

All in all, this is a delightful book. It is recommended as an introduction to ornithology for new recruits to birding, as an appropriate refresher overview for serious bird students, and as a basic text for a half-class in ornithology.

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## BOTANY

### North American Native Orchid Conservation – Preservation, Propagation, and Restoration

By Jyotsna Sharma (Editor). 2009. Conference Proceedings of the Native Orchid Conference, Inc., Green Bay, Wisconsin, June 12–16, 2009. Native Orchid Conference, Inc., P.O. Box 29010, Greensboro, North Carolina 27429-9010. 131 pages, plus CD. \$24.95 USD Soft cover.

As noted in the preface by Clifton (Kip) Knudson (Native Orchid Conference Conservation Committee Chair), the 2009 Native Orchid Conference (NOC) annual meeting held on June 12–16 at the University of Wisconsin campus at Green Bay, Wisconsin, focused on actions to meet the goals of the NOC mission: “to foster the study, conservation, and enjoyment of the native orchids of the United States and Canada.” The major goal was to provide information that would assist native orchid habitat conservation. The articles are organized into five sections: conservation, preservation, restoration, propagation, and experimental studies. Sixteen (more than half) of the 21 articles in this proceedings feature conservation, restoration and preservation. There is a welcome focus throughout much of this document on practical conservation effort. The work presented is scientifically sound and the 131 – page publication is well designed and well produced. Editor Jyotsna Sharma and production manager Clifton Knudson are to be complemented on an excellent job. With a wealth of information for a very reasonable price, the Native Orchid Conference Inc. has taken a major step toward the achievement of their stated goals.

The “**Orchid Conservation**” section includes five articles. The first paper entitled “The role of systematics in orchid conservation,” provides some useful information on the ways that systematics can assist in setting orchid conservation priorities. For example newly discovered species have often been overlooked due to their rarity and are likely to require protection. The article entitled “Orchid conservation and the IUCN red list: *Platanthera praeclara*, a case study” provides a very helpful overview of global status ranking. The method of establishing a protection framework based on representation in different ecological regions is notable and has been applied to crop relatives. Related to this subject of global assessment are assessments done to support listings under the US and Canadian Endangered Species Acts which use similar criteria and function in the same way to provide a basis for protection and recovery programs. It is particularly interesting that in the example, the global and national assessment teams co-operated together in developing an assessment.

The paper entitled “Ethics of plant rescue: what’s in it for the plant?,” covers a difficult subject with caution and common sense. The author notes that “... plants that are removed to a garden cannot be considered as rescued because they cease to be a part of a reproducing population in a natural plant community.” Moving plants is a last resort and moving plants to gardens is generally to be discouraged as long as conservation is the objective. This subject area is related to the idea of the use of transplanting as a conservation tool. Transplanting is best not considered as a conservation tool unless it is based on expert knowledge and follow up and is accompanied by a strong commitment. There is no guarantee of success. It often fails and has been frequently used as a “quick fix” for habitat destruction with disastrous results. Not surprisingly some expert organizations, such as the Canadian Botanical Association, have discouraged the use of simple transplanting as a reliable solution to the destruction of a natural habitat; “The Canadian Botanical Association is strongly opposed to the idea that transplanting is a reliable method of conserving rare species” (<http://www.cba-abc.ca/pospaper.htm>, see also Fahselt 1988, 2004, 2006, 2007 and references in Catling 2008). Protecting and managing a natural habitat is more likely to be successful than transplanting because conditions can often be maintained more easily than they can be duplicated (despite our occasional accidental production of great orchid habitat). There is a place for gardens and transplanting in education and recovery, but the limitations and the context needs to be better understood and guidelines, including concepts presented in this article, need to be developed. “Orchid Conservation for the 22<sup>nd</sup> century” provides a valuable overview of the elements of orchid conservation efforts and suggests both integrated orchid conservation and flexibility. The following and last article in this section, “Orchid food webs,” extends the idea of integrated orchid conservation through consideration of orchid food webs. A more thorough understanding of the ecological network that supports a population of orchids has great potential to improve conservation efforts.

The “**Orchid preservation**” section is particularly valuable in providing help with the basic ground

work of conservation. "Using a community support network to preserve native orchid habitat" outlines the roles and actions that are needed for successful preservation. This will be really useful to people engaged in direct conservation efforts. "Challenges and strategies ..." has a background in the Chicago region, where orchid habitats have been very extensively destroyed. In fact Illinois is in the forefront of both losses and current efforts to protect what remains. In the state, 25% of orchids are gone and another 25% are at risk. The discussion of difficulties is distressing but the achievements are uplifting. The article entitled "Wisconsin State Natural Areas: a place for every orchid" has to do with the states remarkable "State Natural Areas Program" (<http://www.dnr.state.wi.us/org/land/er/sna/>) which protects 90 % of the states rare plants in 609 sites encompassing 330,000 acres. This is a good example of the potential to learn a lot about what is happening outside and apply it at home.

The four following articles on Carney Fen State Natural Area in Michigan are excellent. This detailed and specific approach is the basic stuff of orchid (and other) conservation. The whole subject of looking after the world requires less preaching and more getting on with the job. One has to do both to be a real conservationist. The first article in this series is about the creation of "State Natural Areas." These are the highest quality remnants of Michigan's native ecosystems. These places provide a standard against which management actions in other areas can be compared, and they are also biological warehouses holding the materials necessary for restoration elsewhere. In part II Kip Knudson provides the basic information on how Carney Fen was protected by legal dedication by state statute. The Natural Areas nomination process was an education for the committee of orchid enthusiasts formed under the sponsorship of the Chapee Rapids Audubon Society. They soon learned that an ecosystem approach would be necessary to protect the site. What were the five important lessons learned during the creation of Carney Fen Natural Area? The answer could apply to the successful creation of many protected areas. Part III outlines the geologic history and provides an explanation for the unusual plants and species richness in the fen area. Part IV outlines some of the recent history of the area. For a long time the large population of Ram's Head Lady's-slipper was a secret known only to a select group who perceived the main threat as poaching, but when they returned for the annual pilgrimage one year, part of the site had become a dump. Of course this led to an expanded view of the threats! Fortunately there was still a lot to protect. A final article in this section entitled "The Ridges Sanctuary, Orchid Hot Spot – 45 years of change" outlines the decline in orchid populations, but the continuation of protected habitat as part of a local initiative established in 1937.

The section entitled "**Orchid Restoration**" was of special interest. Having watched woodland orchids come and go from numerous pine plantations in Ontario, I was very interested to read about "53 years of succession in a Wisconsin Scots Pine (*Pinus sylvestris*) plantation." As is commonly the case the orchid populations reached a peak and then declined as succession proceeded. A number of articles have drawn attention to the fact that Scots Pine has a capacity to be invasive and to destroy valuable natural open habitats, especially meadows, prairies and sand barrens (e.g., Catling & Carbyn 2005; Catling & King 2008). To avoid contributing to this problem, pine plantations should be comprised of native species, which appear to be just as beneficial for orchids. The good news here is that a natural forest community succeeded the plantation.

The next article in this section features conservation efforts in the coastal plain and mountain bog communities of Georgia. Here the Atlanta Botanical Garden has developed an exemplary protective network in cooperation with the Georgia Plant Conservation Alliance. If this kind of leadership of *in situ* protection by botanical gardens and local groups could be extended throughout North America, we would be in a much improved position with regard to protecting rare and endangered plants. The article makes a strong point for education and suggests that despite huge losses there is some good news.

The article entitled "Transplanting a rare orchid" describes an admirable effort to maintain the Small White Lady's-slipper in Nebraska. Although it is my view that something should be done to protect any threatened wild orchids, I also believe that transplanting is a last resort because there is no guarantee of success. It is always best to make a very substantial effort to protect the existing habitat of a rare plant. Our understanding of habitat is often incomplete, but developers prefer to think that we are all outstanding gardeners and can grow anything anywhere. Occasionally someone says, "if they can grow somewhere else, why are they not there already?" Since orchids are well equipped to find the places where they can survive (with the largest numbers of the smallest seeds in the plant kingdom), the reason that they are not already present could be because the habitat is not appropriate. The concept of transplanting does assume a great deal (including knowledge and gardening capabilities that few people have). It is also complicated to evaluate and the criteria should include local increase, ample seed production and colonization of new habitat. I am aware of many more failed transplantation attempts with orchids than successes. In this case in Nebraska the transplanting effort is not a failure and to a degree may be regarded as a success. This article does inspire thought on the subject! See above for more thoughts on transplanting.

The “**Orchid Propagation**” section includes 3 articles. “Orchid Seed Germination” is one of the most concise and informative articles that I have seen on the subject. Following is an article on the micropropagation of the spectacular and rare (rarer than tigers) *Cypripedium kentuckiense*. This species is subject to poaching so that propagation can play an important role in conservation and this article provides some useful information. The propagation section concludes with an article on Yellow Lady’s-Slippers. Here the many questions about the variation in this group are reviewed but of particular interest is the discussion of variability of in plants from a single seedpod. On the accompanying CD there are color photos which help to evaluate the color variation in siblings.

The symposium volume concludes with a section entitled “**Experimental Studies**” which includes 2 articles. The article entitled “Visitor impact and sustainability” may give the impression that low levels of foot traffic can have a negative impact on orchids, but the article is mostly about impact on orchid habitat rather impacts on orchids. To the extent that orchids are considered, a beneficial effect is demonstrated. A positive effect of moderate trampling on orchids has been suggested (Catling 1996, p. 18) as a result of orchids being relatively more abundant in the area of light trampling near to a bare path than in the more distant area further away. Many species of native North American orchids benefit from a degree of ground disturbance. Orchid enthusiasts and photographers may be having a positive impact much of the time and may be to some extent be substituting for recently lost ecological processes. The second article concerning the pollination biology of *Epipactis gigantea* is a field study that includes much valuable information from breeding experiments. The plants produce more seeds through outbreeding, but are capable of both self-pollination and asexual seed production. This species attracts fly pollinators that are parasites of aphids and the flies lay eggs on the flowers. The article is a valuable contribution to the pollination biology of North American orchids, but it also contains information that is needed for conservation purposes.

Clearly there is a lot packed into this symposium volume. Is it what you need? Information generally available on orchid conservation ranges from hundreds of articles in journals to special issues of regular journals (Kull et al. 2006), books (Dixon et al. 2003) and to regular worldwide scientific meetings such as the International Orchid Conservation Congresses (2001, in Perth, Western Australia; 2004 in Sarasota, Florida; 2007 in San José, Costa Rica; and 2011 in Czech Republic – <http://www.iocc4.cz/index.php?m=home>). Certain organizations including both international such as Orchid Conservation International – <http://www.orchidconservation.org/main/about-oci.html> and local such as Native Orchid Conservation Inc. – <http://www.nativeorchid.org/about.htm> are committed to the

goal of orchid conservation. Many orchid and naturalists’ clubs also provide information on orchid conservation. Yes, there is a lot of information available on the subject, but “North American Native Orchid Conservation ...” is a very useful package, – especially for an introduction. More importantly it largely originates from the people that actually do the job on the ground and consequently it may have much more impact among the real practitioners than many other attempts to cover the subject. The information is well presented and accurate, and most aspects of orchid conservation are included. I missed the conference so the proceedings were important to me. The CD included valuable material that extended the text. As well as material that was just interesting such as images from Kauth’s presentations and photos taken at the conference and on the conference field trips, the CD included conference documents and links and a couple of very nice videos one featuring Great Lakes Orchids. I was very impressed. This publication is a valuable source and background for anyone interested in orchid conservation. It deserves prizes and awards. Thanks to all those involved.

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