

# The Native Orchid Conference **Journal**



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## ***Corallorhiza* and its Historical Background**

### **Part I: Etymology**

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The problem of different spelling of the generic names is known from several orchid genera. In most cases, however, there is one correct name and spelling, and perhaps a logical and often a simple explanation of the different spellings. This is only partially true for *Corallorhiza*. For this genus we know the spellings *Corallorhiza*, *Coralliorhiza*, and *Corallorrhiza*. For a long time it was questioned which spelling would be correct and three authors were mentioned in connection with the genus, Jean Jacques Chatelain (*Corallorhiza*), Abraham Gagnebin de La Ferrière (*Corallorrhiza* and *Rhizocorallon*) and Robert Brown (*Corallorrhiza*); often Albrecht von Haller also is mentioned as an author. Three of those authors were Swiss and were in close contact with each other. In this article, these three botanists are introduced and the history and taxonomy of *Corallorhiza* is explained.

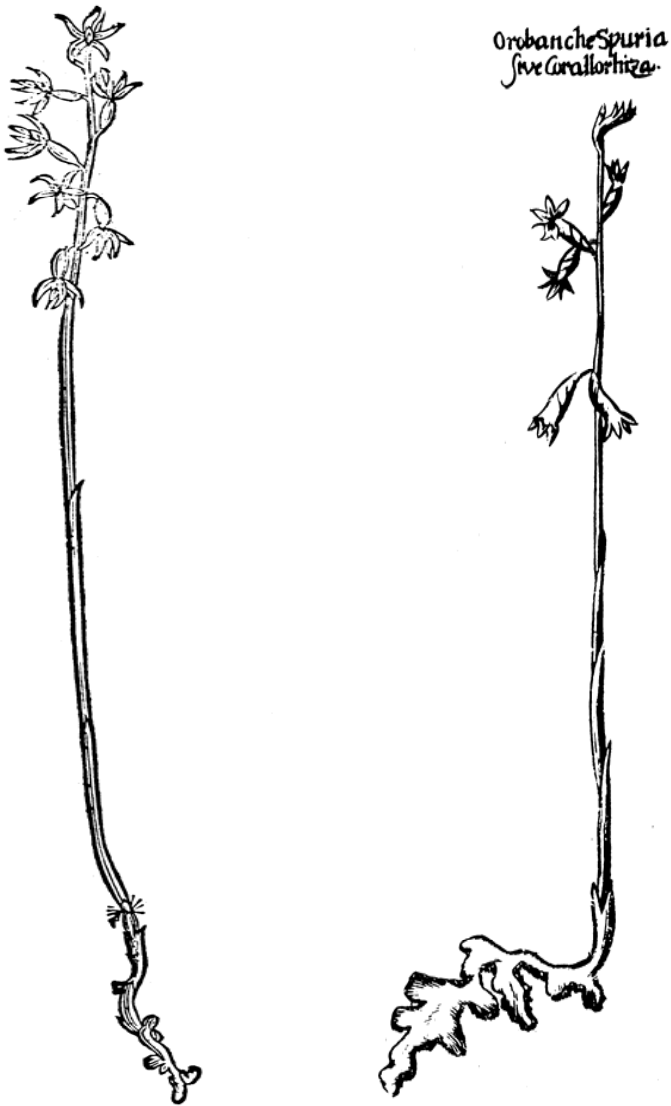
As a plant genus, *Corallorhiza* was known for a very long time. The first illustrations (Fig. 1) were published by Charles de L'Ecluse (also known as Carolus Clusius) in his very famous book *Rariorum Plantarum Historia* (L'Ecluse, 1601). At that time, long before Carl von Linne (also known as Linnaeus) and his approach to classification by consistently using binominal nomenclature, there was no uniform nomenclature for plants, and therefore such a system was not available for *Corallorhiza*. Carl von Linne (1753) named the plant *Ophrys corallorhiza* in 1753 - today known as *Corallorhiza trifida* - in his revolutionary publication *Species Plantarum* and listed different sources of older names. In his

Figure 1: One of the wood-cuts from *Rariorum Plantarum Historia* by Carl L'Ecluse (1601).



Figure 2. Illustration of *Orobanche sueonum radice coralloide*, flore albo from O. Rudbeck's *Campi Elysii* of 1702.

Figure 3. Illustration of *Orobanche spuria* sive *Corallorhiza* from Rupp's *Flora Jenensis* from 1718.



list we find besides his own earlier publications also names given by other botanists:

Orobanche radice coralloide

C. Bauhin (1560 – 1624) in 1623, *Pinax Theatri Botanici* p. 88.

Orobanche sueonum radice coralloide, flore albo (Fig. 2)

O. Rudbeck (1630 – 1702) in 1702, *Campi Elysi* 2:234, fig.16.

Orobanche spuria sive corallorhiza

H.B. Rupp (Rupp is an alternate surname for Ruppius; 1688 – 1719) in 1718, *Flora Jenensis* p. 284, t.2.

Neottia radice reticulata

C.von. Linne (1707 – 1778) in 1737, *Flora Lapponica* p. 315.

Neottia bulbis reticulatis

C.von. Linne (1707 – 1778) in 1745, *Flora Suecica* p. 743, and in 1744, *Acta Societatis Regiae Scientiarum Upsaliensis ad Annum* p.3 and 32.

While formal nomenclature is considered to begin with Linne's *Species Plantarum* (1753), it is fascinating to follow the nomenclatorial history of a European plant genus in the literature through the centuries.

The first person to use the name *Corallorhiza* explicitly before Linne (1753) was Rupp in his *Flora Jenensis* (Rupp, 1718) [on the plate we read *Orobanche spuria* sive *Corallorhiza* (Fig. 3)]. In fact these are two names, first *Orobanche spuria* which means *Orobanche* with spur, then sive which means 'or,' and second *Corallorhiza*. The illustrated plant has no relation with the genus *Orobanche* as it is accepted today, but the plant can be identified as *Corallorhiza*. In 1742, still before Linne, Haller (1742) also mentioned *Corallorhiza* in his *Enumeratio Methodica Stirpium Helvetiae Indigenarum* (Fig. 4) based on Rupp's publication. With the publication of *Species Plantarum* by Linne in 1753 the rules of botanical nomenclature changed to a strictly binomial system, Linne did not accept *Corallorhiza* as a genus of its own, he called *Corallorhiza trifida* in his publication *Ophrys corallorhiza*. After Linne's *Species Plantarum* it was decided that all plants would have at least a generic name and an additional specific epithet, both constituting the specific name. A repetition of the generic name in form of the specific epithet was not permitted in botany (it is permitted in zoology). Constructions such as *Corallorhiza corallorhiza* (Linne) Karsten are known as tautonyms and are not recognized. *Corallorhiza corallorhiza* (Linne) Karsten was described by Karsten (1881) on the basis of Linne's *Ophrys corallorhiza* and Gagnebin's genus *Corallorhiza*. The argument that this construction cannot be a 'real' tautonym because the generic name *Corallorhiza* is spelled with two 'r's and the epithet *corallorhiza* only with one 'r,' is weak. In fact both names, the generic name and the epithet are so similar that even with the different spelling the combination would be accepted as a tautonym and therefore be invalid. From this point of view the combination *Corallorhiza corallorhiza* (Linne) Karsten, described in 1881 by Karsten based on Linne's *Ophrys corallorhiza* is invalid. For exactly

Figure 4. Page 278 from *Enumeratio Methodica Stirpium Helvetiae Indigenarum* by Albrecht von Haller (1742).

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# PLANTAE PETALODEAE

*Alismatis generis, quod fuchius ophrys neminat* 23. Tab. Coll. p. 57.

*Pseudorchis bifolium* DOD. Cor. p. 231. Pempt. p. 242.

*Ophrys* CAES. L. X. c. 48. LUGD. p. 126.

*Ophrys bifolia* C. B. Baf. p. 25. MAGN. Char. p. 188. L. R. H.

*Bifolium majus* f. *ophrys major* quibusdam 1. B. III. p. 533. RAJ. p. 1232. syn. III. p. 385.

*Bifolium majus vulgare* H. OX. III. p. 489.

8 Foliis ternis CAM. Hort. c. 8. Baf. p. 25. L. R. H.

In paludosis sylvae Bremgarten. Circa Mühlenen ad radices M. Neff uberrime. c. B. in Muscio.

Radix est glomer fibrillarum teretium, connatarum. Folia ad caulem, ad aliquot super terram pollices, duo, ovata. Reliquis culmus nudus gerit longam spicam florum; Horum brevis pediculus est, praeter ovarium, & huic pene aequale foliolum. Flos ex cucullo, inaequalibus petalis facto, & longo labello, bicruri, cornibus retis, viridis totus, solidiusculus.

Pro insigni vulnerario habetur.

*Nidus avis*!

## 2. OPHRIS aphylla.

*Satyrion novum* TRAG. p. 785. cum icone.

*Orobancha nostra* GESN. Tab. Coll. p. 24.

*Nectia* DODON. p. 553.

*Pseudoleimodorum* CLUS. Hist. p. 270. bona icon, non autem descriptio.

*Nidus avis* ex specibus satyrii abortivi, orchis abortiva LOBEL. p. 195. eadem icon.

*Nidus avis* LUGD. p. 1073. HORT. AICHST. Aest. Ord. IV. T. 4. f. 3. L. R. H. VAILL. RAJ.

Synopf. III. p. 381.

*Orchis abortiva* C. B. Baf. p. 24. f. 14. r.

*Orobancha aphylla* nidus avis 1. B. II. p. 782. cum icone aliena RAJ. p. 1228.

*Orobancha radice e foliis compacta major flore obsoleto* H. OX. III. p. 503. T. 16. f. 18.

Pasum in Helvetia. c. B. in M. Grenzach; ubi in Pinastreto legi. Tum circa Bernam in sylvae Bremgarten versus Drakau, in nemore Doffen, in M. Fulconario &c.

Radix uti priori, est fasciculus intricatus fibrarum cylindricarum, carnosarum. Caulis pedales & ultra, squamis quibusdam rufis vestiti, aphylli. Spica longa. Cucullus quinquefolius, uti priori, & labelum bicorne, sed corniculis extroflexis flexis, omnia lignei coloris, odore gravi. Staminum machina paululum diversa. Fit nempe apice convexo, interne biloculari, quem squama elastica sustentat, & ipsa scapi bipartito margine fulta. In hac planta aditus ad tubam apertissimus est.

## L I M O D O R U M.

TOURN. T. T. 250. bene.

*Nidus avis* facies aphylla est: sed integro labello differt, & calcare longo. Ab Orchidibus fabrica flaminum, qua convenit cum proxime antecedentibus.

*Orchis abortiva*

## 1. LIMODORUM.

*Limodorum austriacum* CLUS. Pann. p. 241. RAJ. Syn. III. p. 383. AMBR. TOURN. out. de Par. p. 486. L. R. H. GARID. p. 286. LEMERT. p. 314. VAILL. p. 117. LIND. p. 44.

*Pseudoleimodorum* CLUS. Hist. p. 270. descriptio, non autem icon.

*Orchis abortiva violacea* C. B. KNAUT. p. 74.

*Orobancha & nidus avis affine pseudolimodorum austriacum violaceum* 1. B. II. p. 781. RAJ. p. 1229.

*Nidus avis purpurea* PARK. p. 1361.

*Nidus avis flore & caule violaceo* MERR. p. 83.

*Orobancha radice compacta major flore violaceo* H. OX. III. p. 503.

Ex valle Rivieria comitatus Ncoconensis adlata est 1. Helvet. n. 24.

Caulis, ut tota planta, violaceus, cubitalis, aphyllus, paucis squamis vagis adpressus. Spica longa, rara. Flores erecti, cauli adpressi. Cucullus de more generis. Labelum latum, simplex, calcar retrorsum conicum projicit, Machina flaminum Helleborines.

## C O R A L L O R H I Z A.

RUPPIL.

NEOTTIA LINNAEI n. 685.

*Ophrys corallorhiza*

Audio nasci in convallibus Juvae M. circa Ferriere: sed de nondum visa planta non pronuncio.

## PLANTAE

the same reasons also *Corrallorhiza corallorhiza* (Linne) MacMillan is invalid, MacMillan (1892) published this combination, again based on Linne's *Ophrys corallorhiza*; obviously he was not aware of the earlier publication by Karsten (1881).

The combination *Neottia corallorhiza* was made by transferring *Ophrys corallorhiza* to *Neottia* by Kuntze (1891), and the use of the same epithet *corallorhiza* in another genus is therefore only possible if the new generic name is not *Corallorhiza*. If the generic name is *Corallorhiza* then, in order to avoid a tautonym or at least an “almost” tautonym, the epithet cannot be *corallorhiza*. Linne’s concept of *Ophrys corallorhiza* is not acceptable from a modern systematic point of view, and the species then belongs in its own genus and has no relation to *Ophrys*. For reasons of priority the generic name first used after Linne in 1753 would be valid; this is *Corallorhiza* Gagnebin (Gagnebin, 1755). As explained above, in order to avoid a tautonym another epithet had to be used. Again, for reasons of priority the first epithet used for this species after Linne in 1753 and different from the epithet *corallorhiza* would be valid. This leads to *Corallorhiza trifida* Chatelain (Chatelain, 1760). Hence it is clear why *Corallorhiza trifida* is the valid name for this species; it is also clear that Chatelain named in 1760 the first species of the genus but not the genus itself. The genus *Corallorhiza* was described five years earlier by Gagnebin. Unfortunately Gagnebin spelled his *Corallorrhiza* with two ‘r’s. This was the reason for the interpretation by Karsten and later by MacMillan that the small difference in the spelling of generic name and epithet would allow acceptance of the combination *Corallorrhiza corallorhiza* without creating a tautonym. From a strictly formal point of view both authors were right, but from a practical point of view it certainly looks different. Another problem was the description of *Corallorhiza innata* by Robert Brown in 1813, this description was accepted by many authors as the valid first description of the genus *Corallorhiza* because the older publications by Gagnebin and Chatelain have been considered as not sufficiently clear. The species *Corallorhiza trifida* Chatelain is accepted by the same authors, and as observed by Freudenstein (1997), this leads to the impossible situation that the generic description was published 53 years later than the first species.

In order to finally end all these discussions, Freudenstein (1996) proposed to formally conserve the genus *Corallorhiza*, spelled with one ‘r’ and with Gagnebin as author. In this case, to ‘conserve’ means to settle the priority of *Corallorhiza* Gagnebin against all other older generic names. Unfortunately this solution also is not free of problems. Before Linne, Haller (1745) mentioned in the second edition of Rupp’s *Flora Jenensis* another generic name (*Rhizocorallon*) for *Corallorhiza*. But this name is pre-Linnean and predates the beginning of the formal nomenclature. Fortunately nobody since Gagnebin (Gagnebin, 1755) has used this generic name again or transferred *Corallorhiza* species to *Rhizocorallon*. Besides this, Gagnebin listed *Rhizocorallon* after *Corallorhiza*, and he may have had the intention to declare *Rhizocorallon* as a synonym for *Corallorhiza*. Both names are based on type specimens.

Furthermore, the spelling *Coralliorhiza* was used for the first time in 1864 by Paul Acherson in his *Flora der Provinz Brandenburg*. Because Ascherson

used Linne's *Ophrys corallorrhiza* as basionym, *Coralliorhiza* must be treated as a synonym for *Corallorrhiza* Gagnebin.

This long explanation is necessary to understand why we have different spellings of the generic name *Corallorrhiza* and why we find different authors in literature. Given below is a chronologically (year is listed first) arranged nomenclature (incomplete listing of the pre-Linnean literature):

- 1601 *Dentaria coralloide radice* (L'Ecluse in *Rariorum Plantarum Historia*)  
One of the oldest illustrations of *Corallorrhiza*.
- 1718 *Orobanche spuria* sive *Corallorrhiza* (Rupp in *Flora Jenensis*)  
First mention of *Corallorrhiza*, invalid because published before *Species Plantarum*.
- 1742 *Corallorrhiza* (Haller in *Enumeratio Methodica Stirpium Helvetiae Indigenarum*)  
Mention of *Corallorrhiza* based on Rupp (1718), also invalid because published before *Species Plantarum*.
- 1744 *Corallorrhiza* (Kramer in *Tentamen Botanicum*)  
Mention of *Corallorrhiza* based on Rupp (1718), also invalid because published before *Species Plantarum*.
- 1745 *Rhizocorallon* (Haller in *Flora Jenensis*, ed.2)  
First mentioning of *Rhizocorallon* as generic name, also invalid because published before *Species Plantarum*.
- 1753 *Ophrys corallorrhiza* (Linne in *Species Plantarum*)  
Beginning of the binomial nomenclature, first 'valid' name for *Corallorrhiza*.
- 1755 *Corallorrhiza* and *Rhizocorallon* as genera (Gagnebin in *Acta Helvetica Physico-Mathematico-Anatomico-Botanico-Medica*)  
First description of the genus *Corallorrhiza*; spelling with two 'r's; *Rhizocorallon* as synonym.
- 1760 *Corallorrhiza trifida* (Chatelain in *Specimen Inaugurale de Corallorrhiza etc.*)  
First description of the type species, spelling of the genus with one 'r.'
- 1768 *Epipactis corallorrhiza* (Crantz in *Stirpium Austriacarum*)  
New combination; transfer of *Ophrys corallorrhiza* to *Epipactis*.
- 1793 *Helleborine corallorrhiza* (Schmidt in *Flora Boemica*)  
New combination; transfer of *Ophrys corallorrhiza* to *Helleborine*.
- 1795 *Ophrys corallorrhiza* (Haller in *Icones Plantarum Helvetiae*)  
Haller accepts Linne's *Ophrys corallorrhiza* and lists Rupp's *Orobanche spuria* sive *Corallorrhiza* as synonym.



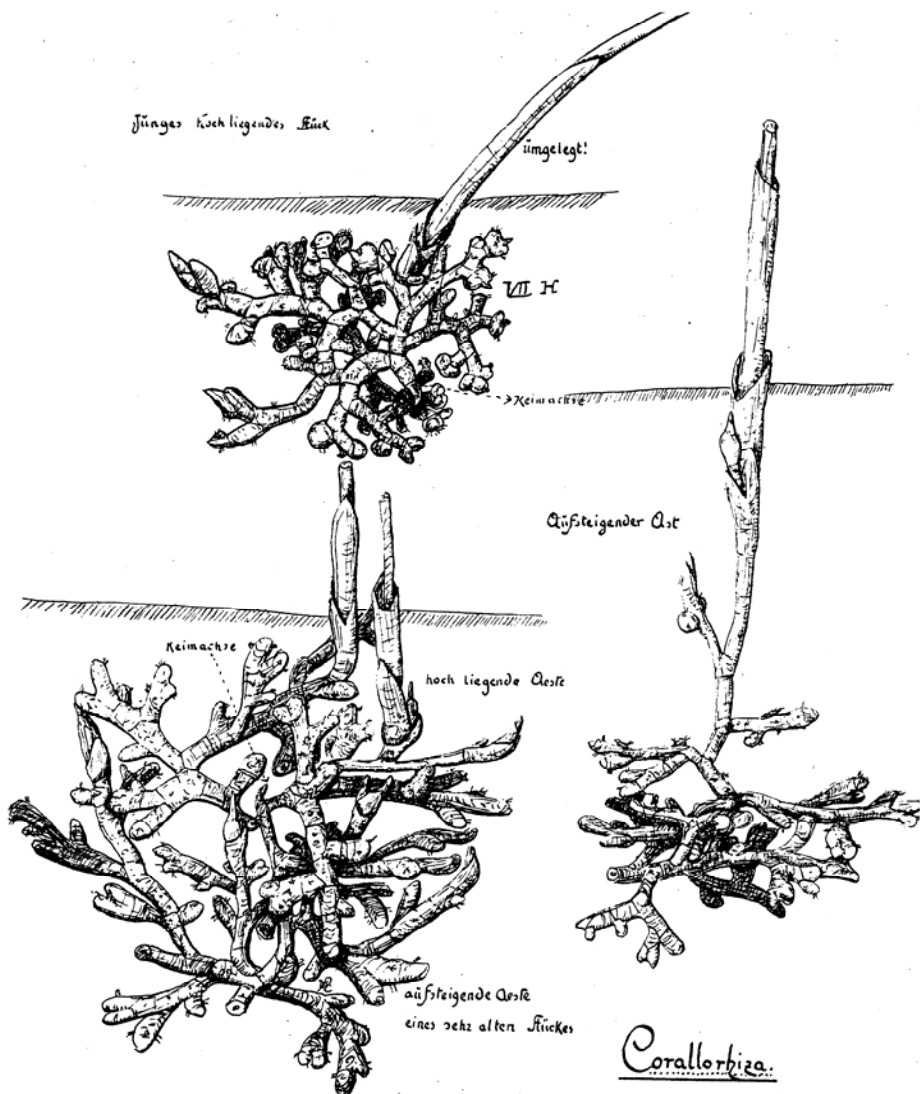
- 1800 *Cymbidium corallorhizon* (Swartz in *Kongl.Vetenskaps Academiens nya Handlingar*)  
New combination; transfer of *Ophrys corallorhiza* to *Cymbidium*.
- 1810 *Epidendrum corallorhizon* (Poiret in *Lamarck, Encyclopaedia Methodique etc.*)  
New combination; transfer of *Ophrys corallorhiza* to *Epidendrum*.
- 1813 *Corallorrhiza innata* (Brown in *Hortus Kewensis or a Catalogue of the Plants Cultivated in the Royal Botanic Garden at Kew*).  
First description of the second species of the genus, and invalid second description of the genus *Corallorhiza*.
- 1864 *Coralliorhiza* (Ascherson in *Flora der Provinz Brandenburg*)  
First mention of the spelling *Coralliorhiza*.
- 1881 *Corallorrhiza corallorhiza* (Karsten in *Deutsche Flora, Pharmaceutisch-medicinische Botanik, ein Grundriss der Systematischen Botanik zum Selbststudium fuer Aerzte, Apotheker und Botaniker*).  
New combination; transfer of *Ophrys corallorhiza* to *Corallorrhiza*, and creation of an 'almost' tautonym.
- 1891 *Neottia corallorhiza* (Kuntze in *Revisio Generum Plantarum*)  
New combinations; transfer of all species of *Corallorhiza* to *Neottia*.
- 1892 *Corallorhiza corallorhiza* (MacMillan in *The Metaspermae of the Minnesota Valley*)  
New combination; transfer of *Ophrys corallorhiza* to *Corallorhiza*.
- 1996 *Corallorhiza* Gagnebin nom.& orth.cons. (Freudenstein in *Taxon*)  
Final clarification of spelling and authorship of *Corallorhiza*.
- 1997 A monograph of *Corallorhiza* (Freudenstein in *Harvard Papers of Botany*)  
First comprehensive revision and monograph of the genus *Corallorhiza*.

In about 250 years after Linne's *Species Plantarum*, *Corallorhiza* was integrated into no fewer than seven different genera, not counting the different spellings of *Corallorhiza* itself. Interestingly, all authors used Linne's *Ophrys corallorhiza* as basionym for nomenclature changes. The spelling of the name was ever changing, and even the same author changed it; Haller spelled *Coral-lorhiza* once with one 'r' and the next time with two 'r's, but mentioned both times the same literature citation. This validates that it is correct to interpret *Corallorrhiza corallorhiza* (Linne) Karsten de facto as tautonym and therefore to declare the combination as invalid based on the rules of botanical nomenclature.

*Corallorhiza* species are leafless, terrestrial, and holomycotrophic plants (meaning that they rely primarily on mycorrhizal fungi to obtain nutrients and

carbon) (Fig. 5; Figs. 6, 7 on page 15). The culture of *Corallorhiza* and other mycotrophic orchids seems to be difficult. Information about the pollination ecology also is limited. Some species are at least partially autogamous, while others are partially or entirely cleistogamous.

Figure 5. Drawing of the root system of *Corallorhiza trifida* from *Botanisches Archiv* by A. Fuchs and H. Ziegenspeck (1927, p. 417, fig.31).



Based on Dressler's (1981, 1993) classification, *Corallorhiza* belongs to the *Epidendroideae* and together with *Aplectrum*, *Cremastra*, and *Oreorchis* in the subtribe *Corallorhizinae*. The opinions about the number of species belonging to *Corallorhiza* are rather different from author to author; probably there are about 10 species and a few varieties. These are distributed in the Northern Hemisphere, mainly in northern and central America with the exception of *Corallorhiza trifida* (Figs. 8, 9; page 15), which is also distributed in northern Europe and northern Asia. The variability in color among species of *Corallorhiza* is high. Plants with white or yellow or even much more intensely colored flowers have been found quite often. Whether these plants should be treated as varieties or forms is still debatable.

### **Author's remarks:**

Many of the cited old botanical publications are extremely difficult to obtain. Such books are generally seldom available in libraries, and many of them have been printed only in small numbers and over time some copies have been lost. The remaining books belong today to the guarded treasures of libraries and it is easy to understand that the possibilities to make reproductions of any kind have become very limited, if not impossible. In the case of Jean Jacques Chatelain we know according to Stafleu (*Taxonomic Literature*) of only one copy in the British Museum and a photocopy in New York. Additionally I found one copy in the library of the University of Basel which obviously Stafleu overlooked.

We don't know whether there are other copies in the estates of Gagnebin or especially Haller. Fortunately the publications by Haller are more or less complete and often more than one copy is available in various libraries in Bern. Unfortunately some of his works are in rather poor condition. This is mostly because pulp was used for producing the paper, and over time the resulting free acids have virtually disintegrated the paper. De-acidification of the paper and salvage of such books is technically possible but difficult, time consuming, and expensive. We have to fear that chances are rare for de-acidification of documents or books worth saving.

One solution to this problem is scanning of such important books, so at least the content can be saved in electronic form for future generations. The libraries generally have limited time, human resources, and infrastructure for such undertakings, and therefore we will have to accept that many of these bibliophilic treasures will become less accessible over time. Of many of these books – not of Chatelain's – there are microfiches existing, but unfortunately the quality is generally rather poor.

Because of the very generous assistance and the permission of the library of the Conservatoire Jardin Botanique Chambesey in Geneva and the library of the town and university in Bern, I had the possibility to make photocopies or slides

of acceptable quality. Nevertheless the illustrations printed in this paper are leaving - concerning quality - some wishes open. In most cases they are reproductions of photocopies. In spite of this fact, this article gives the possibility to show at least some of the drawings and illustrations from those old and famous botanical books.

## Literature Cited:

- Ascherson, P. 1864. Flora der Provinz Brandenburg, p. 697.  
 Bauhin, C. 1623. Pinax Theatri Botanici p. 88.  
 Brown, R. 1813. In Hortus Kewensis or a Catalogue of the Plants Cultivated in the Royal Botanic Garden at Kew.  
 Chatelain, J.J. 1760. Specimen Inaugurale de Corallorhiza quod Jussu et autoritate gratiosi medicorum ordinis pro summis in inclyta Rauracorum Universitate honoribus et privilegiis doctoralibus legitime obtinendi p. 8.  
 Crantz, H.J.N. 1768. Stirpium Austriacarum p. 464.  
 Dressler, R.L. 1981. Orchids: Natural History and Classification.  
 Dressler, R.L. 1993. Phylogeny and Classification of the Orchid family.  
 Freudenstein, J.V. 1996. Taxon 45:695 – 696.  
 Freudenstein, J.V. 1997. A monograph of Corallorhiza. Harvard Papers of Botany 10:5 – 51.  
 Fuchs, A. and H. Ziegenspeck. 1927. Botanisches Archiv, Zeitschrift für die gesamte Botanik 18:378 – 475.  
 Gagnebin, A. 1755. Acta Helvetica Physico-Mathematico-Anatomico-Botanico-Medica 2:56 – 75.  
 Haller, A.von. 1742. Enumeratio Methodica Stirpium Helvetiae Indigenarum, p. 278.  
 Haller, A.von. 1745. Flora Jenensis Henrici Bernardi Ruppil, ed. 2, p. 301.  
 Haller, A.von. 1795. Icones Plantarum Helvetiae, edition 1, p. 54 – 55, t. 48.  
 Karsten, G.K.W.H. 1881. Deutsche Flora Pharmaceutisch-medicinische Botanik, ein Grundriss der Systematischen Botanik zum Selbststudium fuer Aerzte, Apotheker und Botaniker, fasc. 5:448.  
 Kramer, J.G.H. 1744. Tentamen Botanicum p. 68.  
 Kuntze, O. 1891. Revisio Generum Plantarum 2:674.  
 L'Ecluse, C.de 1601. Rariorum Plantarum Historia, p. 270.  
 Linne, C.von. 1737. Flora Lapponica p. 315.  
 Linne, C.von. 1744. Acta Societatis Regiae Scientiarum Upsaliensis ad Annum 1740, p. 3 and 32.  
 Linne, C.von. 1745. Flora Suecica p. 267.  
 Linne, C.von. 1753. Species Plantarum 2:945.  
 MacMillan, C. 1892. The Metaspermæ of the Minnesota Valley p. 174.  
 Poiret, J.L.M. 1810. In J.B.P.A.M.de Lamarck, Encyclopaedia Methodique, Botanique suppl. 1:377.  
 Rudbeck, O. 1702. Campi Elysii 2:Fig. 9 (p. 232) and Fig. 16 (p. 234).  
 Rupp, H.B. 1718. Flora Jenensis (Edition 1) p. 284, t. 2.  
 Schmidt, F.W. 1793. Flora Boemica 1:79.  
 Swartz, O. 1800. Kongl.Vetenskaps Academiens nya Handlingar 21:202 – 254.

**Editor's note: This is Part I of a 3-part series. Part 2: 'The Early Scientists' will appear in the next issue of NOCJ.**

This article was adapted from a previously published version:

Jenny, R. 2002. *Corallorhiza*: Die Gattung und ihr geschichtlicher Hintergrund (The genus and its historical background). Die Orchidee, Jahrgang 53, 5. September 2002, Beiheft 7.

## **Federally Threatened *Platanthera praeclara*: a Model for Plant Conservation**

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*Platanthera praeclara* Sheviak and Bowles (western prairie fringed orchid; Fig. 1a, 1b; page 16) was listed by the U.S. Fish and Wildlife Service (USFWS) in 1989 as threatened under the Endangered Species Act. A recovery plan which listed the recovery criteria was developed and approved in 1996. Since the listing of the species, many efforts have been made at individual, state, and federal levels to study, maintain, and enhance the remaining populations while searching for new populations. Once every few years, persons involved in research and/or management of *P. praeclara* are brought together to exchange information and discuss the future efforts for conserving the taxon.

For the 2004 meeting, several invited and volunteer guests met at a lovely lodge (Fig. 2) at Eugene T. Mahoney State Park in Ashland, Nebraska on 17

Figure 2.



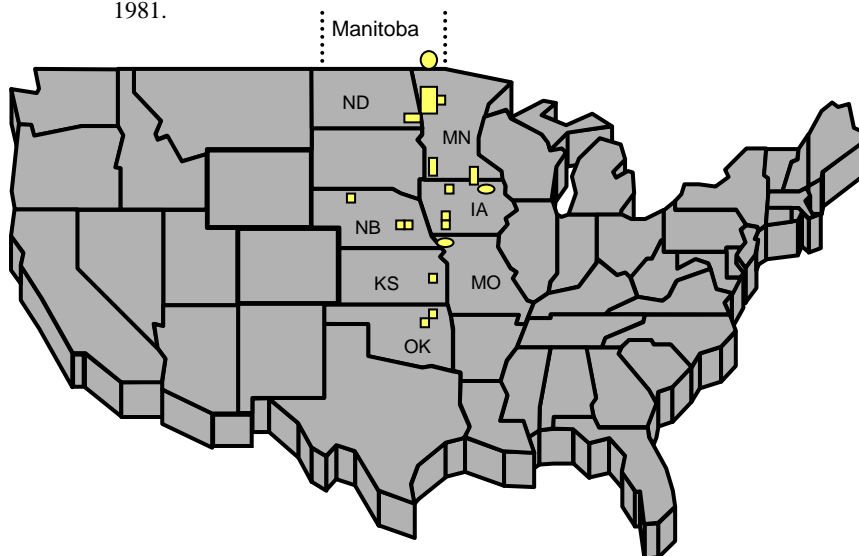
and 18 November. Phil Delphey, a USFWS wildlife biologist (Twin Cities Field Office, Minnesota) working on endangered species recovery in the Midwest, organized this meeting, which was the sixth of its kind since 1991. Ap-

proximately 50 attendees represented the natural range of the species extending from Manitoba, Canada southward into Oklahoma (historic sites), USA (Fig. 3).

Phil started the meeting by welcoming the researchers, resource managers, and state and federal botanists/ecologists who filled the room. Most of this audience were thoroughly familiar with the species and therefore, introductory information was not necessary. Phil then continued with his presentation and described his progress in documenting and monitoring recovery efforts throughout the natural range of *P. praeclara*. He has developed a database by compiling detailed information about all known, extant element occurrences in

six states in the US. Along with other information, this database includes flowering plant counts, ownership of the sites, level of protection, and management practices at the sites, threats to specific element occurrences, and spatial information which can be incorporated into Geographic Information System software. The intent is to update this valuable tracking tool (the database) annually, or as new information becomes available.

Figure 3. Map of United States (and part of Manitoba, Canada) showing the natural distribution of *Platanthera praeclara* Sheviak and Bowles (western prairie fringed orchid). Plants have not been observed in Oklahoma (OK) since 1981.



Next several presentations included updates on the current distribution, status, and conservation efforts in Manitoba, Minnesota, North Dakota, Iowa, Nebraska, Kansas, and Missouri. Christie Borkowsky substituted for Jason Greenall (coordinator/ecologist for Manitoba Conservation Data Centre of Manitoba Conservation) and described the population in Manitoba as ‘largest anywhere’ within the natural range of the species. In 2003, 23,530 flowering stems were observed in and around the Manitoba Tall Grass Prairie Preserve. *P. praeclara* is listed as endangered in Manitoba and under Canada’s Species at Risk Act (SARA), which has mandated the development of a National Recovery Strategy to be completed by June 2006.

Nancy Sather from Minnesota Department of Natural Resources (MNDNR) indicated that the orchid was, at one time, documented in at least 18 counties in the state but occurs today only in eight. The most recent count statewide was 3,504 flowering plants, although this number has been as high as 13,891 over the last 20 years. The Nature Conservancy and MNDNR have collaborated to obtain 19-year demographic data for four sites, 10-year data for one site, and

nine-year data for an additional two sites. She indicated that the largest populations of *P. praeclara* in northwestern Minnesota are highly suitable research sites for researchers nationwide and described several past and current research projects. Nancy also reminded everyone that appropriate research permits should be obtained prior to collection of any part of a listed species.

A report by Darla Lenz [U.S. Forest Service (USFS)] and Karen Kreil (USFWS) followed and indicated that two southeastern counties in North Dakota harbor large populations of the orchid (highest known number of flowering plants = approximately 12,860), and 90% of the orchids are located at USFS's Sheyenne National Grassland. Sites in North Dakota also serve as suitable research locations for studies of management strategies, pollination biology, inventory and demography, and hydrology.

John Pearson (Iowa Department of Natural Resources), Tom Nagel (Missouri Department of Conservation), Gerry Steinauer (Nebraska Game and Parks Commission), and Craig Freeman (R.L. McGregor Herbarium and Kansas Biological Survey) then spoke on the distribution and status of the orchid in their respective states. In these states, populations are small, fragmented, and range from one to 300+ individuals. While personnel from government agencies in Iowa, Missouri, and Nebraska survey and monitor the known sites, systematic surveys for the orchid have not been conducted in Kansas since 1988. The state also does not offer legal protection to the species. One common theme among the rangewide status reports was that, in general, extant populations of *P. praeclara* can vary greatly from year to year in size and/or number of flowering plants.

Before the lunch-break, we also heard a brief, unplanned report from a USFWS representative from Oklahoma, where *P. praeclara* has not been observed since 1981. Although extensive surveys have not been conducted recently, the Nature Conservancy has acquired some historic sites and efforts are underway to identify element occurrences.

After lunch, Jyotsna Sharma (University of Florida) started off the session on ecology by describing the mycorrhizae associated with different phenological stages of *P. praeclara*. In populations across Minnesota and Missouri, *Ceratophora* strains were obtained most frequently. Furthermore, only a *Ceratophora* strain induced both germination and seedling development among seeds cultured *in vitro*. She emphasized the importance of studying orchid mycobionts because of the very close, and sometimes very specific, relationship between orchids and their fungal associates. The second part of this one-hour talk described the genetic variation, as ascertained by protein electrophoresis to resolve 13 loci, within and among 8 populations across Minnesota. Smaller populations had fewer alleles per polymorphic locus, fewer polymorphic loci, and lower expected heterozygosity. Along with a more diverse allelic structure, some larger populations in Minnesota also harbor unique alleles. The next two presentations addressed quantification of suitable habitat for *P.*

*praeclara* in light of soil characteristics and hydrology. Phil Gerla (University of North Dakota) presented preliminary results from a study of landscape and hydrological features at the Pembina Trail occurrence in Minnesota. By surveying microtopography, tracking orchid patch rainfall, monitoring soil moisture, and characterizing seasonal groundwater flow, the researchers are attempting to identify the effect of these factors on plant occurrence. Carolyn Hull Sieg (USFS, Flagstaff, Arizona) then discussed results from her projects with Paige Wolken (USFWS) and Steve Williams (University of Wyoming). By using their model based on vegetative and edaphic habitat of *P. praeclara* in southeastern North Dakota, they were able to correctly classify 87% of 38 swales as suitable (with orchids) or unsuitable (devoid of orchids).

Because the persistence and genetic make-up of a species also depend on its mating system, subsequent talks about pollinators of *P. praeclara* were most appropriate. Dave Ashley (Missouri Western State College) summarized his persistent, and often amusing, attempts to capture and study the night-flying pollinators of the species at three sites in northwestern Missouri. By using mercury vapour lamps and blacklights, he has thus far confirmed four sphingid species as flower visitors. Pollinia, however, were observed only on *Paratraea plebeja*. Christie Borkowsky (Manitoba Conservation) informed us of her discoveries at the Manitoba Tall Grass Prairie Preserve, where *Hyles gallii* was identified as a pollinator along with some other previously known sphingid hawkmoths. A team from North Dakota State University (Marion Harris, Kristina Fox, Gerry Fauske) and USFS (Darla Lenz) also captured a new pollen vector, *Sphinx eremitus*, for *P. praeclara* at the Sheyenne National Grasslands. Paul Johnson (South Dakota State University) finished off the pollination session by reporting his observations from Pipestone National Monument in Minnesota. By using different types of traps and direct observation, he documented the hawkmoths previously known as pollen vectors from other parts of the range. He also observed other arthropods such as spiders, ants, and gnats visiting the flowers, but none was identified as a vector. Although ants and bees are suspects for stealing nectar by chewing the swollen ends of the nectar spur.

All sessions were very informative and also allowed time for questions and brief discussions. Unfortunately, I had to keep a close eye on the watch as the day wound down. Because I had to return to Florida for a faculty retreat scheduled for the next day, I reluctantly left the conference near the end of the first day. (Thanks to Phil Delphey for booking me on the latest flight out of Omaha, which enabled me to attend most all talks on the first day.)

Based on my discussions with the attendees, information printed in the program, and abstracts submitted by the authors, the first day concluded with a roundtable discussion of status and ecology of the species. The roundtable discussion was preceded by two presentations on phenological development of *P. praeclara*: one by Nancy Sather (MNDNR) and the other by a team from



Figures 6 - 9 from 'Corallorhiza and its Historical Background' by R. Jenny.

Figure 6. *Corallorhiza striata*; Photo: R. Jenny

Figure 7. *Corallorhiza maculata*; Photo: R. Jenny

Figure 8. *Corallorhiza trifida*; Photo: J. Rueger

Figure 8. *Corallorhiza trifida*; Photo: J. Rueger



Figure 1 from ‘Federally Threatened *Platanthera praeclara*’ by Jyotsna Sharma. *Platanthera praeclara* Sheviak and Bowles grows in mesic to wet-mesic tallgrass prairies in the Midwest. **(1a)** A cluster of plants growing in close vicinity of each other. **(1b)** close-up of a flower. Nectar spurs, seen in the background, can be up to 50 mm long.





Figures 1 - 4 from ‘The “Hand of Man”’ by David McAdoo.



Figure 1. Hillside behind the grocery store.



Figure 2. Hillside view from the edge of the parking lot.

Figure 3. Close-up of flowers of *Spiranthes cernua*.

Figure 4. Plants of *Spiranthes cernua*.

Photos: David McAdoo





Figures 1, 2, 4, and 6 from 'Orchids in New Hampshire, Maine, and Vermont' by Shirley Curtis.

Figure 1. *Calypso bulbosa*

Figure 2. *Isotria medeoloides*

Figure 4. *Corallorhiza maculata* var. *flavida*

Figure 6. *Cypripedium arietinum*

Photos: Shirley Curtis



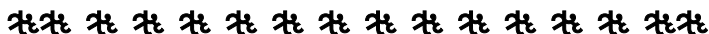
National Park Service (Gary Wilson and Craig Young) and University of Missouri (Adnan Akyuz). The abstract indicates that the mean number of flowers per inflorescence did not vary over the monitoring period, but mean height of plants fluctuated over the years.

The presentations scheduled for 18 November were classified under three categories: 1) Monitoring and Population Viability Assessment; 2) Management of Populations and Threats to the Species, and 3) Reintroduction, Propagation, and Hand Pollination. A brief outline of the topics reported on the second day follows. Bill Watson of Iowa summarized 3-year population monitoring and management at seven western sites in Iowa by indicating in his abstract that flowering and capsule formation appeared to positively correlate to high spring/early summer precipitation. Nancy Sather reported results from 18-year demographic monitoring at sites in Minnesota. Talks in the second session were related to the effects of fire, mowing, flooding, and grazing on habitat, flowering, and fruit set in Minnesota, Nebraska, and North Dakota. The remaining presentations in this session reported the effects of invasive plant control methods on *P. praeclara*. Some aggressive plants of Midwestern prairies include *Euphorbia esula* and *Phalaris arundinacea* and chemical and biological methods for their control are being investigated. The final session included reports on structural biology and propagation of *P. praeclara* from one isolated population in Nebraska and effects of hand pollination at one site in Minnesota.

A wide variety of relevant topics was covered over these two days, and Phil did a tremendous job in bringing the group together. Speakers discussed subjects ranging from distribution and status of the species across the range to population biology, ecology, and strategies to manage extant populations. This meeting was different from our previous meeting in 2001 which was held in the middle of July and coincided with anthesis among *P. praeclara* in northwestern Minnesota. A field trip to the nearby prairie preserves was held after the presentations and this allowed attendees to observe ongoing research and monitoring efforts. While the timing of the 2004 conference (mid November) was not suitable for a field trip, the meeting was just as informative and productive.

I recall when I first began working with *P. praeclara* it was described to me as a 'political hot potato' to indicate how selection of land management practices in different states was delimited more by politics than by what was in the best interest of the species. But at events like the above-mentioned meeting, it becomes apparent that the personnel involved in research and management are driven primarily by a quest to understand the biology and ecology of the plant, and not so much by the political interests that might exist. It also is apparent that an open exchange of scientific information relevant to conservation of *P. praeclara* can only be beneficial to the overall effort to protect, preserve, and conserve the species. Thanks to the concerted efforts rangewide, this orchid

now has become a poster-child for both orchid conservation and for prairie restoration and conservation, and is an excellent model for conservation of rare and endangered plants everywhere. *P. praeclara* conservation meetings truly exemplify the value of exchange of information among researchers, administrators, and resource managers.



## The “Hand of Man”

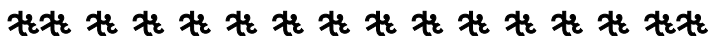
David R. McAdoo  
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Over the years there have been many articles written about the impact that humans have had on orchid habitat and populations. There is no question that plowing midwestern prairies into wheat fields, strip-mining for coal in the mountains of eastern Kentucky, or draining the costal plains of North Carolina for golf courses are examples of the negative. But believe it or not, there are times when the “hand of man” can help provide a habitat that encourages our native orchids to grow. This is the case in an area in North Carolina near Grandfather Mountain.

About six or seven years ago the side of a small mountain was cut away in order to make room to build a shopping center. The cut-away slope behind the grocery store that was built there is a hundred feet or so high.

I had been told by a friend that this hillside was so covered with *Spiranthes cernua* that when he first saw it he thought that there was frost on the ground! In 2003 we had a great year of rain after several years of drought, which led to profuse flowering at other sites. In spite of that, I was a little skeptical about his report. The friend (who shall remain nameless) has been known to exaggerate.

Regardless, as evident in the pictures (Figs. 1-4; page 17), I should have had more faith in my friend. He was correct about the massive blooming! Apparently the habitat created by the construction has been favorable for the plant. I suspect that over the future years as the vegetation gets denser the population of *S. cernua* will decline, but in the meantime, this is a glorious sight to see. I didn’t do a scientific count of the plants, but I suspect that there were several thousands of the orchids in bloom during this mid-October visit to this man-made hillside.



## Dorcas Fen

Glenda Quinn  
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At 7 o'clock in the morning, there was a loud rap on our door and a voice asked, "Are you ready?" It was Sue to say Graham was waiting, we were driving with him to Dorcas Bay on the shores of Lake Huron to the west of Highway 6 in the Bruce Peninsula, Ontario. He had left a note the night before but we had not seen it. Roused from a deep sleep, we were ready in 10 minutes flat, and even cobbled together snacks on the way through the door.

There were many people at our designated meeting spot somewhere in the Bruce Peninsula National Park, not far from Dorcas Bay and the Singing Sands Park. Before we went to the park, we crossed the highway and walked a little distance, and luckily I had heard Shirley Curtis say there was a rare daisy at this site. I will think of this spot as the place where I saw two yellow flowers, the Large Yellow Lady's Slipper (*Cypripedium calceolus* var. *pubescens*) and the Lakeside Daisy (*Hymenoxys herbacea*). The latter interested me more. The clump of sunny yellow flowers bloom earlier than other composites and their bright green leaves formed dense basal rosettes. A solitary flower grows on a stout hairy stalk. The flowers look like they were dipped in yellow paint, for the button and rays are the same color as egg-yolk. At home on limestone rock, the daisy-like flowers follow the sun across the sky and are a cheerful sight. *Hymenoxys herbacea* is an endemic restricted to the Great Lakes area and is one of the drought-tolerant, prairie, and mountain range plants that migrated eastward 7,000 to 9,000 years ago.

Orchids are celebrities; they have hordes of photographers hunting them down, and striving to capture their images; whereas, the little daisy, a commoner, goes unnoticed. Of course, even commoners attain status, especially if they are endangered or show up somewhere they should not be, holding secrets of post-glacial warming periods.

In all places, then, and in all seasons,  
Flowers expand their light and soul like wings,  
Teaching us, by most persuasive reasons,  
How akin they are to human things.  
-Henry Wadsworth Longfellow

Next stop was Singing Sands and seven of us piled into Mike's SUV and set off. The orchid we were pursuing was *Cypripedium arietinum* (Ram's Head Lady's Slipper) - little cute gumdrops - Betty had called them yesterday. And wasn't I surprised when I saw them for the first time! These little guys were

tiny, very tiny! They look much prettier as a slide on a big screen. After witnessing Betty's jubilation yesterday at Flowerpot I thought we were in for a spectacular treat. I knew the Fairy Slipper was small but I hadn't done my homework and knew nothing about the Ram's Head Slipper. It is a beautiful orchid. '*Arietinum*' is Latin for 'like a ram' and the labellum strongly resembles the butting head of a ram and it even has a crown of white wool (hairs). The bloom only lasts ten days and the orchid is rare, so it's not just its beauty that excites one, but the fact you find the plant flowering. Four days after we were there, Graham returned to the site and they had all gone over. Our timing had been perfect. It is the smallest of the Lady's Slippers and in Canada, it is found in five provinces - Alberta, Saskatchewan, Manitoba, Ontario, Quebec, and Nova Scotia.

Seaside arrow grass (*Triglochin maritima*) also grew on the trail, and Sue said the plant is a relict from eons ago when a warm shallow tropical sea covered the area. Nearby, Beach Plum (*Prunus maritima*) thrived; it is a seaside shrub that helps stabilize the sand and is tolerant of salt spray. No doubt it provides tasty snacks for the birds. In early spring it bears a profusion of white blossoms.

The Dorcas Fen is an example of Ontario's rarest habitat and there were many striking features underneath the boardwalk. Indian Paintbrush (*Castilleja coccinea*) provided a striking background for our "snaps" and it was so peaceful sitting there in the sun. The storyboard said:

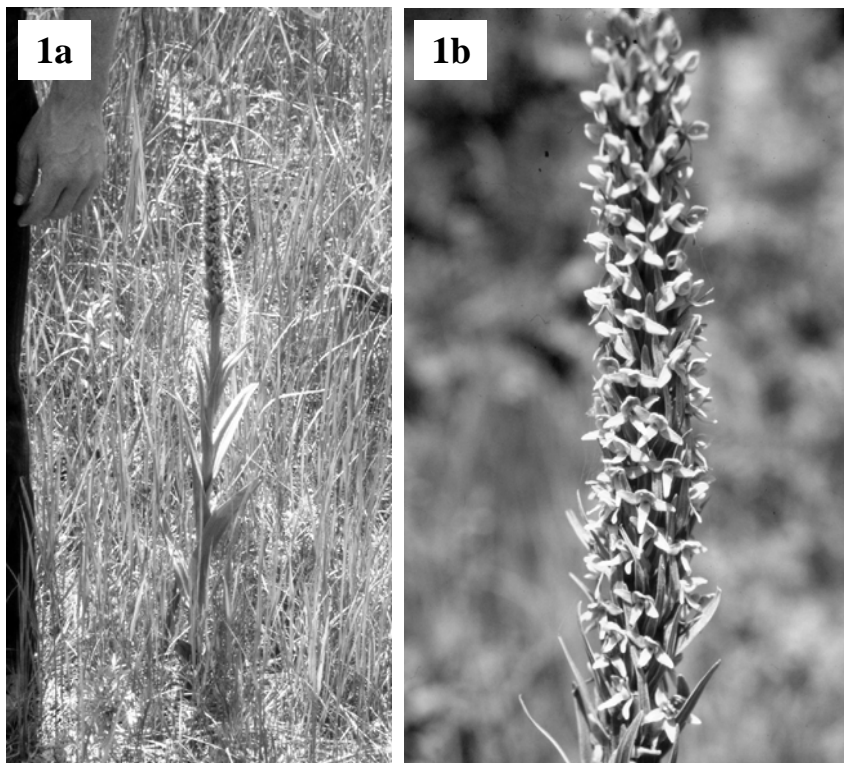
"A fen is an alkaline wetland that has some drainage, usually a stream. Bruce Peninsula's fen (Dorcas Fen) is rich in calcium, but its nitrogen is locked up in forms that plants can't use. It's considered to be healthy since it continues to fulfill the ecological functions of a wetland."

The Northern Small Yellow Lady's Slipper, *Cypripedium parviflorum* var. *makasin*, was now our objective. Mike, our enthusiastic and witty leader had been given some very good clues to its location - X kilometers down Pinetree Point Road, plastic bag tied to a tree, pool of water. Off we went to scour the area. Not meeting with much success, we did see the Tall Northern Green Orchid, *Platanthera huronensis* (Fig. 1). Then Sue, using her experience in all matters botanical, honed in on the elusive yellow. She found it growing beside Marsh Marigold near the edge of a beaver pool, while we had wandered off to drier soil. It was here we saw the venomous Massasauga Rattlesnake, a threatened species, and Sue and I made a hasty retreat. The others, Carmel, Andrew, and Mike, stayed to get its picture. For a threatened species, it sure popped up a lot that day - at the Lakeside Daisy site, at Singing Sands where park staff were implanting monitors, and now, here. Thank goodness it is a shy creature. Even though I only saw its head poking through the undergrowth, I was surprised at its small size. It likes wet areas and I guess we



Figure 1. *Platanthera huronensis*. (1a) whole plant. (1b) inflorescence.

Photos: David McAdoo

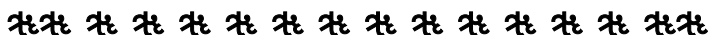


could consider it just another clue to finding the Northern Small Yellow Lady's Slipper habitat. The three of us then got a ride back to Sauble Beach with the Slaughters, an American couple from Arkansas.

Our last evening, and finally, a restaurant with a menu that would tantalize the most sophisticated epicure. With an unpretentious, charming decor, it was located on the sandy shores of Lake Huron and was called The Driftwood. It was a lovely evening with good friends, warm conversation, and a dazzling red sunset.

Our ride back to Toronto and the airport was in a rather unkempt van. On the way, the driver stopped for an older woman. Large dark sunglasses covered her eyes, and she was wearing a cotton skirt and sensible shoes. Then I noticed her earrings. Large, beautiful, brightly-colored orchids were clamped onto her ears! I commented on them and we started to chat about orchids and she described some she knew, asking to see Carmel's book to help her recall their names. Genial and warm, there was an air of mystique around her, and al-

though she was a total stranger, I thought how coincidental to be accompanied on the last leg of our journey by an orchid fancier - she must be the orchid fairy!



## Orchids in New Hampshire, Maine, and Vermont

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My family and I live in southern New Hampshire, USA, where we have 47 species of orchids. The state of Maine has 52, and Vermont has 51, but the orchids are much easier to find in northern Vermont than in other parts of the region.

One of the first species to bloom in Vermont is *Calypso bulbosa* (Fig. 1; page 18), but once one gets to the cedar bog site, which is a 3-hour drive from our house, it is not easy to find the few plants that are there. Although, after my husband retired in 1992, we have been traveling around the country and have found many places with hundreds, even thousands, of *Calypso bulbosa* plants.

In our region, during the 1<sup>st</sup> week in June we look for *Isotria medeoloides* (Fig. 2; page 18), which was one of the first orchids to be listed by the federal government under the Endangered Species Act on September 9, 1982. Then on October 6, 1994 it was reclassified from 'endangered' to 'threatened.' Although very rare and often known in other states from single stations, it can be locally abundant in New Hampshire and western Maine.

Another orchid, *Amerorchis rotundifolia* (small round leaved orchis) grows in northern cedar swamps and woodlands in Caribou, Maine. It is one of the rarest orchids in this region. But, we have seen several thousands in Canada. We have found *Amerorchis rotundifolia* var. *lineata* (Fig. 3) at four different sites in Canada, but this variety does not seem to occur in Maine. While in Alaska we have found plants of the same variety with blotches of color on the lip.

We also have several species of coral-roots but finding them is not easy and when one does, there are only a few plants. This is in contrast to the western states, where one can see large groups of these from the car while driving along some roads. These are the species we have: (1) *Corallorhiza trifida*, with a white (sometimes with few, tiny, spots), 3-lobed lip that looks like a

Figure 3. *Amerorchis rotundifolia*  
var. *lineata*



*ata* is the showiest of the coral-roots but does not occur in New Hampshire. It is reported from Vermont, however. We have seen several plants in Michigan and at Bruce Peninsula in Ontario, Canada.

Lady's slippers (*Cypripedium* spp.) that grow in New England are: (1) *Cypripedium acaule* (pink lady slipper; see back cover) are everywhere! In 1995 I found a plant with two flowers (Fig. 5) in my own back yard, but it never appeared in the following years and now there is a house there. My recently deceased friend Phil Keenan found a plant with a double flower years ago, and he watched it for many years, but it did not always appear each year. He showed us the site in 2000, but we did not find the plant last year when we checked the site. In 1994 we found a plant that had two lips, and it re-appeared for four consecutive years. While riding along the Kancamagus Highway in New Hampshire, one might see 100 or more of the white form, which seems to like the cooler White Mountains area. (2) *Cypripedium arietinum* (ram's head) (Fig. 6; page 18) is the smallest of the lady's slippers, and blooms about the 1<sup>st</sup> of June. (3) *Cypripedium parviflorum* var. *pubescens* (large yellow lady's slipper) blooms in open woodlands in all three states about the 1<sup>st</sup> of June. (4) *Cypripedium parviflorum* var. *makasin* (northern small yellow lady's slipper) prefers cold, northern cedar bogs & swamps. The flowers have an intense, sweet fragrance and bloom mostly in the third week of June. (5) *Cypripedium*

notch. Flower peduncle is yellow, and the flowers open about the 1<sup>st</sup> of June. (2) *Corallorhiza maculata* var. *occidentalis* (western spotted coral-root); we found a nice clump in Maine on June 22, 1988 and watched this group for several years, but lately it has been hard to find. (3) *Corallorhiza maculata* forma *immaculata* (yellow spotless form) grows only at one site, at Dolly Copp campground in New Hampshire. It has been reported that there were 300 stems in 1993 but the most we have seen is 30. (4) *Corallorhiza maculata* var. *maculata* tend not to grow in clumps. We have only seen a few scattered in the woods. I've seen only once in Maine *Corallorhiza maculata* var. *flavida* (Fig. 4; page 18), which has orange-yellow stem and sheath, and lemon yellow flowers with unspotted white lip. (5) *Corallorhiza stri-*

Figure 5. *Cypripedium acaule*



*reginae* flowers around July 4<sup>th</sup>, and we have found a few of the white form in Quechee, Vermont.

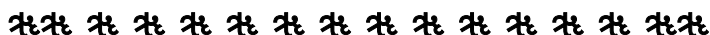
We also have four species of *Listera*: (1) *Listera auriculata*, which is found in Pittsburg, New Hampshire and in Evans Notch, Maine. (2) *Listera convallarioides* (broad-lipped twayblade) is abundant in northern New England but absent in the southern parts. (3) *Listera veltmanii*, which is a cross between *L. auriculata* and *L. convallarioides* – we have not seen this plant in New England but have seen it in the Upper Peninsula of

Michigan. (4) *Listera cordata* (heart-leaved twayblade) grows in cold cedar bogs; it is more abundant and therefore easiest of the four to find.

In August we start checking the woods for *Triphora trianthophora* (three birds orchid). Plants often grow in large colonies under American beech, but number of plants varies greatly from year to year. A small area of about 1 square foot had approximately 700 to 800 plants in 1990. Usually there are three pinkish flowers on a plant, and I even saw an albino one year.

When the *Spiranthes* spp. start blooming one knows the flowering season is almost over for that year. We have five different species in the region: 1) *Spiranthes lacera* var. *lacera* (northern slender ladies' tresses), which has white flowers with a green throat; 2) *Spiranthes casei*; (3) *Spiranthes romanzoffiana*; 4) *Spiranthes ochroleuca*, which has creamy white flowers with butterscotch-colored throat; and 5) *Spiranthes cernua*.

There are other orchid species in the region, but I have not listed those here... perhaps another time.



## ANNOUNCEMENTS, ANNOUNCEMENTS, ANNOUNCEMENTS

### Logo Contest



Here is a great opportunity to represent the Native Orchid Conference, Inc. AND win a one-year membership free...

We invite submissions of logo designs, which if selected, will serve as a symbol for the organization. The logo may be placed on the cover of the Journal, on t-shirts, tote-bags, and other accessories. The artist whose submission is selected also will win free NOC membership for one year!

Please submit your design(s) electronically (high resolution TIFF files to [jsharma@ifas.ufl.edu](mailto:jsharma@ifas.ufl.edu)) or by post to: Dr. Jyotsna Sharma, Univ. of Florida, 155 Research Road, Quincy, FL 32351. Please include a statement indicating that if selected, you permit NOC, Inc. to use your design as needed.

**Closing date – Sunday, 1 May, 2005.**



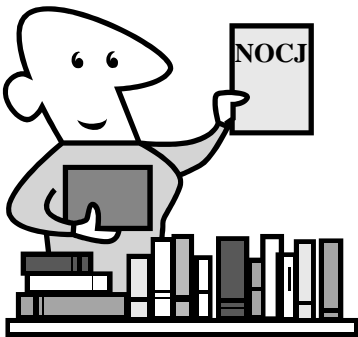
### Congratulations to one of our members!!

Aaron Kennedy from Ohio recently was awarded funds from the American Orchid Society for a proposal titled "Phylogeny, Evolution and Mycorrhizal Specificity in the Myco-heterotrophic Orchid Genus *Hexalectris* Raf. (Orchidaceae)." Aaron is a Ph.D. student under the supervision of Dr. Linda Watson in the Department of Botany at Miami University, Ohio.

Well done, Aaron!



**One more item....**



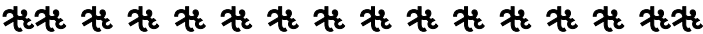
Native Orchid Conference, Inc. wishes to encourage its members to consider donating their copies of the Journal (NOCJ) to their favorite library (herbarium library or otherwise). While the NOC Board has voted to send complimentary copies to several institutions [Oakes Ames Orchid Herbarium (Harvard University), Vascular Plant Herbarium (Agriculture Canada), Herbarium Library (Missouri Botanical Garden), William and Lynda Steere Herbarium (New York Botanical Garden), Herbarium (Royal Botanic Gardens, Kew), University of Michigan Herbarium, University of North Carolina Herbarium, and Rocky Mountain Herbarium (University of Wyoming)], one of us (J. Sharma) has donated her copies to the University of Florida Herbarium.

Please do not forget to notify David McAdoo if/when you have identified a recipient institution for your donated copies so he can update the records.

Many thanks for your support!



*Hexalectris spicata*; Photo: Jyotsna Sharma



## **Publication Policies**

The Native Orchid Conference Journal provides a means for rapid communication of important, relevant, and interesting topics related to North American native orchids. The range of topics appeals to both the professional and amateur.

The Journal will consider for publication manuscripts related to all aspects of North American native orchids including:

- Research and Educational reports
- Regional or local orchid floras
- Cultivation and Propagation
- Travelogues
- Photography and Illustrations
- Literature reviews
- Viewpoint papers

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## **Guidelines**

### **General Form**

1. Use an informative, yet concise title.
2. Include in the by-line the name of the author(s), City, State, and e-mail address.
3. Use font size 10pt (Times New Roman) throughout.
4. Do not justify any part of the manuscript.
5. Do not use footnotes unless absolutely necessary.
6. Do not underscore abbreviations i.e., e.g., etc.

7. Italicise Latin words such as *in situ*, *ex situ*, *sensu lato*, etc.
8. Abbreviate: hours to hr, minutes to min, meter to m, centimeter to cm, millimeter to mm, foot-candles to ft-c, diameter to diam when used as a measurement; do not use full-stops after abbreviations.
9. Use metric measurements throughout, unless imperial measurements are clearly more appropriate, in which case the metric measurement should be given in parentheses.
10. Do not use degree sign for temperature; use e.g., 37 C.
11. Do not use the symbol "&," write "and."
12. Avoid the use of acronyms, but if used, give the name in full in parentheses after the first citation.
13. Please be sure that each figure is cited at least once in the text (refer to figures in the text by using Arabic numerals). Captions need not be complete sentences but should enable the reader to identify features of the figures without reference to the text.
14. Figures must be numbered consecutively according to their appearance in the text.

### **Samples of Literature Cited in Text**

1. Refer to literature citations in the text by last name of author by using ().
2. Within parentheses, use a semi-colon between types of citations as: (Fig. 4; Table 2) or (Jones, 1950; Smith and Doe, 1967, 1968).
3. Within parentheses, use commas rather than connecting words for a series, as: (Smith, 1952, 1959, 1962; Jones, 1962, 1965). Several references in a series within parentheses should be arranged chronologically (beginning with the earliest date) and then alphabetically for a given year.
4. Two authors: Smith and Jones (1960) or (Smith and Jones, 1960).
5. Three authors: Doe, Miller, and Wilson (1958) or (Doe, Miller and Wilson, 1958).
6. Four authors or more: Always use Doe et al. (1958) or (Doe *et al.*, 1958).
7. In press: (Davis, in press) or Davis (in press).
8. Unpublished material may be cited but is not included in the Literature Cited. Example: (B. L. Miller, unpublished) or (J. L. Doe, pers. comm.)

### **Literature Cited**

1. List citations alphabetically by author's name.
2. Citations to be listed under Literature Cited include papers in research publications, books, theses, and dissertations.
3. Do not underline publication name.
4. Examples of commonly used literature citations are given below:



### Research Periodical

Bruns, T.D., R. Fogel, T.J. White, and J.D. Palmer. 1989. Accelerated evolution of a false truffle from a mushroom ancestor. *Nature* 339: 140-142.

### Book

Harley, J.L. and S.E. Smith. 1983. *Mycorrhizal Symbiosis*. Academic Press, London.

### Book Chapter

Hadley, G. 1982. Orchid Mycorrhiza. In *Orchid Biology: Reviews and Perspectives*, III. J. Arditti (ed.), pp. 84-118. Comstock Publishing Associates, Cornell University Press. Ithaca and London.

### Thesis or Dissertation

Sharma, J. 2002. Mycobionts, germination, and conservation genetics of federally threatened *Platanthera praeclara* (Orchidaceae). Ph.D. Dissertation. University of Missouri - Columbia, USA.

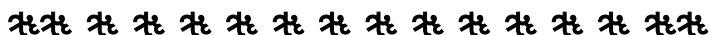
## **Plant Names**

1. Give the full scientific name the first time a plant taxon is mentioned. The generic name may be abbreviated after the first mention of a taxon. Use of common names is not required, but if included, common names should be placed within parentheses along with the first mention of a taxon.
2. Italicise Latin plant names at the generic level and below. The term 'var.' is not italicised (for example: *Platanthera blephariglottis* var. *conspicua*).
3. List hybrids in the following format by using the non-italicized multiplication symbol (not the letter x): *Platanthera ×bicolor*.

## **Additional Guidelines for Technical Articles**

### Standardization of Nomenclatural Material

1. Abbreviate titles of serial publications according to *Botanico-Periodicum-Huntianum/Supplementum* (G. D. R. Bridson, editor. 1991. Hunt Botanical Library, Pittsburgh).
2. For authors of botanical names, use *Authors of Plant Names* (R.K. Brummitt and C. E. Powell, editors. 1992. Royal Botanic Gardens, Kew).
3. For designation of herbaria, use Index Herbariorum. If specimens are cited, use the following form: ECUADOR. Los Rios: Rio Palenque Science Center, km 56 Quevedo-Santo Domingo, alt. 150–220m, 23 Apr. 1973, C. H. Dodson 5257 (holotype: SEL!; isotype: RPSC!).



## NATIVE ORCHID CONFERENCE INC.

### TREASURER'S REPORT (31 December 2004)

BALANCE (15 December 2003)----\$5,699.43

INCOME: Membership	\$4,795.00
Donations	\$520.00
Conference Registration	\$5,390.00
Journal Back-Copies	\$145.00
Book Sales	\$56.00

TOTAL	<hr/> \$16,605.43
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EXPENSES:Office Supplies	\$226.83
Postage	\$16.99
Brochure Printing	\$624.01
IRS Fees(501(3)(c))	\$500.00
Journal (Printing & Postage)	\$2,629.49
Conference Expenses	\$4,327.92
Conference Refunds	\$276.25
Bank Charges	\$96.30
Safe Deposit Box	\$38.00
Book Purchases	\$450.00
Chargebacks	\$35.00
2005 Conference Deposit	\$249.00

TOTAL	<hr/> \$9,469.79
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BALANCE 31 December 2004	\$7,135.64
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