

A NEW FORM OF *TRIPHORA TRIANTHOPHORA*  
(SWARTZ) RYDBERG, AND PART 3 OF  
OBSERVATIONS ON THE ECOLOGY OF  
*TRIPHORA TRIANTHOPHORA* (ORCHIDACEAE)  
IN NEW HAMPSHIRE

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ABSTRACT

An albino form of *Triphora trianthophora* (Swartz) Rydberg is described as forma *albidoflava* Keenan, characterized by pure white sepals and petals, and the three crests on the lip petal being a bright yellow instead of the normal green color, the remainder of the plant creamy-white. A summary of conclusions on observations of the three-birds orchid in Holderness, N.H. at two different sites, one under study for twenty years, the other for six years, including these: approximately five or six days of flowering spaced over a bloom period from the first week in August to the first week in September; variation in population from a few thousand to several thousand each year; simultaneous blooming in a region encompassing New Hampshire, Maine and Massachusetts; more than 95% of the plants having either one or two flowers open at the same time.

Key Words: *Triphora trianthophora*, albino color-form, ecology, New Hampshire

*Triphora trianthophora* (Swartz) Rydberg f. *trianthophora* is characterized by a mostly white flower with varying degrees of purplish-pink suffusion around the edges and at the tips of both sepals and petals. The lip petal is highlighted by three parallel ridges of teeth-like projections, bright green in color.

Field work in the Holderness, N.H. area in October 1987 yielded my first albino plant, with mature upright fruit in the dehiscent stage. In August, 1990, I discovered my first albino plant in flower in the same general area, but not the same plant found in 1987. This site has been under my surveillance every year for six years and is the largest station I have ever seen or known about both in terms of area covered and total population. The site measures approximately one quarter mile in length and one hundred feet in width, while the population has varied from approximately two thousand plants to more than ten thousand, depending on the year.

The single albino plant had four buds. The stem and leaves were a creamy-white color. The very base of the stem had a bit of purplish suffusion. The sepals and petals were white without a trace of purple. The characteristic green coloring of the lip petal's

three ridges was replaced with a pure yellow color. The pollinia retained their purplish color.

***Triphora trianthophora* (Swartz) Rydberg forma *albidoflava***  
Keenan

Differt a forma *trianthophora* caule foliisque sine ullo pigmento viridi, sepalis petalisque sine ullo pigmento purpureo, crista triplici omnino flava sine ullo pigmento viridi in labio.

Differing from forma *trianthophora* in its stem and leaves lacking all green pigment; the sepals and petals lacking all traces of purplish pigment; the triple crest without any green pigment on the lip, the green replaced by pure yellow.

TYPE LOCALITY. United States. New Hampshire, Grafton County: Open, deciduous beech forest. August 10, 1990. (HOLOTYPE: NHA, color photographs.)

ETYMOLOGY. From *albido*, white and *flava*, yellow, referring to the yellow crest on the otherwise white lip.

I am indebted to Paul Martin Brown of the New England Wild Flower Society, and Dr. Leslie Garay of the Oakes Ames Herbarium at Harvard for their help in checking the authenticity of this new taxon.

The discovery of this new color form culminates almost twenty years of nearly annual visits to two stations of *Triphora trianthophora* in Holderness, N.H. (Keenan, 1986, 1990a). The August, 1990 season was one of the more remarkable. Among the interesting surprises was the discovery of one exceptionally large clump, which contained, by individual count, approximately 750 stems, packed tightly together in the extremely small area of 15 × 25 cm, the majority of them blooming en masse on August 10th. This massive bloom was very impressive; it was illustrated in part in Keenan, 1990b, which see. Case (1987) attributed these larger clumps to squirrel caches, with corms piled in several layers; I am not convinced by this explanation, however.

The second most interesting happening in 1990 was the flowering—and non-flowering—of a single four-bud albino specimen described at the beginning of this article. Color photographs of

this new taxon also appear in the American Orchid Society Bulletin (Keenan, 1990b).

The albino plant produced its first open flower on August 10th. That event left three other tight buds, two which were large and a week away from opening, and the much smaller third one two weeks from opening.

On the 18th of August there occurred the third major mass blooming of the 1990 season. On that day, the two large albino buds should have opened but did not. Consequently, I drove up to Holderness again the next day, Sunday, again to no avail. I continued to visit the site each successive day determined to catch the two large buds when they finally opened. Wednesday, the 22nd, four days after they should have opened, the two larger buds, for the first time, changed color from the pure white of the preceding days to a dull, almost sickly, pale cream. This change indicated to me that they would not open. Meanwhile, the tiny third bud continued to enlarge each day and now was erect and white, sure to open the next day, which it did, on Thursday, August 23rd. On this same day, the two large buds dropped off the plant, as I expected they might do in view of their color change the previous day. The question of why these two buds failed to open on the day they could be expected to, then deteriorated and dropped off without opening at all, is a very perplexing one to me. As noted, the first and last of the four buds did open, despite the fact the last bud was much smaller than usual, and smallest of the four. The albino plant measured 120 mm tall; the tiny fourth flower only 10 mm long and 13 mm wide when fully open.

The 1990 season was an excellent one for *Triphora* in the Squam Lake region over and above the two remarkable phenomena detailed above. There was a total of five bloom days for the month of August, i.e., only five days out of thirty-one had open flowers. Three of these days, August 3rd, 10th, and 18th, were days of major blooms.

Herewith I present a summary of conclusions based on these two Holderness, N.H. stations during my twenty years of observations:

1. Flowering period occurs from the first week in August to the first week in September.
2. Only five or six days in the entire monthly period have open flowers.
3. Flowers are fully open for that one calendar day. Rarely,

during cooler temperatures, will flowers remain approximately one-quarter open the next day.

4. Contrary to Morris and Eames (1929) contention, plants do not have "one flower partly open, one flower fully open, and one flower partly closed" on the day a flowering takes place.

5. Less than approximately 5% of plants have 3 flowers open at the same time. Approximately 95% of plants have either one or two flowers open at the same time.

6. Open flowers occur simultaneously on the same day throughout the region of New Hampshire, Maine (fieldwork with Les Eastman of the Josselyn Society), and Massachusetts (personal communication, Sue Williams, studying a *Triphora* population in western Massachusetts for the Natural Heritage Inventory of the State of Massachusetts).

7. All buds open by 10 a.m. (my earliest arrival time) but probably sooner, on the day a flowering occurs.

8. Every year above-ground plants are produced; these plants vary in number from several hundred to several thousand, with approximately all plants producing at least one bud regardless of the size of the plant.

9. Judgment on population numbers should be based on observation early in August because of potential rodent destruction later in the month (Keenan, 1986).

10. Judgment on bud numbers must be ascertained early, before first bloom, because many closed flowers drop off the plants quickly if not fertilized.

11. Relatively small percentage of flowers produce mature fruit.

12. Nearly 100% of plants grow in beech leaf litter. This environment can be in the typical beech-forest shallow depressions or just as often on flat ground with thin accumulations of beech leaves, or in decomposing log material beside fallen logs, but almost never directly on top of rotting logs.

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