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**COMPANY DETAILS**

Company *Environmental Research & Assessment Ltd.*  
Address Cambridge, United Kingdom  
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**POSITION AND PROFESSIONAL SPECIALISATION**

Colin Harris established *Environmental Research & Assessment Ltd.* in 1998 in Cambridge, UK and is Company Director. He has operated the consultancy company continuously for 25 years with between 1 to 4 staff specialising in environmental management and policy, protected areas, monitoring, impact assessment, indicators, state of the environment reporting, mapping and environmental applications of Geographical Information Systems (GIS), Remote Sensing and Global Positioning Systems (GPS), information management and internet resource development. Products are based on high-quality research and in-depth technical knowledge of environmental issues and GIS and Remote Sensing.

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**PROJECT EXPERIENCE****Project Director Environmental Policy, Assessment and GIS / Remote Sensing**

- Prepared *Wildlife Awareness Manual: Antarctic Peninsula, South Shetland Islands, South Orkney Islands. 2<sup>nd</sup> ed. (2020-21).*  
Clients: *United Kingdom, Germany and IAATO.*
- Prepared *Environmental Management plans and maps for Antarctic Specially Managed Area No.2 McMurdo Dry Valleys, No. 5 South Pole and No.7 Palmer Basin. Prepared Environmental Management plan and maps for a wide range of Antarctic Specially Protected Areas in Antarctica. (2012-2020). Work ongoing.*  
Client: *National Science Foundation, United States of America.*
- Prepared *Environmental Management plans and maps for Antarctic Specially historic ASPAs in the Ross Sea region (2019-20).*  
Client: *Antarctica New Zealand, Government of New Zealand.*
- *Development of environmental guidelines for operation of Remotely Piloted Aircraft Systems (RPAS) in Antarctica. 2017. Scientific evidence evaluation, policy formulation and stakeholder consultation management.*  
Client: *Ministry for Environment, Federal Republic of Germany*
- *Mawdin Coast, Myanmar Mangrove Conservation (2016) Supervised landcover classification and mangrove quality mapping.*  
Client: *Fauna & Flora International.*
- *Marine Important Bird Areas identification in Antarctica (2016-18) Analysis of penguin track data to identify foraging areas & candidate sites for marine protection.*  
Client: *Birdlife International.*
- *Gola, Liberia, artisanal mining (2015) Map production to support fieldwork for developing strategies for responsible artisanal mining practices, including river and catchment modelling.*  
Client: *Estelle Levin Ltd / RSPB*
- *Liberia REDD+ Intervention Landscape Study (2015) GIS overlay analysis to identify priority areas and opportunities for REDD+ intervention in Liberia.*  
Client: *Ruth Golombok Ltd / World Bank.*
- *Guidelines for Activities at Antarctic Geothermal Sites (2014-15): develop guidelines in consultation with science community and governments.*  
Client: *National Science Foundation, Government of the United States of America.*

- *Bird conservation Myanmar (2014- ) Habitat mapping from ornithological survey data to support bird conservation in Myanmar.*  
Client: ArcCona Ecological Consulting.
- *Important Bird Areas in Antarctica (2014-15) Application of spatial analysis in GIS to define location and spatial extent of Important Bird Areas, production of maps and site accounts for IBAs. Antarctic Treaty adopted IBA network for Antarctica.*  
Client: Birdlife International.
- *Lake Turkana Environmental Impact Assessment (2014) Landcover classification.*  
Client: Golders Associates / Tullow Oil.
- *Lake Turkana Strategic Environmental Assessment (2013-14) Data management and analysis for ecology, freshwater and land cover technical topics of ESIA.*  
Client: RSK / Tullow Oil.
- *Environmental Baseline Lake Albert oil field (2012-13) Design and construction of GIS database to support EIA including data capture, data analysis, data quality analysis, spatial modelling, preparation of figures for reports.*  
Client: AECOM / Tullow Oil.
- *Environmental Planning & GIS (2012) Fieldwork in Antarctica to support revision of Management Plans for Antarctic Specially Managed and Specially Protected Areas.*  
Client: National Science Foundation, Government of the United States of America.
- *South Pole Antarctic Specially Managed Area Maps (2009 ongoing) Preparation of mapping using GIS to support management plan. Inclusion of spatial data on zoning and infrastructure.*  
Client: National Science Foundation, Government of the United States of America.
- *Union Glacier Map Series (2010 ongoing) Development of a GIS database and design of maps / map series. Integration of glaciological, topographic and GPS data.*  
Client: Antarctic Logistics & Expeditions, USA.
- *Lake Albert oil field Environmental & Social Impact Assessment, (2010-11) Design and build GIS database to support EIA, including spatial data analysis, spatial modelling.*  
Client: Atkins / Tullow Oil.
- *Nimba Regional Resource Atlas (2009)*  
Design and build GIS database and maps for atlas to support environmental planning, working with NGOs, companies, and the Mano River Union.  
Client: Fauna and Flora International.
- *Olympics Equestrian and Beach Volleyball (2009-10)*  
Design & prepare maps in support of EIA for events at London 2012 Olympics.  
Client: Atkins / LOCOG.
- *Nimba Iron Ore Deposits Liberia (2009) Strategic Environmental Study and full EIA. Construction of GIS database to support EIA. Commission remote sensing and LiDAR survey of region. Supervised landcover classification of SPOT imagery.*  
Client: Atkins / Arcelor Mittal.

## EDUCATION

- 1988 – 1993 Ph.D. University of Cambridge, United Kingdom.
- 1984 – 1986 MA (Geography) University of Western Ontario, Canada
- 1979 – 1984 BA Hons (First Class) (Geography) University of Otago, New Zealand

### HONOURS AND AWARDS

- 2021 British Cartographic Society Stanford Award Highly Commended *Wildlife Awareness Manual*.
- 2011 US National Science Foundation Office of Polar Programs Environmental Award: outstanding environmental and GIS mapping contributions to USAP
- 2006 Co-winner of British Cartographic Society Awards "Best Mapping Entry" & "Best Electronic Map" 2006
- 1992 Cambridge Philosophical Society Studentship
- 1988-91 United Kingdom Overseas Research Student Award, Cambridge Commonwealth Trust Graduate Fellowship, CT Taylor Environmental Studentship, University of Cambridge, British Antarctic Survey Research Bursary
- 1984-86 University of Western Ontario Admission Scholarship, Fees Award and Overseas Student Scholarship

### SELECTED PUBLICATIONS

- Harris, C.M. (ed) 2021. *Wildlife Awareness Manual: Antarctic Peninsula, South Shetland Islands, South Orkney Islands*. 2<sup>nd</sup> ed. Prepared for United Kingdom, Germany and IAATO. *Environmental Research & Assessment*, Cambridge.
- Harris, C.M., Herata, H. & Hertel, F. 2019. Environmental guidelines for operation of Remotely Piloted Aircraft Systems (RPAS): Experience from Antarctica. *Biological Conservation* **236**: 521–31.
- Dias, M.P., Carneiro, A.P.B., Warwick-Evans, V., Harris, C.M., Lorenz, K., Lascelles, B.G., Clewlow, H.L., Dunn, M.J., Hinke, J.T. & 8 others. 2018. Identification of marine Important Bird and Biodiversity Areas for penguins around the South Shetland Islands and South Orkney Islands. *Ecology and Evolution* DOI:10.1002/ece3.4519
- Dias, M.P., Warwick-Evans, V., Carneiro, A.P.B., Harris, C.M., Lascelles, B.G., Clewlow, H.L., Manco, F., Ratcliffe, N. & Trathan, P.N. 2018. Using habitat models to identify marine Important Bird and Biodiversity Areas for Chinstrap Penguins *Pygoscelis antarcticus* in the South Orkney Islands. *Polar Biology*. DOI: 10.1007/s00300-018-2404-4
- Harris, C.M. 2017. Draft guidelines to minimize environmental impacts arising from the use of drones in Antarctica: literature review. Attachment B to Working Paper 029 to the XLI ATCM held in Buenos Aires, Argentina, submitted by Germany.
- Harris, C.M., Lorenz, K. & Syposz, M. 2017. Representation of Important Bird Areas in the series of Antarctic Specially Protected Areas. Information Paper 016 to the XL ATCM held in Beijing, China, submitted by New Zealand, Norway and the United Kingdom.
- Harris, C.M., Lorenz, K. & Arthur, J. 2017. Southern Anvers Island and Palmer Basin. Antarctic Specially Managed Area No.7. 1: 50 000. Prepared for the United States Antarctic Program and the US National Science Foundation, Office of Polar Program. *Environmental Research & Assessment*, Cambridge.
- Harris, C.M., Lorenz, K., Fishpool, L.D.C., Lascelles, B., Cooper, J., Coria, N.R., Croxall, J.P., Emmerson, L.M., Fijn, R.C., Fraser, W.L., Jouventin, P., LaRue, M.A., Le Maho, Y., Lynch, H.J., Naveen, R., Patterson-Fraser, D.L., Peter, H.-U., Poncet, S., Phillips, R.A., Southwell, C.J., van Franeker, J.A., Weimerskirch, H., Wienecke, B., & Woehler, E.J. 2015. *Important Bird Areas in Antarctica 2015*. BirdLife International and Environmental Research & Assessment Ltd., Cambridge.
- Lorenz, K. & Harris, C.M. 2013. Cartographic Challenges in Antarctica: Mapping in support of environmental management in the US Antarctic Program. 26th International Cartographic Conference Proceedings, Dresden, Germany.
- Lorenz, K. & Harris, C.M. 2012. Palmer Station, Arthur Harbor 1: 15 000. Prepared for the United States Antarctic Program and the US National Science Foundation, Office of Polar Program. *Environmental Research & Assessment*, Cambridge.
- Jungblut, A.D., Wood, S.A., Hawes, I., Webster-Brown, J. & Harris, C.M. 2012. The Pyramid Trough Wetland: environmental and biological diversity in a newly created

- Antarctic protected area. *FEMS Microbiology Ecology* **82**(2): 356–66.
- Clarke, A., Brierley, A., Harris, C.M., Lubin, D. & Smith, R.C. 2008. Polar and ice-edge marine systems. In Polunin, N. (ed) *Aquatic ecosystems*. Cambridge University Press, Cambridge: 319–33.
- Harris, C.M. 2007. Protected Areas within the Antarctic Treaty Area. In Riffenburg, B. (ed) *Antarctic Encyclopaedia* (Vol II). Routledge, New York: 769–81.
- Poncet, S. & Poncet, J. 2007. *Southern Ocean Cruising*. 2<sup>nd</sup> Edn comprehensively revised and updated by Poncet, S., Harris, C.M. & Grant, S.M. *Environmental Research & Assessment*, Cambridge.
- Harris, C.M. 2005. Aircraft operations near concentrations of birds in Antarctica: The development of practical guidelines. *Biological Conservation* **125**: 309–22.
- Clarke, A. & Harris, C.M. 2003. Polar marine ecosystems: major threats and future change. *Environmental Conservation* **30**(1): 1–25.
- Harris, C.M. 2001. Key pressures on the Ross Sea region environment: science. In Waterhouse, E (ed) *Ross Sea Region 2001: a State of the Environment Report for the Ross Sea Region of Antarctica*. New Zealand Antarctic Institute, Christchurch.
- Harris, C.M. 1998. Science and environmental management in the McMurdo Dry Valleys, Antarctica. In Prisco, J. (ed) *Ecosystem Processes in a Polar Desert: the McMurdo Dry Valleys, Antarctica*. Antarctic Research Series, Vol. 72. American Geophysical Union, Washington.
- Harris, C.M. & Stonehouse, B. (eds) 1991. *Antarctica and global climatic change*. Belhaven Press, London.
- Harris, C.M. 1991. Environmental management on King George Island, South Shetland Islands, Antarctica. *Polar Record* **27**(163): 313–24.
- Harris, C.M. 1991. Environmental effects of human activities on King George Island, South Shetland Islands, Antarctica. *Polar Record* **27**(162): 193–204.

#### PROFESSIONAL MEMBERSHIPS

- Practitioner, Institute of Environmental Management & Assessment
- Member, British Cartographic Society
- Member IUCN World Commission on Protected Areas

#### IT & TECHNOLOGICAL SKILLS

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| GIS & Remote Sensing | ESRI ArcGIS 10.4 including Spatial Analyst & 3-D Analyst, Erdas Imagine 2015 including Imagine Photogrammetry, Google Earth |
| GPS                  | Trimble Business Center, BaseCamp, GPS Utility, Garmin & Trimble units  |
| Graphics             | Adobe Creative Suite CS5: Photoshop, Illustrator  |
| Page Layout          | InDesign  |
| Other                | MS Office: Word, Excel, Powerpoint  |

#### LANGUAGES

|         |        |
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| English | Native |
| Italian | Basic  |

#### INTERESTS

Mountain hiking, tennis, cycling, gardening, photography, travel, art, writing.