

THE CALIFORNIA BLACK RAIL REPORT

A NEWSLETTER FOR LANDOWNERS COOPERATING WITH THE CALIFORNIA BLACK RAIL STUDY PROJECT http://nature.berkeley.edu/~beis/rail/ Vol. 10, No. 1

THE NEXT HUNDRED YEARS

Here we are after 10 years of visiting your property and surveying your wetlands to assess the status of the California Black Rail, and it's time to update you and share some of our current and future plans. We'd also like to introduce you to the new folks working with us on the Black Rail Project and our collaboration with a new study of foothill wetlands. Sorry, we don't have space for the whole century's agenda (Joking, of course.), but we are doing some research that we hope will help us project the status of rail populations over the next century.

As always, we thank you for letting us onto your property and making it possible for us to carry on our studies. We are still mainly visiting wetlands on public and private lands in Butte, Nevada, and Yuba Counties. We call this our "study area", and you are part of it. However, this last year we've found significant occurrences in Placer County too. We are excited about this range extension, an intriguing complication which we still have to assess. One of these new Black Rail wetlands is even a salt lick; it's fed by a spring that was once so salty it was used by Native Americans to extract the salt for their uses.

How many more little islands of wetland in our foothill pastures and open spaces are there out there, like a chain of stepping stones, connecting the Foothill Black Rail population to their kin in the coastal marshes of the Bay Area and its estuaries?

Our last spring-summer field season completed a 10 year assessment of the status of the Foothill rails. You may recall that we are simultaneously surveying for the more common and much larger Virginia Rail when we are out there detecting Black Rails. Some of you requested a summary of these finding which we emailed to you. Here are some graphs that summarize how all the wetlands of our study area have fared over the last decade. Note that "colonization" refers to a new detection in a wetland where rails had previously not been detected; and "extinction" refers to there not being rails where there had been some before. Overall "occupancy" assesses the condition of all the wetlands. Some are continuously occupied, some never occupied, and some go extinct and get colonized once again. We think the rails were impacted by West Nile Virus, as were lots of wildlife species in our area, in about 2006-07, and it appears that Black Rails have not recovered to their pre-2007 condition, although trending favorably, with colonizations and extinctions in balance. Virginia Rails seem to be faring slightly better. We will be looking further into West Nile Virus in our area starting this summer (See p. 3) in order to better understand the effect this disease is having on wetland species.



NEW APPROACHES TO TRACKING RAILS

Laurie Hall (pictured here holding a plump Virginia Rail chick), who many of you know because she has directed the summer field work for the Black Rail Project the last few years, is now doing full-time research for her Ph.D. degree at UC Berkeley on some tricky Black Rail mysteries. We know that Virginia Rails are very

good flyers and can travel great distances between wetlands, but Black Rails are much smaller and appear to be poor fliers. In fact, even avid birders rarely see Black Rails flying. It is extremely difficult to follow how rails move around in the landscape, even when we put miniature radios on their backs to track their movements. So Laurie is tracking them indirectly by comparing how their DNA differs, the different genetic fingerprints of the different populations. She is trying to decipher how far rails move between wetlands and to predict what they will do as wetlands change over time, especially with climate changes in Northern California and in the Bay Area.

Within the Sierra Foothills it is possible to use the DNA of captured rails to identify them as parent and offspring pairs from a specific wetland. She can then measure the distance between where these two



birds were captured and use it as an estimate for the distance that a young bird moves after it was hatched in its parental wetland. She has a bring-them-back-alive "trapping team" working in different wetlands to capture rails and take tiny samples of blood for DNA analysis to make these determinations.

We can also use genetics to measure movement of rails on a larger scale between the Foothills and the San Francisco Bay Area, using population assignments based on their DNA "signatures". Rails from the Foothills have a different genetic signature than rails from the Bay Area (shown by different colors in the pie diagrams at the left). We can use these differences to identify birds that have moved between the two regions. For example, a rail that is captured in the Bay Area but has a genetic signature from the Foothills must have hatched in the

Population assignments



Foothills and then flew to the Bay Area. We may even be able to detect differences within the Bay Area marshes and find out how rails move around there. Since we also can get DNA from hundred year old rail specimens preserved in museums, it may be possible to understand rails movements through time and predict what will happen as the Bay wetlands change in future.

Another way to indirectly measure the movement of birds is by using chemical signatures in feathers to identify where the birds were living when they grew their feathers. Birds, like us, are what they eat, and their feathers tell the story. Laurie is using chemical signatures of stable isotopes (specific chemical forms of Carbon, Nitrogen, and Sulfur) found in rail feathers to track the movements of birds

between the Foothills and the Bay Area. Freshwater wetlands, like those of the Foothills, have different chemical "signatures" than saltwater marshes of the Bay. This is determined by analyzing vegetation samples from these two very different types of wetlands in a hi-tech machine called an isotope ratio mass spectrometer. Similar analysis of rail feathers reveals their freshwater or saltwater origins, where the birds were when they were eating and growing their feathers. Thus, we can indirectly tell if a rail captured in a Foothill wetland originated there or in the Bay Area. All this takes an enormous amount of work. Soon we'll see what Laurie's results finally reveal.

Please fill out and return the enclosed postcard so we can update our records. Your response saves us lots of time making landowner contacts, and we greatly appreciate your cooperation. We only come onto your property with your permission. One of our field workers plays a few rail calls and listens to detect a response, determining the presence or absence of rails. It takes but a few minutes to assess the status of your wetland. We respect all gates and fences.

A NEW WETLAND COLLABORATION

The National Science Foundation recently funded a new study project to assess wetlands in the Sierra Foothills. This interacts with our interest in Black Rails in the Foothills. Researchers at University of California Berkeley and



Santa Cruz will be looking into how wetlands function hydrologically, how they are used by humans, and also how mosquitoes and rails use them. You may be contacted by **Professor Lynn Huntsinger** or her graduate student **Gareth Fisher**, who are examining what kinds of things foster the sustainability of small wetlands. Lynn and Gareth understand and value the connection between agriculture and wetlands, and the importance of landowner stewardship. They are talking to people with wetlands to learn about how they manage and use them, and what kinds of things they need to continue their stewardship. They want to know how drought, water prices,

regulation, West Nile Virus, and other things might influence your management of wetlands. They are interested in your ideas about wetlands and the long term outlook for our local agriculture. Gareth and Lynn hope to find ways that landowners and managers can benefit from the "ecosystem services", or benefits to society, that come from small

wetlands. Whether you live on a few acres or manage a few thousand, they are interested in your ideas. They will be in the area in May and June and would welcome the opportunity to talk with you at a convenient time. Please don't hesitate to call them with questions!

Lynn Huntsinger: buckaroo@berkeley.edu, 510-685-1884 Gareth Fisher: garethfisher@berkeley.edu, 775-657-1815



Professor Marm Kirkpatrick from UC Santa Cruz and grad student Tony Kovach

will also be doing field work in our area studying West Nile Virus and how it is spread by mosquitoes. In the eastern U.S., Prof Kirkpatrick discovered that flocks of Robins harbored the virus. The goal of their research is to understand the influence of climate, human land and water use, and wetland characteristics on birds, mosquitoes, and West Nile virus. They want to understand how mosquito and bird abundance and the species present differ among rice fields, irrigated pasture, grassland/pasture, and woodland and to what



they trap for West Nile virus.

Marm

extent mosquitoes are affected by the size of nearby wetlands. They are also interested in examining whether mosquito communities differ among wetlands that do and don't persist over the summer. To answer these questions, they will measure the abundance of different species of mosquitoes, using two kinds of mosquito traps, and the abundance of birds, using censuses of singing birds. They will also test the mosquitoes



Tony

A SPECIAL INVITATION: MAY 18, FIELD DAY

Please come to the annual Field Day at the Sierra Foothill Research and Extension Center in Browns Valley (locally known as The Field Station). It's a chance to see our beautiful headquarters and hear our presentation of ten years work on Black Rails, as well as interesting natural resources presentations by others. Starts at 9 a.m. with a barbecue at noon, and afternoon activities. See <u>http://ucanr.org/sites/sfrec/</u> for directions, agenda of the day's activities, and other details, or call the Field Station at 639-8800. We hope you can join us!

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. Ten 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. Laurie Hall (pictured on p. 2) is doing her Ph.D. work in Steve's lab on genetics and dispersal of the rails. Nathan Schmidt, also doing his Ph.D. with Steve, is now leading the summer field work, as well as studying why some of the wetlands are unsuitable for Black Rails, and how they are changing over time. Nadje Najar who worked with us last summer will be in the field with us again this year. Ask her about bird calls; she's an expert. Kelly Morris will also be on our field team for the first time, coming to us from her work on the genetically distinct Black Rail population of the Lower Colorado River.

You can always contact us by calling the Field Station, 530-639-8809; or emailing Nathan at <u>vanschmidt@berkeley.edu</u>, Jerry at jetecklin@ucdavis.edu, or Dr. Beissinger at <u>beis@berkeley.edu</u>. Consider visiting our website: <u>http://nature.berkeley.edu/~beis/rail/</u>. There you will find pictures as well as sound recordings of rails (look under "Links"), and lots of other information.



Steve



Jerry



Nadje





Kelly

