

# Insect Pollinators Before Angiosperm Domination

## Importance

Even before the radiation of flowering plants, insects had four different modes of pollinating gymnosperms. Modern pollinators either remained gymnosperm pollinators, transitioned from gymnosperm to angiosperm pollinators, or evolved when angiosperms diversified (9).

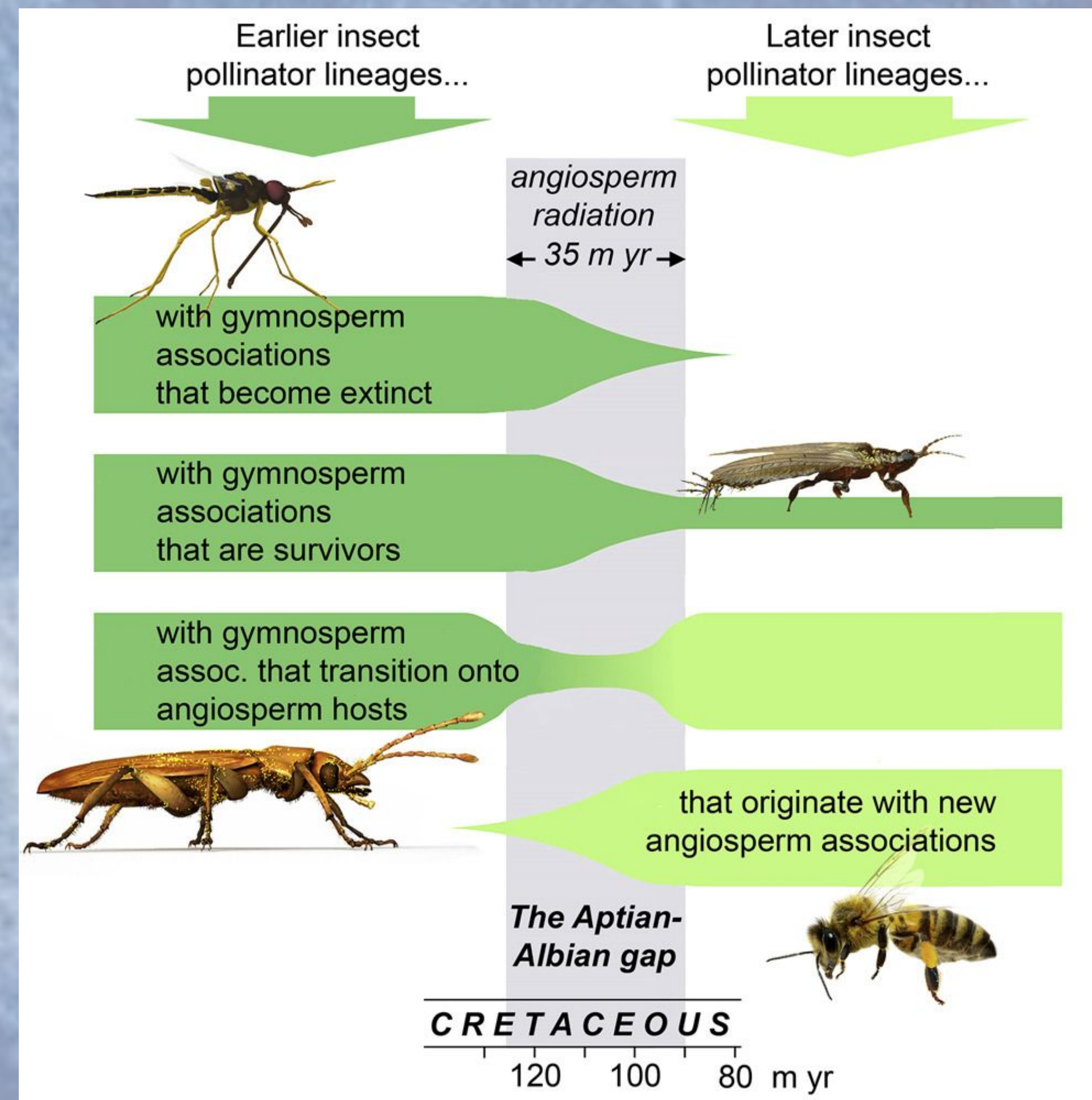
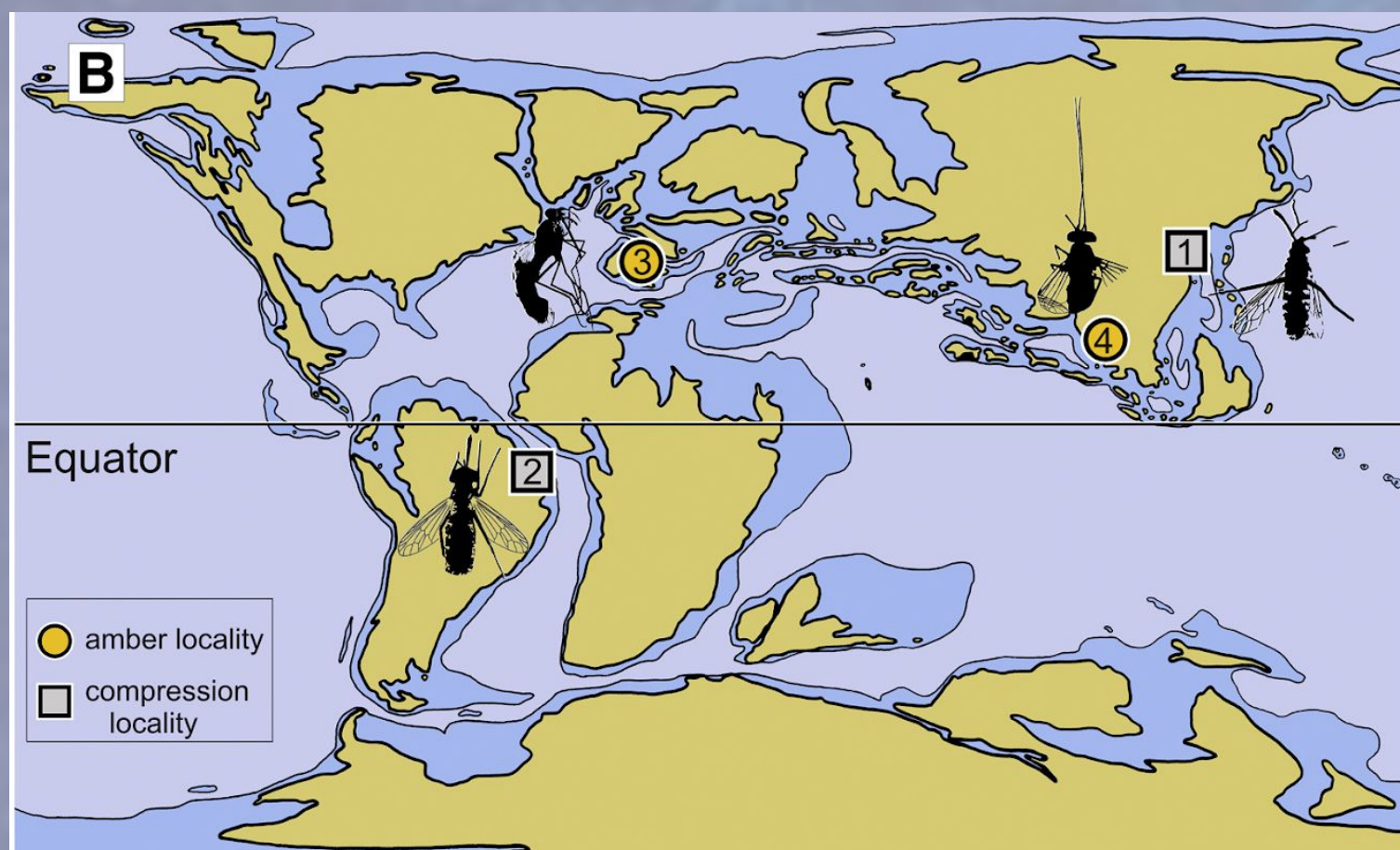


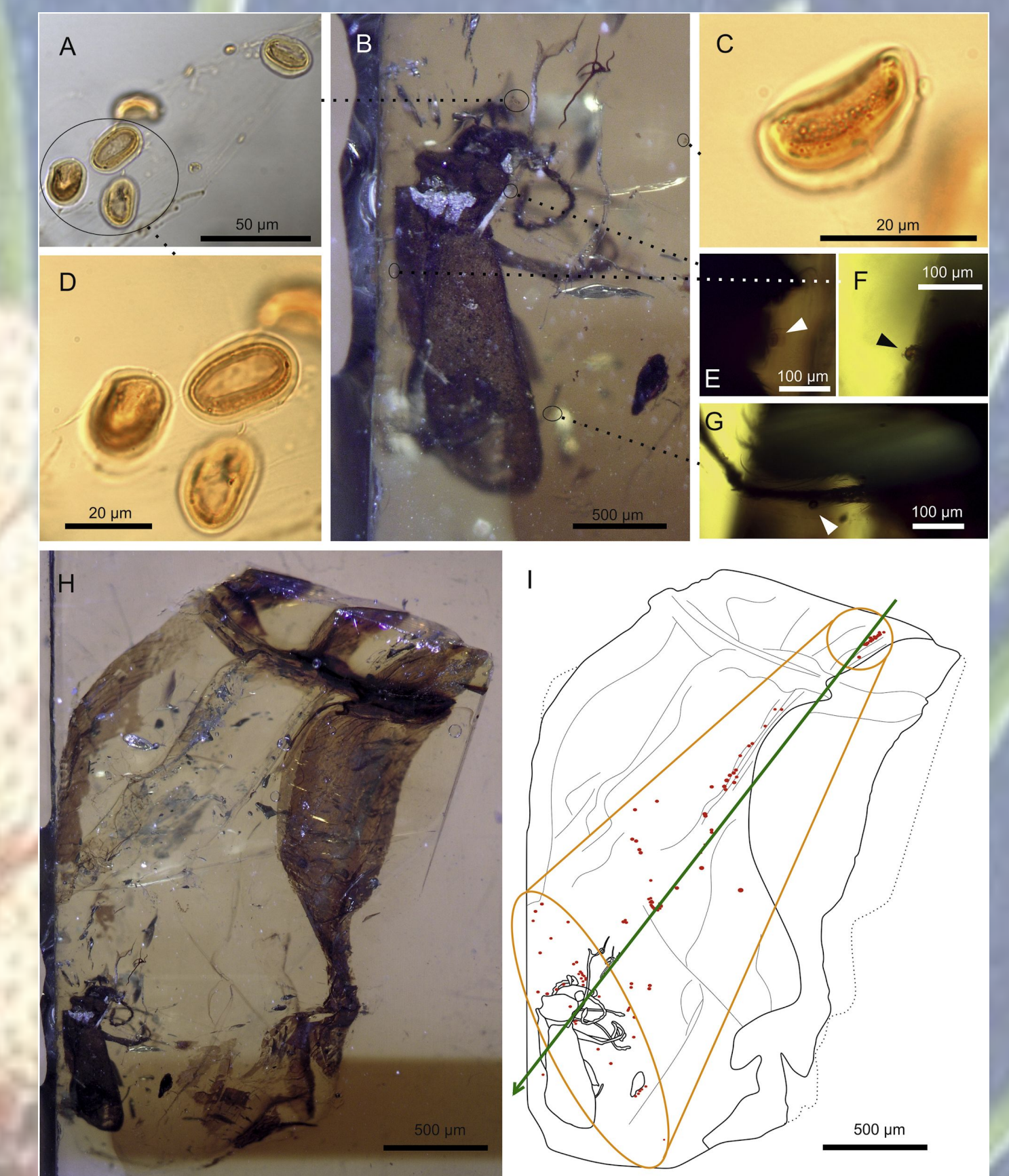
Figure showing different possible fates of pollinating insects before and after angiosperm radiation. Example of gymnosperm host that became extinct: Zhangsolvid flies  
 Example of gymnosperm host that remained gymnosperm hosts: Merothripid thrips.  
 Example of gymnosperm host that transitioned to angiosperm host: false blister beetles  
 Example of insect that evolved with angiosperm radiation: bees (9)



Paleodistribution of Zhangsolvid flies (pollinating flies) from the Cretaceous (8)



Fossil specimen of *Cretahilarimorpha lebanensis* preserved in amber, showing its elongated mouthparts (5)



*Darwinylus marcosi* in amber with pollen grains. Projection of movement of pollen from body of beetle (I) (9)

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Background retrieved from Encyclopedia Britannica (3).