

Summary or synopsis of the double-projection slide lecture: **An Introduction to North American Trilliums**, Frederick W. Case, Jr. at the Trillium Symposium at Wintertur, Delaware, April 17, 2008

Note: The double projection used in this talk (for comparisons etc) can make a synopsis difficult to summarize. Here I summarize the basic topics covered and the things discussed about each species, but I cannot list all the details for each species covered without exceeding the size limits for this publication. Details can be found in my book *Trilliums*, Timber Press.

An Introduction to the American Trilliums
Frederick W. Case, Jr.

Trillium relatives considered by taxonomists at various times in history include *Medeola* (now largely discounted), *Scoliopus*, *Paris*, *Smilax*, and *Zygadenus*. I am not aware of any definite conclusions of authority. The genus *Trillium*, however has been fairly well studied.

Trillium is divided into two subgenera, the pedicillate trilliums and the sessile trilliums, subgenus *Trillium*, and subgenus *Phyllantherum*, based primarily upon whether or not the plant bears the flower on a short pedicel above the leaves, or whether the flower is borne directly upon the whorl of leaves without a pedicel. In both subgenera the basic flower parts are the same.

Compared to a typical woody plant; the “stem” of a trillium is subterranean, horizontal or essentially so and termed a rhizome. True leaves exist as small, papery scales termed cataphylls along the rhizome or absent. The stem that appears above ground is really a specialized flowering branch, the peduncle, which arises from a subterranean terminal bud on the rhizome and bears a single flower. The flower is subtended by three bracts. The bracts are similar in structure and function to leaves, and commonly called leaves.

In subgenus *Trillium*, the leaves, except in one known form, are uniformly green. In subgenus *Phyllantherum*, the leaves are variously mottled with areas of darker green, brownish-or bronze markings which gradually become faded and more obscure with age. The function of these markings is unknown although I have seen in print speculations that the markings serve to camouflage the plant from grazing animals (they do not).

The flower bears three green or purplish stained sepals and three variously colored petals. In subgenus *Trillium*, the petals usually spread widely and are variously colored. In subgenus *Phyllantherum*, the petals mostly stand erect and somewhat clustered together and range in color through maroon, reddish-brown or green or yellow tones and may in some species be purplish at the base and greenish distally. The flower bears a three chambered or weakly three chambered fleshy capsule containing numerous seeds. The b-b sized seeds, brown when ripe bear an oily mass of tissue, the eliasome nearly as large as the seed itself. The eliasome is myrmecochorus, that is attractive to ants. The eliasome serves as the main method of seed dispersal in *Trillium*. Ants hoard the eliasome bearing seeds for food, but discard the seed bodies or store them in groups

in their tunnels. After a period of cold (vernalization) the seeds germinate, frequently in clusters of several species as they were stored in ant tunnels,

First flowering after germination of the seed takes from four to seven years or more.

Six or seven species of trillium are known to occur in Asia from the Himalayan Mountains to Korea. One species, *Trillium camschatcense* possesses ten chromosomes, the other Asian species are tetraploids or triploids.

Thirty-eight species occur in North America in two main areas. Seven species occur in western North America, from California to British Columbia, and inland to Idaho. The rest of the American species occur in eastern and midwestern North America.

For each species of American trillium the lecture covered names of each species, special varieties or forms, if present, color photographs of each species, distribution map for each species, habitat and companion plant photos where significant to the trillium's occurrence or special comments about structure and identification.

The Western American Species:

Trillium chloropetalum

Var. *chloropetalum*

Var. *giganteum*

Trillium albidum

Trillium parviflorum

Trillium ovatum

v. *maculosum*

v. *hibbersonii* (not taxonomically valid name)

Trillium kurabayashii

Trillium petiolatum

Trillium rivale (*Pseudotrillium rivale*) now considered to form a separate genus from trilliuml.

The Eastern American Species

The eastern trillium species are grouped in somewhat vague geographic areas: the northern and Midwestern species, the Appalachian Mt. and inner Piedmont species, and the outer piedmont species. There is, however much overlap with one species occurring at least occasionally in more than one area. I listed them where they mostly occur.

Species are listed below by these areas, not alphabetically, which in a double projection slide presentation would cause too much confusion. Two species particularly significant for their natural hybridization are discussed last to illustrate their interesting hybrids and their significance to horticulture.

Northern and Midwestern group

Trillium nivale

Trillium cernuum

Trillium undulatum

Trillium grandiflorum,

f. *roseum*,

f. *multiplex* (double forms named and otherwise) Also shown and discussed were multiple forms with greening fully or partially of petals, doubling of parts and massive deformities caused by *Mycoplasma* an insect vectored disease.

Trillium erectum (discussed later, below)

Trillium flexipes (discussed later, below)

Trillium sessile

Trillium recurvatum

Trillium luteum

Trillium cuneatum several petal color forms shown, but are not botanically named.

Trillium viride

Trillium viridescens

Primarily Appalachian or Piedmont Species:

Trillium gracile

Trillium ludovicianum

Trillium foetidissimum

Trillium pusillum complex

Trillium stamineum

Trillium decipiens

Trillium underwoodii

Trillium maculatum

Trillium reliquum

Trillium persistens

Trillium stamineum

Trillium catesbaei

Trillium decumbens

Trillium rugelii

Trillium lancifolium

Trillium discolor

Trillium erectum and its color forms

Trillium sulcatum and its forms and compared to *T. erectum*

Trillium vaseyi

Trillium simile

Trillium flexipes and its forms

Trillium hybridization

Mapping the counties of occurrence of *Trillium erectum* and *T. flexipes* in Michigan shows unusual color forms which occur mostly along the contact zone of the two species. As these forms have the same color patterns as those occurring in our hand pollinated crosses, we presume them to be hybrid swarms in the wild populations. We show slides of several hybrids.

There is another color pattern in trilliums apparently visible to bees and other insects under reflected ultraviolet light but essentially not visible to human eyes. Close observation of the flower of *Trillium sulcatum* shows a faint darker center in left screen and *T. erectum* at right with pale greenish center and yellow flowered *T. erectum* with faint pink center which suggests the presence of a "bullseye" central area of color visible to the insect in ultraviolet light forming to guide the pollinator to pistil, anther and pollen, a pattern which occurs in colors visible to humans in hybrids, backcrosses and recombinations, but which is not visible to the human eye when viewing the basic species (parent). These same patterns occur in the same manner in wild hybrids between *Trillium erectum* and *Trillium cernuum* in Michigan's Upper Peninsula.

In advanced crosses and backcrosses some amazing and different genetic recombination color patterns appear in our garden crosses: Dark or light bullseye-like patterns occur in flower centers. In some hybrids the colors break up into grizzled or picotee-like patterns with the petal margins darkly outlined. In a few individual advanced hybrids dark centers and radiating lines and background colors of pink, yellow or white from the *T. erectum* parent occur. Slides showing examples of such forms completed the talk. All of these colors are highly desirable from a horticultural standpoint and only await a young hybridizer to develop them.

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