

Gentner's Fritillary The Discovery and Protection of a Rare Species

Georgie Robinett

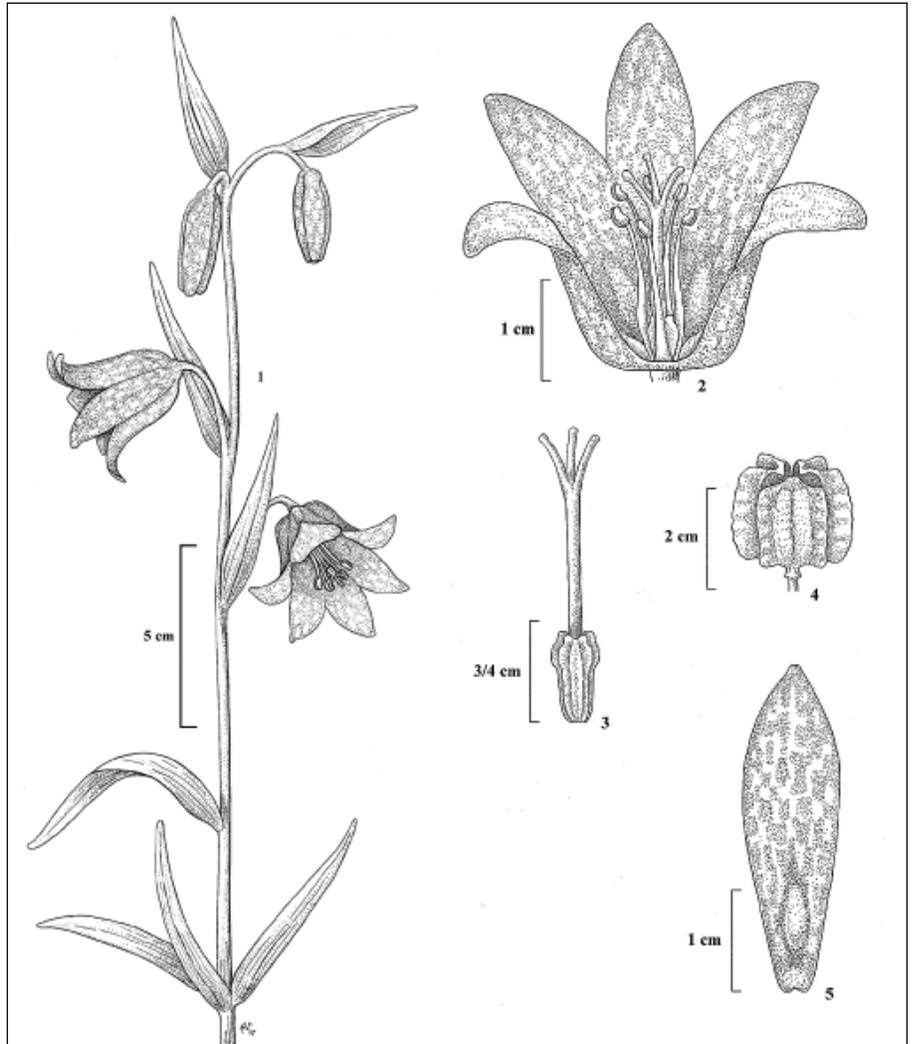
Freedom Plaza 5524, 13373 Plaza del Rio Blvd., Peoria, AZ 85381

Rare plants are often accidentally discovered. Sometimes amateurs find them. *Fritillaria gentneri* was first noticed in the spring of 1942, while 18-year-old Laura Gentner was pursuing one of her favorite pastimes, bicycling the back roads of Jackson County. Her bicycle gave her an excellent vantage point for admiring the wildflowers she sometimes collected for her parents' garden in Medford. From this trip, however, she brought home a fritillary unlike the two she was accustomed to seeing on her wildflower jaunts, *Fritillaria recurva* and *F. affinis* (historically also known as *F. lanceolata*).

The following spring Laura could not find the new fritillary again. However, the year after that (1944), Laura's sister Katherine recognized it in a bouquet of wildflowers a friend had picked. Before long, the source was traced to a location south of the town of Jacksonville, about seven miles away. Laura and Katherine's father, Dr. Louis G. Gentner, was an entomologist who had imbued his family with a deep interest in natural history. His wife Lillian was a horticulturist, and the family enthusiastically investigated the flora and fauna of Jackson and Josephine counties. Their excitement in discovering what might be a new, undescribed wildflower can be imagined.

Dr. Gentner, the Assistant Superintendent for the Southern Oregon Branch Experiment Station in Medford, was a friend of Dr. Helen M. Gilkey, Curator of the herbarium at Oregon State College. He promptly reported the discovery to her. At Dr. Gilkey's request, the Gentners sent her specimens for study, and in 1951 Gilkey published the new species in *Madroño*, the journal of the California Botanical Society. She honored the family by naming the new species *Fritillaria gentneri* (Gilkey 1951). In this paper, Dr. Gilkey outlined the distinction between *F. gentneri* and the plant it most closely resembled, *F. recurva*:

"As brilliant in color as *F. recurva*, the blossom of this new form is consistently of a different shade of red; its flowering period begins two weeks later; the plant is typically more robust; and the flower shape so different that regardless of other dissimilarities, plants of the two entities can readily



Fritillaria gentneri: 1, flowering stalk; 2, cross-section of flower; 3, pistil; 4, capsule; 5, outer perianth segment, face view. Illustration by Rena Schlachter.

be distinguished from a car moving rapidly on the highway.

Since the first report, it has been possible to make intensive studies of plants of both forms in all stages, not only in the field and from generous collections provided by Mr. Gentner, but also from plants grown at the Oregon State College Herbarium and in the Gentner garden. As a result of these studies, the "new" form appears, in the morphology of the flower as well as in the superficial aspects of the plant previously mentioned, so distinctly different from any species thus far described, as to merit specific rank and recognition. It is a pleasure, therefore, to describe this beautiful species and to perpetuate it in the name of the family who discovered it."

Disagreement over Species Status

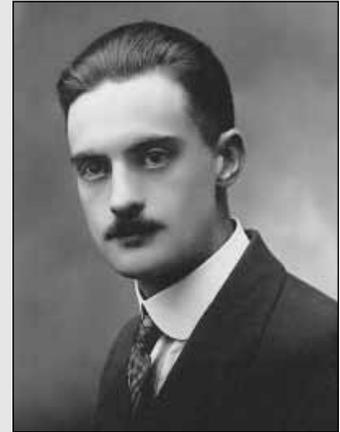
Although it has been over 50 years since Gilkey's publication of *F. gentneri* in Madroño, it is still not universally accepted as a species. In the Royal Horticultural Society's Lily Year Book, Horton (1970) indicated that *F. gentneri* had "an uncertain status. It is said to differ from *F. recurva* in being more slender in most of its parts, but in having larger flowers... This somewhat obscure species hails from southern Oregon, where it is usually found in company with, or close to, *F. recurva*." In The Lily Yearbook of the North American Lily Society, Roger M. MacFarlane (1975) summarized Western fritillaries and dismissed *F. gentneri* as follows: "Large, darker coloured form of *F. recurva* with a more divided style and non-recurving tepals—but continuously connected to *F. recurva*." After visiting the Jacksonville Cemetery in May 1999 and photographing *F. gentneri*, British plantsman David King contributed the following to the North American Rock Garden Society's Bulbs of North America (2001): "[Its] status...as a species is unconfirmed and requires further study; maintaining it as a species is something of a political issue rather than a botanical one, since its rarity makes it a candidate for listing, and its presence would then be grounds for preservation of its habitat."

Fritillaria gentneri was recognized by Peck (1961) in the second edition of his Manual of the Higher Plants of Oregon and is on the working list of the Oregon Flora Project. *Fritillaria gentneri* is recognized as a species by Bryan Ness in his treatment of *Fritillaria* for Flora of North America (2002). The acceptance, however, is provisional: "a restricted endemic closely allied with *F. recurva* and *F. affinis*, with which it can be confused. Some evidence suggests it may represent a hybrid between those two species. More study is needed to determine whether it should remain recognized as a distinct species." Despite disagreements, it was listed by the US Fish and Wildlife Service in 1999, granting the species legal status: "Although *Fritillaria gentneri* may be of recent hybrid origin, it is considered to be a valid species. This rare, red-flowered lily is known primarily from Jackson and Josephine counties in southwestern Oregon... One additional small population has just been found in northern California, very close to the Oregon border" (US FWS 2003). For many years, it was believed that *F. gentneri* was endemic to the state of Oregon. But in 2003 Bureau of Land Management



Louis and Lillian Gentner flanked by vigorous plants of *Fritillaria gentneri* in their garden at 22 S. Groveland Avenue, Medford, April 19, 1950. Photo by Louis Gentner, provided by Laura Gentner Dunwald.

Louis Gustave Gentner (1892-1980)



Louis Gentner, 1916, when he began as Assistant County Agent in Jackson County, Oregon. Photo courtesy of Laura Gentner Dunwald.

Louis Gentner, son of Katherine Kayser and Louis J. Gentner, was born in Portland on February 29th in the leap year of 1892. He became an entomologist, earning degrees from Oregon State College (BS, 1915; PhD, 1953) and the University of Wisconsin (MS, 1918). After completing his undergraduate work, he was hired as assistant county agent in Jackson County, where he met

Lillian Pierce, whom he married in 1919. He worked as an entomologist in Wisconsin and Michigan from 1916 to 1930. Then he returned to Oregon to serve as the assistant superintendent at the Oregon State Branch Experiment Station at Medford until he retired in 1962 at age 70. His major work in the Rogue Valley was research on the biology and control of insect and mite pests of fruit trees. He also monitored coddling moth populations and weather conditions (in those days (1915) frost warnings were indicated by running up a flag in Medford). In 1937 he began testing performance of various strains of 21 varieties of alfalfa. After five years of research he selected a strain that had originally come from Provence, France, but was no longer available because of the war. He named the variety "Talent." His entomological expertise is credited with rescuing Jackson County alfalfa and clover seed crops in 1947 by diagnosing insect infestations in the fields. In 1950 he released *Chrysolina* beetles for control of the noxious weed *Hypericum perforatum*, that had invaded grasslands and oak savannas in southwestern Oregon. In retirement he remained professionally active, consulting with orchardists, judging horticulture exhibits at fairs in Jackson, Josephine, Coos, Del Norte and Siskiyou counties, and giving talks at various clubs and organizations. He was a charter member of the Oregon Entomological Society and world authority on flea beetles, a group of insects comprising about 400 species in North America and about 8,000 world-wide, 40 of which were discovered by Gentner. He identified thousands of specimens of flea beetles for other entomologists and published numerous scientific papers. His pencil drawings of insects are preserved in the Oregon State University archives. A year before his death at age 88, he donated his personal insect collection of about 50,000 specimens (representing 1,000 different species) to the Smithsonian Institution.

Lillian Pierce Gentner

(1892-1967)

Lillian's horticultural interests began early in life as her parents, Charles and Anna Laura Pierce, built the first greenhouses in Medford in 1907, which her mother operated. Lillian became an authority on roses, auricula primroses, chrysanthemums, and gladiolus. She was president of the Medford Garden Club in 1941-1942, and helped organize the Medford Rose Society in 1955. In addition to growing hundreds of varieties of flowers in her home garden, she gave talks and taught flower arranging, having attended a florist school in Seattle in 1948. She obtained a certificate in 1959 to teach flower arranging to adults, the first such certificate issued in Oregon. A member of the American Horticultural Society, she won many prizes at flower shows and competitions in Washington, Oregon, and California, became an accredited judge for the Primrose Society, and excelled in making corsages and arrangements with flowers from her garden for weddings and public events, as well as competitions. She was featured in a 1973 *Sunset* magazine article about the hardiness of aspidistra in Medford. In addition to her work with fresh flowers, she used native conifers in swags and corsages, learning the native flora along with her husband. While he was particularly interested in native plants as insect hosts, she utilized cones and fresh or dried flowers in artistic arrangements. One of these she named the Westcoast Wildwood Corsage, which contained parts of sugar pine, incense cedar, Oregon myrtle, redwood, western hemlock, mountain hemlock, western larch, lodgepole pine, Arizona cypress, and Sitka spruce cones, Siskiyou iris (dried pods), white oak acorns, and alder catkins. She provided a description with the corsage that not only named each species, but described its habitat and significance. In 1968 a sourwood tree (*Oxydendrum arboreum*: Ericaceae) was dedicated to her at the Claire Hanley Arboretum at the Hanley Historic Farm near Central Point.



Lillian's childhood home and the Pierce greenhouses that were built in 1907. When streets were constructed, this was at the corner of Crater Lake Avenue and Main Street in Medford. The buildings were torn down in the 1960s. Photo courtesy of Laura Gentner Dunwald.

Katherine Louise Gentner

(1920-2004)



Katherine Gentner as a young woman. Photo courtesy of Laura Gentner Dunwald.

Born in Madison, Wisconsin in 1920, Katherine moved with her family to Medford in 1930. She graduated from Medford Senior High School in 1940 and attended Southern Oregon College of Education in Ashland, 1940-1941. She held stenographic and later administrative positions in Oregon, Nevada, California and Michigan, at a hospital, bank, architect, engineering firm, a university, and city offices. In 1964 she became a manager for Fashion Two Twenty in Detroit, Michigan, then transferred to a Fashion Two Twenty Studio in Sacramento. When her mother died in 1967

she transferred to Medford to live closer to her father. She lived the rest of her life in the Rogue Valley, working and volunteering in various positions. She studied music while in Ann Arbor, Michigan in the 1950s, and later served as organist at First Church of Christ in Medford and First Presbyterian Church in Jacksonville. Her volunteer activities were extensive, in which she pursued her love of flowers and gardening, music, birds, and seashells, and poetry. She won a Golden Poet award for her poem, "Requiem" from the World of Poetry in Sacramento, California. The awards were presented at a World of Poetry ceremony at the Marriott Marquis in New York City in 1990. She developed a memorial garden as a tribute to her parents at 205 Lani Way in Talent, and invited the public to view it in October 1980. She vigorously supported the efforts to conserve *Fritillaria gentneri*, giving talks to service clubs, including the Jacksonville Garden Club, giving interviews to the press, and maintaining scrapbooks of articles and photos of the fritillary, which provided information used by the Jacksonville Woodlands Association to obtain grants toward purchasing land for habitat. She and other members of the family also donated money to the Association to preserve habitat (Larry Smith, pers. comm.).

Laura Gentner Dunwald
(1924-)



Laura Gentner, high school graduation photo in 1942. Photo courtesy of Laura Gentner Dunwald.

Louis and Lillian's younger daughter, Laura Beatrice, was born in Lansing, Michigan, but came to the Rogue Valley in time to start school in Medford, where she finished high school before attending Southern Oregon College of Education (in Ashland) for two years. Her higher education was interrupted by World War II and she worked a variety of wartime jobs ranging from teletypist at Camp

White to sewing parachutes in Manti, Utah. She left Medford in 1941 and after the war worked for a number of years in sales and management in nurseries and seed businesses, including Paul J. Howard's California Flowerland in Los Angeles, California. During the 1950s and 1960s, while rearing her daughter, she worked as an interviewer and field supervisor for market and opinion research companies, then in a variety of positions for the California School Boards Association, and the Bakersfield City Elementary School District. In the 1980s, with a new husband, she worked with multi-level marketing companies; then in 1991 she returned with him (Lloyd Dunwald) to her Oregon roots, settling in Grants Pass. Since then, her interests have been in genealogy and computers (editing the Escapee's genealogy newsletter and organizing genealogy seminars for the club's annual reunions) and teaching seniors how to research their family histories and use their computers. Not surprisingly, she is currently working on the Gentner family history, and has an active interest in the "family lily," including the Fritillaria Festival sponsored by the Jacksonville Woodland Association.

Right: Lillian Pierce Gentner (center back) with her daughters, Laura Gentner Lynch (left) and Katherine Louise Gentner (right) and Laura's daughter, Anna (front), December 28, 1956, Medford, Oregon. Photo by Louis Gentner, provided Laura Gentner Dunwald.

botanist Joe Molter discovered a small population of *F. gentneri* in northern Siskiyou County, California; and in 2004 a second population was documented about a mile from the first one. The California Native Plant Society recently added *F. gentneri* to its Inventory of Rare and Endangered Plants of California, which will encourage protection of these populations (Tomlinson 2005).

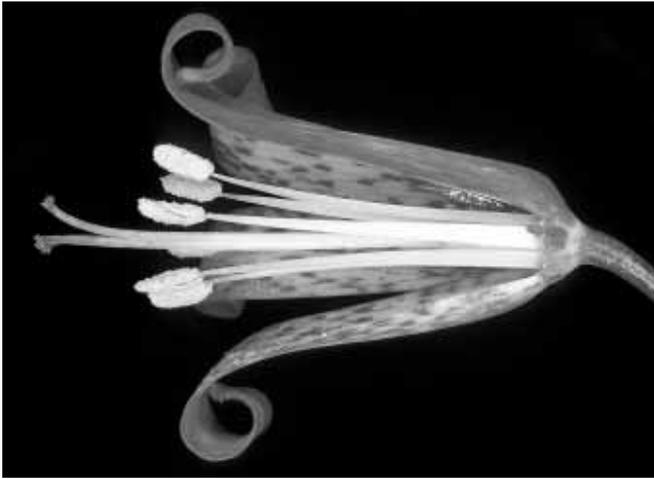
Field Observations by the Robinetts

My late husband Jim and I first saw *Fritillaria gentneri* in 1993 at the Jacksonville Cemetery, not far from the place Laura originally found it. At the time, there was no question in our minds that it was justifiably distinct from the many *F. recurva* and *F. affinis* we had seen over the years. Characteristics that the three species share (height, nodding flowers in the upper stems, one or more whorls of long, fairly narrow leaves) are basic traits common in other woodland fritillary species, such as *F. eastwoodiae*, *F. multiflora*, and *F. ojaiensis* in California and *F. atropurpurea*, which has a wider range. *Fritillaria gentneri* differs from *F. recurva* and *F. affinis* in flower color, shape, nectary glands, and style branches.

Flowers of *F. gentneri* are bluish red, usually darker than the scarlet (orange red) flowers of *F. recurva*; both are dotted with small, rectangular yellow tessellations. In southern Oregon, flowers of *F. affinis* are sometimes dominantly green, but more often a rather "dusky" brownish-purple, with scattered yellowish-green tessellations.

The tepals of *F. gentneri* curve slightly outward at the top before descending, and flare out gently at the tips, producing a bell shape (see cover photo). Tepals of *F. recurva* form a rather narrow cone in silhouette, with each tepal recurving back tightly on itself at the tip. In our experience, flowers of *F. gentneri* can be variable, ranging from nearly straight at the tips to curving out (but not fully





Longitudinal view of flower of *Fritillaria recurva*, with tepals removed, showing recurved tepals, short glands, and erect style branches. Photo by John Erwin.

recurved). Flowers of *F. affinis* flare markedly outward at the top, then descend nearly straight or curve slightly inward, thus appearing like a six-sided down-facing box or cylinder.

Nectary glands located inside the tepals are another distinguishing feature. *Fritillaria affinis* has very large glands that extend for half or more of the length of the tepal. In *F. recurva* these glands are short, no more than one quarter the length of the tepal. Nectary glands of *F. gentneri* are about half the tepal length.

The style of *F. gentneri* is widely separated into three spreading branches for about half its length, while the style of *F. affinis*, though likewise deeply cleft, spread less widely. In *F. recurva* the style branches are usually quite erect and do not spread, except minutely at the tips.



Glands in flowers of *Fritillaria affinis* extend more than half the length of the tepals, and the deeply cleft styles spread widely. Photo by John Erwin.



Side view of flower of *Fritillaria affinis*, showing the broad shoulders that lend a box-like appearance. Photo by John Erwin.

Both *F. affinis* and *F. recurva* can be found in a variety of habitats, from woodlands, to grassy slopes, to rocky and gravelly soils. Light conditions range from quite open to moderate shade. In contrast, *F. gentneri* is usually found on humus-rich, acid soils, under oak or fir trees, though some populations are found in other habitats, including dry forests, riparian shrub communities, grasslands, and chaparral.

Jim and I discovered what we interpreted to be F-1 hybrids between *F. affinis* and *F. recurva* in two different locations. In California, at Mendocino Pass (near the junction of the counties of Mendocino, Tehama, and Glenn), we found two fritillaries with flowers that were quite large and yellow-green, much like the typical Mendocino form of *F. affinis*, but with reddish-brown spots and tightly recurved tepal tips. The flowers of each assumed hybrid were narrower than those of *F. affinis* but wider than those of *F. recurva*; on one plant the flowers were nodding, while in the other they faced outward. There were about a dozen of the regionally typical form of *F. affinis* as well as about 30 typical *F. recurva* blooming within 20 feet of the variants.

In Oregon, along Interstate-5 on the south side of Siskiyou Summit, we came upon about 30 plants of the Siskiyou (dusky purple) form of *F. affinis* and about 50 *F. recurva* in a cove of stunted oak trees. Among them we found a single plant that had



Apparent hybrid between *Fritillaria affinis* and *F. recurva*, showing intermediate characteristics in the flower. Photo by Frank Lang.

small, nodding, reddish-purple flowers with yellow-green spots. Its petals were somewhat splayed, but strongly recurved at the tips. In both this and the previous case, we interpreted these as F-1 hybrids between *F. affinis* and *F. recurva*. Another possibility is that they might have been backcrosses of a hybrid with one of the parents. In neither case were a sufficient number of plants present to warrant considering that either might be a valid separate species.

Efforts to Conserve *Fritillaria gentneri*

Laura left Oregon in 1944, as did Katherine several times over the years. When she returned to the Rogue Valley, Katherine became active in the preservation of the rare lily bearing their family name. *Fritillaria gentneri* was listed as endangered in 1995 by the Oregon Department of Fish and Wildlife. In 1997, the Native Plant Society of Oregon submitted a formal petition for Federal

classification as an endangered species, which was granted by the US Fish and Wildlife Service in 1999. When Katherine learned that *F. gentneri* had been given federal status as an endangered species in need of protection, she was quoted in the Medford Mail Tribune: "I'm so glad they have done this. It has to be protected. It's found only in Jackson and Josephine counties. It grows nowhere else" (14 December 1999).

Jacksonville has long been proud of its special fritillary. The Jacksonville Garden Club uses its image as their logo, and the Jacksonville Woodlands Association sells sweatshirts with an appliqué of *F. gentneri* as a fund-raiser (<http://www.jvwoodlands.org/wiki>). Larry Smith, president of the Jacksonville Woodlands Association, whose yard supports 25 to 50 flowering plants of *F. gentneri*, leads field trips to see Gentner's fritillary in the woodland areas around Jacksonville. The Jacksonville Woodlands Association works with the City of Jacksonville, the Bureau of Land Management (BLM), Southern Oregon Land Conservancy, and Trust for Public Land to protect fritillary habitat by purchasing and receiving donations of land.

The City of Jacksonville also provides habitat protection in its pioneer cemetery and other natural open sites surrounding Jacksonville. The Jacksonville Cemetery, considered the central hub of the range for the species, supports a vigorous population of *F. gentneri*, with 300 to 600 flowering plants (US FWS 2003). [ed. note: Katherine Gentner related that she planted Gentner's fritillary bulbs over the graves of friends buried in the Jacksonville cemetery during the 1960s (Mark Mousseaux, pers. comm.)] After this population was badly damaged in the spring of 2001 by ground disturbance in the cemetery followed by invasion of yellow starthistle (*Centaurea solstitialis*), the City of Jacksonville



Side view of flower of *Fritillaria gentneri*, with tepals removed to show the glands and spreading style branches. Photo by John Erwin.

developed a conservation plan that included “*Fritillaria*-friendly grounds maintenance” (Amsberry and Meinke 2002). The Oregon Department of Agriculture’s Native Plant Conservation Program, in cooperation with the BLM and the US FWS, cultivates bulbs for transplanting into new and existing publicly-owned habitats, and conducts research on conservation methods and on the biology and ecology of *F. gentneri*. Research also continues, using molecular methods to investigate the origin of the species and its relationship with other *Fritillaria*. Conservation and recovery efforts are coordinated by the Recovery Plan for *Fritillaria gentneri* (US Fish and Wildlife Service 2003).

Acknowledgments

My thanks go to Laura Gentner Dunwald of Grants Pass, OR, and to her sister, the late Katherine Gentner of Medford. As *F. gentneri*’s most ardent champions, they provided much of the impetus for the preparation of this article. Sadly, Katherine died in Medford on March 3, 2004. Laura contributed the biographical information for the Gentner family. Thanks are also owed Kelly Amsberry and Robert Meinke of the Oregon Department of Agriculture and OSU Department of Botany, for reviewing an earlier version of the manuscript. John Erwin, Frank Lang, and Laura Dunwald provided photographs. Rena Schlachter prepared the illustration of *F. gentneri* for the Oregon Flora Project. Frank Lang, Rhoda Love and Susan Kephart reviewed the manuscript. Finally, Linda K. Hardison, Chair of the Friends of the Oregon Flora Project in Corvallis, worked tirelessly in support of this article; without the editor’s and her assistance, I could not have completed it.

References

- Gilkey HM. 1951. A new *Fritillaria* from Oregon. *Madroño* 11:137-141.
- Horton SV. 1970. The American *Fritillarias*. The Lily Year Book. London: The Royal Horticultural Society. 146 p.
- King D. 2001. *Fritillaria*. In: McGary J, editor. *Bulbs of North America*. Portland (OR): Timber Press. p 151-171.

- MacFarlane RM. 1975. North American *Fritillaria* – a preliminary account. The Lily Yearbook of the North American Lily Society, Inc. New York (NY): The North American Lily Society. p 56.
- Amsberry K, Meinke RJ. 2002. Reproductive Ecology of *Fritillaria gentneri*. Report from Oregon Department of Agriculture. Portland (OR): US Fish and Wildlife Service. 41 p.
- Ness BD. 1993. *Fritillaria*. In: Hickman JC, editor. The Jepson Manual. Berkeley (CA): University of California Press. p 1194-1196.
- Ness B. 2002. *Fritillaria*. In: Flora of North America North of Mexico, Volume 26, Magnoliophyta: Liliidae: Liliales and Orchidales. New York (NY): Oxford University Press. p 164-171.
- Peck ME. 1961. A Manual of the Higher Plants of Oregon. 2nd ed. Portland (OR): Binsford & Mort. 936 p.
- Tomlinson M. 2005. The California Native Plant Society at the State Level: Who We Are and What We Do. *Fremontia* 33(1):11-17.
- US FWS [Fish and Wildlife Service] 2003. Recovery Plan for *Fritillaria gentneri* (Gentner’s fritillary). US Fish and Wildlife Service, Portland OR vii + 89 p. <http://www.r1.fws.gov/ecoservices/endangered/recovery/documents/GentnersFritillary-FinalRecoveryPlan.pdf> Accessed 2004 Oct 3.

Georgie Robinett is a life member of both the Native Plant Society of Oregon and the California Native Plant Society and has been an active supporter of the Oregon Flora Project. She and her late husband Jim Robinett explored the field extensively for more than 20 years and formerly grew West Coast native bulbs from seed, marketing them world-wide. Together with Mark McDonough, they co-authored the article on *Alliums* in *Bulbs of North America*. Jim and Georgie also wrote articles for *The North American Lily Society Quarterly Bulletin* and for *Herbertia*. Now retired, she lives in Arizona and was until recently the editor of *Mariposa*, a quarterly newsletter devoted to the bulb genus *Calochortus*.
