Sam Paplauskas

Ecologist and evolutionary geneticist with more than a decade of experience with freshwater predator-*Daphnia and Daphnia*-parasite systems. Demonstrates aptitude for both empirical data collection (field & laboratory) and quantitative research (meta-analysis, time-series analysis, multivariate analysis, large-scale comparative analysis, multi-level modelling), with a proven record of publishing first author papers in high-impact journals e.g. *Nature Ecology & Evolution*.

Education

Ph.D. Ecology and Evolutionary Biology | Sept 2018 – Nov 2024 (leave 2021 – 2022)
University of Stirling (UK) – Biological and Environmental Sciences
UK Centre for Ecology & Hydrology – CEH Lancaster

Nationally selected under the NERC IAPETUS Doctoral Training Partnership

Thesis: *"Predicting epidemic size and disease evolution in response to environmental change"*
Supervisors: Dr Stuart Auld, Professor Matthew Tinsley, Dr Stephen Thackeray, Dr Brad Duthie

(i) Quantified host–parasite coevolutionary dynamics using multivariate phenotypic trajectory analysis (**published in *Nature Ecology & Evolution***)
(ii) Applied ecological time-series models (ARIMA) to multi-year epidemic datasets (20 populations × 5 years) to forecast disease dynamics under environmental variation
(iii) Tested local adaptation theory in *Daphnia* host–parasite systems through reciprocal transplant experiments across spatial and environmental gradients
(iv) Conducted meta-analyses synthesising cross-system drivers of epidemic size and host genetic diversity effects
(v) Developed a predictive "Disease Cycle" framework linking the size of past and future epidemics to environmental drivers of ecological change

M.Sci. Biological Sciences (First Class Honours) | Sept 2013 – May 2017
University of Sheffield (UK) – School of Biosciences (Animal and Plant Sciences & Biomedical Science)

Theses: "*The trajectory of* Daphnia *through shape space along a gradient of predation risk*"
"*The genetic control of a predator-induced defence*"
Supervisors: Professors Andrew Beckerman and Marysia Placzek

Integrated immunofluorescence and geometric morphometrics to quantify inducible defensive plasticity in *Daphnia* at molecular and morphological levels

Professional Appointments

JSPS Postdoctoral Fellow | Aug 2025 – April 2026
Utsunomiya University (Japan) – Bioscience Education and Research Centre
Developed transgenic *Daphnia* lines using CRISPR-Cas9 microinjection to investigate the genetic basis of predator-induced defences

CDI Postdoctoral Fellow | April 2025 – July 2025
Utsunomiya University (Japan) – Creative Department for Innovation
Transitioned into JSPS-funded postdoctoral fellowship

JSPS Predoctoral Fellow | June 2019 – Aug 2019
Utsunomiya University (Japan) – Bioscience Education and Research Centre
University of Tokyo (Japan) – Biological Sciences
Undertook a research sabbatical during my Ph.D. to investigate gene expression associated with predator-induced defences in *Daphnia* using RT-qPCR

Sam Paplauskas
Ph.D.
Freshwater Ecologist
Evolutionary Geneticist
Biostatistician

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Research Experience

BES Ecology Research Assistant | Aug 2017 - Aug 2018
University of Sheffield (UK) – School of Biosciences (Animal and Plant Sciences; Biomedical Science; Molecular Biology and Biotechnology)

(i) Awarded ecology research grant as co-PI to quantify inducible plasticity of thermal performance curves in *Daphnia* under predation risk
(ii) Awarded Scurfield memorial bursary to extend my pioneering M.Sci. research
(iii) Contributed to the development of a Business Innovation Project for the commercial applications of inducible algae flocculation systems

BSPP Research Assistant | May 2016 – Sept 2016
University of Sheffield (UK) – Animal and Plant Sciences
Awarded undergraduate vacation bursary for plant metabolomics using UHPLC–MS

Soil Ecology Research Assistant | May 2015 – Sept 2015
University of Sheffield (UK) – Animal and Plant Sciences
Field and laboratory assistant for soil–plant–microbe experimental systems

Publications: Peer-reviewed

5. **Paplauskas, S.** (2026). Conventional wisdom revised in terms of a Diversity-Uncertainty model for the effect of host genetic diversity on mean epidemic size and its variability. *Ecology and Evolution*, 16(5). http://dx.doi.org/10.1002/ece3.73660
4. **Paplauskas, S.** (2025). A conceptual Disease Cycle model to link the size of past and future epidemics. *Ecology and Evolution*, *15*(8). https://doi.org/10.1002/ece3.71868
3. **Paplauskas, S.**, Morton, O., Hunt, M., Courage, A., Swanney, S., Dennis, S. R., Becker, D., Auld, S. K. J. R. and Beckerman, A. P. (2024). Predator-induced shape plasticity in *Daphnia pulex*. *Ecology and Evolution*, *14*(2). https://doi.org/10.1002/ece3.10913
2. **Paplauskas, S.**, Brand, J. and Auld, S. K. J. R. (2021). Ecology directs host–parasite coevolutionary trajectories across *Daphnia*–microparasite populations. ***Nature Ecology and Evolution***, *5*(4), 480–486. https://doi.org/10.1038/s41559-021-01390-7
1. Wilkinson, S. W., Pastor, V., **Paplauskas, S.**, Pétriacq, P. and Luna, E. (2018). Long-lasting β-aminobutyric acid-induced resistance protects tomato fruit against *Botrytis cinerea*. *Plant Pathology*, *67*(1), 30–41. https://doi.org/10.1111/ppa.12725

Publications: Under Review

2. **Paplauskas, S.** (2026). No local adaptation despite environmental heterogeneity in naturally coevolving *Daphnia*–parasite mesocosms. *Ecology and Evolution* (under review). Preprint: https://doi.org/10.22541/au.177153469.92868672/v1
1. **Paplauskas, S.** (2025). Borrowing data from other populations to forecast epidemic size. *Ecology and Evolution* (under review).
Preprint: https://doi.org/10.22541/au.174475403.32807642/v1

Publications: Protocols

1. **Paplauskas, S.** (2026). User guide for *Daphnia* microinjection. *Protocols.io*. https://dx.doi.org/10.17504/protocols.io.bp2l6je8rvqe/v1

Publications: Datasets

2. **Paplauskas, S.** and Miyakawa, H. (2026). RT-qPCR Gene Expression Dataset for *Daphnia pulex* (Predator-Induced). *Zenodo*. https://doi.org/10.5281/zenodo.18491338
1. **Paplauskas, S.** (2026). Immunofluorescence dataset of developmental marker expression during neckteeth formation in *Daphnia pulex*. *Zenodo*. https://doi.org/10.5281/zenodo.18751901

Thesis

1. **Paplauskas, S.**, Tinsley, M. C., Duthie, A. B. and Thackeray, S. (2024). Predicting epidemic size and disease evolution in response to environmental change. *STORRE*. http://hdl.handle.net/1893/36402

Manuscripts in Preparation

1. **Paplauskas, S.** (tbc). The extent to which epidemics drive host-parasite (co)-evolution is system specific and depends on epidemic size: A meta-analysis. Manuscript in preparation.

Research Grants and Fellowships

JSPS London Postdoctoral Fellowship (2025 – 2026)	840,000 JPY
CDI Postdoctoral Fellowship (2025)	NA
JSPS Predoctoral Fellowship (2019)	158,500 JPY
NERC IAPETUS Doctoral Training Partnership Ph.D. Studentship	10,000 GBP
Irish Research Council Government of Ireland Postgraduate Research Scholarship (Ph.D. Studentship) at Trinity College Dublin (2018)	Declined
British Ecological Society (BES) Small Ecology Research Grant (2017 – 2018)	5000 GBP
Scurfield Memorial Bursary (University of Sheffield Alumni Award, 2017 – 2018)	500 GBP
NERC ACCE Doctoral Training Partnership Ph.D. at University of Liverpool (2017)	Declined
British Society for Plant Pathology (BSPP, 2016)	NA
Science Outreach Grant (Science Faculty, University of Sheffield, 2016)	200 GBP

Selected Awards

Collaboration of the Year Award, University of Sheffield (2016) — awarded for leadership of outreach activities within Science Brainwaves, a student society and registered charity

Best Poster Prize, IV International Symposium for the Society of Spanish Researchers in the UK, University College London (2016)

Technical skills

Software: R, Python, HTML/Markdown, Git

Statistical methods: multivariate statistics (phenotypic trajectory analysis, PCA, geometric morphometrics), ecological time-series analysis (ARIMA forecasting), mixed-effects and meta-analytic models, large-scale comparative analysis and infectious disease modelling

Laboratory: CRISPR-Cas9 microinjection, RT-qPCR, immunofluorescence (IF), and UPLC–MS

Field: Experimental coevolution, reciprocal transplant experiments, environmental monitoring and life-history assays using field-cage systems

Teaching Experience

Statistics Teaching Assistant | Sept 2018 – Nov 2024 (leave 2021 – 2022)
University of Stirling (UK) – Biological and Environmental Sciences
20+hours per year of under- and postgraduate teaching and marking on ecology and statistics

Ecology Field Course Assistant | Sept 2016 – June 2018
University of Sheffield (UK) – Animal and Plant Sciences
Tutored undergraduates on a week-long ecology field course based in Lisbon (Portugal)

Mentoring

Ph. D. Mentor | Aug 2025 – April 2026
Utsunomiya University – Centre for Bioscience Research and Education
As a senior postdoctoral fellow, prepared two Ph.D. researchers for the 73rd Annual Meeting of the Ecological Society of Japan

Undergraduate Mentor | Sept 2018 – Nov 2024 (leave 2021 – 2022)
University of Stirling (UK) – Biological and Environmental Sciences
During my Ph. D., mentored two undergraduate researchers which resulted in a published article in *Ecology & Evolution*

Teaching Outside of Academia

Museum Tour Guide | Sept 2016 – May 2018
University of Sheffield (UK) – Alfred Denny Museum
Delivered public museum tours and science communication activities for diverse audiences

Science Outreach Leader | Sept 2015 – June 2016
University of Sheffield (UK) – Science Brainwaves
Award-winning leader of a student-led science outreach charity (*Collaboration of the Year*)

English Teacher in China | Aug 2015 – Sept 2015
Zhejiang Haining Hongda Foreign Language School (China)
Taught English as a foreign language

Selected Presentations

*Denotes invited talk

Paplauskas, S., Tinsley, M. C. and Duthie, A. B. (2023). Host genetic diversity determines epidemic size through time and across populations. **Departmental seminar**. University of Stirling, UK.

Paplauskas, S. and Auld, S. K. J. R. (2020). Multivariate vectorisation of coevolving host-parasite populations in field environments. **Annual IAPETUS Doctoral Training Partnership Conference**. University of Durham, UK.

***Paplauskas, S.**, Miyakawa, H. M. and Miura, T. (2019). Gene expression results from RT-qPCR of inducible defences in *Daphnia*. **Invited seminar**. University of Tokyo, Japan.

Paplauskas, S., Thackeray, S. and Auld, S. K. J. R. (2019). A series of meta-analyses that link the size of past and future epidemics. **Stirling University Research Symposium**. University of Stirling, UK.

Paplauskas, S., Placzek, M. and Beckerman, A. P. (2017). Secret to shapeshifting: the genetic control of a predator-induced defence. **University of Sheffield Postgraduate Research Symposium**. University of Sheffield, UK.

Selected Posters

*Denotes best poster award

Paplauskas, S. (2026). The extent to which epidemics drive host-parasite (co)-evolution is system specific and depends on epidemic size: A meta-analysis. **73rd Annual Meeting of the Ecological Society of Japan**. Kyoto University, Japan.

Paplauskas, S. (2025). A meta-analysis: Epidemic size can determine the strength of parasite- but not host-mediated selection. **71st Annual Meeting of the Ecological Society of Japan**. Yokohama National University, Japan.

Paplauskas, S. and Auld, S. K. J. R. (2023). No local adaptation despite environmental heterogeneity in naturally coevolving *Daphnia*–parasite mesocosms. **British Ecological Society Annual Meeting 2023**. International Convention and Exhibition Centre, Belfast, Northern Ireland.

Paplauskas, S., Miyakawa, H. M. and Miura, T. (2019). Research Plan in Japan: Gene expression associated with predator-induced defences in *Daphnia*. **JSPS Summer Program 2019 induction**. Shonan Village Center, Hayama, Kanagawa Prefecture, Japan.

Paplauskas, S. and Auld, S. K. J. R. (2019). Predicting epidemic size and disease evolution in natural systems. **Ecological Society Annual Meeting 2019.** Edinburgh International Conference Centre, Edinburgh, UK.

***Paplauskas, S.**, Wilkinson, S. W. and Luna, E. (2016). Inducible disease resistance against grey mould (*Botrytis cinerea*) in tomato fruit. **IV International Symposium for the Society of Spanish Researchers in the UK**. University College London, UK.

Professional affiliations

British Ecological Society

Ecological Society of Japan

Referees

Professor Andrew Beckerman
Professor in Evolutionary Ecology, Faculty Director of Education
University of Sheffield – School of Biosciences
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Dr. Pepijn Luijckx
Assistant Professor in Parasite Biology, Zoology
Trinity College Dublin – Department of Zoology
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