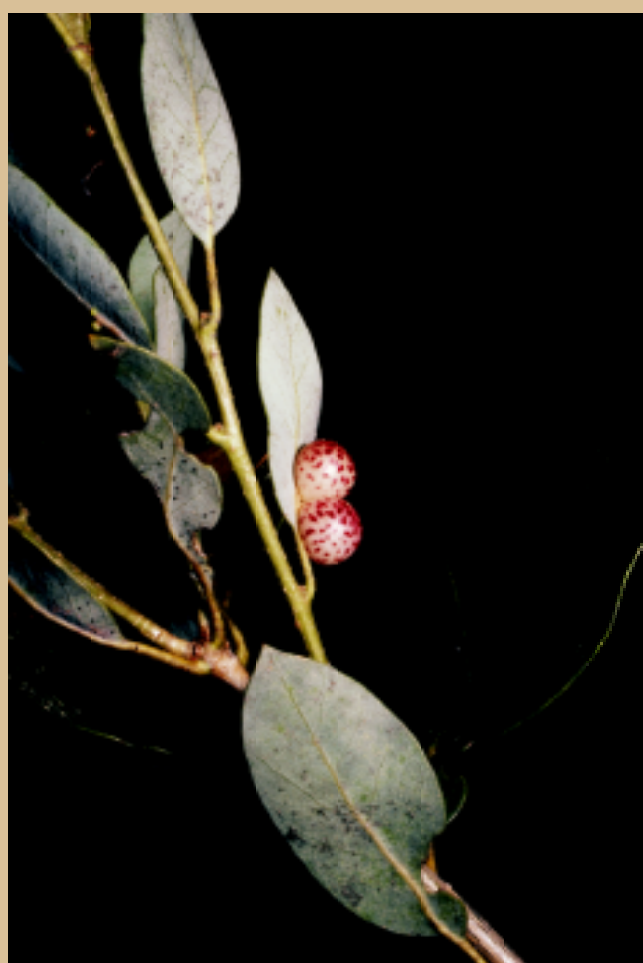


# Wasp Galls on California Oaks



California gall fly (actually a wasp), *Andricus californicus*, on valley oak.



Gall wasp, *Trichoterus coquilleti*, on huckleberry oak.

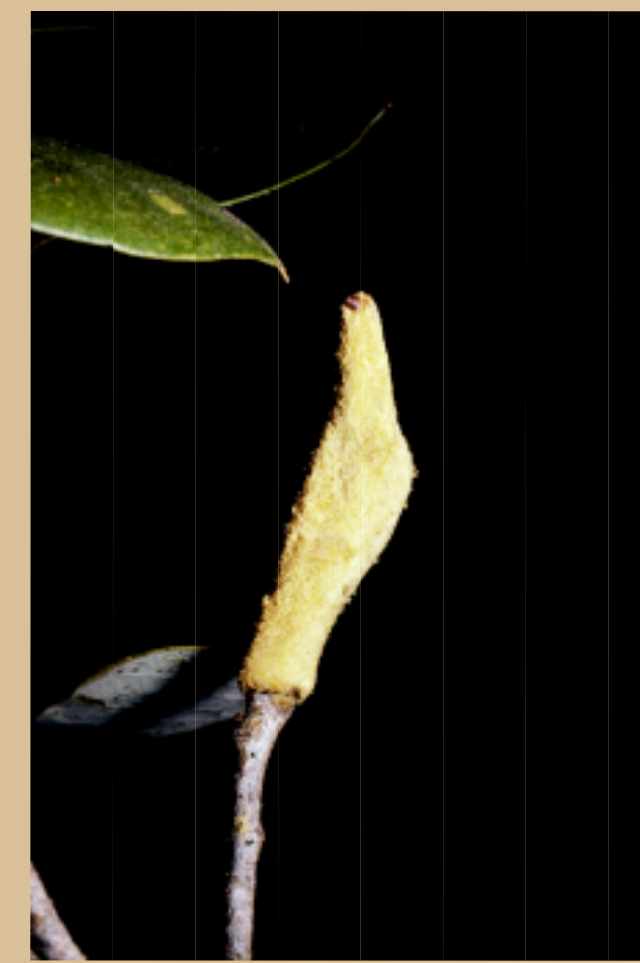
A single oak tree can host hundreds of species of insects, spiders, lichens, mosses, fungi, and other organisms creating a veritable arboreal zoo. Some of these organisms induce tumor-like galls on various parts of oak trees. Among them is a large group of gall-inducing cynipid wasps. There are over 150 species of these wasps associated with California oaks. Most of these wasps are scarcely the size of fruit flies. The galls they induce provide shelter and food to their developing larvae. Wasp galls also support a large contingent of other insects that can be parasites on the gall wasps or each other or feed directly on the gall tissues. In one study, over 90 species of insects were found associated with the galls of one species of wasp. These complex communities thrive relatively out of sight. Our only reminder that some insects depend on oak flowers, leaves, fruit, and branches is the presence of noticeable and, sometimes, colorful and ornate galls on these plant parts. Each gall wasp species lays its eggs not only on specific parts of a tree, but also only on certain species of oaks. For example, gall wasps associated with blue and valley oaks do not occur on coast and interior live oaks. The behaviors and structures that have evolved for the successful survival of gall wasps remain among the most intriguing stories in nature.

The galls you see in these photos are just a few of the most spectacular that you can find in California's diverse oak woodlands.

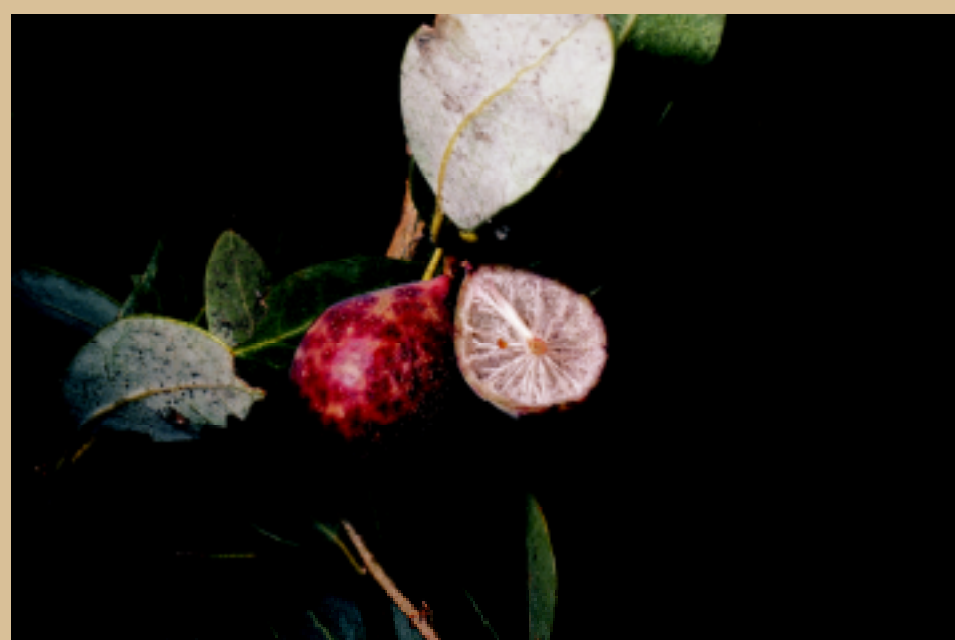
Photos by Ron Russo



Beaked spindle gall wasp, *Heteroecus pacificus* (red=bisexual gall; green=unisexual gall), on canyon live oak.



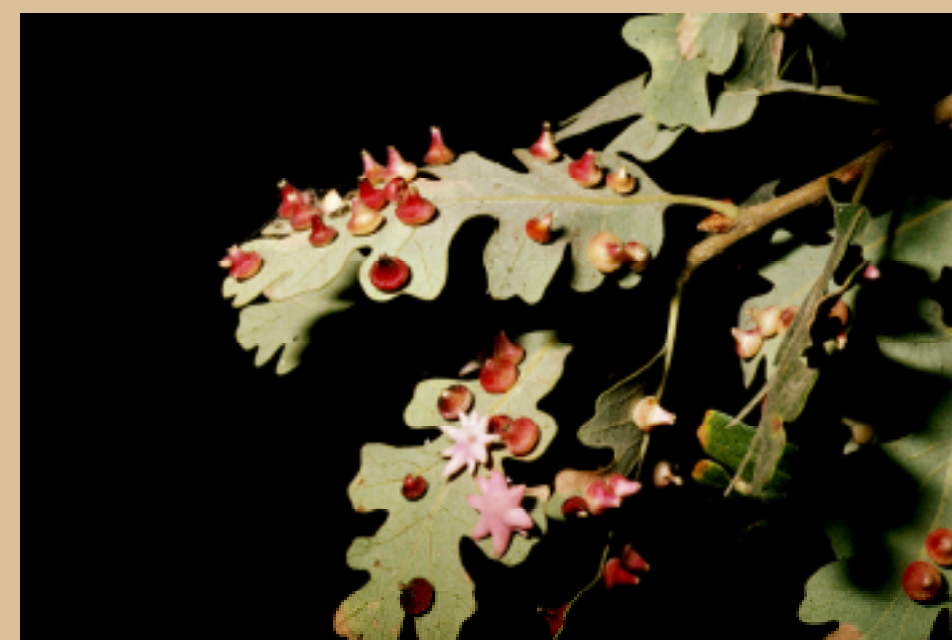
Gall wasp, *Heteroecus melanoderma*, on canyon live oak.



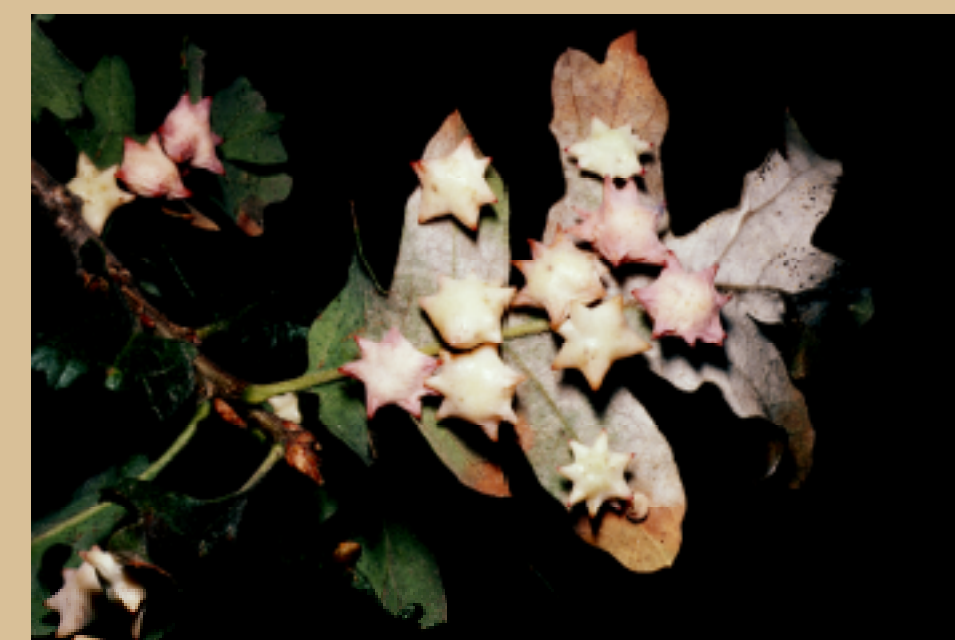
Paper gall wasp, *Trichoterus vacciniifoliae*, on huckleberry oak.



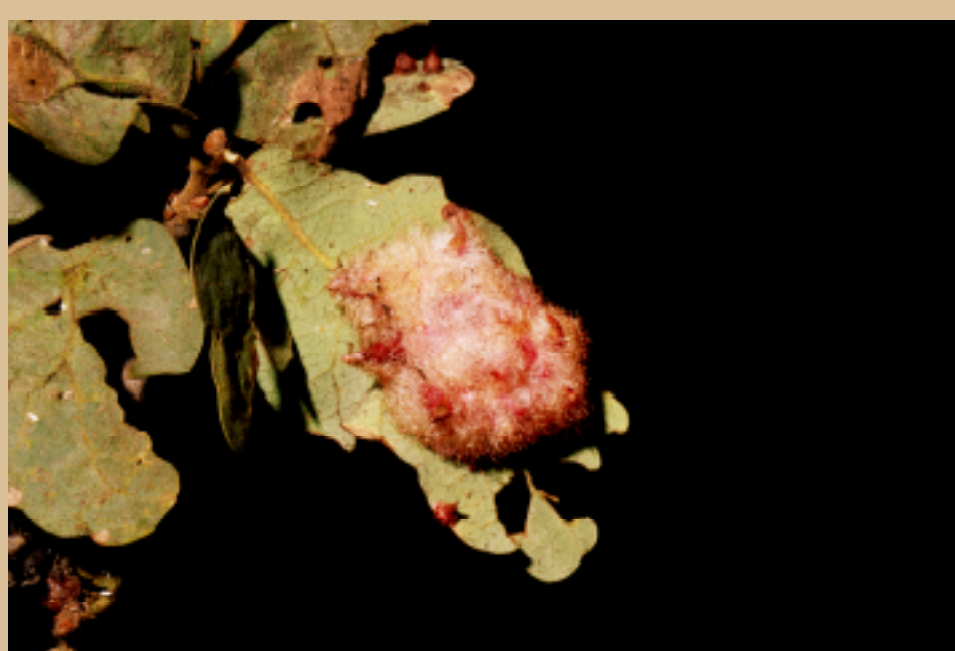
Red cone gall wasp, *Andricus kingi*, on valley oak.



Red cone gall wasp, *Andricus kingi*; and spined turban gall wasp, *Antron douglasii*, on valley oak.



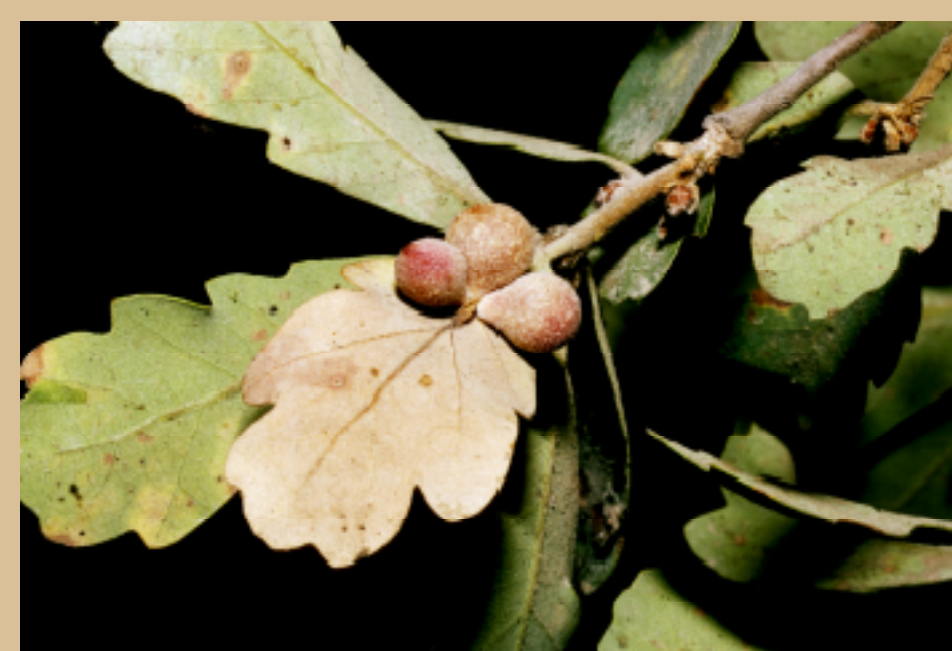
Spined turban gall wasp, *Antron douglasii*, on valley oak.



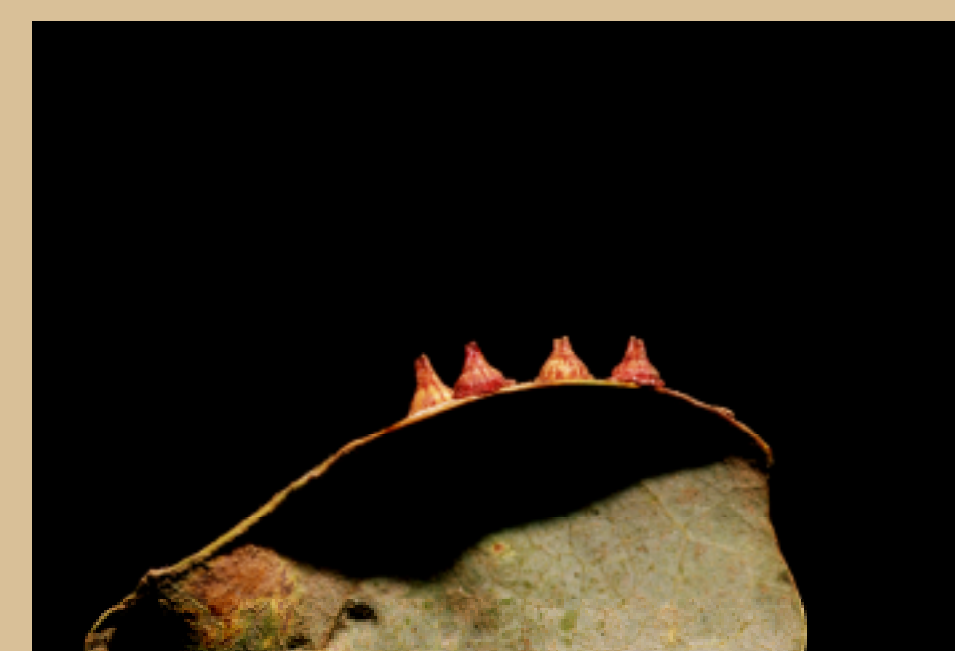
Crystalline gall wasp, *Andricus crystallinus*, on blue oak.



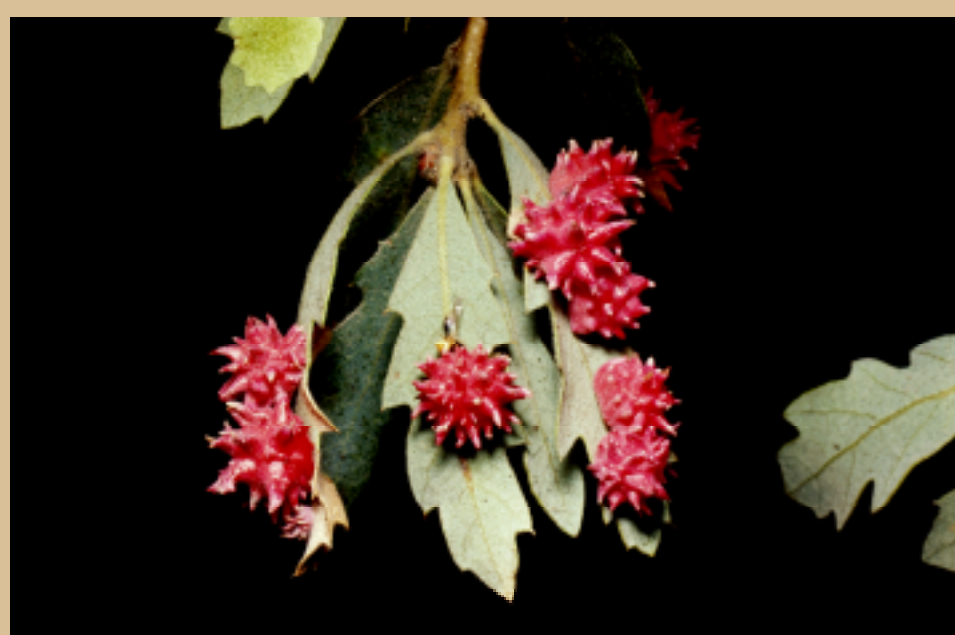
Cynipid wasp gall, *Andricus confertus* (center) on valley oak.



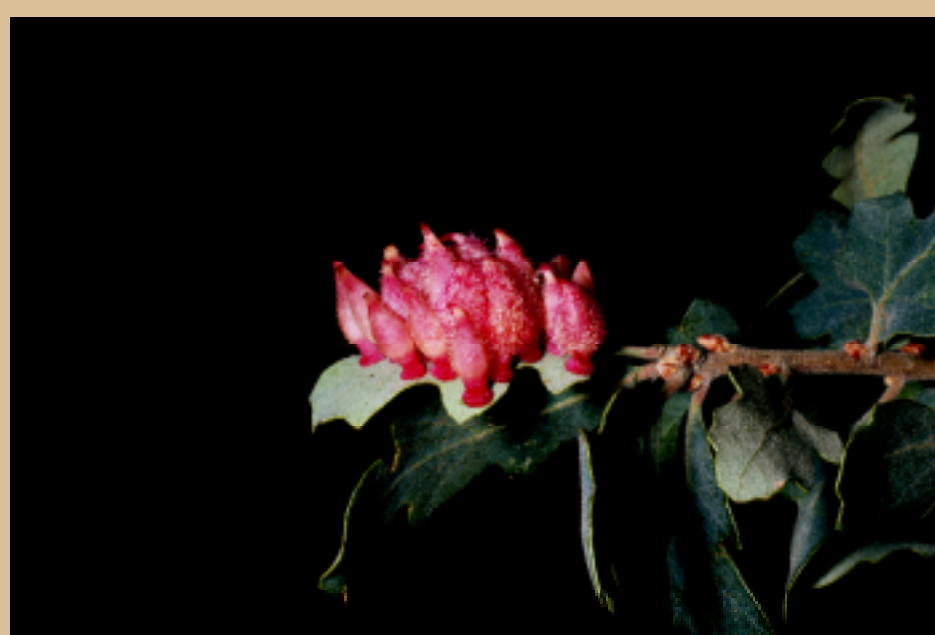
Gall wasp, *Andricus brunneus*, on blue oak.



Dunce cap gall wasp, *Andricus atrimentus*, on blue oak.



Urchin gall wasp, *Antron echinus*, on blue oak.



Crystalline gall wasp, *Andricus crystallinus*, (parasite attacked) on blue oak.



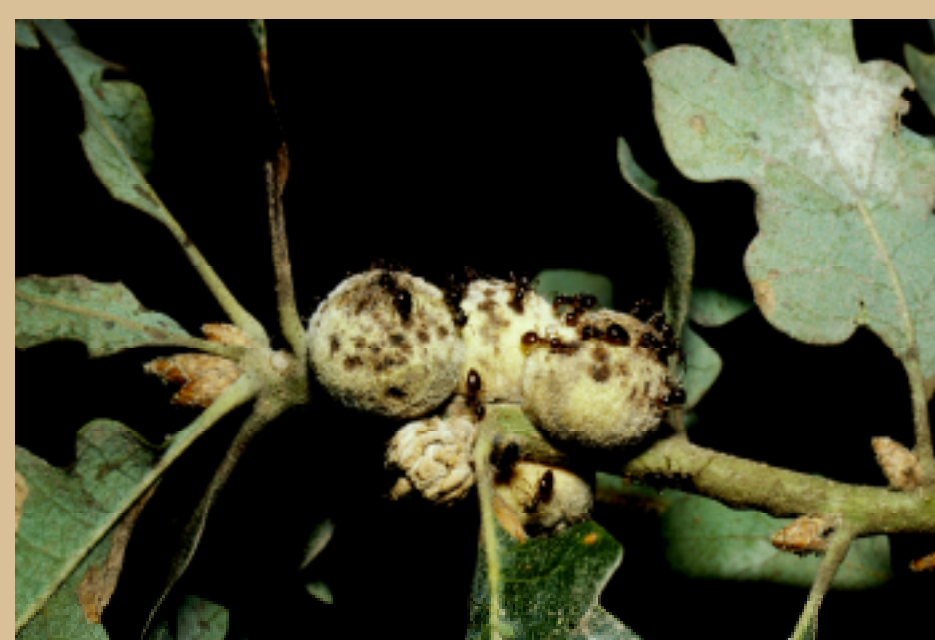
Club gall wasp, *Antron clavula*; and disc gall wasp, *Andricus parmula*, on valley oak.



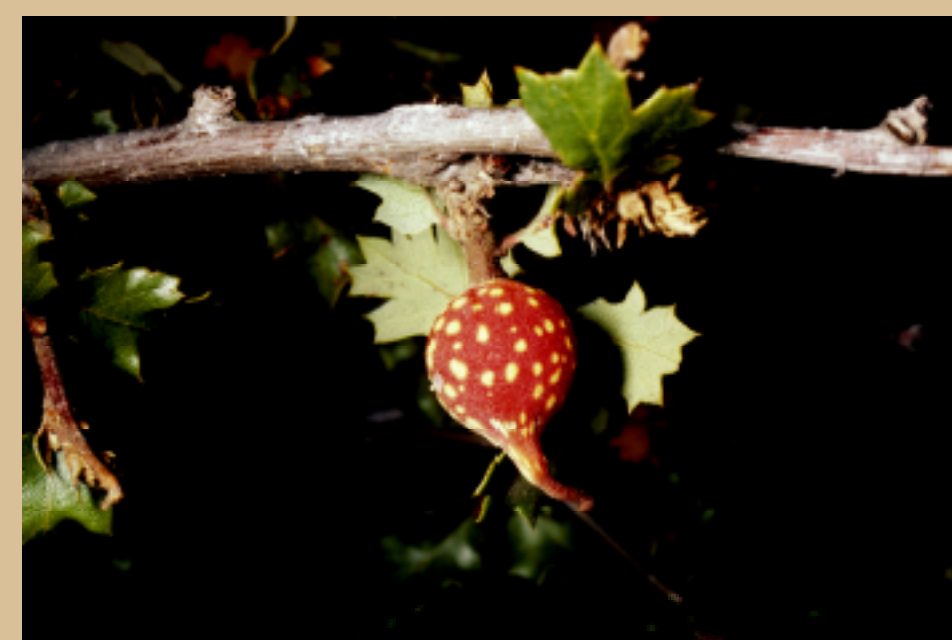
Clasping twig gall wasp, *Dischalcaspis prehensa*, on scrub oak.



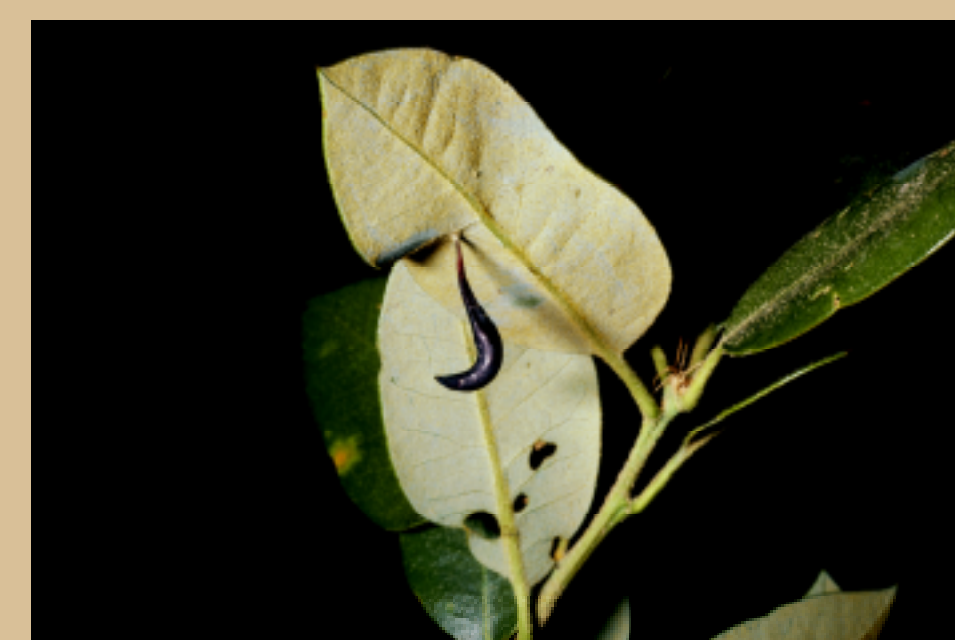
Saucer gall wasp, *Andricus gigas*, on blue oak.



Gall wasp, *Disholcaspis canescens*, on valley oak.



Beaked twig gall wasp, *Disholcaspis plumbella*, on scrub oak.



New species, gall wasp, on canyon live oak.