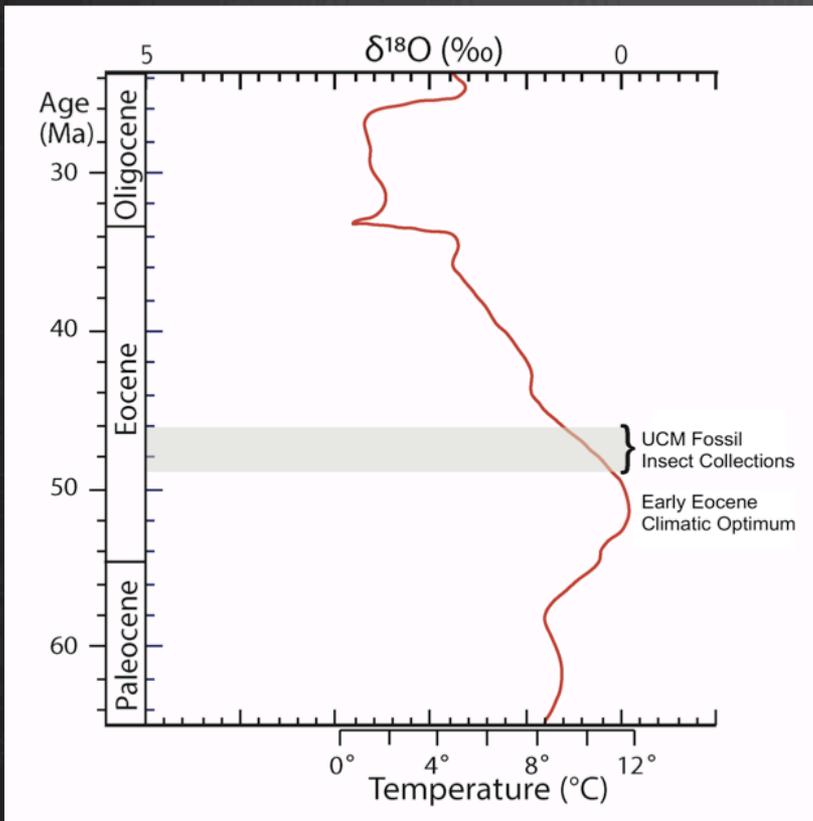
Body Size

- 🎞 Image J
- 🎞 Elytron area

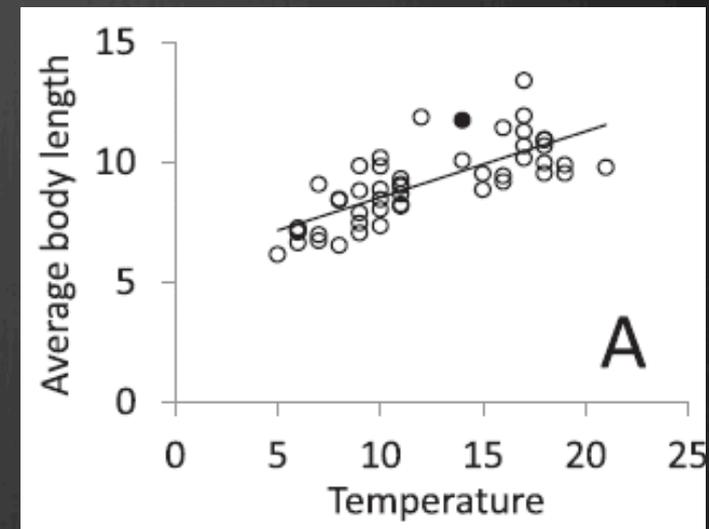


e.g. Gardner et al. (2011), Hunt & Roy (2006), Fattorini et al. (2013)

Predictions



Decrease in body size.



Original article

Latitudinal trends in body length distributions of European darkling beetles (Tenebrionidae)

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^bAzorean Biodiversity Group (CITA-A) and Platform for Enhancing Ecological Research & Sustainability (PEERS), Universidade dos Açores, Dep. Ciências Agrárias, Angra do Heroísmo, Terceira, Açores, Portugal

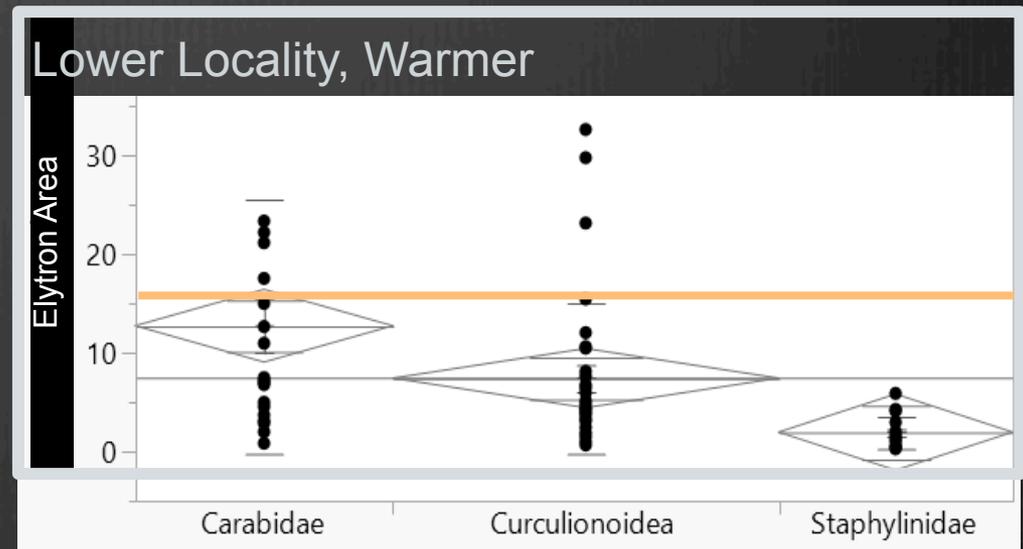
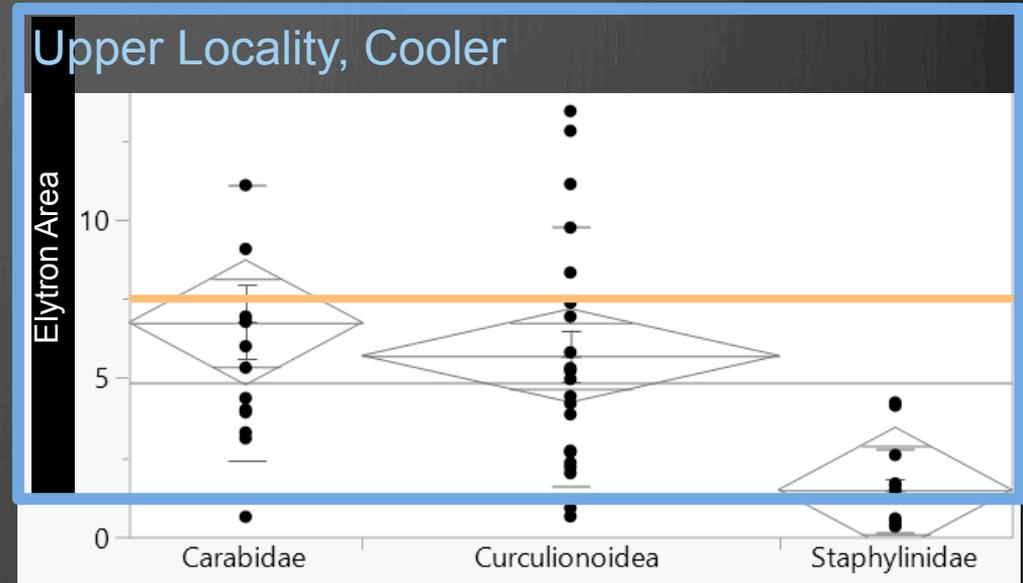
^cDipartimento di Biologia Ambientale, Università degli Studi Roma Tre, Viale G. Marconi 446, 00146 Rome, Italy

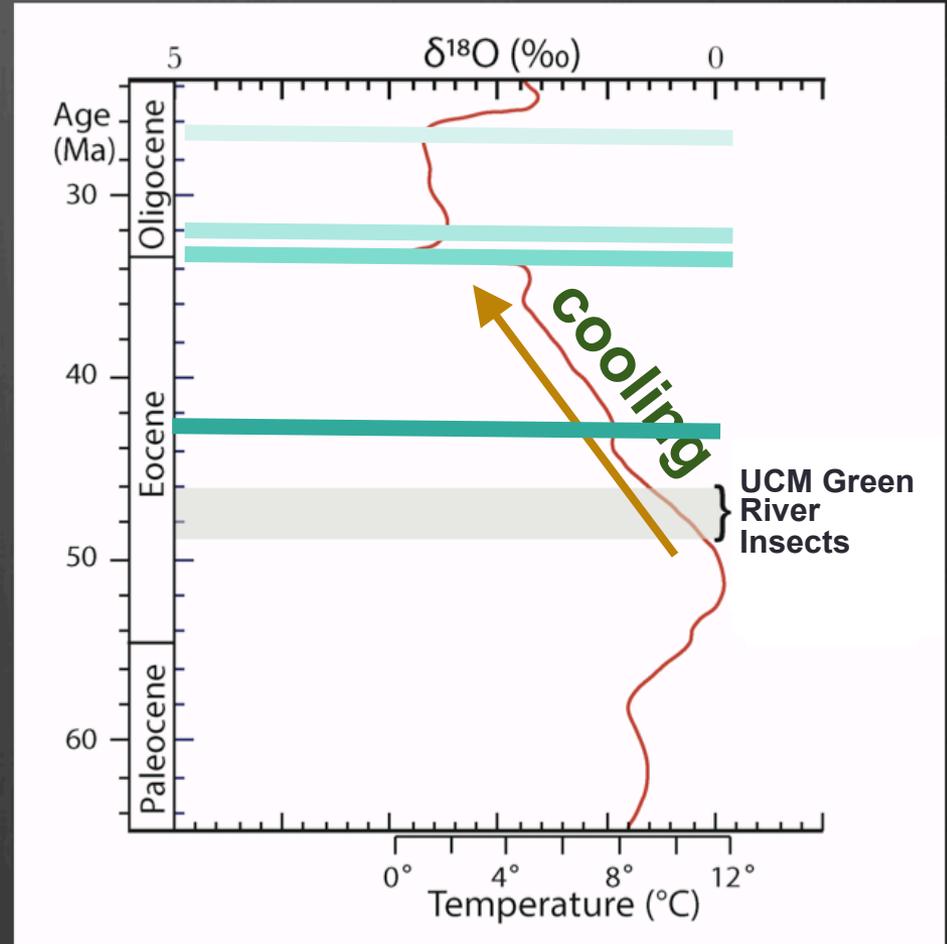
^dChair of Ecology and Biogeography, Nicolaus Copernicus University in Toruń, Lwowska 1, 87-100 Toruń, Poland

Body Size

- **Elytron (wing) measurements**
Mean body size ↓ 30%

- **ANOVA**
site $P = 0.0408$
family $P < .0001$





Modified from Zachos et al. (2001)

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