

Orchid Research Newsletter No. 69

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In the German language there is a word *Orchideenfach* ('orchid subject'; plural *Orchideenfächer*), which denotes an obscure field of study considered to be of little practical value and which attracts only insignificant numbers of students. According to the German Wikipedia (<https://de.wikipedia.org/wiki/Orchideenfach>), such *Orchideenfächer* include Onomastics, Celtology, Christian Archaeology, Tibetology, African Studies, and Crystallography. Ironically, Orchidology is not listed as an *Orchideenfach*. Perhaps that is because it is not considered an 'orchid subject', or maybe—and more likely, I think—because Orchidology is not a single field of study with its own Orchidology Departments at universities. In any case, it would be wrong to see the term as a purely derogatory one. No-one today would look down upon Quantum Physics, and yet it has been called an *Orchideenfach* in the past. So, there is hope for students and professors of 'orchid subjects'.

As orchidologists we should be relieved to learn that the term *Orchideenfach* does not derive from the occupation of people who study orchids professionally. If we are to believe Wikipedia, the term instead comes from a perceived analogy. On the one hand we have a group of plants, orchids, once considered to be luxury items that are fastidious in cultivation and lack practical value. On the other hand we have, well, an *Orchideenfach*: a subject that is something of an intellectual luxury, one that requires a special kind of dedication (and may lead students to unemployment, as the same Wikipedia article suggests).

I firmly believe, however, that even if Orchidology were an academic field in its own right, complete with professors and curricula, it would not be an *Orchideenfach*. I would maintain that the determining characteristic of an 'orchid subject' is not its supposed 'uselessness'. I say this because, to be frank, I think that several popular academic subjects are at least as useless as, say, Onomastics. It is principally, I would suggest, the low number of people working in the field that makes the latter an *Orchideenfach*. A low number of people implies a low number of publications. The equivalent of the *Orchid Research Newsletter* for an *Orchideenfach* would probably contain only a handful of pages. And, most likely, the authors would all know each other. But just look at the hundreds of papers listed in this issue of the ORN, most published only during the last six months. Do *you* know all the authors? I certainly don't.

No, Orchidology is not an *Orchideenfach*. Definitely not. It's a thriving field, as dazzling as a field with actual orchids.

André Schuiteman

Upcoming Conferences

We welcome any news about future orchid conferences for promotion here. Please send details to André Schuiteman (a.schuiteman@kew.org) as far in advance of the event as possible, remembering that the *Orchid Research Newsletter* is published only in January and July of each year.

News from the 22nd World Orchid Conference

Guayaquil, Ecuador's largest city with a population approaching three million, will soon be host to the 22nd World Orchid Conference. The Conference begins on Wednesday, 8 November and will run through Saturday at 3 p.m., followed immediately by the Closing Ceremony.

We now have a full slate of Conference speakers, advertised along with the titles of their talks on the website (www.WOC22.com). The well-known and highly respected plenary speakers will be Mark Chase and Mike Fay, both of the Royal Botanic Gardens, Kew, and James D. Ackerman of the University of Puerto Rico. There will be two concurrent sessions with simultaneous translations (English/Spanish). The hallmarks of this World Orchid Conference will be two day-long symposia, one on Andean orchids with speakers from Colombia to Chile, and another on all aspects of the world's most commercially important orchid genus, *Vanilla*. Registrants will be hard-pressed to decide between sessions devoted to slipper orchids, pleurothallids, pollination, orchid floras, art, hybridization, taxonomy and systematics, and conservation. All talks will begin promptly at 9:00 a.m. and end at 4:45 p.m. Specialist group and committee meetings will be held from 5:00 p.m. until 7.00 p.m. unless conflicts require otherwise.



The WOC organizers have selected two individuals to be sponsored by the WOC Trust. **Nhora Helena Ospina-Calderón** received her Master's degree in biological science at Universidad Nacional de Colombia with a specialty in ecology. She is now a Ph.D. candidate in biology at Universidad del Valle with a specialty in conservation. Nhora is interested in orchid ecology, especially pollination and distribution. She currently focuses on population ecology and community ecology of Colombian orchids and has recently begun studies in molecular ecology toward the conservation of Colombian orchids. **Yader S. Ruiz** obtained his bachelor's degree in biology at Universidad de El Salvador, San Salvador. He is presently obtaining his master's degree in tropical ecology at Universidad Veracruzana, México, and specifically working on epiphyte ecology and ethnobotany of orchids used by the Nahuan community in northeast Veracruz state. Yader is also co-authoring a book titled *Orchids of El Salvador* and conducting research on *Vanilla odorata* C.Presl and *Vanilla inodora* Schiede, which are recently discovered species for El Salvador.

There will also be poster presentations, especially by students, in the categories of taxonomy and systematics, ecology, conservation science, and horticultural science. Students whose poster abstracts are accepted may be eligible for scholarships toward their registration fees. Space is available on the website for registrants to donate money toward these scholarships with a \$25 minimum. A full scholarship of \$100 would cover full student registration. Please support the future educators and guardians of biodiversity in precisely those habitats of the world most in need of preservation.

The 22nd WOC organizers look forward to greeting you in Guayaquil and making sure that your experience is wonderfully unforgettable in this Land of Orchids. To begin the journey, your first stop needs to be www.WOC22.com.

Alec Pridgeon

News from Correspondents

Please submit any news about recently completed research, future research plans and needs, change of address, upcoming or recent fieldwork, etc. to André Schuiteman (a.schuiteman@kew.org). Graduate students are especially encouraged to share the subjects of their thesis or dissertation with the international community.

André Schuiteman (Royal Botanic Gardens, Kew) and **Rudolf Jenny** (Bibliorchidea) made a field trip in Cambodia between 19 and 27 November 2016. Together with staff of the Forestry Administration, the Ministry of Environment, and a local NGO, they explored limestone hills in Battambang Province, lowland dipterocarp and montane forest in the western part of Pursat Province, and the plateau of Mt Bokor in Kampot Province. The aim was to gather data (specimens and photographs) for a checklist of the orchids of Cambodia, as well as an orchid field guide currently in preparation. New records will be published in the *Cambodian Journal of Natural History*.

Note: The above item was mainly included as an example to stimulate readers to produce something similar about their own fieldwork or research and to submit it here. Please do. [Ed.]

Recent Orchid Nomenclature

New orchid names may be retrieved from the IPNI website: <http://www.ipni.org/ipni/plantnamesearchpage.do>. Click on "Show additional search terms" on the right-hand side of the screen. After the search page appears, type in **Orchidaceae** under family name and (for example) **2010-11-30** under "Record date" and "Added since." This will pull up a list of all names added to the IPNI database since 30 November 2010. Also be sure to check the World Checklist of Selected Plant Families (<http://apps.kew.org/wcsp/>) for accepted names and synonyms as well as for building your own checklists.

Recent Literature

We are grateful to Paolo Grünanger for supplying references from journals dedicated to European orchids. If you are aware of any relevant citations published between May 2015 and November 2016 not listed here or in the previous issue, please send them—in the exact style below—to André Schuiteman (a.schuiteman@kew.org) for publication in the next issue (July). Write "ORN references" in the subject line of the email. Book citations should include author(s), year of publication, title, publisher, and place of publication (in that order). Journal titles should be spelled out in full.

Anatomy and morphology

Akbulut, M. K. and Şenel, G. 2016. The seeds micromorphology and morphometry of certain *Dactylorhiza* (Orchidaceae) species distributed in Turkey. *Rendiconti Lincei* 27: 679–686 (doi:10.1007/s12210-016-0549-z).

Alomía, J. A., Muñoz, E., Acosta, A. M., and Tupac Otero, J. 2016. Morphometric analysis of *Vanilla* seeds (Orchidaceae) by microscopic techniques. *Lankesteriana* 16: 21–26 (doi:10.15517/lank.v16i1.23501).

Chen, T.-K., Yang, H.-T., Fang, S.-C., Lien, Y.-C., Yang, T.-T., and Ko, S.-S. 2016. Hybrid-cut: An improved sectioning method for recalcitrant plant tissue samples. *Journal of Visualized Experiments* 2016(117): art. e54754 (doi:10.3791/54754).

Gnasekaran, P., Mahmood, M., and Subramaniam, S. 2016. Ultrastructure study of *Vanda* Kasem's Delight orchid's protocorm-like body | Estudo da ultra-estrutura do protocormio da orquídea *Vanda* Kasem's Delight. *Horticultura Brasileira* 34: 333–339 (doi:10.1590/S0102-05362016003005).

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Jakubska-Busse, A., Janowicz, M., Ochnio, L., and Jackowska-Zduniak, B. 2016. Shapes of leaves with parallel venation. Modelling of the *Epipactis* sp (Orchidaceae) leaves with the help of a system of coupled elastic beams. *Peerj* 4: art. e2165 (doi:10.7717/peerj.2165).

Kaewubon, P. and Meesawat, U. 2016. Histological examination of callogenesis in bisected protocorm culture of pigeon orchid (*Dendrobium crumenatum* Swartz). *Walailak Journal of Science and Technology* 13: 745–756.

Karremans, A. P., van Heuven, B., Langelaan, R., and Gravendeel, B. 2016. Documentation of floral secretory glands in Pleurothallidinae (Orchidaceae) using Scanning Electron Microscopy (SEM). *Bio-protocol* 6(22): art. e2021 (doi:10.21769/BioProtoc.2021).

Li, Y. Y., Chen, X. M., Guo, S. X., and Lee, Y. I. 2016. Embryology of two mycoheterotrophic orchid species, *Gastrodia elata* and *Gastrodia nantoensis*: ovule and embryo development. *Botanical Studies* 57: art. 18 (doi:10.1186/s40529-016-0137-7).

Millner, H. J. and Baldwin, T. C. 2016. Floral micromorphology of the genus *Restrepia* (Orchidaceae) and the potential consequences for pollination. *Flora* 225: 10–19 (doi:10.1016/j.flora.2016.09.007).

Moradi, S., Dianati Daylami, S., Arab, M., and Vahdati, K. 2017. Direct somatic embryogenesis in *Epipactis veratrifolia*, a temperate terrestrial orchid. *Journal of Horticultural Science and Biotechnology* 92: 88–97 (doi:10.1080/14620316.2016.1228434).

Stencel, M., Bertin, R. L., Souza-Leal, T., and Pedroso-de-Moraes, C. 2016. Phenotypic and vegetative plasticity of *Oeceoclades maculata* (Lindl.) Lindl. (Orchidaceae) in two environments of a forest area | Plasticidade fenotípico-vegetativa de *Oeceoclades maculata* (Lindl.) Lindl. (Orchidaceae) em dois ambientes de área florestada. *Revista em Agronegocio e Meio Ambiente* 9: 635–649 (doi:10.17765/2176-9168.2016v9n3p635-655).

Thangavelu, M. and Ayyasamy, K. 2017. Comparative anatomy of aerial and substrate roots of *Acampe praemorsa* (Rox.) Blatt. & McCann. *Flora* 226: 17–28 (doi:10.1016/j.flora.2016.11.001).

Valencia-Nieto, B., Sosa, V., and Márquez-Guzmán, J. 2016. Late stages of anther development and anther attributes in *Microepidendrum* differs from other genera of *Epidendrum* alliance (Orchidaceae). *Flora* 218: 35–43 (doi:10.1016/j.flora.2015.11.002).

Wang, L.-H., Tsay, J.-S., and Chi, H.-S. 2016. Embryological studies on *Spiranthes sinensis* (Pers.) Ames. *Flora* 224: 191–202 (doi:10.1016/j.flora.2016.07.019).

Books

Braem, G. J., Chiron, G., and Öhlund, S. L. 2016. *The genus Paphiopedilum*. 2nd ed. BSMPS, Dehra Dun.

Courtinard, P. 2016. *Orchidées de la Martinique*. PCP Éditions, Martinique.

Delforge, P. 2016. *Orchidées d'Europe, d'Afrique du Nord et du Proche-Orient*. Delachaux et Niestlé, Paris.

Eccarius, W. 2016. *Die Orchideengattung Dactylorhiza*. The author.

Endersby, J. 2016. *Orchid: A cultural history*. University of Chicago Press, Chicago.

Jin, X. 2016. *Higher plants of China in colour. Volume IX, Angiosperms: Taccaceae–Orchidaceae*. Science Press, Beijing.

Johnson, S. D. and Schiestl, F. P. 2016. *Floral mimicry*. Oxford University Press, Oxford.

Løjtant, B. and Pedersen, H. Æ. 2016. *Een Orchidé—Mange kunstneriske udtryk*. BFN's Forlag, Thisted. [*Epipactis purpurata*; in Danish]

Kolanowska, M. and Szlachetko, D. 2016. *Orchids of the Department of Valle del Cauca (Colombia). Volume 4: Orchidaceae, Vandoideae*. A.R. Gantner Verlag KG, Ruggell.

Mourgues, V. 2015. *Orquídeas de la Región del Maule*. Editorial Jardín Botánico Nacional (Chile).

Novoa, P., Espejo, J., Alarcón, D., Cisternas, M., and Domínguez, E. 2015. *Guía de Campo de las Orquídeas Chilenas*. Segunda Edición. Ed. Corporación Chilena de la Madera, Concepción, Chile.

Pradhan, M. 2016. *100 Sikkim Himalayan Orchids*. 2nd ed. The author.

Tang, C. Z. and Cheng, S. J. 2016. *The illustrated important orchids in China*. Science Press, Beijing [in Chinese].

Teoh, E. S. 2016. *Medicinal orchids of Asia*. Springer Verlag, Berlin.

Conservation

Bohnert, T., Wenzel, A., Altenhovel, C., Beeretz, L., Tjitrosoedirdjo, S. S., Meijide, A., Rembold, K., and Kreft, H. 2016. Effects of land-use change on vascular epiphyte diversity in Sumatra (Indonesia). *Biological Conservation* 202: 20–29 (doi:10.1016/j.biocon.2016.08.008).

Bone, R. E. 2016. Orchid hunters and orchid cake eaters. *Orchid Review* 124: 160–167.

Bonilla M., M. M. and Aquirre M., A. C. 2016. Análisis espacial y conservación de *Lepanthes magnifica* Luer (Orchidaceae: Pleurothallidinae) en Colombia | Spatial analysis and conservation of *Lepanthes magnifica* Luer (Orchidaceae: Pleurothallidinae) in Colombia. *Orquideología* 33: 4–13.

Cardoso, J. C., da Silva, J. A. T., and Vendrame, W. A. 2016. Impacts of deforestation on some orchids of Sao Paulo State, Brazil. *Natureza & Conservacao* 14: 28–32 (doi:10.1016/j.ncon.2016.02.001).

Djordjevic, V., Tsiftsis, S., Lakusic, D., and Stevanovic, V. 2016. Niche analysis of orchids of serpentine and non-serpentine areas: Implications for conservation. *Plant Biosystems* 150: 710–719 (doi:10.1080/11263504.2014.990534) [Serbia].

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Hinsley, A., Lee, T. E., Harrison, J. R., and Roberts, D. L. 2016. Estimating the extent and structure of trade in horticultural orchids via social media. *Conservation Biology* 30: 1038–1047 (doi:10.1111/cobi.12721).

Hoang, N. H., Kane, M. E., Radcliffe, E. N., Zettler, L. W., and Richardson, L. 2016. Novel in vitro approaches for orchid conservation: The Ghost Orchid case study. *In Vitro Cellular & Developmental Biology—Animal* 52: S21–S22 [*Dendrophylax lindenii*].

Khapugin, A. A., Silaeva, T. B., Semchuk, A. A., and Kunaeva, E. N. 2016. Populations of *Orchis militaris*, *Epipactis palustris* and *Malaxis monophyllos* in the Republic of Mordovia (Central Russia). *Biodiversity: Research and Conservation* 42: 33–40 (doi:10.1515/biorc-2016-0012).

Kreziou, A., de Boer, H., and Gravendeel, B. 2016. Harvesting of salep orchids in north-western Greece continues to threaten natural populations. *Oryx* 50: 393–396 (doi:10.1017/S0030605315000265).

Kull, T., Selgis, U., Pecina, M. V., Metsare, M., Ilves, A., Tali, K., Sepp, K., Kull, K., and Shefferson, R. P. 2016. Factors influencing IUCN threat levels to orchids across Europe on the basis of national red lists. *Ecology and Evolution* 6: 6245–6265 (doi:10.1002/ece3.2363).

Kumar, P., Gale, S. W., Schuiteman, A., Bouamanivong, S., and Fischer, G. A. 2016. Identifying orchid hotspots for biodiversity conservation in Laos: the limestone karst vegetation of Vang Vieng District, Vientiane Province. *Journal of Threatened Taxa* 8: 9397–9417 (doi:10.11609/jot.2826.8.12.9397-9417).

Mirenda, T. 2016. Orchid gardens: a species survival tool for a changing planet. *Lankesteriana* 16: I–III.

Rahayu, E. M. D. and Yusri, S. 2016. Georeferencing orchids specimen history cards in Bogor Botanic Gardens to increase their use for conservation efforts. *Biodiversitas* 17: 510–514 (doi:10.13057/biodiv/d170217).

Reid, J. L., Chaves-Fallas, J. M., Holl, K. D., Zahawi, R. A., and Wulf, M. 2016. Tropical forest restoration enriches vascular epiphyte recovery. *Applied Vegetation Science* 19: 508–517 (doi:10.1111/avsc.12234).

Singh, S., Waman, A. A., Bohra, P., Gautam, R. K., and Roy, S. D. 2016. Conservation and sustainable utilization of horticultural biodiversity in tropical Andaman and Nicobar Islands, India. *Genetic Resources and Crop Evolution* 63: 1431–1445 (doi:10.1007/s10722-016-0445-5).

Cytogenetics and horticultural genetics

Aloysius, S., Purwantoro, A., Dewi, K., and Semiarti, E. 2017. Improvement of genetic variability in seedlings of *Spathoglottis plicata* orchids through X-ray irradiation. *Biodiversitas* 18: 20–27 (doi:10.13057/biodiv/d180104).

Bhattacharyya, P., Kumar, V., and Van Staden, J. 2017. Assessment of genetic stability amongst micropropagated *Ansellia africana*, a vulnerable medicinal orchid species of Africa using SCoT markers. *South African Journal of Botany* 108: 294–302 (doi:10.1016/j.sajb.2016.11.007).

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Lee, H. J., Kim, Y. E., Yoon, Y. J., Jeong, C. S., Lian, M. L., Paek, K. Y., and Park, S. Y. 2016. Highly endoreduplicated floral organs of somaclonal variants in clonally propagated *Phalaenopsis* 'Spring Dancer'. *Plant Cell Tissue and Organ Culture* 126: 67–77 (doi:10.1007/s11240-016-0977-6).

Moraes, A. P., Simões, A. O., Alayon, D. I. O., Barros, F. d., and Forni-Martins, E. R. 2016. Detecting mechanisms of karyotype evolution in *Heterotaxis* (Orchidaceae). *PLoS ONE* 11(11): art. e0165960 (doi:10.1371/journal.pone.0165960).

Wannajindaporn, A., Kativat, C., and Tantasawat, P. A. 2016. Mutation induction of *Dendrobium* 'Earsakul' using sodium azide. *HortScience* 51(11): 1363–1370 (doi:10.21273/HORTSCI10860-16).

Ecology

Blinova, I. V. 2016. Spatial population structure of rare orchid species in rich fens in the central part of Murmansk oblast. *Russian Journal of Ecology* 47: 234–240 (doi:10.1134/S1067413616030036) [*Dactylorhiza incarnata*, *Dactylorhiza traunsteineri*, *Listera ovata*].

Boyd, J. N., Raymond, G. A., Call, G. P., and Pistrang, M. J. 2016. Ecophysiological performance of the rare terrestrial orchid *Platanthera integrilabia* across contrasting habitats. *Plant Ecology* 217: 1259–1272 (doi:10.1007/s11258-016-0653-2).

Djordjevic, V., Tsiftsis, S., Lakusic, D., Jovanovic, S., and Stevanovic, V. 2016. Factors affecting the distribution and abundance of orchids in grasslands and herbaceous wetlands. *Systematics and Biodiversity* 14: 355–370 (doi:10.1080/14772000.2016.1151468).

Fardeeva, M. B. 2016. Some patterns of spatial-ontogenetic structure in populations of tuber orchids. *Contemporary Problems of Ecology* 9: 626–635 (doi:10.1134/S199542551605005X).

Garcia-Gonzalez, A., Damon, A., Riveron-Giro, F. B., and Avila-Diaz, I. 2016. Circular distribution of three species of epiphytic orchids in shade coffee plantations, in Soconusco, Chiapas, Mexico. *Plant Ecology and Evolution* 149(2): 189–198

(doi:10.5091/plecevo.2016.1150) [*Oncidium poikilostalix*, *O. guatemalenoides* and *Lepanthes acuminata*].

García-González, A., Riverón-Giró, F. B., González-Ramírez, I. S., Domenech, R. Y. E., Montero, Y. H., and Verdecia, E. P. 2016. Ecología y estructura poblacional del endemismo cubano *Tetramicra malpighiarum* (Orchidaceae), en el Parque Nacional Desembarco del Granma, Cuba. *Lankesteriana* 16: 1–11 (doi:10.15517/lank.v16i1.23379).

Kooijman, A. M., Bruinb, C. J. W., van de Craats, A., Grootjans, A. P., Oostermeijer, J. G. B., Scholten, R., and Sharudin, R. 2016. Past and future of the EU-habitat directive species *Liparis loeselii* in relation to landscape and habitat dynamics in SW-Texel, the Netherlands. *Science of the Total Environment* 568: 107–117 (doi:10.1016/j.scitotenv.2016.05.086).

Nakanishi, A., Sungpalee, W., Sri-ngernyuang, K., and Kanzaki, M. 2016. Large variations in composition and spatial distribution of epiphyte biomass on large trees in a tropical montane forest of northern Thailand. *Plant Ecology* 217(9): 1157–1169 (doi:10.1007/s11258-016-0640-7).

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Slaviero, A., Del Vecchio, S., Pierce, S., Fantinato, E., and Buffa, G. 2016. Plant community attributes affect dry grassland orchid establishment. *Plant Ecology* 217(12): 1533–1543 (doi:10.1007/s11258-016-0666-x) [*Anacamptis morio*, *Himantoglossum adriaticum*, and *Ophrys sphegodes*].

Timsina, B., Rokaya, M. B., Münzbergová, Z., Kindlmann, P., Shrestha, B., Bhattarai, B., and Raskoti, B. B. 2016. Diversity, distribution and host-species associations of epiphytic orchids in Nepal. *Biodiversity and Conservation* 25(13): 2803–2819 (doi:10.1007/s10531-016-1205-8).

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(doi:10.1371/journal.pone.0158548).

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History

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