The North American Species of Arisaema (Araceae)-"Jack-in-the-Pulpit"

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The North American "Jacks-in-the-Pulpits" are so variable as to have caused a great deal of controversy and confusion. Six specific and numerous subspecific epithets have been applied to them. Graduate research at Cornell between 1946 and 1950 and extensive observations since have lead me to the conclusion that there is but one species, *Arisaema triphyllum* (L.) Schott, with four subspecific populations. Rather widespread hybrid swarms between these populations tend to confuse their separations. A key to the subspecific categories and a discussion of them follows.

Key to the subspecies of Arisaema triphyllum

- 1. Leaves usually glaucous beneath when mature; lateral leaflets strongly to moderately oblique or lobed; growing in moist, usually not wet, ground; flange at top of spathe tube only slightly reflexed, not rolled under.
- 1. Leaves never glaucous beneath; lateral leaflets slightly to moderately oblique, very rarely lobed; growing in wet, swampy ground; flange at top of spathe tube strongly reflexed and inrolled.

..... A. tripnyllum ssp. stewardsonii ------

A. triphyllum ssp. *triphyllum* the most widespread and abundant, ranging from the C peninsula, southern Quebec, Ontario, Wisconsin and Minnesota, south to southern Florida and eastern Texas. Though it grows in deciduous forests in shade and usually in moist woods, soil conditions are widely varied and it is often found in swamps.

Its one or two leaves are trifoliolate with the lateral leaflets moderately to strongly gibbous and occasionally lobed on outer margins. The mature lobes are always glaucous beneath. The spathe tube is smooth or slightly fluted and has wide, horizontal, slightly depressed flanges at top. The spathe blade is usually purple and green striped but sometimes wholly green and rarely wholly purple. The straight appendage of the spadix is clavate 4-10 mm in diameter. Its somatic chromosome number is 56 or occasionally 28. Plants with varied spathe blade colorations have been named as varieties but, since there is wide variation in all colonies Latin designations are not

justified.

A. triphyllum ssp *stewardsonii* (Britton) Hutt. is essentially a northern variant ranging from Prince Edward Island through New England, New York and Pennsylvania and south in the mountains to North Carolina. One specimen from northwestern Indiana has been observed growing in shaded swamps and flood plains.

A. triphyllum ssp stewardsonii tends to be more slender than the typical subspecies and the leaves are never glaucous and the lateral leaflets are slightly to moderately glabrous. The spathe tube is strongly fluted with white ridges outside and is topped by narrow, strongly depressed or inrolled flanges. The acute spathe blade is nearly always green with purple stripes between the veins in the throat, though it is sometimes more extensively marked with purple. The spadix is slender and cylindrical and not enlarged at the tip. Its chromosome number is 28.

A. triphyllum ssp *pusillum* (Peck) Hutt. tends to be more southern than the spp. *stewardsonii* and, though the ranges overlap, they are rarely found growing together. It ranges from Connecticut, southern New York, Pennsylvania and Indiana south to southern Florida and Louisiana. It grows in the same wet habitats as ssp. *stewardsonii* but at lower elevations.

Like spp. *stewardsonii* it tends to be more slender and its leaves are never glaucous while the lateral leaflets are slightly to moderately gibbous. In addition, the spadix appendix is slender and cylindrical. It differs in that the spathe tube is smooth and the spathe blade is acuminate and nearly always wholly green or wholly purple, occasionally with slender, green stripes. Its somatic chromosome number is 28.

A. triphyllum ssp *quinatum* (Buckley) Hutt. has a very restricted range in the deep south and is found only in Georgia, northern Florida, Alabama, Mississippi and Louisiana. It grows in moist, shaded situations. It tends to be smaller than the other subspecies and its leaves are usually glaucous beneath and penta-foliate though they are sometimes tri-foliate or lack gaucescense. The spathe tube is smooth and topped by broad, flaring, but not depressed flanges. The spathe blade is unmarked green and oval or orbicular with an abruptly apiculate tip. The cylindrical spadix appendix is very slender and curved toward the opening of the spathe. Its chromosome number is 28.

Hybrid swarms between various subspecies are not uncommon. Two of these are rather widespread and have been given specific names. *Arum polymorphum* was described in 1843 from the bank of the French Broad River in Tennessee and distinguished by having penta-foliate leaves. It was subsequently transferred to Arisaema. This variant is found in the mountains of Tennessee and North Carolina and from northern Georgia to central Alabama. The plants are commonly confused with ssp. *quinatum* so that many botanists, who have never seen true spp. *quinatum*, dismiss that name as being unworthy of recognition. Though most of the plants have penta-foliate leaves, they exhibit the characteristics of ssp. *pusillum* and ssp. *quinatum* in various combinations and I believe they are of hybrid origin. Their chromosome number is 28.

Arisaema acuminatum was described from Florida as being more delicate and slender than *A. Triphyllum ssp pusillum* with acuminate spathe blades. It is found in coastal Georgia and throughout Florida. I consider it of hybrid origin involving ssp *triphyllum* and ssp. *pusillum*. Though the long-acuminate spathe blades are usually green, an occasional plant has purple markings. I made 23 root tip chromosome counts of these plants and found four to have counts of 56 and the remaining nineteen to have counts of 28.

Most of the distinguishing characteristics are obscured or destroyed by pressing and it is not always

possible to assign heredity.

The only other *Arisaema* in temperate North America is *A. dracontium* which is distinguishable by its single compound leaf with 7-12 leaflets, its small green sheathing, and its long-caudate spadix appendix. There is a similar species *A. macrospatha*, in the tropical American highlands, It is distinguished by its large, arched spathe limb with the spadix appendix exiting from the side. I haven't seen living specimens but suspect it may be a minor variant of *A. dracontium*.



Arisaema triphyllum ssp. stewardsonii (L.) Schott, Giles Co., Va.



Arisaema triphyllum ssp.quinatum (L.) Schott D.G.H. Garden



Arisaema triphyllum ssp. triphyllum (L.) Schott Side view, striped