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Cover photo: *Didymoglossum godmanii,* epiphyte on trunks of the palm *Welfia regia,* Costa Rica (Klaus Mehltreter)

INTRODUCTION

This volume of the *Annual Review of Pteridological Research* (ARPR) provides a comprehensive list of 776 literature citations on ferns and lycophytes published during 2016, an index to authors and keywords, and a description of research interests and contact information of pteridologists who answered our annual questionnaire.

In 2016, research in ferns and lycophytes yielded important worldwide contributions, such as the PPG I (2016) community-derived classification system for ferns and lycophytes and several family treatments for the Manual of the Vascular Plants of the Northeastern United States (Moran 2016 b & c, Taylor et al. 2016) and the Flora of the cangas of the Serra dos Carajás, Pará, Brazil (Moura & Salino 2016 a & b, Moura et al. 2016 a & b, Salino & Arruda 2016 a-d, Viana et al. 2016). In addition, 45 new species were described from Africa-Madagascar (11 spp.), China (9), Brazil (6), Peru (4), New Guinea (3), Guianas (3), Thailand (2), and Argentina, Ecuador, Mexico, Myanmar, New Zealand, Taiwan, and Vietnam (each 1 sp.). New insights on molecular phylogeny came from Testo & Sundue's (2016) analysis of 4000 leptosporangiate ferns. Physiological research focused on stomatal dynamics and hydraulic architecture, especially under drought stress (Baer et al. 2016, Brodersen et al. 2016, Holmlund et al. 2016, Klepsch et al. 2016, Martins et al. 2016), but also on the ecophysiology of leaf dimorphism (Watkins et al. 2016). Haufler et al. (2016) reviewed the homosporous vascular plant life cycle, whereas Sessa et al. (2016) looked at the functional significance of extreme inbreeding and Imai et al. (2016) at the relationship between mating systems and genetic diversity.

Other exciting examples of fern and lycophyte research include the sex-dependent nutrient content of gametophytes (Goodnoe & Hill 2016) and the oil-absorbing properties of the highly hydrophobic leaves of four *Salvinia* species for possible use in clean-up of oil spills (Zeiger et al. 2016). Finally, Shukla et al. (2016) transferred a fern gene into cotton to provide an insecticidal effect against whiteflies. The former are just a few examples of the enormous diversity of research published on ferns and lycophytes in 2016. We hope that this edition of ARPR will help you quickly find references within your own field of research or personal interest.

Joanne M. Sharpe supported this year's issue by contributing to database searches. Elisabeth Hooper took charge of the annual questionnaire, directory and research interests of respondents. Klaus Mehltreter compiled and formatted the literature citations and index. We hope that the continuous publication of ARPR will enhance access to information published about ferns and lycophytes worldwide and stimulate further collaboration among pteridologists. For any feedback on this year's issue, please contact Klaus Mehltreter, Instituto de Ecología, A. C., Red de Ecología Funcional, carretera antigua a Coatepec No. 351, El Haya, 91070 Xalapa, Ver., Mexico (klaus.mehltreter@inecol.mx).

If you are not on our mailing list but would like to receive information about how to be included in future issues, or if you would like to obtain back issues of the ARPR please contact Elisabeth A. Hooper, Treasurer, International Association of Pteridologists, Biology Department, Truman State University, 100 E Normal Street, Kirksville MO 63501-4221 USA, (iapferns@gmail.com). On-line access to the literature from back issues since 1994 is available on the website of the American Fern Society (www.amerfernsoc.org).

Klaus Mehltreter, Xalapa, Veracruz, Mexico

Elisabeth Hooper, Kirksville, Missouri

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Patrick J. Acock	Phylogeny of *Asplenium* and most aspects of *Equisetum* research
Ruth Aguraiuja	Population biology and restoration ecology of endangered fern species
Victor B. Amoroso	Botany; Economic ferns; Histochemical studies (medicinal ferns); Philippine *Cycas*; Morphology and taxonomy
Sayuri Ando	Fern sporophyte development
Raju Antony	Systematic studies of *Selaginella*; Ferns and conservation of ferns
Naomi Arcand	Ecology and biogeography of tree ferns
Ralph C. Archer	Fern horticulture
Nan Crystal Arens	Ecology of tree ferns
Monanjali Bandyopadhyay	Phyto-geography; Ecology; Fern lore; Ethnobotany
Yasmin S. Baksh-Comeau	Vascular flora of Trinidad and Tobago
Julie F. Barcelona	Philippine ferns/floristics; Ecology and conservation; *Odontosoria* systematics; Philippine *Rafflesia*
Wilfried H. Bennert	Ferns and lycopods
Subir Bera	Animal interaction with pteridophytes and its co-evolutionary significance
Kamlesh Bhakuni	Biodiversity, taxonomy and morphology of Central Himalayan ferns
Rodica Bercu	Histo-anatomy of ferns
Michel Boudrie	Pteridophytes of France and of the Guianas (systematics, taxonomy, ecology, distribution)
Siegmar W. Breckle	Ecosystems of the Earth; Ecology of halophytes; Tropical ecology; Desert ecology
William R. Buck	Systematic bryology
Walter Bujnoch	Ferns of Central Europe, especially *Dryopteris affinis*
Manuel G. Caluff	Selaginellaceae; Lycopodiaceae; Polypodiaceae (including Grammitidaceae); Fern culture; Ecology
Jian Guo Cao	Sexual reproduction and development of fern gametophytes
James D. Caponetti	Propagation of ferns by tissue culture

Kalyan Chakraborti	Phyto-geography; Ecology; Fern lore; Ethnobotany
Wen-Liang Chiou	Gametophyte morphology and development; Reproductive biology; Antheridiogen; Phenology of sporophytes; Fern systematics
Maarten Christenhusz	Fern floras; Island biogeography; Botanical Journal of the Linnean Society (adjunct chief editor); Phytotaxa (founder)
Aurea M.T. Colli	Ecology and physiology
Marten W. de Boer	Pteridophytes of Bolivia and East Africa; Herbarium specimen collection
Shi-Yong Dong	*Tectaria*; *Asplenium nidus* group; Taxonomy of Asian tropical ferns; Pteridophyte flora of Southern China
Franz G. Dunkel	Rare ferns; Ecology and population biology
Atsushi Ebihara	Speciation; Gametophytes; Hymenophyllaceae
Donald R. Farrar	Fern reproduction; *Botrychium* systematics
Kathryn Flinn	Ecology
Harald C. Frank	Tropical ferns in general; *Platycerium*; Ant ferns; *Huperzia*
Christopher R. Fraser-Jenkins	Taxonomy; Floristics; Himalayan and all Asian pteridophytes; *Asplenium, Athyrium, Cheilanthes, Diplazium, Dryopteris, Polystichum, Pteris*; Nepal; Sri Lanka; Assam; Flora of Pakistan; Bangladesh; China; Myanmar; Tibet; Bhutan
Stephen C. Fry	Cell wall polysaccharides and enzymes
Mary Gibby	Evolution and speciation in ferns; Fern conservation
Arthur V. Gilman	Lycopodiaceae; Ophioglossaceae; Systematics of temperate ferns and allies
Hit Kishore Goswami	Population cytogenetics of *Isoetes* and *Ophioglossum*; Pteridophytes as medicinal plants
Gary K. Greer	Phenotypic plasticity; Polyploidy; Reproductive Ecology; Community assembly; Antheridiogen; Allelopathy
Irina I. Gureyeva	Taxonomy; Morphology; Biology of ferns of Siberia and Russia, especially taxonomy of *Pteridium* and morphology of the fern spores
Christopher H. Haufler	Patterns and processes of fern evolution; Application of chromosomal, isozymic and DNA data bases in characterizing fern species; Understanding speciation mechanisms and phylogenetic relationships; The significance of polyploidy in pteridophyte evolution

Andreas Hemp	Vegetation ecology
Elisabeth A. Hooper	Fern systematics; *Aleuritopteris*
Karsten Horn	Biosystematics, ecology, population biology and distribution of *Diphasiastrum* and *Botrychium* species in Europe; Bibliography of Macaronesian pteridophytes; Conservation strategies for endangered German pteridophytes; Monograph of the genus *Diphasiastrum*
Peter H. Hovenkamp	Polypodiaceae; Nephrolepidaceae; Oleandraceae; Woodsiaceae; Saccolomataceae; Ferns of Sulawesi; Flora Malesiana; Flora of China
Ana M. Ibars	Conservation; Fern spore bank; Germination
Filippo Imperato	Chemistry of flavonoids and other phenolics of ferns
Kunio Iwatsuki	Flora of East and Southeast Asia; Hymenophyllaceae; Conservation
Mirkka Jones	Determinants of plant community composition and diversity; Ecology of neotropical ferns
Masahiro Kato	Tropical fern flora; Morphological evolution of vascular plants; Speciation and adaptation of rheophytes; Evolution of apogamous ferns
Michael Kessler	Biodiversity and biogeography of tropical montane forests, including pteridophytes; Flora of Bolivian pteridophytes
Johanna H.A. van Konijnenburg-van Cittert	Evolution of fossil fern families, especially Dipteridaceae
S.P. Khullar	Fern floristics; Taxonomy; Cytology and morphology
Yves Krippel	Distribution of pteridophytes in Luxembourg
Siro Kurita	Speciation; Karyotype evolution; Systematics
Brij Lal	Inventory, conservation, and documentation of pteridophyte-associated traditional knowledge of Indian Himalayan region in particular
Marco Landi	Population ecology
Marcus Lehnert	Taxonomy, phylogeny, ecology and biogeography of pteridophytes; Special expertise in tree ferns
Ilia J. Leitch	Evolution of genome size and karyotype diversity in plants
Blanca León	Taxonomy of neotropical Polypodiaceae, Andes and Peruvian ferns
Bai-Ling Lin	Development; Hormone signaling; Genomics

Stuart Lindsay	Pteridophytes of Thailand, Laos and Cambodia; Vittariaceae of Southeast Asia; Gametophyte biology/ecology; Multi-access keys
David H. Lorence	Pteridophytes of Polynesia, Micronesia, Mascarenes
Kay Lynch	Propagation and conservation of Hawaiian native ferns
P.V. Madhusoodanan	Pteridophytes and bryophytes of South India; *Azolla* species and Cyanobacteria as biofertilizers
Fernando Matos	The flora of Bahia; the genus *Elaphoglossum* (Dryopteriaceae); The biology of ferns and lycophytes
Sadamu Matsumoto	Cytotaxonomic study of ferns, especially *Cyrtomium*, *Asplenium*, and *Pteris*; Pteridophyte flora of Southern Pacific Islands, Bhutan, Taiwan
J. Mitchell McGrath	Plant breeding; Molecular cytogenetics; Gene duplication
Klaus Mehltreter	Fern ecology; Phenology; Herbivory; Interactions with insects; Invasive species
Aniceto Mendoza Ruiz	Pteridophytes of Mexico; Taxonomy, floristics, cultivation and propagation of ferns
Jordan Metzgar	*Cryptogramma*; Phylogenetics; Polyploidy; *Azolla*; Osmundaceae
John Mickel	Pteridoflora of Mexico; Monographic studies of *Anemia* and *Elaphoglossum*
Vlastimil Mikolas	*Polypodium*; *Asplenium trichomanes* agg.; *Dryopteris*; *Equisetum* and ferns of Oceania
James D. Montgomery	*Dryopteris* in North America and Mexico; Ferns of Pennsylvania and New Jersey; Ecology of *Botrychium*
Robbin C. Moran	Taxonomy, biogeography, phylogeny and evolution of ferns and lycophytes
Claudine C. Mynssen	*Diplazium*; Brazilian flora
Narumi Nakato	Chromosomes; Polyploidy; Hybridization; Speciation
Maite Niño	Selaginellaceae; Lycopodiaceae; Polypodiaceae (including Grammitidaceae); Fern culture; Ecology
Benjamin Øellgaard	Systematics and biology of the Lycopodiaceae with special reference to neotropical Lycopodiaceae; Pteridophytes of the northern Andes, especially Ecuador; Biology; Taxonomy and diversity; Quantitiave inventories of pteridophytes in sample plots in Ecuador

Sue Olsen	Testing ferns for hardiness and ornamental value and introducing ferns to the public
Leticia Pacheco	Systematics of *Diplazium*
Christopher Page	Biology and ecology of Pteridophyta; Biogeography; Distribution; Insular floras; Paleobotany; *Equisetum*; Patterns, principles, processes and dynamics in pteridophyte ecosystems and their evolution
Santiago Pajarón	Reproductive biology; Population genetics; Systematics and evolution
Daniel Palmer	Hawaiian ferns
Barbara Parris	Monographic studies of Grammitidaceae; Systematics, ecology and phytogeography of Old World pteridophytes particularly in tropical and south temperate regions
Alison Paul	Pteridophyte curation; Macaronesian and European pteridophytes
James H. Peck	Pteridophyte flora of Arkansas
Ana L. Pereira	Biological activity of extracts; Plant-cyanobacteria symbioses; Phylogeny; Cyanotoxins; Proteomics; Phytoremediation; Ecotoxicology of plants by cyanotoxins
Krzysztof Piątek	Fern biogeography
Jefferson Prado	Phylogeny, nomenclature, taxonomy, and geographical distributions of Pteridaceae; Pteridoflora in Brazil
Kathleen Pryer	Phylogenetics of ferns and basal tracheophytes using morphological and molecular data; Systematics of basal fern families, especially Marsileaceae, Hymenophyllaceae, tree ferns, pteroid ferns, ontogeny and phylogeny; Morphometrics
N. Punetha	Morphology, taxonomy and biodiversity of Central Himalayan ferns and lycophytes
Anshita Raj	Phytoremediation; Arsenic; *Pteris vittata* gametophytes
K.P. Rajesh	Ecology, taxonomy and conservation of bryophytes and pteridophytes of Western Ghats
R.G.H. Ranil	Tree ferns
Tom A. Ranker	Systematics, ecology and evolution of tropical ferns
Karen Renzaglia	Morphology; Development; Reproduction; Ultrastructure
Edgardo Santiago Rivera	Tropical ferns

Gar W. Rothwell	Phylogeny of land plants
Kai Runk	Comparative biology and ecology of Estonian *Dryopteris*; Cultivation of hardy ferns in Estonia, especially *Polystichum* and *Phyllitis scolopendrium* and their cultivars; Hardy East Asian fern species
Arthur E. Salgado	Taxonomy of Southeast Asian ferns; the genus *Asplenium* in the Philippines
Annette Schoelch	Construction morphology; Development of the sporophyll, sporangia, and sori in ferns; Evolution and phylogeny of ferns
Eric Schuettpelz	Evolution, diversification and systematics of pteridophytes, especially the leptosporangiate fern family Pteridaceae
David Schwartz	Cheilanthoid ferns
Kakali Sen	Evolutionary biology of ferns and lycophytes
Wen Shao	Fern embryology; Pteridophyte taxonomy; Polypodiaceae; *Phymatopteris*
B.D. Sharma	Morphology, anatomy, phytochemistry and experimental studies on pteridophytes; Paleobotany of Mesozoic and tertiary plants
Joanne M. Sharpe	Tropical and temperate fern life histories; Long-term studies of demography of tropical pteridophytes; Ecology of rheophytes and New England ferns
Judith E. Skog	Fern evolution and phylogeny, especially basal ferns - Osmundaceae, Schizaeaceae, Matoniaceae; Relationships with fossil ferns
Alan R. Smith	Phylogeny of pteridophytes; Phylogeny of Polypodiaceae/Grammitidaceae; Floristics of Mexican, Venezuelan and Bolivian ferns and allies; Phytogeography of ferns
V.K. Sreenivas	Molecular phylogeny; Taxonomy; *Pteris*
Michizo Sugai	Photocontrol of spore germination; Sex organ differentiation
John A. Thomson	Taxonomy, evolution and secondary metabolics of *Pteridium*; Bracken fern/insect interactions
Alejandra Vasco	Neotropical pteridophyte taxonomy; *Elaphoglossum*
Olena V. Vasheka	Fern introduction, cultivation of temperate-zone ferns in Ukraine; Pteridophyte conservation
David H. Wagner	Ferns of the Pacific Northwest; *Polystichum*; *Botrychium*; Photomicrography

Florence S. Wagner	Cytology and hybridization in pteridophytes; Monograph of *Botrychium*; Hawaiian pteridophyte flora; Cytology and paraphyses of Hawaiian pteridophytes; Bibliography of Hawaiian pteridophytes
Yasuyuki Watano	Speciation; Apogamy; Intragametophytic selfing; Allopolyploidy
James E. Watkins, Jr.	Fern ecology; Ecophysiology; Reproductive/gametophyte biology
Richard A. White	Vascular plant anatomy and morphology; Systematics and anatomy of the tree ferns (Dicksoniaceae and Cyatheaceae) and allies
Dean P. Whittier	Morphology and development of fern gametophytes; Development of gametophytes of the Ophioglossaceae, Psilotaceae and Lycopodiaceae
Kenneth A. Wilson	Hawaiian alien ferns; Pteridophyte sporangial morphology
Michael D. Windham	Cytology and phylogeny of ferns; Cheilanthoid ferns
Paul Wolf	Molecular systematics; Population genetics; Fern phylogeny; Fern genomics
George Yatskievych	Systematics of cheilanthoid ferns; Floristics of US (especially Missouri) and Mexico; Conservation
Xian-Chun Zhang	Ferns of the Himalayan region and Southeast Asia
Aurora Zlotnik	Fern anatomy; Plant stomata

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