

# The International Fossil Plant Names Index (IFPNI): A global registry of scientific names of fossil organisms started

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## ABSTRACT

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The International Fossil Plant Names Index (IFPNI) is a new global on-line data base [<http://fossilplants.info/about>] of fossil names of plants, algae, fungi, allied prokaryotic forms (formerly treated as algae and Cyanophyceae), algae-related protists and fossil microproblematica (so-called ‘ambiregnal’ organisms). IFPNI as a new platform provides an online, open-access, and community-generated registry of fossil plant nomenclature as a service to the global scientific community. One of the goals of the IFPNI was also to compile and maintain a comprehensive literature based record of these fossil scientific names and bank of author names in palaeobotany. IFPNI fulfils existed gap in modern systematic botany lacking comprehensive indices of fossil plant names.

**Key-words**—Botanical Nomenclature; Botanical Bibliography; Palaeobotanical Collections.

**अंतर्राष्ट्रीय जीवाश्म पादप नामों की अनुक्रमणिका (आई एफ पी एन आई) : प्रारंभ किए गए जीवाश्म जीवों के वैज्ञानिक नामों का वैश्विक पंजीकरण**

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## सारांश

अंतर्राष्ट्रीय जीवाश्म पादप नामों की अनुक्रमणिका (आई एफ पी एन आई) पादपों, शैवाल, कवक, संबंधित प्रोकैरियोट प्ररूप (पहले शैवाल व सायनोफाइसी के रूप में माने जाने वाले) शैवाल-संबंधी प्रजीवों एवं जीवाश्म सूक्ष्म समस्यात्मक (तथाकथित, एंबीरेग्नल जीव) के जीवाश्म नामों का एक अभिनव वैश्विक युगपत आंकड़ा आधार [<http://fossilplants.info/about>] है। नूतन प्लेटफार्म के रूप में आई एफ पी एन आई एक युगपत, खुला अभिगम और वैश्विक वैज्ञानिक समुदाय की सेवा के रूप में जीवाश्म पादप नामपद्धति का समुदाय-जनित पंजीकरण प्रदान करता है। आई एफ पी एन आई का एक उद्देश्य इन जीवाश्म वैज्ञानिक नामों को संकलित और व्यापक साहित्य आधारी अभिलेख का रखरखाव करना तथा पुरावनस्पतिविज्ञान में लेखक नामों का हिसाब रखना भी था। जीवाश्म पादप नामों की व्यापक अक्षांक कमी आधुनिक वर्गीकरण वनस्पतिविज्ञान में आई एफ पी एन आई मौजूदा पूरक को पूरा करता है।

**सूचक शब्द**—वानस्पतिक नामपद्धति, वानस्पतिक ग्रंथ सूची, पुरावानस्पतिक संग्रहण।

## INTRODUCTION

**T**HE International Fossil Plant Names Index (IFPNI, 2014–onwards) was first launched in May, 2014 as an on-line data base [<http://fossilplants.info/about>] of fossil names of

plants, algae, fungi, allied prokaryotic forms (formerly treated as algae and Cyanophyceae in particular), algae-related protists and fossil microproblematica (so-called ‘ambiregnal’ organisms) published in using binary nomenclature. One of the goals of the IFPNI was also to compile and maintain a

comprehensive literature based record of these fossil scientific names and bank of author names in palaeobotany. In modern botany there was no previously comprehensive united index of fossil forms of algae, cyanobacteria and related prokaryotic microorganisms (interpreted in the past as algae), fungi and plants, which were all described since 31 December 1820 (starting point for the nomenclature of fossil plants) up to our days.

IFPNI was constructed as a platform to provide an online, open-access, and community-generated registry of fossil plant nomenclature as a service to the global scientific community. Dynamic data base aims to document all nomenclatural novelties (new scientific names of extinct organisms) and associated data, including registry of the scientific publications (taxonomic literature) containing nomenclatural acts, and authors in palaeobotany and palaeontology in general. The idea was to settle a working group of systematists to process retro data from old palaeobotanical literature and to invite also actively working palaeobotanists to become sole contributors and invited specialized editors in contributing new nomenclatural and bibliographic data by means of their on-line registration. As a result for one year of work, at present IFPNI has registered 34114 names from 3852 publications from 1003 journals and 447 books authored by 2642 authors [statistics on 14 Mar 2016]. The data base is not yet complete, and more work should be done on some remained to verified and analyzed data.

The IFPNI Platform was developed on the basis of MongoDB data base; it is hosted on the Digital Ocean virtual servers in Europe and easily and freely available to users worldwide with no restrictions in access. In contrast to the *International Plant Names Index* (IPNI, 2004-onwards), covering just extant taxa of vascular plants at present, IFPNI was constructed in a similar manner to *Zoobank* database (Zoobank, 2012-onwards) with analogous tools of registration of taxonomic literature, scientific names, and type specimens. IFPNI currently does not incorporate fossil record data; it is an aim of the future development. In addition to mentioned indices, IFPNI first provides comfortable platform and tools for uploading of original photo and inventory numbers of the type specimens which currently housed in Museums and Palaeontological Collections worldwide, to aggregate a valuable specimen documentation.

#### IFPNI DEVELOPMENT: 2014–2015

*Author's names*—Author names of palaeobotanists were mostly compiled (registered) by one of the managing editors, Valentina Nazarenko: now more than 2535 names with full names and, more importantly, standardized abbreviations and transliterations (for Cyrillic and Eastern languages) are available. They were compared to the *International Association for Plant Taxonomy* (IAPT) standard of the

authors of plant names Brummitt & Powell's *Authors of Plant Names* (1992); however, at present IFPNI has more than 37% (!) unique records of authors (palaeobotanists and palaeontologists) contributing to systematic palaeobotany, which escaped from either 1992 author's compilation or on-line author database of the *International Plant Names Index* (IPNI).

Author names were standardized against Brummitt & Powell's *Authors of Plant Names* (1992) with minor changes and alterations reflected priority of author's original spelling used in their taxonomic publications. Transliteration of the author names in Cyrillic and Eastern languages are mostly done on the basis of the accepted author's original spelling in their taxonomic works. When the alphabet of the language was changed (for example, Azerbaijani alphabet is currently based on Latin, although being originally based on Cyrillic in taxonomic publications), both versions of the spelling were registered, but in database IFPNI accepts only modern form of alphabet (Latin in case of Azerbaijani). Pinyin (formally Hanyu Pinyin) is the official IFPNI phonetic system for transcribing the Chinese characters into the Latin alphabet, which is also adopted by the International Organization for Standardization (ISO). We provide also registration of surname change of female palaeobotanists.

*Serial names*—Journal and serial data base was quite necessary for comfortable registration of new articles published in journals and serials. More than 968 such titles were registered in the IFPNI by providing full and recommended and standardized abbreviated form in accord with the *Botanico-Periodicum-Huntianum, Supplement* (BPH/S) (BPH, 1991-onwards) and *Taxonomic Literature* (1976–1988) and its Supplements (TL–2/S) (1992–2000) with a few exceptions (TL–II, 2000-onwards). For each journal title provided standardized full and abbreviated titles, superseded and preceded (if any) titles when the journal changed its name, years of publication, ISSN numbers, publishing body (organization). More than 217 serial titles, new for BPH, were registered and contributed to BPH Staff for addition and improving their records to achieve uniform standardization between IFPNI and BPH.

*Taxonomic literature (palaeobotany)*—Formation of the comprehensive Taxonomic Literature (Palaeobotany) as a result of registration of the scientific publications containing nomenclatural acts and scientific names was based on the format used in Stafleu's *Taxonomic Literature II* (<http://www.sil.si.edu/digitalcollections/tl-2/index.cfm>), including full bibliographic description of publications on the basis of the *International Standard Bibliographical Documentation* (ISBD) and providing working links to available digitized literature (BHL, JSTOR, JSTAGE, Elsevier, Springer, Taylor & Francis, CNKI, etc.). Retroactive scanning of the principal botanical and geological journals and serials, once registered in IFPNI, as for new fossil plant names and nomenclatural

acts, is doing regularly by the IFPNI Staff on the base and facilities of the Fundamental Botanical Library of the National Institute of Carpology (Gaertnerian Institution), Moscow, Russian Federation, and either uploaded into The Google Books platform for further reading or to independent platform (<https://yadi.sk>). 1087 newly digitized books and serial monographs with new for science fossil plant names were already uploaded into Google Books for 2012–2015. IFPNI is served as an aggregator only of the direct links to this taxonomic literature bearing protologues with illustrations. Currently IFPNI has registered literature in 45 languages, viz. Abkhazian, Afrikaans, Armenian, Azerbaijani, Byelorussian, Bulgarian, Chinese, Croatian, Czech, Danish, Dutch, English, Estonian, Finnish, French, Georgian, German, Greek, Hungarian, Irish, Italian, Japanese, Kazakh, Korean, Latin, Latvian, Lithuanian, Moldavian, Norwegian, Persian, Polish, Portuguese, Romanian, Russian, Serbo–Croatian, Slovak, Slovenian, Spanish, Swedish, Tajik, Turkish, Turkmen, Ukrainian, Uzbek, and Vietnamese.

IFPNI Staff continued bibliographic searches for missing in TL–2 precise publication dates of old and new taxonomic literature as well as registration of newly published taxonomic publications beyond the coverage of TL–2 (1753–1940). For the purposes of data standardization, IFPNI accepts only original titles in native language, not their Latin, Cyrillic or other counterparts or parallel titles. Transliteration of books and serials in Cyrillic and Eastern languages were done in accord with the *International Organization for Standardization* (ISO) standards.

*Geography and Palaeogeography*—The names of counties or their equivalents have been standardized using the *Times Atlas of the World* (12th ed., 2013) or *Webster's New Geographical Dictionary* (3rd ed., 1997). Place names have been converted to their modern country equivalents, but the original name is retained in a comment field [example: Böğendorf–Liebichau, Waldenburg, Silesia, Germany = Witoszów Dolny, Lubiechów, Wałbrzych, Lower Silesian voivodeship, Poland]. Names of palaeocontinents, geological terranes, tectonic plates, palaeo oceans and seas, mountain systems, palaeogeographic provinces were extracted from the available geological literature. Palaeogeographic names are used in IFPNI as well as modern geographical names in the correct describing of the distribution of fossil plant taxa in the geological history. A revised *Synopsis of Palaeogeographic Names in Palaeobotany* is planned to be produced in 2017 as a separate publication and special tool for advanced searches of the taxonomic database and palaeogeographical distribution of extinct plant taxa. Standardization of palaeogeographical names would be a separate subproject of the IFPNI to be planned in 2015–2017 to allow further mapping of the taxonomic record on the available reconstructed palaeomaps and palaeoatlases; this work is being done in collaboration with wide geological community of The International Union of Geological Sciences (IUGS).

*Stratigraphy*—Names of global stratigraphic units (systems, series and stages) of the International Chronostratigraphic Chart and the subordinate units (periods, epochs, and age) of the International Geologic Time Scale (IGTS, 2013–onwards) are only used when accepted by the International Commission on Stratigraphy (ICS) (<http://www.stratigraphy.org/>). When different names of stratigraphic units were used in the protologues of fossils in the past, these are to be changed for the use in IFPNI in accord with modern International Geologic Time Scale. Regional and outdated old stratigraphic units are mostly rejected or mentioned in a comment field when their precise age is still unknown or doubtful.

#### ON–LINE REGISTRATION, PROCESSING AND EVALUATION OF FOSSIL PLANT NAMES

*Generic Names*—IFPNI now incorporates data from the previously compiled, but outdated *Index of Generic Names of Fossil Plants*, 1820–1965 (Andrews, 1955 & 1970), *Index of generic names of fossil plants*, 1966–1973 (A.M. Blazer, 1975), *Index of generic names of fossil plants*, 1974–1978 (A. D. Watt, 1982), and *Index of generic names of fossil plants*, 1979–2000 (J. Schultze–Motel, 2003). Generic entries were revised and processed as for their validity in accord with the modern revised versions of the *International Code of Nomenclature for Algae, Fungi, and Plants* (formerly *International Code of Botanical Nomenclature*) (McNeill & al. 2012) and the *International Code of Zoological Nomenclature* (Ride & al. 1999[–2012]) (when applied). The final upload and nomenclatural processing of old generic names (published prior 2012) is expected by August, 2016. Generic names of extant organisms were uploaded into IFPNI when their extinct species were assigned taxonomically to extant genera. Infrageneric names were and are used intermittently in the developing taxonomic classifications of fossils; their input is expected to be done bit by bit when they would be recovered from the available taxonomic literature. At present IFPNI recorded 11897 generic names (accessed on 14 Mar 2016).

*Suprageneric Names*—Suprageneric names of fossil and extant algae, cyanobacteria, fungi and plants were extracted from Doweld's *Prosyllabus Tracheophytorum* (2001) and published parts of the *New Syllabus of Plant Families* (2005+). Suprageneric names of extant vascular plants (incomplete record of names when used in IFPNI) were also verified against James Reveal's *Indices Nominum Supragenericorum Plantarum Vascularium* (<http://www.plantsystematics.org/reveal/pbio/fam/allspgnames.html>) and *International Index of Plant Names* (IPNI), algae (including fossils) against *Index Nominum Algarum* (<http://ucjeps.berkeley.edu/INA.html>), bryophytes and hepatics against *Bryophyte Names Authority List* (<http://www.mobot.org/mobot/tropicos/most/bryolist.shtml>). At present IFPNI recorded 549 suprageneric names (accessed on 14 Mar 2016).

*Species and Infraspecies Names*—The fossil species are the main component of the IFPNI. Once generic names, both fossil and extant, were uploaded and registered into IFPNI, the retro registration of fossil plant species was started. At present time, IFPNI recorded 19664 species names (accessed on 14 Mar 2016). We have found unexpectedly the high amount of homonyms among registered species names (ca 1.5 %). IFPNI Staff regularly notifies IPNI, AlgaeBase, Mycobank and Index Nominum Algarum about homonym cases to update their own records.

In addition to registration of the original author's data, the spelling of species names is re-checked against modern rules of orthography outlined in ICN (Arts. 60–61), and the corrected spelling is recorded too along with improper author's terminations. For example, *Ginkgoites patagonicus* (E.W. Berry) de Seoane, Cúneo, Escapa, Wilf & Gandolfo (2015a: 349) was originally e-published with improper termination "patagonica", about which the authors were notified by the IFPNI Staff in e-mailing; although the authors later provided correct spelling in Erratum to their publication (de Seoane & al.: 364, 2015b), both spellings are nevertheless recorded in the IFPNI (<http://fossilplants.info/names/493E3B21-0D1C-41B1-947B-656045757158>).

IFPNI also registered invalidly published names (when author failed to designate holotype, provide illustration, or indicate repository for holotype, etc.); these names are annotated with invalid status by listing of concrete infringement reasons of ICN rules. For example, Dorofeev failed to designate holotype for proposed *Magnolia uralensis* Dorof. (1963: 43), but later the omission was fulfilled and the fossil species has been validated: *Magnolia uralensis* Dorof. (1975: 17); both entries, invalid (with mentioned nomenclatural status as invalid) and valid, are interconnected by cross-reference for the comfortable use [<http://fossilplants.info/names/3093738A-8041-4EDE-93B1-4FA2846AC397>].

Now the online registration allows authors and/or publishers to easily register their own new fossil species before publishing, and to use the permanent unique IFPNI lsid codes under each newly proposed new or recombined name in their publications before their printing (see e.g. Doweld, 2015a–b). This new tool provides unique cross-reference to fossil plant species in further searches through publications in web.

*Fossil Spore and Pollen Names*—The fossil spore and pollen taxonomic names are expected to be added in 2016–2017; the registration of not validly published sporomorph names and distinct Group (Turma) names of artificial system of classification of spores and pollen is processed at the same time as the registration of validly published taxonomic names. The processing of the Jansonius & Hills' *Genera File of Fossil Spores* (1976–2002) is expected to be finished in 2017 only. IFPNI will continue registration of fossil fungal

sporomorphs, once described and earlier interpreted as spores of plants. At present IFPNI recorded 5972 fossil spore/pollen species names.

*Fungal Names*—The fossil fungal taxonomic names, published between XIX century–2012, are expected to be added in 2014–2015 after verification against original taxonomic literature and new provisions of the International Code of Nomenclature for Algae, Fungi, and Plants (formerly International Code of Botanical Nomenclature). At present IFPNI recorded 1377 fossil fungal names.

*Fossil Cyanobacteria and allied Prokaryotic Names*—Registration of fossil cyanobacteria and related prokaryotic microorganisms is continued along with registration of fossil algae and related protist-like forms; however, it is planned in further to segregate all names of prokaryotic microorganisms into a separate *International Index of Fossil Prokaryotes* in 2015. At present time the revised version of the *International Code of Nomenclature of Prokaryotes* (formerly *International Code of Nomenclature of Bacteria*) does not contain nomenclatural regulations for the fossil prokaryotic taxa. At present IFPNI recorded 3483 cyano- and prokaryotic names.

*'Ambiregnal' Fossil Microorganisms and Microproblematica*—IFPNI registers all previously described fossil taxa, once described or once interpreted as of plant nature, irrespective their current taxonomic position and reference to animal (protistan) or prokaryotic taxa. Special groups of fossil algae, which are considered simultaneously as fossil protists and therefore sometimes referred to animal kingdom (Chloromonada, Chrysomonada, Dinoflagellatae, Euglenomonada, Haptomonada, Prasinomonada, etc.), are registered with additional checking of their availability (validity) as for the homonymy and other provisions of the International Code of Zoological Nomenclature. At present IFPNI recorded 2842 'ambiregnal' names.

*Type Specimens*—IFPNI provides registration of lectotypes, neotypes, epitypes and other permissible typification for the fossil plant taxa. Since this type of registration of nomenclatural acts is sensitive as for correct application of the names in systematics, IFPNI Staff scrupulously evaluated users' changes and additions to the database; erroneous or superfluous typification actions are not permissible and deleted from the main system records into the comments. At present IFPNI focuses on the registration of holotypes and designated lectotypes, the cooperation and consultations on the holotype barcoding and verification of their existence with principal palaeobotanical repositories, such as Museum für Naturkunde (Berlin), Chernyshev Central Scientific–Research Geological Exploration Museum (S.–Petersburg, Russia); Komarov Botanical Institute (S.–Petersburg, Russia); National Museum of Natural History (Washington, USA), Muséum National d'Histoire Naturelle (Paris) and numerous others.

## IFPNI FUTURE

Establishing IFPNI as a register of fossil plant names will largely provide an opportunity to introduce unprecedented stability into botanical nomenclature. Not only will taxonomic data be freely available, but also an alerting–service targeting taxa of interest to particular user groups will be provided. Completeness of the fossil plant species register will be achieved by having registration of new names as a possible ICN requirement for availability (to be discussed and worked out at the Special Committee on Registration of Plant and Algal Names established by last Melbourne International Botanical Congress), along with retrospective registration of existing names. With Code–compliance built into the registration process, we will avoid creation of homonyms, nomenclaturally superfluous names, invalid names or names with incorrect orthography. IFPNI will enable the tracking of names and hence facilitate the correction of many problems prior to publication and name availability. The IFPNI interface will provide automatic checking for Code–compliance, and thus prevent new homonymy, stabilize spellings, fix genders and stems, and provide stability in gender agreement.

A possible additional benefit of IFPNI would be universal availability of new original descriptions and partially original descriptions from retro literature. Comments field is provided for the possibility to upload newest and revised descriptions and diagnoses of registered fossil taxa. Making the inclusion of original descriptions mandatory would be very difficult to achieve, partly for reasons of current copyright laws. However, IFPNI will provide a voluntary field for original descriptions, with links to the original papers, along with additional inclusion of holotype and/or lecto/neotype illustrations. As a result, a comprehensive photo bank of principal specimens serving types of fossil species might be in further constructed.

The standardization of input data on palaeogeography and further implementation of geographical map tools will provide the possibility to get a list of taxa for palaeofloristic analysis for specified period of time and locality. Tools on the site also let users generate palaeomaps, data summary tables, lists of taxa, first appearances, time scale confidence intervals, stratigraphic confidence intervals, synonymy lists for taxa, and finally the IFPNI will provide comprehensive Fossil Record for registered taxa. The building of such a comprehensive Index is achieved to the next International Botanical Congress in Shenzhen in 2017, which will solve the problems of registration of new names as a possible ICN requirement for availability, and hence a data base of previously validly and invalidly published taxa (retro registration) should be done with a maximum. This goal might be achieved by a broad cooperation of palaeobotanists worldwide, which are invited to actively participate as data contributors of their own taxa (authors) and/or taxa under study (users) of IFPNI.

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## REFERENCES

- Andrews HN 1955. Index of generic names of fossil plants, 1820–1950. U.S. Geological Survey Bulletin 1013: 1–262.
- Andrews HN 1970. Index of generic names of fossil plants, 1820–1965. U.S. Geological Survey Bulletin 1300: 1–354.
- Blazer AM 1975. Index of generic names of fossil plants, 1966–1973. U.S. Geological Survey Bulletin 1396: 1–54.
- BPH 1991–onwards. Botanico–Periodicum–Huntianum, Supplement (BPH/S). Available from: [http://fmhibd.library.cmu.edu/fmi/iwp/cgi?-db=BPH\\_Online&-loadframes](http://fmhibd.library.cmu.edu/fmi/iwp/cgi?-db=BPH_Online&-loadframes)
- Brummitt RK & Powell CE 1992. Authors of Plant Names. Royal Botanic Gardens, Kew.
- Dorofeev PI 1963. Tretichnye flory Zapadnoj Sibiri [Tertiary floras of Western Siberia]. Izdatel'stvo Akademii Nauk SSSR, Moscow & Leningrad.
- Dorofeev PI 1975 (“1974”). *Magnolia* L. Vidy, ustanovlennye po semenam [*Magnolia* L. Species established on seeds]. In: Takhtajan, A.L. (Ed.), *Iskopaemye tsvetkovye rasteniya SSSR* [Fossil Flowering Plants of the USSR], vol. 1. pp. 15–17.
- Doweld AB 2001. Prosyllabus Tracheophytorum. Tentamen Systematis Plantarum Vascularium [Prosyllabus Tracheophytorum. Опыт системы сосудистых растений]. Moscow: GEOS. [In English & Russian.]
- Doweld AB 2015a. *Elaeocarpus sveshnikovae*, a new name for the fossil–species *Elaeocarpus microphyllus* (*Elaeocarpaceae*). *Phytotaxa* 227, 299–300.
- Doweld AB 2015b. On the nomenclature of fossil *Stuckenia* (*Potamogetonaceae*). *Phytotaxa* 227, 86–90.
- IFPNI 2014–onwards. The International Fossil Plant Names Index. Global registry of scientific names of fossil organisms covered by the International Code of Nomenclature for Algae, Fungi, and Plants (formerly International Code of Botanical Nomenclature) and International Code of Zoological Nomenclature. Available from: <http://fossilplants.info/>
- IGTS 2013–onwards. International Geologic Time Scale. Available from: <http://www.stratigraphy.org/index.php/ics-chart-timescale>
- IPNI 2004–onwards. The International Plant Names Index. Available from: <http://www.ipni.org/index.html>
- Jansonius J & Hills LV 1976–2000. Genera File of Fossil Spores. Special Publication, Department of Geology, University of Calgary, Calgary, Alta.
- McNeill J, Barrie FR, Buck WR, Demoulin V, Greuter W, Hawksworth DL, Herendeen PS, Knapp S, Marhold K, Prado J, Prud'homme van Reine WF, Smith JF, Wiersma JH & Turland NJ (Editors) 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, Koeltz Scientific Books, Königstein.
- Ride WDL (Chairman), Cogger HG, Dupuis C, Kraus O, Minelli A, Thompson FC & Tubbs PK. (International Commission on Zoological Nomenclature) 1999[–2012]. International Code of Zoological Nomenclature (ICZN) [Incorporating Declaration 44, amendments of Article 74.7.3, with effect from 31 December 1999 and the Amendment on e–publication, amendments to Articles 8, 9, 10, 21 and 78, with effect from 1 January 2012]. Ed. 4, adopted by the International Union of Biological Sciences. London: The International Trust for Zoological Nomenclature. Available from: <http://www.iczn.org/iczn/index.jsp> (accessed: 14 Mar 2016).
- Schultze–Motel J 2003. Index of generic names of fossil plants, 1979–2000. *Fossilium Catalogus II, Plantae* 106: 1–218.
- Seoane LV de, Cúneo NR, Escapa IH, Wilf P & Gandolfo MA 2015. *Ginkgoites patagonica* (Berry) comb. nov. from the Eocene of Patagonia, last ginkgoalean record in South America. *International Journal of Plant Sciences* 176: 346–363.
- Seoane LV de, Cúneo NR, Escapa IH, Wilf P & Gandolfo MA 2015. Erratum: *Ginkgoites patagonica* (Berry) comb. nov. from the Eocene of Patagonia,

- last ginkgoalean record in South America. *International Journal of Plant Sciences* 176: 364.
- TL-II 2000–onwards. *Taxonomic Literature: A selective guide to botanical publications and collections with dates, commentaries and types (1976–1988) and its Supplements (TL-2/S) (1992–2000)*. Available from: <http://www.sil.si.edu/digitalcollections/tl-2/search.cfm>
- (The) *Times Atlas of the World* 2013. 12th ed. HarperCollins Publishers Ltd., London.
- Watt AD 1982. Index of generic names of fossil plants, 1974–1978. *U. S. Geol. Surv. Bull.* 1517: 1–63.
- Webster's New Geographical Dictionary* 1997. 3rd ed. Merriam–Webster, Springfield, Mass.
- Zoobank 2012–onwards. Available from: <http://www.zoobank.org>.