Joseph Kelly



Nationality: Dual British/Irish

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Professional experience

Independent consultant (2026–present), Old-Growth Labs, United Kingdom

Remote sensing, geographic information systems, machine learning and spatial ecology expertise applied to conservation, land use and environmental monitoring for international clients.

Principal Expert—Spatial Ecology (2021–2026), Nature Based Solutions, Malaysia

- Led the development of a machine learning framework and Python tool for alternative scenarios of forest intactness, using satellite lidar aboveground biomass data.
- Developed multiple other remote sensing products for landscape management, including topography, hydrography, landslide susceptibility, elephant habitat use, forest connectivity and 3D renders of sites using drone photogrammetry.
- Contributed to the delineation and management of two new protected areas in Peninsular Malaysia: the Al-Sultan Abdullah Royal Tiger Reserve (134,000 hectares) and the Southeast Pahang Peat Swamp Project (90,000 hectares).

Research assistant (2019–2020), CIRES, National Dong Hwa University, Taiwan

Assisted with the establishment of the Center for Interdisciplinary Research on Ecology and Sustainability, mapping a new study site, developing a UAV-based ‘spectral diversity’ pilot study and building staff capacity.

Early-stage research fellow (2018–2019), CEFE-CNRS, France

Developed spatial analyses with global datasets, including a seven-month residency in Cambridge, United Kingdom, at BirdLife International and the UN Environment Programme World Conservation Monitoring Centre.

Research assistant (2017), NGO Rimba, Malaysia

Geographic information systems, remote sensing and publication writing for Kenyir State Park.

Volunteer (2013), Community Based Tourism Arslanbob, Kyrgyzstan

Modelled free-roaming donkey population growth, prompting local government measures to mitigate overpopulation and avoid degradation of the walnut forest landscape.

Research assistant (2012–2013), Max Planck Institute, Gabon

Habituation of chimpanzees and gorillas and collection of their behavioural data. Other responsibilities included collection of biomonitoring camera trap data; phenology surveys; diet analyses; collection of genetic and isotope samples; identification of chimpanzee nests and fruiting trees using one of the first ‘conservation drones’.

Education

MSc International Nature Conservation (2014–2016), University of Göttingen, Germany and Lincoln University, New Zealand (bi-national). Grade: 1.1 (German scale, 1.0 highest)

- Thesis project on bird diversity on the Sangihe and Talaud islands, Indonesia. Found new regional records and potential new taxa on previously unsurveyed islands. Independently organised permits, logistics and fieldwork on 15 islands.
- Designed and led a pilot study on forest elephant movements and human-elephant conflict in Cameroon, used by the Programme for the Sustainable Management of Natural Resources in the South West Region of Cameroon for further research and policy decisions.
- Funded by the Leverhulme Trust via a 2-year Study-abroad Studentship (SAS-2014-125).

BSc Zoology (2008–2012), Cardiff University, United Kingdom. Grade: 2:1

- Dissertation on factors affecting global primate distribution using GIS.
- Professional Training Year in Madagascar, investigating bird diversity with the NGO Mitsinjo Association in Andasibe and supervising fieldwork at the Saint Luce reserve.

Key skills and experience

- Python for data science, designing user-friendly Jupyter notebooks for use in cloud environments (Google Colaboratory, Google Drive, Earth Engine, etc.).
- Machine learning for predictions of historical and alternative scenarios. Proficiency in decision-tree regression and classification; familiarity with convolutional neural networks.
- Proficiency in geographic information systems, spatial statistics and mapping.
- Planning and leading field projects and expeditions, including permits and logistics.
- Conversational Indonesian, Malay and French.

Publications and presentations

- Kelly, J, Ong, DJ, Clements, GR, Low, R, Senescall, M, Zeng, Y, Rao, S, & Jinggut, T (2026). Prioritising forest protection and restoration using alternative scenarios of intactness. Under review at Journal of Environmental Management. Available at SSRN: https://ssrn.com/abstract=7259344
- Kelly, J, Ong, DJ, Clements, GR, Low, R, Senescall, M, Zeng, Y, Rao, S, & Jinggut, T (2026). Mapping alternative scenarios of forest intactness: A machine learning framework. Under review at MethodsX. Available at SSRN: https://ssrn.com/abstract=7269979
- Majeed, MA, Md Hanif, MH, Md Affandi, E, Kelly, J, & Abu Bakar, AF (2026). Dynamically calibrated spatial validation and explainable AI: a stratified cluster-based approach for tropical landslide susceptibility. Under review at Computational Geosciences.
- Cazalis, V, Princé, K, Mihoub, J, Kelly, J, Butchart, SHM, & Rodrigues, ASL (2020). Effectiveness of protected areas in conserving tropical forest birds. Nature Communications, 11, 4461. https://doi.org/10.1038/s41467-020-18230-0
- Kelly, J, Grass, I, Tasirin, JS, Rahman, A, & Waltert, M (2019). The relationship between human population density and bird diversity on the remote Sangihe-Talaud islands, Indonesia. Oral presentation, International Congress for Conservation Biology (ICCB), Kuala Lumpur, Malaysia.
- Kelly, J, Rahman, A, Grass, I, Tasirin, JS, & Waltert, M (2017). Avifaunal status updates, range extensions and potential new taxa on the lesser Sangihe and Talaud islands, Indonesia. Raffles Bulletin of Zoology, 65, 482–496. Download PDF
- van Andel, AC, Wich, SA, Boesch, C, Koh, LP, Robbins, MM, Kelly, J, & Kuehl, HS (2015). Locating chimpanzee nests and identifying fruiting trees with an unmanned aerial vehicle. American Journal of Primatology, 77(10), 1122–1134. https://doi.org/10.1002/ajp.22446