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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 criticial 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 malvaeflora* and *Polygonum phytolaccaefolium* bear misspelled species names. Correct are *malviflora* and *phytolaccifolia*, 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* (Celastraceae) 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 indispensible 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, Scrophulariaceae) 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 faucibarbatus = *Triphysaria versicolor* Fisch. & Mey. subsp. *faucibarbata* (Gray) Chuang & Heckard

Orthocarpus hispidus = *Castilleja tenuis* (Heller) Chuang & Heckard

Orthocarpus lacerus = *Castilleja lacera* (Benth.) Chuang & Heckard

Orthocarpus lithospermoides = *Castilleja rubicundula* (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 McNeill (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 *Calytonia* 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 rubra* (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. Dietr.] 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

"Microseris troximoides," now *Nothocalais troximoides* (Gray) Greene, and *"Agoseris alpestris,"* now *Nothocalais alpestris* (Gray) Chambers (Abrams, 1960).

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 as evidence 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) Rydberg 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. glaziovіana* Micheli (formerly known as *O. erythrosepala*), rare taxa like *O. villosa* Thunb. (formerly known as *O. strigosa*). *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* (Dougl.) Raven

Oenothera cheiranthifolia = *Camissonia cheiranthifolia* (Spreng.) Raimann

Oenothera claviformis = *Camissonia claviformis* (Torr. & Frem.) Raven

Oenothera contorta = *Camissonia contorta* (Dougl.) 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* (Dougl.) 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 distinct 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 *latifolium* 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 *Eriastrum, 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 *Allophyllum* 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* (Pursh) 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. tenuituba* (Rydb.) V. Grant *(G. aggregata* var. *macrosiphon)*. 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 *Allophyllum*, the rarely collected *Allophyllum 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. *bisetaea* 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 Siskiyous of Josephine and Curry Counties.

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