

1962

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### Recommended Citation

Lenz, Lee W. (1962) "A Key Character in Iris for Separating the Sibiricae and the Californicae," *Aliso: A Journal of Systematic and Floristic Botany*. Vol. 5: Iss. 2, Article 7.  
Available at: <https://scholarship.claremont.edu/aliso/vol5/iss2/7>

## A KEY CHARACTER IN IRIS FOR SEPARATING THE SIBIRICAE AND THE CALIFORNICAE

LEE W. LENZ

All recent taxonomic treatments place the *Sibiricae* and the *Californicae* near one another in the beardless, or apogon irises. Bentham (1882) first used the name *Apogon* for a subsection of the genus which included all species with smooth perianth segments. In his monograph of the genus, Dykes (1913) accepted Bentham's subsectional name and under it recognized 15 groups, among them '*The Californian group*' and '*The Siberica group*.' Dykes' 'groups' lacked any formal designation of their taxonomic category. Diels (1930) accepted Dykes' groups and he latinized their epithets and treated them formally as subsections. This was the first use of the terms *Sibiricae* and *Californicae*.

In 1953 Lawrence published a reclassification of the genus in which he raised the rank of the non-bearded irises to that of a section, the *Spalbula*. This section he then divided into four subsections, one of which is called *Apogon*. The Apogons are then divided into 15 series. The species included in Lawrence's 'series' are essentially the same as those in Dykes' 'groups' and Diel's 'subsections.' The only changes then which have taken place in the *Californicae* and *Sibiricae* since they were first recognized by Dykes in 1913 are changes in their infra-generic standing.

The *Sibiricae* and the *Californicae* while obviously more closely related to one another than they are to any subgeneric taxa, as evidenced by similar chromosome numbers ( $2n=40$ ) and their compatibility as far as interspecific hybridization is concerned, are nevertheless quite distinct groups with widely differing geographical distributions (Dykes, 1913, 1924; R. C. Foster, 1937; Lenz, 1956, 1958, 1959). The *Sibiricae* are strictly Old World plants whereas the species of the *Californicae* are all from the New World, most of them native to California.

For all their distinctiveness these two groups have never been successfully separated in taxonomic keys. Dykes (1913) did not key out his groups but instead gave a short descriptive paragraph for each. The characters he used are listed in the following table:

CHARACTER	SIBIRICA GROUP	CALIFORNIAN GROUP
1. Rhizome		Slender, root-fibres few
2. Leaves	Thin and grassy	Tough and leathery, dying leaves dull red
3. Perianth tube	Short, not smooth but obviously formed of the bases of the segments	
4. Stigma	A projecting triangular tongue	
5. Capsule	Trigonal	
6. Seeds	Disc-shaped, D-shaped or cubical	Thick D-shaped or even almost cubical
7. Stem	Hollow (except in <i>I. Clarkei</i> and <i>I. prismatica</i> )	

Only in the case of the leaves and seeds did Dykes give contrasting characters for the two groups. His brief description of the seeds shows that they are essentially alike and experience shows that they cannot be used for separating groups. The nature of the leaves

is perhaps the best of the characters he used and in living material it is not at all difficult to differentiate between the thin and rather soft leaves of the *Sibiricae* and the coarse, rather hard leaves of the *Californicae*. In herbarium material this difference is sometimes difficult to determine. The color of the dying leaves in the *Californicae* is distinctive but seldom can this be used as a determining character in herbarium material. The nature of the rhizome is given for the Californians but not for the Siberians. Actually there is such a range of variation within the two groups that it is impossible to use 'slender' or 'thick' as delimiting



*Iris orientalis*, a member of the *Sibiricae*. Sepals showing basal flanges which extend between the sepal hafts and the bases of the petals above the points of fusion of the sepals and petals.

an entire series. The nature of the root system in the two groups is quite distinctive, the Californians producing relatively few roots whereas the Siberians have a well developed fibrous root system—again a character which is hard to determine on much of the herbarium material. The nature of the perianth tube, stigma and capsule as given for the *Sibiricae* does not provide satisfactory diagnostic characters as the same condition exists in one or more of the *Californicae*. Concerning the hollow stem which is present in most of the *Sibiricae*, Dykes makes the statement that herbarium specimens are seldom a safe guide on this point for the pith in the center of the stem often shrivels and this leaves it hollow, although the living stem is solid. This has also been my experience in attempting to use this character.

Diels (1930) did not present a key to his subsections but merely gave a brief description of each. The characters used in describing the *Californicae* and the *Sibiricae* are essentially the same as those used by Dykes.

Lawrence in his reclassification of the genus (1953) separated the two groups as follows:

- 5. Stigma with a projecting triangular tongue: seeds D-shaped or cubical.
- 6. Rhizomes stout, brown.....Series (1) *Sibiricae*
- 6. Rhizomes slender, reddish or pink as are also the more or less persisting leaf-bases .....Series (3) *Californicae*
- 5. Stigma lacking a triangular tongue, often bilobed: seeds variable.
- 7. Stem-leaves reduced to short inflated linear-acuminate bracts, basally tinged or flushed red or pink.....Series (3) *Californicae*



*Iris munzii*, a member of the *Californicae*. Sepals without basal flanges, free to the points of fusion with the petals.

Except for *I. purdyi* which is the single species keyed out separately under 7, the remaining species are separated by rhizome characters, primarily as stout or slender. As already mentioned this is not a reliable character for distinguishing these two groups, nor is their color, since in the *Californicae* it ranges from brown with white leaf bases to reddish-brown with red leaf bases.

Dykes was a careful and astute observer and he knew most of the species belonging to these two groups as living plants, having grown and hybridized them over a period of years. In the description of the Siberians in his monograph he mentions a floral character found in that group which is not found in any of the Californians. It is interesting to speculate why he did not recognize this as perhaps the one definitive character needed to separate the two groups. In describing *I. sibirica* on page 22 he wrote:

"*Falls*. The orbicular blade narrows abruptly to the much veined haft, which bears two projecting flanges near the base (f.n. These show more clearly in the drawings of *I. orientalis*, *I. Wilsoni*, *I. Forrestii*, and *I. chrysographes*, Plates I-IV, than in that of *I. sibirica*.)"

In his descriptions of the species belonging to the Siberians, either Dykes mentioned this projecting flange or it is shown on the colored plate illustrating the species. In some instances he calls it a buttress rather than a projecting flange. In describing *I. chrysographes* he wrote:

"*Falls*. The oblong blade narrows abruptly to the oblong haft, which bears at its base the projecting flanges, *which are a marked characteristic of the Sibirica group*" (Italics mine).

In no instance are flanges reported in any of the Californians. Since this character was first pointed out to me many years ago by Jean Stevens of Wanganui, New Zealand, I have carefully checked the haft condition on all the species now recognized as members of the two groups. In every instance I have found the flange present in members of the *Sibiricae* and absent in the *Californicae*. It must be pointed out however that the flange is not unique with the Siberians as it is found in some other species of beardless irises. I have noted its presence in *I. prismatica*, *I. pseudacorus* and *I. versicolor*. In his monograph Dykes placed *I. prismatica* in the *Sibiricae* but he noted that in several characters it appeared to be separated from the other members of the groups. Small in his *Manual of the Southeastern Flora* (1933), recognizing its uniqueness, formally separated it from that group by placing it by itself in the *Prismaticae*. This disposition of the species has been followed by both R. C. Foster (1937) and Lawrence (1953).

I propose the following key for the separation of these to series:

1. Sepals with two small flanges near the base which project at right angles to the blade of the sepal; leaves rather thin and soft; root system well developed, fibrous and much branched; perianth tube rather short (13-18 mm) . . . . . *Sibiricae*
1. Sepals without projecting flanges; leaves rather thick, very fibrous and somewhat harsh to the touch; root system scanty, roots fibrous and not much branched; perianth tube very short to very long (5-130 mm) . . . . . *Californicae*

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