

Report of the Special Committee on Registration of Algal and Plant Names (including fossils)

Members of the Special Committee: Mary E. Barkworth (Convener),¹ Mark Watson (Secretary),² Fred R. Barrie,³ Irina V. Belyaeva,⁴ Richard C.K. Chung,⁵ Jiřina Dařková,⁶ Gerrit Davidse,⁷ Ali A. Dönmez,⁸ Alexander B. Doweld,⁹ Stefan Dressler,¹⁰ Christina Flann,¹¹ Kanchi Gandhi,¹² Dmitry Geltman,¹³ Hugh F. Glen,¹⁴ Werner Greuter,¹⁵ Martin J. Head,¹⁶ Regine Jahn,¹⁷ Malapati K. Janarthanam,¹⁸ Liliana Katinas,¹⁹ Paul M. Kirk,²⁰ Niels Klazenga,²¹ Wolf-Henning Kusber,¹⁷ Jiří Kvaček,⁶ Valéry Malécot,²² David G. Mann,^{2,23} Karol Marhold,²⁴ Hidetoshi Nagamasu,²⁵ Nicky Nicolson,²⁶ Alan Paton,²⁷ David J. Patterson,²⁸ Michelle J. Price,²⁹ Willem F. Prud'homme van Reine,³⁰ Craig W. Schneider,³¹ Alexander Sennikov,³² Gideon F. Smith,³³ Peter F. Stevens,^{7,34} Zhu-Liang Yang,³⁵ Xian-Chun Zhang³⁶ & Giuseppe C. Zuccarello³⁷

- 1 Intermountain Herbarium, Utah State University, Logan, Utah 84322-5305, U.S.A.
- 2 Herbarium, Royal Botanic Garden, Edinburgh EH3 5LR, Scotland, U.K.
- 3 Missouri Botanical Garden, P.O. Box 299, Saint Louis, Missouri 63166-0299, U.S.A.; Herbarium, Botany Department, Department of Science and Education, Field Museum of Natural History, 1400 S. Lake Shore Drive, Chicago, Illinois 60605-2496, U.S.A.
- 4 Science Directorate, Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB, U.K.
- 5 The Herbarium, Forest Biodiversity Division, Forest Research Institute Malaysia, 52109 Kepong, Selangor, Malaysia
- 6 Department of Palaeontology, National Museum, Prague, Václavské náměstí 68, 115 79, Praha 1, Czech Republic
- 7 Missouri Botanical Garden, P.O. Box 299, Saint Louis, Missouri 63166-0299, U.S.A.
- 8 Hacettepe Üniversitesi, Faculty of Science, Department of Botany, 06800 Ankara, Turkey
- 9 National Institute of Carpology (Gaertnerian Institution), 21 Konenkowa Street, 127560, Moscow, Russian Federation
- 10 Herbarium Senckenbergianum Frankfurt/Main, Senckenberg Forschungsinstitut und Naturmuseum, Senckenberganlage 25, 60325 Frankfurt/Main, Germany
- 11 Species 2000, Naturalis Biodiversity Center, 2333 CR Leiden, The Netherlands
- 12 Herbaria, Harvard University, 22 Divinity Avenue, Cambridge, Massachusetts 02138-2020, U.S.A.
- 13 Komarov Botanical Institute of the Russian Academy of Sciences, Prof. Popov str., 2, 197376, St. Petersburg, Russian Federation
- 14 Box 1781, Forest Hills, Kloof 3624, South Africa
- 15 Botanischer Garten und Botanisches Museum Berlin, Freie Universität Berlin, Königin-Luise-Str. 6–8, 14195 Berlin, Germany; Orto botanico di Palermo, Via Lincoln 2, Palermo PA, Italy
- 16 Department of Earth Sciences, Brock University, 1812 Sir Isaac Brock Way, St. Catharines, Ontario L2S 3A1, Canada
- 17 Botanischer Garten und Botanisches Museum Berlin, Freie Universität Berlin, Königin-Luise-Str. 6–8, 14195 Berlin, Germany
- 18 Department of Botany, Goa University, Goa – 403206, India
- 19 División Plantas Vasculares, Museo de La Plata, Universidad Nacional de La Plata, Argentina
- 20 Royal Botanic Gardens (Jodrell Laboratory), Kew, Richmond, Surrey TW9 3DS, U.K.
- 21 Royal Botanic Gardens Victoria, Birdwood Avenue, Melbourne, Victoria 3004, Australia
- 22 IRHS, Agrocampus-Ouest, INRA, Université d'Angers, SFR 4207 QuaSaV, 49071, Beaucouzé, France
- 23 Aquatic Ecosystems, Institute for Food and Agricultural Research and Technology (IRTA), Crta de Poble Nou Km 5.5, 43540 Sant Carles de la Ràpita, Catalunya, Spain
- 24 Institute of Botany, Slovak Academy of Sciences, Dúbravská cesta 9, 845 23 Bratislava, Slovak Republic; Department of Botany, Faculty of Science, Charles University, Benátská 2, 128 01 Praha 2, Czech Republic
- 25 The Kyoto University Museum, Kyoto University, Yoshida-honmachi, Sakyo-ku, Kyoto 606-8501, Japan
- 26 Biodiversity Informatics, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB, U.K.
- 27 Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB, U.K.
- 28 School of Biological Sciences, University of Sydney, New South Wales, Australia
- 29 Conservatoire et Jardin botaniques de la Ville de Genève, Case Postale 60, Chemin de l'Impératrice 1, 1292 Chambésy, Geneva, Switzerland
- 30 Naturalis Biodiversity Center, P.O. Box 9517, 2300 RA Leiden, The Netherlands
- 31 Department of Biology, Trinity College, Hartford, Connecticut 06106, U.S.A.
- 32 Botanical Museum, Finnish Museum of Natural History, University of Helsinki, Unioninkatu 44, P.O. Box 7, 00014 Helsinki, Finland; Herbarium, Komarov Botanical Institute of Russian Academy of Sciences, Prof. Popov str. 2, 197376, St. Petersburg, Russian Federation
- 33 Department of Botany, P.O. Box 77000, Nelson Mandela Metropolitan University, Port Elizabeth, 6031 South Africa; Centre for Functional Ecology, Departamento de Ciências da Vida, Universidade de Coimbra, 3001-455 Coimbra, Portugal
- 34 Department of Biology, University of Missouri-St. Louis, 1 University Boulevard, St. Louis, Missouri 63121-4400, U.S.A.
- 35 Kunming Institute of Botany, Chinese Academy of Sciences, 132# Lanhei Road, Heilongtan, Kunming 650201, Yunnan, P.R. China
- 36 The National Herbarium, Institute of Botany, Chinese Academy of Sciences, 20 Nanxincun, Xiangshan, Beijing 100093, P.R. China
- 37 School of Biological Sciences, Victoria University of Wellington, P.O. Box 600, Wellington, 6140 New Zealand

Author for correspondence: Mary Barkworth, mary.barkworth@gmail.com

DOI <http://dx.doi.org/10.12705/653.43>

Abstract The Special Committee on Registration of Algal and Plant Names (including fossils) was established at the XVIII International Botanical Congress (IBC) in Melbourne in 2011, its mandate being to consider what would be involved in registering algal and plant names (including fossils), using a procedure analogous to that for fungal names agreed upon in Melbourne and included as Art. 42 in the *International Code of Nomenclature for algae, fungi, and plants*. Because experience with voluntary registration was key to persuading mycologists of the advantages of mandatory registration, we began by asking institutions with a history of nomenclatural indexing to develop mechanisms that would permit registration. The task proved more difficult than anticipated, but considerable progress has been made, as is described in this report. It also became evident that the Nomenclature Section needs a structure that will allow ongoing discussion of registration and associated issues. Simultaneously with this report we are submitting four proposals that would provide such a structure.

Keywords *Code*; International Botanical Congress; Nomenclature; Nomenclature Section; registration

Introduction

The Special Committee on Registration of Algal and Plant Names (including fossils) was established at the XVIII International Botanical Congress (IBC) in Melbourne in 2011 (McNeill & al., 2011), its mandate being to consider what would be involved in registering algal and plant names (including fossils), using a procedure analogous to that for fungal names agreed upon in Melbourne and included as Art. 42 in the *International Code of Nomenclature for algae, fungi, and plants* (McNeill & al., 2012). The initial Committee included 37 members (Wilson, 2012). An online group was formed to facilitate discussion within the Committee. Subsequently, several other individuals who were actively involved in registration centres were added to the group with the result that, in January 2016, there were 47 listed participants, of whom one, J.L. Reveal, had died, plus two ex-officio members. To obtain votes on the proposals and approval for this report, we attempted to correspond directly with listed members. This revealed that, for various reasons, some had not been able to receive mail through the online group and one person resigned as a Committee member. There were six others from whom we received no response despite our repeated attempts to contact them, often using two or more email addresses. They are considered to have effectively resigned from the Committee. Consequently, the Committee is considered to have had 39 voting members when votes were requested.

The decision of the Nomenclature Section at Melbourne to set up the Committee was, in large part, a response to the positive experience that mycologists had had with registration, experience that resulted in the Melbourne Congress approving mandatory registration of nomenclatural novelties in fungi, starting on 1 Jan 2013. The process requires authors to register any nomenclatural novelty, prior to publication, with a recognized registration centre (repository), whereupon they are provided with a unique identifier for each name, which has to be included in the protologue along with other *Code*-mandated information.

A key step in persuading mycologists to endorse mandatory registration was the development, years earlier, of an effective online mechanism for voluntary registration. Mycologists had been strongly encouraged to use the system, often by publishers, with the result that, when asked about making registration mandatory, they were highly supportive, being familiar with the process involved and the benefits it conferred. The Nomenclature Section of the Melbourne Congress noted, however, that the process could not be extended to other groups covered by the *Code*, even on a voluntary basis, because the necessary infrastructure did not exist. Thus it seemed that the first step, after formation of the Committee, was establishment of centres that would enable voluntary registration of non-fungal groups. Unfortunately, for diverse reasons, this task proved to be more complex and time-consuming than had been foreseen. Nevertheless, substantial progress has been made.

Progress

Extant vascular plants. — A registration system for extant flowering plants and ferns has been developed by Royal Botanic Gardens, Kew (K), building on the International Plant Names Index (IPNI; <http://www.ipni.org>) system. Kew resourced its development through the deployment of staff time. Development of the system began in early 2013, defining the requirements of the system in a use case document using “technology-neutral” language. This document was circulated to members of the Committee in March 2013, and feedback was invited; it was further refined throughout 2013. Work on the creation and deployment of the pilot registration site was undertaken during 2014, and in mid-2015 the pilot site was made available for testing, assessment, and feedback by members of the Committee. Members of the IPNI editorial team and the Kew informatics development team participated in development of the system and its integration with IPNI, both in terms of the business processes around the addition and curation of name citations and technical integration. There have been changes in team membership, but use of standard development practices enabled new team members to support, enhance, and work with the system.

Issues reported from the user testing were prioritized and resolved by late 2015. In early 2016, a functional registration system (<http://registration.ipni.org>) was made publicly available for prospective users and is about to be publicized through appropriate channels.

Fossil organisms. — Two sites are being developed for fossil organisms governed by the *Code*, the Fossil Plant Index (<http://www.fossilplantnames.com/accounts/login/>) and the International Fossil Plant Names Index (IFPNI; <http://fossilplants.info/about>). Although the two sites are being developed independently based on different programming environments, the principal persons involved have agreed that the sites have similar aims and will exchange data and information. Both systems are due to be presented at the combined meeting of the XIV International Palynological Congress and the X International Organisation of Palaeobotany Conference in Salvador, Brazil, in 2016.

The Fossil Plant Index is being developed at the Czech National Museum, Prague (PR), by Jiří Kvaček and Jiřina Dašková under the auspices of the International Organisation of Palaeobotany (IOP). An initial version of the site was made available to members of the Nomenclature Committee on Fossils and to some members of the present Special Committee in December 2014. It is being revised on the basis of comments received and discussions with members of the IPNI registration team and the IOP executive. The Czech National Museum is funding the development using internal resources and is committed to the long-term maintenance of the registration site.

The International Fossil Plant Names Index (IFPNI; <http://fossilplants.info/>) was established in 2014 as an index for the names of fossil organisms and a registration centre. It is designed to be

compatible with the requirements for registration in ZooBank as well as the anticipated requirements of the *Code* (Doweld, 2015).

Algae. — Development of a registration site for names of algae will start in June 2016 at the Botanic Garden and Botanical Museum Berlin with funding from the German Research Foundation (DFG; Deutsche Forschungsgemeinschaft) for a three-year research project: *Building a Global Registration and Index System for Scientific Names and Types of Algae*. The project is also supported by the International Society for Diatom Research (ISDR) and the Global Biodiversity Information Facility (GBIF). The site will be created in cooperation with the Index Nominum Algarum at the University of California at Berkeley (<http://ucjeps.berkeley.edu/INA.html>), the Catalogue of Diatom Names at the California Academy of Sciences (<http://researcharchive.calacademy.org/research/diatoms/names/index.asp>), and the New Species File at The Academy of Natural Science of Drexel University (<http://www.ansp.org/research/systematics-evolution/collections/diatom-herbarium/collections/>). It will be developed using EDIT Platform software (<http://cybertaxonomy.eu/>) and based on the AlgaTerra Information System (<http://www.algaterra.org>) and on the IAPT Registration of Plant Names database (<http://archive.bgbm.org/registration/QueryForm.htm>). It is expected that a prototype will be ready just ahead of the International Botanical Congress in Shenzhen (July 2017), and that the fully functional site will be available within two years.

Bryophytes. — The Conservatoire et Jardin Botaniques de la Ville de Genève and the Missouri Botanical Garden have started discussing how to create a nomenclatural repository for names of bryophytes that will build on the indices they maintain for these organisms: Index Nominum Hepaticarum (<http://www.ville-ge.ch/musinfo/bd/cjb/hepatic/index.php>) and Tropicos (<http://www.tropicos.org/>).

Proposals

Despite the progress described above, the Committee does not consider it appropriate to propose dates for extending mandatory registration to additional groups of organisms at this time. Nevertheless, we consider it imperative that the Shenzhen Congress be offered the opportunity to move forward with registration without having to wait six more years. The accompanying proposals (Barkworth & al., in this issue, pp. 656–658), mentioning the level of support for each by the Committee membership, are designed to serve this purpose.

Literature cited

- Doweld, A. 2015. The International Fossil Plant Name Index (IFPNI): First year report. *I. O. P. Newslett.* 108: 4–5 and Appendix A (8 pp).
- McNeill, J., Turland, N.J., Monro, A.M. & Lepschi, B.J. 2011. XVIII International Botanical Congress: Preliminary mail vote and report of Congress action on nomenclature proposals. *Taxon* 60: 1507–1520. <http://www.jstor.org/stable/41317562>
- McNeill, J., Barrie, F.R., Buck, W.R., Demoulin, V., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Marhold, K., Prado, J., Prud'homme van Reine, W.F., Smith, G.F., Wiersema, J.H. & Turland, N.J. (eds.) 2012. *International Code of Nomenclature for algae, fungi, and plants (Melbourne Code): Adopted by the Eighteenth International Botanical Congress Melbourne, Australia, July 2011*. Regnum Vegetabile 154. Königstein: Koeltz Scientific Books.
- Wilson, K.L. 2012. Report of the General Committee: 12. *Taxon* 61: 878–879. <http://www.jstor.org/stable/41679318>