

ORCHID CONSERVATION NEWS

The Newsletter of the Orchid Specialist Group of the IUCN Species Survival Commission

Issue 2

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ORCHIDS AND CLIMATE CHANGE

Editorial

What are the direct and indirect impacts of global climate change on orchids? How might native orchids and their respective ecosystem components, including mycorrhizae, respond to a warming climate? Are some orchids, terrestrial, epiphytic, or both, more or less impacted by climate change? What about introduced, even invasive species – might they respond similarly or differently? All these questions reflect a growing concern over climate change and how this might impact orchid conservation initiatives.

Among the possible impacts of climate change on orchids are: 1) phenology shifts: are orchid species differently impacted (Dunnell & Travers, 2011); 2) pollinator asynchrony or loss of pollinator diversity (Solga, Harmon & Ganguil, 2014); and 3) loss of mycorrhizal associates (see Bellgard & Williams (2011) for a comprehensive review). A recent report by Kolanowska *et al.* (2017) suggests that climate change might not impact some holomycotrophic species but predicts the eventual extinction of North American *Cephalanthera austiniiae*.

Wubs *et al.* (2019) have demonstrated experimentally that introductions of soil biota and plants can alter the soil nematode assemblage and the flora. Introduced and invasive orchid species come to mind. Oakes Ames reported finding an Asian terrestrial orchid growing in an Ormond, Florida, USA, garden, identifying it as a native Asian orchid, *Zeuxine strateumatica* (L.) Schltr. (Ames, 1937, 1938). He found many of the same orchid growing in a lawn of centipede grass, *Eremochloa ophilurioides*, at a nearby nursery. Grass seed imported

in 1916 from southeast Asia is believed to be how the orchid seeds were introduced (Unruh *et al.* 2005). Two orchids collected on 19 January, 1937 (Ames Accession 44181: The Harvard University Herbaria) are mounted on the same sheet together with the first page of his 1937 paper.

Introduced *Z. strateumatica* is ruderal, warm-growing, and apomictic. Flowering is during the December to March period in Florida, somewhat later within the limits of the present range. No pollinators have been reported. The mycorrhiza that promoted germination of seed in Florida is *Rhizoctonia mucoroides* (Porter, 1942). Seeds take six to eight months to germinate when seedlings grow quickly. The orchid has spread north and westward from Florida, being reported from most Florida counties, and coastal/riparian, disturbed sites in the States of Alabama, California, Georgia, Louisiana, South Carolina, and Texas [Sources: online herbaria, Thieret (1972), Brown *et al.* (2011)]. All occurrences, with the exception of greenhouse material and from Wisconsin, (Zone 5b, -23 to -26°C) are from locations in the USA where, according to the USDA 2012 Plant Hardiness Zone Map, the average annual extreme minimum temperature is -9.4 to -6.7°C or warmer (Zones 8 to 10). Can *Z. strateumatica* expand its range in the USA as climate warms? Might invaded sites be altered, and if so, how? These and other questions could be addressed by identifying and vouchering orchid and mycorrhizal occurrences outside the present range, and assessing their response to climate change.

Papers cited in this editorial are listed in the Food for Thought section. *Marilyn H.S. Light, Editor*



Fig. 1. Delegates gather for a group photograph during IOCCVII at the Royal Botanic Gardens, Kew, UK.

7th International Orchid Conservation Congress Mike Fay

The 7th International Orchid Conservation Congress (IOCCVII) was held at the Royal Botanic Gardens, Kew, from 28 May to 1 June, and was attended by > 170 delegates, representing 35 countries and all six continents where orchids grow (Fig. 1). The theme of the meeting was 'Orchid Conservation, the Next Generation', celebrating the next generation of researchers and the next generation of molecular techniques too – and we delighted that so many of the delegates were students and early-career researchers, many of whom gave oral presentations about their work.

Plenary speakers were Kingsley Dixon (Australia), Wenqing Perner (China), Luciano Ramos Zandoná (Brazil) and Barbara Gravendeel (the Netherlands). In addition, there were 98 oral presentations - in line with IUCN policy on gender equality, 50% of the plenary lectures and > 50% of the submitted oral talks were given by women. There was also a lively poster session with 43 posters.

We were able to award bursaries to cover the costs of attendance for 12 delegates (seven women and five

men) from developing countries. This was made possible by the generosity of the Lennox Boyd Trust, Orchid Conservation International, the Linnean Society of London and the friends and family of the late Amy Morris.

As far as possible, talks were organised into themes [conservation, restoration, education, trade, conservation planning and assessment, molecular tools, morphology, population biology, demography, genetics, mycorrhizal associations, seed germination, interactions with other organisms (pollination) and ecology]. Due to the large number of presentations, some took place in parallel sessions, meaning that delegates had to make some difficult decisions, but overall the standard of presentations was very high, and they were well received by the audience. A well-received break-out session on species conservation planning was led by Jamie Copsey of the Conservation Planning Specialist Group (CPSG), and another popular session was a practical demonstration of seed germination by the students from Writhlington School.

Trade-related issues featured prominently at the meeting, reflecting the establishment of a group within the Orchid Specialist Group specifically addressing the problems of unsustainable and illegal harvest and trade for food, medicine and horticulture. This group is co-chaired by Amy Hinsley and Jacob Phelps, and they and other members of this group are engaging with CITES and working on other trade-related issues. Dealing with

these issues (along with those relating to, e.g., habitation degradation and climate change) will be essential if we are to halt declines in populations of many orchids. Currently, about 1400 species of orchids have been assessed for IUCN's Global Red List, and of these > 50% fall in one of the categories of threat; conserving the world's orchids in the face of a range of threats will be a major challenge.

However, it wasn't all work, and delegates enjoyed a congress dinner in Kew's iconic Orangery and one of three field trips: Darwin's house and *Orchis* Bank; Box Hill; and Wakehurst Place and the Millennium Seed Bank. The first two of these gave people the chance to see several species of native orchids.

Amy Hinsley (Co-Chair of the group investigating trade issues) and I (as Chair, OSG) recently attended the Species Survival Commission (SSC) Leaders' Meeting in Abu Dhabi - see if you can spot us in Figure 2! We were able to report on the congress and to have useful meetings with colleagues about shared concerns and ways forward – Amy spoke with colleagues about trade issues and I had several conversations about red listing projects on orchids from around the world. There was

a session in which colleagues who have passed away since the last leaders' meeting were remembered – for OSG, Peter O'Byrne, Holger Perner, Mark Whitten and Jeff Wood were all honoured in this way.

Looking forward, OSG will be represented at the World Orchid Conference in Taiwan in 2020, and there will be a focus on the role of ex situ collections in orchid conservation at that meeting. Following this, for the next IOCC we will be returning to Perth, Western Australia, where the first IOCC was held. This will take place in September 2023, in association with the next World Orchid Conference. We are already talking about fund raising activities so that we can continue the bursary scheme initiated at IOCCVII. Put the date in your diary – we hope to see many of you there!

Fig. 2 (below): Delegates at the Species Survival Commission (SSC) Leaders' Meeting in Abu Dhabi.



On the Bookshelf

Everglades Wildflowers: A Field Guide to Wildflowers of the Historic Everglades, Including Big Cypress, Corkscrew, and Fakahatchee Swamps. 2nd Edition.

Roger L. Hammer (2002)
FalconGuides®, Guilford, Connecticut
ISBN 978-0-7627-8753-1



Zeuxine strateumatica
Photos: Roger L. Hammer



We acknowledge the assistance of Roger Hammer in sharing his photos of *Zeuxine strateumatica* in Florida, including one from his book, to illustrate this newsletter.

Food for Thought

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Mark your Calendar

23rd World Orchid Conference, Taichung, Taiwan
March 9–18, 2020 <https://www.woc23.com/>

24th World Orchid Conference, Perth, Australia,
September 3–11, 2023
<https://horticulturalcouncil.com.au/event/24th-world-orchid-conference/>

IOCC VIII, Perth, Australia, September 2023
8th IOCC to be held in conjunction with the 24th WOC
Details to follow.

Changes to contact information?

To maintain effective communication, we need to know of any changes in contact information.

Please inform the OSG Chair, Mike Fay.
(M.Fay@kew.org)

Call for conservation news

Members are invited to provide news of their recent conservation activities for publication in the OSG Conservation News.

Please submit material in Microsoft Word, and illustrations, if any, as separate jpeg files. If applicable, please include suggested captions and photographic credits. Send news to Marilyn Light, Editor, (mslight@distributed.net)