



# Kasia Ziemińska

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**Keywords** ● plant structure and function, wood anatomy, wood density, tropical and temperate forests, plant ecology and physiology, interdisciplinary research, Harvard Uni, Oxford Uni, Macquarie Uni, Kew Gardens, WSL, graphic design, curiosity, creativity, open mind

## Work experience

- 2018-present ● Postdoc, Forest Dynamics Research Unit at the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), Birmensdorf, Switzerland (part-time)
- 2016-2018 ● Independent Postdoctoral Putnam Fellow at the Arnold Arboretum of Harvard University, Boston, USA
- 2015-2016 ● Postdoc, Ecosystems Laboratory, Oxford University, Oxford, UK; supervisor: Prof. Yadvinder Malhi (initially part-time, advanced to full-time)
- 2009 ● Research assistant, Comparative Ecology Lab, Macquarie University, Sydney, Australia; supervisor: Prof. Mark Westoby
- 2008 ● Plant anatomist and database manager, Jodrell Laboratory, Royal Botanic Gardens, Kew, UK; supervisor: Dr. Peter Gasson

## Education

- 2010-2014 ● PhD, Comparative Ecology Lab, Macquarie University, Sydney, Australia; supervisors: Prof. Mark Westoby and Prof. Ian Wright. Thesis: Anatomical variation in twig wood across Australian angiosperms. Doctor of Philosophy qualified: 03.06.2014
- 2005-2007 ● MSc, Mickiewicz University, Poznań, Poland. Thesis: Leaflet anatomy of two *Encephalartos* Lehm. species.
- 2002-2005 ● BSc, Mickiewicz University, Poznań, Poland. Thesis: Genera and species of cycads in the Poznań Greenhouse.
- 2004 ● Erasmus student exchange program, Masaryk University, Brno, Czech Republic

## Skills/experience

- Highly skilled in wood anatomy, as well as measuring a variety of other traits: soft traits (wood density, leaf area, etc.), mechanics (MOE, MOR), physiology (leaf/stem water potential, capacitance)
- Microscopy (light, SEM, TEM), image analysis (ImagePro Plus, ImageJ), image manipulation + graphic design (Photoshop, Illustrator, InDesign), mechanical performance tests (Instron Materials Testing Machine)
- Field work in remote areas from humid tropical rainforest to semi-arid woodlands (Australia) and in temperate regions (North-East USA)
- Statistical analysis (R, Sigmaplot)

## Publications

- 2019 ● Aguirre Gutiérrez J, Oliveras I, Rifai S, Fauset S, Adu-Bredu S, Afum-Baffoe K, Baker T, Feldpausch TR, Gvozevaite A, Hubau W, Kraft NJB, Lewis SL, Moore S, Niinemets Ü, Peprah T, Phillips OL, **Ziemińska K**, Enquist B, Malhi Y. *Shifts in forest traits along an African forest transect in response to long-term drought*. Ecology Letters. **Accepted**.

- 2019 • Etzold S, **Ziemińska K**, Rohner B, Bottero A, Bose AK, Rühr NK, Zingg A, Rigling A. *One century of forest monitoring data in Switzerland reveals species-specific trends of climate induced tree mortality*. *Frontiers in Plant Science*. **Accepted**.
- 2018 • Morris H, Gillingham MAF, Plavcová L, Gleason SM, Olson ME, Coomes DA, Fichtler E, Klepsch MM, Martínez-Cabrera HI, McGlenn DJ, Wheeler EA, Zheng J, **Ziemińska K**, Jansen S. *Vessel diameter is related to amount and spatial arrangement of axial parenchyma in woody angiosperms*. *Plant, Cell & Environment* 41: 245–260.
- 2016 • Morris H, Plavcová L, Cvecko P, Fichtler E, Gillingham MAF, Martínez-Cabrera HI, McGlenn DJ, Wheeler E, Zheng J, **Ziemińska K** and S Jansen. *A global analysis of parenchyma tissue fractions in secondary xylem of seed plants*. *New Phytologist* 209(4): 1553-1565.
- 2015 • **Ziemińska K**, Westoby M, Wright IJ. *Broad anatomical variation within a narrow wood density range – a study of twig wood across 69 Australian angiosperms*. *PLoS ONE* 10(4): e0124892.
- 2014 • **Ziemińska K**. *Anatomical variation in twig wood across Australian angiosperms*. PhD thesis. Macquarie University, Sydney, Australia.
- 2013 • **Ziemińska K**, Butler DW, Gleason SM, Wright IJ and M Westoby (2013) *Fibre wall and lumen fractions drive wood density variation across 24 Australian angiosperms*. *AoB PLANTS*, Volume 5, plt046.
- 2012 • Gleason SM, Butler DW, **Ziemińska K**, Waryszak P and M Westoby. *Stem xylem conductivity is key to plant water balance across Australian angiosperm species*. *Functional Ecology* 26 (2): 343-352.
- 2010 • Gasson P, Miller R, Stekel DJ, Whinder F and **K Ziemińska**. *Wood identification of Dalbergia nigra (CITES Appendix I) using quantitative wood anatomy, principal components analysis and naïve Bayes classification*. *Annals of Botany* 105 (1): 45-56.
- ongoing • I have reviewed multiple manuscripts for: *New Phytologist*, *Functional Ecology*, and *Trees – Structure and Function*

## Manuscripts ●

- 2019 • Roddy A, **Ziemińska K**. *Upscaling plant physiology to community and ecosystem processes depends on understanding structure-function relationships*. Technical Comment on Bartlett et al. 2018. *Ecology Letters*. **Submitted**.
- 2019 • **Ziemińska K**, Rosa E and Gleason SM. *Wood density and water content, not tissue fractions, drive twig wood day capacitance across 30 temperate angiosperm tree species*.
- 2019 • Etzold S, **Ziemińska K**, Zweifel R et al. *When do trees grow? - growth patterns of ten European species from seasonal to hourly resolution*.
- 2019 • **Ziemińska K**, Roddy A. *Comparison of field and laboratory techniques for measurements of sapwood capacitance*.

## Current projects ●

- Anatomical drivers of wood mechanical properties. In collaboration with Prof. Lorna Gibson, MIT.
- Wood anatomy of ring-porous versus diffuse-porous angiosperm trees – moving beyond vessel differences.

## Grants and awards ●

- 2016-2018 • Independent Postdoctoral Putnam Fellowship, Arnold Arboretum of Harvard University (\$50,000/year + ~10,000 research budget)
- 2010-2014 • Macquarie University Research Excellence Scholarship (\$25,000/year)
- 2013 • My *AoB PLANTS* paper has been selected as “Editor’s Choice”
- 2012 • Daintree Rainforest Observatory Research Student Grant awarded by James Cook University (\$6,000)
- 2012 • Travel grant to the annual meeting of the Ecological Society of Australia (Melbourne) awarded by the society (\$200)

## Presentations and meetings

- 2011 ● Travel grant to the International Botanical Congress, Melbourne, awarded by the Australian Society of Plant Scientists (\$400)
- \*invited
- 2018 ● **Ziemińska K\*** *The future of wood anatomy as an integral part of plant sciences*. Oral presentation – [link](#). Botany 2018, MN, USA.
- 2018 ● **Ziemińska K**, Rosa E and SM Gleason. *Where does capacitance water come from?* Poster – [link](#). New Phytologist Symposium “The biology of wood: from cell to trees”, CA, USA.
- 2018 ● **Ziemińska K**, Rosa E and SM Gleason. *Where does capacitance water come from?* Poster (as above) + 1 min oral poster pitch. Gordon Research Conference “Multiscale Plant Vascular Biology”, VT, USA.
- 2017 ● **Ziemińska K** and SM Gleason. *Wood anatomy and water storage in temperate angiosperms*. Oral presentation. Botany 2017, TX, USA.
- 2016 ● **Ziemińska K**. *Wood anatomy and ecological strategies*. Oral presentation. Arnold Arboretum of Harvard University, Boston, MA, USA.
- 2016 ● **Ziemińska K\***. *Patterns in wood anatomy in the GEM trait campaigns*. Queralbs, Spain. Talk at the workshop: “Traits and ecosystem function along tropical environmental gradients” organized by Dr. Imma Olivaras and Prof. Yadvinder Malhi.
- 2015 ● **Ziemińska K\***. *Wood density, anatomy and ecological strategies in Australian angiosperms*. Oral presentation. Oxford University, UK.
- 2013 ● **Ziemińska K\***. *The myriad ways plants build their wood*. Oral presentation. Ulm University, Germany.
- 2012 ● **Ziemińska K**, Butler DW, Gleason SM, Wright IJ and M Westoby. *Wood density and its anatomical components*. Oral presentation. Annual conference of the Ecological Society of Australia, Melbourne, Australia.
- 2012 ● **Ziemińska K**, Wright IJ and M Westoby. *Anatomical variation independent of wood density*. Annual postgraduate conference at the Department of Biological Sciences, Macquarie University (oral presentation).
- 2012 ● Two-day Genes to Geoscience Outlook, talks and discussions on future research ideas, Macquarie University, Sydney, Australia.
- 2011 ● **Ziemińska K**, Wright IJ and M Westoby. *Wood density – what are its underlying components and why does it vary with different climates*. Poster. International Botanical Congress, Melbourne, Australia.
- 2011 ● **Ziemińska K**, Wright IJ and M Westoby. *The anatomy of wood density*. Oral presentation. Annual postgraduate conference at the Department of Biological Sciences, Macquarie University, Sydney, Australia.
- 2011 ● **Ziemińska K**, Wright IJ and M Westoby. *The anatomy of wood density*. Poster. Faculty of Science conference, Macquarie University, Australia.
- 2010 ● One-day Postgraduate Day at the annual conference of the Ecological Society of Australia, Canberra, Australia.
- 2010 ● **Ziemińska K**, Butler DW, Gleason SM, Wright IJ and M Westoby. *Wood density – what is it made of and why are stems denser in drier environments?* Oral presentation. Annual postgraduate conference at the Department of Biological Sciences, Macquarie University, Australia.
- 2009 ● International Congress of Ecology (Intecol), Brisbane, Australia.
- 2009 ● Two-day Genes to Geoscience Outlook, talks and discussions on future research ideas, Macquarie University, Sydney, Australia.
- 2008 ● Annual conference of the Ecological Society of Australia, Sydney.
- 2008 ● “Wood matters” the joint meeting of IAWA, IAWS and The Linnean Society, London, UK.

## Workshops

- 2012 ● “The science intense writing course”, Macquarie University (10 weeks)
- 2011 ● “R programming”, Macquarie University (3 days)
- 2010 ● “Evolutionary divergence analyses”, Macquarie University (1 day)
- 2010 ● “Toughness, elasticity and breakage of biological materials”, Macquarie University (1 day)

- 2009 • Plant functional traits, International Congress of Ecology (Intecol), Brisbane, Australia (1 day)
- 2007 • Negotiations workshop, Poznań, Poland (1 day)
- 2007 • Team building workshop, Poznań, Poland (2 days)

## Supervising and teaching

- I have supervised students who all finished their projects on time. I have also trained multiple students in wood anatomy.
- 2017-2018 • Undergraduate interns at the Arnold Arboretum: Emily Rosa and Emily Brown (read Emily Rosa's impressions about her internship [here](#))
- 2016 • Students at Oxford University: Natascha Luijken, Karabi Prathak, Palasiah Jotan
- 2009-2013 • Students at Macquarie University: Paweł Waryszak, Henrike Fürstenau, Togashi, Zhou Shuangxi
- 2008 • Students at Kew Gardens: Ian MacLachlan, Daniel Oakley, Frances Whinder, Alisa Zhiteneva

## Work experience – non-academic

- 2015 • Freelance researcher and graphic designer at [the Hoverbike](#) (Malloy Aeronautics Ltd.), White Waltham, UK.
- 2002-2007 • Throughout my BSc and MSc I had a variety of jobs which supported me financially, allowed me to explore various aspects of life and gain transferrable skills such as: team work, clear communication, resourcefulness, work under pressure (teacher at children camps, cook, barista, kitchen hand, elderly care, children hippotherapy).

## Extracurricular activities/outreach

- 2017-2018 • I took evening classes in graphic design at the Rhode Island School of Design (Providence) and School of Museum of Fine Arts (Boston). Selected works can be found [here](#). The classes included areas of: illustration, typography, graphic structures and systems, logo, branding, graphic design for three-dimensional structures, wayfinding systems.
- 2018 • I have designed a graphic and wrote a popular science piece about wood anatomy for "Arnoldia", the Arnold Arboretum's quarterly magazine, Fall 2018 issue. Check it out [here](#).
- 2017 • I taught at the Summer Institute organized by the Arnold Arboretum for primary school science teachers.
- 2017 • I wrote a popular science piece about my research for "Silva", a biannual magazine published by the Arnold Arboretum.

## Contests

- 2014, 2015 • I participated in infographic/dataviz competition organized by Information Is Beautiful and Kantar. In 2014, for example, I visualised variation in parenchyma fraction from my 2015 PLoS ONE paper ([link](#)).
- 2012 • I participated in the "Three minutes thesis" competition where the challenge was to present my PhD project in maximum three minutes to an intelligent but not necessarily scientific audience. One powerpoint slide was allowed – you can see my slide [here](#). My talk was titled: "Nuts and bolts of trees and shrubs". Macquarie University, Sydney, Australia.
- 2010 • My photograph titled "Plants are watching us" was highly commended in the photographic competition celebrating Macquarie University Arboretum. Macquarie University, Sydney, Australia ([link](#)).
- 2005 • I won a second prize in Lomography photographic competition (Poznań, Poland). [Here](#) is one of my submitted photos.