


Tobias Schwoerer

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Education

- Ph.D., University of Alaska Fairbanks, INDS: Socio-bioeconomics
Thesis title: *Invasive elodea threatens remote ecosystem services in Alaska: a spatially-explicit bioeconomic risk analysis*
- M.S., Simon Fraser University, Burnaby, B.C., Resource and Environmental Management, Ecological Economics concentrator
Thesis title: *The economic value of gray whales to local communities: A case study of the whale watching industry in two communities in Baja, Mexico*
- B.A., University of Alaska Anchorage, Economics major, Environmental Studies minor

Appointments

- University of Alaska Anchorage
- 2009 – present: Research Associate, Institute of Social and Economic Research
 - 2003 – 2004: Research Associate, Institute of Social and Economic Research
 - 2001 – 2003: Research Assistant, Institute of Social and Economic Research
- McDowell Group, Juneau and Anchorage, Alaska
- 2007 – 2009: Economist
- Simon Fraser University, Burnaby, Canada
- 2004 – 2007: Research Assistant, School of Resource and Environmental Management
 - 2005 – 2006: Teaching Assistant for two courses: Ecological Economics and Development Economics, School of Resource and Environmental Management
- Kadus Haarkosmetik, Lenzkirch, Germany
- 1999: Logistics assistant
- German Federal Armed Forces, German Cross-country Skiing National Team, Germany
- 1995 – 1999: Staff Sergeant (Stabsunteroffizier)
 - 1994 – 1995: Private first class (Gefreiter)

Research awards, contracts, and grants

2019

- U.S. Fish and Wildlife Service Cooperative Ecosystem Studies Units agreement: Informing effective agency response to aquatic invasive species threatening Arctic and Subarctic ecosystems – keystones for risk management (\$273,190)

2018

- National Science Foundation, Office of Polar Programs: Research Collaboration Network – ANCHOR: Arctic Network for Coastal Community Hazards, Observations, and integrated Research, Award # 1745508 (\$201,000 ISER, total: \$480,000)
- National Oceanic and Atmospheric Administration Ocean Acidification Program: Thresholds in a changing ocean environment: bioeconomic implications to inform adaptation decisions for Alaska's salmon fisheries (\$250,000 ISER, total: \$1.3 million)

2017

- Fish and Wildlife Service, Alaska Department of Fish and Game: Statewide boat owners survey and associated pathway modeling (\$110,000)

2016

- National Center for Ecological Analysis and Synthesis / Gordon and Betty Moore Foundation: State of Alaska Salmon and People (SASAP) Synthesis (\$50,000)
- Alaska Department of Fish and Game: Analysis and data collection related to the potential distribution of aquatic invasive species via floatplanes across Alaska (\$6,000)
- Cook Inlet Aquaculture Association: Incentive payments for questionnaire of private floatplane pilots regarding distribution of invasive species (\$2,300)

2014

- Alaska SeaGrant: Coastal Resilience Research – An Expert and Community-supported Decision Tool for Managing Marine Invasive Species (\$54,143)
- The Nature Conservancy: Economic Geography of Salmon in the Mat-Su (\$35,000)
- Alaska Sustainable Salmon Fund: A Decision Analysis for Management of Elodea in Alaska: (\$142, 529)
- Intelligent Energy Services: Economic evaluation of electric thermal storage devices in wind-diesel hybrid systems in rural Alaska: Utility cost structure survey (\$15,982), Analysis of cost and benefits of battery storage (\$16,707)

2013

- Intelligent Energy Services: Development of an economic simulation dispatch model for wind-diesel hybrid systems (\$59,500)
- The Nature Conservancy: Contingent valuation of ecosystem services in the Mat-Su Borough: Peer review of benefit transfer approach (\$17,701)

2012

- The Nature Conservancy: Contingent valuation of ecosystem services in the Mat-Su Borough: Contingent valuation survey (\$124,747)

2011

- The Nature Conservancy: Contingent valuation of ecosystem services in the Mat-Su Borough: Focus groups for questionnaire design (\$74,851)
- Alaska SeaLife Center: Economic analysis of invasive species in Alaska (\$50,064)

- Environmental Protection Agency (NatureServe): Economic significance analysis of healthy ecosystems in the Bristol Bay (\$98,027)

Journal articles and book chapters

- Schwoerer, T., Little, J., Schmidt, J., and Borash, K. 2019. Hitchhikers on floats to Arctic freshwater: private aviation and recreation loss from aquatic invasion. *Manuscript submitted for publication*
- Schwoerer, T., Little, J., and Hayward, G. 2019. Quantifying expert opinion using a discrete choice model: Will invasive *Elodea spp.* Threaten wild salmonids in Alaska? *Manuscript submitted for publication*
- Schwoerer, T., Little, J., and Adkison, M. 2019. Aquatic Invasive Species Change Ecosystem Services from the World's Largest Wild Sockeye Salmon Fisheries in Alaska. *Journal of Ocean and Coastal Economics*. doi.org/10.15351/2373-8456.1094.
- Larsen, A., Schworer, T., Simmons, T., and Fulkerson, J. in press. Elodea, Alaska's first invasive aquatic plant, continues its march across the state. *Alaska Park Science*.
- Schwoerer, T., Little, J., and Hayward, G. preprint. Quantifying expert opinion using a discrete choice model: Will invasive *Elodea spp.* Threaten wild salmonids in Alaska? doi.org/10.13140/RG.2.2.29993.44646
- Schwoerer, T. and Morton, J. 2018. Human dimensions of aquatic invasive species in Alaska: lessons learned while integrating economics, management, and biology to incentivize early detection and rapid response. In: *Alaska Economic Environmental, and Social Issues*. Lewis, T. Ed. Nova Science Publishers. ISBN: 978-1-53613-438-4. [URL-link](#).
- Ansuategi, A., Knowler, D., Schworer, T., and Garcia-Martinez, S. 2018. Local fishing communities and nature-based tourism in Baja, Mexico: An inter-sectoral valuation of environmental inputs. *Environmental and Resource Economics*. doi.org/10.1007/s10640-018-00308-5.
- Ansuategi, A., Knowler, D., Schworer, T., and Garcia-Martinez, S. 2017. Nature-based tourism: shrimp fisheries and whale watching in Baja, Mexico. Conference Proceedings. Western Economic Association Annual Conference.
- Schwoerer, T. 2017. Invasive elodea threatens remote ecosystem services in Alaska: a spatially-explicit bioeconomic risk analysis. PhD thesis. University of Alaska Fairbanks. doi.org/10.13140/RG.2.2.22859.59682.
- Schwoerer, T.; Knowler, D.; Garcia-Martinez, S. 2016. The Value of Whale Watching to Local Communities in Baja, Mexico: A Case Study using Applied Economic Rent Theory, *Ecological Economics*. doi.org/10.1016/j.ecolecon.2016.03.004.
- Schwoerer, T.; Federer, R.; Ferren II, H. 2014. Invasive species management programs in Alaska: A survey of statewide expenditures, 2007-11, *Arctic* 67(1): 20-27. doi.org/10.14430/arctic4359.
- Schwörer, T.; Fay, V.; Meiners, D. 2011. The Chaninik Wind Group, In: *The Cool 100 Book*, Haselip, J. and Pointing, D. Eds. ISBN 978-87-550-3880-6. [URL-link](#).

Schwoerer, T.; Schmidt, J.; Holen, D. in progress. Gasoline demand in communities dependent on the harvesting of wild foods: Empirical evidence from Interior Alaska.

Schwoerer, T. Little, J., Schmidt, J., and Borash K. in progress. Aquatic invasive plants alter aviation-related values: Extending pathway identification with economic valuation to inform management.

Schwoerer, T., Little, J., and Adkison, M. in progress. Aquatic invasive species change ecosystem services from the world's largest wild sockeye salmon fisheries in Alaska.

Datasets

Schwoerer, T., Schmidt, J., and Borash, K.. 2019. Floatplane pilots' destination choices: a panel dataset, Alaska, 2015. Arctic Data Center. doi:10.18739/A2HH6C540.

Schwoerer, T. Regional salmon weight derived from commercial catch data, Alaska, 1975-2016 Knowledge Network for Biocomplexity. doi:10.5063/F1NC5ZGW

Alaska Department of Fish and Game, Commercial Fisheries Entry Commission and Schwwoerer, T. 2018. Commercial vessel characteristics by year, state, Alaskan census area and city, 1978-2017. Knowledge Network for Biocomplexity. doi.org/10.5063/F14F1P2Q

Journal articles in preparation

Schwoerer, T., Schmidt, J., and Holen, D. 2019. From dogsleds to snowmobiles: Predicting end use energy for harvesting wild foods in the Arctic. *Manuscript in preparation.*

Schwoerer, T., Little, J., Hayward, G., Adkison, M., and Morton, J. 2019. Invasive elodea threatens remote ecosystem services in Alaska: A spatially-explicit bioeconomic risk analysis. *Manuscript in preparation.*

Schwoerer, T., Dial, R. 2019. A Bayesian hierarchical approach to predicting dispersal of aquatic invasive species by floatplane: remote introductions of *Elodea spp.* in Alaska. *Manuscript in preparation.*

Schwoerer, T., Davis, T., and Martin, A. 2019. Human dimensions of aquatic invasive species in Alaska: A participatory geographic pathway analysis of watercraft movement across Alaska. *Manuscript in preparation.*

Datasets in preparation

Schwoerer, T. Floatplane pilots' destination: a geographic dataset of stated first-segment flights, 2015.

Schwoerer, T. Watercraft pathways across Alaska: a geographic dataset of stated watercraft trips, 2018.

Schwoerer, T., Schmidt, J., and Holen, D. Energy end use for the harvest of wild foods in Arctic and Subarctic communities, 2011.

Schwoerer, T., Schmidt, J. Angler destination choices across Alaska, 2015.

Reports, working papers and other publications

Information Insights. 2018. The economic impact of Interior-based Alaska Native Organizations. Report prepared in collaboration with Information Insights, Fairbanks, AK, for Doyon Limited, Fairbanks, AK.

Schwörer, T. 2017. Uncertainty, economics, and invasive species management. In: Climate change vulnerability assessment for the Chugach National Forest and the Kenai Peninsula. Hayward, G.D.; Colt, S.; McTeague, M.L.; Hollingsworth, T. Eds. USDA Forest Service, Pacific Northwest Research Station, General Technical Report. [URL-link](#).

Schwörer, T. 2014. Attitudes towards land use and development in the Mat-Su: Empirical evidence on economic values of ecosystem services. *UAA Institute of Social and Economic Research Working Paper*. [URL-link](#).

Duffield, J.; Neher, C.; Patterson, D.; Knapp, G.; Schwörer, T., Fay, V.; Goldsmith, O.S. 2014. Bristol Bay Wild Salmon Ecosystem: Baseline Levels of Economic Activity and Values. Prepared for Environmental Protection Agency. [URL-link](#)

Schwörer, T. 2013. The Mat-Su Borough in 2040: What Would Residents Like to See? Research Summary No. 76. UAA Institute of Social and Economic Research.

Fay, V.; Villalobos Melendez, A.; Schwörer, T, West, C. 2013. Alaska Energy Statistics 1960-2011. UAA Institute of Social and Economic Research.

Fay, V. Schwörer, T., Guettabi, M., Armagost, J. 2013. Analysis of Alaska Transportation Sectors to Assess Energy Use and Impacts of Price Shocks and Climate Change Legislation, UAA Institute of Social and Economic Research.

Information Insights. 2013. The economic impact of closing Flint Hills' Northpole refinery. Report prepared in collaboration with Information Insights, Fairbanks, AK, for Flint Hills Resources, Fairbanks, AK.

Schwörer, T.; Federer, R.; Ferren II, H. 2012. Managing invasive species: How much do we spend? ISER Research Summary. UAA Institute of Social and Economic Research.

Information Insights. 2012. The economic impact of Interior-based Alaska Native Organizations. Report prepared in collaboration with Information Insights, Fairbanks, AK, for Doyon Limited, Fairbanks, AK.

Fay, V.; Villalobos Melendez, A.; Schwörer, T. 2012. Power Cost Equalization Funding Formula Review. *UAA Institute of Social and Economic Research Technical Report*.

- Information Insights. 2011. The economic impact of public transportation in Alaska. Report prepared in collaboration with Information Insights, Anchorage, AK, for Alaska Mobility Coalition, Anchorage, AK.
- Fay, V.; Saylor, B.; Schwörer, T. 2011. Alaska fuel price projections 2011-2030. UAA Institute of Social and Economic Research.
- Holdmann, G., Fay, G., Witmer, D., Williams, F., Schwörer, T., Pride, D. Stevens, R., 2011. Executive Summary: Small Scale Modular Nuclear Power: an option for Alaska? Alaska Center for Energy and Power.
- Haley, S., Szymoniak, N., Klick, M., Crow, A., and Schwörer, T. 2011. Social Indicators for Arctic Mining. *UAA Institute of Social and Economic Research Working Paper 2011.2.*
- Schwörer, T. and Fay, V. 2010. Economic feasibility of North Slope propane production and distribution to select Alaska communities. UAA Institute of Social and Economic Research.
- Goldsmith, O.S. and Schwörer, T. 2010. The Foraker Group Report on the Alaska non-profit economy: 2010 update. UAA Institute of Social and Economic Research.
- Fay, V.; Keith, K.; Schwörer, T. 2010. Alaska isolated wind-diesel systems performance and economic analysis. UAA Institute of Social and Economic Research.
- Colt, S. and Schwörer, T. 2010. Socioeconomic impacts of potential Wishbone Hill coal mining activity. UAA Institute of Social and Economic Research.
- Goldsmith, O.S. and Schwörer, T. 2010. Benefit cost analysis TIGER II Grant Application Port of Anchorage barge berths and rail extension project. Report prepared for the Port of Anchorage. UAA Institute of Social and Economic Research.
- Helvoigt, T.; Schwörer, T.; Charlton, D. 2010. Economic Analysis of the Chuitna watershed and Cook Inlet, Report prepared in collaboration with Eco-Northwest, Eugene, OR, for Cook Inletkeeper, Homer, AK.
- Goldsmith, O.S. and Schwörer, T. 2009. Anchorage Port Intermodal Expansion Program (PIEP) benefit cost analysis of proposed TIGER discretionary grant funds. Report prepared for the Port of Anchorage. UAA Institute of Social and Economic Research.
- Colt, S. and Schwörer, T. 2009. Economic importance of sportfishing in the Matanuska-Susitna Borough. UAA Institute of Social and Economic Research.
- Lister, C., Calvin, J., Rogers, B., Schwörer, T., Arriaga, I., Logan, D., Modrow, S., and Pierce, J. 2008. The role of the oil and gas industry in Alaska's economy. Report prepared for the Alaska Oil and Gas Association, Anchorage, AK, [URL-link](#).
- McDowell Group. 2009 Q1. The AEDC Anchorage Quarterly Economic Indicators Report. Report prepared for Anchorage Economic Development Corporation, Anchorage, AK.
- McDowell Group. 2008. Financial assessment of inflation proofing for Klukwan endowment fund. Report prepared for Klukwan Inc., Juneau, AK.
- McDowell Group. 2008. Economic Impact of Alaska's cruise ship industry. Report prepared for the Alaska Cruise Association, Juneau, AK.

McDowell Group. 2008. Anchorage Economic Forecast. Report prepared for Anchorage Economic Development Corporation, Anchorage, AK.

McDowell Group. 2008 Q1 – Q4. The AEDC Anchorage Quarterly Economic Indicators Report. Report prepared for Anchorage Economic Development Corporation, Anchorage, AK.

McDowell Group. 2007. Potential economic impact of the Kensington Mine. Report prepared for Coeur Mining, Inc., Juneau, AK.

Fay, V.; Colt, S.; Schwörer, T. 2005. Sustainable economic development for the Prince William Sound Region. Report prepared for the National Wildlife Federation, Alaska Office. UAA Institute of Social and Economic Research, [URL-link](#).

Computer models

IRECOS: Isolated Renewable Energy Economic Simulator, a simplified energy dispatch model with an hourly time step that simulates the economics of integrating high penetration renewables into isolated village utility systems. Particularly emphasis is given to modeling dispatchable loads such as individual household's heating demand.

ManTerPla: Management Model for Invasive Terrestrial Plants, a logistic growth model in discrete time that keeps track of the early, undetected, and detected portions of an invasion depending on effort related to detection, spread/damage prevention, and eradication.

Teaching and guest lectures

- Research Methods for Public Administrators (PADM 604), UAA teaching
- Ecological Economics (REM 621), Simon Fraser University, teaching assistant
- Fairbanks Fisheries Division Seminar, UAF guest lecturer
- Natural Resource Economics (ECON 435), UAA guest lecturer
- Environmental Economics and Policy (ECON 210), UAA guest lecturer

Peer review

- Ecological Economics
- Society and Natural Resources
- Aquaculture Economics and Management
- Conservation Biology
- SeaGrant
- USDA Agricultural and Forestry Experiment Station – McIntire Stennis Capacity Grant Program

Conference presentations

2019

- U.S. Fish and Wildlife Service Annual Alaska Region meeting, Anchorage, AK: *Invasive elodea in Alaska: A spatially-explicit bioeconomic risk and decision analysis*.
- University of Alaska Sea Grant Site Review, Fairbanks, AK: *Human Dimensions of Invasive Species: Managing Land-based risk for coastal economies*.

- Southwest Alaska Municipal Conference annual meeting, Anchorage, AK: *Socio-economic dimensions of Alaska's changing oceans.*

2018

- American Fisheries Society Meeting: Western Division Annual Meeting, Anchorage, AK
 - 1) *Some socio-economic dimensions of Alaska salmon system: examples of exploratory data analysis largely related to commercial fisheries data.*
 - 2) *Invasive elodea changes ecosystem services derived from sockeye salmon: a spatially-explicit bioeconomic risk analysis.*

2017

- Conference of the Committee on Noxious and Invasive Plants Management in Alaska, Anchorage, AK
 - 1) *From risk assessment to risk management.*
 - 2) *Human dimensions of invasive species: Managing risk for economy and environment.*
 - 3) *Invasive elodea threatens remote ecosystem services: a spatially-explicit bioeconomic risk analysis.*

2016

- Alaska SeaGrant Advisory Committee Meeting, Anchorage, AK
An expert and community supported decision tool for managing invasive species: The risk of Elodea spp. to salmon-dependent communities.
- Western Regional Panel on Aquatic Nuisance Species, Jackson Hole, WY
An expert and community supported decision tool.
- Conference of the Committee on Noxious and Invasive Plants Management in Alaska, Fairbanks, AK
Potential dispersal of aquatic invasive species by floatplanes.

2015

- Alaska SeaGrant Advisory Committee Meeting, Anchorage, AK
An expert and community supported decision tool for managing invasive species: The risk of Elodea spp. to salmon-dependent communities.
- 8th Annual Mat-Su Salmon Science & Conservation Symposium, Palmer, AK
- Conference of the Committee on Noxious and Invasive Plants Management in Alaska, Juneau
Expert probability elicitation through adaptive choice: The risk of Elodea spp. for salmon persistence in Alaska.
- Elodea workshop, Cordova, AK
Human dimensions of invasive species management.

2014

- Matanuska-Susitna Business Alliance Monthly Lunch Forum, Wasilla, AK
- 16th Annual Alaska Forum on the Environment, Anchorage, AK
Ecosystem Services: How much do Mat-Su residents value them? Evidence from a household survey and analysis of property values in the Matanuska-Susitna Borough.

2013

- 6th Annual Mat-Su Salmon Science & Conservation Symposium, Palmer, AK
Preliminary results from a contingent valuation of Mat-Su residents' preferences and values for: population growth, job sectors, recreation, and conservation.
 - American Planning Association, Alaska Chapter Conference, Anchorage, AK
Preliminary results from a contingent valuation of Mat-Su residents' preferences and values for: population growth, job sectors, recreation, and conservation.
 - American Association of Energy Economists, Anchorage, AK
Harnessing Wind Resources to Achieve Energy Independence and Economic Development in Isolated Rural Communities: A Financial Simulation Model
 - Alaska Forum on the Environment, Anchorage, AK
Applied Bioeconomics for Invasive Species Management
 - Alaska Rural Energy Conference, Anchorage, AK
Personal Transportation in Rural Alaska: Results from Two Questionnaires
 - College of Business and Public Policy Poster Session, Anchorage, AK
Decisions under Uncertainty: How Bioeconomics Can Inform Invasive Species Management
- 2012
- Prince William Sound Regional Citizen's Advisory Council, Anchorage, AK
Opportunities for Economic Analysis within Invasive Species Management.
 - Conference of the Committee on Noxious and Invasive Plants Management in Alaska, Kodiak, AK
1) *Investments in Statewide Invasive Species Management Programs in Alaska.*
2) *Decisions under Uncertainty: A Bioeconomic Approach to Managing Invasive Species in Alaska: the Case of Elodea in Chena Slough, Fairbanks.*
 - American Fisheries Society Alaska Chapter, Kodiak, Alaska & Alaska SeaLife Center Science Colloquium, Seward, AK
Elodea in Alaska – Is it worth taking action and if so how much action is needed?: A bioeconomic risk assessment.
 - Arctic Frontiers Conference, Tromsø, Norway
 - Arctic Frontiers Young Scientist Forum, Tromsø, Norway
Harnessing wind: Opportunities for Sustainability in isolated Arctic communities.
- 2011
- Western Alaska Science Conference, Bethel, AK
Potential Economics of Nuclear Small Modular Reactor Technology for Alaska.
- 2010
- Conference of the Committee on Noxious and Invasive Plants Management in Alaska, Fairbanks, AK
Assessing the Potential Economic Benefits and Costs of Invasive Species Coordination in Alaska: A Proposal.
 - Green Infrastructure Workshop, Kenai, AK

Analytical and software skills

Quantitative methods:

- Discrete choice modeling (design and analysis of mail and online surveys): Sawtooth, NLOGIT, Matlab, R
- Static websites and publishing: R bookdown, etc.
- Survey data collection: Qualtrics
- Applied statistical computing: R, STATA
- Bayesian statistical computing: R, STAN, WINBUGS
- Risk and decision analysis / Monte Carlo simulation: R, Palisade Decision Suite for MS Excel
- Regional economic modeling: IMPLAN, ISER Input-Output model
- Geospatial analysis / mapping: ArcGIS, OCAD
- General research and writing tools: R, Microsoft Office Suite, Zotero research assistant

Qualitative methods:

- Key informant interviews, focus groups, participatory appraisal,

Significant volunteer activity

Board member: Alaska Invasive Species Partnership, 2017 - present

Vice-President: Arctic Orienteering Club, 2011-2013, 2017 - present

Instructor: Crosscountry Alaska Coaches Clinic, 2008-2013

Volunteer coach: KidsRunning summer program, 2004