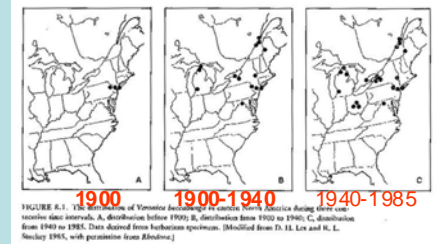


The Herbaria at New Mexico State University

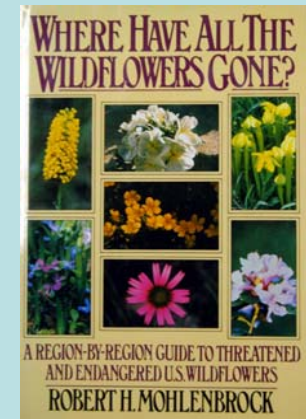
The herbaria at N.M.S.U. are part of the Center for Natural History Collections, a consortium designed to document the natural history of New Mexico and similar regions, to protect, preserve, and build the natural history collections within the university, and to distribute information from these collections. The Center fosters interdepartmental and intercollegiate communication and cooperation, and facilitates collaborations with other institutions. The CNHC recognizes the need to consolidate scattered resources and collections into a single permanent facility. It serves to expand educational and research partnerships, expand outreach, and support teaching, research and service within and outside NMSU.

Herbaria are immense sources of information about plants useful to the academic community, governmental agencies, and general public. Among the uses and users of information are:



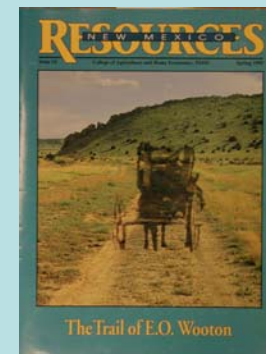
Identifications for wild flower enthusiasts and physicians

Changes in vegetation since western settlement, and chronology of weed invasion



Vouchering new species, chromosome studies, and molecular work, etc.

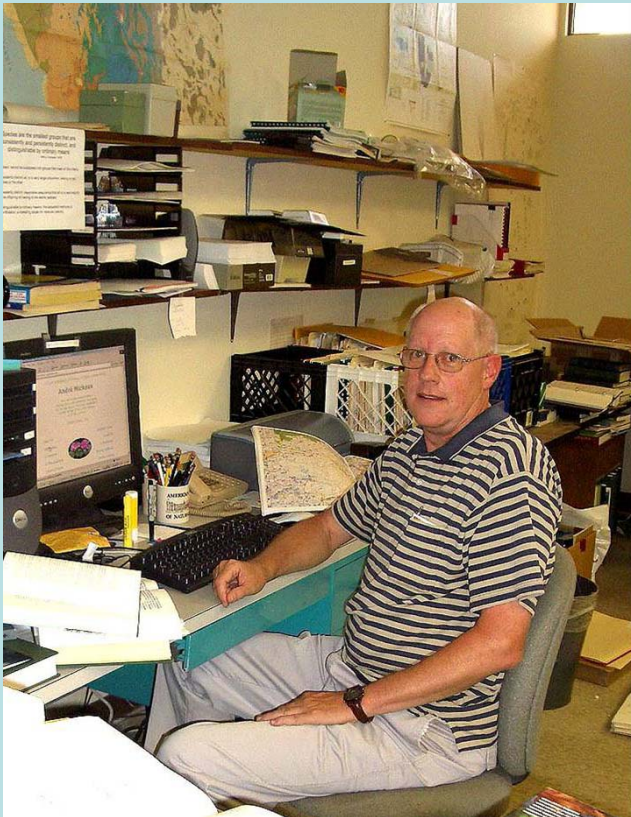
Information from specimens for technical and popular publications, and information on endangered species



History of botany Within a region

Information for land management and range research agencies, for schools, and for non-governmental organizations

And much more. The next 8 frames show how the N.M.S.U. herbaria function.



There are two internationally recognized herbaria at NMSU

**Animal and Range Science Department
Herbarium, College of Agriculture and
Home Economics**

International acronym: NMCR

Contact Dr. Kelly Allred (kallred@nmsu.edu),
505-646-1042

Founded: 1930. Specialty: State flora; grasses

Number of specimens: 25,000

**Biology Department Herbarium, College of
Arts and Sciences**

International acronym: NMC

Contact Dr. Donovan Bailey
(dbailey@nmsu.edu), 505-646-1042

Founded: 1890. Specialty: Regional flora

Number of specimens: 70,000



An herbarium a collection of plants that documents contemporary and historical distributions of plants within a specified region. It is a record of effort to understand native and introduced plants and a long-term representation, contributed by many individuals, of which plants once grew, or presently grow, with a region and their condition during the seasons. Herbaria contain large amounts of information regarding plant diversity, geographic variation, spread of weeds, and ecological conditions where species grow. For protection, specimens are pressed, dried, and mounted on archival paper, and filed in insect and fire resistant cabinets. They are arranged in an order that makes retrieval of any species easy and efficient.

This photo shows a modern herbarium cabinet with about 1000 specimens. Richard Spellenberg, a curator of the Biology Department Herbarium, is examining a specimen of the mustard family Brassicaceae).



HOW PLANTS ARE COLLECTED.

Plants are pressed to prevent distortion from curling, wilting, and shrinkage.

The best specimens result when plants are put directly in a temporary press, in the field, that is easy to carry. Notes are taken on the spot.

Within a day or two, and ideally sooner, each of the newly pressed specimens is placed between corrugated cardboards and placed over a source of heat. They should dry within one or two days.

The top photo shows the initial collecting; the plants are pressed and notes are taken.

The lower photo shows a drying press placed over a heat source (here a camp stove with flame baffle) and collecting gear (maps, notebook, digger, GPS, and the temporary press). One might add silica gel in a bottle for collecting molecular material.

Later, when plants are dry, they are identified, labeled, and mounted on heavy acid-free archival paper.

SPECIMENS SERVE MANY FUNCTIONS

All kinds of plants are found in herbaria. Each specimen, protected by its paper backing, has data on its label indicating date and place of collection and who collected it. Modern specimens have data regarding plant features and ecological characteristics of the site where the plant was found.

The plant on the left is a cactus, sliced, the fleshy material removed. This helps the plant dry rapidly.

On the upper right is a member of the daisy family from Chihuahua, Mexico. Several years after it was collected a few leaves were removed for molecular study by a

researcher in the U.S. Midwest who was studying relationships within the genus *Erigeron*. This saved days of effort and the costs of miles of travel for him.

The specimen on the lower right documents the rediscovery of a rare sunflower, long “lost” after its original discovery, and it represents a record from a site in New Mexico far from where the species was previously known.





The two specimens shown here are from a species of oak that grows in the Sierra Madre of Chihuahua, Mexico. The one of the left was collected in 1989, the one on the right in 1887. On each, the information (leaf size, hair characteristics, etc.) is equal; the newer specimen has more data on the label.

How long will a specimen last? We still do not know, but they should last as long as any organic material in a dry environment safe from fungi, insects, fire and misuse. The oldest specimens in the world, in Germany, are more that 500 years old. Thus, a biological collection can show what organisms were or are present in an area, where they occurred or presently occur, and how our knowledge of them has progressed.

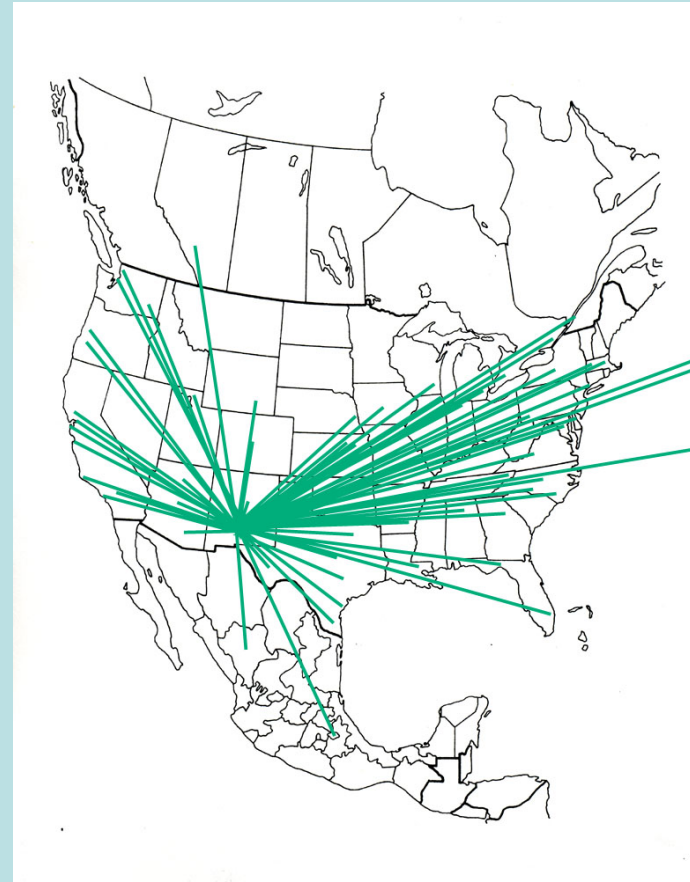


Herbaria are open to use by anyone who needs information about plants of some particular region after minimal instruction in use and care of specimens. The collections are regularly used by faculty, students, land managers, consultants and the general public. Faculty and students associated with the herbaria also make presentations about various aspects of botany to the public and present workshops on native and introduced plants.

On the left, Gene and Betty Jercinovic study New Mexico walnuts for their work on New Mexico plants. On the right, members of the Native Plant Society of New Mexico, Otero Chapter, take a tour of the Biology Department Herbarium. Graduate student Patrick Alexander points out some details of a fern from the Organ Mountains.



Origins of specimens
borrowed by herbaria at NMSU



Destinations of specimens
loaned by herbaria at NMSU

Specimens may be borrowed by and loaned. To facilitate availability and use, researchers throughout the world may request loans of specimens. The maps show some of that activity since 1985 at N.M.S.U. A label is placed upon each specimen providing its use and classification at that time.



Data-basing information from museum specimens

Museums are great stores of information, but until recently obtaining this information was a slow and often expensive process. A person might visit museums to study specimens, borrow specimens for examination, or request specimen data, which had to be hand-prepared and mailed.

Museums around the world are now data-basing information from specimens to make it easily and widely available via the World Wide Web. Here Lisa Schauer, an undergraduate and a Biology Department Herbarium assistant, data-bases from specimens; also shown is the entry screen and an Excel file of information, which can easily be e-mailed to a recipient. Information found in museums of New Mexico have also been made available through a cooperative state-wide project known as INRAM. That information can be viewed at <http://biodiversity.inram.org>.

In April, 2006, Lisa completed data-basing the Biology Department Herbarium, a project that was initiated in 1993 and has involved many students.

40217	Fabaceae	Astragalus	Spellenben	2279	5/23/1970	8 mi W of Wission on Hwy 52		8900R	Pinevalle
40268	Fabaceae	Astragalus	Spellenben	2925	8/8/1974	W Boca Cal 100	4W	Sec 18 or 1900R	N-facing st
43767	Fabaceae	Coleogama	Morr. WH	638	8/11/1978	Black Range, McKnight Road		8700R	SW aspect
51873	Fabaceae	Lotus	wing/ Spellenben	6600	8/4/1982	Ca 14 air in 100	10W	551 m in 14	7400R
51883	Fabaceae	Trochilium	sp Spellenben	6624	8/4/1982	Ca. 14 air in 100	11W	SW 14 Sec 1400R	On rocky st
52247	Malvaceae	Sphaeralcea	Spellenben 2278-D		5/23/1970	Ca. 3 mi NW of Cuchillo along NM Hwy 52			
52349	Asteraceae	Berlandieria	Ward, D. 151-167	610	8/10/1981	19 mi NW 110	7W	8	8000R
53715	Ranunculaceae	Aquilegia	D. E. Ward	81-179	6/4/1981	Black Range 129	9W	35 535	ca 8000R
54884	Fabaceae	Astragalus	R. W. Spell	7955	4/4/1988	Ca 10 air in 100	4W	Sec 11	8900R
56212	Asteraceae	Oxeraia	sig Ward, D.	83-263	8/17/1983	Black Range 100	9W	sec. 15	8100R
57156	Agavaceae	Agave	neo. Spellenben	10218	8/18/1990	White Sam 125	SE	c. cent 8	2330m
57841	Cactaceae	Opuntia	sp Spellenben	10081	4/17/1990	White Sam 105	SE	58 SE 14	4850R
57906	Cactaceae	Echinocystis	Spellenben	10094	4/17/1990	White Sam 105	SE	58 SE 14	4850R
58071	Lamiaceae	Hedeoma	R. W. Spell	10655	8/19/1990	White Sam 130	SE	15 SE 14	2075m
58082	Fabaceae	Crotalaria	R. W. Spell	10651-A	8/19/1990	White Sam 130	SE	15 SE 14	1900m
58303	Caryophyllaceae	Urena	plant R. W. Spell	10577	8/20/1990	NE part of 125	SE	5 SW 14 Sec 2720m	Rocky spine
58349	Malvaceae	Sphaeralcea	R. W. Spell	10660	8/19/1990	White Sam 130	SE	15 S center	2270m
64696	Cactaceae	Opuntia	sp Spellenben	10002	4/17/1990	White Sam 108	SE	58 SE 14	4850R
66992	Nyctaginaceae	Boerhaavia	Spellenben	10566	8/20/1990	White Sam 125	SE	518 SE	1900m
70527	Fabaceae	Lotus	wing/ Spellenben	12524	8/9/1998	Look Out 8115	9W	18 NW	2700m
37266	Fabaceae	Dalea	near Sutherland	6864	8/15/1989	E. of Mimbres Mts. along NM Hwy 27 2.1 mi S of Milago 5200R			in rocky st
38189	Rubiaceae	Prentissia	R. W. Spell	12551	8/9/1998	Gila National Forest, Seventyfour Draw [ca 8 air km W of 2310m			rocky outc
36452	Cistaceae	Hypericum	R. W. Spell	12583	8/9/1998	Gila Nat. For. seventyfour Draw ca. 8 air km W of Looko 2310m			Pinus pond
58710	Linaceae	Linum	vern R. W. Spell	10621	8/9/1990	White Sam 130	SE	7 N edge sec 2	clayey, silt
54902	Asarum	Asarum	R. W. Spell	7952	4/4/1988	ca. 10 air in 100	24W	12	8200R
50286	Amaranthaceae	Amaranthus	R. W. Spell	10574	8/20/1990	White Sam 125	SE	5 SW 14	2720m
51889	Nyctaginaceae	Mirabilis	Spellenben	9588	8/4/1982	ca. 14 air in 100	10W	31 NW 14	7400R
48777	Euphorbiaceae	Euphorbia	R. W. Spell	4086	5/23/1970	4.2 mi. E. of Caballo Dam on W foothills of Caballo Mts.			in gravelly