Some Recent Taxonomic Changes Affecting the Names of Oregon Plant Species

By Kenton L. Chambers

Books, like people, grow old and eventually need to be retired. The principal floristic manuals covering the flora of Oregon are reaching this venerable state. These include Manual of the Higher Plants of Oregon (Peck, 1961), Illustrated Flora of the Pacific States (Abrams, 1923, 1944, 1951, 1960), A California Flora (Munz and Keck, 1959), Vascular Plants of the Pacific Northwest (Hitchcock and Cronquist, 1973). Such works are still extremely useful, their detailed keys, descriptions and illustrations allowing identification and naming of virtually all native and introduced species of the state. As newer books are published, however, like the forthcoming revised version of Manual of the Flowering Plants of California (Jepson, 1925), older reference manuals will gradually lose their utility and scientific rigor. They will not represent current knowledge about species names and relationships based on the best and most recent taxonomic research.

The pace of new research in systematics (plant taxonomy, in the broad sense) continues at a high rate in botanical institutions all over the world. Studies by taxonomists in countries as far away as Europe and the Orient have to be examined for new insights about the relationships and classification of Oregon’s flora. Botanists who wish to keep abreast of taxonomic research have at least two difficult problems to overcome; first, they must be aware of pertinent publications throughout the vast scientific literature, and second, they must check and evaluate taxonomic conclusions derived from such research. The most critical publications to Oregon botanists are those which propose significant changes in names and classification of particular Oregon genera. Botanists are almost never forced to adopt new names for familiar plant species; changes are usually optional, based on evaluation of the quality of supporting research and reasonableness of the authors’ conclusions. Only if existing plant names are found to be unusable (e.g., “illegitimate”) because of particular rules in the International Code of Botanical Nomenclature (ICBN) are we literally forced to abandon them.

The purpose of this article is to list and comment on some proposed changes in the names of Oregon plant species. These changes are the result of recently published taxonomic research. Biologists constantly deal with plant names; however, once we have memorized Latin names for numerous species, it is disconcerting, to say the least, to find other botanists using different names. We ask ourselves, “What goes on here; what's the excuse for changing names?” Perhaps it is a simple difference, such as a letter or two in the spelling of a name. For example, both Sidalcea malviflora and Polygonum phytolaccæfolium bear misspelled species names. Correct are malviflora and phytolaccæfolia, as mandated by a provision in ICBN permitting only the letter “i” as a connecting vowel in compound words of Latin origin. The connector “ae” is not allowed, even though 19th century botanists who originally named these species used it. Likewise, Pachistima (Celastraceæ) must be spelled Paxistima (Chambers, 1992), because the latter name was legitimately published, while the former was not. Other recent changes that we have selected, below, are more significant, representing major differences from the reference manuals listed earlier. No doubt many of the changes will be adopted in the upcoming revised edition of Jepson’s manual, as well.

Research leading to rearranging generic relationships is a frequent source of new and unfamiliar plant names. The category of genus is basic and indispensable to nomenclature. By merely speaking the name of a genus (Rhododendron, for example), we call to mind a constellation of diagnostic traits — a mental picture, so to speak — by which we recognize a large group of related species. A change in the name of a genus is indeed a major event, which may alter our views of species relationships. Modern systematics research is exposing many past errors in classification, however, and the advance of science cannot be held back simply by nostalgia for familiar plant names.

A good example of correcting past taxonomic errors is the recently-published research by Chuang and Heckard (1991) on the genera Castilleja and Orthocarpus (Paintbrush and Owl-clover, Scrophulariaceæ) and their relatives. The traditional genus Orthocarpus is shown to be an artificial assemblage of three evolutionary lines; one line properly belongs within Castilleja, another retains the name Orthocarpus, and the...
third stands as an independent genus named Triphysaria. Impressive evidence from chromosome numbers, pistil and ovule morphology and corolla structure supports the authors’ conclusions. Species of Oregon that must change their names are as follows (current name at left, new name at right):

Orthocarpus attenuatus = Castilleja attenuata (Gray) Chuang & Heckard

Orthocarpus campestris = Castilleja campestris (Benth.) Chuang & Heckard

Orthocarpus castillejoides = Castilleja ambigua Hook. & Arn.

Orthocarpus erianthus = Triphysaria eriantha (Benth.) Chuang & Heckard

Orthocarpus faucibarbarus = Triphysaria versicolor Fisch. & Mey. subsp. faucibarbarus (Gray) Chuang & Heckard

Orthocarpus histidus = Castilleja tenuis (Heller) Chuang & Heckard

Orthocarpus laeuenus = Castilleja laeuen (Benth.) Chuang & Heckard

Orthocarpus lithospermoides = Castilleja rubicandula (Jeps.) Chuang & Heckard subsp. Lithospermoides (Benth.) Chuang & Heckard

Orthocarpus pusillus = Triphysaria pusilla (Benth.) Chuang & Heckard

Taxonomic studies of the Portulacaceae being completed at Oregon State University support earlier proposals by Swanson (1966) and McNell (1975) that several species of Montia should be returned to Claytonia (Springbeauty), where they in fact resided 100 years ago. This brings into Claytonia some annual species as well as perennials with slender taproots or rhizomes. They join presently accepted Claytonia species whose perennial roots are tuber-like or thick and elongated. All species of the reconstituted genus Claytonia have their principle leaves in a basal rosette, the flowering stems naked except for a distinct pair of opposite, sometimes fused leaves (bracts) just below the cyme of flowers. Species of Oregon Montia whose names are to be changed are as follows:

Montia arenicola = Claytonia arenicola Hend.

Montia cordifolia = Claytonia cordifolia Wats.

Montia heterophylla (of Peck’s Manual) = slender-leaved races of Claytonia sibirica

Montia perfoliata divides into three species, Claytonia perfoliata Willd., Claytonia nebra (Howell) Tidest., and Claytonia parviflora Hook. (not the same as Montia parvifolia).

Montia sibirica = Claytonia sibirica L.

Montia spathulata = Claytonia exigua Torr. & Gray

Another recent change which involves resurrecting a long-ago accepted name for a well-known species is the transfer of Sisyrinchium douglasii (Grass-widows, Iridaceae) to the genus Olsynium (Goldblatt, et al., 1990) Not since early in this century (Piper, 1906; Abrams, 1923) has the latter name been used in floras for the Pacific Northwest. As Oregon botanists know, “Sisyrinchium” douglasii (now known as Olsynium douglasii [A. Diem] Bickn.) differs sharply from the blue- or yellow-flowered Sisyrinchium species of the state in having a reddish-purple (rarely white) perianth (often called petals, but really tepals), only partly fused stamen filaments and round rather than angled stems. According to Goldblatt et al. (1990), these obvious differences are reinforced by more subtle traits of the leaf blade and sheath, roots and seeds, all linking O. douglasii to a dozen or more South American species which together comprise the genus Olsynium. The “species” Sisyrinchium inflatum (Hitchcock and Cronquist, 1973) has recently been renamed Olsynium douglasii var. inflatum (Suksd.) (Cholewa and Henderson, 1991). Interestingly, the work by Goldblatt et al. (1990) keeps Golden-eyed-grass (Sisyrinchium californicum) safely within Sisyrinchium, not segregating it into the genus Hydastylus as was done by Piper and Abrams (op. cit.).

Molecular systematic studies figured in another recent re-establishment of a former genus name, this time in the Asteraceae (Compositae). Uropappus (Silver-puffs) was merged with Microseris as long ago as 1866, but was kept separate by both Jepson (1925) and Peck (1961) to comprise the single species U. linearifolius. The species was placed in Microseris by Chambers in Abrams (1960) and by Cronquist in Hitchcock et al. (1955); the correct species epithet is lindleyi rather than linearifolia, however. Jansen et al. (1991) have revised the classification of Microseris and related genera, using the newly popular molecular technique of restriction enzymes to detect mutations in the DNA of chloroplast chromosomes. Ideally, such mutations are neutral to natural selection, arising and persisting essentially by chance. Therefore, over geologic time, an evolving plant group will accumulate increasing numbers of unique shared mutations. The term given to a set of shared advanced traits (in the case at hand, point mutations of the DNA) is “synapomorphies.” Statistical tests of the data by Jansen et al. (1991) grouped typical species of Microseris 100% of the time by their molecular synapomorphies, but in 98% of the tests, Lindleyi was excluded from the genus. It was placed on its own separate evolutionary line, sharing significant synapomorphies with two other genera — Agoseris and Nothocalais. We know that Lindleyi differs from typical Microseris in important morphological traits as well (e.g., pubescence, growth-form, involucre, fruit shape, pappus), but polyploid hybrids connect it with two Microseris species. By renaming it Uropappus lindleyi (DC.) Nutt., we emphasize its morphological, genetic, and evolutionary distinctness from Microseris. Furthermore, Nothocalais is defined as a natural generic group by the inclusion of
Phylogenetic analysis of a different kind, relying on morphology and anatomy rather than chloroplast DNA, led Kron and Judd (1990) to very interesting conclusions about the status of the genus Ledum (Labrador-tea, Ericaceae). In a study of the large and diverse genus Rhododendron, relying on morphological synapomorphies for shared common ancestors within sections of the genus, they found that Ledum is evolutionarily connected with a particular Rhododendron species-group (section Edgeworthia of subgenus Rhododendron). Its phylogenetic origin is therefore deeply embedded within this latter genus, and it ought not stand on its own generically. In particular, it shares a unique type of shield-shaped epidermal trichome (multicellular hair) with this species-group. If we view Ledum as essentially an advanced, morphologically divergent Rhododendron, then logically the two genera should be merged. The Oregon taxon Ledum glandulosum takes the new name of Rhododendron neoglandulosum Harmaja (Wallace, 1992).

The reverse of generic “lumping” (as in Ledum) is “splitting,” i.e., the chopping-up of large, polymorphous genera into smaller, more homogeneous species-groups which are named as separate genera. An example of a worldwide, diverse genus in which this is taking place is Polygonum (Knotweed, Smartweed, Bistort, etc., of Polygonaceae). These smaller groups, which we call segregate genera, have not yet become popular among American botanists, but the changing fashions of taxonomy may in the future bring Polygonum segregates like Aconogonon, Bistorta, Fallopia, Persicaria and Reynoutria into our floras and manuals (Weber, 1987). According to Hong (1991) there are two “Polygonum” species in Oregon which belong to Aconogonon; our reference manuals know these as Polygonum phytolaccifolium and Polygonum newberryi. If Oregon taxonomists in the future agree to split Polygonum, these would become Aconogonon phytolaccifolium (Small) Rvdberg and Aconogonon davisiae (Gray) Sojak. Hong merged newberryi with davisiae, an alpine species of California and southwest Oregon; however, many other taxonomists, past and present, have kept these two species separate. It would be in interesting project for a taxonomy student to study these taxa by modern methods and tell us whether two species or only one ought to be recognized.

A generic split that was made in the Onagraceae by Raven (1969) involved segregating a large number of species of Oenothera into Camissonia. Raven’s concepts have been widely accepted by taxonomists but have not yet found their way into regional floristic manuals. Oenothera, as delimited in its new, narrower sense, contains only those species having a deeply four-lobed stigma. It includes the beautiful cultivated Evening-primroses such as O. erythrosepala, rare taxa like O. villosa Thunb. (formerly known as O. stricta), Camissonia, on the other hand, is composed entirely of species having a capitate (pinhead-like) stigma. The following list identifies the Oregon species of “Oenothera” affected by this change, together with their correct names (excluding subspecies) in Camissonia:

Oenothera alyssoides = merged with Camissonia boothii
Oenothera andina = Camissonia andina (Nutt.) Raven
Oenothera boothii = Camissonia boothii (Doug.) Raven
Oenothera cheiranthifolia = Camissonia cheiranthifolia (Spreng.) Raimann
Oenothera claviformis = Camissonia claviformis (Torr. & Frem.) Raven
Oenothera contorta = Camissonia contorta (Doug.) Kearney
Oenothera graciliflora = Camissonia graciliflora (Hook. & Arn.) Raven
Oenothera heterantha = Camissonia subacaulis (Pursh) Raven
Oenothera minor = Camissonia minor (A. Nels.) Raven
Oenothera ovata = Camissonia ovata (Torr. & Gray) Raven
Oenothera palmeri = Camissonia palmeri (S. Wats.) Raven
Oenothera pterosperma = Camissonia pterosperma (S. Wats.) Raven
Oenothera pygmaea = Camissonia pygmaea (Doug.) Raven
Oenothera scapoidea = Camissonia scapoidea (Torr. & Gray) Raven
Oenothera tanacetifolia = Camissonia tanacetifolia (Torr. & Gray) Raven

Raven (1969) also noted two additional species occurring in eastern Oregon — Camissonia parvula (Torr. & Gray) Raven, and Camissonia pusilla Raven — but he excluded Camissonia pubens (S. Wats.) Raven (Oenothera pubens, cited in Hitchcock & Cronquist, 1973) from the state.

Another large genus of Onagraceae, reviewed in detail by Raven and coworkers, is Epilobium (Willow-herb, Fireweed). Several Oregon species have received new names based on this work. Epilobium paniculatum, for example, has to be called E. brachycarpum Presl, for reasons of nomenclatural priority. Closely related to E. minutum but distinguished from it in chromosome number, seed morphology and growth habit is E. foliosum (Torr. & Gray) Suksd. (Seavey et al., 1977). This is an addition to the state's known flora, not listed before in standard reference books. In a third case, five names that have been applied to one of
our most abundant, often weedy epilobiums have been merged under a still older name. Epilobium adenocaulon, E. californicum, E. franciscanum, E. glandulosum and E. watsonii have all been reduced to synonyms of E. ciliatum Raf.

Finally, the beautiful and striking orange-red flowered species of California and southwestern Oregon known as Zauschneria latifolia (California Fuchsia), when carefully analyzed by Raven (1976), proved to be very closely related to Epilobium. The case is similar to that of Ledum, described above. Zauschneria evolved its large, red, tubular flowers through specialization for pollination by hummingbirds. Except for this feature, it is similar in chromosome number and vegetative morphology to E. nivium, a typical purple-flowered, bee-pollinated epilobium. To express this relationship and to show the evolutionary origin of Zauschneria from within Epilobium, Raven has renamed the California Fuchsia E. canum (Greene) Raven. Note that the species name latifolia had to be replaced, because there already exists a different species named E. latifolium L. (Red Willow-herb).

Important generic splitting in the Polemoniaceae done by Grant (1956) 36 years ago has been adopted in some, but not all, of the books on Oregon's flora. The large and biologically complex genus Gilia has been studied in detail by Grant and his coworkers since the early 1950's. Gilia contains several distinct species-groups and is itself closely related to other recognized genera such as Erastium, Langloisia and Navarretia. From his analysis of the genetic, morphological and cytological relationships within Gilia, Grant (1956) proposed separate generic status for two species-complexes, called Allopohylum and Ipomopsis, both of which are represented in Oregon. Ipomopsis, according to Grant, differs from typical Gilia in basic chromosome number, vegetative habit, seeds, corolla shape and breeding behavior. It is recognized as a genus by Munz and Keck (1959) but not by Peck (1961) nor Cronquist (Hitchcock et al., 1959; Cronquist et al., 1984). Species of Ipomopsis are assigned by Cronquist (1984) to two sections (sect. Microgilia and sect. Ipomopsis) of Gilia. The best known Oregon species to be affected by these differing taxonomic views is Ipomopsis (Gilia) aggregata (Pushr.) V. Grant (Scarlet Gilia, Skyrocket). Much interesting research on pollination, hybridization and floral evolution has been published in recent years about this species and its relatives, which occur widely throughout western North America. Most of this literature is referenced by the names assigned to the taxa in Ipomopsis, rather than in Gilia. Besides this well-known showy species, other members of Ipomopsis in Oregon are: I. congesta (Hook.) V. Grant (Gilia congesta), I. minutiflora (Benth.) V. Grant (G. minutiflora), I. polycladon (Torr.) V. Grant (G. polycladon) and I. tetonensis (Ryd.) V. Grant (G. aggregata var. macrostipha). The races of I. aggregata occurring in Washington, Oregon and northern California have mostly been classified as subsp. formosissima (Greene) Wherry. Also present in the Rogue River Valley, Oregon, is a member of Grant's other segregate genus Allopohylum, the rarely collected Allopohylum gilioides (Benth.) A. & V. Grant (G. gilioides in Peck's Manual).

The name of William C. Cusick (1842-1922) is well known among western American taxonomists, due to his pioneering work as a plant collector and contemporary of such "greats" of Oregon botany as Thomas J. Howell, Wilhelm Suksdorf and Lewis F. Henderson. Cusick has many plant species named in his honor, but the genus name Cusickia by M.E. Jones, published in 1908 for what we now call Lomatium minus, is no longer in use. Rollins (1988) remedied the need (if such existed) for an active generic name honoring Cusick. Cusickiella (Rollins, 1988) of Brassicaceae (Cruciferae) comprises two species which formerly were placed in Draba. One of these is widespread in eastern Oregon, Cusickiella douglasii (Gray) Rollins (Draba douglasii). This newly-described genus differs from Draba in having seeds with incumbent cotyledons; its seeds are larger and neither compressed nor grooved; and its 1- or 2-seeded fruits have more thickened, leathery valves and replum than are typical of Draba.

One of Oregon's and northern California's rare gentians has only recently been correctly described and named. Gentiana plurisetosa C.T. Mason (1990) from the Siskiyou Mountains was previously confused with G. setosa Gray, quite a different species. In an unusual mixup of names, G. setosa was found to be the same species as G. bisetacea T. Howell of southwestern Oregon (Chambers and Greenleaf, 1989). The type specimen of G. setigera, from Mendocino County, California, had been wrongly interpreted by most California botanists, and this name was misapplied to G. plurisetosa (Jepson, 1925; Abrams, 1951; Munz and Keck, 1959). In Oregon, G. plurisetosa is known from montane meadows in the vicinity of Oregon Caves, whereas G. setigera is common in Darlingtonia bogs of the western Siskiyou of Josephine and Curry Counties.

References


Botanical Exploration of the Trans-Mississippi West, 1790-1850
by Susan Delano McKelvey

Reprinted in the Northwest Reprints series. This classic history, while undoubtedly a serious scholarly work of great importance, is written with charm and humanity. The accounts of the travels and collections of botanical explorers range from the well known—such as Lewis and Clark, Menzies, and Douglas—to the obscure. A major reference work back in print. 1200 pages. Illustrated with maps. $85