

# The Sacramento District Review

4 Lost Lodge Rd, Cloudcroft, NM 88317

575-682-2551

## Drought Effects on Piñon Pine



piñon pines affected by drought in Karr Canyon

**-Reese Bowen** Drought in the Southwest deeply affects all parts of an ecosystem. Soil moisture depletion, vegetative stress and mortality, wildfire intensity, and degraded wildlife habitat are all symptoms of drought. In New Mexico, the 30-month period ending in March 2013 was the driest on record according to the latest U.S. Drought Monitor, released on May 9, 2013.

Drought is defined as an extended period of months or years when a region notes a deficiency in its water supply, generally receiving consistently below average

precipitation. Soil moisture depletion is when a soil becomes severely dry and plant transpiration declines, due to water being increasingly bound to the soil particles by suction. Below the wilting point, plants are no longer able to extract water. They wilt and cease transpiring altogether. Vegetative stress and mortality are direct results of low soil moisture. This has become very apparent here on the Lincoln National Forest.

Here in New Mexico, we can see the effects of the drought most noticeably in our piñon pines. Beginning in 2002, these trees have

shown very high mortality rates. The high heat which accompanied recent droughts was the underlying cause of death for millions of piñon pines throughout the Southwest in 2005, according to University of Arizona researchers.

The drought, coupled with increasingly high temperatures, make the trees susceptible to insect attacks. The high heat combined with extreme dryness puts the trees under so much stress that attacks from bark beetles kill them. Under such conditions, the trees cannot make enough pine sap to defend themselves against the insects.

In a study by Colorado University's Ecology and Evolutionary Biology Department, piñon pine seed cone production declined an average of 40 percent at nine study sites in New Mexico and Oklahoma over the past four decades.

*In our hearts a memory is kept, for a friend we respect and will never forget.*

*No space of time, no lapse of years, can dim the treasured past.*

*A loving memory keeps it dear, affection holds it fast.*

### ***In Loving Memory***



***Daniel A. Davidson***  
***1987-2013***

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## Drought Effects on Piñon Pine (Cont.)

The biggest declines in seed cone reproduction were at the higher elevation sites experiencing more dramatic warming trends.

The pine cones are initiated two years prior to seed maturity, and research suggests the environmental stimulus for cone initiation is unseasonably low temperatures during the late summer. Between 1969 and 2009, unseasonably low temperatures in late summer decreased, likely inhibiting cone initiation and development (Redmond, 2013).

Piñon pines take three growing seasons, or about 26 months, to produce mature cones from the time of cone initiation. The 2002-03 drought caused significant mortality in piñon pine forests (Redmond, 2013). The biggest trees had the highest death rate - about five times greater than small piñon seedlings, which are shaded by taller vegeta-

tion. Normally, biologists expect big trees to withstand dry conditions better due to their greater reserves of moisture and nutrients.

Researchers have also found that shrubs compete with the formation of piñon pine roots and the root fungi that help them absorb water. They found that trees freed from competition with the shrubs had 150 percent longer needles, three times the mass, and about four times as much of the beneficial fungus growing on them (Aleshire, 2013).

The findings provide a fresh glimpse at the impact of the near exclu-

sion of periodic, low-intensity wildfires from most of the Western United States in the past century. The frequent, low-intensity fires controlled the growth of shrubs.

Piñon trees are slow-growing, so we aren't going to have woodlands of this type back in this area for decades. The lack of piñon seeds will also have negative impacts on wildlife. The fate of the piñon - juniper forest depends on what happens next. If the climate gets wetter, the trees may come back. If not, we will probably see shifts to species from drier ecosystems.



Drought-affected piñon pines on a hillside in Karr Canyon

### Evening Lecture Series

The June 13th lecture, "Dark Skies & Astronomy in the Sacramento Mountains" by Stephanie Snedden will be presented 6:00 - 7:00 p.m. at the Sacramento Ranger Station, #4 Lost Lodge Rd. in Cloudcroft.

**Guided hikes have started! Stop by the district office or call 575-682-2551 for more information.**



### Slash Pit Schedule

Sat., May 25th 9am-1pm  
Sat., June 8th 9am-1pm

Dates and times could change due to weather conditions or unexpected complications.

Limbs, branches & brush only. No trash or construction materials.



### Summer Office Hours

(Memorial Day to Labor Day)

Mon.-Fri. 8:00am-4:30pm  
Saturday 9:00am-2:30pm

Closed on Sunday's and Federal Holidays

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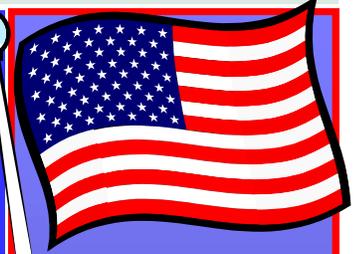
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## KIDS CORNER



By J. Fink



### Lovely Ladybugs

#### Did you know?

- There are 5,000 different species of ladybugs in the world.
- One ladybug can eat up to 5,000 insects in its lifetime!
- As ladybugs age, the color of their spots fade.
- A ladybug in flight beats its wings up to 85 times per second.
- Ladybugs breathe through openings on the sides of their body.
- In 1999, NASA sent ladybugs and aphids up in the space shuttle to test their movements in zero gravity.
- The ladybug is the official insect of at least five U.S. states.



### IT'S ALL IN



### THE BARK

**Bark rubbings are a great way to appreciate the various patterns of tree bark! Use plain paper and a big crayon to get the best results. The rubbings can easily be turned into a work of art by using different colors or making a collage.**

#### Instructions:

1. Look for trees with different textured bark.
2. Place the paper on the bark, then lay the long side of the crayon flat on the paper and rub.
3. Compare the textures
4. Name the tree!

### June 14th is Flag Day

The first official national flag, known as the Stars and Stripes, was adopted by the United States Continental Congress on June 14, 1777. Flag Day has been observed since 1916, when President Woodrow Wilson proclaimed a nationwide observance of Flag Day, but it was not until 1949 when President Truman designated June 14th the official Flag Day holiday.

Join Americans across the nation who will commemorate the annual event by proudly displaying the American flag.