

# Florissant Fossil Beds

## Fossil Insects

National Park Service  
U.S. Department of the Interior

Florissant Fossil Beds  
National Monument



Beetle (YPM IP 1)



Dragonfly (FLFO 6565)



Hopper (MCZ 5013)

Relatives of insects were the first lifeforms to live on land, and today insects the most numerous and diverse animals on the planet. Insects are rare as fossils, however. The Florissant fossil beds contain an exceptional diversity and abundance of fossil insects, including more than 1,500 different species.

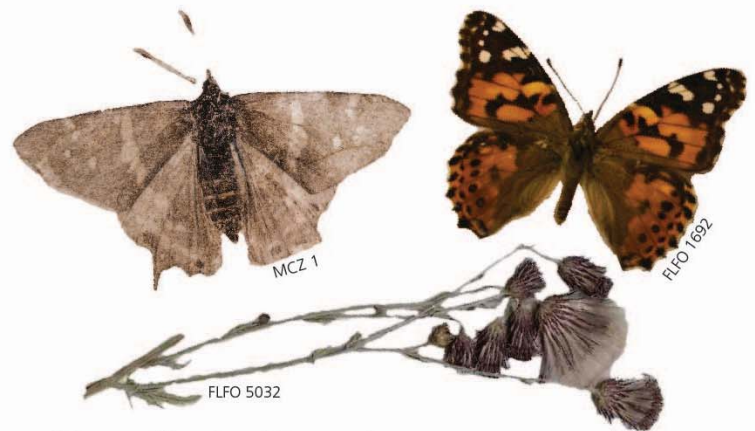
### Why study insects?

Three out of four kinds of animals are insects. There are twice as many species of flies (Diptera) as there are of all vertebrates (fishes, birds, reptiles, amphibians, and mammals). Insects live on every continent and play major roles in every ecosystem: they pollinate flowers, eat plants, decompose dead matter, and provide food for many other animals. Some insects spend part of their life cycle as parasites, usually on other insects but occasionally on vertebrates. In order to understand and respond to issues in conservation biology, agriculture, and medicine, we need to know about the animals involved, and insects are some of the most important animals on earth!

Fossil insects show how ecosystems have changed and moved over time. By tracing living species back to their fossil ancestors, scientists can propose explanations for the diversity and geographic distribution of insect groups alive today.

### Why are fossil insects so rare?

Most bodies decay, erode, or are scavenged before they can become fossils. Softer body material is more fragile, so it is less likely to preserve. Teeth and animals with a thick cuticle (hard covering) like beetles are more common as fossils than soft-bodied animals like spiders. Even the most fragile animals can fossilize, however. The gentle lake environment of Florissant in the late Eocene (34 million years ago) led to the preservation of the delicate insects that lived then.



Fossil butterflies (Lepidoptera) are very rare. *Prodryas lpersephone* (top left, life size) is one of the best examples ever found. *Vanessa* (the painted lady), a close relative, still flies at Florissant (top right). Their caterpillars love to eat thistles like this native Colorado species (*Cirsium*) (bottom).

### Are fossil insects the same species as living ones?

Almost all of the insect species found as fossils at Florissant became extinct in the 34 million years since they were buried. Descendants and relatives of these species survive today, however, and many still live in Colorado. Insects evolve more slowly than many other organisms do, and many Florissant fossil insects look nearly identical to their living relatives. Fossil insects from older deposits look more different.



Tsetse fly (UCM 66281)

"Fossil insects offer an extraordinary opportunity... throwing so much light on the evolution and migrations of insects, and therefore of prime importance for the understanding of the modern fauna."

T.D.A. Cockerell, 1937