University of Kent

Kent Academic Repository

Kor, Laura and Diazgranados, Mauricio (2021) *London's Useful Plants: Highlighting the Use and Folklore of Urban Plants to Inspire Conservation Interest.* InPractice (114).

Downloaded from
https://kar.kent.ac.uk/107442/ The University of Kent's Academic Repository KAR

The version of record is available from
https://cieem.net/i-am/in-practice/

This document version
Publisher pdf

DOI for this version

Licence for this version
UNSPECIFIED

Additional information

Versions of research works

Versions of Record
If this version is the version of record, it is the same as the published version available on the publisher's web site. Cite as the published version.

Author Accepted Manuscripts
If this document is identified as the Author Accepted Manuscript it is the version after peer review but before type setting, copy editing or publisher branding. Cite as Surname, Initial. (Year) 'Title of article'. To be published in ***Title of Journal*** , Volume and issue numbers [peer-reviewed accepted version]. Available at: DOI or URL (Accessed: date).

Enquiries
If you have questions about this document contact ResearchSupport@kent.ac.uk. Please include the URL of the record in KAR. If you believe that your, or a third party's rights have been compromised through this document please see our Take Down policy (available from https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies).

Feature

London's Useful Plants: Highlighting the Use and Folklore of Urban Plants to Inspire Conservation Interest



Laura Kor ACIEEM
Royal Botanic Gardens, Kew, King's College London and Mott MacDonald



Mauricio Diazgranados
Royal Botanic Gardens, Kew

Keywords: ethnobotany, plant records, urban ecology

Increasing urbanisation is changing the way people experience nature. Meanwhile, despite their importance to life on Earth, plants are ignored and undervalued in many societies and conservation initiatives. In the face of this double challenge, we discuss the potential for a focus on useful plant species to ignite and encourage plant awareness and conservation interest among urban populations. We use London as a case study to present the range of useful plants that can occur in an urban context.

Introduction

Urbanisation and the 'pigeon paradox'

London's population is projected to increase to 10.8 million by 2041 (Greater London Authority 2021). This reflects patterns of global urbanisation, with the United Nations predicting that over 60% of people will live in cities within the next 10 years. This is relevant to biodiversity and conservation in many ways, one being through the 'pigeon paradox' (Dunn *et al*. 2006), which is based on three main assertions. Firstly, with biodiversity being lost at an unprecedented rate, current conservation efforts are insufficient. Secondly, people are much more likely to care about and take conservation action if they have direct experience of nature. Thirdly, and paradoxically, with increasing urbanisation ever more

people will only experience nature in urban environments. This means that motivating conservation action will increasingly depend on people's interactions with nature in our cities.

Plant awareness disparity

Plants provide vital functions which enable life on Earth. Ethnobotany – the study of people's categorisation, understanding and use of plants – has a long history, with over 40,000 useful plants documented (Diazgranados *et al*. 2020). These are species with reported human uses, from food and fuel to those with spiritual and aesthetic values. Despite this, plants often remain unnoticed by many, providing a backdrop for charismatic fauna that many find easier to identify and appreciate. This tendency, termed 'plant awareness disparity' (PAD; Parsley 2020) (also known as 'plant blindness'), has been cited as a reason plants are often ignored in conservation planning (Balding and Williams 2016).

Evidence for PAD exists in the UK and other Western societies. This includes studies in the UK and USA showing that participants have better recollection and visual detection of animals compared to plants (Balding and Williams 2016). Certain theories purport that PAD is rooted in human biology, with our perception of plants being lower than for animals due to our evolutionary history. For example, the animate monitoring hypothesis suggests that ancestral hunter–gatherers needed to monitor animals more than plants due to their greater potential danger and importance as food. Other theories focus on visual detection, suggesting that individual plants are simply not seen, since they do not move and generally grow close to and are similar in colour to other plants (Balding and Williams 2016).

But strong bonds with plants persist in many cultural groups across the world, which are often under-represented in global conservation planning (Ro 2019, Milner-Gulland 2021). This challenges purely biology-based theories of PAD. Even if biology has a role, cultural factors are clearly also significant in determining how individuals and social groups in general notice and value plants. So how can this be used to develop greater plant awareness? And what means are there to encourage people in urban environments to support plant conservation and environmental protection?

Motivating conservation interest

Conservation initiatives often focus on environmental education. However, evidence shows that knowledge alone may not be enough to motivate behaviours (Balding and Williams 2016). And plants often take a back seat in education initiatives, even in formal biological training.

To improve plant awareness, Balding and Williams (2016) emphasise direct experiences that highlight certain species and individuals, helping people look beyond a green blur. Meanwhile, many of the societies that have strong bonds with plants are united by the feeling of kinship between humans and plants. This is often based on the recognised necessity of plants, with associated cultural traditions and folklore encouraging their care and responsible use.

With this in mind, and in response to calls for novel approaches to both harness people's experiences of urban nature and to increase plant awareness, we suggest focusing on useful plant species. The importance of exposing people to everyday plant interactions is highlighted by Schussler, one of the authors of the phrase 'plant blindness' (Ro 2019). This already happens through our constant use of plants, such as in food, cosmetics and medicines. By highlighting these often-overlooked connections, identifying useful species in local urban areas and showcasing their stories and ecological importance, easily ignored pavement plants, street trees and park planting can perhaps start to gain new meaning.

Our focus is on promoting interest in plants by highlighting their relevance to our lives, thus garnering conservation interest and engagement (Craig 2019). However, this is amidst a current trend for 'rural' activities such as local food-growing and foraging in London, evidenced through a boom in guided walks, social media engagement and the sale of relevant books (Cole 2021). As stated by the Woodland Trust, "many people seek not just to be in nature, but to genuinely connect with it…. Foraging gives us the chance to do that." However, these activities often lack a link to conservation. As well as promoting botanical interest, a focus on useful plants could therefore also provide a route for conservation organisations to reach new audiences while encouraging responsible foraging practices, thereby helping to prevent such trends from negatively impacting urban biodiversity (Fischer and Kowarik 2020).

Useful plants in London

Distribution of useful plants

To highlight the diversity of plant stories in urban environments, we assessed the presence of useful plant species in London, based on publicly available records and the World Checklist of Useful Plant Species (WCUP). The WCUP was compiled from a range of literature, herbarium records and databases, classifying plant uses into ten 'Level 1' categories (Diazgranados *et al*. 2020). Georeferenced plant records in London were downloaded from the National Biodiversity Network (NBN; https://nbnatlas.org), including only species-level entries from the last 15 years (2006–2020), clipped to the extent of London's 32 boroughs.

The survey resulted in 44,403 records for 1893 plant species across the London boroughs. Of these, 950 species (over 50%) have one or more reported uses globally, with all 10 use categories represented (Figure 1a). Useful species accounted for 77% of plant records in the capital. Based on the taxonomic database of the Botanical Society of Britain and Ireland (BSBI), 453 of the 950 species are known or inferred to be native, with the remaining 497 considered alien, including invasive species (Figure 1b). This is higher than the overall ratio of alien to native plants in Britain and Ireland, suggesting that many species may be introduced for their use value. Nineteen species were of conservation concern: 12 Vulnerable, six Endangered and one Critically Endangered on the GB Red List for Vascular Plants (February 2021 revision).

Useful plants with the most records were hawthorn (*Crataegus monogyna*), ash (*Fraxinus excelsior*) and pedunculate oak (*Quercus robur*; Figure 1b). These are no doubt very familiar to *In Practice* readers. However, the likelihood is that most Londoners would struggle to name them (Wyner and Doherty 2021).

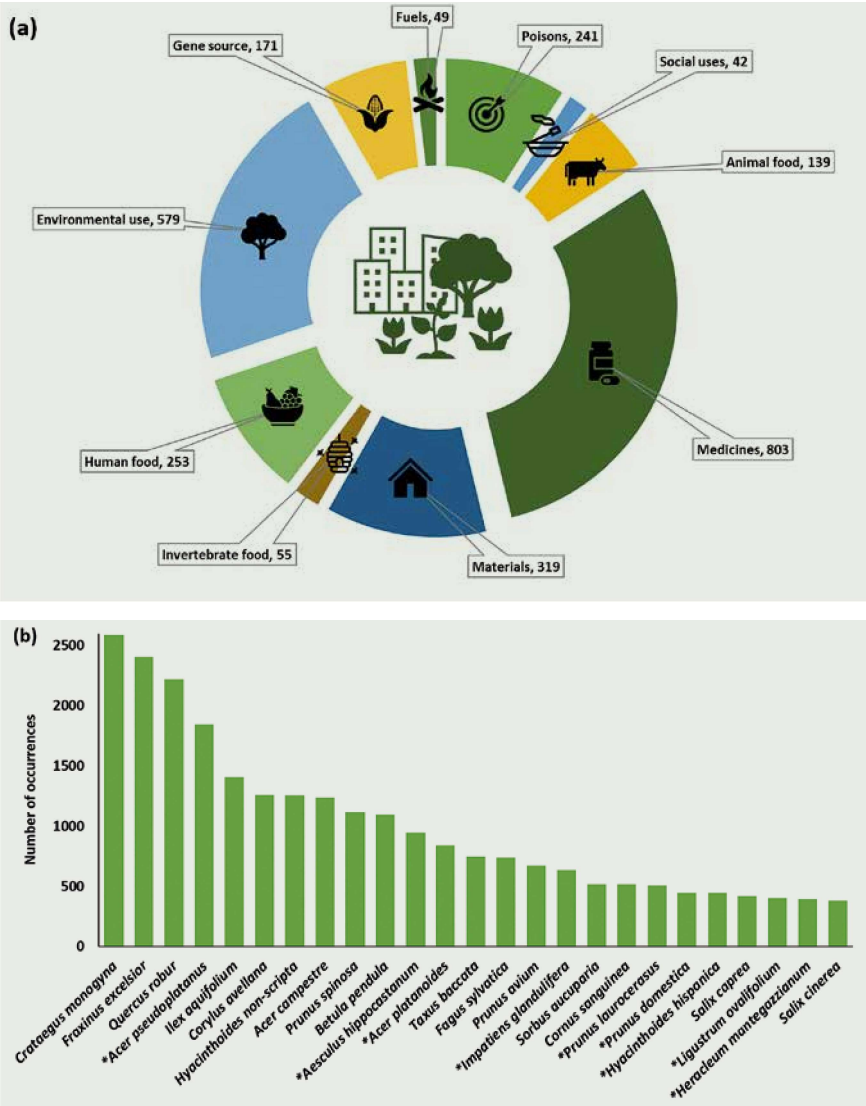


Figure 1. Characteristics of useful plants in London, showing (a) the number of species within each Level 1 use category, as per the WCUP (species can occur in multiple categories) and (b) the top 25 species in terms of number of occurrences based on NBN Atlas data. * Indicates non-native species as defined by BSBI.

Away from trees and shrubs, a plant with countless uses through history that most would surely recognise is the common, or stinging, nettle (*Urtica dioica*; Box 1). Invasive species also feature, including the Indian balsam (*Impatiens glandulifera*) and the tree of heaven (*Ailanthus altissima*). These can have negative impacts on native ecology, with invasive species being a major driver of global biodiversity loss. Box 1 highlights plant stories and uses for some of the most commonly occurring plants in London.

Data limitations

The occurrence and species numbers we present are unlikely to document the true abundance and diversity of useful plants in London. Analyses were based on NBN Atlas records only and we relied on the WCUP alone to categorise uses. While NBN provides a valuable, open-access database of UK species we recognise that there are gaps in its plant records, with our results only intended to provide a representation of the richness of useful plants in the city.

The BSBI maintains a comprehensive Distribution Database (https://database.bsbi.org/), which could provide data for future analyses. However, the shortfall in data submitted to records centres is important to highlight. Conservation organisations and researchers often rely on existing records, including in urban environments, as demonstrated at the National Forum for Biological Recording Conference on Wildlife recording in the urban world (www.nfbr.org.uk/?q=conference_2021). A government-commissioned report on biodiversity data recommended "the re-use of species data collected by consultants in transparent processes (…) potentially through new regulation. This will (…) support environmental outcomes" (Cabinet Office 2021). Meanwhile, Rowe and Clark (2021) recently published suggestions to support consultants in submitting records. As ecologists and conservationists, we should be pushing to implement data sharing wherever possible, with or without a mandated requirement.

Ethnobotany in multi-cultural London

We have focused on geographic records of useful plants on our streets and green spaces. Meanwhile, ethnobotanical studies in London directly showcase plant use in different communities. For instance, despite restricted access to traditional herbal remedies from their country of origin, migrants from Bolivia and Peru continue using home remedies, relying more on food species and available cosmopolitan plants (Ceuterick *et al*. 2011). This includes herbs occurring in London such as mint (*Mentha* spp.) and oregano (*Origanum vulgare*).

Similar patterns were found among immigrants of the Sikh religion. Traditional medicine was important for many interviewed but was changing in the face of reduced availability of ingredients and altering views in younger generations (Sandhu and Heinrich 2005). Meanwhile, many of the non-native plant species recorded in London have a rich history of uses and folklore in their native countries.

It is well documented that urban areas provide novel and varied environments for ecology which can support a range of wildlife if appropriately managed (Francis and Chadwick 2013). Ethnobotanical studies showcase high biocultural diversity too. Recent CIEEM and *In Practice* articles have discussed the under-representation of Visible Minority Ethnic (VME) and Black, Asian and Minority Ethnic (BAME) groups in conservation and ecology (Craig 2019, Williams 2020). Both authors highlighted the disproportionate number of VME people who live in inner city areas, with Craig stressing the need "to make nature relevant", such

Box 1. Showcasing some of London's useful plants



Common nettle (L1 uses: medicine, food, materials): while we may try to avoid *Urtica dioica* L. stings, flogging with nettles, or 'urtication', has been documented for chronic rheumatism in many cultures including Britain and ancient Rome. Its leaves are a nutritional green vegetable with many culinary uses, and remain key in Cornish Yarg cheese. There is a long history of using nettle fibres for textiles, with their common name possibly deriving from the Anglo-Saxon word *noedl* (needle). Nettle was relied on in Germany during World War 1 cotton shortages and has seen a recent resurgence as a sustainable alternative to cotton. It is associated with folklore, featuring heavily in Hans Christian Andersen's fairy tales.



Pedunculate oak (L1: animal food, environmental use, human food, fuel, materials, medicine, poison): *Quercus robur* L. is tightly bound to the history of Britain and is the national tree of Ireland. King Arthur's Round Table was made from a single piece of oak, reflecting its timber value. Oak bark is used as a dye, while its acorns have been fed to livestock, eaten by humans during famine and even used as a charm to protect against lightning. Medicinally, oak has been used for its astringent properties in many countries, and even oak galls have been harvested.



Tree of heaven (L1 uses: animal food, environmental use, invertebrate food, fuel, materials, medicine, poison): an invasive species in the UK, with calls for it to be listed on Schedule 9 of the Wildlife and Countryside Act, *Ailanthus altissima* (Mill.) Swingle (commonly known as 臭椿 or *chòuchūn* in China) has many uses. It even features in the oldest existing Chinese encyclopaedia, from *c*.300 BC. Applications include cultivation to feed caterpillars of the silk-spinning ailanthus moth, tinctures to treat cardiac complaints and harvesting its wood for furniture, charcoal and firewood.

With reference to Grieve (1982), Vickery (2019), Hu (1979) and Diazgranados *et al*. (2020).

"Outreach and engagement that focuses on plants in local urban environments, while highlighting their uses in a variety of cultures, could provide relevance to cultural heritage and a connection to the local living world."

as referring to nature and biocultural knowledge in different countries and under-represented groups. Outreach and engagement that focuses on plants present in local urban environments, while highlighting their uses in a variety of cultures, could therefore provide relevance to cultural heritage and a connection to the local living world (Balding and Williams 2016, Wyner and Doherty 2021).

While this article highlights the relevance of plants rather than directly encouraging harvesting, a recent study by Fischer and Kowarik (2020) presented urban foraging as a promising tool for connecting society to nature. Their findings from Berlin suggested that foraging does not pose a threat to native biodiversity, with the general public harvesting common species such as dandelion and blackberry. Edible plant collection was undertaken by people from diverse backgrounds and the authors suggested incorporating such species in green infrastructure to further increase accessibility (Fischer and Kowarik 2020).

Aside from direct uses, plants provide many ecosystem services in urban environments. Their recreational, aesthetic and health values are recognised through the creation of parks. They also provide regulating services, such as improving air quality and local climate regulation. Broader awareness of this is needed to motivate spatial planning approaches that further incorporate green spaces sustainably (Rogers *et al*. 2015). This could simultaneously enhance habitats for wildlife, improve nature accessibility and support adaptation to urban climate change.

Final remarks

Urban landscapes were historically ignored by conservationists, with nature and ecology seen to occupy the realms of 'pristine' areas excluding humans (Francis and Chadwick 2013). The emergence of urban ecology – a hugely interdisciplinary field – has given voice not just to the unique ecological interest and disproportionately large environmental impact of cities, but also the crucial interactions of people with urban nature.

The health benefits of urban nature and issues of equitable access are now recognised at the highest levels of conservation planning. The Draft Post-2020 Global Biodiversity Framework aims to "increase the area of, access to, and benefits from green and blue spaces, for human health and well-being in urban areas" (Convention on Biological Diversity 2021). The London Plan also includes policies for urban greening and access to nature (Greater London Authority 2021). Similarly important is the need to inspire increasingly urban populations to care about biodiversity.

Making nature relatable is vital for this goal, particularly for plants, as PAD continues to limit conservation action. A focus on useful plants is one way of achieving this, highlighting their huge diversity in London and the continued importance of ethnobotany among many communities. While the trends for foraging and other rural activities in London often lack conservation links, they show a wish to connect to nature, mirrored in the global movement for National Park Cities (National Park City Foundation 2021). London was designated as the world's first, highlighting its natural heritage and providing a means to improve green spaces for a more diverse range of people. Focusing on the biocultural values of our urban plants could be an additional route for nature organisations to reach broader audiences and to develop growing the environmental awareness into conservation interest, support and action.

References

Balding, M. and Williams, K.J.H. (2016). Plant blindness and the implications for plant conservation. *Conservation Biology*, **30**: 1192–1199.

Cabinet Office. (2021). *Mapping the Species Data Pathway: Connecting Species Data Flows in England*. Cabinet Office – Geospatial Commission, London.

Ceuterick, M., Vandebroek, I. and Pieroni, A. (2011). Resilience of Andean urban ethnobotanies: a comparison of medicinal plant use among Bolivian and Peruvian migrants in the United Kingdom and in their countries of origin. *Journal of Ethnopharmacology*, **136**: 27–54.

Cole, E. (2021). The Growing Popularity of Foraging in London. Available at: www.swlondoner.co.uk/news/20062021-foraging-growing-popularity-london/. Accessed 23 September 2021.

Convention on Biological Diversity. (2021). *First Draft of the Post-2020 Global Biodiversity Framework*. Convention on Biological Diversity.

Craig, M.-R. (2019). How do we Change a Whole Sector? Colonialism in Conservation Nature is the Cause of Institutionalised Racism. Available at https://cieem.net/colonialism-in-conservation/. Accessed 5 August 2021.

Diazgranados, M., Allkin, B., Black, N. *et al*. (2020). *World Checklist of Useful Plant Species*. KNB Data Repository.

Dunn, R.R., Gavin, M.C., Sanchez, M.C. and Solomon, J.N. (2006). The pigeon paradox: dependence of global conservation on urban nature. *Conservation Biology*, **20**: 1814–1816.

Fischer, L.K. and Kowarik, I. (2020). Connecting people to biodiversity in cities of tomorrow: is urban foraging a powerful tool? *Ecological Indicators*, **112**: 106087.

Francis, R.A. and Chadwick, M.A. (2013). *Urban Ecosystems: Understanding the Human Environment*. Taylor & Francis Group, London.

Greater London Authority. (2021). *The London Plan: The Spatial Development Strategy for Greater London*. Greater London Authority, London.

Grieve, M. (1982). *A Modern Herbal*. Penguin Books, London.

Hu, S.Y. (1979). Ailanthus. *Arnoldia*, **39**: 29–50.

Milner-Gulland, E.J. (2021). The global conservation movement is divided but not diverse: reflections on 2020. *Oryx*, **55**: 321–322.

National Park City Foundation. (2021). *Let's Make More Cities National Park Cities*. Available at www.nationalparkcity.org/. Accessed 6 August 2021.

Parsley, K.M. (2020). Plant awareness disparity: a case for renaming plant blindness. *PLANTS, PEOPLE, PLANET*, **2**: 598–601.

Ro, C. (2019). *Why 'Plant Blindness' Matters — and What You Can Do About It*. Available at www.bbc.com/future/article/20190425-plant-blindness-what-we-lose-with-nature-deficit-disorder. Accessed 4 August 2021.

Rogers, K., Sacre, K., Goodenough, J. and Doick, K. (2015). *Valuing London's Urban Forest Results of the London i-Tree Eco Project*. Available at www.london.gov.uk/sites/default/files/valuing_londons_urban_forest_i-tree_report_final.pdf. Accessed 18 August 2021.

Rowe, A. and Clark, D. (2021). Biodiversity data: showcasing Wales' approach and encouraging better data sharing. *In Practice*, **112**: 41–43.

Sandhu, D.S. and Heinrich, M. (2005). The use of health foods, spices and other botanicals in the Sikh community in London. *Phytotherapy Research*, **19**: 633–642.

Vickery, R. (2019). *Vickery's Folk Flora: An A-Z of the Folklore and Uses of British and Irish Plants*. Weidenfield & Nicolson, London.

Williams, H. (2020). Stimulating representation of BAME people in the ecological professions. *In Practice*, **108**: 49–51.

Wyner, Y. and Doherty, J.H. (2021). Seeing the trees: what urban middle school students notice about the street trees that surround them. *Journal of Biological Education*, **55**: 155–177.

About the Authors

Laura Kor is a PhD student at the Royal Botanic Gardens, Kew and King's College London and works as a Consultant Ecologist for Mott MacDonald. She's mainly lived in urban environments, taking many years before becoming aware of the wonders of plants.

Contact Laura at: l.kor@kew.org

Mauricio Diazgranados is a Research Leader in the Ecosystem Stewardship priority at the Royal Botanic Gardens, Kew. His interests focus on multidisciplinary methods for the study, sustainable use and conservation of plant and fungal diversity.

Contact Mauricio at: m.diazgranados@kew.org

Acknowledgements

Thank you to Sonia Dhanda, Mihai Coroi and Max Heaver, who provided very useful comments on the draft article. LK is supported by a studentship awarded by the Natural Environment Research Council (grant NE/ S007229/1).