

# Utah Forest News

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## New Research Sheds Light on Aspen Clone Identification

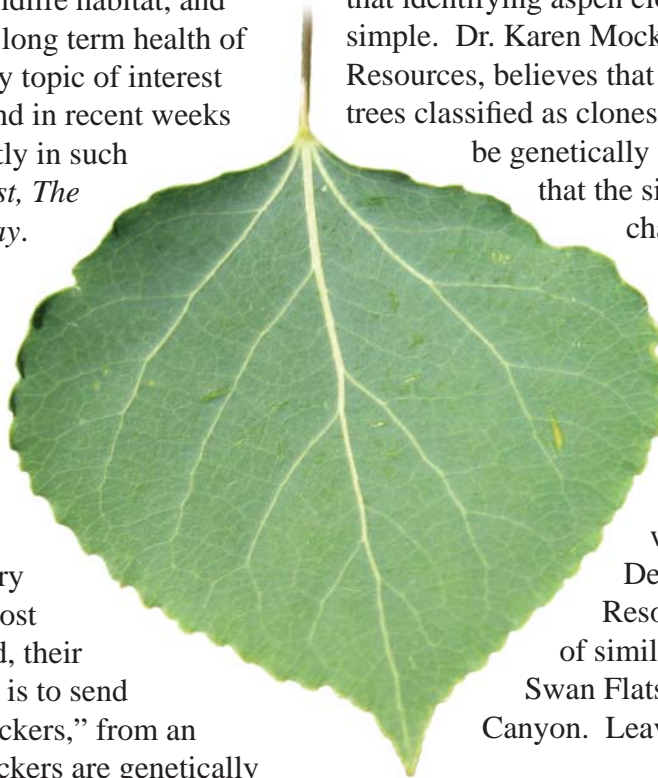
Aspen are one of Utah's most valued forest resources. They provide scenic beauty, wildlife habitat, and excellent forage. Ensuring the long term health of aspen stands has been a primary topic of interest for USU Forestry Extension, and in recent weeks this issue has played prominently in such publications as *The Denver Post*, *The New York Times*, and *USA Today*.

The unique life cycle of aspen sets it apart from other forest types and necessitates special management strategies. Although aspen produce viable seeds, successful seedling establishment is thought to be very rare in the dry conditions found throughout most landscapes in the West. Instead, their primary means of reproduction is to send up new root sprouts, called "suckers," from an existing root system. These suckers are genetically identical to the root system from which they spring, and the entire system of trees and roots is called a clone.

Until now, forest managers were taught, and have taught others, that distinct aspen clones could be easily identified by looking for similar patterns in branching habits and leaf color and size. However,

new research from Utah State University suggests that identifying aspen clones might not be quite that simple. Dr. Karen Mock, Department of Wildland Resources, believes that many groups of aspen trees classified as clones might actually prove to be genetically dissimilar. Mock explains that the similar leaf and branch characteristics that are usually used to identify clones "are not perfect predictors of genetic identity."

In order to test the genetic makeup of one supposed aspen clone, Mock, along with Dr. Ron Ryel, also Department of Wildland Resources, studied a cluster of similar-looking aspen trees on Swan Flats, near the summit of Logan Canyon. Leaves were collected from more



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than 800 individual trees at the site, over an area of several square miles.

Genetic analysis was performed on the leaf samples, and early results indicate that the aspen stands at Swan Flats are much more genetically diverse than most foresters would have guessed by looking at the stand. This finding suggests that we cannot base management decisions on the visual characteristics we have used in the past. It also suggests that the directing principles of aspen ecology might prove to be inaccurate. For instance, although aspen reproduction by seed has been considered extremely rare in western landscapes, it is perhaps the simplest explanation for the genetic diversity at Swan Flats. Another explanation is that mutations have accumulated within the clone, which over time have altered the clone's genetics.

Further analysis should determine how much each mechanism is contributing to genetic variation among the aspen at Swan Flats, but either scenario could have important implications for aspen management in the West. If aspen reproduction by seed is a more common occurrence than is currently thought, managers will have to significantly adjust their assumptions about aspen landscape dynamics. Alternately, if accumulating mutations within a clone can significantly alter its genetics, finding out how these mutations affect aspen health and survival throughout the West will be an important task in understanding and managing these forests.

Either way, the emerging results of Mock and Ryel's research are likely to have a significant impact on how aspen forests are managed in years to come.



*These aspen are part of the Swan Flats study. Traditionally, the light green foliage to the right and the dark green foliage to the left would have indicated two separate clones. New research casts doubt on this assumption.*



*Dr. Karen Mock*



*Dr. Ron Ryel*

*By Olivia Salmon*

## Last Hope in the War on Weeds

Whether it's leafy spurge, dalmatian toadflax, tamarisk (salt cedar) or any other noxious weed, standard battle tactics simply aren't doing the job. Weed management is rapidly becoming a top priority for public and private land managers across the state as native vegetation is replaced by weeds at an exponential rate. While the results of herbicides and other conventional methods are often dismal, the latest strategy for controlling weeds is remarkably small, effective, and – best of all – virtually free.

Biological control using armies of tiny beetles, mites and moths has become a viable method for keeping weeds at manageable levels on the landscape. According to Amber Richman of the USDA Animal and Plant Health Inspection Service (APHIS), each bioagent works differently. “Some attack the stem and roots, while others may defoliate the plant or feed on the seed heads,” she says. “By destroying the weed’s ability to reproduce, these insects can drastically decrease weed infestations and even make it possible to completely eradicate a weed.”

The idea of biocontrol is based on the understanding that exotic weeds are usually not invasive in their native ecosystems. This is because weeds have specific insects in native settings that keep their populations in balance. However, when weeds are

introduced to places like Utah, they come without the insects that fed on them in their native land, allowing them to spread quickly. In order to contain this spread, biocontrol researchers spend years identifying potential bioagents that will only feed on the desired weed. Eventually, these insects receive approval from APHIS and become available to landowners.

Private landowners and county weed groups throughout Utah are catching on to this recent trend in controlling weeds. In a highly

proactive attempt to prevent a serious weed infestation at Snowbasin ski resort, Natural Resources Program Manager Mike Jenkins has enlisted Richman and Liz Hebertson of the USDA Forest Service. With their help, Jenkins coordinated the release of beetles on small pockets of both leafy spurge and dalmatian toadflax on the ski resort in Weber County.

Past management of weeds at Snowbasin hadn't produced the results Jenkins was looking for, so when Hebertson mentioned releasing some beetles, he jumped at the opportunity. Hebertson points out, “One of the advantages of insects is that they can be used in close proximity to streams and other water sources. While herbicides cause concern when used near water, the bugs are harmless to everything except the weed.” This makes biocontrol even more



*Leafy Spurge Beetle*



*Tamarisk Leaf Beetle*



*Yellow Starthistle Weevil*



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desirable, since many weeds have a tendency to grow in the wetter areas that are hard to spray.

Success stories are occurring throughout the state with dalmatian toadflax weevils, leafy spurge beetles, and especially the tamarisk leaf beetle. The triumphs of the tamarisk leaf beetle are undeniably one of the best showcases in Utah of what a biocontrol agent can really do. Until the introduction of the beetles, land managers dealing with tamarisk had few options for controlling the spread of this highly invasive tree. Just five years ago, the tamarisk leaf beetle was introduced at a site south of Delta along the Sevier River. Now, at the original release site little more than skeletons of dead or dying tamarisk trees are left, which can barely muster the strength to send up a few green shoots before the beetle vigorously defoliates them. Richman notes, “The beetles are currently eating about six to seven miles of tamarisk along the stream per year in just one direction, and they aren’t even up to full potential yet.”

Although most cases of releasing bioagents have met with success, occasionally they do not survive in their new environment. On a recent trip to Logan for their third collection of flea beetles to release on leafy spurge, Bert Webster and Bob Riddle of the Wasatch County Cooperative Weed Management Area went about the process with high hopes but little faith. In three years of bringing the beetles to the Heber Valley, they have found little or no survival in the beetle populations and, therefore, no decrease in leafy spurge.

Any number of factors contribute to the survival of a bioagent at a given site. Richman explains, “The

survival of the beetles can be determined by anything from predators to soil type, as well as climate and the direction of the slope. We record these factors each time we release the beetles to find out which methods and locations are most desirable for each species.” Unfortunately, ant populations are high at the Wasatch County site. Ants are one of the main predators of the leafy spurge beetle and are the likely cause of their failure at the Heber Valley site.

As we released the leafy spurge beetles and left the Heber Valley site, Webster turned to me with a look of desperation and simply

asked, “What are we going to do if this doesn’t work? What else is there?”

*By Morgan Mendenhall*



*Leafy Spurge Beetles*

**For more information on using biocontrol contact:**

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## Utah Forest Products Association Receives Grant

Ladd Bunting, vice president of the Utah Forest Products Association (UFPA), announced that the organization was recently awarded a grant from the Labor Commission of Utah for \$30,000. It will be used to establish a logger safety program in Utah.

Many other states have already developed safety programs for loggers, and the results are often impressive. These programs promote professionalism, sustainable forestry, safety and good business management. They can also lead to dramatic savings for loggers, because of increased harvesting and worker efficiency, lower worker compensation rates and reduced regulatory infractions. According

to Bunting, a primary goal of the logger safety program in Utah will be to reduce worker compensation rates, which are as high as 79 dollars per hundred here.

Other states have seen worker compensation rates reduced by 38 percent or more after establishing logger safety programs.

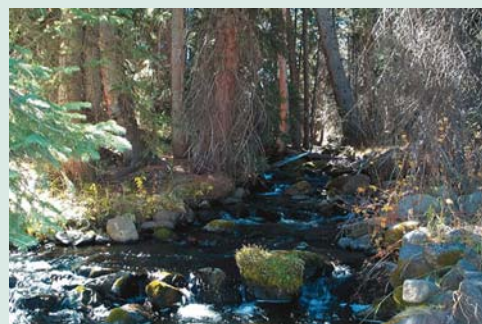
Bunting will now go about setting up a program in cooperation with the Applied Technology Centers of Utah and Utah State University Forestry Extension that will be

modeled after existing programs in other states. To join the UFPA, see their Web site at [http://extension.usu.edu/forestry/Business/FPB\\_UFPASite.htm](http://extension.usu.edu/forestry/Business/FPB_UFPASite.htm).



## Forest Water Quality Guidelines Monitoring Program

State Forester Joel Frandsen recently announced the results of four years of monitoring the voluntary compliance of Utah's Forest Water Quality Guidelines (FWQGs). This audit shows that the FWQGs were correctly applied 81 percent of the time and were effective in protecting forest, soil, and water resources 79 percent of the time. For more information, or to request a copy of the report, contact the Division of Forestry, Fire and State Lands at 801-538-5555.



## CROP: Getting a Levelized Supply

Practicing forestry can be a challenge for many Utah forest landowners from an economic standpoint. A shortage of local facilities to purchase and process logs often means that the costs of forest management can't be offset by the income from a timber sale. Local mill owners, for their part, often find it difficult to stay in business because of erratic swings in the supply of raw materials.

This problem was addressed in a presentation at the summer meeting of the Utah Forest Products Association held in Ogden, Utah. Catherine Mater of Mater Engineering revealed the results of a wood supply study her company recently completed in Utah. The study was one of a series of Coordinated Resource Offering Protocol (CROP) analyses that Mater Engineering has been completing throughout the country. (Mater admits that CROP is "a lousy name, but we started with it and it just stuck.") CROP was developed to coordinate elements of the forest products industry and aims to find new ways to make forest management economically viable. An important component of a CROP analysis is gathering information about all the timber products in an area, and then compiling a list of all the possible contracts that could be offered on federal, state and private forest land.

Based in Corvallis, Oregon, Mater Engineering has been in the forest products business for more than 55 years. They are currently under contract with the USDA Forest Service to do seven CROP studies in regions throughout the country, one of which is southern Utah. Daggett County also hired Mater's company to do a CROP analysis there, making Utah one of the only states in the nation to host two CROP studies. This is good news for the state, Mater explained: "A huge chunk of the Utah landscape has been measured for wood volume, tree size, species, and harvest type. This gives Utah a major advantage



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*"A levelized supply is more important than the level of supply."*

*-Catherine Mater*

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in the push toward building a viable forest products industry in the state."

The emphasis of Mater's message was that producers need a levelized supply of materials. She went on to explain that "a levelized supply is more important than the level of supply." In other words, producers need a steady supply of raw materials to do business, whether that amount is a little or a lot. She

indicated that a mill needs about 35 to 45 million board feet of wood per year to be able to open up shop in a new location.

In spite of a predicted upsurge in raw materials coming online in the state, she warned that many local producers will need to retool to take advantage of this, as she expects to see about 68 percent of the offerings coming from the small log sector. She touted technologies commonly used in Canada, such as the HewSawR200 Plus that converts logs into precisely measured boards in a single pass.

Mater concluded by emphasizing the importance of stakeholder councils in guiding a course of action toward levelized timber supply, and she stressed that representation from all communities is key to the success of the process. Establishing a stakeholder council is one of the next steps Utah forest managers are taking down this road.

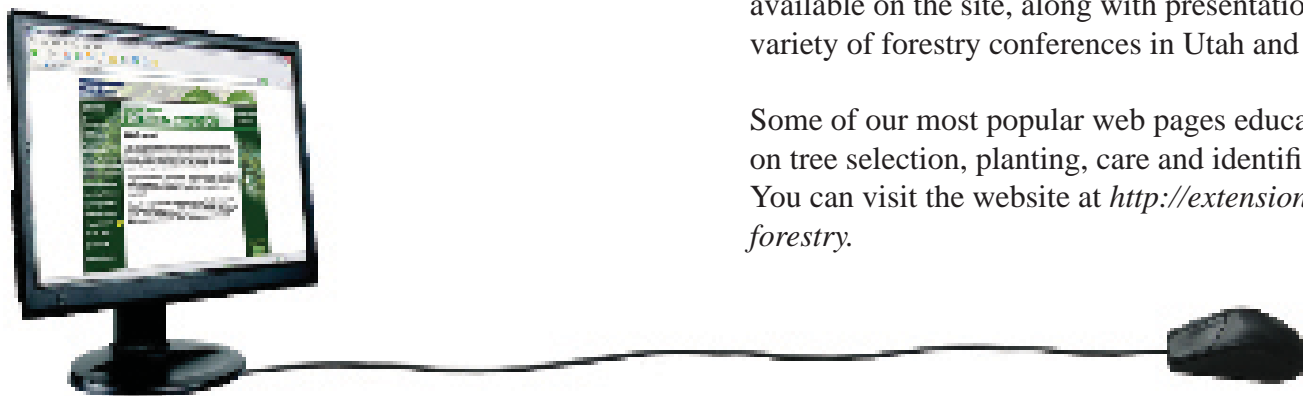
## USU Forestry Extension Web Site Increasing in Popularity

The Forestry Extension Web site has recently seen a boom in visitors. In just the past year, the average number of monthly visitors has jumped 35 percent to 4,815, and the number of pages viewed by those visitors has risen 28 percent to an average of 16,402 page views each month. The majority of visitors to the Web site are from Utah and other western states, but there are significant numbers of visitors from other parts of the country, as well as international visitors. The growing trend toward Internet use for forestry information can possibly be explained by the

ease of access. Internet users can obtain information about forestry from practically anywhere, and at any time.

Visitors to the Forestry Extension Web site can find an abundance of information about Utah trees and forests, forest management, forest product businesses, urban forestry and upcoming forestry events. There is also a section of the Web site devoted to forestry-related activities for children and teachers. Archived issues of *Utah Forest News* and *Utah Forest Facts* are available on the site, along with presentations from a variety of forestry conferences in Utah and elsewhere.

Some of our most popular web pages educate visitors on tree selection, planting, care and identification. You can visit the website at <http://extension.usu.edu/forestry>.



For more information regarding any of the information presented in this newsletter, please call Darren McAvoy at Utah State University, 435-797-0560, write to him at 5230 Old Main Hill, Logan, UT 84322-5230, or email [darren.mcavoy@usu.edu](mailto:darren.mcavoy@usu.edu).

The Utah State University Forestry Extension Web site, found at <http://extension.usu.edu/forestry>, is an excellent source of technical forestry information for woodland owners. Check the “What’s New” section periodically for new postings.

State of Utah Division of Forestry, Fire and State Lands (DFF&SL) service foresters for your area can be contacted by calling 801-538-5555.

Ideas and written contributions to this newsletter are encouraged. Send your contributions or comments to the return address above or call 435-797-0560, or email [darren.mcavoy@usu.edu](mailto:darren.mcavoy@usu.edu).

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UNIVERSITYUtah State University is an affirmative action/equal opportunity institution.  
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## Utah Forest News

### COMING EVENTS

**Restoring the West Conference: Aspen Restoration.** September 12-13, 2006: Logan, UT. Presentations, posters and a one day field trip highlighting aspen restoration efforts in northern Utah. For more information, visit <http://www.restorethewest.org>.

**Southwest Society of American Foresters Meeting: Pinyon-Juniper Ecology and Management.** September 13-15, 2006: Albuquerque, NM. Presentations, field trips and poster sessions. For more information, visit <http://extension.usu.edu/forestry/events.htm>.

**Inland Empire Dry Kiln Workshop.** October 2-5, 2006: Moscow, ID. For more information, contact Jan Pitkin at 208-885-9663.

**National Wildland/Urban Interface Fire Education Conference: Backyards and Beyond.** November 2-4, 2006: Denver, CO. Visit <http://www.firewise.org> for more information.



*This giant sequoia, planted in 1933, grows at the Browse Guard Station in the Pine Valley Mountains.*