

Link 1. Echinacea angustifolia Facts

(Compiled by Robyn Klein)

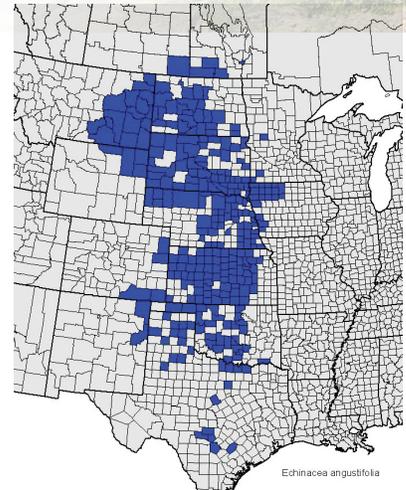
Echinacea is the Latin and common name of a wildflower native only to North America. Latin names are always italicized. The Genus is always capitalized and the species always in small letters.

Echinacea is mostly called purple coneflower, a native plant of the United States.

Echinacea from Montana is called coneflower, comb flower, snakeroot and many other names.

There are nine species of *Echinacea*:

- Echinacea angustifolia* (narrow-leaf coneflower)
- Echinacea atrorubens* (Topeka purple coneflower)
- Echinacea laevigata* (smooth coneflower)
- Echinacea pallida* (pale purple coneflower)
- Echinacea paradoxa* (yellow coneflower)
- Echinacea purpurea* (purple coneflower)
- Echinacea sanguinea* (sanguine coneflower)
- Echinacea simulata* (wavyleaf purple coneflower)
- Echinacea tennesseensis* (Tennessee coneflower)



The nine *Echinacea* species are endemic to eastern and central North America and into southern Canada. Among the nine species of *Echinacea* only one is native to Montana, *Echinacea angustifolia*.

The most commonly used *Echinacea* species are *Echinacea purpurea*, *E. angustifolia* and *E. pallida*. Of these three species, *E. purpurea* is the species most cultivated as a crop. This non-native species of *Echinacea* is often what people grow in their gardens.

Echinacea angustifolia is considered medicinally superior, but that is debatable according to current scientific research.

The only native species of *Echinacea* found in Montana is *Echinacea angustifolia*.

There are fourteen Montana counties where *Echinacea angustifolia* has been documented: Big Horn, Carter, Custer, Dawson, Fallon, Garfield, McCone, Powder River, Richland, Roosevelt, Rosebud, Sheridan, Wibaux, Yellowstone.

For more information of the distribution of *Echinacea* species (by species) you may check out:
<http://kindscher.faculty.ku.edu/research/ethnobotany/distribution-maps-for-echinacea-species>

Link 2. Echinacea angustifolia Biology

(Compiled by Robyn Klein)

1907-1955 - *Brauneria pallida* (*Echinacea angustifolia*) root is listed in the United States Dispensatory.

1916-1947 - *Braueria pallida* root is listed in the National Formulary of the United States as a synonym or an equivalent substitute for *E. angustifolia*.

Echinacea is in the daisy or sunflower family now known as *Asteraceae*.

The old Latin names for *Echinacea* were *Rudbeckia purpurea* and *Brauneria pallida*.

Echinacea angustifolia plants are slow-growing and long-lived. Mature plants average 18 to 44 years old.

50% of *Echinacea angustifolia* plants re-sprout within two years after harvest, contributing to the resilience of wild populations. However, it might take 20-40 more years for these *Echinacea* plants to become large enough to be profitable. The holes left by the harvesters seem to act as a moisture reservoir for the damaged root to re-sprout.

Most other tap-rooted perennial plants cannot re-sprout after a significant portion of their root is dug due to the damage to the root system.

The loss of flowers and seeds from disturbance and harvesting can lead to loss of pollinators and other species that depend on *Echinacea* for nectar and food.

The biggest threats to *Echinacea angustifolia* are overgrazing, herbicides, overharvesting and loss of habitat.

Land sprayed with herbicides for thistle appears to also kill wild *Echinacea*.

For more detailed botanical information visit:

- USDA Natural Resources Conservation Service Plants Database: *Echinacea angustifolia*

<http://plants.usda.gov/core/profile?symbol=ecan2>

- Forest Service: *Echinacea angustifolia*

<http://www.fs.fed.us/database/feis/plants/forb/echang/all.html>

- Internet Archive, Biodiversity Heritage Library: *Echinacea angustifolia*

http://archive.org/details/cbarchive_48828_nomenclaturalhistoryandtaxonom1992

Link 3. Echinacea angustifolia and Traditional Use

(Compiled by Robyn Klein)

Pre-colonization – Current Era: Many Native Americans, including the Assiniboine and Sioux used *Echinacea angustifolia* for snakebites, burns, wounds, toothache, sore throat, coughs, colds, measles, and many other ailments.

Echinacea was discovered to have medicinal and health uses by several Native American groups living and hunting and gathering where *Echinacea* grows.

The root of *Echinacea angustifolia* was one of the most widely used medicinal plants among Plains tribes.

Echinacea angustifolia root is still chewed for toothache and sore throat by American Indians.

All parts of the plant are used in medicine, including the roots, leaves, flowering heads, and seeds.

See these web pages for information on traditional uses of *Echinacea*.

See pages 58-68 of these articles:

<http://www.fs.fed.us/r9/wildlife/tes/ca-overview/docs/Plants/Echinacea.pdf>

See page 4 of the power point found on this page: <http://www.fortpecktribes.org/crd/museum.htm>

Other tribes' traditional uses chart:

http://www.christopherhobbs.com/website/library/articles/article_files/echinacea_01.html

Link 4. *Echinacea angustifolia* Harvesting

(Compiled by Robyn Klein)

Echinacea angustifolia is not as easy to grow as *E. purpurea*, and so it is primarily obtained through the harvest of native wild stands.

The root of *Echinacea angustifolia* is usually dug an average of 11.72 cm below the surface of the soil.

In the late 1990s, most of the *Echinacea angustifolia* was obtained by digging from wild populations in the continental United States.

Over 30 million *Echinacea* plants were harvested between 1998 and 2001.

It takes over 220 *Echinacea* plants to equal 1 kg of dried root.

When prices are high, harvesters can decimate a wild stand of *Echinacea* in a short amount of time, like a gold rush.

The holes left by the harvesters are a danger to livestock and can encourage weed invasion. Tire tracks also left disturbed soil in these areas, potentially creating spaces for weed invasion and soil erosion.

Two years without harvest is necessary for *Echinacea* populations to recover, though these would be small plants and not worth harvesting.

Long-term diggers have a strong conservation ethic and appreciation of the native prairie.

The Montana Native Plant Society has published guidelines for harvesting, as have many wildcrafters and herbalists: <http://www.mtnativeplants.org/filelib/58.pdf>

About harvesting from a researcher and a tribal elder:

www.mtnativeplants.org/fileaccess/getfile/351.pdf

Montana Senate Bill 178 (1999): <http://leg.mt.gov/bills/billhtml/sb0178.htm>

Then the Montana Senate Bill 178 (1999) becomes law as MCA 76-10-101:

http://leg.mt.gov/bills/mca_toc/76_10_1.htm

For more about the process of Senate Bill 178's passage from a Montana Native Plant Society Newsletter in 1999: <http://www.mtnativeplants.org/Kelseya>

*Once on the site keep scrolling down the archives list on the main page that opens until you see: Volume 12 (1998 - 1999) and V 12, No. 3, Spring 1999 then "Legislation Passed for the Sustainable Harvest of Wild Plants"

Link 5. Echinacea angustifolia and Socio-Economics

(Compiled by Robyn Klein)

The demand for purple coneflower has pushed a few states into passing laws to protect wild *Echinacea*. Two species are federally protected. *Echinacea laevigata* and *E. tennesseensis*. *Echinacea laevigata* is only found in a few counties of Virginia, North Carolina, South Carolina, and Georgia. *Echinacea tennesseensis* is found only in three counties in Tennessee.

The cost of *Echinacea* changes depending on the market and demand.

In 1905, the root sold for \$1.00 per pound.

During the "*Echinacea* gold rush" on the Fort Peck Reservation (1995-1998), diggers were first paid \$3.50 per pound of fresh root. This shifted to \$6.50 to \$8.00 a pound of fresh root. Fierce competition between local buyers increased the prices paid to diggers. Read more about this in an article written about a tribal elder at Fort Peck, Curley Youpee, "*Echinacea gold rush: Curley Youpee fights to preserve an ancient legacy*" by Kimberly Lord Stewart. Your teacher or librarian can help you access this online document found through your public library: <http://connection.ebscohost.com/c/articles/9131860/echinacea-gold-rush>

The market for *Echinacea* root rose and fell as the market became flooded. Harvesting would slow or end when the price became too low for the harvesters or the buyers did not need more roots.

Harvesters reported making \$20-\$200 per day digging *Echinacea* roots, depending on how many hours and ability to find plants.

People would take time off work to dig *Echinacea* because it paid better than their jobs. Often, cost of gas and wear and tear on vehicles was not taken into account. Buyers would place ads in the local newspapers or post advertising placards along the road.

Buyers thought that most harvesters were selling five to twenty pounds of fresh root a day; estimated at \$32 to \$145. The more experienced harvesters were digging up to 50 pounds of *Echinacea* root per day. One company bought 545 kg of root per day and paid out over \$1.1 million to *Echinacea* harvesters in 1998.

The price paid to professional wildcrafters (harvesters) off the reservation was in the range of \$30-50 per pound of fresh root. The difference was that on the reservation there were intermediate buyers who took a cut, instead of harvesters selling direct to the end buyers, as professional wildcrafters did.

Echinacea angustifolia seed was also collected for sale to buyers. Seventeen to twenty pounds of seed heads from 3-5 plants would equal one pound of seed, worth \$6.50-8.00 a pound. One order of 300 pounds of seed required around 1500 plants to be cropped of their heads, leaving less native seed abundance for wild populations.

During the digging rush, there were contests held for the biggest root. Diggers would ignore the smaller plants and try to get the largest, heaviest plants. This behavior eliminated the oldest *Echinacea* plants from the wild plant populations—probably up to 40 year-old plants. One winner had dug a 96.5 cm-long (37.9 inches) *Echinacea* root.

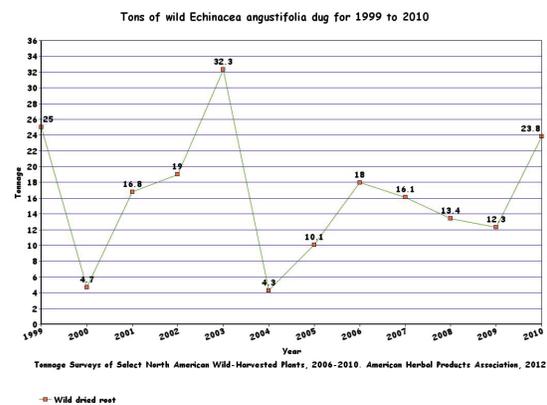
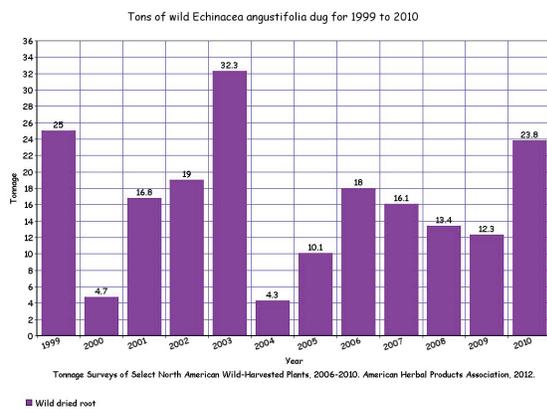
Some people made money by charging diggers \$20/person to dig on their private property.

During this “purple gold rush” there were complaints of trespassers on private land and damage to land such as leaving behind holes and trash.

Poachers were caught with 83 pounds of fresh roots by Custer National Forest Service officers in 1998.

Under Montana law it is a crime to dig any plant in large amounts without permission of the landowner.

Digging *Echinacea* without permission on private land could lead to a \$10,000 fine.



Link 6. Echinacea angustifolia harvesting and Tribal Sovereignty

Mid-1990s - Harvesting of *Echinacea angustifolia* root increases in the mid-1990s. It spreads northward from historical harvesting areas in Kansas to the untouched native stands in eastern Montana and western North Dakota. Harvesting increases with market demands in 1997 and 1998. The Fort Peck Reservation in northeast Montana becomes to focus of this expansion of commercial markets.

1995 - Companies approach the tribes on the Turtle Mountain and Fort Berthold Reservations in North Dakota and the Fort Peck Reservation in northeast Montana, and offer money for *Echinacea* roots.

1998 - University of Montana Master's Thesis by Monique Kathleen Kolster: Impacts of the global *Echinacea* market on the people and land of the Fort Peck Assiniboine and Sioux Reservation.

In the spring of 1998, over 350 to 400 people were harvesting *Echinacea* on the Fort Peck Reservation. The headlights of pickup trucks were used at night so that the last remaining seed heads could easily be seen.

No one is allowed to dig plants on Montana Indian Reservations without permission. Taking anything from an Indian Reservation without permission is against tribal laws.

The Fort Peck Indian Reservation covers parts of four counties: Roosevelt, Valley, Daniels, and Sheridan. *Echinacea angustifolia* is mostly found in only two of those counties: Roosevelt and Sheridan.

Sometimes, herbal medicine knowledge among tribes in Montana remains closely guarded. The information often resides only with people that hold a special position such as a spiritual leader.

For some tribes, herb information is being documented. For example, on the Salish/Kootenai Reservation, medicinal plant information has been published in a book...written in Salish. This book is not available to the general non-Indian public. And you would not know how to read it unless you knew the Salish language.

Today, it is suspected that some of the herbal medicine knowledge among Montana tribes is being forgotten. Sometimes young people are not interested. It takes a lot of work and dedication to learn the prayers, songs and information about medicinal plants. It takes someone who really wants to take the ownership and responsibility that comes with having that kind of knowledge.

Price and Kindscher discovered on Fort Peck that the most experienced harvesters have great respect for harvesting sustainably. Digging *Echinacea* root is part of their livelihood and they do not want to destroy it. For more information read their articles at:

<http://kindscher.faculty.ku.edu/wp-content/uploads/2010/10/Price-Kindscher-2007-One-Hundred-Years.pdf>

<http://kindscher.faculty.ku.edu/wp-content/uploads/2010/10/Kindscher-2008-Resprouting-of-Edhinacea-angust.pdf>

In her Master's thesis on the harvesting of *Echinacea* on the Fort Peck Reservation, Monique Kolster describes the tribal conflicts that resulted. Many thought it was a good thing that brought families together. Others complained of trespassers digging on their land and leaving holes and trash. Elders were concerned about digging with respect. Your librarian can help you check her thesis out from the University of Montana: <http://www.worldcat.org/title/impacts-of-the-global-echinacea-market-on-the-people-and-land-of-the-fort-peck-assiniboine-and-sioux-reservation/oclc/42068906>

Link 7. *Echinacea angustifolia* and Commercial Usage

1805 - Meriweather Lewis sends Thomas Jefferson a specimen of *Echinacea angustifolia* root, claiming its use for rattlesnake bite.

1885 - *E. angustifolia* is introduced to the Eclectic pharmacist, John Uri Lloyd and Dr. John King as "Meyer's Blood Purifier."

1886 - J.U. Lloyd manufactures *E. angustifolia* root products such as tincture of Echinacea and Specific Medicine Echinacea.

1887 - The first commercial Echinacea product was introduced in the U.S. in 1887 and was touted for colds and infection. The first article on the medicinal properties of *E. angustifolia* root is published in The Eclectic Medical Journal. Advent of antibiotics and interest in Echinacea wanes.

1930s - Scientific research on *Echinacea* begins in Germany.

1950s-1970 - *Echinacea* use in the US declines, while vigorous research on *E. purpurea* aerial parts proceeds in Europe.

1970s - *Echinacea angustifolia* reintroduced by herbalist Michael Tierra and popularized by herbalists such as "Herbal" Ed Smith.

1988 - German researchers discover that *E. pallida* contains unique chemical constituents (ketoalkenynes) which distinguish it from both *E. angustifolia* and *E. purpurea*.

1993 - First clinical trial conducted with *E. pallida* reports reduction in symptoms in patients with upper respiratory infection.

1994 - *Echinacea angustifolia* products are first sold in the United States as a "Dietary Herbal Supplement."

2003 - *E. angustifolia* root is included in the Dietary Supplements section of the United States Pharmacopeia.

2004 - *E. pallida* root is included in the European Pharmacopoeia.

2008 - Ketoalkenynes, the characteristic constituents of *E. pallida* root, are shown to be potentially bioavailable.

Echinacea has been among the top-selling herbal supplements in the United States for many years. *Echinacea* was re-discovered in the late 1800s by European-Americans. It was made popular again in the 1980s by American herbalists.

Echinacea was once very popular in the U.S. between 1891 and 1923. But after the 1930s and the decline of the "eclectic" doctors, *Echinacea* was forgotten. Then in the 1970s, *Echinacea* was encountered by a California herbalist who made it popular once more. The popularity trending of *Echinacea* products reflects repeated rises and falls over time.

Doctors and herbalists debate the efficacy and use of *E. angustifolia*.

Modern practitioners use *Echinacea* to stimulate the immune system in acute infections such as colds and flu.

E. angustifolia root contains four major groups of compounds of medicinal interest: alkamides, caffeic acid derivatives, polysaccharides, and glycoproteins.

Research studies suggest that *Echinacea angustifolia* preparations promote phagocytosis and stimulate T-cells and have an anti-inflammatory effect.

The widespread use of *Echinacea angustifolia* suggests it has a high degree of safety as an herbal ingredient and medicine.

Only two clinical trials have been performed using *E. angustifolia* root alone. Most clinical trials used the more common *E. purpurea*.

The indications for use listed in the United States Pharmacopeia and National Formulary say: "supports the immune system."

Echinacea angustifolia is one of the most popular and most researched plants in the herbal product industry.

A Smithsonian Website details the Lewis and Clark Expedition and what Clark wrote about *Echinacea*:
http://www.mnh.si.edu/lewisandclark/resources/Echinacea_angustifolia.pdf

John Uri Lloyd, Eclectic Pharmacist who manufactured medicines from *Echinacea angustifolia*:
http://www.lloydlibrary.org/history/lloyd_brothers.html
<http://www.lloydlibrary.org/history/lloyd%20pharmacy.html>

What is an Eclectic Pharmacist anyhow?
http://www.christopherhobbs.com/website/library/articles/article_files/echinacea_01.html

Information on current usages of *Echinacea* can be found at:
<http://www.pitt.edu/~cjm6/w98echin.html>
http://www.mayoclinic.com/health/echinacea/NS_patient-echinacea