



MISSOURI BOTANICAL GARDEN

4344 Shaw Boulevard • St. Louis, MO • 63110 • (314) 577-9400 • www.mobot.org

What's growing on
at the Garden!

Date: December 29, 2010

Contact: Missouri Botanical Garden Public Relations Dept.,
(314) 577-0254 or karen.hill@mobot.org (media use only)

Bryony Phillips, Royal Botanic Gardens, Kew Press Office,
+44 (0) 208 332 5607 or pr@kew.org (media use only)

Kew

PLANTS PEOPLE
POSSIBILITIES

**MISSOURI BOTANICAL GARDEN, ROYAL BOTANIC GARDENS, KEW
ANNOUNCE COMPLETION OF THE PLANT LIST**
Accomplishment Fundamental to Plant Conservation Efforts Worldwide

(ST. LOUIS): As the 2010 United Nations International Year of Biodiversity comes to a close, the Missouri Botanical Garden (MBG) and the Royal Botanic Gardens, Kew (RBG Kew) announce the completion of **The Plant List**. This landmark international resource is a working list of all land plant species¹, fundamental to understanding and documenting plant diversity and effective conservation of plants. The completion of The Plant List accomplishes Target 1 of the Global Strategy for Plant Conservation (GSPC), which called for a widely accessible working list of known plant species as a step towards a complete world flora. The Plant List can be accessed by visiting www.theplantlist.org.

“The on-time completion of The Plant List is a significant accomplishment for the Royal Botanic Gardens, Kew and the Missouri Botanical Garden, and our partners worldwide,” said Professor Stephen Hopper, Director, Royal Botanic Gardens, Kew. “This is crucial to planning, implementing and monitoring plant conservation programs around the world.”

Without accurate names, understanding and communication about global plant life would descend into inefficient chaos, costing vast sums of money and threatening lives in the case of plants used for food or medicine. The Plant List provides a way of linking the different scientific names used for a particular species together, thus meeting the needs of the conservation community by providing reliable names for all communication about plants and their uses.

(over)

ADD ONE: The Plant List

The Plant List includes 1.25 million scientific plant names, of which 1.04 million are names of species rank. Of the species names included in The Plant List, about 300,000 (29 percent) are accepted names for species and about 480,000 (46 percent) are recorded as synonyms of those species. The status of the remaining 260,000 names is “unresolved” since the contributing data sets do not contain sufficient evidence to decide whether they should be accepted names or synonyms. The Plant List includes a further 204,000 scientific plant names of infraspecific taxonomic rank linked to those species names. These numbers will change in the future as data quality improves.

“All validly published names for plants to the level of species have been included in The Plant List, the majority of them synonyms; no names have been deleted,” said Dr. Peter H. Raven, President Emeritus, Missouri Botanical Garden.

Since 2008, botanists and information technology specialists at MBG and RBG Kew have been developing and testing an innovative new approach to generating The Plant List. The approach involved merging existing names and synonymy relationships from the Royal Botanic Gardens, Kew’s World Checklist of Selected Plant Families with over one million plant names from Tropicos[®], which has been the Missouri Botanical Garden’s main online taxonomic resource since 1982.

Researchers and specialists used names and synonymy relationships from regional floras and checklists and worked out a rules-based approach² to merge them with RBG Kew’s records into The Plant List. The project has relied on collaboration with other botanists and their institutions around the world working towards GSPC Target 1; major contributions have come from The International Compositae Alliance (www.compositae.org), International Legume Database & Information Service (www.ildis.org) and The International Plant Names Index (www.ipni.org).

“This is a breakthrough,” said Chuck Miller, Vice President of Information Systems at the Missouri Botanical Garden. “By capturing taxonomic knowledge into a rulebase, computers could be employed to aid the task of sorting out the millions of plant name records assembled over the past two decades in Tropicos[®], the World Checklist of Selected Plant Families and other sources to produce this product that achieves the Global Strategy for Plant Conservation Target 1.”

The Global Strategy for Plant Conservation (GSPC) was first proposed at the XVI International Botanical Congress in St. Louis in 1999. It was adopted in April 2002 by the

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ADD TWO: The Plant List

Convention on Biological Diversity as a guide and framework for plant conservation policies and priorities worldwide at all levels. The GSPC consists of a plan containing 16 targets to address the loss of plant species around the world. At the 10th Meeting of the Conference of the Parties to the Convention on Biological Diversity held in Nagoya, Japan in October 2010, an updated plan was adopted for the period of 2011 through 2020 with updated targets. The first three objectives of the new Global Strategy for Plant Conservation are that plant diversity is well understood, documented and recognized; plant diversity is urgently and effectively conserved; and plant diversity is used in a sustainable and equitable manner. The completion of The Plant List is a significant step towards the new GSPC Target 1 – to create an online flora of all known plants by 2020.

“Having an accurate and comprehensive list of the world’s flora will be a fundamental requirement to underpin future plant conservation efforts,” said Dr. Peter Wyse Jackson, President, Missouri Botanical Garden. “The Plant List provides this new resource and will be widely used and much welcomed. Meeting this important GSPC target for 2010 represents a remarkable achievement for all those involved and provides the basis on which we can build towards the newly adopted 2020 target.”

“For anyone that depends upon reliable information about plants, including professionals working in health, food and agriculture or rural development, The Plant List represents a significant information product,” said Bob Allkin, Information Project Manager, Royal Botanic Gardens, Kew. “It will enable such professionals to find all published research about a given plant regardless of which name was used in those publications.”

With scientists working in 38 countries on six continents around the globe, the Missouri Botanical Garden has one of the three largest plant science programs in the world. Its mission is “to discover and share knowledge about plants and their environment in order to preserve and enrich life.” The Garden focuses its work on areas that are rich in biodiversity yet threatened by habitat destruction, and operates the world’s most active research and training programs in tropical botany. Garden scientists collaborate with local institutions, schools and indigenous peoples to understand plants, create awareness, offer alternatives and craft conservation strategies. The Missouri Botanical Garden is striving for a world that can sustain us without sacrificing prosperity for future generations, a world where people share a commitment to managing biological diversity for the common benefit.

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Today, 151 years after opening, the Missouri Botanical Garden is a National Historic Landmark and a center for science, conservation, education and horticultural display.

The Royal Botanic Gardens, Kew is a world-famous scientific organization, internationally respected for its outstanding living collection of plants and world-class herbarium as well as its scientific expertise in plant diversity, conservation and sustainable development in the U.K. and around the world. Kew Gardens is also a major international visitor attraction. Its landscaped 132 hectares and Kew's country estate, Wakehurst Place, attract nearly 2 million visitors every year. Kew was made a UNESCO World Heritage Site in July 2003 and celebrated its 250th anniversary in 2009. Wakehurst Place is home to Kew's Millennium Seed Bank, the largest wild plant seed bank in the world. The Royal Botanic Gardens, Kew and its partners have collected and conserved seed from 10 percent of the world's wild flowering plant species (c. 30, 000 species) and aim to conserve 25 percent by 2020.

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Eimear Nic Lughadha, Senior Responsible Owner for The Plant List at the Royal Botanic Gardens, Kew: “The challenge has been to reconcile data from sources as diverse as peer-reviewed global lists for major families and species lists prepared on a smaller scale for other purposes. Our approach has been to attempt to mimic/replicate, through the rulebase, the decisions that a working botanist would make when comparing published information sources. Of course, further research will result in changes to the list, but this is a good start.”

Bob Magill, Senior Vice President, Science and Conservation, Missouri Botanical Garden: “The Plant List provides us with a benchmark of our current knowledge of the names of flowering plants, gymnosperms, ferns and bryophytes. As more information is accumulated about these plants, the List will undoubtedly change, but we now have a fixed point to track changes and monitor relationships among the vegetation around us. The web will provide everyone interested in plants access to a defined list of the world’s plants that will enhance the study of botany and positively impact conservation, planning and climate change effects on plants.”

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The GSPC has 16 outcome-oriented targets under 5 main objectives:

- (a) Objective I: Plant diversity is well understood, documented and recognized;
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 - (e) Objective V: The capacities and public engagement necessary to implement the Strategy have been developed.
- The 16 targets adopted in 2002 were set for achievement by 2010. These targets have recently been revised and updated by the CBD at its 10th Conference of the Parties in Nagoya, Japan, setting new plant conservation goals for 2020.

Global Strategy for Plant Conservation (GSPC) Target 1 – 2010 Target

The first of the outcome oriented targets seen as fundamental to understanding and documenting plant diversity is:

- (i) A widely accessible working list of known plant species, as a step towards a complete world flora.

Global Partnership for Plant Conservation (GPPC)

The Global Partnership for Plant Conservation brings together a wide range of international, regional and national organizations in order to contribute to the implementation of the Global Strategy for Plant Conservation (GSPC) worldwide. To help nations meet the targets of the GSPC, this consortium of international and national plant and conservation agencies was formed in 2004. The Partnership is working to support national implementation and the GSPC, and to provide tools and resources on how each country can plan and act to meet the targets. The GPPC was included by the Convention on Biological Diversity as part of the flexible coordination mechanism of the GSPC and plays a significant role in helping to monitor and promote GSPC implementation. A Secretariat for the Partnership is hosted by Botanic Gardens Conservation International (BGCI). The Royal Botanic Gardens, Kew and the Missouri Botanical Garden are members of the GPPC. www.plants2010.org

Limitations

The Plant List, a working list of known plant species, currently has some significant limitations: There is no coverage of algae (perhaps 30,000 known species). Coverage of monocots is comprehensive and fairly consistent but the completeness and accuracy of the synonymy information for other flowering plants is variable. Because of the nature of the information resources from which the list has been collated, coverage is probably weakest for SE Asia and for genera commencing with letters in the latter half of the alphabet. Collaboration in the future will be vital to ensure that the

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Tropicos® has been the Missouri Botanical Garden's primary supporting database for botanical taxonomic research since 1982 and contains over one million plant names with synonymy, protologues, types, distributions, references, high resolution images and almost four million cross-referenced specimen records. The Internet face of Tropicos is www.tropicos.org, which provides open worldwide access, including integrated links to the botanicus.org repository of digitized botanical reference literature and other resources. It also incorporates datasets for numerous different floristic projects each covering different parts of the world – Madagascar, Peru, Mesoamerica, China, etc. These often reflect conflicting taxonomic views as to how many plants there are in a particular genus or which names are synonyms of which. Resolving such conflicts is part of the challenge for our Target 1 work.

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Encyclopedia of Life (EoL)

EoL's objective is to offer a webpage for every known species of life on Earth. Initiatives such as EoL depend on resources such as The Plant List in order to relate names to species so that all information about a particular species can more easily be obtained and synthesized. www.eol.org

The International Legume Database and Information Service (ILDIS)

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The Global Compositae Checklist

The Global Compositae Checklist is an integrated database of nomenclatural and taxonomic information for the second largest vascular plant family in the world. It is compiled from many contributed datasets. The database will be continually updated. The contributed data include more than 40,000 synonyms at species rank. References, infraspecific taxa and

distribution data will be available in the next edition. All species are marked as “provisionally accepted names” in Beta version. www.compositae.org/checklist

Additional Information

Paton, A.J., Brummitt, N., Govaerts, R., Harman, K. Hinchcliffe, S., Allkin, R. & NicLughadha, E. (2008). Towards Target 1 Of The Global Strategy For Plant Conservation: A Working List Of All Known Plant Species – Progress and Prospects. *Taxon* 57: 602–611.



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The International Legume Database and Information Service is a long-term program of co-operation among legume specialists world-wide to create a biodiversity database for the Leguminosae (Fabaceae) family. The database provides a taxonomic checklist plus basic factual data on distribution, common names, life-forms, uses, literature references to descriptions, illustrations and maps. www.ildis.org

The Global Compositae Checklist

The Global Compositae Checklist is an integrated database of nomenclatural and taxonomic information for the second largest vascular plant family in the world. It is compiled from many contributed datasets. The database will be continually updated. The contributed data include more than 40,000 synonyms at species rank. References, infraspecific taxa and

distribution data will be available in the next edition. All species are marked as “provisionally accepted names” in Beta version. www.compositae.org/checklist

Additional Information

Paton, A.J., Brummitt, N., Govaerts, R., Harman, K. Hinchcliffe, S., Allkin, R. & NicLughadha, E. (2008). Towards Target 1 Of The Global Strategy For Plant Conservation: A Working List Of All Known Plant Species – Progress and Prospects. *Taxon* 57: 602–611.