OSU Extension Forestry staff had the pleasure of helping host the annual State Convention of Oregon’s Future Natural Resource Leaders at Hopkins Demonstration Forest (April 27-28, 2018). This was the second annual convention for the new version of Oregon’s High School Forestry programs, revitalized under the leadership of Peter Matzka (OSU Extension, Hopkins Forest Educator) and a group of dedicated high school teachers. Nine schools and about 150 students participated with enthusiasm, in spite of the chilly weather (48 degrees and raining) the first day. For more highlights of this event, see https://www.facebook.com/ORFNRL/. Later this summer, we will be hosting Teachers in the Woods at Hopkins to provide Career Technical Education and increase the capacity for forestry education in Oregon schools.

If you are inclined to help support forestry education at Hopkins Demonstration Forest this summer, please see the upcoming opportunities for volunteering at Hopkins Community Forestry Days (p. 2) or consider becoming a Friend of Hopkins. http://www.demonstrationforest.org/become-a-friend.

Despite the 30-degree drop in temperature at the end of April, the long range forecast for this summer is both warmer and drier than average. http://www.cpc.ncep.noaa.gov/products/predictions/90day/. New plantings and established trees should have the benefit of spring root growth to help get them through the summer. But you can conserve soil moisture and relieve drought stress with timely weed control around young trees.

While it is starting to heat up, fire season seems far away with the lush green growth of May. But it is time to start thinking about fire prevention and preparedness for the summer. Visit Firewise-USA for great resources to help make your home and community more fire-safe https://www.nfpa.org/Public-Education/By-topic/Wildfire/Firewise-USA For in-person on-the-ground fire education, we are offering another workshop on Preparing your Home for Wildfire at the Oregon Garden in Silverton on June 5 (Citizen Fire Academy on p. 3)

Speaking of fire, here is a new publication in the Extension series of Fire FAQs: EM 9193, Fire FAQs—Managing Wildfire for Resource Benefit: What is it and is it beneficial? This publication discusses the conditions, planning, and circumstances involved in managing naturally ignited wildfire as a strategic choice to achieve forest resource management objectives. https://catalog.extension.oregonstate.edu/em9193.

I hope you find useful information and food for thought in this edition.

ALL THE BEST TO YOU AND YOUR FOREST THIS SUMMER.

Glenn Ahrens,
OSU Extension Forester, Clackamas, Marion, Hood River Counties
Community Forestry Days

JUNE 9, JULY 14, AUGUST 11, 8:30 AM - 2:30 PM

HOPKINS DEMONSTRATION FOREST
16750 S. BROCKWAY RD., OREGON CITY

WE NEED YOUR HELP to create, support, and maintain forestry education opportunities at Hopkins. This is your chance to learn by doing a variety of projects in a sustainably managed woodland.

Upcoming or Ongoing Projects and Events include:

• **Community Sawmill Work** – using the sawmill at Hopkins, help process logs for use on the Demonstration Forest. Bring your own special logs and find what beautiful wood may be hidden inside.

• **Adopt a Plot of Trees** – after planting trees in many different management units over the years, we have a wide variety of young seedlings and saplings that need maintenance or “release” from competition. One way you can help is to adopt a plot of trees to visit and revisit.

• **Assessment of conditions and silvicultural options** in 26 acres of 70-80 year old Douglas-fir/cedar/maple stands that have been thinned periodically. It’s time to visit these stands and see how they are doing and consider thinning vs. selection, or patch harvesting methods.

• **Riparian Forest Assessment** along Little Buckner Creek – you are invited to participate in developing management options across a range of objectives for timber, habitat, beauty, etc. along with regulatory options and limits.

LEARN BY DOING—IT’S THE HOPKINS WAY WE MANAGE OUR FOREST!

Registration is requested at 503-655-8631 or jean.bremer@oregonstate.edu. A delicious hot lunch will be provided.

For more information contact Peter Matzka at peter.matzka@oregonstate.edu.

OSU Extension Service
Clackamas County Office
200 Warner Milne Rd.
Oregon City, OR 97045
Office: 503-655-8631

jean.bremer@oregonstate.edu

http://extension.oregonstate.edu/clackamas/

Oregon State University Extension Service strives to ensure that all educational publications, programs, services, and activities are accessible. All announcements for programs, services, and activities must include a statement describing how to request accessibility accommodations.
Twilight Tour: Green Acres Forest

JUNE 21, 2018, 6:00PM TO DUSK
Estacada, OR

Mark your calendar for a twilight tour the first week of summer. See how a couple from the city got a head start on learning to manage their woodland near Estacada. Les and Susan Ricketts adopted a two-storied forest of widely scattered timber with a well-established understory of 9-year old trees. They will share their experience with the challenges of managing the daylight and growing space, under and over the two-storied stand as the young trees start getting crowded.

The Ricketts are a successful example of intergenerational land stewardship outside the family as they pick up forest stewardship with guidance from the previous owner. Their forest was established by Lee Holland, an active member of the Clackamas woodland owner community who was eager to pass on his knowledge of the woods he managed. Les and Susan in turn, plan to keep it as a forest to provide benefits of high quality air, water, wildlife, mushrooms, etc. & timber someday - involving their children and grandchildren in forest stewardship for the next generation.

Registration is required. There is no fee. Detailed directions will be provided to registered participants.

To register or get more information, call 503-655-8631 or email jean.bremer@oregonstate.edu.

NOTE: Change in DATE from previous announcements to avoid conflict with OSWA Annual Meeting, June 28-30.
TWIG WEEVIL FIELD DAY
JULY 10, 2018, 1:00-3:00PM

Plans are underway to organize an afternoon field day to illuminate what is currently understood on the biology and management of twig weevils. See article “Twig Weevil” on p. 13.

Where: TBA
When: 1-3 PM, Tuesday, July 10, 2018

What: You will have the opportunity to observe plant damage in Douglas-fir and noble fir. This will be an opportunity to scout for twig weevils, learn how to identify the adult and larval forms, and discuss control options.

Presenters: Jim LaBonte, ODA Entomologist, Chal Landgren, OSU Christmas tree Specialist, and Growers.

Maps and other details will be available soon at: http://oregonstate.edu/dept/NWREC/programs/christmas-trees.
Stay tuned. Questions can be directed to Chal Landgren at (971) 801-0381 or chal.landgren@oregonstate.edu.

FAMILY FOREST CARBON MARKETS IN PRACTICE: RAINCLOUD TREE FARM TOUR

July 12, 2018, 6:00-8:30pm Twilight Tour

Attend this forest tour at the Stewart family’s Raincloud Tree Farm to see an example of how forest carbon markets can work for family forest owners. Jon and Janice Stewart are the first forest owners in Oregon to enroll in a forest carbon sequestration program with Forest Carbon Works. This was done in partnership with the Pinchot Institute for Conservation and their project on Unlocking Carbon Markets for Family Forest Owners. The goal is to help overcome barriers that have prevented family forest owners from participating in carbon markets.

The Stewart family would like to share their experience with other family forest owners. The general idea is that forest landowners who are managing in a way that stores a lot of carbon in their forest growth have opportunities to get paid for their “carbon sequestration services”.

“My goal is to show that there are ways for small woodland owners to actively step forward to address climate change” - Jon Stewart, forest owner.

Join the tour to see their beautiful forest and learn about how they are getting credit (payments) for the carbon they store in their forest with their style of management.

Registration is required but there is no fee. Detailed directions will be provided to registered participants. Space is limited. To register or get more information, please email jean.bremer@oregonstate.edu or call Jean at 503-655-8631.
CCFFA ANNUAL PICNIC AND CLACKAMAS WOODLAND FARMER OF THE YEAR TOUR AT RAINBOW FOREST FARM

AUGUST 4, 2018   5:00PM - DUSK
REDLAND

Mark your calendar for the annual CCFFA Summer picnic on August 4, featuring a tour of Rainbow Forest Farm in Redland, Clackamas Woodland Farmer of the Year 2017.

Tim Dahl and Debi Poppe have been living and working on their 15-acre forest farm since 1986, the year after they were married. The forest was a mixed-species blend of second-growth and brush from logging in the 1940s. The vision and goals emerging from their woodland management journey include:

- Maintain private woodland residence
- Improve forest health
- Open the canopy for daylight and diversity
- Enhance species diversity and wildlife habitat
- Reduce fuels and fire hazards
- Keep the land in forest for the next generation

Along with work on the farm, Tim is a very active participant in the forestry community, including: CCFFA Board, Secretary-Treasurer, OSU Master Woodland Manager, OSU Citizen Fire Academy, Oregon Master Naturalist, The Nature Conservancy, and volunteer work at Hopkins Demonstration Forest and Tree School.

4:00pm Arrivals and social time
5:00pm Dinner
6:00-8:00pm Tree Farm Tour, highlighting Rainbow Forest Farm’s stewardship.

Registration required, details to be finalized in July. Call 503-655-8631, email jean.bremer@oregonstate.edu or visit http://extension.oregonstate.edu/clackamas/forestry for more information closer to the event date.

NEWS YOU CAN USE

Young Stand Thinning Highlights

Glenn Ahrens, OSU Extension Forester

Tree spacing and stand density have dramatic effects on the forest, in a relatively short time. This was very clear during the field workshop on thinning young forest stands, attended by over 50 people at Chuck Schlechter’s farm near Salem (April 21). The main lesson was that landowners have good options to shape the character of their forest with early thinning in dense young stands. Making the choice to get it done before any actual crowding – as early as 8 to 12 years – delays crown closure and makes the actual cutting and felling easier than later thinning when trees are larger and harder to fell in the crowd.

Effects of thinning on fire hazards are an important consideration. Thinning can reduce fire hazards by separating fuels (tree crowns) at wider spacing. But ground fuel hazards can be increased by thinning due to slash, undergrowth response, and increased drying. In many cases, precommercial or young stand thinning does

continued on next page...
increase fuel loads for a while. The question is how much effort is necessary to reduce fire risk, which depends on the chances of natural or human-caused ignition. In northwest Oregon, a very low risk of natural ignitions in the interior of managed forests often results in landowners concentrating effort on fuels reduction adjacent to likely sources of accidental ignitions such as roads, trails, and neighbors.

Some highlights of tree spacing studies (see below) provide examples of likely outcomes of different tree spacings – across the range from wide-spaced, moderate, to dense/overcrowded young stands. There is no right or wrong condition - it depends on your objectives. But to help you decide, it is important to know the likely outcomes and tradeoffs in terms of tree size, resilience to weather, understory conditions, habitat diversity, etc. Dense forest stands can be quite productive in terms of total timber volume, but individual trees develop poor crown vigor (low crown-tree ratio) and low stability (resilience to weather). Wider spacing promotes stable trees with good crown vigor, more understory vegetation, and better options for continued thinning. What fits your objectives?

If you wish to attend field workshops on thinning, they will be offered periodically so keep your eye on upcoming events in the future.

Example - effects of spacing in a 29 year-old Douglas-fir plantation on a good site

![440 trees/ac planted, not thinned](image1)

![Moderate, early thinning 250 tpa](image2)

![Wide spacing, early thinning, 150 tpa](image3)

![Increasing growing space - all trees of the same age](image4)
WHAT’S CHEWING MY SEEDLINGS?

BY JEN GORSKI
OSU EXTENSION FORESTRY/NATURAL RESOURCES

Some land managers may be noticing damage on tree seedlings. Here are some facts to help detect what’s causing the damage; the focus here is on voles and pocket gophers.

**Voles** gnaw roots under the ground and can girdle bark and stems up to 8” above ground on young seedlings (0-10 years old). Trees can die from being girdled. Look for individual tooth marks on stems – 1/16” wide x 3/8” long that appear in irregular patterns and at different angles. Rabbits leave tooth marks in regular patterns about 1/8” wide.

To narrow it down to vole damage, also look for shallow runways through vegetation about 1-2” wide. There are small ground entrance holes of the same size that do not have soil mounded around them. There may be clippings of short grass and piles of brown droppings along runways and in the tunnel system that is 5-11” beneath ground surface.

There are several species of voles in the Willamette Valley - Oregon coast - Cascade foothills and they can be difficult to tell apart. One species in our area is the Creeping vole, *Microtus oregoni*. Species have blunt heads and short tails and average about 5 ½” long (including the tail). Females can reproduce after they are about 35 days old, with peak breeding periods in spring and smaller peaks in the fall. There are 3-6 young/litter with 1-5 litters/year and a gestation period of 21 days. If you do the math, there may be an average of 23 offspring for each female/year!

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Voles do not hibernate in winter but are most active in spring and fall. They like dense ground cover > 6” in height and they do not like crossing or feeding on bare ground. They eat roots, stems, grass, seeds, bulbs and tubers, and eat their own weight (about 4 oz.) of food daily.

There are several methods of control which include modification of their habitat: mowing vegetation, grazing, tilling, burning, and removal of weeds and brush piles (clearing weeds 3’ away from each seedling). Predator habitat can be enhanced by providing perches for birds of prey and encouraging hawks, crows, owls, snakes, and skunks who eat voles. Alternatively, voles can be excluded around seedlings by using ¼” mesh hardware cloth or plastic cylinders. It is recommended to bury the exclusion barrier 6-10” below ground surface: http://ipm.ucanr.edu/PMG/PESTNOTES/pn7439.html. You can trap them using mouse traps set at right angles in their tunnels or set out poison bait which is explained well in Meadow Voles and Pocket Gophers. (Link to https://catalog.extension.oregonstate.edu/pnw627). If trapping, attach the trap with a string or chain to a solid stake outside the hole so the trap is retained. Usually an Integrated Pest Management approach using a combination of control methods is most effective.

Have you seen these types of mounds and wondered what animal made them?

Pocket gophers eat roots and cut plant stems, sometimes pulling the entire plant underground. They love to eat green succulent vegetation and can kill bulbs, tubers, grasses, seeds, tree roots, bark, and tree seedlings. They do not normally eat the roots of annual crops because the roots are not fibrous enough. Moles eat insects and worms and they create molehills shaped like volcanos that are oriented in a line; the soil is clumpy. Their tunnels are less than 2” wide. They eat very little vegetation and are not considered a pest for tree seedlings.

Pocket gopher mounds are crescent shaped with the hole on one edge. There are several mounds grouped together and their runways are 1-4” wide; soil is fine. Their soil disturbance can introduce invasive weeds and the tunnels that are created can create holes for tripping into and wreak havoc with irrigation systems. Large mounds of soil can dull blades and discs of tractor implements. Mound surveys can be done when gopher numbers reach levels above what can be tolerated. In sites with active mounds for two years, run circular plots (1/10th acre) with 12’ centers keeping them 150’ apart. Determine if mounds are active by opening them up and seeing if they are closed 24-48 hours later. If 25% or more of the plots contain active mounds, use control measures. Follow up in subsequent years.

In the Willamette Valley, the Coast and western Cascade ranges, there are two species: the Camas pocket gopher *Thomomys bulbivorus* and the western or Mazama pocket gopher, *Thomomys mazama*. They are about 10-12” long including the tail. Their claws are too weak to dig the tunnels so their large incisors help. They live underground and only come to the surface occasionally. They have an acute sense of smell that helps them locate food. They prefer deep porous soil but can also live in rocky areas. They avoid wetlands and sandy soil. Their tunnels provide soil aeration and they also build up organic material.

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Gophers are active year round and do not hibernate. They live three to five years and are ready to reproduce at one. They will produce 3-6 offspring/litter and have 1-2 litters/year. Gestation is 20 days and offspring are born March - June. They are territorial with one gopher/burrow system, unless they have young or are mating. Their burrows can be 3’ deep. For best gopher control, understand the burrow system well!

An integrated pest management approach is recommended, using several management strategies. Alter the habitat by mowing, cultivating, grazing, or burning. ( Explosives are not recommended in case you wondered, Caddy Shack fans.) Remove vegetation and piles of debris. Enhance predator habitat for owls, hawks, badgers, coyotes, foxes, bobcats, skunks, weasels, and bull snakes. If exclusions are used, use 3/8-1/2” mesh, bury 2’ deep and raise 1’ above the ground. Trapping or baiting is recommended. There are excellent videos with Dr. Terry Salmon, University of California Cooperative Extension, on setting a gopher trap, trap placement and finding tunnel systems https://youtu.be/BCeApisQavk.

Good directions on placing bait in pocket gopher holes can be found at: http://ipm.ucanr.edu/PMG/PESTNOTES/pn7433.html. Good luck!

What Smells So Good?

BY JEN GORSKI
OSU EXTENSION FORESTRY/NATURAL RESOURCES

The sweet fragrance of mockorange flowers will soon filter through the forest in late May - June. The Pacific Northwest’s orange blossom scent emanates from Philadelphus lewisii. This multistemmed shrub is named after Meriwether Lewis who documented it.

The flower is composed of four white petals with many yellow stamens. The fruit is a hard capsule with many tiny seeds. It’s easy to propagate by seeds or cuttings. Live stakes can be directly planted along streambanks with good rooting success.

Mockorange can be identified by its distinctive leaves, opposite and oval with smooth – sparsely toothed margins. It grows 4 – 10’ tall x 3 – 9’ wide with arching branches. To promote maximum quantity of blooms, prune 1/4 - 1/3 of the oldest canes to the ground each year.

Good habitat features full sun/part shade in a moist, well-drained soil. It can tolerate rich, poor or rocky soil in forest edges, clearings or along streams. Use mockorange to help stabilize streambanks and prevent erosion and also provide nectar for bees, butterflies and hummingbirds.
Wildlife cameras, often called trail or game cameras, are cameras that are strategically placed on your property to take pictures and video of wildlife while you aren’t around. The cameras are typically triggered by heat and/or motion and store the pictures internally for you to view later. Originally, wildlife cameras were used in wildlife management research, but as camera technology improved they became affordable and available to the public.

There are many benefits to placing a wildlife camera on your property. Not only will it be fun and educational, but it will also provide useful information to supplement the wildlife section of your property’s management plan. With the help of these cameras, you can develop a cumulative list of the diversity of wildlife species found on your property. Wildlife cameras can also document animal activity of rarely seen wildlife, monitor animals without disturbing them, and scout the presence and movement of game animals. Additionally, these cameras can be an added security measure if you are concerned about the potential of illegal trespass on your property.

If you have a large property, you do not necessarily need to purchase a lot of cameras. For a species inventory, purchase a few cameras and systematically move them around your property a few times a year to capture multiple habitats. Alternatively, you will be able to identify areas of high priority or habitat value, such as a pond or bird’s nest; it may be more efficient to monitor wildlife in these specified areas. It is always helpful to know where animals congregate on your property to help you make an informed decision as to where to put the devices.

Once you have the general location determined, placement of the cameras will depend on the animals you’d like to see. To maximize your viewing potential put the cameras up higher and angle them slightly downward. This will increase your visibility in thicker brush while increasing the chances of seeing both the large and small animals. Using a mount may secure the camera better than a strap in this case. Interested in seeing some amphibians, snakes, or small carnivores? Consider putting some cameras closer to the ground. Try placing cameras slightly off the trail at a curve, so animals need to walk toward it. You will then have better success getting pictures of the animals looking directly at the camera. This is also a benefit if your camera has a slow trigger speed.

Clearing branches, large shrubs, and leaves when setting up the camera will minimize setting off the motion trigger excessively on a windy day. If you are using the camera to scout for game animals, minimize your scent by wearing gloves. Check and double check the camera’s placement and test it before you leave. There is nothing more disappointing than returning to a camera that you forgot to turn on.

If you are worried about the camera being seen, protect it by getting a security box or label it with your name and phone number. Recording the serial number may help authorities if the camera gets stolen; though the risk of this should be low on private property.

With the growing popularity of wildlife cameras, there are lots of choices out there. Here are some things to consider when choosing the features:

Picture quality is often rated by the number of megapixels because more megapixels lead to higher resolution photos that will look better when you zoom in. However, don’t let megapixels drive your decision when buying the Typically, wildlife cameras are triggered to take pictures by motion, however, some are coupled with heat sensors. If you’re looking to monitor salamander migration to your pond, heat sensors aren’t going to pick up these cold-blooded animals. Mammals on the other hand, are warm-blooded and will have no problem setting off a heat sensor.

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Time-lapse mode takes pictures at specific intervals or times of the day despite triggers – such as once every five minutes. With many models, you can choose how often a camera takes pictures and how long it will operate in time-lapse mode. This can be useful if you have a meadow or small pond where you know activity will be higher at certain times during the day.

The detection range is the farthest distance an animal can be from the camera in order to trigger a photo. Detection range can be as close as 40 feet and as far as 120 feet away. Consider picture quality here too. If you have low megapixels and the camera is set up for a far trigger distance, you’re in for a lot of blurry photos. Far trigger distances are important in a meadow, but may be less important in a denser forest setting.

Trigger speed is the time it takes for the camera to take a photo once the animal enters the frame. Trigger speeds of less than a half a second are ideal. Anything longer and you could end up with a lot of empty frames and animal butt photos. Though Animal Butts sounds like a great coffee table book! On the other hand, if the camera is looking over a baiting station - food or salt lick - which situates the animals looking directly at the camera, then a slow trigger speed may not be much of a factor.

Recovery speed is how quickly the camera can reset and take a new picture. Slow recovery speeds of one to two seconds may save you on memory, but you may miss some visitors if there are multiple animals together. With a fast trigger speed, but slow recovery time you may get a great photo of the doe, but you’ll miss the mountain lion that was stalking her.

Other cameras can take bursts, or several photos per second. This can increase your chances of getting a good photo. If you’re only curious what’s out there, you may not need burst mode. However, if you are looking for a good picture, burst mode will give you more options to choose from. You’ll even get better shots of fast moving animals. Other cameras will take ten-second video clips which can be useful if you are interested in documenting animal behavior, like watching predators around nesting birds but beware, videos take up a lot of memory and battery. This may be difficult to manage if you don’t check your cameras often.

Time stamps are important if you want to collect information about times of day or year when certain animals access your property. This can be a really useful tool if you know that a certain bird species migrates through your property during a specific season. This can help you monitor arrival patterns. Some cameras go the extra mile with moon phase, temperature settings, and barometric pressure indicators as well. These are really only important if you are a serious hunter that doesn’t have the time to go scouting.

Battery life plays a large role during high activity and if you don’t live on your property will be more problematic to maintain. Alkaline batteries are cheaper, but picture quality will decline with cool temperatures and increased use of the camera. Lithium batteries are longer lasting, rechargeable, give better consistency of quality over use, and work better in cold weather. These qualities will also save you money over time by not having to replace your alkaline batteries as often. Some cameras recharge with solar packs or allow for attaching a solar charger via a port. These have the potential to run indefinitely, but don’t forget to consider your mounting location; if you are placing the camera in dense forest, solar packs may not be efficient for you.

continued on next page...
LCD Screens can make camera set up easier, especially while you are picking and readjusting placement to get a good shot. You can view the pictures right away and directly on the camera without an adaptor or extra device. This is the option for you if you can’t wait until getting home to look at the photos. For hunters, it may be more beneficial to not have a screen to get in and out faster without leaving a scent. No screen will also save you on cost.

Pictures are typically stored on an SD card. If your camera takes high resolution photos, bursts, or video, you won’t be able to check and clear the SD card regularly. It’s best to have a minimum size of 32 or 64 GB card because these features take up a lot of storage space. If you don’t have an LCD screen, view pictures by downloading them onto your computer directly from the SD card. If you don’t have an SD slot you can purchase an adaptor to view on your computer or smartphone. It is not recommended that you check the pictures on a camera unless you are sure your wildlife camera software is compatible with your digital camera. Some people have lost their photos doing this. There are a few more expensive models that will remotely transfer your photos via cellular technology to your email for a monthly fee. This feature is less invasive if adjusting the camera will disrupt the animals you are watching, but is only effective if you have cellular reception in the camera location.

It is important to note that this tool, if positioned correctly or set for time-lapse photo, has the potential for an enormous number of pictures. You may have an amazing shot of a bird catching a snake, but it’s no good if you can’t find it. Some cameras come with or have the option to add on photo-management software which usually comes with photo enhancement tools. This can be helpful if you don’t consider yourself an organized person or if you want to tinker with the pictures.

Depending on the species, animal activity can increase at night. This means that your camera will need some sort of light to take a good shot. It is expected that picture quality will decrease at night, but you can still get a clear picture within an acceptable range. Higher flash ranges will illuminate animals at farther distances from your camera. There are three types of lights to choose from. The first is your traditional white light flash. These are good for getting close up full color photos where you need to see specific markings. This light, however, may spook the animals, but research suggests that they are only spooked for a brief time before acclimating to the flash and resuming normal behavior. These lights aren’t the best option for a security camera because the noticeable flash could be seen by the intruder.

Other options to regular flashes include infrared light or “low glow” and black infrared or “no glow.” Both of these options take black and white photos. Infrared lights produce a visible red glow when taking pictures. The red glow is typically faint and when positioned correctly will not spook animals, but the light can be seen when looking directly at the camera. These cameras typically take better night images compared to the black infrared cameras, but there are exceptions. No-glow cameras emit no visible light while taking photos and therefore your subjects will be unaware of the cameras at nighttime. These light options are typically preferred for security cameras and hunters because they don’t spook deer or trespassers.

Wildlife cameras can be a great addition to your property and useful tool for augmenting your management plans. If you keep your objectives in mind and choose wisely on the features, there is no reason you can’t get a good quality camera that does what you need for around $200. Now go out and set your cameras to show off the wildlife on your property, adding excitement for both you and your friends.

Figure 3. Chihuahuan raven catching a snake. Photo taken using a remote motion-sensor camera located in the Sevilleta National Wildlife Refuge.
Each year we seem to have a new disease or insect problem. This year, it appears that Douglas-fir Twig Weevil (*Cylindrocopturus furnissi*), DFTW, has attained the prize. Don’t be fooled by the Douglas-fir part of the name, noble fir is also a target, *(Figure 1)* but not to the same degree.

**What to look for:** Signs of DFTW can take many forms and may look like drought damage, canker disease, bark beetles or cone worms. Small trees may be killed outright. Larger trees can exhibit damage along the leaders or along the branches, depending on where the weevil larvae are feeding.

When you start to look more closely, you may notice callus bark tissue from adult feeding and pitch pockets. This “pitching out” of the minute larvae brood is the best defense the tree has against this insect. It is an attempt to suffocate or remove the pest. Healthy trees will produce significant pitch, stressed trees very little.

Once you find pitch masses, split twigs or branches with a knife or clippers. Inside the twig you likely will find tunnels in the wood from larvae feeding *(Figure 3)*. It is difficult to find the actual larvae.

Larvae will feed inside the twig for around 9 months. Emergence tunnels will exit at right angles from the pith *(Figure 3)* and are about 1mm in diameter.

DFTW larvae are legless, stout, pale, with prominent head capsules and are up to 4 millimeters long *(Figure 4)*.

The text books say DFTW is a minor pest of seedling Douglas-fir on marginal sites in dry years. But tree stress and drought can change pest dynamics. Not only are we seeing damage on harvest size Douglas-fir on normally good sites, we are seeing damage on noble fir on trees of all sizes.

*Figure 1. Twig weevil damage on noble fir.*

*Figure 2. Pitch from DFTW damage.*

*Figure 3. Larvae tunnels and emergence holes for DFTW.*
DFTW are not the only insects that are found inside twigs. The larvae of these other insects will typically have legs or no visible head capsule. After DFTW larvae pupate, adults will emerge in around 2-3 weeks. Adults of the DFTW can be found feeding on branches and are speckled, 2-3 millimeters long, with long “beaks” tucked under their heads (Figure 5).

Management calendar - Adults and symptoms (dead branches and terminals) can be present year-round (Table 1). Most new adults emerge from about mid-June through early August. Females lay eggs inside the bark from early August through early October. These hatch in a week or two. The larval stage lasts at least nine months and larvae of all sizes can overwinter. Pupation takes place in the spring. There may be at least a smaller, partial second generation from eggs laid in the spring by overwintering adults.

Once DFTW is inside the tree no chemical treatment is likely to be effective. Even highly systemic insecticides do not appear to kill the larvae. If you can trim out the damaged branches or stems and still get a marketable tree, trimming is your best option. It is not clear how long the larvae or pupae can live in cut branches or trees.

Insecticide applications (Manage 1 in Table 1) target the adults who begin emergence in late June. Adults feed on bark as long as they are active. The control “window” appears to be from mid June to early August. The most effective insecticide control seems to be with broad spectrum pyrethroids such as bifenthrin (Brigade and others) and esfenvalerate (Asana and others). Good coverage of the tree is essential as the weevil needs to come into contact with the treated bark while feeding. One potential result of the use of pyrethroid insecticides, may be the development of mite outbreaks, because the normal insect controls are killed along with weevils. So, persistent scouting is necessary.

Table 1. DFTW Management Calendar

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