FREDDIE DRAPER

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EDUCATION

PhD University of Leeds (2011-2016) Title: Carbon storage and floristic dynamics in Peruvian peatland ecosystems. Supervisors: Dr Katy Roucoux, Dr Tim Baker and Dr Ian Lawson.

BSc (Hons) University of Aberdeen (2007-2011) Ecology, 1st class.

University of Kuopio, Finland (2008-2009) Environmental biology and biogeochemistry, ERASMUS exchange year.

EMPLOYMENT

Marie Sklodowska-Cuire global fellow Postdoctoral research fellow and PI on project E-FUNDIA (Ecosystem function and diversity in Amazonia) based at University of Leeds and Carnegie Institution for Science, Stanford University (August 2018-2021). Mentored by Dr Tim Baker (University of Leeds) and Dr Gregory Asner (Carnegie Institution).

Postdoctoral research fellow Department of Global Ecology, Carnegie Institution for Science, Stanford University and International Center for Tropical Botany, Florida International University (November 2016 – July 2018). Supervised by Dr Gregory Asner, Department of Global Ecology (Carnegie Institution) and Dr Christopher Baraloto, International Centre for Tropical Botany (FIU).

Research impact postdoc University of Leeds (Jan-Feb 2016). Supervised by Dr Tim Baker, Ecology and Global Change, School of Geography.

PUBLICATIONS (peer reviewed)

Draper, F.C., Asner, G.P., Honorio Coronado, E.N., Baker, T.R., García-Villacorta, R., Pitman, N.C.A., Fine P.V.A., Phillips, O.L.P., Zárate Gómez, R., Amasifuen Guerra, C., Flores, M., Vasquez Martinez, R., Brienen, R.J.W., Monteagudo-Mendoza, A., Torres Montenegro L.T., Valderrama Sandoval, E., Roucoux, K.H., Ramirez Arévalo, F.R., Mesones, I., Del Aguila Pasquel, J., Tagle Casapia, X., Flores Llampazo, G., Corrales Medina, M., Reyna Huaymacari, J. & Baraloto, C. Hyperdominant tree species drive broad scale beta diversity patterns in West Amazonia. *Ecology* (in review).

Draper, F.C., Baraloto, C., Phillips, O.L., Vasquez Martinez, R., Coronado, E.N., Baker, T.R., Zaráte, R., Amasifuen Guerra, C. A., Flores, M., García-Villacorta, R., Fine P.V.A., Freitas, L., Monteagudo-Mendoza, A., Brienen, R. J. W., Del Aguila Pasquel, J., Tagle Casapia, X., Ramirez Arévalo, F. R., Florez Llampazo, G., Corrales Medina, M., Huaymacari, J. R., Brodrick, P., and Asner G.P. A. 2017. Imaging spectroscopy predicts variable distance decay across contrasting Amazonian tree communities. *Journal of Ecology* (in press).

Wang, S., Zuang, Q., Lähteenoja, O., **Draper, F.C.**, Cadillo-Quiroz, H. 2017. A potential shift from a carbon sink to a source in Amazonian peatlands under a changing climate. *PNAS* (in review).

Draper, F.C., Honorio Coronado, E.N., Roucoux, K.H., Lawson, I.T., Pitman N.C.A., Fine P.V.A., Phillips, O.L., Montenegro, L.T., Sandoval, E.V., Mesones, I., García-Villacorta, R. Ramirez Arévalo, F. R., & Baker, T.R. 2018. Peatland forests are the least diverse tree communities documented in Amazonia, but contribute to high regional beta-diversity. 2018. *Ecography.* 41: 1-14

Roucoux, K.H., Lawson, I.T., Baker, T.R. **Draper, F.C.**, Lähteenoja, O., Honorio Coronado, E.N., Kelly T.J., Mitchard, E.T.A. & Vriesendorp C. 2017. Threats to intact tropical peatlands and opportunities for their conservation. *Conservation Biology.* **00** 1-10

Draper, F.C., Roucoux, K.H., Lawson, I.T., Mitchard, E.T.A., Honorio Coronado, E.N., Lähteenoja, O., Montenegro, L.T., Sandoval, E.V., Zaráte, R. & Baker, T.R. 2014. The distribution and amount of carbon in the largest peatland complex in Amazonia, *Environmental Research Letters*, vol. 9, no. 12.
*This paper was covered by the BBC website, Mongabay, Environmental research web and several other online news outlets.

Lawson I.T., Kelly T.J., Aplin P., Boom A., Dargie G., **Draper, F.C**., Hassan P.N.Z.B.P., Hoyos-Santillan J., Kaduk J., Large D., Murphy W., Page S.E., Roucoux K.H., Sjögersten S., Tansey K., Waldram M., Wedeux B.M.M. & Wheeler J. 2014. Improving estimates of tropical peatland area, carbon storage, and greenhouse gas fluxes. *Wetlands Ecology and Management*, 1-20.

Swindles, G.T., Reczuga, M., Lamentowicz, M., Raby, C.L., Turner, T.E., Charman, D.J., Gallego-Sala, A., Valderrama, E., Williams, C., **Draper, F.C**., Honorio Coronado, E.N., Roucoux, K.H., Baker, T. & Mullan, D.J. 2014, Ecology of Testate Amoebae in an Amazonian Peatland and Development of a Transfer Function for Palaeohydrological Reconstruction, *Microbial ecology*, vol. 68, no. 2, pp. 284-298.

PUBLICATIONS (not peer reviewed)

Kelly, T J and Draper F C. 2014. Peatlands of the Western Amazon. *Planet Earth Magazine*.

RESEARCH EXPERIENCE

January-February 2016: Maximising research impact, Peru. Alongside local collaborators I worked to maximise the impact of our carbon focused research. This involved contributing to two national grant proposals and presenting research at regional and national levels to policy makers, members of the public and industrial companies.
October-November 2015: Tropical forest ecology, Brasil. Assisted Dr Sophie Fauset in collecting vertical light and temperature profile data through forest canopies in the Mata Atlântica as part of the ECOFOR project.
May-October 2013: Tropical forest ecology, Peru. Led the second and primary field season of my PhD research. Managed a field team of 7 co-workers at a number of field sites throughout the region. Established floristic and carbon monitoring plots, extracted peat cores, and validated satellite data.
June- October 2012: Tropical forest ecology, Peru. Led the first field season of my PhD project: Amazonian Peatland forests: Past, present and future. Managed a field team of 7 co-workers at a number of field sites throughout the region. Established floristic and carbon monitoring plots, extracted peat cores, and validated satellite data.
June –August 2010: Tropical plant ecology, Peru. Led an independent ten week student expedition to the Manu Learning Centre, Manu, Peru. Completing honours project entitled "Determinants of differential

herbivory rates between monocotyledon and dicotyledon understory plants in a Peruvian tropical rain forest." Supervised by Dr David Burslem, achieved a first class mark.
May 2009: Biogeochemistry, Finland. Took part in a Biogeochemistry field course, investigating CO_2, CH_4, and N_2O dynamics in various sub-arctic ecosystems. Also introduced to Eddy-covariance techniques.

IMPACT

Our carbon focused research (Draper *et al.* 2014) is having on-going impact in Peru. This research provided the scientific basis for a major new $10 million conservation project in Peru (2015). This was the first conservation project to be funded by the UN Green Climate Fund (GCF). This work has also been used to in the scientific basis to establish the new Yaguas National Park in 2018.

GRANTS, AWARDS AND PRIZES

- European Commission Marie Sklodowska- Curie global fellowship (2018-2021) € 250,000.

- First prize University of Leeds postgraduate of the year (2015) £500
- Prize for excellence in an ecology dissertation (2011). University of Aberdeen. £100.
- Prize for excellence in plant taxonomy (2007). University of Aberdeen. £100.

- British Ecological Society (2015), training and travel grant £500.
- Association of Tropical Ecology and Conservation, travel grant (2015) $500.
- NERC radiocarbon facility (2014), £7,680
- NERC radiocarbon facility (2013), £4,060
- Earth and Space Foundation (2013). Earth exploration award, £300.
- Quaternary Research Association (2013). NWR award, £750.
- Anglo-Peruvian Society (2013). £500.
- European Space Agency (2012), category 1 full proposal (PI).
- Royal Geographic Society (2010), geographical fieldwork grant, £2000.
- Explorers Club (2010), youth activity fund, $1000.
- Gilchrist Educational Trust (2010), expedition grant, £1500.
- Aberdeen University expedition fund (2010), £1200.
- Aberdeen University alumni fund (2010), £1500.
- Tambopata reserve grant (2010), £500.
- European Union (2008) ERASMUS exchange grant £4000

PRESENTATIONS

- Distance decay of tree species composition in lowland Amazonia using airborne imaging spectroscopy. July 2017. Association of Tropical Biology and Conservation annual meeting, Merida, Mexico. (Invited symposium)
- Amazonian peatlands: Floristic dynamics through time and space. June 2016. Association of Tropical Biology and Conservation annual meeting, Montpellier, France.
- Amazonian peatlands: Floristic dynamics through time and space. February 2016, European Society for Tropical Ecology (GTÖ). Göttingen, Germany.
- La distribución y cantidad de carbono en los humedales de Loreto. February 2016, Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos, Lima, Peru.

- La distribución y cantidad de carbono en los humedales de Loreto. February 2016, Día Mundial de los Humedales, Ministerio del Ambiente (MINAM). Lima, Peru.
- La distribución y cantidad de carbono en el complejo de turberas de la Abanico Pastaza. January 2016. Instituto de Investigaciones de la Amazonía Peruana (IIAP). Iquitos, Peru.
- Above and Below-ground carbon storage in the largest peatland complex in Amazonia. July 2015. Association of Tropical Biology and Conservation annual meeting, Hawaii.
- Peruvian peatland forests: Carbon storage, vegetation and long-term ecosystem dynamics. February, 2015. University of St Andrews, UK.
- Peruvian peatland forests: Long term vegetation dynamics. April, 2014. British Ecological Society-Tropical Ecology Group. University of York, UK.
- Los bosques de turberas en Loreto, Perú. August 2012. Instituto de Investigaciones de la Amazonía Peruana (IIAP). Iquitos, Peru.
- Los bosques de turberas en Loreto, Perú. September 2012. Universidad Nacional de la Amazonía Peruana (UNAP). Iquitos, Peru.
- Peruvian peatland forests: Long term vegetation dynamics. April, 2012. British Ecological Society-Tropical Ecology Group. Imperial College London, UK.
- Wetland forest ecosystems in Peruvian Amazonia: Past, present and future. March, 2012 University of Edinburgh, UK.
- Wetland forest ecosystems in Peruvian Amazonia. November, 2011. UK Tropical Peatlands working group, University of Nottingham, UK.

REVIEWING EXPERIENCE

Ecography, Journal of Ecology, Ecology Letters, Journal of Vegetation Science, Folia Amazonica

TEACHING EXPERIENCE

- University of Leeds. Co-supervised undergraduate dissertation project. Student achieved a 1st class mark. (2014-2015)
- University of Leeds. Mentor to three undergraduate field apprentices in Peruvian Amazon (summer 2012 and 2013).
- University of Leeds. Teaching assistant in tropical forest ecology (spring 2014, 2015 and 2016).
- University of Leeds. Teaching assistant in remote sensing and GIS (autumn 2012, 2013 and 2014).
- University of Leeds. Teaching assistant in ecological statistical analysis in R (spring 2013, 2014, 2015).
- University of Leeds. Teaching assistant in ecosystem modelling (autumn 2012 and 2013).

RESEARCH SKILLS

- Ecological modelling and statistical analysis in the R statistical environment using large datasets, particular expertise in multivariate analysis.
- Satellite image analysis using Python, R and ENVI
- Forest plot establishment and biomass allometric measurements, particularly familiar with the RAINFOR protocol and the related forestplots.net database.
- Pollen analysis, particularly familiar with South American pollen types.
- Proficient in speaking, reading and writing Spanish.

SOCIETY MEMBERSHIP

British Ecological Society, Ecological Society of America, Association of Tropical Biology and Conservation