ORCHID CONSERVATION NEWS

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

Issue 1 June 2024

2024 –Celebrating Conservation Progress

Photo: *Cymbidium canaliculatum*. Credit: Heidi Zimmer.

In this Conservation News, we hear from orchid conservationists in three regions; Australia, Colombia, and the USA, where investigators have explored intriguing aspects of orchid ecology and conservation methodologies. Marilyn Light, Editor

Heidi Zimmer introduces us to a potential indirect threat to Australian epiphytic orchids, such as *Cymbidium canaliculatum*, from an introduced fungal disease that damages their host trees of the Myrtaceae family with defoliation, stunted growth, dieback and ultimately loss of bark and death.

Collateral damage: myrtle rust impacts on orchids.

Heidi Zimmer
Centre for Australian National Biodiversity Research (a joint venture between CSIRO and Parks Australia), GPO Box 1700, Canberra, ACT 2601, Australia

Myrtle rust is a disease caused by the South American fungus *Austropuccinia psidii*. Myrtle rust, first detected in Australia in 2010, causes dieback and death in some species from the Myrtaceae family. The Myrtaceae species most susceptible to myrtle rust in Australia are those from the genera *Gossia* and *Rhodamnia*, and paperbarks (*Melaleuca*). Recently we conducted a literature and records review to identify possible knock-on effects of myrtle rust on non-Myrtaceae species, focusing on epiphytic orchids. Australia has 283 species of epiphytic orchids, equivalent to about 14% of Australia's total orchid species richness. Australia is unusual in that most of our orchid flora is terrestrial (ground-dwelling), whereas approximately 70% of the world's orchid species are epiphytic. Based on this review of published literature and herbarium records we found that 73 species of Australian epiphytic orchids are commonly found growing on myrtaceous hosts. This includes several widespread epiphytic orchid species, such as channel leaf cymbidium (*Cymbidium canaliculatum*), and other more narrowly distributed species, such as thin tea tree orchid (*Durabaculum*/*Dendrobium foelschei*). Other potentially at-risk orchids were identified from subtribes Aeridinae, Bulbophyllinae, Dendrobieae and Malaxideae. While there is significant conservation effort focused on myrtaceous species that are directly impacted by myrtle rust, this research shows that is worth thinking about non-myrtaceous species, communities and ecosystems which may also be indirectly affected.

You can find the full article here:

Zimmer, H., Clements, M., Cooper, E., Jones, D., Makinson, R., Nargar, K., & Stevenson, K. (2023). Collateral damage: epiphytic orchids at risk from myrtle rust. *Australian Journal of Botany.* https://doi.org/10.1071/BT23047

Robert Pemberton , Atlanta, GA. USA. reports that years ago he observed male orchid bees habitually collecting an herbicide that had been sprayed on the leaves of an invasive tree in Florida. Why the bees did this was puzzling. Recent investigations with chemist James Kindt found that the breakdown products of the herbicide mimic the fragrance compounds of some of the bee's orchid mutualists. Read more about this intriguing discovery using the link to the paper;

Pemberton, R.W. and Kindt, J.T., (2024). Orchid bee collects herbicide that mimics the fragrance of its orchid mutualists. *Florida Entomologist* 2024; **107**(1): 20240013 https://doi.org/10.1515/flaent-2024-0013

Bejarano Ramirez, E. V., Flanagan, N. S., Lespiaucq, A. V., & Espinosa Mosquera, A. T. (2024) present readers with an illustrated, practical guide, in Spanish that aims to promote capacity in the study and use of mycorrhizal fungi, as essential elements for orchid ecology and conservation.

Guía práctica: implementación de metodologías para el aislamiento, preservación y uso de hongos micorrízicos de orquídeas. Sello Editorial Javeriano-Pontificia Universidad Javeriana, Cali. 84pp. ISBN: (e) 978-628-761-829-9

The book is available with open access through Google Books and also Apple Books: https://books.google.com.co/books/about?id=0_sBEQAAQBAJ&redir_esc=y ; https://books.apple.com/us/book/gu%C3%ADa-pr%C3%A1ctica-implementaci%C3%B3n-de-metodolog%C3%ADas-para/id6496852612

Conferences:2024

We welcome international conferences of interest to us all in 2024. We look forward to the long awaited IOCC VIII and to learning and sharing our conservation research with delegates around the world.

The VIII International Orchid Conservation Congress (IOCC) comes to Perth, Australia, September 3–6, 2024 with a post-congress tour planned. Registration is now open. Congress website: https://iocc8.com/ The Congress will be held at Curtin University, and it will be followed by an exciting fieldtrip to see some of the orchids (and other plants) of the SW Australia Biodiversity Hotspot. See,e.g., https://www.cepf.net/our-work/biodiversity-hotspots/southwest-australia/

The VI Colombian Orchid Symposium will be held during the XII Colombian Botanical Congress, 4-8th November 2024, in the beautiful colonial city of Popayan, nestled in the Andes in Southern Colombia. The symposium is organized by the team at Corporquidea.com. For more information on the Congress: https://congresobotanica.org/ For all those interested in neotropical and Andean orchids, this opportunity is not to be missed.

MARK YOUR CALENDAR

IOCC VIII, Perth, Australia, 3–6 September, 2024 Registration now open.

Post-congress fieldtrip 8-10 September 2024
Congress website: https://iocc8.com/

VI Colombian Orchid Symposium during the XII Colombian Botanical Congress, 4-8th November 2024, Popayan, Colombia. For more information on the Congress: https://congresobotanica.org/
For Symposium information: please contact Miguel Bonilla, contacto@corporquidea.com

On the Bookshelf

Colombia

Guía práctica: implementación de metodologías para el aislamiento, preservación y uso de hongos micorrízicos de orquídeas

El presente manuscrito proporciona información detallada de la relación entre orquídeas y hongos benéficos que participan de su nutrición, dicho de manera técnica las micorrizas orquidioides, destacando la importancia de estos hongos en la conservación y adaptación de las orquídeas. Se presentan los procedimientos claves, desde la observación en campo de las orquídeas en su hábitat natural hasta la extracción en laboratorio de sus hongos simbiontes que están en las raíces formando pelotones. Se describe en detalle los protocolos de aislamiento, identificación, preservación y uso de los hongos micorrízicos que son esenciales para la germinación en campo y laboratorio de las semillas microscópicas de las orquídeas. Lo anterior es fundamental, para la recuperación de poblaciones de plantas tan amenazadas por malas prácticas de los humanos, por lo tanto, el material que se brinda es de importancia práctica y teórica en la conservación de la biodiversidad vegetal.

Food for Thought

Fiorini,C.F., Borba, E.L., Resende-Moreira, L.C.. Smidt, E.de C, and Knowles , L. L.(2023). Geographic isolation alone does not explain divergence of a group of orchid species across Brazil's campos rupestres do Brasil. Isolamento geográfico por si só não explica a divergência de um grupo de espécies de orquídeas nos campos rupestres do Brasil. *Evolution*: Apr 1;77(4):946-958. PMID: 36688535 DOI: 10.1093/evolut/qpad010

Hochkirch, A. et *al*. (2023). A multi-taxon analysis of European Red Lists reveals major threats to biodiversity. *PLoS One* 18(11): e0293083. https://doi.org/10.1371/journal.pone.0293083

Nargar, K. and Chen, J-T (2023). Editorial: Orchid genomics and developmental biology, volume II. *Frontiers in Plant Science* 14:1136350. doi:10.3389/fpls.2023.1136350 https://doi.org/10.3389/fpls.2023.1136350

Onana, J. M. National Herbarium of Cameroon, Cameroon, Red list authority coordinator; and T. Stévart, Missouri Botanical Garden, Africa & Madagascar Department, Red list authority coordinator (2021). IUCN SSC, Central Africa Plant Red List Authority, 2021 Report. Target 2021–2025, T-001. Complete assessments of 149 orchid species endemic to Atlantic Central Africa. Activities and Results, Red List, T-001 (KSR 6); Number of new global Red List assessments completed: 84, many assessments published in 2021. https://www.iucn.org/sites/default/files/2023-04/2021-iucn-ssc-central-africa-plant-rla-report_publication.pdf

Parra Sanchez, E., Pérez Escobar, O. A.,and Edwards, D. P. (2023). Neutral based processes overrule niche based processes in shaping tropical montane orchid communities across spatial scales. *Journal of Ecology*, 111(8), 1614-1628.

Parra-Sanchez, E., Freckleton, R. P., Hethcoat, M. G., Ochoa-Quintero, J. M., and Edwards, D. P. (2024). Transformation of natural habitat disrupts biogeographical patterns of orchid diversity. *Biological Conservation*, 292, 110538.

Pemberton, R.W. and Kindt, J.T., (2024). Orchid bee collects herbicide that mimics the fragrance of its orchid mutualists. *Florida Entomologist* 2024; 107(1): 20240013 https://doi.org/10.1515/flaent-2024-0013

Reiter, N., Wicks, M., Pollard, G., Brown, G., Menz, M., and Bohman, B. (2023) Improving conservation and translocation success of an endangered orchid, *Caladenia xanthochila* (Orchidaceae), through understanding pollination. *Plant Ecology* (2023)224: 715–717. https//doi.org/10.1007/s11258-023-01334-0

Singer, R. B., Buzatto, C. R., Farias-Singer, R., Machado-Neto, N. B., Custodio, C. C., and Prendergast, K. (2024). You don't have to kill the orchids–good practices in orchid research. *Iheringia, Série Botânica.*, 79.

Sletvold, N. et al (2024). Fine-scale genetic structure in the orchid *Gymnadenia conopsea* is not associated with local density of flowering plants. *American Journal of Botany* 2024:111:e16273. https://doi.org/10.1002/ajb2.16273

Sprunger, S. & de Jong, C. (2023) The reintroduction project of *Cypripedium calceolus* in Switzerland. *Curtis's Botanical Magazine*, 40(1): 129–145. https://doi.org/10.1111/curt.12498

Zahn, F.E. et al. (2023). Novel insights into orchid mycorrhiza functioning from stable isotope signatures of fungal peletons. *New Phytologist* (2023) doi: 10.1111/nph.18991

Zimmer, H., Clements, M., Cooper, E., Jones, D., Makinson, R., Nargar, K., & Stevenson, K. (2023). Collateral damage: epiphytic orchids at risk from myrtle rust. *Australian Journal of Botany*. https://doi.org/10.1071/BT23047

Changes to contact information?

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

Please inform the OSG Co-Chairs, Mike Fay and Amy Hinsley (M.Fay@kew.org and aehinsley@gmail.com)

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 (not embedded). If applicable, please include suggested captions and photographic credits. Send news to Marilyn Light, Editor, (mslight@distributel.net)