

Useful Plants

Data sources

A list of datasets where information on categories of use is available was compiled January – September 2015. From this list the datasets accessed for the analysis are shown in Table 1 below.

Table 1: Datasets accessed between August 2015 and March 2016 for inclusion in analysis of the number and categories of use of useful plant species.

Dataset	Managed by	Date accessed	Description
Medicinal Plant Names Services (MPNS)	Bob Allkin, Kew	17/11/2015	global resource for medicinal plant names with access to information about plants and plant products
Economic Botany Collection	Dr. Mark Nesbitt, Kew	04/12/2015	a database of Kew's Economic Botany collection containing over 121,263 economic botany collection specimens
Survey of Economic Plants for Arid and Semi-Arid Lands (SEPASAL)	Steve Davis, Kew	09/10/2015	a database of 16,407 uses records for species from the African Arid and Semi-Arid areas
Useful Plants of West Tropical Africa	Dr. Don Kirkup, Kew	13/11/2015	a database of Useful Plants from West Tropical Africa
Project MGU- Useful Plants Project (UPP)	Alex Hudson/Dr. Tiziana Ulian, Kew	17/11/2015	a compiled database of uses of species selected by communities and partners in the UPP from Botswana, Kenya, Mali, Mexico and South Africa (database not online yet)
Plants for Malaria plants for Fever	Dr. William Milliken, Kew	18/11/2015	a database of plant species used by the Yanomami to treat malaria and fever following a bibliographic survey (book)
Palmweb	Dr. Bill Baker, Kew	08/10/2015	an online palm encyclopaedia gleaned from taxonomic publications
eMonocot	Dr. Bill Baker, Kew	15/12/2015	a global online biodiversity information resource for monocotyledons.
Crop wild relative Inventory	Global Crop Diversity Trust	29/01/2016	a global priority CWR inventory, based on both gene pool and taxon group concepts (Vincent <i>et al.</i> 2013).
Plant Resources of Tropical Africa (PROTA)	Wageningen University	16/08/2015	an online resource of useful plant information from Africa
GRIN National Genetic Resources Program	John H. Wiersema, National Germplasm Resources Laboratory	21/03/2016	an online database of taxonomic information on cultivated plants in the USDA-ARS germplasm resources information network (GRIN)

Number of useful plant species categorised by use

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Only names at species rank were considered. The categories of uses were defined according to the [Economic Botany Data Standard](#) (Cook, 1995). This is the most commonly used standard and provides a unified system to describe the uses of plants. This standard was published in 1995 and resulted from discussions at the International Working Group on Taxonomic Databases for Plant Sciences (TDWG). It includes three levels of terms for uses with each additional level providing more detail, from the first level of 'Food', through to plant parts and food types.

For this analysis we used an adapted version of the standard, grouping species at the highest level into the following categories of uses: (i) Animal Food; (ii) Environmental Uses; (iii) Fuels; (iv) Gene Sources; (v) Human Food; (vi) Invertebrate Food; (vii) Materials; (viii) Medicines; (ix) Poisons; (x) Social Uses – see Table 2 below. The adaptations grouped the original categories of 'bee plants' and 'invertebrate food' into the single category 'Invertebrate Food', 'food' and 'food additives' into 'Food', and all poisons under the single classification of 'Poisons'.

Table 2. Definitions of uses of plants and plant products, according to the Economic Botany Data Collection Standard (Cook, 1995) and adapted from Ulian et al. (2016).

Uses	Definition
Animal food	Forage and fodder for vertebrate animals only
Environmental use	Plants used for environmental purposes such as agroforestry, as companion plants, ornamentals, barrier edges, shade plants, firebreaks, soil improvers, plants for revegetation, erosion control, pollution control, and indicators of the presence of metals, pollution, and underground water
Invertebrate food	Plants used as pollen or nectar sources for honey production, or food for invertebrates useful to humans such as silk worms or edible grubs
Food	Food, including beverage and food additives for humans only.
Fuels	Wood, charcoal, petroleum substitutes, fuel, alcohols, tinder, and non-woody fuel.
Gene sources	Wild relatives of crop plants that may contain useful traits of value, for example drought tolerance or disease resistance, in breeding programmes
Invertebrate food	Plants used as pollen or nectar sources for honey production, or food for invertebrates useful to humans such as silk worms or edible grubs
Materials	Wood, fibres, cork, cane, tannins, dyestuffs, latex, rubber, resins, gums, waxes, lipids, and their derived products.
Medicine	To treat human and veterinary medical disorders
Poisons	

	Plants which are both accidental and useful poisons for vertebrate and non-vertebrate animals, plants, bacteria, and fungi, e.g. for hunting and fishing, molluscicides, herbicides, insecticides.
Social use	Plants used for social purposes which are not classified as food or medicines, such as adulterants, hallucinogens, masticatories, sacred/spiritual and ritual plants, sedatives, smoking materials, snuff, and stimulants.

References

Castañeda-Álvarez, N.P., Khoury, C.K., Achicanoy, H.A., Bernau, V., Dempewolf, H., Eastwood, R.J., Guarino, L., Harker, R.H., Jarvis, A., Maxted, N., et al. (2016). Global conservation priorities for crop wild relatives. *Nature Plants* 2: 16022.

Cook, F. (1995). *Economic botany data collection standards, prepared for the international working group on taxonomic database for plant science (TDWG)*. Kew: Royal Botanic Gardens, Kew.

Ulian, T., Sacande, M., Hudson, A., and Mattana, E. (2016). Plant conservation for the benefit of local communities: The MGU - Useful Plants Project. In, *Botanists of the Twenty First Century: Roles, Challenges and Opportunities*, 22-25 September 2014. B. Rakotoarisoa N.R., S., Riera, B. Paris: UNESCO: 28-34.

Vincent, H. et al. (2013). A prioritized crop wild relative inventory to help underpin global food security. *Biological Conservation* 167: 265–275.

Useful links

- CWR Inventory: <http://www.cwrdiversity.org/checklist/>
- CWR Atlas: <http://www.cwrdiversity.org/distribution-map/>
- CWR Occurrence database: <http://www.cwrdiversity.org/checklist/cwr-occurrences.php>
[Paper in preparation]
- Gap Analysis results <http://www.cwrdiversity.org/conservation-gaps/>
- Genesys: <https://www.genesys-pgr.org/welcome>
- International Treaty on Plant Genetic Resources for Food and Agriculture: <http://www.planttreaty.org/>
- Global Strategy for Plant Conservation: <http://www.plants2020.net/about-the-gspc/>
- PwC CWR value study: <http://www.pwc.co.uk/services/sustainability-climate-change/insights/understanding-the-value-of-seeds.html>