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### California Vascular Plant Families: A Munz, Hickman, & Baldwin Nomenclator

James P. Smith

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# CALIFORNIA VASCULAR PLANT FAMILIES (A MUNZ, HICKMAN, & BALDWIN NOMENCLATOR)

Compiled by  
James P. Smith, Jr.  
Professor Emeritus of Botany  
Department of Biological Sciences  
Humboldt State University

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In the last sixty years, we have had three outstanding floras available to us: *A California Flora* by Philip Munz (1959); *The Jepson Manual* edited by James Hickman (1993); and its second edition, edited by Bruce Baldwin and others (2012).

The purpose of this exercise is to summarize the evolving family concepts adopted in these three floras. These changes are the result of new information from a variety of sources (chemical, genetic, molecular, etc.); taxonomic methodology, such as cladistic analysis; and the approach taking by the authors and editors as to the general usefulness of competing alternatives, especially in the recognition of segregate families.

Let me cite two examples that will help explain the format. The simplest may be seen under the first heading. The three lycophyte families accepted by Munz were also accepted by Hickman and Baldwin. The same is true for any number of other families in Munz. On the other hand, while all three recognized Liliaceae, the treatment in Baldwin transferred a number of its species to other segregate families. You will also note that some well known families, such as Asclepiadaceae and Hydrophyllaceae, have been merged into other families. The abbreviation "p. p.," from the Latin meaning "in part," indicates that some members now reside in the family indicated.

These changes are both an exciting reflection of the results of current research ... but also a source of frustration for those of us who simply want to know what family some plant is in.

A more comprehensive summary is also available at this website. It also shows, in tabular form, the acceptance of family concepts by Brewer & Watson in our first state flora, Abrams in his flora of the Pacific states, and Willis Linn Jepson in his 1925 *Manual*.

Nomenclator may be an unfamiliar term. In this context, it is a person who assigns or invents names. In ancient Rome, it was the name of a slave who accompanied his master at public events to recall the names of people he encountered.

## LYCOPHYTES

Isoëtaceae [M] → [H] → [B]  
Lycopodiaceae [M] → [H] → [B]  
Selaginellaceae [M] → [H] → [B]

## FERNS

Aspidiaceae [M p. p.] → Dryopteridaceae [H] → [B]  
Aspidiaceae [M p. p.] → Pteridaceae [H] → [B]  
Aspidiaceae [M p. p.] → Woodsiaceae [B]  
Aspleniaceae [M] → [H] → [B]  
Azollaceae [M] → [H] → [B]  
Blechnaceae [M] → [H] → [B]  
Dennstaedtiaceae [M] → [H] → [B]  
Dryopteridaceae [M] → [H] → [B]  
Dryopteridaceae [M & H p. p.] → Woodsiaceae [B]  
Equisetaceae [M] → [H] → [B]  
Marsileaceae [M] → [H] → [B]  
Ophioglossaceae [M] → [H] → [B]  
Polypodiaceae [M] → [H] → [B]  
Pteridaceae [M] → [H] → [B]  
Salviniaceae [M] → [H] → [B]  
Thelypteridaceae [M] → [H] → [B]  
Woodsiaceae [B]

## GYMNOSPERMS

Cupressaceae [M] → [H] → [B]  
Ephedraceae [M] → [H] → [B]  
Pinaceae [M] → [H] → [B]  
Taxaceae [M] → [H] → [B]  
Taxodiaceae [M] → [H] → Cupressaceae [B]

## FLOWERING PLANTS

Acanthaceae [M] → [H] → [B]  
Aceraceae [M] → [H] → Sapindaceae [B]  
Adoxaceae [B]  
Agavaceae [M] → [B]  
Aizoaceae [M] → [H] → [B]  
Aizoaceae [M p. p.] → Molluginaceae → [H] → [B]

Alliaceae [B]  
 Alismataceae [M] → [H] → [B]  
 Amaranthaceae [M] → [H] → [B]  
 Amaryllidaceae [M] → [B]  
 Anacardiaceae [M] → [H] → [B]  
 Apiaceae [H] → [B]  
 Apocynaceae [M] → [H] → [B]  
 Apodanthaceae [B]  
 Aponogetonaceae [MS] → [H] → [B]  
 Aquifoliaceae [H] → [B]  
 Araceae [M] → [H] → [B]  
 Araliaceae [M] → [H] → [B]  
 Arecaceae [H] → [B]  
 Aristolochiaceae [M] → [H] → [B]  
 Asclepiadaceae [M] → [H] → Apocynaceae [B]  
 Asparagaceae [B]  
 Asphodelaceae [B]  
 Asteraceae [H] → [B]  
  
 Balsaminaceae [MS] → [B]  
 Basellaceae [MS] → [H] → [B]  
 Bataceae [H] → [B]  
 Batidaceae [M] → Bataceae [H] → [B]  
 Berberidaceae [M] → [H] → [B]  
 Betulaceae [M] → [H] → [B]  
 Bignoniaceae [M] → [H] → [B]  
 Boraginaceae [M] → [H] → [B]  
 Brassicaceae [H] → [B]  
 Buddlejaceae [H] → Scrophulariaceae [B]  
 Burseraceae [M] → [H] → [B]  
 Buxaceae [M] → Simmondsiaceae [H] → [B]  
  
 Cabombaceae [H] → [B]  
 Cactaceae [M] → [H] → [B]  
 Callitrichaceae [M] → [H] → Plantaginaceae [B]  
 Calycanthaceae [M] → [H] → [B]  
 Campanulaceae [M] → [H] → [B]  
 Cannabaceae [H] → [B]  
 Capparaceae [H] → Cleomaceae [B]  
 Capparidaceae [M] → Capparaceae [H]  
 Caprifoliaceae [M] → [H] → [B]  
 Caprifoliaceae [M & H p. p.] → Adoxaceae [B]  
 Caprifoliaceae [M & H p. p.] → Linnaeaceae [B]  
 Caryophyllaceae [M] → [H] → [B]  
 Celastraceae [M] → [H] → [B]  
 Ceratophyllaceae [M] → [H] → [B]  
 Chenopodiaceae [M] → [H] → [B]  
 Chenopodiaceae [M & H p. p.] → Sarcobataceae [B]  
 Cistaceae [M] → [H] → [B]  
 Cleomaceae [B]  
 Comandraceae [B]  
 Commelinaceae [M] → [H] → [B]  
 Compositae [M] → Asteraceae [H] → [B]  
 Convolvulaceae [M] → [H] → [B]  
 Cornaceae [M] → [H] → [B]  
 Crassulaceae [M] → [H] → [B]  
 Crossosomataceae [M] → [H] → [B]  
 Cruciferae [M] → Brassicaceae [H] → [B]  
 Cucurbitaceae [M] → [H] → [B]  
 Cuscutaceae [M] → [H] → Convolvulaceae [B]  
 Cymodoceaceae [H]  
 Cyperaceae [M] → [H] → [B]  
  
 Datisacaceae [M] → [H] → [B]  
 Dipsacaceae [M] → [H] → [B]  
 Droseraceae [M] → [H] → [B]  
  
 Elaeagnaceae [M] → [H] → [B]  
 Elatinaceae [M] → [H] → [B]  
 Empetraceae [M] → [H] → Ericaceae [B]  
 Ericaceae [M] → [H] → [B]  
 Eriocaulaceae [M]  
 Euphorbiaceae [M] → [H] → [B]  
 Euphorbiaceae [M & H p. p.] → Picrodendraceae [B]  
  
 Fabaceae [H] → [B]  
 Fagaceae [M] → [H] → [B]  
 Fouquieriaceae [M] → [H] → [B]  
 Frankeniaceae [M] → [H] → [B]  
 Fumariaceae [M] → Papaveraceae [H] → [B]  
  
 Garryaceae [M] → [H] → [B]  
 Gentianaceae [M] → [H] → [B]  
 Gentianaceae [M p. p.] → Menyanthaceae [H] → [B]  
 Geraniaceae [M] → [H] → [B]  
 Gramineae [M] → Poaceae [H] → [B]  
 Grossulariaceae [H] → [B]  
 Gunneraceae [H] → [B]  
  
 Haloragaceae [M]  
 Haloragaceae [M p. p.] → Hippuridaceae [H] → [B]  
 Haloragaceae [M p. p.] → Gunneraceae [H] → [B]  
 Hippocastanaceae [M] → [H] → Sapindaceae [B]  
 Hippuridaceae [H] → Plantaginaceae [B]  
 Hydrangeaceae [B]  
 Hydrocharitaceae [M] → [H] → [B]  
 Hydrophyllaceae [M] → [H] → Boraginaceae [B]  
 Hypericaceae [M] → [H] → [B]  
  
 Iridaceae [M] → [H] → [B]  
  
 Juglandaceae [M] → [H] → [B]  
 Juncaceae [M] → [H] → [B]  
 Juncaginaceae [M] → [H] → [B]  
  
 Koeberliniaceae [MS] → [H] → [B]  
 Krameriaceae [M] → [H] → [B]  
  
 Labiatae [M] → Lamiaceae [H] → [B]  
 Lamiaceae [H] → [B]  
 Lauraceae [M] → [H] → [B]  
 Laxmanniaceae [B]  
 Leguminosae [M] → Fabaceae [H] → [B]  
 Lemnaceae [M] → [H] → Araceae [B]  
 Lennoaceae [M] → [H] → Boraginaceae [B]  
 Lentibulariaceae [M] → [H] → [B]  
 Lilaeeae [M] → [H] → Juncaginaceae [B]  
 Liliaceae [M] → [H] → [B]  
 Liliaceae [M & H p. p.] → Agavaceae [B]  
 Liliaceae [M & H p. p.] → Alliaceae [B]  
 Liliaceae [M & H p. p.] → Amaryllidaceae [B]  
 Liliaceae [M & H p. p.] → Asparagaceae [B]  
 Liliaceae [M & H p. p.] → Asphodelaceae [B]  
 Liliaceae [M & H p. p.] → Melantheriaceae [B]  
 Liliaceae [M & H p. p.] → Nartheciaceae [B]  
 Liliaceae [M & H p. p.] → Ruscaceae [B]  
 Liliaceae [M & H p. p.] → Smilacaceae [B]  
 Liliaceae [M & H p. p.] → Themidaceae [B]

Liliaceae [M & H p. p.] → Tofieldiaceae [B]  
 Limnanthaceae [M] → [H] → [B]  
 Linaceae [M] → [H] → [B]  
 Linnaeaceae [B]  
 Loasaceae [M] → [H] → [B]  
 Loganiaceae [MS] → Buddlejaceae [H] →  
     Scrophulariaceae [B]  
 Lorantheaceae [MS] → Viscaceae [H] → [B]  
 Lythraceae [M] → [H] → [B]

Malvaceae [M] → [H] → [B]  
 Martyniaceae [M] → [H] → [B]  
 Melanthiaceae [B]  
 Meliaceae [M] → [H] → [B]  
 Menyanthaceae [H] → [B]  
 Molluginaceae [H] → [B]  
 Montiaceae [B]  
 Moraceae [M] → Cannabaceae [H] → [B]  
 Moraceae [MS] → [H] → [B]  
 Myoporaceae [H] → Scrophulariaceae [B]  
 Myricaceae [M] → [H] → [B]  
 Myrsinaceae [B]  
 Myrtaceae [M] → [H] → [B]

Najadaceae [M]  
 Nartheciaceae [B]  
 Nitrariaceae [B]  
 Nyctaginaceae [M] → [H] → [B]  
 Nymphaeaceae [M] → [H] → [B]

Oleaceae [M] → [H] → [B]  
 Onagraceae [M] → [H] → [B]  
 Orchidaceae [M] → [H] → [B]  
 Orobanchaceae [M] → [H] → [B]  
 Oxalidaceae [M] → [H] → [B]

Paeoniaceae [M] → [H] → [B]  
 Palmae [M] → Arecaceae [H] → [B]  
 Papaveraceae [M] → [H] → [B]  
 Philadelphaceae [H] → Hydrangeaceae [B]  
 Phrymaceae [B]  
 Phytolaccaceae [M] → [H] → [B]  
 Picrodendraceae [B]  
 Pittosporaceae [H] → [B]  
 Plantaginaceae [M] → [H] → [B]  
 Platanaceae [M] → [H] → [B]  
 Plumbaginaceae [M] → [H] → [B]  
 Poaceae [H] → [B]  
 Polemoniaceae [M] → [H] → [B]  
 Polygalaceae [M] → [H] → [B]  
 Polygonaceae [M] → [H] → [B]  
 Pontederiaceae [M] → [H] → [B]  
 Portulacaceae [M] → [H] → [B]  
 Portulacaceae [M & H p. p.] → Montiaceae [B]  
 Potamogetonaceae [M] → [H] → [B]  
 Potamogetonaceae [H p. p.] → Ruppiaceae [B]  
 Primulaceae [M] → [H] → [B]  
 Primulaceae [M & H] → Myrsinaceae [B]  
 Primulaceae [M & H] → Theophrastaceae [B]  
 Proteaceae [B]  
 Punicaceae [H] → Lythraceae [B]  
 Pyrolaceae [M] → Ericaceae [H] → [B]

Rafflesiaceae [M] → [H] → Apodanthaceae [B]

Ranunculaceae [M] → [H] → [B]  
 Resedaceae [M] → [H] → [B]  
 Rhamnaceae [M] → [H] → [B]  
 Rosaceae [M] → [H] → [B]  
 Rubiaceae [M] → [H] → [B]  
 Ruppiaceae [M] → [B]  
 Ruscaceae [B]  
 Rutaceae [M] → [H] → [B]

Salicaceae [M] → [H] → [B]  
 Santalaceae [M] → [H] → Comandraceae [B]  
 Sapindaceae [B]  
 Sarcobataceae [B]  
 Sarraceniaceae [M] → [H] → [B]  
 Saururaceae [M] → [H] → [B]  
 Saxifragaceae [M] → [H] → [B]  
 Saxifragaceae [M p. p.] → Grossulariaceae [H] → [B]  
 Saxifragaceae [M & H p. p.] → Hydrangeaceae [B]  
 Saxifragaceae [M p. p.] → Philadelphaceae [H]  
 Scheuchzeriaceae [M] → [H] → [B]  
 Scrophulariaceae [M] → [H] → [B]

Scrophulariaceae [M p. p.] → Orobanchaceae [B]  
 Scrophulariaceae [M p. p.] → Phrymaceae [B]  
 Scrophulariaceae [M p. p.] → Plantaginaceae [B]  
 Simarubaceae [M] → [H] → [B]  
 Simmondsiaceae [H] → [B]  
 Solanaceae [M] → [H] → [B]  
 Sparganiaceae [M] → Typhaceae [H] → [B]  
 Staphyleaceae [M] → [H] → [B]  
 Sterculiaceae [M] → [H] → Malvaceae [B]  
 Styracaceae [M] → [H] → [B]

Tamaricaceae [M] → [H] → [B]  
 Themidaceae [B]  
 Theophrastaceae [B]  
 Thymelaeaceae [M] → [H] → [B]  
 Tofieldiaceae [B]  
 Tropaeolaceae [M] → [H] → [B]  
 Typhaceae [M] → [H] → [B]

Ulmaceae [M] → [H] → [B]  
 Umbelliferae [M] → Apiaceae [H] → [B]  
 Umbelliferae [M & H p. p.] → Araliaceae [B]  
 Urticaceae [M] → [H] → [B]

Valerianaceae [M] → [H] → [B]  
 Verbenaceae [M] → [H] → [B]  
 Violaceae [M] → [H] → [B]  
 Viscaceae [H] → [B]  
 Vitaceae [M] → [H] → [B]

Zannichelliaceae [M] → [H] → [B]  
 Zosteraceae [M] → [H] → [B]  
 Zygophyllaceae [M] → [H] → [B]

#### ABBREVIATIONS

[B] = Baldwin et al. (2012)  
 [H] = Hickman (1993)  
 [M] = Munz (1959)  
 [MS] = Munz (1968)

## A NUMERICAL SUMMARY

	Lycophytes	Ferns	Conifers	Flowering Plts.	Total
<b>Munz</b>	3	9	5	145	162
<b>Hickman</b>	3	11	5	152	171
<b>Baldwin</b>	3	13	4	165	185

## SOURCES

Baldwin, B. G. et al. (editors). 2012. *The Jepson manual: vascular plants of California*. Second edition.

Hickman, J. C. (editor). 1993. *The Jepson manual: higher plants of California*.

Munz, P. A. 1959. *A California flora*. In collaboration with D. D. Keck.

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