Editor in Chief of Journal of Ecology

Sydney, 5th June, 2014

Dear Dr. David Gibson,

Please find enclosed our manuscript **“Hydrological conditions predict wood density in riparian plants of south-eastern Australia”**, which we have submitted for consideration as a Standard Paper in *Journal of Ecology*.

Dense woody tissue represents a substantial investment of biomass into structural support, which might otherwise be allocated to reproduction, photosynthetic tissues, or rapid growth. This trade-off between defense and competitive vigour is fundamental to the ecology of riparian plants, which must cope with persistent flooding disturbance and highly variable levels of soil moisture. Our study describes variation in stem wood density in riparian plant communities at 15 sites across south-eastern Australia, across a broad range of hydrological conditions. We found that mean wood density of riparian plant communities varied strongly over a gradient of environmental harshness, as determined by hydrological unpredictability and flooding intensity.

We believe this manuscript is suitable for your journal as it addresses the fundamental ecology of plant-environment interactions. With increasing climatic variability and magnitude of extreme events predicted globally over the next century, this work provides insight into the mechanisms by which changes in hydrology might affect riparian plant communities in other regions.

We confirm that this manuscript is original and is not published or under consideration for publication by any other journal. If you feel this contribution is appropriate for your journal, we suggest the following referees:

Lourens Poorter, Wageningen University (lourens.Poorter@wur.nl);

Hugo Martínez-Cabrera, Universidad Nacional Autónoma de México (huismaca@yahoo.com);

Jane Catford, University of Melbourne(catfordj@unimelb.edu.au)

We submit this cover letter, the manuscript, 5 figures, 4 tables and a supplementary appendix. James Lawson is the corresponding author, and email is the preferred form of contact.

Yours sincerely,

James Lawson  
Department of Biological Sciences  
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Functional trait approaches to riparian ecology remain largely unexplored. We describe variation in a key plant trait across the dominant abiotic gradients within the riparian environment. This study highlights the role of extreme events and environmental variability in community assembly, increases in which are hallmarks of global climate change predictions.