

The Native Orchid Conference

ISSN 1554-1169

Journal



**Volume 14(1)
Jan-Feb-Mar 2017**

Volume 14, Issue 1

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ISSN 1554-1169

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The Native Orchid Conference, Inc.

P. O. Box 2047 Boone, NC 28607-2047

Web Sites

<http://nativeorchidconference.info>

<http://groups.yahoo.com/group/nativeorchidconference/>

OFFICERS

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Mark Rose rmarkrose_2000@yahoo.com

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Editor

Robert J. Ferry, Ph.D.

noceditor@gmail.com

The Native Orchid Conference Journal is published four times a year by the Native Orchid Conference, Inc., a non-profit [501(c)3] organization, as a service to its members. The organization is devoted to fostering the study, conservation, and enjoyment of orchids native to North America. Membership dues are: US Individual: \$30; US Family: \$35; Student: \$15, and non-US Individual or Family: \$40. Address inquiries about membership, back issues of this journal, and requests for copies of the bylaws to the editor at 343 John Wayne Trail Victoria, Texas 77905, or to noceditor@gmail.com

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Remarks on Wild Orchids and New Friends

The Native Orchid Conference was born out of the desires of individuals who were interested in orchids. These were serious people; not the armchair, “couch potato”, and coffee table types. They were that deplorable sort who readily eschewed dress clothing and the formalities of modern fashion in favor of the rough clothing, boots, and insect repellents, and were eager to get out “into the field” and risk unknowingly treading on a viper in Ontario, stepping into the moss-covered hole of a burned-out tree stump in the Frances Marion National Forest, or sliding down a rocky slope while clutching a camera, just to go where the orchids lived so they could see and photograph and learn about them first hand. Such people are aliens in the contexts of modern society. They don’t seek to possess. They look to share knowledge and photographs. They’re interested in protecting property they don’t own, and they’re known to drive hundreds, even thousands of miles to just look at and photograph a few plants 2-3 inches tall.

Who are they? Some are U.S. citizens and others are Canadians, and -yes -there are members of this strange bunch from other countries, and it doesn’t matter where they meet: they share a common interest in the especial preservation of habitats and a family of flowering plants with an ancestry that reaches back about 110 million years and blesses the world with flowers from within the Arctic Circle into every ecosystem where humans have drawn their artificial political boundaries.

The orchid Family is global yet its members have to be, by Nature’s laws, in some respects provincial. NOC began by trying to learn as much as possible about the orchids that grew “close to home.” This has both advantages and disadvantages, but even the political construct of a nation cannot long survive well as an isolationist entity. This enhanced viewpoint need not be adversarial. Indeed, as the orchid family is global, might not this strange group of non-adversarial U.S. and Canadian orchid lovers meet like-minded individuals globally, and work *together* to preserve not just the reaches of a part of North America, but of orchids and orchid people worldwide? Ignorance tends to beget animosity. What might sharing a love and knowledge of orchids and the preservation of the global habitat beget?

In recent years, manuscripts for your journal have become increasingly sparse and by a vote of your board, your editor has been granted the latitude to publish other material if that of Canadian or U.S. origin is not at hand.

This issue opens with textual material and figures of cypripediums largely unknown to residents of the western world. A window to the world has been opened, and your editor anticipates it may well result in the NOC Journal becoming not just a recounting of old familiar adventures, but some fresh looks that may bode well to reader and subscriber interest as well as removing much pressure on the editor to provide timely issues. Your *Journal* may provide new insights on new and beautiful orchids that have been obscure, but can be both entertaining and educational.

Watch: NOC members may find new places to go and new friends who are just like the present-day and past old ones. The new ones just live someplace else. That’s OK, NOC already has members and orchids living “someplace else”!

Convergent Orchid Species in China and North America

Part I. The *Cypripediums*

Tom Sampliner

email: tomsam2651@hotmail.com

Some fascinating parallels exist among orchid species found in western China as compared with our familiars here in North America. We share some of the same genera as well as species. Such parallels argue the case for convergent evolution.

First, by way of introduction, here is a brief overall perspective of the flora of China. It has 12% (almost 1/8) of the entire world's plant diversity. Putting numbers to this, China has 30,000 species of higher plants compared to only 17,000 for North America (Guide to the Flowers of Western China at Page 1). Limiting numbers to endemics, China has 220 endemic genera encompassing 16,800 species, which almost equals the aforementioned total number of species here in North America (Guide to the Flowers of Western at Page 1).

Certainly among the showiest and most sought after there or here would be the slipper orchids. When it comes to slippers both regions of the globe, have members of the slipper genus *Cypripedium*. China has another slipper genus, *Paphiopedulum*, found in their southern provinces, while we have only one. No doubt even among the most devoted slipper enthusiasts, not many westerners realize that the rugged mountains of Yunnan and Sichuan Provinces of western China is a center for diversity among slipper orchids of the genus *Cypripedium*. This region is also recognized as a world biological hotspot home to other charismatic and endangered life forms as the Giant Panda. I was fortunate enough to have arranged to do some orchid hunting in this hotbed for slipper orchids during the summer of 2015 under the guidance of a world-recognized expert, Dr. Holger Perner.

About twenty million people inhabit the Sichuan Province capital city of Chengdu. To the north and east of the capital are rugged temperate forested mountains with at least three major adjacent national parks, all declared UNESCO World Heritage sites (<http://whc.Unesco.org>). In these lightly inhabited areas, the temperate forests of mixed deciduous conifer and broadleaf trees provide suitable alkaline substrate and conditions for members of the genus *Cypripedium*. From late spring through summer, these areas are subject to monsoon driven heavy rains, which along with orographic lifting of moisture as the terrain rises, act as Mother Nature's watering cans for flowering plants such as orchids. The mountainous terrain is especially productive for members of the genus *Cypripedium* from about 1500 to slightly above the 3500-meter range, (a few can reach 4000 meters) in the protected national parks. It has been written that of the 30 some *cypripediums* in China, most are endemic; see Guide to the Flowers of Western China. My trip was timed to see a broad sample of some of their best.

Once we got up into our first of three national parks we would visit, Huanglong, we were ready to start walking the trails and finding our first *cypripediums*. We were not disappointed as we saw from the very start one of the most spectacular,



Fig. 1. *C. tibeticum*

the incomparable *Cypripedium tibeticum*. With a color combination of light to dark maroon and some white, it most resembles our summer blooming Queen or Showy Lady Slipper, *Cypripedium reginae*, which is a hot pink pouch, yellow staminode, and everything else white. Both are large sized flowers with alternate leaves that are broad, pleated and hairy. Both species can be solitary or clumped, double or single flowered.

The Asian species, forms, and varieties show a broader gamut of color shades and intensities than do ours. I attach some examples of *C. tibeticum* (Figs 1, 2). The pouch of this Asian taxon is rounder and tighter and sometimes shows a white or even a yellow rim border color (Fig. 3). There is another species resem-

bling *C. tibeticum*, but is distinguished based upon a darker plum pouch coloration and translucent windows at the rear of the pouch. It is *C. calcicola* (Fig. 4). My guide, Holger Perner, in his book “Orchids of Huanglong” 2007 Page 75, would add that the petals are more acute, the pouch opening is narrower than that of *tibeticum* and flattish on the upper pouch surface curving downward in front to form a more saccate lip (Page 75). Unfortunately, I must also point out that Perner uses the species name *C. calciculum*, which is not an accepted name according to the Kew checklist [however, one synonym of



Fig. 2. *C. tibeticum*, double flowered.



Fig. 3. *C. tibeticum*,
pouch yellow-rimmed.

Cypripedium calcicola is *Cypripedium tibeticum* subspecies *calcicola* (Scltr.) Ecarius, [Orchideengattung *Cypripedium*: 201 (2009)]. The Kew world checklist of selected plant families is the one accepted by many non-European botanical institutions. Despite the greater similarity to the respective colors of this taxon. Another Asian yellow slipper *Cypripedium flavum* is thought to be more closely related to our *C. reginae* than *C. tibeticum* (Perner, page 81). See *Cypripedium flavum* (Fig. 5). The color array for this taxon is one of the broadest among the genus. Overall, the pouch is a pale yellow but any of the flower parts can be suffused or even spotted with pink, red or maroon. The

most distinguishing trait for this taxon is the dramatic recurvature of the two lateral petals. Perner observed that *Cypripedium flavum* is the most common slipper species of the entire region with over 10,000 stems expected each June in Huanglong. I was there the second half of June, and was able to see the prime portion of the annual show.

Based only on color we might be persuaded to consider *C. flavum* (as an Asian expression) to our well-known three yellow lady slippers (excluding a 4th, the Kentucky slipper).

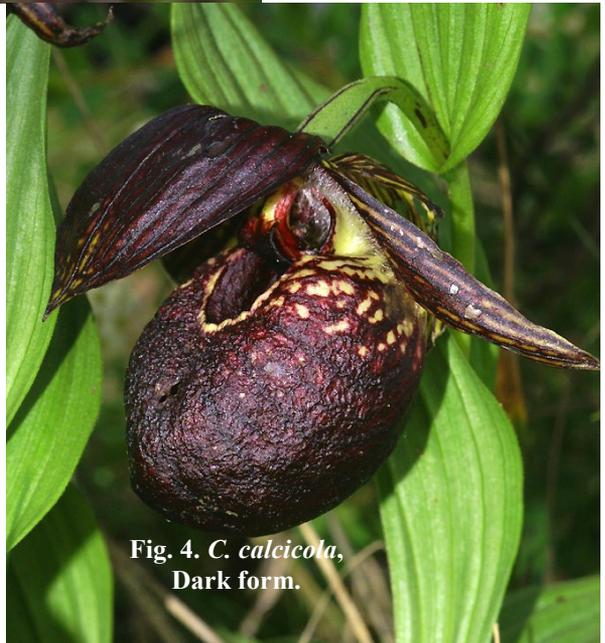


Fig. 4. *C. calcicola*,
Dark form.



**Fig. 5. *C. flavum*,
A duo of two plants growing closely.**

However, these rugged west China Mountains have other yellow colored slippers that seem more closely related. The region is widely known for its fantastic displays of travertine and tufa substrates decorated with pools, waterfalls and creeklets sprinkling downward from the heights of the magnificent Min Shan Mountains. These features are due to springs emerging through the calcareous substrate.

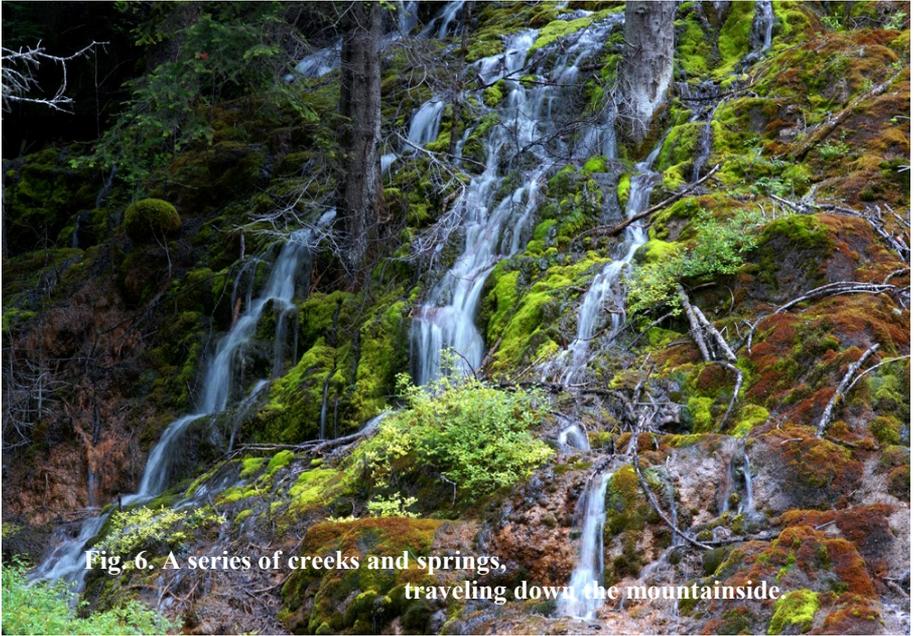


Fig. 6. A series of creeks and springs, traveling down the mountainside.

The clear turquoise pools and silvery waterfalls in particular attract tourists from around the globe (Figs. 6, 7). At the borders of these pools and their bog-like perimeters, one can often find slipper orchids as well as in drier adjacent mountain woodlands and edges.

Cypripedium fasciolatum (Fig. 8), is a very large, flower known since 1894.



Fig. 7. In places, the restrained pools creeklets flowing through and over the calcareous substrate, form travertine pools.

Normally it is a pale yellow colored slipper, and it is probably closest in appearance to our *Cypripedium kentuckiense*. I did not see this one in the wild but did see a cultivar of the type specimen at Dr. Perner's greenhouse. Dramatic strong maroon lines looking like venation appear on the dorsal and synsepals as well as upon the lateral petals. The latter show strong twisting bringing to mind a resemblance to our *Cypripedium parviflorum*. Due to its sweet scent, it reminds me more of our *Cypripedium makasin*. In contrast to all four of our yellow species, this one has a narrower pouch opening with a raised rim of triangular teeth.

Cypripedium farreri (Fig 9) is not as large as *C. fasciolatum*, though otherwise quite similar. However, there is less twisting to the lateral petals and the opening to the pouch sits as if it were on a short chimney. It was not found in Huanglong National Park but in the adjacent



Fig. 8. *C. fasciolatum*, a white form.



Fig. 9. *Cypripedium farreri*, profile aspect.

Wolong, which also has a population of the giant panda. Due to being a large sized flower closer to the substrate, it has a more dramatic presence. My back, joint and shortness of breath during the upper portions of these trails confirmed I was well above 3000 meters. It helped to stop frequently enjoying the lichen adorned trees and travertine pools.

In addition to the aforementioned yellow colored slippers, I was also able to see some of the

tiny darkly colored smaller species. One can distinguish these species in part by

whether the leaves have dark maroon spots or are unspotted and whether they are basal leaves flat to the substrate or upright and cauline.

Cypripedium bardolphianum has been known since 1916. It is an unspotted-leaf species found above 3000 meters; usually single flowered measuring a minute 1.5 to 2 cm in diameter. A dull yellow tiny pouch dotted or blotched in maroon is seated upon maroon petals and synsepals with a canopy by the dorsal sepal (Fig. 10).



Fig. 10. *Cypripedium bardolphianum*

My guide, Dr. Perner, described *Cypripedium sichuanense* in 2002. This tiny species is one of the maroon spotted leaf taxon. However, what looks like twin basal leaves is deceiving. One does sit flat on the substrate while the other is slightly higher up on the raceme stalk so technically it is a leaf-like bract. The lateral and dorsal parts as well as the pouch show a lot of very dull dark maroon but also yellowish-green. A distinguishing flower trait is the eyelash resembling ciliation along the margins of the flower parts (Fig. 11).



Fig. 11. *Cypripedium sichuanense*.

Cypripedium shanxiense, known since 1893 (Figs. 12, 13), was seen at its

southernmost Asian location in the Aba Autonomous Area near the border of Sichuan and Gansu. It has unique colors for a slipper ranging from ochre to coppery-brown. Doubles were not hard to find. Perner wrote on page 106 of his book, the interesting observation that shortly after a flower opens the pollen becomes semi-liquid and oozes onto the stigma with some 90% fruit set. Trails here were extremely steep and over 3500 meters. An interesting aside, the several Tibetans I met (park employees who worked on the trails and comfort stations) could not quite understand why I could not speak their



Fig. 12



Fig. 13. *Cypripedium shanxiense*

language. The area could use an army of these Tibetan women because all of the Chinese parks I visited were strewn with litter. The disrespect for nature is as common there as it is in some places here.

One final species was *Cypripedium guttatum* (Fig. 14) a small flowered species in white with generous madder blotches. We have this species in the Pacific Northwest in Alaska and some places in Canada.

There were a number of other members of this genus I did not get to see; Either the route of my trip or the timing limited my sightings to what I have mentioned. Based upon what I did see, I would certainly welcome the

chance to visit China again to see these species again as well as additional orchids new to me.



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<http://whc.Unesco.org>

Hunting the Broad-leaf Nodding Caps

Chuck Wilson
chuckwilson5@bellsouth.net

Why on earth would anyone in their right mind want to travel into the blistering mid-summer heat of Florida to look for a tiny and extremely rare plant that is located in a mosquito-infested and wild hog-riddled wetland miles from any road and which only blooms for a few hours? Maybe it was the sheer challenge of getting the first pictures of it in bloom in over four decades, especially after several intrepid individuals had tried and failed in recent years. Or maybe it was just because it is arguably the rarest terrestrial orchid in the US and Canada.

A few years ago, *Triphora amazonica* (syn. *T. latifolia*, common names: Broad-leaf nodding caps, the Amazonian Triphora) was discovered in a Florida State Park's property in Manatee County known now as the Little Manatee River South Fork Tract (Fig. 1). This location is currently the only known site in the USA for this taxon. As luck would have it, this location is miles from any public road, which requires a long hike to get to the plants unless a visitor has either a key or combination for one of the locks linked in series at the main visitor gate. There are two-track roads on the property which can be traversed by high-clearance vehicles.



Fig. 1. *T. amazonica* Schltr. (1925)
Image Credit: J. Heaton.

In addition to access difficulties, however, there is another complication. Like other *Triphora* species, the flowering of a group of mature plants in one area occurs simultaneously, a process known as synchrony and whose purpose presumably is to increase the chances of cross-pollination by a pollinator. The flowers last only a single day, opening in mid-morning and closing by mid-afternoon, but subsequent flowerings occur in intervals several days apart as the next group of buds reaches maturity. In other words, the chances of finding plants in flower on a given day are small.

Living several hundred miles away in Chattanooga, it was clear that I was going to need some help in tracking the status of the plants this past season. Jake Heaton, an avid and intrepid wild orchid hunter, lives within a two-hour drive of the site and planned to hunt for the orchids; he and I agreed that bicycles might be a practical means of getting from the locked gate to the bottomland forest area where the habitat was right for the orchids, i.e., a riparian wetland characterized by needle

palm (*Rapidophyllum hystrix*) and cinnamon fern (*Osmunda cinnamomea*).

Jake visited the property on July 11, 2016, and was able to find some of the little orchids, not in bloom but showing buds; an example is shown in (Fig. 1). For most of the roadways involved the bicycle worked well. A subsequent site visit by him a week later showed progress in the buds (Fig. 2) possibly coming into bloom in subsequent days, so I hit the road. The plan was to stay with a friend of mine in nearby Sarasota to avoid expensive motel bills while making consecutive daily site visits until the plants came into bloom. We had no idea how long this would take.

On Thursday, July 21, Jake and I drove to the South Fork and met at the main gate. However, for this visit we elected to take a “shortcut” to the plants by crossing a commercial agricultural property located about a mile west of the main gate on Florida highway 62.

After getting permission to cross the sandy property we began the drive, and my little Focus with its small tires soon got stuck in the fine “sugar sand.” Workers on the property helped me get unstuck and guided us on the best route to avoid the loosest sand. Jake’s car had somewhat larger tires and did not experience as much difficulty. At the north end of the commercial property we parked at another gate and hoisted our bicycles over it. This dramatically reduced the time and effort required to get to the plants, which was very welcome in the July heat and humidity. This time it appeared that some of the buds had elevated and enlarged slightly (see Fig. 2, the same plant shown in Fig. 1), giving us the impression that blooming could occur in the next few days. Wild hog damage was very evident and prevalent, surrounding the spots with groups of orchids which had (at least temporarily) escaped uprooting by the beasts. Jake and I both feared for the future of the tiny orchids at this site unless something could be done to reduce or eliminate the site destruction by wild hogs.

On the next morning, Friday, July 22, we met again at the main gate and drove to the nearby commercial property to again take the shortcut to the orchid site. This time we found more of the little plants, and to our great excitement it appeared that some of them had swollen buds that were opening. A few of them were even photogenic, with the flower being disproportionately large compared with the rest of the plant. One of the plants in bloom (Fig. 3) was the same one shown in the earlier photos.

Not all of the buds we saw appeared to be maturing at the same schedule, however, which made it clear that predicting when they will come into bloom is still problematic. In comparison, my own experience with the more common three-

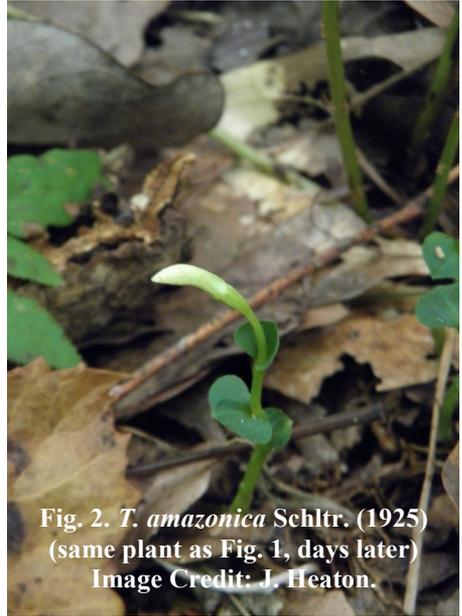


Fig. 2. *T. amazonica* Schltr. (1925)
(same plant as Fig. 1, days later)
Image Credit: J. Heaton.

birds orchid (*Triphora trianthophora*) is that individual plants progress to cyclical blooming in a fairly uniform manner, generally thought to be associated with a drop in night-time temperatures. However, no such thermal history was apparent in the mid-July heat of interior Florida, and numerous site visits in this and previous years have failed to define the blooming cycle. At this point it is safe to say that the “sloppy” synchrony exhibited by the broad-leaf nodding caps is not well understood and awaits future study by academics or interested and dedicated amateurs. For that matter, exactly how any plant species coordinates synchronous behavior is still a fascinating mystery.

Triphora latifolia Luer filius (1969) was thought to be endemic to Florida until James

Ackerman (1995) found that herbarium specimens from Puerto Rico matched the description. Subsequently (2000) he determined that the only detectable difference between it and *Triphora amazonica* was the middle lobe of the lip, which may be rounded in *T. latifolia* or acute in *T. amazonica*. Currently, *T. amazonica* is understood to range from Brazil to Florida in scattered locations, but like other rare species it is possible that additional specimens may demonstrate that disjunct populations are not all conspecific (Ackerman 2014). For example, compared with photographs from Florida, some internet pictures of *T. amazonica* show much more colorful flowers and decidedly more obvious leaf perfoliation. Also, Carl Luer noted that to his knowledge DNA work had yet to be done to allow genetic comparisons of geographically separated specimens to definitively establish taxonomic relationships. For this reason, he believes the proper designation for the Florida plants to be *T. latifolia* (personal communication, July 2016). Nevertheless, regardless of whatever name is assigned to it, this inconspicuous but very cute little orchid presents quite a challenge to a hunter.



Fig. 3. *Triphora amazonica*
Image credit: C. Wilson

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