

# Taxonomic complexity of *Sambucus* genus studied

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Morphological characters of *Sambucus* species. 1. *S. adnata* Wall. ex DC; 2. *S. javanica* Blume; 3. *S. nigra*; a. compound odd-pinnate leaves with serrated margins; b. polychasial cyme, flat-topped inflorescence; c. small rounded berry-like drupes. Credit: WBG

*Sambucus* L. is a morphologically diverse flora comprising approximately 23 accepted species that are mostly deciduous shrubs,

perennial herbs or small trees widespread in almost all regions of the world, excluding extremely cold and desert zones. *Sambucus* species are difficult to identify based solely on morphological characteristics; thus, there is a necessity for taxonomic clarification since the many so-called species are merely horticultural clones.

Researchers from the Wuhan Botanical Garden of the Chinese Academy of Sciences (CAS) compiled representative views and databases of studies on the taxonomic, nomenclatural treatments and taxa discrimination within the *Sambucus* genus.

According to the researchers, enormous intraspecific variations within narrow-ranged populations and their widespread counterparts have resulted in taxonomic complications. The *Sambucus* genus encompassed about 37 accepted names, including 23 species, six subspecies, six varieties, and two forms.

Interestingly, the genus had the highest number of synonyms (52%) and unresolved names (34%), while accepted names were the least (14%). In total, 143 synonyms and 91 ambiguous names were recognized in *Sambucus* genus.

Intraspecific variations within *Sambucus* species leads to misidentifications and misapplication of names, resulting in the publication of many putative synonyms, and ambiguous names. Possible interspecific hybridizations experienced between *Sambucus* species triggered complexity in character evolution.

The morphology of *Sambucus* seeds endocarps were of taxonomic significance and provided highly reliable diagnostic features for species identification. The seed endocarps could thus be used as supporting characters to separate the *Sambucus* taxa into [distinct species](#) because they provided a key for species identification.

The Viburnum, Sambucus, and Adoxa genera were distinct in both the NeighborNet phylogenetic split network and Maximum Likelihood analyses. The latter showed that the Sambucus species formed a monophyletic group, and *S. adnata*, was closely related to *S. javanica* and *S. wightiana*.

Generally, defining major boundaries between Sambucus species and their infraspecific taxa is problematic due to possible hybridizations and morphological plasticity. Genetic diversity within Sambucus populations creates a wide genetic base; thus, recognition of infraspecific taxa should be done with caution in order to simplify classification and prevent confusions.

An [integrative approach](#) and comprehensive sampling are needed to relieve taxonomic complications and bring consistency and clarity across the genus. Further studies could focus on the structure of seed endocarps and molecular traits to improve the systematics of Sambucus [genus](#).

The study, titled "Understanding the taxonomic complexes and [species delimitation](#) within Sambucus L. (Viburnaceae)," was published in *Diversity*.

**More information:** Emmanuel Nyongesa Waswa et al, Understanding the Taxonomic Complexes and Species Delimitation within Sambucus L. (Viburnaceae), *Diversity* (2022). [DOI: 10.3390/d14110906](https://doi.org/10.3390/d14110906)

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