



DAYV (DAVID) LOWRY, PH.D.

Curriculum vitae

Senior Puget Sound Marine Fish Research Scientist

Washington Department of Fish and Wildlife

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SUMMARY OF CURRENT POSITION

As the head of Puget Sound Marine Fish Science Unit for the Washington Department of Fish and Wildlife I oversee long-term monitoring of marine and forage fish resources, as well as coordinating project work to address critical management needs and/or fill ecological data gaps. I currently supervise a staff of 18, including one research scientist, nine biologists, and eight technicians. The budget for this work averages over \$1.5M annually with significant variation due to influxes of grant money. For additional details on our research see: [herring population assessment](#), [bottomfish monitoring with an ROV](#), and [beach-spawning forage fish research](#).

In addition to coordinating and conducting research I also inform and develop policy to regulate marine fisheries in Puget Sound. Significant components of this aspect of my position include translating science to upper management, testifying before the Washington State Fish and Wildlife Commission, and conducting public meetings to gather input on proposed fishery changes.

EDUCATION

Ph.D., Biology. University of South Florida, 1999-2005. Dissertation: The early ontogeny of feeding in two shark species: developmental aspects of morphology, behavior, and performance. Advisor: Dr. Philip Motta. Graduate committee: Dr. Robert Hueter, Dr. Susan Bell, Dr. Florence Thomas.

B.S., Biology, *Summa Cum Laude*. Hawai'i Pacific University, 1996-1999. Thesis: The influence of algal abundance on home range size in juvenile Palenose Parrotfish *Scarus psittacus*. Advisor: Dr. Eric Vetter.

FIELDWORK AND RESEARCH EXPERIENCE

Research Project Coordinator, Puget Sound Mid-water Trawling and Hydroacoustics Survey, Washington Department of Fish and Wildlife, Marine Fish Science Unit, July 2015 – Present.

Research Project Coordinator, Threatened and Endangered Species Monitoring at U.S. Naval Installations in Puget Sound, Cooperative Agreement between U.S. Navy and Washington Department of Fish and Wildlife, September 2012 – Present.

Research Project Coordinator, Puget Sound Groundfish Surveys via Remotely Operated Vehicle (ROV), Washington Department of Fish and Wildlife, Marine Fish Science Unit, February 2012 – Present.

Research Project Coordinator, Annual Puget Sound Groundfish Trawl Survey, Washington Department of Fish and Wildlife, Marine Fish Science Unit, February 2012 – Present.

Research Project Coordinator, Spawning “Stock” Monitoring of Pacific Herring in Puget Sound, Washington Department of Fish and Wildlife, Marine Fish Science Unit, February 2012 – Present.

Research Project Coordinator, Washington Coastal Intertidal Forage Fish Comprehensive Spawning Beach Survey, Washington Department of Fish and Wildlife, Marine Fish Science Unit, October 2012 – October 2014.

Fish and Wildlife Research Scientist 2 – Senior Marine and Forage Fish Research Scientist, Washington Department of Fish and Wildlife, Marine fish Science Unit of Fish Management Division, supervisor Tien-Shui (Theresa) Tsou, February 2012 – Present.

Fish and Wildlife Research Scientist 1 – Nearshore Marine and Forage Fish Ecologist, Washington Department of Fish and Wildlife, Habitat Program, supervisor Kirk Krueger, November 2010 – February 2012.

Research Project Coordinator, Sentinel Stocks and Chinook Technical Committee Letter of Agreement (CTC-LOA): Snohomish, Stillaguamish, and Green Rivers, Washington Department of Fish and Wildlife, Stock Assessment Unit of Science Division, supervisor Peter Hahn, March 2010 – March 2011.

Research Project Coordinator Snohomish Sentinel Stocks, Washington Department of Fish and Wildlife, Stock Assessment Unit of Science Division, supervisor Peter Hahn, March 2009 – March 2010.

Fish and Wildlife Biologist 3 – Fisheries Biologist and Salmonid Stock Inventory Data Coordinator, Washington Department of Fish and Wildlife, Stock Assessment Unit of Science Division, supervisor Peter Hahn, May 2008 – November 2010.

Fish and Wildlife Biologist 3 – Crab Biologist and Fishery Manager, Washington Department of Fish and Wildlife, Point Whitney Shellfish Laboratory, supervisor Brad Sele, Dec. 2006 – May 2008.

Scientific Technician 2 - Fisheries Observer, Washington Department of Fish and Wildlife Salmon Monitoring Program, supervisor Cynthia Burns, July – Sept. 2006.

Volunteer, NOAA/NMFS Mississippi Laboratories Bottom Longline Project: Shark/Red Snapper Cruise, Leg II Aboard R/V OREGON II, lead scientist Dr. Mark Grace, Aug. 2004.

Volunteer, Mote Marine Laboratory/NMFS longline cruise, Aboard R/V SUNCOASTER, lead scientist Dr. Jose Castro, Dec. 2003.

Research Assistant, Towed System Marine Attack Reduction Research Grant SBIR N99-104, Awarded to Texas Research Institute, Subcontracted to Dr. Philip Motta, University of South Florida, 2001– 2003.

Research Assistant, University of South Florida Ichthyology Course, Research Expedition to Dry Tortugas, Aboard R/V BELLOWS, lead scientist Dr. Philip Motta, November 2002.

Graduate Student Researcher, University of South Florida fish biomechanics and ecomorphology laboratory, supervisor Dr. Philip Motta, September 1999 – December 2005.

Honors Intern, Hawai'i Institute of Marine Biology, 1999. Advisors: Eric Conklin and Steven Kajiura.

- Utilized acoustic tracking equipment including dart-style and intraperitoneal sonic tags.

RESEARCH PAPERS AND REPORTS

Hauser, L, Gruenthal, K, Canino, M, and **D Lowry**. (2016). Local adaptation in Puget Sound Pacific Cod (*Gadus microcephalus*) phenotypic and genomic differentiation and the conservation of a depleted population in a warming environment. Washington Sea Grant Final Report for OMB Project Number 0648-0362. 12 pp.

Pacunski, RE, **Lowry, D**, Hillier, L, and J Blaine. (2016). A comparison of groundfish species composition, abundance, and density estimates derived from a scientific bottom-trawl and a small remotely operated vehicle for trawlable habitats. Washington Department of Fish and Wildlife Technical Report. FPT 16-03. 36 pp.

Carson, HS, Ulrich, M, **Lowry, D**, Pacunski RE, and R Sizemore. (2016). Status of the California sea cucumber (*Parastichopus californicus*) and red sea urchin (*Mesocentrotus franciscanus*) commercial dive fisheries in the San Juan Islands, Washington State, USA. *Fish Res.* **179**: 179-190.

McNeil, B, **Lowry, D**, Larson, S, and D Griffing. (2016). Feeding behavior of subadult sixgill sharks (*Hexanchus griseus*) at a bait station. *PLoS One.* **11(5)**: e0156730.

The IUCN Red List of Threatened Species. (2015). www.iucnredlist.org.

- Cortes, E, **Lowry, D**, Bethea, D, and CG Lowe. *Sphyrna tiburo* – bonnethead shark.
- Larson, S, **Lowry, D**, and D Ebert. *Hexanchus griseus* – bluntnose sixgill shark.
- **Lowry, D**, Larson, S, and D Ebert. *Notorynchus cepedianus* – broadnose sevengill shark.
- **Lowry, D**, and K Goldman. *Carcharhinus limbatus* – blacktip shark.

Larson, S, Farrer, D, **Lowry, D**, and DA Ebert. (2015). Preliminary observations of population genetics and relatedness of the Broadnose Sevengill Shark, *Notorynchus cepedianus*, in two Northeast Pacific estuaries. *PLoS One.* **10(6)**: e0129278.

Langness, M, Dionne, P, Masello, D, and **D Lowry**. (2015). Summary of Coastal Intertidal Forage Fish Spawning Surveys: October 2013- October 2014. Report to the Washington Department of Natural Resources Marine Spatial Planning Funding Board. Washington Department of Fish and Wildlife Technical Reports. Report Number FPA 15-01. January 2015. 50 pp. + appendices.

- Lowry, D**, Stick, K, Lindquist, A, and YW Cheng. (2015). Evaluation of creel survey methods to estimate recreational harvest of Surf Smelt in Puget Sound, Washington. *N Amer J Fish Man.* **35 (3)**: 403-417. DOI 10.1080/02755947.2015.1009658.
- Initially drafted as: **Lowry, D**, Cheng, YW, Stick, K, and A Lindquist. (2013). Estimating recreational harvest of Surf Smelt *Hypomesus pretiosus* via a combined access point and roving creel count design. Final Report to the SeaDoc Society. January 2013. 41 pp.
- Green, K, **Lowry, D**, and L Yamanaka, eds. (2014). Proceedings of the Visual Survey Methods Workshop, April 8&9, 2014. U.S.-Canada technical sub-Committee (TSC) of the Canada-U.S. Groundfish Committee. May, 2014. 79 pp.+Appendix. <http://www.psmfc.org/tsc2/>.
- Stick, K, Lindquist, A, and **D Lowry**. (2014). 2012 Washington State herring stock status report. Washington Department of Fish and Wildlife Technical Reports. Report Number FPA 14-09. July 2014. 100 pp.
- Langness, M, Dionne, P, Dilworth, E, and **D Lowry**. (2014). Summary of Coastal Intertidal Forage Fish Spawning Surveys: October 2012- September 2013. Report to the Washington Department of Natural Resources Marine Spatial Planning Funding Board. Washington Department of Fish and Wildlife Technical Reports. Report Number FPA 14-01. February 2014. 40 pp.
- Preliminary version covering through April 2013 released in 2013 at end of contract period
- Lowry, D**, Pacunski, R, LeClair, L, Blaine, J, Hillier, L, Beam, J, Hennings, A, and E Wright. (2013) Preliminary assessment of rockfish (*Sebastes* spp.) and other groundfish presence, abundance, habitat, and prey base adjacent to Naval Base Kitsap at Keyport and Bremerton: 2012-13 survey results. Final report to Naval Facilities Engineering Command Northwest for Cooperative Agreement N44255-12-2-0018. 32 pp.
- Liedtke, T, Gibson, C, **Lowry, D**, and D Fagergren, eds. (2013). Conservation and ecology of marine forage fishes – Proceedings of a research symposium, September 2012: U.S. Geological Survey Open-File Report 2013-1035, 24 p.
- Also served on organizing board and delivered oral presentation included in proceedings.
- Quinn, T, Krueger, K, Pierce, K, Penttila, D, Hicks, T, and **D Lowry**. (2012). Annual patterns of Surf Smelt, *Hypomesus pretiosus*, intertidal spawning habitat use along Camano Island, Puget Sound, Washington State. *Estuaries and Coasts.* **35**: 1214-1228. DOI:10.1007/s12237-012-9511-1.
- Lowry, D**. (2012). Management of shark bycatch in Washington in the trawl and longline fishing industries. *In* First Pacific Shark Workshop. G.A. McFarlane, U.M. Arndt, and E.W.T. Cooper, editors. TRAFFIC and WWF Canada, Vancouver, B.C. 24-26.
- Invited speaker and workshop participant.
- Lambert, EP, Motta, PJ, and **D Lowry**. (2011). Modulation in the feeding prey capture of the Ant-Lion, *Myrmeleon crudelis*. Accepted at *J Exp Zool.* **315A**: 602-609.
- Scott, T, Kohr, J, **Lowry, D**, Weiss, A, Bosworth, A, Cummins, J, Gombert, D, La Riviere, P, Miller, P, and B Murphy. (2011). Columbia River Instream Atlas Project Final Report. Washington Department of Fish and Wildlife. Olympia, WA. Ecology Publication No. 11-12-015. 38 pp. plus 7 appendices.
- Hahn, PKJ, **Lowry, D**, Mizell, M. and YW Lee. (2011). Abundance estimation of Green River Basin Chinook Salmon via mark-recapture , 2010-11 Sentinel Stock monitoring. Project completion report to Sentinel Stocks Committee of the Pacific Salmon Commission.
- Larson, S, Christiansen, J, Griffing, D, Ashe, J, **Lowry, D**, and K Andrews. (2011). Relatedness and polyandry of Sixgill Sharks, *Hexanchus griseus*, in an urban estuary. *Cons Gen.* **12 (3)**: 679-690. DOI: 10.1007/s10592-010-0174-9.
- Hahn, PKJ, **Lowry, D**, and M Mizell. (2010). Abundance estimation of Snohomish system Chinook Salmon via mark-recapture , 2009-10 Sentinel Stock monitoring. Project completion report to Sentinel Stocks Committee of the Pacific Salmon Commission. 40 pp. Available on-line at: http://fund.psc.org/2009/SSP_Reports/SSP_9_Hahn.pdf.
- Bayer, J, Clements, S, Gadomski, D, Giorgi, A, Hillman, T, **Lowry, D**, Malone, K, O’Neal, J, Paulsen, C, Wolf, K, and N Zymonas. (2010). Summary and Conclusions: the PNAMP and Fish Population Monitoring work group’s Editorial and Review Committee. IN: Wolf, KS and JS O’Neal Eds., PNAMP Special Publication: Tagging, Telemetry and Marking Measures for Monitoring Fish Populations: a compendium of new and recent science for use in informing technique and decision modalities: Pacific Northwest Aquatic Monitoring Partnership Special Publication 2010-002, Chapter 10, p. 145-146.
- Also served on Executive Review Committee and reviewed three contributed chapters.

- Lowry, D**, Castro, A, Mara, K, Whitenack, L, Delius, B, Motta, P and G Burgess. (2009). Identification of shark species and size from forensic analysis of bite damage. *Mar Biol.* **156**: 2483-2492. DOI:10.1007/s00227-009-1273-3.
- Motta, PJ, Hueter, RE, Tricas, TC, Summers, AP, Huber, DR, **Lowry, D**, Mara, K, Matott, MP, Whitenack, LB, and AP Wintzer. (2008). Functional morphology of the feeding apparatus, design constraints, and suction performance in the Nurse Shark *Ginglymostoma cirratum*. *J Morph* **269**: 1041-1055. DOI:10.1002/jmor.10626.
- Lowry, D** and PJ Motta. (2008). Relative importance of growth and behaviour to elasmobranch suction-feeding performance over early ontogeny. *J Royal Soc. Interface.* **5**: 641-52. DOI:10.1098/rsif.2007.1189.
- Lowry, D** and PJ Motta. (2007). Ontogeny of feeding behavior and cranial morphology in the Whitespotted Bambooshark *Chiloscyllium plagiosum*. *Mar Biol.* **151**: 2013-2023. DOI:10.1007/s00227-007-0642-z.
- Lowry, D**, Motta, PJ, and RE Hueter. (2007). The ontogeny of feeding behavior and cranial morphology in the Leopard Shark *Triakis semifasciata* (Girard 1854): a longitudinal perspective. *J Exp Mar Biol and Ecol.* **341** (2): 153-167. DOI:10.1016/j.jembe.2006.07.018.
- Lowry, D**, Wintzer, AP, Matott, MP, Whitenack, LB, Huber, DR, Dean, M, and PJ Motta. (2005). Aerial and aquatic feeding in the Silver Arawana *Osteoglossum bicirrhosum*. *Env Biol of Fishes* **73** (4): 453-462. DOI:10.1007/s10641-005-3214-4.
- Lowry, D** and PJ Motta. (2004). Ontogeny of prey capture kinematics and cranial morphology in the Leopard Shark, *Triakis semifasciata*. *J Morph* **260** (3): 307-308A.
- Motta, PJ, Hueter, RE, Tricas, TC, Summers, AP, **Lowry, D**, Matott, MP, Whitenack, LB, and AP Wintzer. (2004). Functional morphology, suction performance, and the enigma of protrusion in the Nurse Shark, *Ginglymostoma cirratum*. *J Morph* **260** (3): 315A.
- Whitenack, LB, **Lowry, D**, Wintzer, AP, Matott, MP, Huber, DR, Dean, MN, Barker, AS, and PJ Motta. (2004). Behavioral and morphological specializations for aerial prey capture in the Silver Arawana, *Osteoglossum bicirrhosum*. *J Morph* **260** (3): 340A.

RESEARCH PAPERS AND TECHNICAL REPORTS IN PREPARATION

- Lowry, D**, Pacunski, RE, Blaine, J, Tsou, T, Hillier, L, Beam, J, Wright, E, Cheng, YW, and A Hennings. (In prep). 2010 Assessment of San Juan Island bottomfish populations utilizing a remotely operated vehicle and a stereological survey protocol. Washington Department of Fish and Wildlife Technical Report. Expected completion September 2016.
- Lowry, D**, Pacunski, RE, Blaine, J, Tsou, T, Hillier, L, Beam, J, Wright, E, and A Hennings. (In prep). Assessing groundfish occurrence, abundance, and habitat associations in Puget Sound via a small remotely operated vehicle: results of the 2012-13 stereological survey. Washington Department of Fish and Wildlife Technical Report. Expected completion December 2016.

PRESENTATIONS AT PROFESSIONAL MEETINGS AND SYMPOSIA (ASTERISK INDICATES PRESENTER)

- Testing batch tagging methods on nearshore forage fishes in South Puget Sound. Phillip Dionne*, Hannah Faulkner, Dayv Lowry. South Sound Science Symposium. Shelton, WA, 2016. Oral pres.
- Pacific Sand Lance in the San Juan Archipelago: synthesis of research 2010-2015. Matthew Baker*, Gary Greene, John Aschoff, Alyssa Tinnon, Katie Cieri, Marielle Beaulieu, Laurel Speed, Olivia Graham, Nicholas Sisson, Annie Thomson, Jennifer Lopez, Mary Rood, Alicia Highland, Thomas Pham, Kailee Bynum, Charlie Heller, Morgan Eisenlord, **Dayv Lowry**, Phil Dionne, and James Selleck. Salish Sea Ecosystem Conference. Vancouver, B.C., 2016. Oral pres.
- Testing the effectiveness of an inexpensive batch tagging method on Surf Smelt in Puget Sound. Phillip Dionne*, Hannah Faulkner, and **Dayv Lowry**. Salish Sea Ecosystem Conference. Vancouver, B.C., 2016. Oral pres.
- All hands on deck: cooperative research sheds light on status of ESA-listed rockfish species. Kelly Andrews, Krista Nichols, Anna Elz, Nick Tolimieri, Chris Harvey, Dan Tonnes*, **Dayv Lowry**, Robert Pacunski, and Lynne Yamanaka. Salish Sea Ecosystem Conference. Vancouver, B.C., 2016. Oral pres.
- Direct quantification of time and cost saving, and quality assurance benefits, from the implementation of a digital data collection and error checking system. **Dayv Lowry***, Adam Lindquist, Jake Shapley, and Jennifer Blaine. 19th Western Groundfish Conference. Newport, OR, 2016. Oral Pres.

- 2002-2007 results of WDFW's scientific bottom trawl surveys in Puget Sound: species abundance, distribution, and population trends. Jennifer Blaine*, Robert Pacunski, Jim Beam, and **Dayv Lowry**. 19th Western Groundfish Conference. Newport, OR, 2016. Oral Pres.
- Using a maximum entropy model to predict suitable habitat for ESA-listed rockfish in Puget Sound. Robert Pacunski*, Chris Rooper, **Dayv Lowry**, and Jennifer Blaine. 19th Western Groundfish Conference. Newport, OR, 2016. Oral Pres.
- Opportunities and pitfalls for conservation aquaculture in a warming ocean: Pacific cod as a case study. Kristen Gruenthal*, Michael Canino, **Dayv Lowry**, and Lorenz Hauser. World Aquaculture Society annual meeting. Las Vegas, NV, 2016. Oral Pres.
- Restoring an integral part of the ecosystem: rockfish conservation planning and implementation in Puget Sound. **Dayv Lowry***. American Fisheries Society national annual meeting. Portland, OR, 2015. Oral pres.
- Does Puget Sound represent a distinct population segment for Yelloweye and Canary Rockfish? Kelly Andrews*, Krista Nichols, Anna Elz, Nick Tolimieri, Chris Harvey, Linda Park, Dan Tonnes, Robert Pacunski, **Dayv Lowry**, and Lynne Yamanaka. American Fisheries Society national annual meeting. Portland, OR, 2015. Oral pres.
- A quantified predictive model of marine benthic habitats for demersal rockfish (*Sebastes* spp.) management in the Puget Sound region. Gary Greene, John Aschoff, **Dayv Lowry**, Andy Weiss, Robert Pacunski, Jennifer Blaine*, and Joseph Gaydos. American Fisheries Society national annual meeting. Portland, OR, 2015. Oral pres.
- A pilot study of a local aggregation of forage fish using visible implant elastomer tags. Philip Dionne*, **Dayv Lowry**, and Theresa Liedtke. American Fisheries Society national annual meeting. Portland, OR, 2015. Poster pres.
- Documenting intertidal forage fish spawning on the Washington State outer coast to support long-term marine spatial planning. Mariko Langness*, Philip Dionne, **Dayv Lowry**, and Daniel Masello. American Fisheries Society national annual meeting. Portland, OR, 2015. E-poster pres.
- Assigning individual Pacific Cod *Gadus macrocephalus* to population of origin along an isolation-by-distance gradient using RAD sequencing. Kristen Gruenthal*, Mike Canino, **Dayv Lowry**, and Lorenz Hauser. American Fisheries Society national annual meeting. Portland, OR, 2015. Oral pres.
- Combining survey methods to assess rockfish critical habitat adjacent to complex anthropogenic structures in Puget Sound. Taylor Frierson*, **Dayv Lowry**, Lisa Hillier, Larry LeClair, Robert Pacunski, Jennifer Blaine, and Andrea Hennings. American Fisheries Society national annual meeting. Portland, OR, 2015. Oral pres.
- Evaluating variability and biases among reviewers of ROV-collected video, and optimizing video review protocols. Andrea Hennings*, Lisa Hillier, Robert Pacunski, Jennifer Blaine, and **Dayv Lowry**. American Fisheries Society national annual meeting. Portland, OR, 2015. Oral pres.
- Population structure of Surf Smelt in Puget Sound, Washington. **Dayv Lowry**, Kurt Stick, Philip Dionne*, and Sewell Young. American Fisheries Society national annual meeting. Portland, OR, 2015. Oral pres.
- Dynamic population structure of Pacific Herring in Puget Sound. Lorenz Hauser*, **Dayv Lowry**, Isadora Jimenez-Hidalgo, Kurt Stick and Adam Lindquist. American Fisheries Society national annual meeting. Portland, OR, 2015. Oral pres.
- Bottomfish community composition throughout Puget Sound through the “eyes” of a robot: where does South Sound fit in? **Dayv Lowry***. South Sound Science Symposium. Shelton, WA, 2014. Oral pres.
- Robots, lasers, and rockfish – oh my!: using an ROV to assess Puget Sound bottomfish. **Dayv Lowry***. NOAA Fisheries Monster Jam Seminar Series. Seattle, WA, 2014. Oral pres.
- Estimating recreational harvest of Surf Smelt *Hypomesus pretiosus* via a combined access point and roving creel count design. **Dayv Lowry***, Kurt Stick, and Adam Lindquist. Salish Sea Ecosystem Conference. Seattle, WA, 2014. Oral pres.
- Evidence for selective differentiation from RAD tags along a microsatellite isolation-by-distance pattern and in an isolated fjord population of Pacific Cod (*Gadus macrocephalus*). Lorenz Hauser*, Dan Drinan, Kristen Gruenthal, **Dayv Lowry**, and Mike Canino. American Fisheries Society International Annual Meeting. Quebec City, Canada, 2014. Oral Pres.
- Evaluation of two study designs for estimating groundfish abundance with a remotely operated vehicle (ROV): capabilities and shortcomings of habitat-stratified and randomized uniform sampling. **Dayv Lowry***

- Robert Pacunski, Lisa Hillier, and Jennifer Blaine. Western Groundfish Conference. Victoria, B.C., 2014. Oral pres.
- Comparing bottomfish density estimates and species compositions derived from paired benthic trawl and remotely operated vehicle surveys. Robert Pacunski*, **Dayv Lowry**, Lisa Hillier, and Jennifer Blaine. Western Groundfish Conference. Victoria, B.C., 2014. Oral pres.
- The biology and management of forage fish in Washington State. **Dayv Lowry***. 20th Conference for Shellfish Growers. Union, WA, 2013. Oral pres.
- Forage fish management in Washington State. **Dayv Lowry***. Conservation and Ecology of Marine Forage Fishes Symposium. Friday Harbor Laboratory, WA, 2012. Oral pres.
- Also presented, with small modifications, at the Northwest Strait Foundation's annual meeting, Port Townsend, WA, 2012.
- Shark conservation and policy in Washington State. **Dayv Lowry*** and Corey Niles. Cowshark Conservation Workshop V, Seattle, WA, 2012. Oral pres.
- Management of shark by-catch in Washington trawl and longline fisheries. **Dayv Lowry***. Pacific Shark Management Conference, Vancouver, B.C., 2011. Oral pres.
- Surf Smelt spawning habitat use along Camano Island, Puget Sound, Washington. Kirk Krueger*, Timothy Quinn, Kenneth Pierce, Daniel Penttila, Tiffany Hicks, and **Dayv Lowry**. American Fisheries Society National Meeting, Seattle, WA, 2011. Oral pres.
- Also presented at the WDFW Fish Program Annual Science Meeting, Olympia, WA, October, 2011.
- Genetic evaluation of Surf Smelt *Hypomesus pretiosus* stock structure in Puget Sound. **Dayv Lowry***, Kirk Krueger, Timothy Quinn, Daniel Penttila, Theresa Liedtke, Tiffany Hicks, and Cheryl Dean. American Fisheries Society National Meeting, Seattle, WA, 2011. Oral pres.
- Also presented at the WDFW Fish Program Annual Science Meeting, Olympia, WA, October, 2011.
- Fish, flow, and habitat: integrated assessment of river systems in eastern Washington for conservation and restoration. Teresa Scott, **Dayv Lowry***, Andy Weiss, Jon Kohr, Dale Gombert, Aaron Bosworth, Brianna Murphy, Peggy Miller, and Jim Cummins. American Fisheries Society National Meeting, Seattle, WA, 2011. Poster pres.
- Also presented at the Water in the Columbia Basin Conference, Stevenson, WA, November, 2011.
- Using bite pattern forensics to determine shark species and size. **Dayv Lowry***. Cowshark Conservation Workshop IV, Seattle, WA, 2010. Oral pres.
- SaSI and SalmonScape: getting data to the people. **Dayv Lowry***, Gil Lensegrav, and Brodie Cox. Coastal and Estuarine Research Federation Annual Meeting, Portland, OR, 2009. Invited Symposium Participant. Oral pres.
- Upgrading the Salmonid Stock Inventory (SaSI) for the 21st Century: remote data entry and on-the-fly stock reports. **Dayv Lowry*** and Gil Lensegrav. Organization of Fish and Wildlife Information Managers Annual Meeting, Seattle, WA, 2009. Oral pres.
- Comparative anatomy of Sixgill Shark *Hexanchus griseus* feeding structures: implications for ecology. **Dayv Lowry***. Cowshark Conservation Workshop III, Seattle, WA, 2008. Oral pres.
- Ontogenetic development of feeding behavior in two elasmobranchs: do anatomical constraints canalize behavioral capacity? **Dayv Lowry*** and Philip J. Motta. Joint Meeting of Ichthyologists and Herpetologists, Tampa, FL, 2005. Oral pres.
- Suction performance and feeding biology of the Nurse Shark *Ginglymostoma cirratum*. Philip J. Motta*, Robert E. Hueter, Daniel Huber, **Dayv Lowry**, Kyle Mara, Michel Matott, Lisa B. Whitenack, and Alpa P. Wintzer. Joint Meeting of Ichthyologists and Herpetologists, Tampa, FL, 2005. Oral pres.
- Feeding kinematics of the Leopard Shark *Triakis semifasciata* Girard 1854: An ontogenetic perspective. **Dayv Lowry***. Joint Meeting of Ichthyologists and Herpetologists, Manaus, Brazil, 2003. Oral pres.
- Getting high with Arawana: a preliminary analysis of aquatic and aerial prey capture in the Silver Arawana *Osteoglossum bicirrhosum*. Philip Motta*, Mason Dean, Daniel Huber, **Dayv Lowry**, Michael Matott, Alpa Patel, and Lisa Whitenack. Joint Meeting of Ichthyologists and Herpetologists, Manaus, Brazil, 2003. Oral pres.
- Feeding kinematics and the role of jaw protrusion in the Sandtiger Shark *Carcharias taurus*. **Dayv Lowry***, Michael Matott, and Daniel Huber. Joint Meeting of Ichthyologists and Herpetologists, Manaus, Brazil, 2003. Poster pres.

- Inter-tooth distance as a predictor of body length in sharks. Andrey Castro*, Bryan Delius, **Dayv Lowry**, George Burgess, and Phil Motta. Joint Meeting of Ichthyologists and Herpetologists, Manaus, Brazil, 2003. Poster pres.
- Scaling of cranial morphology and its impact on feeding kinematics in the Leopard Shark *Triakis semifasciata*. **Dayv Lowry*** and Philip Motta. Florida Ichthyologists and Select Herpetologists meeting, 2003. Oral pres.
- Feeding kinematics of the Leopard Shark *Triakis semifasciata* Girard 1854: An ontogenetic perspective. **Dayv Lowry*** and Philip Motta. Florida Ichthyologists and Select Herpetologists meeting, 2002. Oral pres.
- Feeding kinematics of the Sandtiger Shark *Carcharias taurus*: The role of cranial elevation and protrusion in the feeding mechanism of a Lamnid shark. **Dayv Lowry***, Michael Matott, and Daniel Huber. Florida Ichthyologists and Select Herpetologists meeting, 2001. Oral pres.
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SPECIALIZED TRAINING

- Pragmatic Project Management, June 2015
- Negotiation Skills Training Course: Practical Treatment of Difficult Topics, December 2014
- Biosonics short course in hydroacoustic data acquisition and information processing, January 2014.
- Diver's Alert Network (DAN) Emergency Oxygen Provider and Neurological Assessment annual certification, 2014 – Present.
- Four years' experience operating a SeaEye Falcon Remotely Operated Vehicle (ROV) from a 36' research vessel, the R/V Molluscan.
- Approximately 90 hours of time piloting the ROV, in addition to hundreds of hours of support time
- Four years' experience with PRIMER-E biodiversity analysis software
- PRIMER-E (February 2012) and Advanced PRIMER-E with PERMANOVA+ (December 2015) training courses
- Seven years' experience with acoustic (Vemco and HTI) and two years with radio (LOTEK) telemetry tracking of various species (parrotfish, cownose rays, tiger sharks, sixgill sharks, Chinook salmon).
- Completed HTI short, intensive training "Using acoustic tags to track fish," February 2011
- Washington Department of Fish and Wildlife Motorboat Operators Certification Course, August 2008.
- Experienced with vessels as large as 28', including twin-screw catamarans.
 - Over 15 years' experience operating small craft, including jetboats, in marine and riverine systems
- NAUI Open Water II SCUBA Certification, ~180 hours of logged dive time.
- Underwater Naturalist Specialist Diver Certification (PADI).
 - Certified CPR/First Aid, Emergency Oxygen, and Neurological Assessment provider
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TEACHING EXPERIENCE

- Guest Lecturer, South Sound Estuary Association annual fundraising cruise, October 9, 2016. Lecture title: The ecology of dinner: why forage fish matter.
- Guest Lecturer, the University of Washington, Friday Harbor Laboratories, October 5, 2015.
- Course: Pelagic Ecosystem Function in the San Juan Archipelago, Instructor Matt Baker. Lecture title: Management of Forage Fish Resources in Puget Sound.
- Primary Beach-Spawning Forage Fish Survey Trainer, Washington Department of Fish and Wildlife, November 2010 – February 2012.
- Guest Lecturer, The Evergreen State College, January 31, 2011 and February 9, 2012.
- Course: Conserving and Restoring Biodiversity, Instructor Timothy Quinn. Lecture title: Shark conservation: biological, ecological, and political factors influencing management.
- Guest Lecturer, University of Washington, November 3, 2010.
- Course: Management and Conservation of Sharks: history and today, Instructor Vincent Gallucci. Lecture title: Application of an ecomorphological paradigm to shark feeding: implications for ecology, evolution, and conservation.
 - Follow up classroom dissection of two juvenile salmon sharks conducted on December 8, 2010.
- Guest Lecturer, Texas A&M University-Commerce, April 3, 2008.
- Course: Wildlife Management II, Instructor Beverly Cochran. Lecture title: Management of the Puget Sound Dungeness crab fishery: where biology and politics collide.

Teaching Assistant, University of South Florida, 1999-2005.

- Courses taught: Cellular Processes Laboratory, Cellular Processes Laboratory, Biodiversity Laboratory, Honors Biodiversity Laboratory, Comparative Vertebrate Anatomy Laboratory, Human Anatomy and Physiology I & II Laboratory, Ecology Laboratory.

Adjunct Faculty, University of South Florida, Summer 2004.

- Course taught: Sex and Today's World.

General Sciences Tutor, Hawai'i Pacific University, 1997-1999.

- Courses tutored: Biology, Ecology, Chemistry, Marine Biology, Oceanography, Pre-Calculus, Statistics.

GRANTS, AWARDS, AND HONORS

Washington Department of Fish and Wildlife Manager of the Year; 2016.

Washington Sea Grant project funds, \$228,052; 2016-17. Project title: Assessing historical abundance trends for key marine species to support ecosystem-based management and restoration of Puget Sound. Co-researchers Tim Essington, Tessa Francis, Eric Ward, and Correigh Greene.

Washington State Legislative Proviso Funding, \$617,154; 2015-17. Project title: Puget Sound-wide forage fish stock assessment via acoustic/trawl surveys.

NOAA Fisheries Endangered Species Study Grant (WDFW grant #14-01861), \$132,969; 2015. Project title: Targeted, ROV-based rockfish habitat surveys in select portions of Puget Sound. Co-researcher Robert Pacunski.

U.S. Navy Cooperative Research Grant (N44255-14-2-0006), \$236,151; 2014. Project title: Abundance assessment of threatened and endangered nearshore species in the vicinity of Naval installations in Puget Sound using beach seine. Co-researchers Robert Pacunski and Larry LeClair.

NOAA Fisheries Cooperative Research Grant, \$125,240; 2014. Project title: Does Puget Sound represent a distinct population segment for Yelloweye and Canary Rockfish? Co-researchers Kelly Andrews, Chris Harvey, Nick Tolimieri, Krista Nichols, Linda Park, Dan Tonnes, and Robert Pacunski.

U.S. Navy Cooperative Research Grant (N44255-13-2-0006), \$451,595; 2013. Project title: Assessment of threatened and endangered species presence, habitat, and prey base in waters adjacent to five Puget Sound Naval Installation facilities. Co-researchers Robert Pacunski and Larry LeClair.

U.S. Navy Cooperative Research Grant (N44255-12-2-0018), \$79,018; 2012. Project title: Preliminary assessment of rockfish presence, habitat, and prey base in waters adjacent to Naval Base Kitsap installations at Keyport and Bremerton. Co-researchers Robert Pacunski and Larry LeClair.

Washington Department of Natural Resources Legislative proviso grant, \$142,072; 2012. Project title: Assessing spatiotemporal use of intertidal habitat along the outer Washington coast for forage fish (smelt and sand lance) spawning. Co-researchers Dr. Kirk Krueger and Phillip Dionne.

SeaDoc Society Fishery Research Grant, \$30,000; 2012. Project title: Estimation of recreational Surf Smelt harvest at a popular smelting location via creel survey and access point interviews. Co-researcher Kurt Stick.

Puget Sound Marine and Nearshore Protection and Restoration Grant Program Award, \$250,000; 2011. Project title: Shoreline Permitting Effectiveness through TACT. Co-project lead Patty Charnas (Kitsap Co.).

Chinook Salmon Escapement Research Grant, Pacific Salmon Commission – Sentinel Stocks Program, \$221,415 (Stillaguamish River) and \$128,448 (Green River); 2010. Co-researchers Dr. Peter Hahn and Michael Mizell.

Chinook Salmon Escapement Research Grant, Pacific Salmon Commission – Letter of Agreement Program, \$210,730 (Snohomish River); 2010. Co-researchers Dr. Peter Hahn and Michael Mizell.

Washington Department of Fish and Wildlife Esprit de Corps Award; 2009.

Chinook Salmon Escapement Research Grant, Pacific Salmon Commission – Sentinel Stocks Program, \$220,583; 2009. Co-researchers Dr. Peter Hahn and Dr. Yong-Woo Lee.

Washington Department of Fish and Wildlife Certificate of Merit – Lake Washington Sockeye Sampling and Enforcement Program; 2007.

Professional Association of Diving Instructors Project Aware Foundation Grant, \$819; 2004.

University of South Florida College of Arts and Sciences Tharpe Endowed Award, \$3,900; Summer 2003.

University of South Florida Latin American and Caribbean Studies Program Research Grant, \$200; 2003.

University of South Florida Graduate Admissions Committee Travel Grant, \$200; 2003; \$200; 2004.

University of South Florida Conference Presentation Grant, \$250; 2003: \$250; 2004.
American Elasmobranch Society Student Travel Award, \$200; 2003.
First Place Poster Award in Sciences, USF Graduate Research Symposium, \$200; 2003.
Hawai'i Pacific University Scholarship for Superior Scientific Writing, \$100; 1998.
BHP Hawaii Scholarship for Excellence in Marine Science, \$500; 1997.
National Dean's List with 4.0 Grade Point Average, 1996-1998.
Hawai'i Pacific University Dean's List with 4.0 Grade Point Average, 1996-1998.

SERVICE

Manuscript reviewer, *Marine Ecology Progress Series*, 2015.
Associate Editor, *North American Journal of Fisheries Management*, September 2015 – Present.
Manuscript reviewer, *Transactions of the American Fishery Society*, 2015.
Grant Application Reviewer, Puget Sound Nearshore and Estuarine Recovery Program, 2015.
Symposium co-organizer, American Fisheries Society National Meeting, Portland, OR, August 2015.

- Title: Rockfish management and recovery: what's in it for the rest of the ecosystem?
- Co-organizers: Shawn Larson, Joan Drinkwin, Robert Pacunski, Larry LeClair, Dan Tonnes, Caroline Gibson, Kyle Antonelis, and Kelly Andrews.
- Title: Assessing fish distribution and abundance using visual tools: recent innovations and advancements
- Co-organizers: Lynne Yamanaka, Robert Pacunski, Jennifer Blaine
- Title: Forage fish research and management across North America: similarities and novelties from sea to shining sea
- Co-organizers: Theresa "Marty" Liedtke, Caroline Gibson

Co-chair, Puget Sound Partnership Forage Fish and Food Webs Monitoring Workgroup, January 2015 – Present.

- Co-chairs Phillip Dionne and Jamey Selleck

Member, Science and Data Committee of the Pacific Marine and Estuarine Fish Habitat partnership, 2014 – Present.
Coordinator, WDFW Bi-weekly Habitat Program Showcase Seminar Series, August 2011-February 2012.
Scientific Advisory Team Member, North Pacific Landscape Conservation Cooperative, 2011.

- Served as technical grant reviewer and participated in determining funding priorities.

Symposium co-organizer, Salish Sea Ecosystem Conference, Vancouver, BC, October 2011.

- Title: Ecology of Forage Fish in the Salish Sea.
- Co-organizers: Theresa "Marty" Liedtke, Collin Smith, Jamey Selleck.

Symposium co-organizer, American Fisheries Society National Meeting, Seattle, WA, September 2011.

- Title: Global Conservation, Trophic Relationships and Ecology of Forage Fish in Marine Ecosystems.
- Co-organizers: John Piatt, Mayumi Arimitsu, Caroline Gibson, Christine Santora.

Grant Application Reviewer, North Pacific Research Board, 2010.
Washington Department of Fish and Wildlife Science Division annual meeting planning committee, 2009.
Fish Population Monitoring Workgroup Executive Review Committee, Pacific Northwest Aquatic Monitoring Partnership (PNAMP) Special Publication 2, 2009.
Manuscript reviewer, *Aquatic Biology*, 2009-2010.
Steering Committee Member, Puget Sound Partnership's South Sound Science Symposium, 2009-2015.
Manuscript reviewer, *Pacific Northwest Aquatic Monitoring Program Tagging, Telemetry, Marking Workshop Proceedings*, 2009.
Invited lecture, "Sixgill sharks: six facts half a dozen mysteries," Seattle Aquarium, Sept. 2008+July 2009.
Manuscript reviewer, *Marine Biology*, 2007, 2009, 2014.
Manuscript reviewer, *Journal of the Royal Society Interface*, 2007-2010, 2013.
Honors Biology Student Mentor - Graduate Shadow Program, Univ. of South Florida, Feb. 2005.
Manuscript reviewer, *Copeia*, 2004-2005, 2010.
Manuscript reviewer, *Environmental Biology of Fishes*, 2004, 2006, 2009.
Manuscript reviewer, *Functional Ecology*, 2003, 2009.
Manuscript reviewer, *Florida Scientist*, 2002.

ACTIVITY IN ACADEMIC AND PROFESSIONAL ORGANIZATIONS

Treasurer and Job Representative, Washington Association of Fish and Wildlife Professionals (WAFWP) Labor Union, September 2016 – Present.

- Served as Executive Board Member At-Large and Job Representative representing supervisory sub-unit, October 2014 – September 2016
- Served as President and Job Representative, October 2011 – February 2012
- Served as Treasurer, 2010 – 2011

Member, Pacific Marine and Estuarine Partnership (PMEP) Data Committee, 2014 – Present.

Member, Federal Rockfish Recovery Plan Development Team, 2012-Present.

Member, Northwest Association of Networked Ocean Observing Systems (NANOOS) Governing Council, 2012-Present.

Member, Technical Subcommittee (TSC) of the U.S.-Canada Groundfish Committee, 2012 – Present.

Member, American Fisheries Society (AFS), 2011 – Present.

Member, International Society of Vertebrate Morphologists (ISVM), 2003 – 2005.

Member, Graduate Admissions and Policy Committee, Biology Graduate Student Organization, 2003 – 2005.

Member, Phi Kappa Phi Honor Society, 2002 – Present.

Member, Alpha Chi Honor Society, 1999 – Present.

Member, Tri-Beta Honor Society, Phi Kappa Chapter, 1999 – Present.

Member, American Elasmobranch Society (AES), 1998 – 2005.

Member, American Society of Ichthyologists and Herpetologists (ASIH), 1998 – 2001.

Vice President, Hawai'i Pacific University Marine Science Club, Spring 1997 – 1999.
