

# THOMAS WARD CROWTHER

Research Curriculum Vitae

**Address:** Droevendaalsesteeg 10, 6708 PB Wageningen NL

**Email:** Thomas.Crowther11@gmail.com

## Higher Education:

PhD in Ecology - Cardiff University (2008-2012)

BSc in Zoology - Cardiff University (2004-2007). Awarded first class honors

## Employment:

Marie Curie Postdoctoral Fellowship. Netherlands Institute of Ecology (2015-present)

Adjunct Professor at University of Minnesota (2016-present)

Postdoctoral Fellowship at The Yale School of Forestry (2012-2015)

## Advisory positions and editorial boards:

Lead scientific Advisor for the UNEP's, 'Billion Tree Campaign' (2016-present)

Co-founder and coordinator of the Global Forest Biodiversity Initiative (2016-present)

Senior Analyst for the 'Global Soil Biodiversity Initiative' GSBI (2016-present)

Scientific advisor for the youth-led organization 'Plant-for-the-Planet' (2016-present)

Scientific advisor to the 'Pacific Slope Trail Project', Costa Rica (2016-present)

Member of the British Ecological Society (BES) Review College (2015-present)

Committee member for Plants, Soils, Ecosystems: BES special interest group (2014-Present)

## Academic Awards:

2017: Early Career Award from the ESA Soil Ecology Society.

2015: Marie Skłodowska-Curie Personal Fellowship grant (€188,055). Marie Curie fellowships are among the most highly competitive research awards to support young scientists in Europe.

2011: Anne Keymer Prize for the Best PhD Student Talk at the British Ecological Society Annual Meeting in September 2010 (€300).

2010: Selected as a STEM Ambassador for Cardiff University

## Noteworthy Academic Grants and Awards:

2017- 2020: Establishing the Team for Research on Earth's Ecology (T.R.E.E.). The Federal Ministry for Economic Cooperation and Development (Germany). (€1.16 million). Sole PI.

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2016-2018: Setting up a novel, long-term NIOO research line on vertebrate grazing in a globally distributed experimental network. Internal Strategic grant from The Royal Netherlands Academy of Arts and Sciences. (€82,000). I am one of 3 lead PIs.

2015-2018: Understanding local controls on fungal-mediated wood decomposition in a regional context. National Science Foundation. Division of Environmental Biology. (€150,000). I am one of 2 lead PIs with Dr Mark Bradford.

2013-2016: Testing the mechanisms governing respiratory thermal acclimation heterotrophic soil microbes. British Ecological Society Large Research Grant (€33,000). Sole PI.

2012-2015: Do soil fauna mediate microbial feedbacks to climate change? Yale Climate & Energy Institute Postdoctoral Fellowship (€202,000). Sole PI.

## Selected peer-reviewed publications

1. **Crowther, T.W.**, Todd-Brown, K., Rowe, C.W., + 30 authors (2016) Quantifying global soil carbon losses in response to warming. **Nature**, 54, 104-108. *Featured by over 100 news outlets including [The Washington Post](#), [The BBC](#) and [The Independent](#) and reached the front page of Reddit and Yahoo News. Altmetric Score: 1023.*
2. Carey, J.C., Tang, J., TempleR, P.H., Kroeger, K., **Crowther, T.W.**, Burton, A. + 20 authors. (2016). Uniform response of soil respiration to experimental temperature manipulation. **PNAS**, DOI: 10.1073/pnas.1605365113. *Featured by various news outlets including [Science Daily](#), [Phys.Org](#), and [Environmental Research Web](#) etc*
3. Liang, J., **Crowther, T.W.\***, Picard, N. + 80 authors. (2016) Positive Biodiversity–Productivity Relationship Predominant in Global Forests. **Science**, 345, aaf8957. *Featured by various news outlets including [Yahoo News](#), [Business Insider](#) and [The Times of India](#)*
4. Bradford, M. A., Wieder, R.W., Bonan, G. B., Fierer, N., Raymond, P. A. & **Crowther, T. W.** (2016). Managing uncertainty in soil carbon feedbacks to climate change. **Nature Climate Change\***, 6, 751-758. *Featured by various news outlets including [Science Daily](#), [Science News](#) and [Eurek Alert](#)*
5. **Crowther, T.W.**, H.B. Glick, K.R. Covey, + 30 authors (2015). Mapping tree density at a global scale. **Nature** 525, 201–205. – *Featured by over 100 news outlets around the world including [the BBC](#), [New York Times](#), [CNN](#), [Wall Street Journal](#), [National Geographic](#), [Scientific American](#), [NPR](#), [Nature News](#), [Science](#) etc. Manuscript reached number 11 by the Altmetric 100 awards in 2015 with a score of 1659, being the highest rated ecology study that year. It was selected by the Faculty of 1000, won the ‘science is beautiful’ award, 2015, and was featured on the front page of Reddit and Yahoo News.*
6. **Crowther, T.W.**, Thomas, S.M., Maynard, D.S., Baldrian, P., Covey, K.R., Frey, S.D., van Diepen, L.T.A. & Bradford, M.A. (2015). Biotic interactions mitigate soil microbial feedbacks to climate change. **PNAS**, 112, 7033-7038. – *Featured by various news outlets including [Al Jazeera](#), [The Atlantic](#), and [ScienceDaily](#) etc.*
7. Maynard, D.S., Leonard, K.E., Drake, J.M., Hall, D.W., **Crowther, T.W.**, and Mark A. Bradford (2015). Modelling the multidimensional niche by linking functional traits to competitive performance. **Proceedings of the Royal Society B**, 282, 20150516.
8. **Crowther, T.W.**, Thomas, S.M., Maynard, D.S., Baldrian, P., Covey, K.R., Frey, S.D., van Diepen, L.T.A. & Bradford, M.A. (2015). Overdependence on “significance” testing in biology. **PNAS**, 112.

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9. Ramirez, K.S., Leff, J.W., Barberán, A., Bates, S., Betley, J., **Crowther, T.W.**, Kelly, E. *et al.* (2014). Biogeographic patterns in below-ground diversity in New York City's Central Park are similar to those observed globally. **Proceedings of the Royal Society B**, 281: 20141988 – *Featured by news outlets including the [New York Times](#), [Washington Post](#), [NPR](#), etc.*
10. Bradford, M.A., Warren R.J. II, Baldrian, P., **Crowther, T.W.**, Maynard, D.S., Oldfield, E.E.\*, Wieder, W.R., Wood, A.A. & King J.R. (2014). Climate fails to predict wood decomposition at regional scales. **Nature Climate Change**, 4, 625–630. – *Featured by news outlets including [ScienceDaily](#), [Astrobiology](#), [Science World Report](#), etc.*
11. **Crowther, T.W.**, Maynard, D.S., Leff, J.W., Oldfield, E.E., McCulley, R.L., Fierer, N. & Bradford, M.A. (2014). Predicting the responsiveness of soil biodiversity to deforestation: a cross-biome study. **Global Change Biology**, 20, 2983–2994. – *Featured by news outlets including [Nature World News](#), [Innovations Report](#), [Physorg](#), etc.*
12. **Crowther, T.W.**, Stanton, D., Thomas, S., A’Bear A.D., Hiscox, J., Jones, T.H., Voříšková, J., Baldrian, P. & Boddy, L. (2013). Top-down control of soil fungal community composition by a globally distributed keystone species. **Ecology**, 94, 2518–2528.
13. **Crowther, T.W.** & Bradford, M.A. (2013). Thermal acclimation in widespread heterotrophic soil microbes. **Ecology Letters**, 16, 469–477.
14. **Crowther T.W.**, Boddy, L. & Jones, T.H. (2011) Outcomes of fungal interaction are determined by soil invertebrate grazers. **Ecology Letters**, 14, 1134–1142. – *Featured by news outlets including [ScienceDaily](#), [Science Newslines](#), [Bio-Medicine](#) etc.*

## Full list of peer-reviewed publications

2016

1. **Crowther, T.W.**, Todd-Brown, K., Rowe, C.W., + 30 authors (2016) Quantifying global soil carbon losses in response to warming. **Nature**, 54, 104–108. *Featured by over 100 news outlets including [The Washington Post](#), [The BBC](#) and [The Independent](#) and reached the front page of [Reddit](#) and [Yahoo News](#). Altmetric Score: 1023.*
2. Carey, J.C., Tang, J., TempleR, P.H., Kroeger, K., **Crowther, T.W.**, Burton, A. + 20 authors. (2016). Uniform response of soil respiration to experimental temperature manipulation. **PNAS**, DOI: 10.1073/pnas.1605365113. *Featured by various news outlets including [Science Daily](#), [Phys.Org](#), and [Environmental Research Web](#) etc*
3. Liang, J., **Crowther, T.W.\***, Picard, N. + 80 authors. (2016) Positive Biodiversity–Productivity Relationship Predominant in Global Forests. **Science**, 345, aaf8957. *Featured by various news outlets including [Yahoo News](#), [Business Insider](#) and [The Times of India](#)*
4. Covey, K.R., Bueno de Mesquita C.P., Oberle, B., Maynard, D.S., Bettigole, C., **Crowther T.W.**, Duguid, M.C., Steven, B., Zanne, A.E., Lapin M., Ashton, M.S., Oliver, C.D., Xuhui, L., & Bradford, M.A. (2016) Greenhouse trace gasses in dead wood. **Biogeochemistry**, *in press*, DOI: 10.1007/s10533-016-0253-1.
5. Barrett, C.B., Zhou, M., Reich, P.B., **Crowther, T.W.**, Liang, J. Forest value: More than just commercial. **Science**, 354, 1541–1542.

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6. Bradford, M. A., Wieder, R.W., Bonan, G. B., Fierer, N., Raymond, P. A. & **Crowther, T. W.** (2016). Managing uncertainty in soil carbon feedbacks to climate change. **Nature Climate Change\***, 6, 751-758. *Featured by various news outlets including [Science Daily](#), [Science News](#) and [Eurek Alert](#)*
7. Van der Waal, A., Gunnewiek, P. K., Cornielissen, H., **Crowther, T. W.** & de Boer, W. (2016) Patterns of natural fungal community assembly during initial decay of coniferous and broadleaf tree logs: an experimental common garden approach. **Ecosphere**, 7.
8. Glick, H.B.\*, Bettigole, C., Maynard, D.S.\*, Covey, K.R., Smith, J.R., **Crowther, T.W.\*** Spatially explicit models of global tree density. **Scientific Data**, 3.

2015

9. **Crowther, T.W.**, H.B. Glick, K.R. Covey, + 30 authors (2015). Mapping tree density at a global scale. **Nature** 525, 201–205. – *Featured by over 100 news outlets around the world including [the BBC](#), [New York Times](#), [CNN](#), [Wall Street Journal](#), [National Geographic](#), [Scientific American](#), [NPR](#), [Nature News](#), [Science](#) etc. Manuscript reached number 11 by the Altmetric 100 awards in 2015 with a score of 1659, being the highest rated ecology study that year. It was selected by the Faculty of 1000, won the 'science is beautiful' award, 2015, and was featured on the front page of Reddit and Yahoo News.*
10. **Crowther, T.W.**, Thomas, S.M., Maynard, D.S., Baldrian, P., Covey, K.R., Frey, S.D., van Diepen, L.T.A. & Bradford, M.A. (2015). Biotic interactions mitigate soil microbial feedbacks to climate change. **PNAS**, 112, 7033-7038. – *Featured by various news outlets including [Al Jazeera](#), [The Atlantic](#), and, [ScienceDaily](#) etc.*
11. Pelini, S.L. Maran, A.M. Chen, A.R. Kaseman, J. & **Crowther, T.W.\***. (2015). Higher Trophic Levels Overwhelm Climate Change Impacts on Terrestrial Ecosystem Functioning. **PLoS one**, 10 (8), e0136344.
12. Maynard, D.S., Leonard, K.E., Drake, J.M., Hall, D.W., **Crowther, T.W.**, and Mark A. Bradford (2015). Modelling the multidimensional niche by linking functional traits to competitive performance. **Proceedings of the Royal Society B**, 282, 20150516.
13. Oldfield, E.E., Felson, A.J., Auyeung, D.S.N., **Crowther, T.W.**, Nancy F. *et al.* (2015) Growing the urban forest: tree performance in response to biotic and abiotic land management. **Restoration Ecology**, 23, 707-718.
14. **Crowther, T.W.**, Thomas, S.M., Maynard, D.S., Baldrian, P., Covey, K.R., Frey, S.D., van Diepen, L.T.A. & Bradford, M.A. (2015). Overdependence on “significance” testing in biology. **PNAS**, 112.
15. **Crowther, T.W.**, Sokol, N.W., Maynard, D.S., Oldfield, E.E.\*, Thomas, S.D. & Bradford, M.A. (2015). Environmental stress response limits fungal necromass contributions to soil organic matter. **Soil Biology & Biochemistry**, 85, 153–161.
16. Maynard, D.S., **Crowther, T.W.\***, King, J, Warren, R. & Bradford, M.A. (2015). Temperate forest termites: ecology, biogeography, and ecosystem impacts. **Ecological Entomology**, in press, DOI: 10.1111/een.12185.
17. Thomas, S.D. & **Crowther, T.W.\*** (2015). Predicting rates of isotopic turnover across the animal kingdom: a synthesis of existing data. **Journal of Animal Ecology**. 84, 861-870.

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18. **Crowther, T.W.** and Grossart, H. (2015). The role of bottom-up and top-down interactions in determining microbial and fungal diversity and function. in T.C. Hanley and K.J. La Pierre (eds): **Trophic Ecology: Bottom-Up and Top-Down Interactions Across Aquatic and Terrestrial Systems**. Cambridge University Press. Cambridge, UK.

2014

19. **Crowther, T.W.**, Maynard, D.S., Crowther, T.R., Peccia, J., Smith, J., & Bradford, M. A. (2014). Untangling the fungal niche: the trait-based approach. **Frontiers in Microbiology**, 5: 579.
20. Ramirez, K.S., Leff, J.W., Barberán, A., Bates, S., Betley, J., **Crowther, T.W.**, Kelly, E. *et al.* (2014). Biogeographic patterns in below-ground diversity in New York City's Central Park are similar to those observed globally. **Proceedings of the Royal Society B**, 281: 20141988 – *Featured by news outlets including the [New York Times](#), [Washington Post](#), [NPR](#), etc.*
21. Bradford, M.A., Warren R.J. II, Baldrian, P., **Crowther, T.W.**, Maynard, D.S., Oldfield, E.E.\*, Wieder, W.R., Wood, A.A. & King J.R. (2014). Climate fails to predict wood decomposition at regional scales. **Nature Climate Change**, 4, 625–630. – *Featured by news outlets including [ScienceDaily](#), [Astrobiology](#), [Science World Report](#), etc.*
22. **Crowther, T.W.**, Maynard, D.S., Leff, J.W., Oldfield, E.E., McCulley, R.L., Fierer, N. & Bradford, M.A. (2014). Predicting the responsiveness of soil biodiversity to deforestation: a cross-biome study. **Global Change Biology**, 20, 2983–2994. – *Featured by news outlets including [Nature World News](#), [Innovations Report](#), [Physorg](#), etc.*
23. Dray, M.D., **Crowther, T.W.**, Thomas S.M., A’Bear, A.D.\*, Godbold, D.L., Ormerod, S.J., Hartley, S.E., & Jones, T.H. (2014). Effects of elevated CO<sub>2</sub> on litter chemistry and subsequent invertebrate detritivore feeding responses. **PLoS one**, 9(1), e86246.

2013

24. **Crowther, T.W.**, Stanton, D., Thomas, S., A’Bear A.D., Hiscox, J., Jones, T.H., Voříšková, J., Baldrian, P. & Boddy, L. (2013). Top-down control of soil fungal community composition by a globally distributed keystone species. **Ecology**, 94, 2518–2528.
25. **Crowther, T.W.** & Bradford, M.A. (2013). Thermal acclimation in widespread heterotrophic soil microbes. **Ecology Letters**, 16, 469-477.
26. Bradford M.A., & **Crowther, T. W.** (2013) Carbon use efficiency and storage in terrestrial ecosystems. **New Phytologist**, 199, 7-9.
27. A’Bear A.D.\*, **Crowther, T.W.**, Ashfield, R., Chadwick, D.D.A., Dempsey, J., Meletiou, L., Rees, C.L., Jones, T.H., Boddy, L. (2013). Localised invertebrate grazing moderates the effect of warming on competitive fungal interactions. **Fungal Ecology**, 6, 137–140.

2012

28. **Crowther, T.W.**, Boddy, L. & Jones, T.H. (2012) Functional and ecological consequences of saprotrophic fungus-grazer interactions. **ISME J**, 6, 1992–2001.



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29. **Crowther, T.W.**, Littleboy, A., Jones, T.H. & Boddy, L. (2012) Interactive effects of warming and invertebrate grazing on the outcomes of competitive fungal interactions. **FEMS Microbiology Ecology**, 81, 419-426.
30. **Crowther, T.W.**, Jones, T.H. & Boddy, L. (2012) Interactions between saprotrophic basidiomycete mycelia and mycophagous soil fauna. **Mycology**, 3, 77-86. Special issue: The impact of fungi on other organisms.
31. **Crowther, T.W.** & A' Bear, A.D. (2012) Impacts of grazing soil fauna on decomposer fungi are species-specific and density-dependent. **Fungal Ecology**, 5, 277-281.

2011

32. Tordoff, G.M., Chamberlain, P.M., **Crowther, T.W.**, Black, H.I.J., Jones, T. H., Stott, A. & Boddy, L. (2011) Invertebrate grazing affects nitrogen partitioning in the saprotrophic fungus *Phanerochaete velutina*. **Soil Biology & Biochemistry**, 43, 2338-2346.
33. **Crowther, T.W.**, Jones, T.H., Boddy, L. & Baldrian, P. (2011) Invertebrate grazing determines enzyme production by basidiomycete fungi. **Soil Biology & Biochemistry**, 43, 2060-2068.
34. **Crowther, T.W.**, Jones, T.H. & Boddy, L. (2011) Species-specific effects of grazing invertebrates on mycelial emergence and growth from woody resources into soil. **Fungal Ecology**, 5, 333-341.
35. **Crowther, T.W.**, Boddy, L. & Jones, T.H. (2011) Species-specific effects of soil fauna on fungal foraging and decomposition. **Oecologia**, 167, 535-545.
36. **Crowther T.W.**, Boddy, L. & Jones, T.H. (2011) Outcomes of fungal interaction are determined by soil invertebrate grazers. **Ecology Letters**, 14, 1134-1142. – *Featured by news outlets including [ScienceDaily](#), [Science Newsline](#), [Bio-Medicine](#) etc.*

## Outreach & other Scholarly activities:

Expert witness for 'Western Environmental Law Center', USA – most notable contributions include a written declaration in support of the proposed 'Clean air Rule' used in the lawsuit against the Washington State Department of Ecology (2016).

Ambassador for Zig Zag Zoom: a children's video game established to promote environmental stewardship and to plant a million trees worldwide.

Presented on the trillion-tree project at the World Wildlife Fund (WWF) UK branch in April 2016.

Presented on the trillion-tree project at the World Wildlife Fund (WWF) Netherlands branch in March 2016.

Presented at the Plant for the Planet Youth Summit (2015). Invited by Felix Finkbeiner.

Presented at the 'Women Leaders in Green Careers' workshop at the Yale School of Forestry & Environmental Studies (2015).

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Judge for the Poster presentation award at the International Association for Ecology Conference (2013), and the PhD talk competition at the BES annual meeting (2014).

Chair for the 'Above-ground below-ground interactions' session at the International Association for Ecology Conference (2013).

Volunteer tutor at New Haven Reads, New Haven, USA (2012-2013)

Stem Ambassador for Cardiff University, Wales (2011-2012)