

Although often overlooked, invertebrates comprise many thousands of wildlife species at Pinnacles. Their lack of bones, teeth, fur, and feathers may make them seem primitive, but don't be fooled. In many cases their life histories are just as complex as those of larger animals, and often much more bizarre. And they are usually much easier to find and observe than larger wildlife.

An inventory of bees conducted in the late 1990s found roughly 400 species of bees at Pinnacles. This is the highest known bee diversity per unit area of any place on earth. The diversity of butterflies here is not nearly as high (70 species), but in the right time and place it is possible to see many hundreds of individual butterflies in a single day. Currently 500 species of moths are known to occur in the park, with the total number expected to be more than 1,000. About 250 species of aquatic invertebrates have been recorded at Pinnacles, including 41 species of dragonflies and damselflies. A spider study began in 2014. Most other invertebrate groups remain largely unstudied.

Several invertebrates found at Pinnacles are endemic to our area, being found elsewhere rarely or not at all. The Pinnacles shieldback katydid (*Idiostatus kathleenae*) is about 2 cm long, wingless, and dark gray in color. It is active at night, feeding on the flowers of California buckwheat and other plants. The Pinnacles riffle beetle (*Optioservus canus*) is a tiny (2 mm) brown beetle that lives in fast-flowing sections of Chalone Creek.

The most common way to study invertebrates is to capture and kill them. While this method may be appropriate under many circumstances, a visit to Pinnacles is not one of them. In order to protect the wildlife at Pinnacles, collecting is prohibited without a scientific collecting permit issued by the park. A great tool for getting a good look at invertebrates going about their lives is a pair of close-focus binoculars. With 8X binoculars, from eight feet away you will have a view as if you were only one foot away! That's plenty close for watching a bee gather pollen, a butterfly sip nectar, or a tarantula wasp sting and drag off a tarantula.