

NATIVE PLANT SOCIETY OF NEW MEXICO
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Missy Deardorff, Editor
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Phyllis Hughes, Membership
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Penstemon barbatus

FAMILY PORTRAIT
Scrophulariaceae
The Figwort Family

The scarlet bugler (*Penstemon barbatus*) is currently gracing our roadsides and hillsides with its elegant flowers. It and other species in the Scrophulariaceae are prized for their ornamental value. The family of herbs and shrubs has variable vegetative features, but the attractive flower with a two-lipped tubular corolla is a common feature of the family. The calyx is persistent and the stamens are 2, 4, or 5. Sometimes the missing stamens are present as sterile, modified appendages. The ovary is two carpels and two-celled. The fruit is usually a dry capsule or rarely a berry.

The family is large, about 210 genera and nearly 3,000 species. It is of cosmopolitan distribution and represented on all continents although it is mainly northern hemisphere. The larger genera in this country include *Penstemon*, *Mimulus*, *Veronica*, *Pedicularis* and *Castilleja*.

The Scrophulariaceae are not a particularly important family, and, except for the drug plant *Digitalis*, they are valued primarily as garden ornamental, e.g. snapdragon (*Antirrhinum*), speedwell (*Veronica*), slipper flower (*Calceolaria*).

Three Native Penstemons and How to Grow Them
by R. J. Crump

The genus *Penstemon*, beard-tongue, consists of about 230 species ranging from the Arctic tundra to Central America and from sea level to alpine regions. It occupies every habitat except swamps. Although distributed across the continent, most species inhabit western North America.

Closely related to the snapdragon, this genus contains some of our most spectacular wild flowers. New Mexico is richly endowed with species of *Penstemon*. Among these are *P. ambiguus*, *P. jamesii*, and *P. strictus*.

Here are descriptions of these three species followed by suggestions for propagating them.

Penstemon ambiguus Nutt.

An herbaceous perennial, this species ranges from Kansas to California and north to Colorado at altitudes of 4,000 to 6,500 feet. It is found in sandy grasslands and is now blooming along I-25 north and south of Albuquerque. Its simple, glabrous stems rise

4-20 inches and bear loose panicles of rose-colored flowers. These flowers are $\frac{1}{2}$ -1 inches long, slender, decurved, and 2-lipped. Two lobes are not fused as in most species of Penstemon, giving rise to the species name ambiguus. The flower contains 4 fertile and 1 sterile stamen. The fruit is an ovoid capsule with numerous, angled seeds. The leaves are opposite, filiform to linear, entire, and the upper leaves are smaller.

Penstemon jamesii Benth.

The range of this species is 4,500-7,000 in sandy soil associated with pinion and ponderosa pine from New Mexico to Southern Colorado, Utah, and Northern Arizona. Two sub-species occur in New Mexico. Subsp. typicus Keck has a corolla $1\frac{1}{2}$ inches long and occurs east of the Continental Divide. Subsp. breviculus Keck has a corolla $\frac{2}{3}$ inches long and occurs in Northwestern New Mexico, Colorado, Utah and Northern Arizona.

This species has a lavender corolla veined with darker purple, the 5 lobes distinctly fused to form 2 lips, and the throat inflated. The sterile stamen is bearded and exserted.

Penstemon strictus Benth.

Found at elevations of 6,000-11,000 feet, this species ranges from New Mexico to Wyoming, Utah, and Northeastern Arizona in rocky to sandy loam soils. The stems are coarse and 8-28 inches tall. The lower leaves form a basal rosette and are usually persistent through the winter. The corolla is blue to violet and the tube is much shorter than the diameter of the throat. It has the usual 5 petals fused into 2 lips with 4 fertile and 1 sterile stamen and a simple pistil.

Propagation

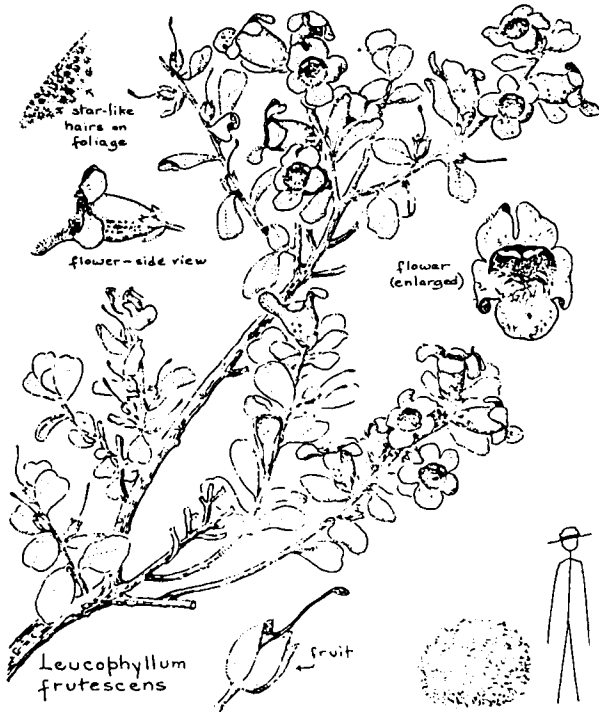
These species can be started from herbaceous cuttings, vegetative stem tip cuttings usually being the easiest. The cuttings are slow to root and a dip in a rooting hormone is helpful. Humidity must be maintained at a high level to reduce transpiration and the foliage should be frequently misted.

The base of P. strictus can be divided into sprigs, making certain that each sprig has some roots attached. Basal portions of its stem will layer readily.

Seeds of these three species contain a complex of dormancies which are broken by moist chill. While P. ambiguus seed requires only 30 days of moist chilling, seeds of P. jamesii and P. strictus require at least 60 days. Although these seeds can be moist-chilled or stratified, in a refrigerator, the best method is to sow the seeds in winter to naturally stratify them. P. ambiguus should not be sown too early, however, since germination drops off after too long a cold period. Moisture must be continuously provided after sowing.

As with most species of Penstemon, these species germinate better at low soil temperatures. After a natural moist-chilling period, Penstemon will be one of the earliest plants to emerge. The genus as a whole, however, is slow growing and will not bloom until the second growing season. Once established, these plants are long lived and will continue to provide beauty and enjoyment with little maintenance for many years.

Native Plant Research Varied at N.M.S.U.
by Carol Dimeff



Silverleaf, Texas Ranger
Scrophulariaceae. Figwort Family
Blooms lilac-violet Aug.-Oct.

Perhaps the most exciting news out of N.M.S.U. for us is that Drs. Bill Martin, Sandy Dick-Peddie and Rich Spellenberg are making preliminary preparations for a manual of the common plants of New Mexico. The book will be a spin-off of Dr. Martin's *New Mexico Flora*, a two-volume publication now being printed in Germany. The 400-plus page manual will contain a representative of every major plant family with a line drawing and description of the species. A comment about other species in the genus will be at the bottom of the page. Three or four species may be described in a few large genera like Penstemon and Quercus. The book will also include an easy-to-use key of trees and shrubs designed for beginning botanists and will be made available at all state parks and monuments for visiting tourists.

The NMSU Horticulture Department has initiated a new program on "Native Plants for Landscaping" in cooperation with the Middle Rio Grande Branch Agricultural Experiment Station. The goal will be water and energy conservation through the use of low

maintenance plants. Specific objectives relate to evaluation, propagation, selection, and cultural management of native plants for landscape use. John Carroll and Ron Crump will be working closely with Dr. Darrell Sullivan and Don Cotter on this project. John has been trying to propagate numerous species native to the area and is working out a standard procedure for testing the germination requirements of their seeds. He is taking vegetative cuttings the first of each month to determine when is the best time for propagating each species. Preliminary results indicate waiting until August or September to take cuttings of Leucophyllum frutescens Texas Ranger. Ron has expressed particular interest in studying Desert Willow, Chilopsis Linearis and Apache Plume Fallugia paradoxa.

Elaine DePree and John Ludwig of the Biology Department have published in the March issue of *The Southwestern Naturalist* a study on leaf and fruit production patterns of desert willow, Chilopsis linearis (Cav.) Sweet, in relation to temperature and precipitation. Dr. Ludwig and Stan Smith have also published recent papers on yucca.

Kathy Fraes (Biol.) is testing Dan Cohen's hypothesis that desert annuals produce a fixed proportion of viable seeds to insure reproductive success. Cohen's model predicts that an optimal fraction, G , of seeds germinate in response to some minimum threshold of precipitation. Corresponding to the germinating fraction, there is a fraction of the seed population, $1-G$, which can remain dormant should total reproductive failure occur in the germinating fraction.

Chris Royce (Biol.) is doing a carbon allocation study on sand verbena, Abronia angustifolia, grown under different levels of calcium sulfate. He has two field locations where the plant is studied: in pure gypsum at White Sands and in silica sand near El Paso. Photosynthesis, transpiration and respiration are being measured to see whether the amount of carbon going to roots, leaves and reproductive structures is affected by gypsum.

Gary Cunningham and Paul Kemp (Biol.) are doing an ecological study of salt grass, Distichlis stricta. Plants have been collected in several locations in New Mexico, Colorado and northern Mexico and are being grown hydroponically under different salt regimes to see if they are genetically different in their response to salinity.

Dr. Dick-Peddie currently has two graduate students studying native plant communities. Cathryn Kennedy is looking at pinyon-juniper across a wide area to see if there are different types of pinyon-juniper woodlands. Bob Henry is surveying riparian vegetation in southern New Mexico to see how the various species are distributed and what species tend to occur together most frequently.



Desert Saltgrass
Distichlis stricta
 Warm season, perennial sod grass

News and Notes
 June Meeting

Terri Fox showed those who attended the NPS meeting in Los Alamos on June 21st how the natural and seeded revegetation of the La Mesa burn in Bandelier National Monument is progressing. Her study plots dramatically revealed that fire at intervals of roughly 5-25 years actually keeps a forest able to bounce back faster than those mature stands in which fire has been suppressed for 100 years. *Thelesperma megapotamicum* is one of the forbs which has appeared in abundance on the burn this spring.

Specimen Tree List

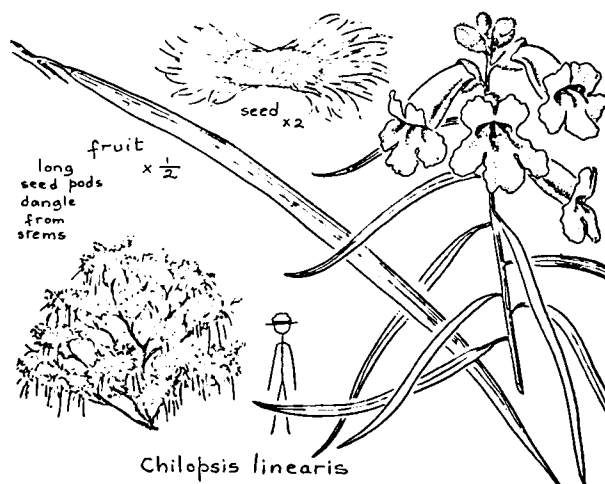
The following list of specimen trees comes from the American Forestry Association's National Register of Big Trees. First published in American Forests in 1945, the Register is a list of the largest individuals of a tree species, its dimensions, its location, and the name of the person who found and nominated the tree. Anyone can nominate a tree. Of the more than 1,000 species eligible for inclusion in the Register, only 661 are recorded. Here are the species whose largest specimen resides in New Mexico.

SPECIES	CIRCUMFERENCE AT 4.5 feet	HEIGHT	SPREAD	TOTAL POINTS	LOCATION & NOMINATOR
Catclaw Acacia <u>Acacia greggii</u> Gray	6'5"	49'	46'	138	Red Rock Samuel Lamb
Mountain Thinleaf Alder <u>Alnus tenuifolia</u> Nutt.	4'4" 5'	68' 57'	25' 37'	126 126	Church Canyon Stanley Stroup
Corkbark Fir <u>Abies lasiocarpa</u> var. <u>arizonica</u> (Merriam) Lemm.	12' 13"	95'	33'	248	Lincoln Nat'l For. Earl Alder
Netleaf Hackberry <u>Celtis reticula</u> Torr.	11'4"	74'	72'	228	Red Rock Samuel Lamb
Gambel Oak <u>Quercus gambelii</u> Nutt.	17'2"	52'	38'	267	Gila Nat'l For. Dahl Kirkpatrick
Southwestern White Pine <u>Pinus strobiformis</u> Engelm.	15'5"	111'	62'	311	Lincoln Nat'l For. Thomas Dix
Five-stamen Tamarisk <u>Tamarix chinensis</u> Louv.	7'7"	37'	38'	138	Albuquerque Paul Thompson

From U. S. Forest Service book Check List of Native and Naturalized Trees of the U. S.
by Elbert Little

To join the Native Plant Society of New Mexico, send your annual dues to 542 Camino del Monte Sol, Santa Fe, New Mexico 87501. Send \$6.00 for an individual, \$8.00 for family membership.

Desert Willow, Desert Catalpa
Bignoniaceae. Trumpet Creeper
Family



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Penstemon ambiguus
Gilia Penstemon



4: DP studies

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