



Keeping Landscapes Working

A Newsletter for Managers of Bay Area Rangelands

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A newsletter provided by the UC Cooperative Extension Natural Resources Program in the San Francisco Bay Area. This newsletter provides information to managers of both public and private rangelands. RANGELAND, which is land characterized by natural vegetation, i.e. grass, forbs and shrubs and managed as a natural ecosystem, is the predominant source of OPEN SPACE in the San Francisco Bay Area.

Sheila Barry, UCCE Bay Area Natural Resources Advisor

Disease Update

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Plant and animal diseases can negatively affect animal, human and ecological health. This issue of "Keeping Landscapes Working" includes updates on the following plant and animal diseases that may be of concern to stewards of Bay Area Open Spaces:

***Lyme Disease West Nile Virus
Sudden Oak Death Syndrome (SOD)
Diseases causing abortions in cattle***

Lyme Disease



Hundreds of cases of Lyme disease have been reported in Northern California. It is caused by the bacterium, *Borrelia burgdorferi* that is carried by some Western Black-legged ticks. Early symptoms of Lyme disease include a red, circular spreading rash, which usually appears three days to one month after being bitten by an infected tick. Fever, aches, and fatigue may accompany this. Later complications of Lyme disease include inflammation of the heart, nervous system, and joints. It may be cured by early diagnosis and appropriate antibiotic treatment, but it may persist in the human body for years if not properly treated. In Northern California, most cases of the disease are reported in spring or summer, which coincides with periods when nymphs are seeking hosts. Previous studies have shown greater infection rates in nymphs (13.6%) than adult ticks (4%). Infection rates in ticks in the Bay Area may be as low as 1 to 2 %. Infection rates in California are much lower than in the northeastern U.S. where 30 to 60% or more of adult ticks may be infected.

A recent study reported in the Journal of Medical Entomology, evaluated six different human behaviors as potential risk factors for coming in contact with a Western Black-legged tick in oak woodlands in Mendocino County. The prevalence of the disease causing bacterium in collected ticks was also evaluated.

Activities involving exclusive or predominant contact with wood resulted in human subjects acquiring more nymphs than activities involving exposure only to leaf litter. Time-adjusted-tick-acquisition rates demonstrated that sitting on logs was the

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riskiest behavior, followed by gathering wood, sitting against trees, walking, stirring leaf litter, and sitting on leaf litter. The number of ticks acquired appeared to be unrelated to the type of footwear worn (hiking boots, hiking sandals, or running shoes).

In addition to their association with wood, other conditions where the Western Black-legged tick may be prevalent include grasses and brush in rural settings that receive afternoon shade. This tick does not like sunny, open areas. Ticks do not fly, jump, or drop from trees. Ticks climb on the tips of vegetation, typically along animal trails or paths, and wait for an animal or human host to brush against them so they can attach themselves. This behavior is called “questing”.

Overall, in the study described above, 3.9% of the ticks were infected with the Lyme disease-causing bacterium, *B. burgdorferi*. Given the density of ticks in the test area, this rate of infection equates to a density of only one infected tick per 100 square miles. The researchers acknowledged that the likelihood of anyone being exposed to the attachment of an infected tick given these densities would be low, unless an individual is bitten repeatedly.

In any case, the researchers advise people who work or recreate in the oak woodlands to inspect themselves frequently during seasons when the ticks are active, taking care to re-examine themselves for another 2 or 3 days after exposure because nymphs which have been feeding are more easily detected than recently attached, unfed ticks.

Use of proper outdoor clothing and tick repellents are advised to prevent tick bites.

What should I do if I am bitten by a tick?

Since it may take a day or more for the tick to transmit the bacteria, prompt removal of ticks should prevent disease transmission.

Grasp the tick with a tissue or tweezers, (Never with your bare hands!) as close to your skin as possible. If ticks are crushed with bare fingers, exposure to the tick body fluids may lead to transmission of the disease organisms.

GENTLY pull the tick from the skin. Do not twist or “unscrew” the tick. Do not attempt to remove by burning with matches or by applying vaseline, kerosene etc. since this can cause the tick to regurgitate its gut

contents, increasing the risk of disease transmission.

Apply an antiseptic to the bite area after removing the tick. Wash your hands with soap and water. If the tick cannot be removed or part of it is left in the skin, consult your physician.

Save the tick for identification! Contact your local Vector Control or Mosquito Abatement District, or state or county Health Department to determine if the tick is one capable of transmitting Lyme disease.

References: Lane, R. S., D.B. Steinlein, and J. Mun. 2004. Human Behaviors Elevating Exposure to Ixodes pacificus (Acari: Ixodidae) Nymphs and Their Associated Bacterial Zoonotic Agents in a Hardwood Forest. J. Med. Entomol. 41(2). Contra costa County Vector Control District website: www.ccmvcd.dst.ca.usa

West Nile Virus

West Nile is a type of virus that causes encephalitis, or inflammation of the brain. The virus has been found in Africa, Western Asia, the Middle East, the Mediterranean region of Europe, and the US.



West Nile Virus (WNV) was first identified in the United States in 1999 in New York. In 2003, 6,411 human cases have been identified, with 134 deaths to date. Currently, WNV activity has been found in 45 states. WNV is spread by mosquitoes that have fed on the blood of infected birds. They then pass the infection on to humans or other mammals. WNV has first detected in California last summer. So far, it has only been found in Southern California but it is expected to reach Northern California late this summer.

Health officials emphasize that the risk to humans is low. Most individuals who are infected with WNV will not experience any illness. Approximately 10 to 15 percent of infected individuals will have only mild symptoms, such as fever, headache and body aches. In less than 1 percent of infected individuals, the virus causes neurologic illness, including inflammation of the brain. WNV can be severe in the elderly and individuals with lowered immune systems.

Landowners have a duty to reduce the risk of WNV and other mosquito-borne diseases by controlling mosquito populations:

- Eliminate standing water in buckets, old tires, gutters, drains, etc. Mosquitoes require standing water to breed.

- Stock your water troughs with Mosquito Fish, which are available free of charge from local vector or mosquito control districts. Note: mosquito fish should not be put in stock ponds which provide habitat for red legged frogs or California tiger salamander
- If you irrigate pasture or other ground, make sure drainage and irrigation rates leave no standing water after 4 days (96 hours).

Horse owners should take extra precaution since up to 30% of horses infected with West Nile Virus are killed or debilitated by the virus. Horses should be vaccinated for West Nile Virus. Consult your vet for more information.

In addition, please assist in monitoring for West Nile Virus by reporting dead birds. To report a dead bird in California, call toll free 877-WNVBIRD or submit a web-based form.

Additional information about WNV in California can be found at <http://www.dhs.ca.gov> or by calling the CDHS WNV information line, (866) 847-2246 or the California West Nile Surveillance Information Center at <http://westnile.ca.gov/>

Sudden Oak Death

Information adapted from California Oak Mortality Task Force Reports and Website. For more information see www.suddenoakdeath.org.



Sudden Oak Death is a forest disease caused by the fungus-like pathogen,

Phytophthora ramorum. This pathogen has caused widespread dieback of tanoak and several other oak species in the central and northern coastal counties of California, and has to date been associated with 26 different plant species. While some of these species, coast live oak, black oak, Shreve oak and tanoak, sustain lethal trunk infections, other plants get more benign foliar and twig infections. Many of these species with foliar infections play a key role in the spread of *P. ramorum* by acting as a reservoir of inoculum, which may then be spread aerially via wind blown rain. The two plants determined to be the greatest sinks for inoculum are California bay laurel and Rhododendron spp. Mortality is most common where oaks and these foliar hosts are found growing together.

Foliar infections, which often appear as leaf spots and twig infections referred to as cankers, do not

necessarily result in the death of the plant. On the other hand, cankers on the trunk of a tree are often very damaging. Tree death appears to occur when cankers expand in the trunk (girdling). Other pest organisms, fungi that decay sapwood and bark beetles, often attack diseased oaks. It should be noted that on some affected species, the symptoms are hard to detect or differentiate from those of other pathogens.

P. ramorum appears to thrive in cooler, wetter climates. In California, it is found only in the coastal counties. Dispersal is likely caused by wind blown rain-splash and infested plant material. In addition to California, the pathogen has been found in Curry County, Oregon, where they are implementing an eradication program. In Europe, *P. ramorum* has been identified on plants in Germany, Spain, France, Poland, Belgium, Sweden, Italy, the Netherlands, and the United Kingdom.

Monitoring Update

Maps and other distribution information for *P. ramorum* reside at the OakMapper, <http://www.oakmapper.org> and are accessible via <http://www.suddenoakdeath.org/>. The site is overseen by Maggi Kelly, UC-Berkeley, and funded by the California Department of Forestry and Fire Protection and USDA-Forest Service. It includes a section where the public can report symptomatic trees.

General statistics and changes in *P. ramorum* wildland distribution.

The number of official *P. ramorum* confirmations from California wildlands have increased to 485 in the 12 infested counties (this number does not include confirmations from nurseries and other contained facilities). One hundred eighty-six new wildland confirmations were added in 2003.

Some of the confirmations resulted from aerial surveys. Over 10,000 miles were flown in a fixed-wing aircraft to survey 13 million acres of host habitat. Ground checking was conducted on over 100 areas where mortality existed. The survey established a new southern boundary for CA's *P. ramorum* infestation, near Plaskett Creek in southern Monterey County, just 15 miles north of the San Luis Obispo County line. Significant new tanoak mortality also appeared in several canyons south of Julia Pfeiffer Burns State Park near Big Sur.

To the north, the only confirmations in Humboldt County are still clustered in a 2 square mile area in Redway (2 on coast redwood and 10 on California bay laurel). There were no new reports of the pathogen in Mendocino County, but Western Sonoma County has experienced widespread scattered tanoak mortality over 20 miles from Guerneville along King's Ridge to east of Stewarts Point. Bleeding coast live oaks and leaf spots on California bay laurel were also scattered across much of Sonoma County.

Diagnostic Lab results

The plant disease diagnostic lab at the California Department of Food and Agriculture in Sacramento processed more than 1866 samples for *P. ramorum* detection in 2003. *P. ramorum* was isolated from 288 samples. Nursery inspections in infested and uninfested counties resulted in over 840 of the samples. Nursery samples were taken primarily by county biologists to comply with the yearly inspection requirement for nurseries located in infested counties that sell *P. ramorum* host plants.

P. ramorum has been detected at a few nurseries within the regulated area. In San Mateo County, on February 17, 2004, *P. ramorum* was detected on five, 5-gallon containerized *Camellia japonica* "Shiro Chan" plants at a wholesale nursery. On February 23, 2004, *P. ramorum* was detected on several varieties of *Camellia japonica* and *Kalmia latifolia* plants at a nursery in Sonoma County. At both nurseries, the infected plants were detected as part of routine quarantine inspections required for all nurseries that move *P. ramorum* host plants out of the regulated area. The movement of all *P. ramorum* host and associated host plants from the nurseries to areas outside of the regulated area has been suspended.

This fall, all samples from Douglas-fir and Grand fir Christmas tree farms also tested negative for *P. ramorum* (except one sample that is still pending).

Status of *Phytophthora ramorum* in Oregon

Despite several new occurrences of *P. ramorum* in 2003, distribution of the pathogen in forests remains limited to a very small area near Brookings, Oregon. New isolated infestations as far as 1.8 miles from other infestations suggest aerial or vector transmission. *P. ramorum* survived cutting and burning on approximately half of the eradication sites, and is present

at low levels in stump sprouts and soils. *P. ramorum* has been detected in several streams associated with eradication sites, but rarely in streams not clearly associated with known infestations. As a result of the 2003 surveys, the Oregon Department of Agriculture will increase the area under regulation for *P. ramorum* from 9 mi² to 11 mi². Efforts to eradicate the pathogen from Oregon forests are continuing on approximately 60 acres of forest within this area.

Phytophthora Monitoring in the Eastern US

The recovery of *P. ramorum* from northern and southern red oak (*Quercus rubra* and *Quercus falcata*) in Europe raises the likelihood that *P. ramorum* might be found in US red oak forests and increases interest in the role of *Phytophthora* species in Eastern forest ecosystems. To date, surveys of nurseries and forest in the Eastern US have not recovered *P. ramorum*.

Management

Santa Cruz County plans to remove 1,465 *P. ramorum* hazard trees at risk of falling along roads and power lines in the Santa Cruz Mountains between Soquel Creek and Bonny Doon. The \$437,000 cost of removing the trees will be funded out of California State Sudden Oak Death Tree Assessment, Removal, and Restoration Plan funds. Logs and woody debris that cannot be left on site will be taken to the new SODBusters collection yard at the Ben Lomond Transfer Station. In 2003, 655 hazard trees were removed by Santa Cruz County using a \$225,000 state grant. For more information contact Karl Buermeyer, krbuermeyer@ucdavis.edu.

In an effort to slow the spread of *P. ramorum*, the Humboldt County Department of Agriculture, the California Department of Forestry and Fire Protection (CDF), and the University of California Cooperative Extension removed and disposed of 77 California bay laurel trees infected with *P. ramorum* in Humboldt County. The project took place February 19-20, 2004 in the County's only known area of infection on 6 different properties. Following the treatment, soil, water, and plants in the area will be monitored to determine if this procedure was effective in limiting pathogen spread in Humboldt County and if further treatments are warranted. All involved are very grateful for the landowners' cooperation in this project.

P. ramorum was discovered on California bay

laurel in a forested rural residential area of Redway in Southern Humboldt County on several homeowners' properties in 2002. Surveys in Humboldt County and the North Coast have found no further areas of infection. Since the pathogen did not spread as fast as anticipated, a slow-the-spread project was deemed worthwhile.

Three landowners did not participate in the project, leaving several infected California bay laurel trees and a 2-inch redwood sapling yet to be removed. Forestry and agriculture officials will continue to seek permission to remove the trees.

The *P. ramorum* infections in Redway are approximately 110 miles from the four confirmations in Mendocino County and about 128 miles from the *P. ramorum* infestation under eradication in Oregon. The geographic isolation of the Redway site makes unlikely the re-infection of Humboldt County via windblown rain from the other known infestations.

To further reduce potential reintroductions, Humboldt County will appeal to USDA Animal and Plant Health Inspection Service (APHIS) and the California Department of Food and Agriculture (CDFA) to reduce the portion of Humboldt County within the *P. ramorum* regulated area. Due to changes in CDFA's *P. ramorum* regulation, host plant material may move freely within the entire 12 county regulated area. By shrinking the size of the regulated area in Humboldt County, the portion outside the quarantine area will have additional protections provided by pre-shipment inspections and other restrictions. The appeal is based on the regulatory treatment of Curry County, Oregon, where eradication and careful monitoring require only 11 square miles of Curry County to be inside the regulated area.

Funding

The federal government is providing \$7.4 million in funding for Sudden Oak Death in 2004. Funds are allocated to the USDA Agriculture Research Service (ARS), USDA Animal Plant Health Inspection Service (APHIS) and USDA Forest Service.

Up-coming Training

Training sessions for *Phytophthora ramorum* recognition, quarantine compliance, and treatment:

April 22, Southern region: Santa Cruz County, exact location pending. Details will be provided at www.suddenoakdeath.org or contact Lucia Briggs, at

lbriggs@nature.berkeley.edu.

May 20, Northern region: Sonoma County, exact location pending. Details will be provided in future newsletters or contact Lucia Briggs, at lbriggs@nature.berkeley.edu.

Preventing Abortions in Cattle

By John Maas, DVM, MS, University of California Extension Vet-Med

One of the most discouraging problems in cow-calf operations is abortions.



The cow or heifer got bred, conceived and is carrying the calf and BANG! You've got nothing! At least if the calf was born and developed scours or pneumonia you would have a

chance to treat and save the calf. But with an abortion, you've lost a year's production with that cow.

What causes abortions? For the most part, abortions are caused by infectious agents—viruses, bacteria, and protozoa. In California, selenium deficiency is also a common cause of late term abortions. The common bugs are Bovine Virus Diarrhea virus (BVD), Infectious Bovine Rhinotracheitis virus (IBR, rednose), Foothill Abortion, Leptospirosis, and Neospora. One bug we can't forget is *Brucella abortus* (Brucellosis).

How many abortions are too many? It is common in nature to have 1% abortions in a herd of cattle and these commonly occur just before the anticipated calving season or early in the calving season. When the number exceeds this level it is time to act.

What if I have too many abortions? The first abortion that occurs is usually not a cause for concern; but if a second one occurs don't hesitate to call your veterinarian. The California state diagnostic laboratory (California Animal Health & Food Safety [CAHFS] laboratory system) does an excellent job of finding out the cause of abortions at a very reasonable price. Your veterinarian will submit samples (often the entire fetus) to the lab. If there is a delay in getting the fetus to the lab—refrigerate it, do not freeze it. When you get a diagnosis back, you and your veterinarian will know what steps to take or what to fine-tune in your current prevention program.

What should I be doing to prevent abortions?

There are a number of things that must be done to prevent each type of abortion and these are briefly listed below. The main thing to do is to consult with your veterinarian well ahead of time to be sure you are doing all those things that are critical to your operation.

Viral Abortions—BVD and IBR

These are viruses that can be spread on equipment and clothing, as well as by contact with infected animals. Be sure to vaccinate all replacement heifers with a modified live virus vaccine (usually a 4-way IBR, PI3, BVD, BRSV vaccine) at some point prior to breeding. Afterwards, give yearly boosters with the killed virus vaccines (any time before the third trimester of pregnancy [before they are 6 months pregnant]) or use the modified live vaccines when they are open, just before turning in the bulls. **Most MLV vaccines are not approved for use in pregnant cattle. If you have any questions regarding virus vaccines, contact your veterinarian.**

Leptospirosis

This is a group of bacteria transmitted via the urine of infected animals contaminating feed and water. It can be spread by many species of animals, such as dogs, rats, and wildlife. Infection usually causes late term abortions (6-9 months). Most veterinarians recommend annual or twice-annual vaccinations with multivalent vaccines, such as 5-way (*L. pomona*, *L. hardjo*, *L. grippotyphosa*, *L. canicola*, *L. icterohemorrhagia*) or GHP (3-way) can usually prevent abortions. It is best to vaccinate when turning the bulls in or before the cows are 5 months pregnant.

Brucellosis

This disease is almost eradicated from cattle in the U.S. Almost, but not quite! Veterinarians and your state animal health officials highly recommend you continue to vaccinate all your replacement heifers against Brucellosis (Bang's vaccination) at or near weaning.

Foothill Abortion

This is a bacterial disease that is carried by the Parajuello tick and causes late term abortions. This disease costs California cattle producers an estimated

13-18 million dollars annually. There has been great progress made by UC researchers in the past few years; however, there is no vaccine currently available. When susceptible cattle are bitten by the tick during the first to seventh month of pregnancy, they can abort in 90 to 120 days. The best prevention is to expose cows and heifers to the tick inhabited areas when they are open or greater than 7 months pregnant and to keep them away from these areas when they are bred from 1-7 months. Contact your veterinarian or livestock advisor if you are unsure where the ticks might be on your ranch. Also, if you anticipate bringing pregnant cattle (1-7 months pregnant) into a high risk Foothill Abortion area, contact your veterinarian ahead of time.

Neospora Abortion

A protozoon carried by dogs and transmitted to cows through the feces, then transferred on to fetus through the placenta. Also, the agent can be transmitted from the cow to the calf. Usually causes abortions at 4-6 months of pregnancy. This is a very common cause of abortion in dairy cattle, much less common in beef cattle. Restrict access of dogs (potential carriers) to stored feed and feeding areas. If the disease is diagnosed in an aborted calf and its dam is found to be seropositive for the disease, consider culling the cow and any female offspring. Also, testing of the cows in the herd can be used in a test and cull program to help eliminate the agent from a closed herd. Consult with your veterinarian about the various options if this disease is a problem in your herd.

Selenium Deficiency

This trace mineral deficiency causes white muscle disease, weight loss, diarrhea, infertility, retained placenta and decreased immune function. When selenium deficiency causes abortions, it is usually in the last trimester. The fetus develops white muscle disease before it is born and dies—thus the abortion. Prevention is best accomplished by use of the new selenium boluses that last for one year or by feeding of a loose salt mineral mix containing 120 parts per million at one ounce per head per day. Consult your veterinarian if you are unsure if your herd is selenium deficient. He or she can do blood tests to determine the selenium status of your herd.

California Grazing Academy Low-Stress Livestock Handling School

April 23-27, 2004

Sierra Research and Extension Center, Browns Valley, CA.

The California Grazing Academy emphasizes practical application of controlled grazing principles to improve the environment and increase ranch profit.

Fee: \$295 (includes meals, and course materials – some lodging available) Limited sleeping space available — first come, first served (bring your own sleeping bag and towel) NO REFUNDS. Your check guarantees your space.

The school emphasizes hands-on experience and your participation will result in increased knowledge and skill in the following areas:

- Step-by Step Training Approach
- Flight and Pressure Zones
- Movement – starting, maintaining, controlling speed, getting desired direction
- Sorting
- How to use these principles and techniques to place animals on the range without fences

After completing the Academy, course participants will be able to:

- Assess the condition of the four basic ecological processes that determine ranch productivity.
- Apply principles of time and stock density to improve pasture productivity and stock performance.
- Estimate carrying capacity.
- Apply principles of animal behavior to reduce stress.
- Determine the supplementation needs of grazing animals.
- Design a layout to efficiently use resources and apply controlled grazing principles.
- Immediately improve grazing management on their own ranch.

For more information call Roger Ingram, (530) 889-7385, or email at rsingram@ucdavis.edu

An on-line registration form is available at ceplacervevada.ucdavis.edu

Just follow the link to Livestock and Natural Resources and then to California Grazing Academy.



Registration Form

Please enclose a check made out to UC Regents

Please check the academy you are registering for:

2004 California Browsing Academy, \$110

2004 California Grazing Academy/Low Stress Livestock Handling School, \$295

Name _____

City _____ State _____ Zip _____

Telephone _____ email _____

What types of animals do you graze or manage? _____

How many head _____ on how many acres? _____

What is the number one thing you would like to learn at the Browsing Academy? (Use separate sheet)

Mail registration to Roger Ingram, California Grazing Academy, 11477 E Ave, Auburn, CA 95603

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