

# Scientific Research in the Mono Basin

*News from the Mono Basin Field Station and Beyond*

The following two project descriptions are representative of the diversity of research going on at Mono Lake. While the subjects of the research may be more or less appealing depending on your taste, the research is cutting edge, and the results exciting.

## Willow Flycatchers: Fitzbews On The Loose

Chris McCreedy, PRBO Conservation Science

One outcome of the court-ordered restoration on Rush Creek has been the recent re-occupation of Rush Creek by a growing population of California State Endangered Willow Flycatchers, discovered by the Point Reyes Bird Observatory (now PRBO Conservation Science) in 2001. As a result, “fitzbeew”, the Willow Flycatcher’s unique, sneeze-like song, can be heard throughout the Rush Creek bottomlands.

Willow Flycatchers were once considered fairly common in the Eastern Sierra, but Sierra Nevada populations have declined precipitously throughout the twentieth century. Rush Creek is one of the few California Willow Flycatcher breeding sites that has seen consistent population increases, and Rush now holds 1–2% of California’s breeding population.

PRBO Conservation Science has continued to monitor the Willow Flycatchers of Rush Creek, measuring nest success, population density, juvenile and adult survivorship, and habitat characteristics. As this is the only known Willow Flycatcher population in the Inyo National Forest, the United States For-

est Service is using Rush Creek’s habitat as a model for comparison studies at nearby historic Willow Flycatcher sites at McGee Creek and June Lake, where Willow Flycatchers have disappeared.

One of the most exciting aspects of PRBO’s research is the real possibility of discovering Rush Creek-born birds occupying other sites within the Mono Basin. PRBO mist-netting stations have already captured two non-breeding Rush Creek flycatchers at Lee Vining Creek. If Rush Creek can become a source population for this endangered bird’s recovery at other sites in the Mono Basin, this would be just one more indication that Rush Creek is on the road to recovery. ❖



A fledging Willow Flycatcher nestling nicknamed “Bomb” after its color bands.

CHRIS MCCREEDY

## The Mono Lake Ticks

Tom G. Schwan, Rocky Mountain Laboratories, NIAID, NIH

Ticks are obligate, blood-feeding ectoparasites of land vertebrates with approximately 865 species known worldwide. In 1992 a new species was described and named at Mono Lake: *Argas monolakensis*.

At Mono Lake, the ticks are intimately associated with the California Gulls that breed on the islands during the spring and early summer (see page 3). The ticks are cold-blooded, nocturnal, and require blood to survive and reproduce. Thus, only a small seasonal window exists when the gulls are present and the night temperatures are warm enough for the ticks to be active and feed. In the laboratory, scientists determined that the tick’s life cycle consists of eggs, one larval stage (see photo), two to five nymph stages, and the adult. While the larvae remain attached to a host to feed for many days, the nymphs and adults feed for only 10 to 60 minutes. The adults are beautifully adapted to wait long periods of time between feedings if necessary. In the laboratory, some ticks have lived for five years without food!

Colonial nesting seabirds that return to the same breeding grounds each year to rear their young are ideal hosts for ticks similar to those found at the lake. However, the host–parasite association of the California Gulls and *Argas* ticks at Mono Lake is found nowhere else in the world. Also, nowhere else

in North America do such high densities of *Argas* ticks exist.

Currently, two projects with Mono Lake ticks are underway with the National Institute of Allergy and Infectious Diseases, one at the Rocky Mountain Laboratories (RML) in Hamilton, Montana, and the other near the main research campus in Bethesda, Maryland. At RML, *Argas* ticks are being used along with other species of ticks to understand how pathogenic spirochetes (like the bacteria that cause Lyme disease and relapsing fever) are transmitted by some ticks but not others. In Bethesda, research focuses on identifying compounds in the saliva of ticks and other blood-feeding arthropods that affect blood flow and the transmission of disease-causing agents.

While some information exists about *Argas* ticks from Mono Lake, they represent exciting future research possibilities! ❖



The larva of the Mono Lake tick, *Argas monolakensis*, as viewed with the scanning electron microscope. Larvae are the stage most often encountered by researchers handling the California Gull chicks and are less than a millimeter wide before feeding.

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