THE CALIFORNIA BLACK RAIL REPORT

A NEWSLETTER FOR LANDOWNERS COOPERATING WITH THE

CALIFORNIA BLACK RAIL STUDY PROJECT

http://nature.berkeley.edu/~beis/rail/

Vol. 11, No. 1

SKEETERS, RAILS, AND YOU

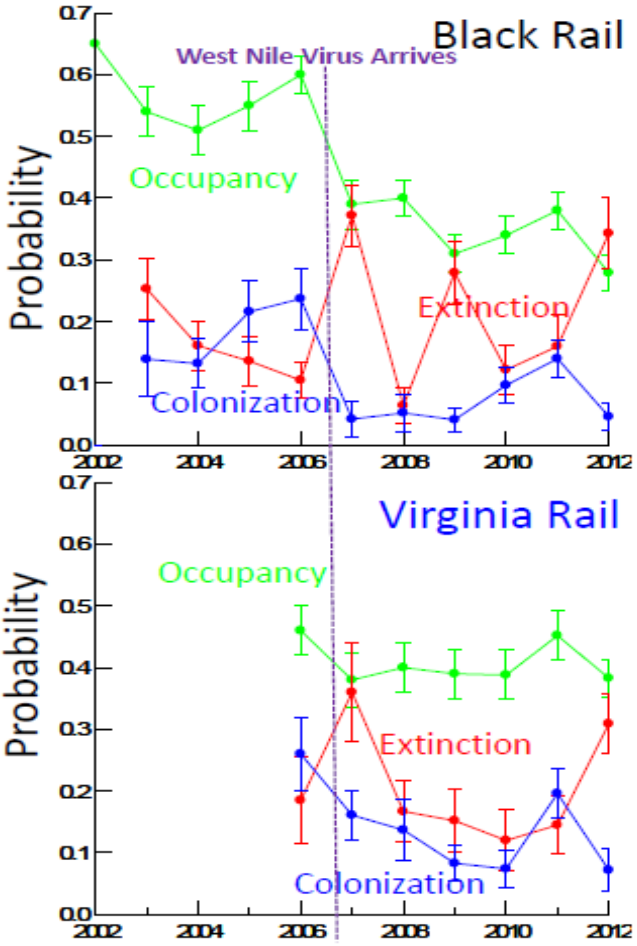
Let's start with **YOU**. For many years you've been letting us come on your land to see if the California Black Rail is still living in those wetland patches of cattails in your pastures and even backyards. We are entering our twelfth year of tracking this tiny bird that no-one ever sees (the tiniest member of the Rail family in the whole world), but it's beginning to tell us lots about what is going on in its life and in our environment. This continuing long-range study is unusual because it's taking place on both public and private land in the Sierra Foothills. That's where you come into this picture. None of our study would be possible without your cooperation. So, once again, we thank you. And, once again, we enclose a postcard that asks you to continue your grateful cooperation. And we want to give you the latest news of what we are finding out.

Mosquitoes have become a big part of our lives— maybe yours too! Especially the one pictured here. Sometimes they seem to be this big, but this shot of the beautifully striped *Culex tarsalis* has of course been enlarged several times. A lovely lady, but also a possible carrier of West Nile Virus in our region. When this disease entered our area in the mid 2000's we noticed a sharp drop in the Black Rail populations. The virus is well known to infect and kill birds of many species (and some mammals too), so we've begun to track mosquitoes as well as Black Rails and their larger cousins, Virginia Rails. All these creatures, and many more, thrive in the extremely productive living space of small Foothill wetlands. One researcher associated with our project, Tony Kovach (see Back Page), last year trapped and sorted ½ million mosquitoes from wetlands on some of your Black Rail wetlands or nearby. Not all individuals or mosquito species— there seem to be mainly five species associated with rails— carry the virus, and so far Tony has assayed 4,000 mosquitoes and not found any carrying the virus. However, we know the virus is here (see next page), and this summer he will be trapping thousands more hunting for the virus.

Our main activity this summer will be continuing to monitor Black Rails and Virginia Rails in their patchy distribution throughout the Foothills of Butte, Nevada, and Yuba Counties. It takes but a few minutes to visit a wetland for a trained field person to play a recording of rail calls in order to get a response indicating the rails are there. We try to be as quick and unobtrusive as possible to minimize impact on you and the rails. On some wetlands we will determine all the birds present there by listening for their calls at separated points for a specific, short time. This is called a "point count" survey, a well established technique for estimating the size of bird populations. Some birds, like our common Robin, are known carriers of West Nile Virus, and we'd like to find out which species in our area are possible carriers.

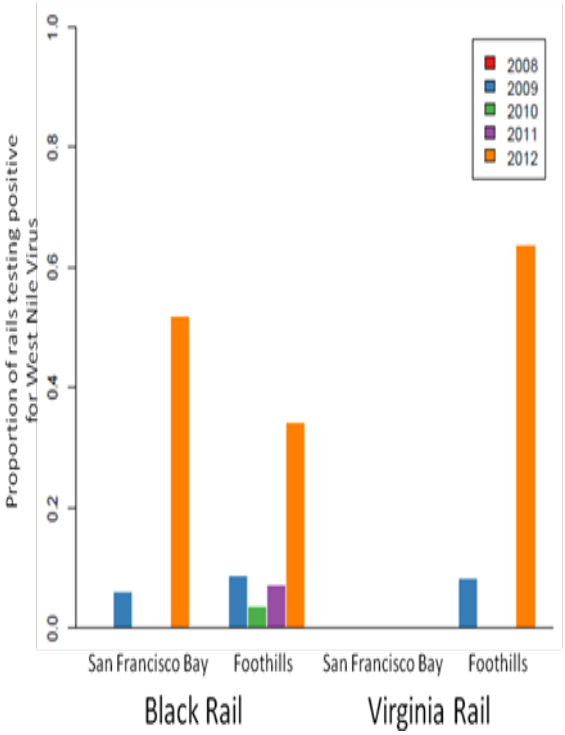
MORE ON WEST NILE VIRUS

We've been monitoring the presence or absence of rails (what we call **occupancy**— shown in **green** on these graphs) in wetlands of the Foothills for quite some time now. This long-term data has allowed us to track **colonization** (the probability that a wetland will become occupied by rails— shown in **blue**), and local **extinction** (the probability that a wetland will become unoccupied by rails— shown in **red**). Over the years we've observed some very interesting patterns. If you look at the red extinction line in the two graphs on the left, you'll notice there are some spikes in extinction for both Black and Virginia Rails. The first of these occurred in 2007 after the arrival of West Nile Virus in the Foothills. We've now observed two other "extinction events" for Black Rails (in 2009 and 2012) and one for Virginia Rails (in 2012).



Since 2008, we've been capturing rails for our genetics research (more on this below) from wetlands in the foothills and from coastal marshes in the Bay Area, the other place Black and Virginia Rails are commonly found, and testing them for West Nile Virus. The captured birds get an identification bracelet of a standard bird band on their right leg, and with little pain or fuss allow us to take a tiny blood sample from a wing vein. This sample is sent off to a virus lab for analysis which detects if the bird has ever been exposed to the virus but successfully fought off the infection.

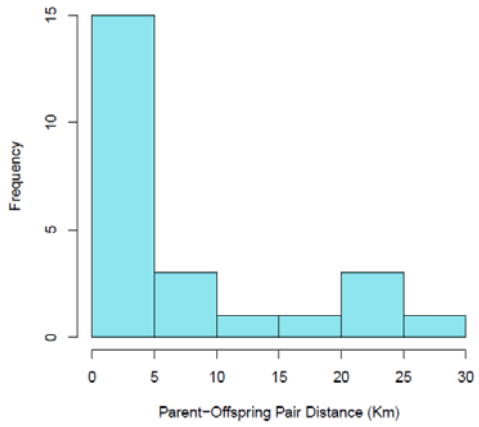
The figure below shows West Nile Virus test results for rails from the Foothills and wetlands of the San Francisco Bay Area. You can clearly see that in both locations the proportion of rails that tested positive for West Nile Virus was much higher in 2012 than in other years.



What is really surprising was the high proportion of birds that had been infected and survived: 52% of Bay Area, 34% of our Foothill Black Rail sample, and 64% of our Foothill Virginia Rails. From this data, we still don't know how many birds died, so we will need to collect more data to definitively link rail extinction to West Nile Virus. We plan to capture more rails again this summer and test them for West Nile Virus to further explore the relationship between West Nile Virus and rails in the Foothills.

OTHER CURRENT RAIL RESEARCH

How far do rails roam from home? You probably remember Laurie Hall, a Ph.D. student at UC Berkeley who's been tracking and trapping rails in the foothills for four years. She's pictured here holding captured Black and Virginia Rails just before releasing them. Laurie refines the DNA extracted from their blood to identify pairs of birds that are related to each other as parent and offspring, similar to the way we identify a human child's real parents. Because it is so difficult to track individual secretive rail's movements in the large geographical area of wetland patches they live in, she uses an indirect method of calculating the distance between parents and their offspring captured in different wetlands to determine how far these little birds fly to find a new home. The figure below shows some of her preliminary data for Black Rails. The graph indicates that her parent-offspring pairs were most frequently caught within 5 kilometers (3 miles) of each other. But some were found in wetlands up to 30 kilometers (18 miles) apart— quite a long distance for a shy little bird that doesn't like to leave its wetland. Even more exciting, one of the Black Rails from the Foothills that she captured and banded last summer was found in Solano County over 70 km away from where we captured it! Although Black Rails appear hesitant to leave their wetland homes, some of them can and do travel long distances, maybe even between wetlands of the Foothills and the San Francisco Bay Area.



How does living in a dynamic, changing landscape affect our rail population's ability to persist over the next 100 years? Wetlands are dynamic features of the foothill landscape—their distribution and locations can change as the flow of water changes, and can shrink or grow each year with changes in rainfall. Irrigation water can create wetlands as well. Nathan Schmidt, another UC Berkeley Ph.D. student, is studying how Foothills' wetland numbers and size have changed over long time periods— looking as far back as the 1950's. A wetland created by a steady supply of irrigation water wouldn't vary as much with annual rainfall, but could change location, shrink, or expand if landowners redirect the water elsewhere or change their management. As suitable habitat shifts around on the landscape, rails need to adjust and move as well. Nathan is interested in determining how these changes interact with the population dynamics of Black Rails and Virginia Rails. Has the irrigation system made wetlands more or less likely to change? Might irrigation-supplied wetlands function as "refuges" for the species in especially dry years? These are some of the questions Nathan hopes to answer over the course of the next few years of his research.

You'll probably see him around a lot, or hear from him, since he will be directing our summer field surveys to detect presence or absence of the rails. (See other members of the field team on the next page.)

WHO WE ARE This research was begun in the late 1990's by **Jerry Tecklin**, a Research Associate at the University of California Field Station near Browns Valley where he was stationed. For several years the California Department of Fish and Game contracted him to look for Black Rails in the foothills. During this time many of you have been contacted by Jerry for permission to enter your property. Eleven years ago **Dr. Steve Beissinger** began to work with Jerry and founded the **Black Rail Study Project**, the current long-term study we are now doing. He is a distinguished professor in the Department of Environmental Science, Policy, and Management at the University of California Berkeley, and a nationally recognized researcher of rare birds and their conservation. Many of his students have made significant contributions to the project. In addition to **Laurie Hall** and **Nathan Schmidt** who you can see on P. 3, here are some other folks working on the project you may be fortunate to meet. That's Steve with the binocs, Jerry doing what comes naturally, and smiling "Mosquito Man" Tony Kovach from UC Santa Cruz. We are fortunate to have two new experienced field technicians, **Ryan Russell** (Bottom, Left) and **Tricia Gardner** (Bottom, Right). Ryan is from Cal Poly San Luis Obispo and Tricia from UC Berkeley. You can always contact us by calling the Field Station, 530-639-8809; or emailing Nathan at vanschmidt@berkeley.edu , Jerry at jetecklin@ucdavis.edu, or Dr. Beissinger at beis@berkeley.edu. Consider visiting our website: http://nature.berkeley.edu/~beis/rail/. There you will find pictures as well as sound recordings of rails (look under "Links"), and lots of other information.