

# Stephen Alexander Oswald

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## Education

Ph.D. Seabird Ecophysiology and Climate Change	2005
University of Leeds, School of Biology (Leeds, UK)	
Dissertation: Responses of Great Skuas to climate change	
M.S. Ecology	1999
University of Aberdeen, Department of Zoology (Aberdeen, UK)	
B.S. Biology (Honors)	1997
University of Durham, Department of Biological Sciences (Durham, UK)	

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## Employment

Faculty in Biology (PT from 2009)	2007-present
Pennsylvania State University, Berks Campus, Division of Science (Reading, PA)	
<ul style="list-style-type: none"><li>• Project and field team leader</li><li>• Cutting-edge research on the ecological effects of climate for vertebrates</li><li>• Research on the conservation and ecology of Great Lakes waterbirds, including developing field experiments and novel techniques, and leading the field team</li><li>• Developed and programmed novel analytical and statistical techniques and software</li><li>• Developed novel field instrumentation and methodologies, and supervised undergraduate research projects</li><li>• Published peer-reviewed articles in scientific journals</li></ul>	
Consultant/Sub-contractor	2008
ESS Group (Providence, RI)	
<ul style="list-style-type: none"><li>• Substantially revised a Population Viability Analysis (PVA) for the Endangered Roseate Tern</li><li>• Responded to technical comments on draft from stakeholder groups</li></ul>	
Scientist/Ornithologist III	2006-2007
EA Engineering, Science, and Technology (Sparks, MD)	
<ul style="list-style-type: none"><li>• Managed tasks for diverse ecological risk assessments (ERA) under CERCLA</li><li>• Developed proposals and bids for work</li><li>• Led analyses and reporting for ornithological research projects, e.g. Aberdeen Proving Ground Bald Eagle Management, Developing exposure factors for ERAs</li><li>• Analyzed data and authored ERA and NEPA reports for diverse clients: e.g. Department of Defense, US Army Corps of Engineers, private businesses</li><li>• Designed and led field data collection for risk assessment and wildlife monitoring projects in freshwater and marine environments</li></ul>	

- Post-doctoral Research Associate 2005  
Institut fuer Vogelforschung, (Wilhelmshaven, Germany)
- Developed and programmed software for data extraction and analysis of high-frequency, measurements of birds from a passive-transponder detection system
  - Performed multi-state mark-recapture analysis and population analyses on a long term ecological data set
- Visiting Researcher 2001  
University of Massachusetts/ Boston, Department of Biology (Boston, MA)
- Project leader
  - Designed, developed, undertook, and published research on tern breeding biology
  - Secured competitive funding from the British Ecological Society
- Research Assistant 1999-2000  
Murdoch University, School of Biological Sciences (Perth, Australia)
- Collected breeding and diet data on tropical seabird species on a remote archipelago
  - Sampled and identified larval fish and plankton
- Independent Consultant 1999  
Aberdeen University, Department of Plant & Soil Science (Aberdeen, UK)
- Project and field team leader
  - Designed and implemented baseline avian survey for Environmental Impact Assessment

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## Prior experience

*Research assistant for multiple academic and monitoring studies national and international. Including work on mammals, birds, fish and invertebrates. Projects include endangered species surveys, radiotracking mammals for control/restoration projects, delineating land-use and habitat.*

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## Professional Activities

- Nominating Committee 2008 - present  
Waterbird Society
- Peer-reviewer for academic journals 2008 - present  
Animal Behaviour, Global Ecology and Biogeography, Journal of Biogeography, Journal of Experimental Biology, PlosOne, Waterbirds
- Co-organizer Scientific Symposium 2009  
Annual Meeting of the Waterbird Society (Cape May, NJ)
- Outreach Committee 2008-2009  
Pennsylvania State University, Berks Campus, Division of Science (Reading, PA)
- Peer-reviewer 2008 – present  
*Animal Behaviour, Global Ecology and Biogeography, Journal of Experimental Biology, Journal of Biogeography, PLoS ONE, Waterbirds*

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## Research funding

National Geographic Society/ Waite Grant: Assessing Common Tern populations in the boreal lakes (14,000 USD)	2011-2012
PSU Berks faculty project funds: Conservation Internship (1,800 USD)	2008-2009
Undesignated funds: Field Study of Bird Behavior, PSU Berks (1,885 USD)	2007-2008
Natural Environment Research Council (UK) Studentship (63,400 USD)	2001-2004
British Ecological Society (UK), Small Ecological Project Grant (1,500 USD)	2001
Natural Environment Research Council (UK) M.S. Studentship (10,000 USD)	1998-9

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## Teaching activities

Pennsylvania State University, Berks Campus (Reading, PA)	2007-present
Introductory Biology (BIOL 110)	2009-2012
Biology: Function and Development of Organisms (BIOL 240W)	2009, 2012
Biology: Populations and Communities (BIOL 220W)	2009
Genetics, Ecology and Evolution Honors (BISC 002H)	2008-2009
Genetics, Ecology and Evolution (BISC 002)	2008-2009
First Year Seminar (PSU 005)	2008
Introductory Biology (BIOL 011)	2007-2008
Laboratory for Introductory Biology (BIOL 012)	2007-2008
University of Durham, UK (teaching assistant)	2001-2002
Geographical Information Systems (GIS) (Graduate level)	
Undergraduate (300-level equivalent): Ecological statistics	
Undergraduate (200-level equivalent): Animal behavior	
Undergraduate (100-level equivalent): Animal and plant ecology and physiology	

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## Technical skills

### Research Software

Statistics: R, Genstat, SPSS, S-Plus, Minitab  
 GIS: Arc GIS 9.x, Arc View 3.x, Arc Info  
 Capture-recapture: MARK, M-SURGE, U-CARE  
 Programming Languages: R, FORTRAN 90, MS Access Visual Basic, MATLAB

### Field skills

Field instrumentation, environmental data logging, radiotracking, banding, habitat survey, trapping (mammals and birds), aquatic invertebrate sampling, watercraft operation

### Certifications and training

OSHA 40 hour site worker; subsequent 8 hour refreshers (Columbia, MD)	2006-2007
Capture-recapture analysis using program MARK. (Leer Volkshule, Germany)	2005

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## Authoried peer-review journal articles

**Oswald, S.A.**, Nisbet, I.C.T., Chiaradia, A. and Arnold, J.M. (2012) FlexParamCurve: Flexible R package to fit non-linear parametric curves. *Methods in Ecology and Evolution*, Early View DOI: 10.1111/j.2041-210X.2012.00231.x.

**Oswald, S.A.** and Arnold J.M. (2012) Direct impacts of climatic warming on heat stress in endothermic species: seabirds as bioindicators of changing thermoregulatory constraints. *Integrative Zoology* **7**: 121-136.

**Oswald, S.A.**, Arnold, J.M., Hatch, J. J. and Nisbet, I.C.T. (2012) Piracy at the nest: factors driving kleptoparasitic activities of Common Tern *Sterna hirundo* chicks. *Acta Ornithologica* **47**: 95-100.

**Oswald, S.A.**, Huntley, B., Russell, D. J., Anderson, B., Arnold, J.M., Furness, R. W. and Hamer, K. C. (2011) Physiological effects of climate on distributions of endothermic species. *Journal of Biogeography*, **38**: 430-438.

Arnold, J.M., Ordonez, R., Copeland, D.A., Nathan, R., Scornavacchi, J.M., Tyerman, D.J., and **Oswald, S.A.** (2011) Simple and inexpensive devices to measure heartrate in incubating birds. *Journal of Field Ornithology*, **82**: 288-296.

**Oswald, S.A.**, Bearhop, S., Furness, R.W., Huntley, B. and Hamer, K.C. (2008) Heat stress in a high-latitude seabird: effects of temperature and food supply on bathing and nest attendance of great skuas *Catharacta skua*. *Journal of Avian Biology*. **39**: 163-169.

Arnold J.M., Oswald S.A., Voigt, C. C., Palme, R., Braasch, A., Bauch, C. and Becker P.H. (2008) Taking the stress out of blood collection: comparison of field blood-sampling techniques for analysis of baseline corticosterone. *Journal of Avian Biology*. **39**: 588-592.

Nudds, R.L. & **Oswald, S.A.** (2007) An interspecific test of Allen's Rule: evolutionary implications for endothermic species. *Evolution*, **61**: 2839-2848.

Arnold J.M., **Oswald S.A.**, Limmer, B. and Becker P.H. (2006) The role of age and condition in predicting survival for a long-lived seabird: A mark-recapture analysis of the Common Tern. *Journal of Ornithology*, **147**, Supplement 1: 85 (published abstract).

**Oswald, S.A.**, Arnold, J.M., Hatch, J.J. and Nisbet, I.C.T. (2005) Effect of intraspecific interactions on seasonal decline in productivity of Common Terns *Sterna hirundo*. *Bird Study*, **52**: 70-79.

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## Manuscripts in review

Arnold, J. M. and **Oswald, S. A.** In review. First confirmed record of a common tern *Sterna hirundo* breeding at one year of age. *Bird Study*, Submitted September 2012.

**Oswald, S. A.**, Wails, C. N., Morey, B. E. and Arnold, J. M. In review. Caspian terns fledge a ring-billed gull chick: Successful waterbird adoption across taxonomic families. *Waterbirds*, Submitted September 2012.

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## Authored software

- Oswald, S.A.** (2011 and updates) *FlexParamCurve: Tools to Fit Flexible Parametric Curves*. R package. Vienna. (<http://cran.r-project.org/web/packages/FlexParamCurve/index.html>)
- Oswald, S.A.** (2007) *Sternamass*. Software program for extraction of long-term biological data, from computerized field-data archive. Written in FORTRAN 90 and MS Access.
- Oswald, S.A.** (2006) *APG Shoreline Survey Import Utility*. Software program for import and analysis of long-term bald eagle survey data from field-data archive. Written in MS Access Visual Basic.
- Oswald, S.A.** (2005) *Permit tracking*. MS Access form for recording correspondence and matching it to existing projects in the data archive. Written in MS Access Visual Basic.

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## Selected other publications

- Oswald, S.A. (2012) *FlexParamCurve: A tutorial*. Online extra for *Methods in Ecology and Evolution*. Available online at: <http://www.methodsinecologyandevolution.org/view/0/podcasts.html>
- Oswald, S.A., Nisbet, I.C.T., Chiaradia, A. and Arnold, J.M. (2012) *FlexParamCurve: An introduction*. Online extra for *Methods in Ecology and Evolution*. Available online at: <http://www.methodsinecologyandevolution.org/view/0/podcasts.html>
- Arnold, J.M. and **Oswald, S.A.** (2012) Colonial waterbird research and monitoring at Gull Island, Presqu'ile Provincial Park in 2011. (22 pp., submitted to Ontario Parks).
- Arnold, J.M. and **Oswald, S.A.** (2008) Responses to comments on and addendum to the roseate tern population viability analysis. Appendix C in *Cape Wind Energy Project Nantucket Sound Biological Assessment (Appendix G of the Final EIS)*. US Department of Interior Minerals Management Service.
- Arnold, J.M., **Oswald, S.A.**, Limmer, B., and Becker, P.H. (2006) The role of age and condition in predicting survival for a long-lived seabird: A mark-recapture analysis of the common tern. *Journal of Ornithology*, **147** (Supp 1): 85 (published abstract).
- EA (2006). Screening Level Ecological Risk Assessment, in Site Inspection Report for Fort Delaware. Alion Science and Technology. Draft Final, January 2007.
- Oswald, S.A.** (2006) Modeling threats to albatross populations (Paper review). *Seabird Group Newsletter*, **103**, 20-21.
- EA Engineering, Science, and Technology (EA) (2006) Aberdeen Proving Ground Bald Eagle Study: Shoreline Surveys. Development of a database and analysis of historical and recent trends. White Paper, December 2006.
- EA (2006) Canal Creek Study Area Work Plan for supplemental sampling of DSERTS Site CC-1K: Canal Creek Marsh. Final Report, October 2006.
- EA (2006). Data evaluation and risk characterizations for DSERTS Sites in the Canal Creek Study Area, Volume III: East Industrial Area. Draft Final Report, August 2006.
- EA (2006) Potential for risk to human health and wildlife from expected radio frequency radiation at Aberdeen Proving Ground. Final Report, April 2006.
- Oswald, S.A.** (2002) Living with Seabirds. Interpretative poster for the Scottish Seabird Centre (North Berwick, UK).

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## Presentations at national and international meetings (since 2008)

Wails, C.N., **Oswald, S.A.** and Arnold, J.M. (2012) Improving accuracy and efficiency of common tern productivity estimates: A tool for aging chicks in the field. North American Ornithological Conference (NAOC-V), Vancouver, BC, Canada. 14 - 18 August. Poster.

Arnold, J.M. and **Oswald, S.A.** (2011) Effects of vegetative cover on reproductive success of Common Terns (*Sterna hirundo*). Waterbird Society Annual Meeting, Annapolis, MD. 9-12 November. Oral.

Arnold, J.M., Nisbet, I.C.T., Chiaradia, A. and **Oswald, S.A.** (2011) A flexible approach for growth rate analysis of waterbird chicks: Extending traditional methods within nonlinear mixed-effects models. Waterbird Society Annual Meeting, Grand Island, NE. 13-16 March. Poster.

Kemfort, T.L., **Oswald, S.A.** and Arnold, J.M. (2011) Does investigator disturbance negatively affect productivity? An experimental study in breeding ring-billed gulls (*Larus delawarensis*). Waterbird Society Annual Meeting, Grand Island, NE. 13-16 March. Poster.

Kilheffer, C., **Oswald, S.A.**, Tyerman, D. J. and Arnold, J.M. (2011) Foraging ecology of Common terns (*Sterna hirundo*) in a freshwater system. Waterbird Society Annual Meeting, Grand Island, NE. 13-16 March. Poster.

**Oswald, S.A.**, Amenta, J.L. and Arnold, J.M. (2010) Morphological adaptations to climate predict differences in thermoregulatory behavior between gulls and terns. 1<sup>st</sup> World Seabird Conference, Victoria, BC. 7-11 September. Poster.

Nisbet, I.C.T., Chiaradia, A., **Oswald, S.A.** and Arnold, J.M. (2010) Growth of little penguin *Eudyptula minor* chicks in relation to hatching date, parental age, parental quality and mate change. 7<sup>th</sup> International Penguin Conference, Boston, MA. 31 August – 3 September. Oral.

Arnold, J. M., Nisbet, I.C.T, and **Oswald, S. A.** (2009) Differences in growth patterns between common terns nesting in freshwater and saltwater environments Waterbird Society, Annual Meeting, Cape May, NJ. 5-7 November 2009. Oral.

Szczys, P., **Oswald, S. A.** and Arnold, J. M. (2009) Analysis of gene flow among common tern colonies in the Great Lakes Region and the Atlantic coast. Waterbird Society, Annual Meeting, Cape May, NJ. 5-7 November 2009. Oral.

Amenta, J. L., **Oswald, S. A.** and Arnold, J. M. (2009) Interspecific differences in heat loss behavior under identical climatic conditions. Waterbird Society, Annual Meeting, Cape May, NJ. 5-7 November 2009. Poster.

Son, E. V., **Oswald, S. A.** and Arnold, J. M. (2009) Ecological factors influencing predation of waterbirds by herring gulls in a mixed species breeding colony. Waterbird Society, Annual Meeting, Cape May, NJ. 5-7 November 2009. Poster.

**Oswald, S.A.**, Arnold, J.M., Bearhop, S., Furness, R.W., Huntley, B. and Hamer, K. C. (2008) Heat stress in waterbirds: trade-offs with foraging and nest attendance. Waterbird Society Annual Meeting, San Padre Island, TX. 15-18 November. Oral.

Arnold, J.M., **Oswald, S.A.** Voigt, C. C., Palme, R., Braasch, A., Bauch, C. and Becker P.H (2008) Bugs, birds and blood: Comparing field methods of blood sampling for baseline corticosterone analysis. Waterbird Society Annual Meeting, San Padre Island, TX. 15-18 November. Oral.

Ordonez, R., **Oswald, S.A.**, Copeland, D., and Arnold, J.M. (2008) Simple and inexpensive devices to measure heart rate of incubating birds. Waterbird Society Annual Meeting, South Padre Island, TX, 15-18 November. Poster.