

USING NAMES IN THE GENUS *MIMULUS*

Genus concepts and names

The two major groups of *Mimulus* in western North America have been shown to be phylogenetically positioned in separate evolutionary lineages and their nomenclature has been modified to reflect this. Species with axile placentation and long pedicels have been transferred to the genus *Erythranthe*, those with parietal placentation and sessile flowers to the genus *Diplacus*. Among the other genera of Phrymaceae, *Erythranthe* and *Diplacus* are not each other's closest relative. *Mimulus* as a genus, including *M. ringens* L., upon which Linnaeus originally based the concept of the genus, now is much narrowed and includes only the two native species of eastern North America plus others from the Southern Hemisphere. The rationale for this is discussed in detail in a 2012 publication where most of the new nomenclature was formally established. Also see "Overview of Phrymaceae" — this website.

Species concepts and names

At the species level, recent studies also have narrowed concepts and link recognizable morpho-geographic entities with their correct name. For example, the name *Mimulus tilingii* commonly had been used to identify plants that now appear to comprise three distinct species — *M. caespitosus*, *M. minor*, and the "original" *M. tilingii*. Application of each name is constrained by its linkage with a single herbarium specimen (the "type" of that species). *Mimulus minor* is defined by its association with a specimen collected by D.M. Andrews (his collection number 8) in 1904 from Boulder Co., Colorado, and deposited in the herbarium at the University of Wyoming. Problems still exist in definition of entities of the "*M. tilingii* group," particularly in the broadly distributed and variable *M. tilingii* (even in its narrowed sense), but recognition of the segregate species rather than a single one provides a more accurate view of the biological and evolutionary realities among these plants. *Mimulus corallinus* probably is more closely related to *Mimulus guttatus* than *M. tilingii*.

Using names — *Mimulus* vs. *Erythranthe*

Moving a species from one genus to another does not change the concept of the species. *Erythranthe minor*, exactly as *Mimulus minor*, is defined by its association with the Colorado specimen collected by D.M. Andrews. Both names are validly published according to the accepted rules of botanical nomenclature and both names are unambiguous in reference. If use of *Mimulus minor* is best suited to the purpose at hand, there is no block or hindrance in using that name. If one wants to use a name that more clearly indicates the evolutionary context of the species, then *Erythranthe minor* would be the choice.

If molecular geneticists want to refer to monkeyflower species by names in the genus *Mimulus*, it can be done simply and appropriately. In the two species groups commonly involved in studies of molecular genetics (sect. *Simiolus*, sect. *Erythranthe*), 39 of the 51 species have a valid name in *Mimulus* and it is meaningful/unambiguous and acceptable in all quarters to use those 39 names. Twelve of the species are without a name in *Mimulus* (either they have been recently described in the genus *Erythranthe* or their name in *Mimulus* is not at species rank) — these can be referred to informally simply by putting the epithet in quotes. For example, *Erythranthe brevinasuta* has no formally published name in *Mimulus*, but it can be referred to as *Mimulus* "brevinasutus;" *Erythranthe arenicola* does not have a formal name at species rank within *Mimulus*, but it can be referred to as *Mimulus* "arenicola." This procedure probably would be intuitively clear to students of *Mimulus* even without any comment.

There should be no doubt about what plants the names *Mimulus* "arenicola," *Mimulus arvensis*, *Mimulus* "brevinasuta," *Mimulus corallinus*, or *M. decorus* refer to. Each name is linked to a type specimen that constrains the concept of the species. The name *Mimulus guttatus*, however, has been applied to so many different entities that it has little meaning unless the use of the name is specified.

Compared to the ambiguous use of species names, reference (in molecular-genetics studies) to a species in one or another genus is mostly mechanical and of relatively minor significance.

Formal alternative

All species names in sects. *Simiolus* and *Erythranthe* could be identified by formally established and correctly applied names in the genus *Mimulus* (bringing in those 15 currently without formal names) by making the nomenclatural combinations in a journal ("valid publication" according to the nomenclatural code). This could be done at any time by any person or group, and the explicit justification could be the desirability of formally referring to all species of these groups as "Mimulus" in the context of molecular-genetic studies. This would be an unusual justification but the procedure is purely mechanical and neither the justification nor procedure meets objection under rules in the nomenclatural code.

Species of *Mimulus* sects. *Simiolus* and *Erythranthe*

The list below includes species treated as "good" (recognizable morpho-geographic entities) in recent taxonomic treatments of *Erythranthe* sects. *Simiola* and *Erythranthe* where morphology, geography, and type species are considered (also considering genetic-phylogenetic evidence, where available). South American species not included. The left column provides a name in the genus *Mimulus* for each of the species.

MIMULUS sect. SIMIOLUS

Mimulus "arenicola"

Mimulus arvensis

Mimulus brachystylis

Mimulus "brevinasuta"

Mimulus caespitosus

Mimulus calciphilus

Mimulus "charlestonensis"

Mimulus "chinatiensis"

Mimulus corallinus

Mimulus cordatus

Mimulus decorus

Mimulus dentilobus

Mimulus filicifolius

Mimulus geyeri

Mimulus glabratus

Mimulus glaucescens

Mimulus grandis

Mimulus guttatus

Mimulus hallii

Mimulus inamoenus

Mimulus laciniatus

Mimulus "lagunensis"

Mimulus madrensis

Mimulus marmoratus

Mimulus michiganensis

Mimulus microphyllus

Mimulus minor

Mimulus nasutus

Mimulus nudatus

Mimulus pallens

Mimulus pardalis

Mimulus parvulus

Mimulus pennellii

ERYTHRANTHE sect. SIMIOLA

Erythranthe arenicola = *Mimulus* guttatus subsp. arenicola Pennell; no formal nomenclatural combination in *Mimulus* at species rank

Erythranthe arvensis

Erythranthe brachystylis

Erythranthe brevinasuta Nesom; no formal name in *Mimulus*

Erythranthe caespitosa

Erythranthe calciphila

Erythranthe charlestonensis Nesom; no formal name in *Mimulus*

Erythranthe chinatiensis Nesom; no formal name in *Mimulus*

Erythranthe corallina

Erythranthe cordata

Erythranthe decora

Erythranthe dentiloba

Erythranthe filicifolia

Erythranthe geyeri

Erythranthe glabrata

Erythranthe glaucescens

Erythranthe grandis

Erythranthe guttata

Erythranthe hallii

Erythranthe inamoena

Erythranthe laciniata

Erythranthe lagunensis Nesom; no formal name in *Mimulus*

Erythranthe madrensis

Erythranthe marmorata

Erythranthe michiganensis

Erythranthe microphylla

Erythranthe minor

Erythranthe nasuta

Erythranthe nudata

Erythranthe pallens

Erythranthe pardalis

Erythranthe parvula

Erythranthe pennellii

Mimulus "percaulis"	Erythranthe percaulis Nesom; no formal name in Mimulus
Mimulus "regni"	Erythranthe regni Nesom; no formal name in Mimulus
Mimulus scouleri	Erythranthe scouleri
Mimulus sookensis	No name in Erythranthe
Mimulus thermalis	Erythranthe thermalis
Mimulus tilingii	Erythranthe tilingii
Mimulus unimaculatus	Erythranthe unimaculata
Mimulus "utahensis"	Erythranthe utahensis = Mimulus glabratus subsp. utahensis Pennell; no formal nomenclatural combination in Mimulus at species rank
Mimulus "visibilis"	Erythranthe visibilis Nesom; a formal name in Mimulus is <i>M. miminus</i> , as proposed in 2010, but that name was earlier proposed for a South American species.

MIMULUS sect. ERYTHRANTHE

Mimulus cardinalis
Mimulus "cinnabarina"
Mimulus eastwoodiae
Mimulus "erubescens"
Mimulus "flammea"
Mimulus lewisii
Mimulus parishii
Mimulus rupestris
Mimulus verbenacea

ERYTHRANTHE sect. ERYTHRANTHE

Erythranthe cardinalis
Erythranthe cinnabarina Nesom (March 2014); no formal name in Mimulus
Erythranthe eastwoodiae
Erythranthe erubescens Nesom (March 2014); no formal name in Mimulus
Erythranthe flammea Nesom (March 2014); no formal name in Mimulus
Erythranthe lewisii
Erythranthe parishii
Erythranthe rupestris
Erythranthe verbenacea [the name *Mimulus nelsonii* is a synonym]

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