David Sweeney CV

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Education

- PhD Statistics: University of St Andrews (2025-present)
    - Taking a deeper dive into goose-beaked whale population consequences of disturbance (PCoD)
        - Research supervised by Len Thomas, Enrico Pirotta, Gregory Schorr, and Erin Falcone
- MSc Statistics: University of St Andrews (2024-2025)
    - Graduated with distinction and placed on the Deans' List for academic excellence
    - Using mark-recapture models to understand goose-beaked whale residency in Southern California
        - Research supervised by Len Thomas, Enrico Pirotta, Gregory Schorr, and Erin Falcone
- BS Biology: Calvin College (2015-2019)
    - Graduated with Honors
    - GPA: Within Major = 3.877; Overall = 3.798
    - Au Sable Institute of Environmental Studies
        - Participation in the 2016 Summer Session 2 at the Pacific Rim Campus
        - Courses taken: Marine Biology and Marine Mammals

Research Employment

- 2024-present: Centre for Research into Ecological and Environmental Modelling (CREEM)
    - Postgraduate Researcher (MSc and PhD)
    - Supervised by Len Thomas and Enrico Pirotta
- 2019-present: Foundation for Marine Ecology and Telemetry Research (MarEcoTel)
    - Full-time from 2019-2024 and then affiliate researcher from 2024-present
- 2018: Duke University Marine Lab
    - Undergraduate Researcher (NSF REU)
    - Supervised by Andrew Read and Nicola Quick
    - Short-finned pilot whale (*Globicephala macrorhynchus*) near-surface behavioral states in relation to previous dive characteristics
- 2017-2019: Calvin University
    - Undergraduate Researcher
    - Supervised by Stacy DeRuiter

- Developing Software Tools for Analysis of Data from Animal-Borne Movement Loggers

Teaching Employment

- 2025-present: University of St Andrews
  - Teaching Assistant for Applied Statistical Modelling using GLMs
    - Supervised by Fergus Chadwick
- 2018-2019: Calvin College
  - Lab Assistant for Human Anatomy
    - Supervised by Ryan Bebej
  - Teaching Assistant for Oceanography
    - Supervised by Ralph Stearley

Peer-Reviewed Publications

In press:

- Barlow, J., Baird, R. W., Badger, J., Schorr, G. S., Falcone, E. A., Coates, S. N., Tyack, P. L., Read, A. J., Hickmott, L. S., Durban, J. W., Claridge, D., de Soto, N. A., Gonzalez, D. M., Visser, F., Oudejans, M. G., DeRuiter, S., **Sweeney, D. A.**, Rone, B. K., & Watwood, S. L. (2025). A Comparison of Diving Behavior of Goose-Beaked and Dense-Beaked Whales From Tagging Studies in Multiple Ocean Basins. *Marine Mammal Science*. https://doi.org/10.1111/mms.70070
- Coates, S. N., **Sweeney, D. A.**, Falcone, E. A., Watwood, S. L., Rone, B. K., DeRuiter, S. L., Barlow, J., Dolan, K. A., Morrissey, R. P., DiMarzio, N. A., Jarvis, S. M., Andrews, R. D., & Schorr, G. S. (2024). Insights into foraging behavior from multi-day sound recording tags on goose-beaked whales (*Ziphius cavirostris*) in the Southern California Bight. *Frontiers in Marine Science*, *11*, 1415602. https://doi.org/10.3389/fmars.2024.1415602
- Fahlman, A., Schorr, G. S., **Sweeney, D. A.**, Rone, B. K., Coates, S. N., Allen, A. S., López, L. M. M., Jarvis, S. M., & Falcone, E. A. (2025). Modelling the effect of varying metabolic rate and cardiac output on estimated tissue and blood O2 and CO2 levels in an extreme deep-diver, the goose-beaked whale (*Ziphius cavirostris*). *Experimental Physiology*. https://doi.org/10.1113/EP093021
- Rone, B. K., **Sweeney, D. A.**, Falcone, E. A., Watwood, S. L., & Schorr, G. S. (2022). Movements and diving behavior of Risso's dolphins in the Southern California Bight. *Frontiers in Marine Science*, *9*, 873548. https://doi.org/10.3389/fmars.2022.873548
- Sweeney, **D. A.**, DeRuiter, S. L., McNamara-Oh, Y. J., Marques, T. A., Arranz, P., & Calambokidis, J. (2019). Automated peak detection method for behavioral event identification: Detecting *Balaenoptera musculus* and *Grampus griseus* feeding attempts. *Animal Biotelemetry*, *7*(1), 7. https://doi.org/10.1186/s40317-019-0169-3

- **Sweeney, D. A.**, Schorr, G. S., Falcone, E. A., Rone, B. K., Andrews, R. D., Coates, S. N., Watwood, S. L., DeRuiter, S. L., Johnson, M. P., & Moretti, D. J. (2022). Cuvier's beaked whale foraging dives identified via machine learning using depth and triaxial acceleration. *Marine Ecology Progress Series*, *692*, 195–208. https://doi.org/10.3354/meps14068

In review:

- None

In prep:

- Assessment of goose-beaked whale responses to mid-frequency active sonar using a hierarchical hidden Markov model (**co-author**)
- Movements and diving behavior of goose-beaked whales (*Ziphius cavirostris*) at Isla Guadalupe, México (**co-author**)
- Predicting blubber thickness in large whales: an analysis to inform satellite tag development (**co-author**)

Funding Acquisition

- Taking a deeper dive into goose-beaked whale population consequences of disturbance (PCoD)
    - Funded by the Office of Naval Research (ONR) from 2024 – 2029 for a total of $629,508 (USD)
    - PIs: Gregory Schorr and Len Thomas
    - Co-investigators: **David Sweeney**, Enrico Pirotta, Erin Falcone, Stephanie Watwood, Stacy DeRuiter, Gustavo Cárdenas-Hinojosa
    - Project focus: Quantifying population consequences of disturbance (PCoD) for goose-beaked whales by integrating long-term photo-ID, tagging, and drone-based data with advanced statistical and ecological modelling to assess impacts of naval training activities in the Southern California Bight.

Posters and Oral Presentations

Research presentation:

- DeRuiter, S., Johnson, M., Swift, R., Harris, C., Marques, T., McNamara-Oh, Y. J., and **Sweeney, D.** (2019). Tools and Training to Enhance Capacity for Analyzing High-Resolution Tag Data [co-presented]. *ONR Marine Mammal and Biology Program Review 2019*. Alexandria, VA, USA: 23 April 2019.
- **Sweeney, D. A.** (2019). Short-finned pilot whale (*Globicephala macrorhynchus*) near-surface behavioral states in relation to previous dive characteristics [seminar]. *Calvin College Department of Biology*. Grand Rapids, MI, USA: 1 February 2019.

- **Sweeney, D. A.** (2017). Event Detection [workshop]. *Analysis of Data from High-Resolution Animal-Borne Tags*. University of St Andrews, Scotland: 7-9 August 2017.

Research poster:

- **Sweeney, D.**, Falcone, E., Watwood, S., DeRuiter, S., Schorr, G. (2022) Cuvier's Beaked Whale Behavioral Responses Persist After Conclusion of Some Navy Sonar Exposures. *24th Biennial Conference of the Society for Marine Mammalogy*. West Palm Beach, Florida, USA: 1-5 August 2022
- **Sweeney, D. A.** (2018). Short-finned pilot whale (*Globicephala macrorhynchus*) near-surface behavioral states in relation to previous dive characteristics. *West Michigan Regional Undergraduate Science Research Conference*. Grand Rapids, MI, USA: 10 November 2018.
- **Sweeney, D. A.** (2018). Short-finned pilot whale (*Globicephala macrorhynchus*) near-surface behavioral states in relation to previous dive characteristics. *Calvin Science Division Summer Research Poster Fair*. Grand Rapids, MI, USA: 19 October 2018.
- **Sweeney, D. A.** and Oh, Y. J. (2017). Software Tools for Analysis of Data from High-Resolution Animal-Borne Tags. *West Michigan Regional Undergraduate Science Research Conference*. Grand Rapids, MI, USA: 4 November 2017.
- **Sweeney, D. A.** and Oh, Y. J. (2017). Software Tools for Analysis of Data from High-Resolution Animal-Borne Tags. *Calvin Science Division Summer Research Poster Fair*. Grand Rapids, MI, USA: 20 October 2017.

Other:

- **Sweeney, D. A.** (2024) Encountering God in Creation: Spiritual Growth Through Scientific Understanding [presentation]. *Central Kitsap Presbyterian Church's Conference on Science and the Christian Life: The Word and the World*. Bremerton, WA, USA: 8 June 2024
- **Sweeney, D. A.** (2024) Marine Ecology and Telemetry Research [outreach presentation]. *South Kitsap High School AP Biology*. Port Orchard, WA, USA: 6 June 2024
- **Sweeney, D. A.** (2023) Marine Ecology and Telemetry Research [outreach presentation]. *South Kitsap High School AP Biology*. Port Orchard, WA, USA: 15 June 2023
- **Sweeney, D. A.** (2018). Insights into Modern Marine Mammal Research [guest lecture]. *Calvin College Department of Geology, Geography, and Environmental Studies*. Grand Rapids, MI, USA: 5 December 2018.

Software Development and Management

- MarEcoTel
  - GitHub organization developer
    - R and Matlab code development
  - ZcTransCMR
    - Bayesian continuous-time open-population mark-recapture modeling

    - WCtagproc
        - Tools for processing Wildlife Computers satellite tag data
    - UASMorpho
        - Code to collect, measure, process, and analyze UAS photogrammetry data
- animaltags
    - Software for data from high-resolution movement tags (https://animaltags.org/)
    - GitHub organization developer
        - R, Matlab, and Octave code development

Field Work Experience

- Southern California Offshore Range (SCORE); Southern California Anti-Submarine Warfare Range (SOAR); Point Mugu Sea Range
    - Vessels: Phoenix and Physalus (2019-2024)
    - Duties: Photo-ID, Database entry, RHIB driving (including for LIMPET tagging and biopsies)
    - Species: Cuvier's beaked whales, Fin whales, Bryde's whales, Delphinus spp., Humpback whales
- Guadalupe Island, Mexico
    - Vessel: Azteca (2021-2024)
    - Duties: Drone photogrammetry, Photo-ID, Database entry
    - Species: Cuvier's beaked whales, Bottlenose dolphins, Humpback whales
- Strait of Juan de Fuca and outer coast of Washington, USA
    - Vessel: Borealis (2021-2023)
    - Duties: Photo-ID, Database entry, RHIB driving
    - Species: Killer whales, Humpback whales, Dall's and Harbor porpoises
- Hood Canal, WA
    - Vessel: On Porpoise (2022-2023)
    - Duties: Harbor porpoise survey visual observer, Pontoon boat driving, Database entry
    - Species: Harbor porpoise, Harbor seal, California sea lion, Steller sea lion
- UAS Experience:
    - Remote Pilot Certified (United States FAA #4555354)

Scholarships/Awards

- Handsel Scholarship (University of St Andrews)
- 2019 Ten Broek Excellence in Biology Research Award (Calvin College)
- Tuition Waiver-CCCU TWEP (Calvin College)
- Honors Fellows Scholarship (Calvin College)
- Presidential Scholarship (Calvin College)
- Au Sable Fellowship (Au Sable Institute of Environmental Studies)
- Swierenga, John R. & Marie A. Brass Scholarship (Calvin College)
- Friends of Music Scholarship (Calvin College)

Journal Peer-Reviews

- Marine Biodiversity Records
- Biology Letters (co-reviewer)

Non-Research Work and Notable Volunteer Experiences

- Administrator of Cornerstone St Andrews church (2025-present)
- Co-founder of Central Kitsap Presbyterian Church's Community Garden (2021-2024)
- Assistant Youth Group Director
    - Silverdale Lutheran Church (2019-2021)
    - Central Kitsap Presbyterian Church (2021-2024)
- Assistant Caretaker of Olympic Lutherhaven in Bremerton, WA (2020-present)
- Knollcrest Dining Hall Team Member at Calvin College (Spring 2019)
- Lifeguard at Six Flags Hurricane Harbor in Gurnee, IL (2013-2016)
    - Leadership Team Member (2015-2016)