RANGE BULLETIN

Livestock & Natural Resources Newsletter

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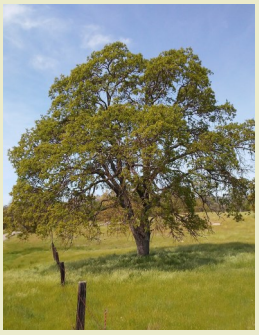

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News Briefs

2018 Rangeland Weed Management Workshop

UCCE Fresno and Tulare Counties, in conjunction with Point Blue Conservation Science and the Sequoia Riverlands Trust, hosted a Southern San Joaquin Valley Rangeland Weed Management Workshop in Tulare on May 1, 2018. Topics included field weed identification, riparian weed management, how to prioritize management at the ranch scale, and new research on barb goatgrass.

Presentations from the speakers are available online at **http://ucanr.edu/sites/livestockandnaturalresources/Events/** and you can contact Rebecca Ozeran with any questions.

In the works

UCCE livestock and range advisors, in collaboration with ranchers throughout California, will soon be developing an update to the Rancher Sustainability Self-Assessment (RSA) which was originally developed for ranchers on the Central Coast. **Contact Rebecca at (559) 241-6564 or rkozeran@ucanr.edu if you would like to be involved in the update process.**

Forage Outcomes

In the winter issue of this newsletter, I looked at historical data to predict the potential forage production for this spring. Now that the growing season has ended, how did we do?

"Miracle March" or not, the southern San Joaquin Valley was fortunate to receive a lot of rain in March and into April. March rainfall was approximately equal to the total rainfall received from October through February, bringing our rainfall totals much closer to the average - and in some places, exceeding the average - for the area.

The pattern of rainfall did not help ranchers, because it meant that livestock did not have access to a good forage supply until March. Many valley and foothills ranchers fed additional hay during the unusually dry months from December through February. Others downsized their herds to avoid unaffordable hay feeding costs.

Despite the worryingly dry winter, the peak standing crop measured at the San Joaquin Experimental Range this spring was 2038 lb/ac, which is approximately 90% of average for the site. This value falls perfectly within the predicted range of forage production assuming an average amount of spring rain (see table below).

Weather Pattern	Potential Total Growing-Season Rainfall (in.)	Predicted Peak Standing Crop (lb/ac)
Dry winter, dry spring	**7**	**1053** ± 206
Dry winter, average spring	**15**	**2076** ± 82
Dry winter, wet spring	**21**	**2527** ± 91

However, this end of season value clearly does not reflect the impact of the pattern of precipitation on actual forage availability during the grazing season. Current financial support for livestock producers experiencing drought often focuses on the forage production total rather than the direct financial impact of weather and forage production patterns. We may need to explore additional resources to help ranchers buffer against years of inadequate early feed despite adequate season-end total forage.

Rebecca is working to increase the number of sites used to estimate forage production and drought impacts in Fresno and Madera Counties. If you would be interested in hosting this kind of monitoring on your ranch, contact Rebecca at 559-241-6564.

Know Your Rangeland Thistles

Despite the late rain, our forage has gone to seed, and ranches are turning golden brown for the summer. Although it means that forage quality (particularly protein content) is declining quickly, the changing colors can help you to identify and manage weedy patches on your property.

Many of our weedy broadleaved species stay green longer than our grasses thanks to the broadleaved species' deep taproots. Thistles in California are no exception to this trend. As a result, patches of thistles can be easier to spot even from a distance during early summer, and they can give you an idea of what parts of your property may need attention.

Granted, early summer will not be the most effective time for most weed control options. Most of our weeds rely on producing seed for next year, so effective weed control requires prevention of seed production. Even mechanical removal of flowering thistles may not fully eliminate seed production for the year - some viable seed may still make it to the ground before you are able to remove the plant.

Instead, I suggest you take this time to identify areas that will continue to be a problem. Take advantage of the summer to decide which weedy patches you will address in the coming year and which tools you plan to use.

But first: why does it matter which thistle species are on your property?

There are three main reasons why it is important to know what kind of thistle you have.

1- not all thistle species pose the same risk to livestock. Some species have extremely long spines, while others are short enough that they won't even penetrate the hair on an animal. Some thistles are toxic, while others are chemically harmless. The more hazardous thistles include:

Yellow starthistle, due to its relatively long spines and because it contains a neurotoxin that can cause chewing disease in horses if they eat enough of the plant – the disease may develop after a horse eats almost their entire body weight in starthistle. Horses will not generally choose to eat yellow starthistle unless it is the primary available food source, e.g. if the horse pasture has been dominated by starthistle. Chewing disease is usually fatal by the time its signs are noticeable: inability of the horse to chew or drink properly, sometimes accompanied by distressed behavior. Because the toxin causes irreversible damage to brain tissue, horses are unlikely to regain their ability to eat and drink independently, and this is the usual cause of death. Fortunately, cattle, sheep, and goats do not seem to be affected by the neurotoxin. You can learn more about chewing disease from New Mexico State University Extension, at http://aces.nmsu.edu/pubs/_b/B710/.

This article continues ▶

Thistles cont'd

Blessed milkthistle, due mainly to its potential to accumulate nitrate in the leaves, which can be toxic for sheep and cattle. The thistle may pose a risk if it is the dominant plant in their pasture or if it is water-stressed. Goats do not seem to be as vulnerable to milkthistle nitrate toxicity.

2- not all thistle species are equally likely to infest and dominate your pastures. For example, yellow starthistle is often seen taking over pastures, whereas Italian thistle is a less common pasture dominator. The ability of a species to invade a pasture will depend on the soil type, precipitation patterns, other vegetation, thistle propagule pressure (seed or rhizome abundance and how often they are released in the pasture), and management decisions (grazing patterns, use of fire, seeding, herbicide, etc.). Because it is unlikely that you will be able to eradicate all thistles in your pastures, you may want to observe the thistle populations over time to determine which of them have the greatest potential to expand beyond their existing patches on your property. Those observations can help you allocate your limited resources (especially time and labor) to the biggest threats.

3- finally, each species is going to respond to management tools differently. If you apply one kind of treatment to every thistle on your property, some will be well controlled while others may be unharmed or even favored. For example, tillage creates many fragments of stems and roots, which could enable a root-sprouting species to spread even further in your pasture. In another example, you might effectively kill one thistle species with a certain herbicide, but others might be unaffected and able to spread the following year. In the following section I will summarize the most effective management tools for each kind of thistle, but for specific herbicide or other treatment recommendations I suggest you contact your local UCCE office and/or refer to the book *Weed Control in Natural Areas in the Western United States*.

Common Southern San Joaquin Valley thistles include introduced thistles and a native thistle.

Native thistle:
California (or cobwebby) thistle (*Cirsium occidentale* var. *californicum* or *Cirsium californicum*); found in all five SSJV counties; blooms in May, June, & July. Longer phyllary spines than bull thistle, leaves gray-green due to short dense hairs, and leaf lobes curl upward like waves.
This species looks a bit like both bull thistle and Scotch thistle.

Cirsium occidentale var. *californicum*

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Thistles cont'd

Introduced thistle species:

Carduus	Centaurea	Cirsium	Silybum	Onopordum
Italian thistle	Yellow starthistle	Bull thistle	(Blessed) milkthistle	Scotch thistle
				
	Tocalote (Malta starthistle)	Canada thistle		All of these species are found at least one of Fresno, Kern, Kings, Madera, or Tulare Counties
				

Thistle Management Options

***Carduus* species** (Italian thistle): Hand-pull, cut or mow Italian thistle when it is in the early flowering stage, before seeds mature. If possible, remove seed heads from the field so that any seeds in the heads cannot reach maturity and contribute to next year's population. Italian thistle can resprout from the root if enough is left behind, so hand removal or cutting should include cutting the root below the soil surface. Herbicides are most effective on the rosette (leaf-only) and rapid growth stages. Targeted grazing with sheep or goats during the flowering stage may be effective, although it has not been tested in California.

***Centaurea* species** (starthistles): Hand-pull, cut or mow yellow starthistle and tocalote in the early flowering stage, when the flower heads are spiny. Remove the entire aboveground plant where possible to reduce the potential for regrowth. You may want to check your pasture and repeat mechanical treatments 4-6 weeks after the initial treatment if the plants are recovering. Herbicides are most effective during the rosette or pre-bolting stages. Goats have been known to eat the spiny flowerheads, so targeted goat grazing can be very effective at reducing seed production. Other livestock species may eat the plant when it is in the rosette stage. Tocalote (Malta starthistle) reaches each stage of growth slightly earlier than yellow starthistle, so you may need to implement these tools earlier in the season for tocalote than you would for yellow starthistle.

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Thistles cont'd

***Cirsium* species** (Canada, bull, and California thistles): Hand pull or mow at early flowering and be prepared to repeat mowing after 3-4 weeks, especially on Canada thistle. Tilling is not recommended on Canada thistle, as it can grow back from root fragments. Herbicide effectiveness on these species depends on the type of herbicide and the time of application, but generally herbicide is most effective on young, rapidly growing plants. Sheep, goats, and horses may graze bull thistle.

*Keep in mind that the native California thistle should not generally pose a problem to your operation. However, control methods that are effective on Canada and bull thistle may also damage the native thistle. If you have California thistle and would like to maintain it, be cautious about using broad-area treatment methods such as aerial herbicide spraying.

***Silybum* species** (blessed milkthistle): Till seedlings and young plants, or mow before flowers open. Herbicides are most effective during the rosette and rapid growth stages.

***Onopordum* species** (Scotch thistle): Dig up individual plants, removing as much from above and below ground as possible. Herbicides are most effective on the rosette stage. Sheep, goats, and horses may graze Scotch thistle.

All species: Maintain vigorous, dense competitors, through seeding, grazing, and other land management tools. Without space to grow, thistles should remain a minority. Prescribed burning is unlikely to be effective, as thistle patches are often not dense enough to carry the flame themselves, and the timing for burning to be effective on thistle may coincide with the peak seed production of our desired forage grasses. Some thistles may also respond positively to fire; yellow starthistle is one example thistle which can come back vigorously after a burn. Burning might therefore cause more harm than good.

*Much of the information in this article can be found in the book *Weed Control in Natural Areas in the Western United States*, a fantastic resource that is available from your local UCCE office or online. The UC Weed Research and Information Center (Weed RIC) has additional resources, including links to purchase the book, at wric.ucdavis.edu. You can also find individual species' reports from the book and download a PDF version of them for free by searching "*species name* + wric weed report" in your web browser.

If you have questions about managing weeds on your property, contact the Fresno UCCE office at (559) 241-7515.

Wild Horses on Public Lands: a Perspective from Northern California

By Laura Snell

Wild Horses have been in the news quite a bit lately with talk of changes in funding and management from the Trump Administration to state leadership. In Modoc County, California wild horses have been a significant topic in my job since day one. I work as a livestock and natural resource advisor for the University of California Cooperative Extension.

Modoc County is roughly 70 percent public land mostly managed by the United States Forest Service (USFS) and Bureau of Land Management (BLM). These lands are managed for multi-use including recreation, wildlife, livestock grazing, timber, mining, etc. On the Devil's Garden management area part of the Modoc National Forest, there is a wild horse herd that is shifting the balance of multi-use to single use.

The horses on the Devil's Garden are the largest wild horse herd managed by the USFS and after agreements with the BLM fell through about 10 years ago, the population of horses has increased significantly. The herd management area (HMA) on the Devil's Garden is capable of supporting 206-402 horses total. There are currently nearly 4000 horses that are inside the congressionally designated territory, outside the territory, on private land, and on tribal land in Modoc County.

Although these horses are designated as wild horses through the 1971 Wild Horse and Burro Act, the horses on the Modoc National Forest all began as domestic horses, released after the mechanization of farming in the early 1900s or left from old USFS horse permits. Local ranchers and cowboys kept the population in check until the passing on the 1971 act. Wild Horse herds double every 4-5 years with little natural predation.

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Wild Horses cont'd

The Devil's Garden is a unique volcanic high plateau mostly vegetated by sage brush, perennial grasses, and juniper trees. Spring moisture from snow melt and natural springs, make this area an essential fly way and nesting ground for birds in the spring and an important habitat for deer and elk as they move back and forth across the California/ Oregon border.

University of California Cooperative Extension research has focused on use of natural springs by wildlife, livestock and horses for the past three field seasons. Springs with wild horse use only, horse and livestock use, and livestock use only are used in the study to look at differences. Using trail cameras, the timing, duration, and species visiting the springs can be determined and noted for two week periods in the spring, summer, and fall. As well as picture monitoring, vegetation monitoring also occurs during each sampling period.

The preliminary pictures and numbers speak for themselves. Wild Horses have been found to be 70 percent of the visits to some springs, and 20 percent livestock use. The stubble height at the spring edge is often zero or bare ground with bare ground expanding up to 30 feet from the spring banks in the fall. The USFS has grazing management standards of 3-5 inches stubble height on spring and stream banks. When livestock grazers meet this standard, the livestock are moved to a different pasture or sent home. This is not true with wild horses. Wild horse grazing is unmanaged and allowed to persist 365 days a year.

Boles Spring, looking up towards the head of the spring

Wild horses are significantly impacting the habitat and ecosystem of the Devil's Garden especially at fragile spring sites. In the uplands, unmanaged grazing has led to a shift from perennial to annual grasses which have lower forage and habitat quality and quantity.

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Wild Horses cont'd

Annual grasses also easily ignite in lightning and promote a higher fire return interval. Several varieties of endemic, endangered or threatened species of fish, birds, and plants live on the Devil's Garden.

Beyond habitat issues, wild horses also have an economic and infrastructure impact to Modoc County. This year, two livestock permittees will not be allowed to turn any cattle out on their grazing allotment and many more will return home early. This totals over 3000 cow calf pairs that do not have summer range for grazing. These ranchers will all be forced to make difficult decisions that will affect their ranches and the rural economy. When ranchers are not allowed to turn out on public allotments, this also means that no one is around to fix fence, maintain stock tanks and wells, or monitor activity on rural expanses of public land.

In September 2016 the Modoc National Forest completed a wild horse gather of 290 animals. This was the first gather conducted in over 10 years. Another gather is being planned for 2018 but without action, wild horses will become the only species on the Devil's Garden and the natural resources will be depleted beyond repair. There are many management options for wild horses written in the original act and part of wild horse management plans across the country. These public lands are for everyone, not just wild horses.

Editor's note: Laura Snell is a Livestock and Natural Resources Advisor in Modoc County.

Virulent Newcastle Disease in California

by Dr. Jennifer McDougle, Veterinarian, CDFA Animal Health Branch, Tulare District Office

Keeping Your Birds Safe from Disease:

The California Department of Food and Agriculture (CDFA) has identified several cases of **virulent Newcastle disease** in small flocks of backyard birds in Los Angeles County and San Bernardino County. The initial case was detected at the UC Davis School of Veterinary Medicine's California Animal Health & Food Safety Laboratory (CAHFS) when a private practitioner submitted a sick bird for testing. All detections are confirmed at the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Services (APHIS) National Veterinary Services Laboratory (NVSL) in Ames, Iowa. This was the first case of virulent Newcastle disease, previously referred to as exotic Newcastle disease, in the U.S. since 2003. CDFA is working with federal and local partners as well as poultry owners to respond to the incident. State officials have quarantined potentially exposed birds and are testing for the disease.

Virulent Newcastle disease is a **highly contagious** and **deadly virus in birds;** the virus is found in respiratory discharges and feces. Clinical signs in birds include:

- sneezing
- coughing
- nasal discharge

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Newcastle Disease cont'd

- green watery diarrhea
- depression
- neck twisting
- circling
- muscle tremors
- paralysis
- decreased egg production
- swelling around eyes and neck
- sudden death.

This chicken has swelling around the eyes and comb, clinical signs which may indicate virulent Newcastle disease.

It is essential that all poultry owners follow good biosecurity practices to help protect their birds from infectious diseases such as virulent Newcastle. These include simple steps like *washing hands* and *scrubbing boots* before and after entering a poultry area; *cleaning and disinfecting tires and equipment before and after moving them on/off the property*; and *isolating any sick birds*. New or returning birds from shows should be isolated for 30 days before placing them with the rest of the flock.

For backyard flock owners, biosecurity measures include using dedicated shoes and clothes when caring for birds and not to use/wear those clothes/shoes in other areas.

Additional information on biosecurity can be found at:
https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian-influenza-disease/birdbiosecurity

https://www.cdfa.ca.gov/ahfss/animal_health/BioSpecies/BioPoultry.html

https://www.cdfa.ca.gov/ahfss/animal_health/pdfs/AI/BiosecurityForBackyardAndPetBirds.pdf

https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian-influenza-disease/birdbiosecurity

http://ucanr.edu/sites/poultry/biosec/

In addition to practicing good biosecurity, all bird owners should report sick birds or unusual bird deaths through California's Sick Bird Hotline at 866-922-BIRD (2473). Additional information on VND and biosecurity for backyard flocks can be found at https://www.cdfa.ca.gov/ahfss/Animal_Health/Newcastle_Disease_Info.html

Sick or dead backyard birds can be submitted to CAHFS laboratories for post-mortem examination ($20 plus shipping and handling). Information on this program can be found at:
https://www.cdfa.ca.gov/ahfss/Animal_Health/pdfs/CAHFS_NecropsyFactsheet.pdf

For additional information on who to contact for issues regarding backyard poultry, see:
http://ucanr.edu/sites/poultry/contact/

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Newcastle Disease cont'd

Virulent Newcastle disease is NOT a food safety concern. No human cases of Newcastle disease have ever occurred from eating poultry products. Properly cooked poultry products are safe to eat. In very rare instances people working directly with sick birds can become infected. Symptoms are usually very mild, and limited to conjunctivitis and/or influenza-like symptoms. Infection is easily prevented by using standard personal protective equipment.

If you have any questions, please do not hesitate to call the Animal Health Branch Tulare District Office at 559-685-3500.

The Case of the Druggie Chickens: Jimsonweed Toxicity in Chicken Pullets

By Julie Finzel

In July of 2017, a veteran chicken owner in the Lake Isabella Valley noticed that her four month old Ameraucana and Australorp pullets were eating the Jimsonweed (*Datura stramonium*) plants in their enclosure. She had left the plants in the enclosure to provide some shade for the young chickens during the hot summer months. At first she disregarded their behavior as the pullets never showed any adverse behavior or went off their normal feed, but after they had eaten half of the leaves off about 12 large plants, she decided she better remove the plants anyway. The pullets consumed only the leaves, no seeds, over a period of about two weeks.

The owner thought nothing more about it as the young chickens were growing normally, until the pullets hit six months, seven months, and then eight months old and they still weren't laying eggs. After doing some research on her own and not finding much information that was specific to chickens, she contacted the UC Cooperative Extension office in Kern County to try to learn if her chickens would ever lay eggs, and if they did, would the eggs be safe to eat.

Jimsonweed is a member of the Nightshade family and is known to contain alkaloid toxins that are poisonous to humans and livestock. All parts of the plant contain the toxins, but they are especially concentrated in the seeds.

This article continues ▶

Toxicity cont'd

Jimsonweed grows up to about 5,000 feet in elevation and is found in many parts of California and the United States. A literature search turned up an article by Kovatsis et al., from 1994, which documented a study from Greece where the alkaloid toxins found in Jimsonweed were fed to a group of laying hens. There were four dosing levels 1.5, 15, 75, and 150 mg/kg fed to the study groups. Effects were seen only at the 150 mg/kg dose. For the first five to six weeks the high dose group saw a decrease in egg production. After five weeks, significant increases in heartrate were observed in the same group. Egg weight, egg shell thickness, and body weight were unaffected. Further, upon necropsy, no obvious signs of alkaloid toxicity were observed. A sister study was conducted by Kovatsis et al (1993) on broilers. The general conclusion from the two studies is that meat and eggs from chickens that have ingested Jimsonweed are safe for human consumption.

In mid-December 2017, the Australorp hens began laying eggs and about two weeks later the Ameraucana hens also began laying. The hens look and act normal, however, they all insist on laying their eggs in the same box.

Sources:

Kovatsis, A., J. Flaskos, E. Nikolaidis, V.P. Kotsakl-kovatsl, N. Papaioannou, and F. Tsafaris. 1993. *Toxicity study of the main alkaloids of Datura ferox in broilers*. Food and Chemical Toxicology. 31: 841-845.

Kovatsis, A., V.P. Kotsakl-kovatsl, E. Nikolaidis, J. Flaskos, S. Tzika, and G. Tzotzas. 1994. *The influence of Datura ferox alkaloids on egg-laying hens.* Veterinary and Human Toxicology. 36: 89-92.

Editor's note: Julie Finzel is a Livestock and Natural Resources Advisor with UCCE in Kern, Kings, and Tulare Counties.