

DR. JEREMY F. JENRETTE

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CORE TECHNICAL COMPETENCIES

- **Cloud Infrastructure & Architecture:** Google Cloud Platform (GCP Expert - Vertex AI, BigQuery, Compute Engine, Architecture Design & Admin), Docker, CI/CD, Unix/Linux Administration.
- **Applied AI & Computer Vision:** End-to-End Deep Learning Workflows, Object Detection & Tracking (YOLO, OpenCV, VIAME), Statistical Bias-Correction Models, Edge AI Deployment at Sea.
- **Data Engineering & Analytics:** Python, R, SQL, PostgreSQL, Spatial GAMs, Bayesian Modeling, Generalized Linear Models (GLMs), Point Process Models, eDNA Analytics.
- **Marine Fisheries & Stock Assessment:** Habitat Camera (HabCam) Surveys, Optical Media Processing, Abundance & Distribution Modeling, Survey Data Integration for Stock Assessments.

PROFESSIONAL WORK EXPERIENCE

Contract Data Scientist & ML Engineer | Saltwater Inc. (Contractor to NOAA NMFS, Northeast Fisheries Science Center)

Dates: 01/2026 – Present | Hours: 40 hrs/week | Duty Location: 166 Water St., Woods Hole, MA 02543

- Orchestrated the architectural design and full programmatic migration of NEFSC marine computer vision and data science infrastructure to Google Cloud Platform (GCP); serve as lead administrator for GCP compute, BigQuery, and Vertex AI workflows under federal IT governance frameworks.
- Designed, trained, and operationalized end-to-end Computer Vision (CV) and Applied AI models on Habitat Camera (HabCam) survey media to automate detection, tracking, and measurement of key managed species (sea scallops, roundfish, crabs, elasmobranchs, and plankton).
- Engineered novel statistical bias-correction algorithms to compensate for automated model misclassifications in optical survey data; integrated bias-corrected predictions into spatial Generalized Additive Models (GAMs) to deliver robust abundance estimates for stock assessments.
- Authored lead-author manuscript detailing automated sea scallop detection and statistical bias-correction for stock assessments (currently In Review at Ecological Informatics).
- Presented research on scaling automated optical survey analytics for stock assessments at the NMFS Optical Strategic Initiative Workshop in Newport, Oregon (August 2026).
- Co-mentored NOAA Hollings Scholar Fellow (Jayce Oldham, May–Aug 2026) on expanding automated deep learning object detection for Jonah Crab identification in survey imagery.
- Participated in offshore research cruises: operated Habitat Camera systems, maintained at-sea server infrastructure, and deployed edge AI workflows directly at sea.

Visiting Research Scientist | Broad Institute of MIT and Harvard (Karlsson Lab)

Dates: 05/2026 – Present | Hours: 5 hrs/week | Location: Cambridge, MA / Remote

- Collaborate with the Vertebrate Genomics Group to engineer programmatic pipelines for processing genomic sequencing data, develop integrative bioinformatic AI frameworks, and consult on multi-species comparative genomic studies.

Research Scientist | Beneath The Waves

Dates: 08/2024 – 01/2026 | Hours: 10 hrs/week | Location: Remote / Field Operations (Bahamas & Japan)

- Built deep learning object-detection and tracking pipelines to automate shark detection and enumeration from aerial drone video media.
- Crowdsourced, structured, and managed massive ecological datasets from open biodiversity platforms to resolve distribution and taxonomy of deep-sea fauna.
- Executed bioinformatic workflows (de novo whole-genome and RNA sequencing) to analyze gene families, phylogeny, and physiological adaptations of deep-sea isopods.
- Led field expeditions in Japan and the Bahamas focused on deploying underwater video/AI monitoring tools and tagging marine megafauna (sunfish, sharks).

Scientific Leader | The SeaKeepers Society

Dates: 05/2024 – 12/2025 | Hours: 5 hrs/week | Location: Remote / Mediterranean Sea

- Directed environmental DNA (eDNA) sample collection, bioinformatic processing, and spatial analysis to detect genetic presence of endangered shark species across the Mediterranean Sea.

Graduate Research & Teaching Assistant / PhD Candidate | Virginia Tech (Dept. of Fish and Wildlife Conservation)

Dates: 08/2020 – 12/2025 | Hours: 40 hrs/week | Location: Blacksburg, VA 24061

- Engineered R and Python pipelines to clean, structure, and visualize large-scale marine biodiversity and environmental eDNA datasets.
- Administered distributed physical and virtual Linux server infrastructure housing PostgreSQL and MySQL databases, full-stack applications, and secure analytical hubs.
- Applied GLMs, Point Process Models, Bayesian frameworks, and neural networks (NLP/image classifiers) for automated marine biodiversity identification.
- Instructed courses in Advanced Fisheries Management (5714G) covering stock assessment, life-history modeling, mark-recapture, and Management Strategy Evaluation (MSE).

- Developed image recognition AI software and automated computer vision pipelines for video processing and species classification of elasmobranchs.

EDUCATION & ACADEMIC QUALIFICATIONS

Ph.D. in Fish and Wildlife Conservation | Virginia Tech, Blacksburg, VA (GPA: 3.96 / 4.00) • Aug 2020 – Dec 2025

Dissertation Focus: Machine Learning, Statistical Ecology, eDNA, and Marine Biodiversity Analytics

B.S. in Biochemistry | Virginia Tech, Blacksburg, VA (GPA: 3.11 / 4.00) • Aug 2014 – May 2018

TECHNICAL SKILLS, SOFTWARE & FIELD QUALIFICATIONS

- Programming & Data Science: Python, R, SQL, MATLAB, Bash/Linux Shell, C++, JavaScript, HTML/CSS, RMarkdown, LaTeX, Jupyter.
- Cloud, DB & DevOps: Google Cloud Platform (Vertex AI, BigQuery, Compute Engine), Docker, CI/CD, PostgreSQL, MySQL, GitHub, JIRA.
- AI, CV & Spatial Tools: PyTorch, TensorFlow, OpenCV, VIAME, YOLO, Spatial GAMs, ArcGIS, Google Earth Engine, eDNA Bioinformatics.
- Certifications & Field Ops: FAA Part 107 Remote Pilot License (Drones), PADI Open Water Scuba, Boating License, Small Boat/Skiff Operator, Offshore HabCam Systems, eDNA Sampling, Animal Tagging.

SELECTED PEER-REVIEWED PUBLICATIONS & MANUSCRIPTS IN REVIEW

Jenrette, J.F., Hart, D.R., Chang, J.-H., Fairclough, C., & McManus, M.C. (2026). Automatically counting and measuring Atlantic sea scallops (*Placopecten magellanicus*) from underwater imagery with object detection and bias-correction. *In Review at Ecological Informatics*.

Jenrette, J.F., Agustines, A., Spencer, E.T., Schallert, R., Varini, F., Arnoldi, N., Madigan, D., White, T., Koller, K., Berglund, J., Kinzer, D., Block, B., Khalid, S., & Ferretti, F. (2026). Accelerating shark video surveys with AI and automated workflows. *In Review at Ecological Informatics*.

Jenrette, J., Riehl, T., Izioka, A. K., Motoki, S., Aldridge, S.E., Tokunaga, S., Watanabe, Y.Y., & Gallagher, A. (2026). Addressing distributional and taxonomic uncertainty in the deep-sea giant isopod genus *Bathynomus* with an integrated observational and molecular framework. *Deep Sea Research Part I*.

Varini, F., Jenrette, J., Wilday, S., Gayford, J., Ferretti, F., & Glocker, B. (2026). Shark object-detection and tracking: a data sourcing and training study. *Ecological Informatics*.

Ferretti, F., Jenrette, J., Moro, S., Butner, C., Fox, E., Haddock, S.H.D., Jorgensen, S., Hastie, T., & Micheli, F. (2025). From data deficient to big data in shark conservation. *Fish and Fisheries*.

Varini, F., Gayford, J.H., Jenrette, J., et al. (2024). SharkTrack: an accurate, generalizable software for streamlining shark and ray underwater video analysis. *arXiv preprint arXiv:2407.20623*.

Jenrette, J.F., Jenrette, J.L., Truelove, N.K., et al. (2023). Detecting white sharks in the Mediterranean with environmental DNA. *Oceanography*.

Jenrette, J.F., Liu, Z.Y.C., Chimote, P., Hastie, T., Fox, E., & Ferretti, F. (2022). Shark detection and classification with machine learning. *Ecological Informatics*.

TECHNICAL MENTORSHIP, LEADERSHIP & KEY PRESENTATIONS

- NOAA Hollings Scholar Fellow Co-Mentor (May–Aug 2026): Co-mentored Jayce Oldham on expanding deep learning computer vision architectures for automated Jonah Crab identification in HabCam survey media.
- International Genetics Workshop Instructor (Oct 2023–Present): Instructing Univ. of Gabes (Tunisia) Master's students on shark eDNA extraction, population genetics, and data science in Sousse, Tunisia.
- Master's Student Co-Supervisor (Mar 2025–Present): Co-supervising Ayumi Kuramae (Univ. of Amsterdam) on deep-sea video/eDNA analytical workflows in Suruga Bay, Japan.
- Graduate & Undergraduate Mentor (2020–Present): Mentored 10+ VT CS, Biological Sciences, and Fish/Wildlife students (e.g., Amritha Subramanian, Aseem Sangwan) on ML & data science.
- Key Scientific Presentations: NMFS Optical Strategic Initiative Workshop (Newport, OR, Aug 2026); Sharks International (Sri Lanka, May 2026); TechSurge MTS Conference (Oct 2025); White Shark Global (Australia, Nov 2023).