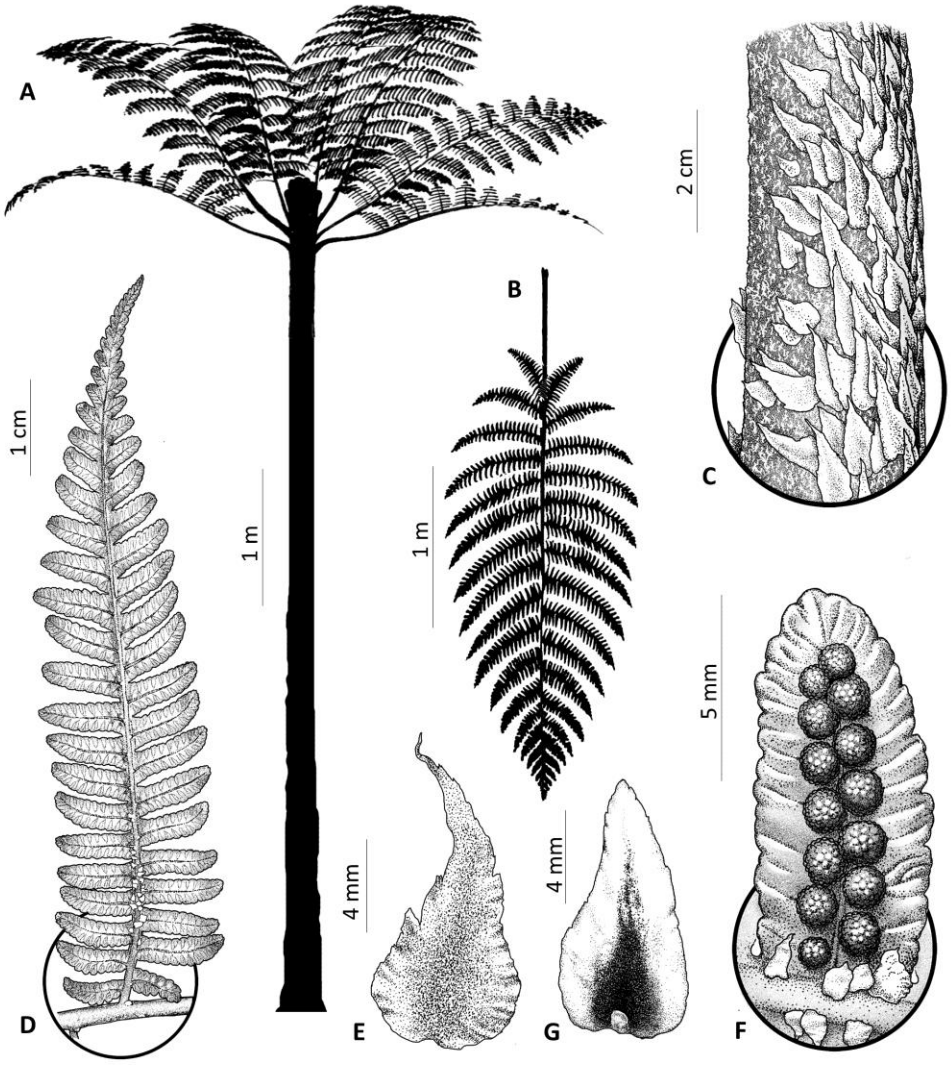
Annual Review of Pteridological Research



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ANNUAL REVIEW OF PTERIDOLOGICAL RESEARCH

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Cover illustration: *Cyathea lehnertii* A. Tejedor & G. Calatayud *sp. nov*. Illustrated by Adrian Tejedor and published in Tejedor, A., & Calatayud, G. (2017). Eleven new scaly tree ferns (*Cyathea*: Cyatheaceae) from Peru. American Fern Journal 107(3): 156–191. Used with permission.

This volume of the *Annual Review of Pteridological Research* (ARPR) provides a list of 832 literature citations on ferns and lycophytes published in 2017, an index to authors (over 2800!) and keywords, a description of research interests and contact information of pteridologists who answered our annual questionnaire.

In 2017, research on ferns and lycophytes continued to yield important worldwide contributions. Some highlights in the areas of floristics, taxonomy, physiology, reproductive biology, ecology, environmental biology, paleobotany, palynology, and medicine include the following:

- Many new family treatments for the "Floras of the cangas of the Serra dos Carajás, Pará, Brazil" and the "Prodromus of a fern Flora for Bolivia."
- Five new fern genera– *Hovenkampia*, *Gastoniella*, *Adetogramma* and the fossils *Kidstoniopteris* and *Sengelia.*
- Fifty-nine new extant or fossil species, mostly from South America (28 spp.) and Southeast Asia (13 spp.).
- Several new molecular phylogenetic analyses including a phylogenomic analysis of 38 families, a study of plastome genomic structure in Schizaeaceae, and global analyses of moonworts, Pteridoidea, Blechnaceae, *Ctenitis*, *Pyrossia*, and *Tectaria*.
- Physiological studies on stomatal dynamics, desiccation tolerance of fern spores, and starch/sugar partitioning in leaves of *Salvinia.*
- New reports on gametophyte development, reproductive biology and community structure, including sporophyte-independent gametophytes.
- A new review on the evolution of heterospory.
- Studies on heavy metal accumulation and bioremediation using a variety of genera, such as *Athyrium*, *Azolla*, *Cyrtomium*, *Equisetum*, *Pteris*, and *Salvinia*.
- Many new records of fern and lycophyte macro- and micro-fossils, including palynological records that add to our knowledge of paleofloras and paleoenvironments.
- New studies on the anti-cancer and/or immunological properties of fern- and lycophyte-derived compounds.

We hope that this edition of the ARPR will help you quickly find references within your own field of research and/or personal interest, and that continued publication of ARPR will enhance access to information published about ferns and lycophytes and stimulate further collaboration among pteridologists worldwide.

We want to thank Klaus Mehltreter who did a superb job over the past several years of compiling the literature citations and preparing the index for the ARPR. This is an enormous task and Klaus's professionalism and attention to detail made our job easier in this transition year. Thankfully, Jenna Canfield stepped in for Klaus and played a pivotal role in the preparation of this volume of the ARPR.

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, IAP Treasurer, 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 is available on the website of the American Fern Society (www.amerfernsoc.org).

Elisabeth Hooper,
Treasurer, IAP

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Acock, Patrick	Phylogeny of *Asplenium* and most aspects of *Equisetum* research
Aguraiuja, Ruth	Population biology and restoration ecology of endangered fern species
Almeida, Thaís	Systematics and evolutionary biogeography of ferns and lycophytes, with emphasis in Thelypteridaceae and neotropical Polypodiaceae
Amoroso, Victor	Botany; Economic ferns; Histochemical studies (medicinal ferns); Philippine *Cycas*; Morphology and taxonomy
Ando, Sayuri	Fern sporophyte development
Antony, Raju	Systematic studies of *Selaginella*; Ferns and conservation of ferns
Archer, Ralph	Fern horticulture
Arens, Nan	Ecology of tree fern
Bandyopadhyay, Monanjali	Phyto-geography; Ecology; Fern lore; Ethnobotany
Baksh-Comeau, Yasmin	Vascular flora of Trinidad and Tobago
Barcelona, Julie	Philippine ferns/floristics; Ecology and conservation; *Odontosoria* systematics; Philippine *Rafflesia*
Bennert, H.	Ferns and lycopods
Bera, Subir	Animal interaction with pteridophytes and its co-evolutionary significance
Bhakuni, Kamlesh	Biodiversity, taxonomy and morphology of Central Himalayan ferns
Bercu, Rodica	Histo-anatomy of ferns
Boudrie, Michel	Pteridophytes of France and of the Guianas (systematics, taxonomy, ecology, distribution)
Breckle, Siegmar	Ecosystems of the Earth; Ecology of halophytes; Tropical ecology; Desert ecology
Cao, Jian	Sexual reproduction and development of fern gametophytes
Caponetti, James	Propagation of ferns by tissue culture
Chakraborti, Kalyan	Phyto-geography; Ecology; Fern lore; Ethnobotany
Chen, Chun-Ming	Tropical plant conservation
Chiou, Wen-Liang	Gametophyte morphology and development; Reproductive biology; Antheridiogen; Phenology of sporophytes; Fern systematics
Christenhusz, Maarten	Fern floras; Island Biogeography; Botanical Journal of the Linnean Society (Adjunct Chief Editor); Phytotaxa (Founder)
de Boer, Marten	Pteridophytes of Bolivia and East Africa; Herbarium specimen collection

Dong, Shi-Yong	*Tectaria*; *Asplenium nidus* group; Taxonomy of Asian tropical ferns; Pteridophyte flora of Southern China
Dunkel, Franz-Georg	Rare ferns; Ecology and population biology
Ebihara, Atsushi	Speciation; Gametophytes; Hymenophyllaceae
Farrar, Donald	Fern reproduction; *Botrychium* systematics
Flinn, Kathryn	Ecology
Frank, Harald	Tropical ferns in general; *Platycerium*; Ant ferns; *Huperzia*
Fraser-Jenkins, Christopher	Taxonomy; Floristics; Himalayan and all Asian ferns; *Asplenium*, *Athyrium*, *Cheilanthes*, *Diplazium*, *Dryopteris*, *Polystichum*, *Pteris*; Nepal; Sri Lanka; Assam; Flora of Pakistan; Bangladesh; China; Myanmar; Tibet; Bhutan
Fry, Stephen	Cell wall polysaccharides and enzymes; *Equisetum* tissue culture (callus)
Gibby, Mary	Evolution and speciation in ferns; Fern conservation
Gilman, Arthur	Lycopodiaceae; Ophioglossaceae; Systematics of temperate ferns and allies
Goswami, Hit Kishore	Population cytogenetics of *Isoetes* and *Ophioglossum*; Pteridophytes as medicinal plants
Greer, Gary	Phenotypic plasticity; Polyploidy; Reproductive Ecology; Community assembly; Antheridiogen; Allelopathy
Gureyeva, Irina	Taxonomy; Morphology; Biology of ferns of Siberia and Russia, especially taxonomy of *Pteridium* and morphology of the fern spores
Haufler, Christopher	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
Hemp, Andreas	Vegetation ecology
Hooper, Elisabeth	Fern systematics; *Aleuritopteris*
Horn, Karsten	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*
Hovenkamp, Peter	Polypodiaceae; Nephrolepidaceae; Oleandraceae; Woodsiaceae; Saccolomataceae; Ferns of Sulawesi; Flora Malesiana; Flora of China
Imperato, Filippo	Chemistry of flavonoids and other phenolics of ferns
Iwatsuki, Kunio	Flora of East and Southeast Asia; Hymenophyllaceae; Conservation

Jones, Mirkka	Determinants of plant community composition and diversity; Ecology of neotropical ferns
Kato, Masahiro	Tropical fern flora; Morphological evolution of vascular plants; Speciation and adaptation of rheophytes; Evolution of apogamous ferns
Kessler, Michael	Biodiversity and biogeography of Bolivian montane forests, including pteridophytes; Flora of Bolivian pteridophytes
Khullar, S.	Fern floristics; Taxonomy; Cytology and morphology
van Konijnenburg-van Cittert, Johanna	Evolution of fossil fern families, especially Dipteridaceae
Krippel, Yves	Distribution of pteridophytes in Luxembourg
Kurita, Siro	Speciation; Karyotype evolution; Systematics
Lal, Brij	Inventory, conservation, and documentation of pteridophyte-associated traditional knowledge of Indian Himalayan region in particular
Landi, Marco	Population ecology
Lehnert, Marcus	Taxonomy, phylogeny, ecology and biogeography of pteridophytes; Special expertise in tree ferns
Leitch, Illia	Evolution of genome size and karyotype diversity in plants
León, Blanca	Taxonomy of neotropical Polypodiaceae, Andes and Peruvian ferns
Lin, Bai-Ling	Development; Hormone signaling; Genomics
Lindsay, Stuart	Pteridophytes of Thailand, Laos and Cambodia; Vittariaceae of Southeast Asia; Gametophyte biology/ecology; Multi-access keys
Lorence, David	Pteridophytes of Polynesia, Micronesia, Mascarenes
Lynch, Kay	Propagation and conservation of Hawaiian native ferns
Madhusoodanan, P.	Pteridophytes and bryophytes of South India; *Azolla* species and Cyanobacteria as biofertilizers
Matos, Fernando	Taxonomy, biogeography, phylogeny and evolution of *Elaphoglossum*
Matsumoto, Sadamu	Cytotaxonomic study of ferns, especially *Cyrtomium*, *Asplenium*, and *Pteris*; Pteridophyte flora of Southern Pacific Islands, Bhutan, Taiwan
McGrath, J.	Plant breeding; Molecular cytogenetics; Gene duplication
Mehltreter, Klaus	Fern ecology; Phenology; Herbivory; Interactions with insects; Invasive species
Mendoza Ruiz, Aniceto	Pteridophytes of Mexico; Taxonomy, floristics, cultivation and propagation of ferns

Metzgar, Jordan	*Cryptogramma*; Phylogenetics; Polyploidy; *Azolla*; Osmundaceae
Mickel, John	Pteridoflora of Mexico; Monographic studies of *Anemia* and *Elaphoglossum*
Mikolas, Vlastimil	*Polypodium*; *Asplenium trichomanes* agg.; *Dryopteris*; *Equisetum* and ferns of Oceania
Montgomery, James	*Dryopteris* in North America and Mexico; Ferns of Pennsylvania and New Jersey; Ecology of *Botrychium*
Moran, Robbin	Taxonomy, biogeography, phylogeny and evolution of ferns and lycophytes
Mynssen, Claudine	*Diplazium*; Brazilian flora
Nakato, Narumi	Chromosomes; Polyploidy; Hybridization; Speciation
Niño, Maite	Selaginellaceae; Lycopodiaceae; Polypodiaceae (including Grammitidaceae); Fern culture; Ecology
Øllgaard, Benjamin	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
Olsen, Sue	Testing ferns for hardiness and ornamental value and introducing ferns to the public
Pacheco, Leticia	Systematics of *Diplazium*
Page, Christopher	Biology and ecology of Pteridophyta; Biogeography; Distribution; Insular floras; Paleobotany; *Equisetum*; Patterns, principles, processes and dynamics in pteridophyte ecosystems and their evolution
Pajaron, Santiago	Reproductive biology; Population genetics; Systematics and evolution
Palmer, Daniel	Hawaiian ferns
Parris, Barbara	Monographic studies of Grammitidaceae; Systematics, ecology and phytogeography of Old World pteridophytes particularly in tropical and south temperate regions
Paul, Alison	Pteridophyte curation; Macaronesian and European pteridophytes
Peck, James	Pteridophyte flora of Arkansas
Pereira, Ana	Biological activity of extracts; Plant-cyanobacteria symbioses; Phylogeny; Cyanotoxins; Proteomic, phytoremediation, ecotoxicology of plants by cyanotoxins
Piatek, Krzysztof	Fern biogeography

Prado, Jefferson	Phylogeny, nomenclature, taxonomy, and geographical distributions of Pteridaceae; Pteridoflora in Brazil
Pryer, Kathleen	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
Punetha, N.	Morphology, taxonomy and biodiversity of Central Himalayan ferns and lycophytes
Raj, Anshita	Phytoremediation; Arsenic; *Pteris vittata* gametophytes
Rajesh, K.	Ecology, taxonomy and conservation of bryophytes and pteridophytes of Western Ghats
Ranil, R.G.H.	Tree ferns
Ranker, Tom	Systematics, ecology and evolution of tropical ferns
Renzaglia, Karen	Morphology; Development; Reproduction; Ultrastructure
Rothwell, Gar	Phylogeny of land plants
Runk, Kai	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
Salgado, Arthur	Taxonomy of Southeast Asian ferns; the genus *Asplenium* in the Philippines
Schoelch, Annette	Construction morphology; Development of the sporophyll, sporangia, and sori in ferns; Evolution and phylogeny of ferns
Schuettpelz, Eric	Evolution, diversification and systematics of pteridophytes, especially the leptosporangiate fern family Pteridaceae
Schwartz, David	Cheilanthoid ferns
Sen, Kakali	Evolutionary biology of ferns and lycophytes
Shao, Wen	Fern embryology; Pteridophyte taxonomy; Polypodiaceae; *Phymatopteris*
Sharma, B.	Morphology, anatomy, phytochemistry and experimental studies on pteridophytes; Paleobotany of Mesozoic and tertiary plants
Sharpe, Joanne	Tropical and temperate fern life histories; Long-term studies of demography of tropical pteridophytes; Ecology of rheophytes and New England ferns
Skog, Judith	Fern evolution and phylogeny, especially basal ferns - Osmundaceae, Schizaeaceae, Matonianaceae; Relationships with fossil ferns

Smith, Alan	Phylogeny of pteridophytes; Phylogeny of Polypodiaceae/Grammitidaceae; Floristics of Mexican, Venezuelan and Bolivian ferns and allies; Phytogeography of ferns
Sreenivas, V.	Molecular phylogeny; Taxonomy; *Pteris*
Vasco, Alejandra	Neotropical pteridophyte taxonomy; *Elaphoglossum*
Vasheka, Olena	Fern introduction, cultivation of temperate-zone ferns in Ukraine; Pteridophyte conservation
Wagner, David	Ferns of the Pacific Northwest; *Polystichum*; *Botrychium*; Photomicrography
Wagner, Florence	Cytology and hybridization in pteridophytes; Monograph of *Botrychium*; Hawaiian pteridophyte flora; Cytology and paraphyses of Hawaiian pteridophytes; Bibliography of Hawaiian pteridophytes
Watano, Yasuyuki	Speciation; Apogamy; Intragametophytic selfing
Watkins, Jr., James	Fern ecology; Ecophysiology; Reproductive/gametophyte biology
White, Richard	Vascular plant anatomy and morphology; Systematics and anatomy of the tree ferns (Dicksoniaceae and Cyatheaceae) and allies
Whittier, Dean	Morphology and development of fern gametophytes; Development of gametophytes of the Ophioglossaceae, Psilotaceae and Lycopodiaceae
Wilson, Kenneth	Hawaiian alien ferns; Pteridophyte sporangial morphology
Windham, Michael	Cytology and phylogeny of ferns; Chelianthoid ferns
Wolf, Paul	Molecular systematics; Population genetics; Fern phylogeny
Yatskievych, George	Systematics of cheilanthoid ferns; Floristics of US (especially Missouri) and Mexico; Conservation
Zhang, Xian-Chun	Ferns of the Himalayan region and Southeast Asia
Zlotnik, Aurora	Fern anatomy; Plant stomata

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