

# *Echinacea*

## Coneflowers from the Tall Grass Prairies of North America

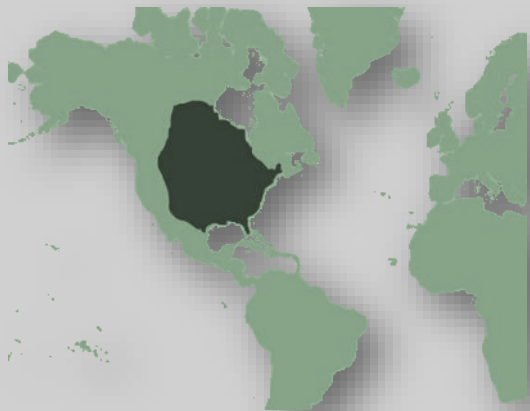
Scientific names of plants and animals are anathema to many; the scientific name *Echinacea* would be one of very few exceptions. The name of this herbal remedy is universally well known, but how many would have heard of its common name, *Coneflower*!

*Echinacea* species are iconic flowering plants of North American prairies. They are in the daisy, or sunflower, family, Asteraceae. There are nine species, all endemic to North

America, from north-western Canada to south-central USA. The name *Echinacea* is derived from the Greek, ἐχῖνος (ekhinos) for *hedgehog*, a reference to the rounded, spiny, central cone of florets.

*Echinacea* has long been used in traditional medicine by Native Americans. European settlers observed Plains tribes used *Echinacea* for coughs and colds, sore throats and flu symptoms, and from the

late 1880s began to develop their own herbal supplements. In about 1880, the first recorded preparation was peddled for the treatment of *neuralgia*, *rattlesnake bites* and *rheumatism*!! *Echinacea* as a herbal remedy reached a peak in the late 1880s through to the early 1930s, and then again an enormous increase at the end of the 20<sup>th</sup> century that continues to this day. Wild harvesting



Natural distribution of *Echinacea*. Map modified from Royal Botanic Gardens, Kew, Plants of the World Online.



to meet demands for herbal medicine has had an extremely detrimental effect on natural populations, threatening survival of some species.

*Echinacea* are herbaceous, drought-tolerant perennials with brightly coloured flowers that have become increasingly popular as garden plants in recent years. Flowers are typical of *daisy* flowers (Asteraceae family), and what looks like *just one flower* is comprised of *many tiny florets* arranged in a cone (hence the name *coneflower*), and with large, colourful petals (ray florets) at the perimeter of the cone and reflexed downwards.



As early 1903, botanists have warned that wild harvest of *Echinacea* exceeded the capacity of the population to regenerate. *Echinacea angustifolia*, the Narrow-leaved Purple Coneflower, once grew in abundance across a broad range of North America, but following the arrival of European settlers in the late 1800s, much tall grass prairie was converted to agricultural production. Tall Grass Prairie is now considered one of the most endangered habitats in the world with *Echinacea* restricted to small remnants of fragmented prairie and this in

itself creates problems, particularly with pollination by bees. Isolated populations become inbred, increasing the likelihood of self-incompatibility (when pollen is genetically rejected by the ‘female’ floral organs). Failed fertilisation reduces seed set, thus recruitment of new plants.



Mass flowering after fire of *Echinacea angustifolia* in mixed tall grass prairie in Northcentral Kansas.

Photo: Tony Ifland, USFWS



Fortunately, *Echinacea angustifolia* plants can live for many years and resprout each year from deep taproots. However, genetic recombination is essential. Because only a few plants flower in any given year, prospects for pollination from other plants is limited. *Echinacea* is now seen as dependent on fire, which is generally known to be essential to the survival of prairie ecosystems. After fire, *Echinacea* plants synchronised and abundant flowering is observed, often doubling seed production and establishing new, robust genetic variation.

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Wikipedia: <https://en.wikipedia.org/wiki/Echinacea>

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