

James Lee Tsakalos

Time as an active researcher	I am an early career research professional with a Doctor of Philosophy (PhD) from The University of Western Australia, awarded in 2019. After graduating, I worked for 1.5 years within the environmental services industry in Australia before commencing my first postdoctoral research position at the University of Camerino, Italy in September 2020.
Education history	<ul style="list-style-type: none">• B.S. Conservation & Wildlife Biology, Edith Cowan University (2009 – 2012)• B.S. Hons in Botany (<i>Floristic patterns and drivers of kwongan vegetation patterns in Eneabba region of the Northern Sandplains Western Australia</i>, supervisors L. Mucina, M. Dobrowolski, E. Laliberte), The University of Western Australia (2013 – 2014)• Ph.D. (<i>Kwongan plant community assembly: driven by habitat heterogeneity and functional trait variability?</i>, supervisors L Mucina, E. Veneklaas, M. Renton, M. Dobrowolski), The University of Western Australia (2014 – 2019)
Certificates	<ul style="list-style-type: none">• Italian Online Course – Level 1 (July, 2020)• Corso di lingua Italiana – Livello A1, University of Camerino (July, 2021)
Employment history	<ul style="list-style-type: none">• Part-time Botanist at Animal Plant Mineral, Perth, AU (2016 – 2018)• Part-time Demonstrator at The University of Western Australia, Perth, AU (2017 – 2019)• Casual Botanist at Mattiski Consulting, Perth, AU (2018 – 2019)• Environmental scientist at Ecoscape Australia, Perth, AU (2019 – 2020)• Researcher at the University of Camerino, Camerino, IT (2020 – present)
Research opportunities	<p>My first research activities (Australian Research Council industry Linkage Project 150100339 Functional-trait approach to restoring species-rich shrublands, 2015–2019) was as a PhD student. My PhD focused on using species, functional traits, and environmental data to define and explain the formation and distribution of species- and trait-based patterns of hyper-diverse kwongan vegetation, Western Australia (Tsakalos 2020). This research included and demonstrates my experience in collecting, analysing and communicating results through peer-reviewed articles and conference presentations synthesised for academia, corporate partners, government agencies and on-the-ground mine site employees. All of these experiences were derived from complex taxon-based co-occurrence-, species-, trait- and environmental-data, and because of this complexity, I focused on the methodological development (Lengyel et al. 2018) and implementation of multivariate classification and ordination techniques in R. In general, this research aimed at defining plant community patterns (indexed using species and traits) and describing how these patterns were explained by environmental covariates. While I collected most of this data through extensive fieldwork involving the design and collection of plant trait data, I also used free spatial/temporal data sets sourced from Esri's Earth Explorer portal and processed them through the QGIS platform.</p> <p>Many exciting research opportunities emerged from my PhD studies, including my involvement in international collaborations. In 2015, after successfully winning a competition for a travel grant from the International Association of Vegetation Science, I travelled to Europe to present my published abstract (Tsakalos et al. 2015) at a conference in Brno, Czech Republic. For a short period after the meeting, I was involved with another PhD student in fieldwork in the Central Balkan Mountains, Bulgaria. Later upon completing the data analyses, involving classification and ordination techniques, to define functional plant communities and their drivers along management gradients and manuscript editing, this expedition turned into a publication where I was the second author (Terziyska et al. 2019). Collaborations have (and continue to) serve in developing my pathway as a researcher.</p> <p>As a PhD student, I was also active with part-time opportunities as a consultant Botanist and University demonstrator. As a Botanist contracted to mine sites in different eco-biogeographic areas across Western Australia, conducted as components of both individual and teamwork,</p>

	<p>I performed remote fieldwork, collected vegetation and surface soil data (from natural and restored environments), and analysed and reported on the data to meet the client's needs. I also held short demonstrator contracts offered by The University of Western Australia (2017 – 2019), where I taught graphics, data management and statistics in R (2017 – 2019) and field ecology (2019) courses for undergraduate and post-graduate students. These experiences reinforce my skills in vegetation surveys and my familiarity with the R programming language.</p> <p>After my PhD, I commenced work on a full-time basis within the environmental services industry and progressed as a junior through to senior level environmental scientist. I was involved in over 20 projects (involving biological monitoring, vegetation mapping and searches for conservation-listed species), working throughout Western Australia and various vegetation types. From concept to completion, these projects involved many components, including proposal writing, budgeting, survey design, fieldwork, data analysis, preparation, and maintenance of spatial data (including ArcGIS), development and implementation of tailored database systems, and mobile phone enabled data collection applications. As a senior-level environmental scientist, I multitasked with many simultaneously ongoing projects and undertook mentoring and training of junior staff members.</p> <p>My job was not only oriented towards classical phytosociology (vegetation survey and analysis) but encompassed other ecological practices. For example, one of our clients required ongoing monitoring of vegetation health because there was a concern that linear infrastructure (train lines) would affect vegetation dependent on the sheet flow of water. We were responsible for contributing to a long-term monitoring dataset requiring the biannual measurement and analysis of fine-scale NDVI, leaf osmotic potential and ant functional communities. Not only was this position helpful in developing my general vegetation survey skills but it involved long-term ecological monitoring and reporting.</p> <p>Past major Industry projects</p> <ul style="list-style-type: none"> • Rio Tinto – Brockman 4 Flora and Vegetation survey (2019) • Water Corporation – Greater Arid Region Flora and Vegetation Survey (2019) • Fortescue Metals Group (FMG) –Vegetation Monitoring (2019 – 2020) • FMG – Sheila Valley and Raven Flora and Vegetation Surveys (2019 – 2020) • Atlas Iron/Roy Hill – McPhee Creek Flora and Vegetation Survey (2020) <p>In 2020, after successfully winning a research bursary, I began my current role as a postdoctoral researcher embedded within the Biosciences and Veterinary medicine School at the University of Camerino. This position involved developing conceptual and experimental frameworks, collaboration in field surveys in Italian Beech forests and the use of databases, applications, and the development of numerical and statistical tools. Part of this work involved creating an R package focused on information theory statistics from the model family of Pál Juhász-Nagy– an explicit skill requested from the call. The paper describing this package (Tsakalos et al. 2021) has been recently submitted to the Journal of Vegetation Science and is currently under review.</p> <p>In 2020, I was also offered an honorary research fellowship position with the Harry Butler institute of Murdoch University, Western Australia. This position provides additional access to academic resources and research collaboration opportunities, and has already led to several co-authorships. My contributions as a data analyst have been instrumental in publications on Thermophilous oak forests of Ukraine and Western Russia (Goncharenko et al. 2020) and defining Forest biomes of Southern Africa (Mucina et al. 2021). As the lead author of another paper, I have designed and analysed clonal trait responses to fine-scale edaphic gradients of kwongan vegetation (see our refereed abstract, Tsakalos et al. 2021). During this period, I became an official supervisor for one PhD student (at Murdoch University, Western Australia) and two Master's students (at the University of Camerino).</p>
<p>Research Achievements, Contributions and Awards</p>	<p>My scientific pathway is short and has been shaped by my PhD and my recent postdoctoral researcher position with the University of Camerino. Since commencing my PhD, I have continued working in vegetation science and where opportunities have been presented, participating in new cooperative teams addressing issues on vegetation classification, biogeography, and post-mining rehabilitation.</p> <p>Since 2014 (the date of commencing my PhD), I have published 11 scientific papers, one PhD dissertation (and co-authored three PhD dissertation chapters), 3 refereed database papers and 8 refereed conference proceedings and one refereed book. So far, my publications have accrued 350+ citations (according to Publish or Perish sourcing my Google Scholar Profile), resulting in an H-index of 5. The last two years of my research profile have seen an exponential increase in my citation impact (see Fig. 1 below).</p>

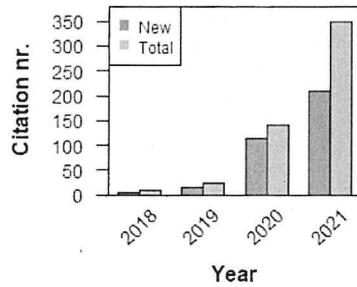


Fig. 1. Citation score of my publications during the last four years (based on Publish or Perrish, sourcing my Google Scholar Profile). The figure was produced using R base graphics.

Scientific, pedagogic and civic awards

- Finishing bachelor degree university studies *summa cum laude* (2012)
- **Awarded the Western Australia Royal Society Student Medal** presented to the highest graduating students from each of Western Australia's five universities (2012)
- Finishing bachelor degree university studies with **second Class honours** (2014)
- **Awarded the Australian Postgraduate Award** scholarship presented to students of exceptional research potential (2014)
- **Awarded the International Association of Vegetation Science student travel grant** supporting young scientists presenting at the Brno symposium (2015)
- **Awarded the degree of Doctor of Philosophy** (2019)
- **Awarded competitive research grant at the University of Camerino (2020)**

Publications

Journal Articles

Tsakalos, J.L., Chelli, S., Campetella, G., Canullo, R., Simonetti, E. & Bartha, S. 2021. Comspat: An R package to analyze within-community spatial organization using species combinations. *Journal of Vegetation Science* (Submitted)

1. Mucina, L., Lötter, M.C., Rutherford, M.C., van Niekerk, A., Macintyre, P.D., **Tsakalos, J.L.**, Timberlake, J., Adams, J.B., Riddin, T. & Mccarthy, L.K. (2021). Forest biomes of Southern Africa. *New Zealand Journal of Botany*. DOI: 10.1080/0028825X.2021.1960383
2. Chelli, S., Bricca, A., Cutini, M., Campetella, G., Cervellini, M. **Tsakalos, J.L.**, & Canullo, R. (2021). Large standard trees and deadwood promote functional divergence in the understory of beech coppice forests. *Forest Ecology and Management*. DOI: 10.1016/j.foreco.2021.119324
3. Goncharenko, I.V., Semenishchenkov, Y., **Tsakalos, J.L.**, & Mucina, L. 2020. Thermophilous oak forests of the steppe and forest-steppe zones of Ukraine and Western Russia. *Biologia*, 75, 337–353.
4. Kattage, J., Bönisch, G., Díaz, S., Lavorel, S., Pentice, I.C., Leadley, P., Tautenhahn, S., Werner, G.D.A., ... & Acosta, A. T. 2020. TRY plant trait database – enhanced coverage and open access. *Global Change Biology*, 26, 119–188.
5. **Tsakalos, J.L.**, Renton, M., Riviera, R., Veneklaas, E.J., Dobrowolski, M.P., & Mucina, L. 2019. Trait-based formal definition of plant functional types and functional communities in the multi-species and multi-traits context. *Ecological Complexity*. DOI: 10.1016/j.ecocom.2019.100787.
6. Terziyska, T., **Tsakalos, J.L.**, Bartha, S., Apostolova, I., Sopotlieva, D., Zimmermann, Z., Szabó, G., Wellstein, C. (2019). Species and functional differences between subalpine grasslands with and without dwarf shrub encroachment. *Plant Biosystems*, 154, 568–577.
7. **Tsakalos, J.L.**, Renton, M., Dobrowolski, M.D., Veneklaas, E.J., Macintyre, P.D., Broomfield, S. J., & Mucina, L. (2019). Composition and ecological drivers of the kwongan scrub and woodlands in the northern Swan Coastal Plain, Western Australia. *Austral Ecology*, 44: 906–916.
8. **Tsakalos, J.L.**, Renton, M., Dobrowolski, M.P., Feoli, E., Macintyre, P., Veneklaas, E.J., & Mucina, L. (2018). Community patterns and environmental drivers in hyper-diverse kwongan scrub vegetation of Western Australia. *Applied Vegetation Science*, 21, 694–722.
9. Macintyre, P.D., Van Niekerk A., Dobrowolski, M. P., **Tsakalos, J.L.**, & Mucina L. (2018). Impact of ecological redundancy on the performance of machine learning classifiers in vegetation mapping. *Journal of Ecology and Evolution*, 8, 6728–6737.

10. Lengyel, A., Landucci, F., Mucina, L., **Tsakalos, J.L.**, & Botta-Dukát Z. (2018). Joint Optimisation of cluster number and abundance transformation for obtaining stable vegetation classifications. *Journal of Vegetation Science*, 29, 336–347.

11. Ottaviani, G., **Tsakalos, J.L.**, Keppel, G., & Mucina, L. (2018). Quantifying the effects of ecological constraints on trait expression using novel trait-gradient analysis parameters. *Journal of Ecology and Evolution*, 8, 435–440.

PhD Dissertation/ co-authored chapters

1. Macintyre, P.D., **Tsakalos, J.L.**, & Mucina, L. (2020). Biogeographic classification system and regional environmental drivers in the kwongan vegetation of Western Australia. In: Macintyre, P.D. (eds.) The vegetation patterns of the kwongan vegetation of South-West Western Australia. PhD thesis, The University of Western Australia, Perth. AU.

2. Macintyre, P.D., van Niekerk, A., Dobrowolski, M.P., **Tsakalos, J.L.**, & Mucina, L. (2020). Impact of ecological redundancy on the performance of machine learning classifiers in vegetation mapping. In: Macintyre, P.D. (eds.) The vegetation patterns of the kwongan vegetation of South-West Western Australia. PhD thesis, The University of Western Australia, Perth. AU.

3. **Tsakalos, J.L.** (2019). Kwongan shrubland community assembly: driven by habitat heterogeneity and functional trait variability?. PhD thesis, The University of Western Australia, Perth. AU.

4. Ottaviani, G., Mucina, L., Keppel, G., & **Tsakalos, J.L.** (2016). Quantification of ecological constraints on traits expression within- and among-plant communities. In: Ottaviani, G. (eds.) Using a plant functional trait approach to determine dynamics of plant community assembly on granite outcrops of Southwest Western Australia. PhD thesis, The University of Western Australia, Perth. AU.

Refereed Database Articles

1. **Tsakalos, J.L.**, Riviera, F. R., Veneklaas, E.J., Dobrowolski, M.D., & Mucina, L. (2020). Data from: Trait-based formal definition of plant functional types and functional communities in the multi-species and multi-traits context. *Dryad*. DOI: 10.5061/dryad.9kd51c5cb

2. Macintyre, P.D., Van Niekerk, A., Dobrowolski, M.P., **Tsakalos, J.L.**, & Mucina, L. (2018). Data from: Impact of ecological redundancy on the performance of machine learning classifiers in vegetation mapping. *Dryad*. DOI: 10.5061/dryad.23fg0

3. Ottaviani, G., **Tsakalos, J. L.**, Gunnar, K., & Mucina, L. (2018). Data from: Quantifying the effects of ecological constraints on trait expression using novel trait-gradient analysis parameters. *Dryad*. DOI: 10.5061/dryad.23fg0

Refereed Conference Proceedings (underlined identifies when I have presented)

1. **Tsakalos, J.L.**, Ottaviani, G., Chelli, S., Rae, A., Elder, S., Dobrowolski, M.D., Mucina, L. (2021). Contrasting clonal responses to fine-scale edaphic gradients in southwest Australian shrubland communities. In: Chelli, S., Ottaviani, G., **Tsakalos, J.L.**, Campetella, G., & Canullo, R. (eds.). Proceedings of the 13th clonal plant meeting, pp 40–41. University of Camerino, Camerino, IT.

2. Mucina, L., **Tsakalos, J. L.**, & Macintyre, P. D. (2019). Ecology, biodiversity and mining: science and solving the challenges. In: Fourie, A. B. & Tibbett, M. (eds.). Proceedings of the 13th International Conference on Mine Closure, Australian Centre for Geomechanics, pp. 19–34. Perth, AU.

3. Lengyel, A., Landucci, F., Mucina, L., **Tsakalos, J.L.**, & Botta-Dukát Z. (2017). Joint Optimisation of cluster number and abundance transformation for obtaining stable vegetation classifications. In: Congress of the European Vegetation Survey, Bilbao; Diversity patterns across communities in the frame of global change: conservation challenges. p. 75. 26th Congress of the European Vegetation Survey, Bilbao, ES.

4. Terziyska, T., Apostolova, I., Sopotlieva, D., **Tsakalos, J.L.**, Zimmermann, Z., Szabo, G., Bartha, S., & Wellstein, C. (2016). Functional diversity of high mountain pasture communities: a trait-based comparative study. In: 13th Eurasian Grassland Conference: Management and Conservation of Semi-natural grasslands: from theory to practice, p. 63. Sighişoara, RO.

5. Terziyska, T., Sopotlieva, D., Wellstein, C., Zimmermann, Z., Szabo, G., **Tsakalos, J.L.**, Apostolova, I., & Bartha, S. (2016). Species diversity and community structure of mountain

	<p>pastures – A case study from Balkan range. In: 25th Meeting of European Vegetation Survey, p. 67. Roma, IT.</p> <p>6. Tsakalos, J.L., Mucina, L., & Dobrowolski, M.P. (2016). On the quantification of functional redundancy: A case study of kwongan the Western Australian kwongan vegetation. In: A Diversity of Approaches: Key Advances in Trait-based Theory and Methods. Ecological Society of Australia Annual Conference 2016, pp 75–76. Perth, AU.</p> <p>7. Tsakalos, J.L., Mucina, L., & Dobrowolski, M.P. (2015). Exploring functional redundancy in species-rich kwongan shrublands of Western Australia. In: Chytry, M., Zeleny, D. & Hettenbergerova, E. (eds), 58th Annual Symposium of the International Association for Vegetation Science: Understanding broad-scale vegetation patterns, p. 382. Masaryk University, Brno. CZ.</p> <p>8. Tsakalos, J.L., Drskova, M., Hruban, J., Mucina, L., & Dobrowolski, M.P. (2014). Floristic patterns and drivers of kwongan vegetation patterns in Eneabba region of the Northern Sandplains Western Australia. In: Mucina, L., Price, J.N. & Kalwij, J.M. (eds.), 57th Annual Symposium of the International Association for Vegetation Science: Biodiversity and vegetation: patterns, processes, conservation, p. 196. Kwongan Foundation, Perth. AU.</p> <p>Refereed Books</p> <p>1. Chelli, S., Ottaviani, G., Tsakalos, J.L., Campetella, G., & Canullo, R. (2021). Proceedings of the 13th Clonal plant meeting. University of Camerino, Camerino IT. ISBN: 9788867680535</p> <p>Technical Reports</p> <p>1. Water Corporation – Greater Arid Region Flora and Vegetation Survey (2019)</p> <p>2. Fortescue Metals Group (FMG) –Vegetation Monitoring (2019 – 2020)</p> <p>3. FMG – Sheila Valley and Raven Flora and Vegetation Surveys (2019 – 2020)</p> <p>4. Stratham Engineering – Deep Space Facility Flora and Fauna Survey (2020)</p>
Invited Talks	<p>Kwongan plant community assembly: driven by habitat heterogeneity and functional trait variability.</p> <ul style="list-style-type: none"> • February 2020. Wildflower Society of Western Australia, Perth, Australia. • November 2019. Iluka Resources, Eneabba and Perth, Australia • September 2019. Tronox Ltd, Cataby, Australia • October 2017. Institute of Botany, Třeboň, Czech Republic • December 2016. MASARC Committee, Cataby, Australia • December 2015. MASARC Committee, Eneabba, Australia