Steven T. Lindley

EDUCATION:

Ph.D., Biological Oceanography. Duke University, 1994
B.A. (with Honors and Distinction in the Major), Aquatic Biology. University of California at Santa Barbara, 1989

EXPERIENCE:

2011-2025	Director, Fisheries Ecology Division and Santa Cruz Laboratory NMFS Southwest Fisheries Science Center, Santa Cruz, CA
2020 (Jan-Mar)	Deputy Director (Acting), NMFS Office of Science and Technology Silver Spring, MD.
2016-present	Researcher, Institute of Marine Sciences, University of California Santa Cruz, CA
2005-2011	Supervisory Research Ecologist, Fisheries Ecology Division NMFS Southwest Fisheries Science Center, Santa Cruz, CA
2001-2016	Research Associate, Institute of Marine Sciences, University of California, Santa Cruz, CA
1996–2005	Ecologist, NMFS Southwest Fisheries Science Center, Santa Cruz / Tiburon, CA
1995–1996	Research Associate, Duke University Marine Laboratory Beaufort, NC
1994–1995	Postdoctoral Fellow, Stanford University and Carnegie Institution of Washington, Stanford, CA

RESEARCH INTERESTS:

Landscape, ecosystem, and population ecology of aquatic organisms; biological oceanography; time series analysis; telemetry and mark-recapture; development and application of integrate models.

SELECTED SERVICE:

NMFS Marine Carbon Dioxide Removal Working Group, 2024-present.
Interagency Ecological Program Management Committee, 2024.
Delta Science Program Science Roundtable, 2022-present.
Sacramento River Science Partnership Core Group, 2021-present.
PICES Fisheries Science Committee, 2018-present.
Yuba-Feather Forecast-Informed Reservoir Operations Steering Committee, 2019-present
Associate Editor, *San Francisco Estuary and Watershed Science*, 2012-present.

Collaborative Adaptive Management Team, 2013-2024.
Monterey Bay National Marine Sanctuary Research Activities Panel, 2012-present.
Monterey Bay National Marine Sanctuary Advisory Council, 2012-present.
Delta Science Program Integrated Modeling Steering Committee, 2022-23.
PICES North Pacific Ecosystem Status Review III editorial board, 2019-23.
Delta Science Program Science Advisory Committee, 2014-2022.
NMFS Protected Resources Board, 2014-16.
SFEI Landscape Interpretation Team, 2013-16.
CIMEC Council of Fellows, 2013-2020.
NMFS green sturgeon recovery team, 2010-2018.
DOC-DOI BDCP Biological Opinion Task Force, 2010-2013.
CeNCOOS Governing Council, 2012-2013.
Pacific Ocean Shelf Tracking Project Science Management Committee, 2009-2012.
Central Valley Project Improvement Act Fish Program Independent Panel, 2008.
NMFS Technical Recovery Team (Chair), Central Valley salmonids, 2003–2007.
USGS Independent Review Panel, Humpback Chub Population Estimation, 2003.
NMFS Biological Review Team, Green Sturgeon, 2002–present.
NMFS Biological Review Team, Steelhead, 2003–present.
NMFS Biological Review Team, Chinook Salmon, 1998–present.

Reviewer for *Animal Biotelemetry, BioScience*, *Canadian Journal of Fisheries and Aquatic Sciences, Conservation Biology, Deep Sea Research, Ecological Applications, Ecology, Ecosphere, Endangered Species Research, Environmental Biology of Fishes, Environmental and Ecological Statistics, Estuaries, Estuaries and Coasts, Evolutionary Applications, Fisheries, Fishery Bulletin (US), Journal of Fish Biology, Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Landscape Ecology, Limnology and Oceanography Methods, Marine and Coastal Fisheries, Marine Ecology Progress Series, North American Journal of Fisheries Management, Northwestern Naturalist, Oikos, PLoS ONE, Progress in Oceanography, San Francisco Estuary and Watershed Science, River Research and Applications, Transactions of the American Fisheries Society, Theoretical Population Biology*, USGS Western Fisheries Research Center, NOAA Undersea Research Program and Saltonstall-Kennedy Program, NASA SIMBIOS, NMFS Species of Concern Program, Pacific Ocean Shelf Tracking Project, California Public Utilities Commission, NSF Antarctic Organisms and Ecosystems.

PROFESSIONAL AFFILIATIONS:

American Geophysical Union
Ecological Society of America

HONORS AND AWARDS:

DOC Bronze Medal, 2019, "*For completing the California Water Fix consultation, resulting in better protections for endangered fish and an improved water delivery system.*"

American Fisheries Society Robert L. Kendall Award for best paper of 2011, Transactions of the American Fisheries Society.

DOC Bronze Medal, 2011, "*For developing rigorous tools and a whole-ecosystem model to complete the first Integrated Ecosystem Assessment of a U.S. Large Marine Ecosystem*."

American Fisheries Society Conservation Achievement award, CalNeva Chapter, 2011.

NOAA Office of the General Council Team Award, 2010, "*For outstanding service and cooperation across line offices, under extraordinarily tight time pressure, to support measures to benefit distressed Chinook salmon and threatened steelhead populations in the lower Tuolumne River."*

DOC Bronze Medal, 2003, "*For expeditiously reassessing the status of all twenty-six West Coast salmon and steelhead populations listed under the Endangered Species Act."*

Dissertations Initiative for the Advancement of Limnology and Oceanography (DIALOG) I. Selected Symposium Participant, 1994, American Society of Limnology and Oceanography.

GRANTS:

Rapid response to increase our understanding of the origins of thiamine deficiency in Central Valley Chinook salmon. 2020-2021. Delta Science Program. $270K. (Co-I).

Update the Standard Assessment Methodology (SAM) Model. 2020-2021. $2M. US Army Corps of Engineers. (Co-I).

Monitoring and Modeling Pathogen Exposure in Salmon Migrating to the Delta. CA Dept Fish and Wildlife. 2019-2021. $847K. (Co-I).

Chinook salmon life cycle model. US Bureau of Reclamation. 2018-2022. $3M. (Co-PI).

A next-generation model of juvenile salmon migration through the Sacramento-San Joaquin Delta. CA Dept Fish and Wildlife Delta Water Quality and Ecosystem Restoration Grant Program. 2018-2020. $1.73M. (Co-I).

Juvenile salmon distribution, abundance, and growth in restored and relict Delta marsh habitats. CA Dept Fish and Wildlife Delta Water Quality and Ecosystem Restoration Grant Program. 2018-2020. $1.3M. (Co-I).

Linking predation mortality to predator density and survival for out-migrating Chinook Salmon and Steelhead in the lower San Joaquin River and South Delta. 2017-2018. CA Dept Fish and Wildlife. $484K. (PI).

Sturgeon population monitoring research, lower Sacramento, San Joaquin and San Francisco Bay. 2015-2017. CA Dept Fish and Wildlife. $311K. (PI).

Life cycle modeling in support of the long term operations of Central Valley Project and the Bay Delta Conservation Plan. 2012-2017. U.S. Bureau of Reclamation. $7.51M (PI).

Survival and migratory patterns of juvenile spring and fall run Chinook Salmon in Sacramento River and Delta. 2012-2015. California Department of Fish and Game, Ecological Restoration Program. $1.75M (Co-I).

From the watershed to the ocean: Using NASA data and models to understand and
predict variations in central California salmon. 2011-2013. NASA Interdisciplinary Research in Earth Science. $1.5M (Co-I).

The future of the California Chinook salmon fishery: roles of climate variation, habitat restoration, hatchery practices, and biocomplexity. 2010-12. California Ocean Protection Council and NOAA Sea Grant. $510K (Co-PI).

Utilizing ecosystem information to improve the decision support system for central California salmon. NASA Applied Sciences Program. 2009-11. $900K (Co-I).

Improving stream temperature predictions for river water decision support systems. NASA Applied Sciences Program. 2008-10. $900K (Co-PI).

Developing Statistically Robust IPCC Climate Model Products for Estuarine-dependent
and Anadromous Fish Stock Assessments. 2008-09. NOAA Fisheries and the Environment. $47K (Co-PI).

Characterization of habitat preferences of green sturgeon in the coastal ocean. 2008. NMFS Species of Concern Program. $33K (PI).

Feeding and habitat use of green sturgeon (*Acipenser medirostris*) in Washington estuaries. 2008. NMFS Species of Concern Program. $35K (co-PI).

Impact of freshwater and terrestrial ecosystem conditions on estuarine-dependent and anadromous fish. 2007. NOAA Fisheries and the Environment. $47K (PI).

Estimating the abundance of Rogue River green sturgeon. 2007. NOAA Species of Concern program. $35K (PI).

Survival and migratory patterns of Central Valley juvenile salmonids. 2006-09. CALFED Science Program. $1.5M (Co-PI).

Scoping workshop for incorporating acoustic tagging and coast-wide acoustic receiver arrays into U.S. ocean observing systems: scientific and institutional opportunities and challenges. 2006. NOAA Stock Assessment Improvement Program. $27K (PI).

Marine migration and estuary use of green sturgeon. 2004-06. NOAA Candidate Species Program. $112K (PI).

PUBLICATIONS:

Shannon, K.C., G. St. John, R. Gould, C. Hartzell, H. Matthews, E. J. Brennan, L.M. Bolaños, S.T. Lindley, J.C. Field, N. Mantua, R. Johnson, C. Jeffres, F.S. Colwell, and C.P. Suffridge. 2025. Springtime upwelling conditions influence microbial communities and dissolved thiamin compounds in the California Current Ecosystem. Limnology and Oceanography. doi: 10.1002/lno.70021

Hendrix, N., A.M.K. Osterback, S. John, M. Daniels, E.D. Jennings, E. Danner, and S. Lindley. 2024. Life cycle modeling framework for Chinook salmon spawning in the Sacramento River. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-696. https://doi.org/10.25923/sj1b-xs90

Young, M.J., F.V. Feyerer, S.T. Lindley, D.D. Huff. 2024. Variability in coastal habitat available for longfin smelt *Spirinchus thaleichthys* in the northeastern Pacific Ocean. Frontiers in Marine Science 11:1282286.

Sridharan, V. K., D. Jackson, A.M. Hein, R.W. Perry, A.C. Pope, N. Hendrix, E.M. Danner, and S.T. Lindley. 2023. Simulating the migration dynamics of juvenile salmonids through rivers and estuaries using a hydrodynamically driven enhanced particle tracking model. Ecological Modelling 482:110393. https://doi.org/10.1016/j.ecolmodel.2023.110393

Vasbinder, K., J. Fiechter, J.A. Santora, J.J. Anderson, N. Mantua, S.T. Lindley, D.D. Huff, B.K. Wells. 2023. Size-selective predation effects on juvenile Chinook salmon cohort survival off central California evaluated with an individual-based model. Fisheries Oceanography. https://doi.org/10.1111/fog.12654.

Lennox, R.J., F.G. Whoriskey, P. Verhelst, C.S. Vandergoot, M. Soria, J. Reubens, E.L. Rechisky, M. Power, T. Murray, I. Mulder, J.L. Markham, S.K. Lowerre-Barbieri, S.T. Lindley, N.A. Knott, S.T. Kessel, S. Iverson, C. Huveneers, M. Heidemeyer, R. Harcourt, L.P. Griffin, C. Friess, A. Filous, L.C. Fetterplace, A.J. Danylchuk, R. Daly, P. Cowley, S.J. Cooke, E.J. Chávez, A. Blaison, K. Whoriskey. 2023. Globally coordinated acoustic aquatic animal tracking reveals unexpected, ecologically important movements across oceans, lakes, and rivers. Ecography e06801.

McClure M.M., Haltuch M.A., E. Willis-Norton, D.D.Huff, E.L. Hazen, L.G. Crozier, M.G. Jacox, M.W. Nelson, K.S. Andrews, L.A. Barnett, A.M. Berger, S. Beyer, J. Bizzarro, D. Boughton, J.M. Cope, M. Carr, H. Dewar, E. Dick, E. Dorval, J. Dunham, V. Gertseva, C.M. Greene, R.G. Gustafson, O.S. Hamel, C.J. Harvey, M.J. Henderson, C.E. Jordan, I.C. Kaplan, S.T. Lindley, N.J. Mantua, S.E. Matson, M.H. Monk, P. Moyle, C. Nicol, J. Pohl, R.R. Rykaczewski, J.F. Samhouri, S. Sogard, N. Tolimieri, J. Wallace, C. Wetzel and S.J. Bograd. 2023. Vulnerability to climate change of managed stocks in the California Current large marine ecosystem. Front. Mar. Sci. 10:1103767. doi:10.3389/fmars.2023.1103767

Lindley, S.T., N.J. Mantua, T.L. Rogers, and S.B. Munch. 2021. Recent changes in the spatial and temporal distribution of salmon habitat in the North Pacific. In: J. Park, W. Stanbury, and M. Kermoade (eds.), Third NPAFC-IYS Virtual Workshop on Linkages between Pacific Salmon Production and Environmental Changes (May 25-28, 2021). North Pacific Anadromous Fish Commission, NPAFC Technical Report 17:108-112.

Rundio, D. E., J.C. Garza, S.T. Lindley, T.H. Williams, and D.E. Pearse. 2021. Differences in growth and condition of juvenile Oncorhynchus mykiss related to sex and a migration-associated genomic region. *Canadian Journal of Fisheries and Aquatic Sciences*, *78*(3), 322-331.

Rundio, D.E., and S.T. Lindley. 2021. Importance of non-native isopods and other terrestrial prey resources to steelhead/rainbow trout *Oncorhynchus mykiss* in coastal streams in Big Sur, California. Ecology of Freshwater Fish 30(6) 419-432.

Wells, B., D.D. Huff, B.J. Burke, R.D. Brodeur, J.A. Santora, J.C. Field, K. Richerson, N. Mantua, K.L. Fresh, M.M. McClure, W.H. Satterthwaite, C. Harvey, F. Darby, S.J. Kim, R.W. Zabel and S.T. Lindley. 2020. Implementing ecosystem-based management principles in the design of a salmon ocean ecology program. Front. Mar. Sci. 7, Art. 342:1-24.

Pearse, D.E., N.J. Barson, T. Nome, G. Gao, M.A. Campbell, A. Abadía-Cardoso, E.C. Anderson, D.E. Rundio, T.H. Williams, K.A. Naish, T. Moen, S. Liu, M. Kent, M. Moser, D.R. Minkley, E.B. Rondeau, M.S.O. Brieuc, S.R. Sandve, M.R. Miller, L. Cedillo, K. Baruch, A.G. Hernandez, G. Ben-Zvi, D. Shem-Tov, O. Barad, K. Kuzishchin, J.C. Garza, S.T. Lindley, B.F. Koop, G.H. Thorgaard, Y. Palti, S. Lien. 2020. Sex-dependent dominance maintains migration supergene in rainbow trout. Nature Ecology and Evolution 3:1731-1742.

Doukakis, P., E. Mora, S. Wang, P. Reilly, R. Bellmer, K. Lesyna, T. Tanaka, N. Hamda, D. Erickson, M.L. Moser, J. Vestre, J. McVeigh, K. Stockman, S.T. Lindley. 2020. Postrelease survival of green sturgeon (*Acipenser medirostris*) encountered as

bycatch in the trawl fishery that targets California halibut (*Paralichthys californicus*), estimated by using pop-up satellite archival tags. Fishery Bulletin (U.S.) 118:63-73.

Crozier, L.G., M.M. McClure, T. Beechie, S.J. Bograd, D.A. Boughton, M. Carr, T.D. Cooney, J.B. Dunham, C.M. Greene, M.A. Haltuch, E.L. Hazen, D.M. Holzer, D.D. Huff, R.C. Johnson, C.E. Jordan, I.C. Kaplan, S.T. Lindley, N.J. Mantua, P.B. Moyle, J.M. Myers, M.W. Nelson, B.C. Spence, L.A. Weitkamp, T.H. Williams, E. Willis-Norton. 2019. Climate vulnerability assessment for Pacific salmon and steelhead in the California Current Large Marine Ecosystem. PLoS ONE 14(7): e0217711. https://doi.org/10.1371/journal.pone.0217711

Friedman, W.R., B.T. Martin, B.K. Wells, C.J. Michel, P. Warzybok, E.M. Danner and S.T. Lindley. 2019. Modeling composite effects of marine and freshwater processes on migratory species. Ecosphere (7):e02743. 10.1002/ecs2.2743

Rundio, D.E. and S.T. Lindley. 2019. Diet variability of steelhead/rainbow trout in a coastal basin in central California: relative importance of seasonal, spatial, and ontogenetic variation. Transactions of the American Fisheries Society 148:88-105.

Waples, R. and S.T. Lindley. 2018. Genomics and conservation units: The genetic basis of adult migration timing in Pacific salmonids. Evolutionary Applications 11:1518-1526.

Mora, E.A., R. Battleson, S.T. Lindley, M.J. Thomas, R. Bellmer, L. Zarri, and A.P. Klimley. 2018. Estimating the annual spawning run-size and population size of the Southern Distinct Population Segment of Green Sturgeon. Transactions of the American Fisheries Society 147:195-203.

McClure, M., J. Anderson, G. Pess, T. Cooney, R. Carmichael, C. Baldwin, J. Hesse, L. Weitkamp, D. Holzer, M. Sheer, and S. Lindley. 2018. Anadromous Salmonid Reintroductions: General Planning Principles for Long-Term Viability and Recovery. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-141. https://doi.org/10.7289/V5/TM-NWFSC-141

Moser, M. L., K. Pattern, S. C. Corbett, B. E. Feist and S. T. Lindley. 2017. Abundance and distribution of sturgeon feeding pits in a Washington estuary. Environmental Biology of Fishes 100:597-609.

Mohr, M.S., W. H. Satterthwaite, D. G. Hankin, P. A. Bisson, C. B. Grimes, S. Hamelberg, D. C. Hillemeier, S. T. Lindley, A. Low, M. L. Palmer-Zwahlen, J. Smith, and T. H. Williams. 2017. Evaluation of alternative marking/tagging systems for hatchery produced California fall-run Chinook salmon. NOAA Tech Memo NMFS-SWFSC-571

Rundio, D.E., A.N. Montgomery, M.G. Nesbit, M.S. Morris, G.T. Brooks, G.A. Axel, J.J. Lamb, R.W. Zabel, J. Ferguson, and S.T. Lindley. 2017. Central Valley passive integrated transponder (PIT) tag array feasibility study. NOAA Tech Memo NMFS-SWFSC-573.

Lehman, B., D.D. Huff, S.A. Hayes and S.T. Lindley. 2017. Relationships between Chinook salmon swimming performance and water quality in the San Joaquin River, California. Trans Am Fish Soc 146:349--358.

Moser, M. L., J.A. Israel, M. Neuman, S.T. Lindley, D.L. Erickson, B.W. McCovey Jr, and A.P. Klimley. 2017. Biology and life history of Green Sturgeon (*Acipenser medirostris* Ayres, 1854): state of the science. J. Appl. Ichthyol. 32(S1):67-86.

Martin, B.T., A. Pike, S. N. John, N. Hamda, J. Roberts, S. T. Lindley, E. M. Danner. 2017. Phenomenological vs. mechanistic models of thermal stress in aquatic eggs. Ecology Letters 20:50-59.

Williams, T.H., B.C. Spence, D.A. Boughton, R.C. Johnson, L.G. Crozier, N.J. Mantua, M.R. O'Farrell, and S.T. Lindley. 2016. Viability assessment for Pacific salmon and steelhead listed under the Endangered Species Act: Southwest. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-564.

Demetras, N. J., D. D. Huff, C. J. Michel, J. M. Smith, G. R. Cutter, S. A. Hayes and S. T. Lindley. 2016. Development of underwater recorders to quantify predation of juvenile Chinook salmon (*Oncorhynchus tshawytscha*) in a river environment. Fishery Bulletin (U.S.) 114(2): 179-185.

Michel, C. J., A. J. Ammann, S. T. Lindley, P. T. Sandstrom, E. D. Chapman, H. E. Fish, M. J. Thomas, G. P. Singer, A. P. Klimley, and R. B. MacFarlane. 2015. Chinook salmon outmigration survival in wet and dry years in California's Sacramento River. Can J Fish Aquat Sci. 72: 1749-1759.

Mora, E. A., S. T. Lindley, D. L. Erickson, and A. P. Klimley. 2015. Estimating the riverine abundance of green sturgeon using a DIDSON acoustic camera. North American Journal of Fisheries Management 35:557-566.

Fiechter, J., D. D. Huff, B. T. Martin, D. W. Jackson, C. A. Edwards, K. A. Rose, E. N. Curchitser, K. S. Hedstrom, S. T. Lindley and B. K. Wells. 2015. Environmental conditions impacting juvenile Chinook salmon growth off central California: An ecosystem model analysis. Geophysical Research Letters 42:2910-2917.

Griffiths, J. R., D. E. Schindler, J. B. Armstrong, M. D. Scheuerell, D. C. Whited, R. A. Clark, R. Hilborn, C. A. Holt, S. T. Lindley, J. A. Stanford, E. C. Volk. 2014. Performance of salmon fishery portfolios across western North America. Journal of Applied Ecology 51:1554-1563.

Moustahfid, H., M. Weise, S. Simmons, B. Block, K. Holland, J. Ault, J. Kocik, D. Costa, S. T. Lindley, B. Mate, S. Hayes, C. M. Holbrook, A. Seitz, M. Arendt, J. Payne, B. Mahmoudi, C. Alexander, P. Moore, J. Price, D. Wilson. 2014. Meeting our nation’s needs for biological and environmental monitoring: strategic plan and recommendations for a national animal telemetry network (ATN) through U.S. IOOS. NOAA Technical Memorandum NMFS-SWFSC-534.

Hendrix, N., A. Criss, E. Danner, C. M. Greene, H. Imaki, A. Pike, and S. T. Lindley. 2014. Life cycle modeling framework for Sacramento River winter-run Chinook salmon. NOAA Technical Memorandum NMFS-SWFSC-530. 27 p.

Huff, D. D., M. M. Yoklavich, M. S. Love, D. L. Watters, F. Chai, and S. T. Lindley. 2013. Environmental factors that influence the distribution, size, and biotic relationships of the Christmas tree coral *Antipathes dendrochristos* in the Southern California Bight. Marine Ecology Progress Series 494: 159-177. doi: 10.3354/meps10591

Pike, A., E. Danner, D. Boughton, F. Melton, R. Nemani, B. Rajagopalan, and S. Lindley. 2013. Forecasting river temperatures in real time using a stochastic dynamics approach. Water Resources Research 49(9):5168-5182.

McClure. M. M., M. Alexander, D. Borggard, D. Boughton, L. Crozier, R. Griffis, J. C. Jorgensen, S. Lindley, J. Nye, M. J. Rowland, E. E. Seney, A. Snover, C. Toole, K. Van Houtan. 2013. Incorporating climate science in applications of the U.S. Endangered Species Act for aquatic species. Conservation Biology 27(6):1222-1233.

Busch, D. S., P. McElhany, M. H. Ruckleshaus, D. A Boughton, T. Cooney, P. Lawson, S. T. Lindley, M . McClure, N. J. Sands, B. C. Spence, T. C. Wainwright and T. H. Williams. 2013. A practical comparison of viability models used for management of endangered and threatened anadromous Pacific salmonids. N Am J Fish Man 33(6):1125-1141.

Pike, A.S., E.M. Danner, D. Boughton, F. Melton, R. Nemani, B. Rajagopalan, and S. Lindley. 2013. Forecasting river temperatures in real time using a stochastic dynamics approach. Water Resources Research 49:1-15. doi:10.1002/wrcr.20389.

Nelson, T.C., P. Doukakis, S.T. Lindley, A. Drauch Schreier, J.E. Hightower, L.R. Hildebrand, R.E. Whitlock, and M.A.H. Webb. 2013. Research tools to investigate movements, migrations, and life history of sturgeons (Acipenseridae), with an emphasis on marine-oriented populations. PLOS ONE 8(8):e71552. doi:10.1371/journal.pone.0071552

Williams, T. H., J. C. Garza, N. J. Hetrick, S. T. Lindley, M. S. Mohr, J. M. Myers, M. R. O'Farrell, R. M. Quiñones, D. J. Teel. 2013. Upper Klamath and Trinity River Chinook salmon Biological Review Team report. U. S. Department of Commerce, NOAA Technical Memorandum, NOAA-TM-NMFS-SWFSC-502, 47 pages.

Sandstrom, P., R. B. MacFarlane, S. Lindley, and A. P. Klimley. 2013. An introduction to the use of electronic tagging to provide insights into salmon migration and survival. Environmental Biology of Fishes 96:131-133.

Sandstrom, P. T., A. J. Ammann, C. Michel, G. Singer, E. D. Chapman, S. Lindley, R. B. MacFarlane and A. P. Klimley. 2013. Growth, survival and tag retention of steelhead trout (Oncorhynchus mykiss) and its application to survival estimates. Environmental Biology of Fishes 96:145-164.

Klimley, A. P., R. B. MacFarlane, P. Sandstrom, and S. Lindley. 2013. A summary of the use of electronic tagging to provide insights into salmon migration and survival. Environmental Biology of Fishes 96:419-428.

Chapman, E. D., A. R. Hearn, C. Michel, P. T. Sandstrom, A. J. Ammann, M. J. Thomas, G. P. Singer, M. L. Peterson, S. T. Lindley, R. B. MacFarlane and A. P. Klimley. 2013. Diel movements of out-migrating Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead trout (*Oncorhynchus mykiss*) smolts in the Sacramento/San Joaquin watershed. Environmental Biology of Fishes 96: 273-286.

Michel, C.J., A.A. Ammann, E.D. Chapman, P.T. Sandstrom, H.E. Fish, M.J. Thomas, G. P. Singer, S.T. Lindley, A.P. Klimley and R.B. MacFarlane. 2013. The effects of environmental factors on the migratory movement patterns of Sacramento River yearling late-fall run Chinook salmon (*Oncorhynchus tshawytscha*). Environmental Biology of Fishes 96:257-272.

Danner, E.M., F. Melton, A. Pike, H. Hashimoto, A. Michaelis, B. Rajagopalan, J. Caldwell, L. DeWitt, S. Lindley, and R. Nemani. 2012. River temperature

forecasting: a coupled-modeling framework for management of river habitat. Journal of Selected Topics in Applied Earth Observations and Remote Sensing 5(6): 1752-1760.

Huff, D., S. T. Lindley, B. K. Wells and F. Chai. 2012. Green sturgeon distribution in the Pacific Ocean estimated from modeled oceanographic features and migration behavior. PLOS ONE 7(9): e45852. doi:10.1371/journal.pone.0045852

Rundio, D.E., and S.T. Lindley. 2012. Reciprocal fluxes of stream and riparian invertebrates in a coastal California basin with Mediterranean climate. Ecological Research. DOI: 10.1007/s11284-011-0920-6

Rundio, D.E., T.H. Williams, D.E. Pearse and S.T. Lindley. 2012. Male-biased sex ratio of nonanadromous *Oncorhynchus mykiss* in a partially migratory population in California. Ecology of Freshwater Fish. DOI: 10.1111/j.1600-0633.2011.00547.x

Huff, D. D., S. T. Lindley, P. S. Rankin and E. A. Mora. 2011. Green sturgeon physical habitat use in the coastal Pacific Ocean. PLOS One 6(9):e25156.

Fullerton, A.H., S.T. Lindley, G.R. Pess, B.E. Feist, E.A. Steel, and P. McElhany. 2011. Human influence on the spatial structure of threatened Pacific salmon metapopulations. Conservation Biology 25: 932-944.

Andrews, K.S., G.D. Williams, I.C. Kaplan, N. Tolimieri, J.F. Samhouri, P.S. Levin, B.K. Wells, S.J. Bograd, C.B. Grimes, E.L. Hazen, D. Huff, S.T. Lindley, and I.D. Schroeder. 2011. Selecting and Evaluating Indicators for the California Current. *In* Technical background for an Integrated Ecosystem Assessment of the California Current: Groundfish, Salmon, Green Sturgeon, and Ecosystem Health, P.S.Levin and F.B.Schwing, eds. NOAA Tech Memo NMFS-NWFSC-109. Pages 7-59.

Tolimieri, N., G.D. Williams, K.S. Andrews, P.S. Levin, B.K. Wells, S.J. Bograd, C.B. Grimes, E.L. Hazen, D. Huff, S.T. Lindley, and I.D. Schroeder. 2011. Status of the California Current Ecosystem: Major EBM Components. *In* Technical background for an Integrated Ecosystem Assessment of the California Current: Groundfish, Salmon, Green Sturgeon, and Ecosystem Health, P.S.Levin and F.B.Schwing, eds. NOAA Tech Memo NMFS-NWFSC-109. Pages 60-98.

Hazen, E.L., W.J. Sydeman, I.D. Schroeder, S.A. Thompson, B.K. Wells, S.T. Lindley, C.B. Grimes, S.J. Bograd, and F.B. Schwing. 2011. Status of the California Current Ecosystem: Major EBM Drivers and Pressures. *In* Technical background for an Integrated Ecosystem Assessment of the California Current: Groundfish, Salmon, Green Sturgeon, and Ecosystem Health, P.S.Levin and F.B.Schwing, eds. NOAA Tech Memo NMFS-NWFSC-109. Pages 99-110.

Lindley, S. T., D. L. Erickson, M. L. Moser, G. Williams, O. P. Langness, B. W. McCovey, Jr., M. Belchik, D. Vogel, W. Pinnix, J. T. Kelly, J. C. Heublein, and A. P. Klimley. 2011. Electronic tagging of green sturgeon reveals population structure and movement among estuaries. Transactions of the American Fisheries Society 140: 108-122. Robert L. Kendall Award for best paper of 2011.

Payne, J., K. Andrews, C. Chittenden, G. Crossin, F. Goetz, S. Hinch, P. Levin, S. Lindley, M. Melnychuk, T. Nelson, E. Rechisky, and D. Welch. 2010. Tracking Fish Movements and Survival on the Northeast Pacific Shelf. *In* Life in the World's Oceans: Diversity, Distribution and Abundance, A. D. McIntyre, ed. Blackwell. (Oxford)

Lindley, S. T., C. B. Grimes, M. S. Mohr, W. Peterson, J. Stein, J. Anderson, D. Bottom, L. Botsford, C. Busack, T. Collier, J. Ferguson, A. Grover, D. Hankin, R. Kope, P. Lawson, A. Low, B. MacFarlane, K. Moore, M. Palmer-Zwahlen, F. Schwing, J. Smith, C. Tracy, R. Webb, B. Wells, and T. H. Williams. 2009. What caused the Sacramento River fall chinook salmon stock collapse? NOAA Tech Memo NMFS-SWFSC 447.

Mora, E. A., S. T. Lindley, D. L. Erickson and A. P. Klimley. 2009. Do impassable dams and flow regulation constrain the distribution of green sturgeon in the Sacramento River, California? Journal of Applied Ichthyology 25(S2): 39-47.

Heublein, J. C., J. T. Kelly, C. E. Crocker, A. P. Klimley, and S. T. Lindley. 2009. Migration of green sturgeon, *Acipenser medirostris*, in the Sacramento River. Environmental Biology of Fishes 84(3): 245-258.

Rundio, D.E. and S. T. Lindley. 2008. Seasonal patterns of terrestrial and aquatic prey abundance and their use by *Oncorhynchus mykiss* in a coastal basin with a Mediterranean climate. Transactions of the American Fisheries Society 137: 467-480.

Lindley, S. T., M. L. Moser, D. F. Erickson, M. Belchik, D. Welch, E. Rechiski, J.T. Kelly, J. Heublein and A. P. Klimley. 2008. Marine migration of North American green sturgeon. Transactions of the American Fisheries Society 137: 182-194.

Schick, R. S., and S. T. Lindley. 2007. Directed connectivity among fish populations in a riverine network. Journal of Applied Ecology 44: 1116-1126.

Adams, P. B., C. Grimes, J. E. Hightower, S. T. Lindley, M. L. Moser and M. J. Parsley. 2007. Population status of North American green sturgeon *Acipenser medirostris*. Environmental Biology of Fishes 79: 339-356.

Moser, M. L. and S. T. Lindley. 2007. Use of Washington estuaries by subadult and adult green sturgeon. Environmental Biology of Fishes 79: 243-253.

Lindley, S. T., E. Mora, R. S. Schick, P. B. Adams, J. J. Anderson, S. Greene, C. Hanson, B. P. May, D. McEwan, R. B. MacFarlane, C. Swanson, and J. G. Williams. 2007. Framework for assessing viability of Chinook salmon and steelhead in the Sacramento-San Joaquin basin. San Francisco Estuary and Watershed Science 5(1), Article 4.

Williams, J. G., J. J. Anderson, S. Greene, C. Hanson, S. T. Lindley, A. Low, B. May, D. McEwan, M. S. Mohr, R. B. MacFarlane, and C. Swanson. 2007. Monitoring and research needed to manage the recovery of threatened and endangered Chinook and steelhead in the Sacramento-San Joaquin basin. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-SWFSC-399.

Newman, K. B. and S. T. Lindley. 2006. Accounting for demographic and environmental stochasticity, observation error and parameter uncertainty in fish population dynamics models. North American Journal of Fisheries Management 26: 685-701.

Newman, K. B., S. T. Buckland, S. T. Lindley, L. Thomas, and C. Fernandez. 2006. Hidden process models for animal population dynamics. Ecological Applications 16: 74-86.

Lindley, S. T., R. S. Schick, A. Agrawal, M. Goslin, T. Pearson, E. Mora, J. J. Anderson, B. May, S. Greene, C. Hanson, A. Low, D. McEwan, R. B. MacFarlane, C. Swanson, and J. G. Williams. 2006. Historical population structure of Central

Valley steelhead and its alteration by dams. San Francisco Estuary and Watershed Science. Volume 4, Issue 1, Article 3. http://repositories.cdlib.org/jmie/sfews/vol4/iss1/art3.

Schick, R. S., A. L. Edsall and S. T. Lindley. 2005. Historical and current distribution of Pacific salmonids in the Central Valley, CA. U. S. Dept. Commer., NOAA Tech. Memo. NMFS-SWFSC-369.

Lindley, S. T., R. Schick, B. P. May, J. J. Anderson, S. Greene, C. Hanson, A. Low, D. McEwan, R. B. MacFarlane, C. Swanson, and J. G. Williams. 2004. Population structure of threatened and endangered chinook salmon ESUs in California's Central Valley basin. U. S. Dept. Commer., NOAA Tech. Memo. NMFS-SWFSC-360.

Lindley, S. T. 2003. Estimation of population growth and extinction parameters from noisy data. Ecological Applications 13: 806–813.

Lindley, S. T., and M. S. Mohr. 2003. Modeling the effect of striped bass (*Morone saxatilis*) on the population viability of Sacramento River winter-run chinook salmon (*Oncorhynchus tshawytscha*). Fishery Bulletin (U.S.) 101: 321–331.

Lindley, S. T., M. S. Mohr, and M. H. Prager. 2000. Monitoring protocol for Sacramento River winter chinook salmon, *Oncorhynchus tshawytscha*: application of statistical power analysis to recovery of an endangered species. Fishery Bulletin (U.S.) 98: 759–766.

Brodeur, R. D., W. T. Peterson, G. W. Boehlert, E. Casillas, M. H. Schiewe, M. B. Eldridge, S. T. Lindley, J. H. Helle, and W. R. Heard. 2000. A coordinated research plan for estuarine and ocean research on Pacific salmon. Fisheries 25: 7–16.

Chai, F., S. T. Lindley, J. R. Toggweiler, and R. T. Barber. 2000. Testing the importance of iron and grazing in the maintenance of the high nitrate condition in the equatorial Pacific Ocean: a physical-biological model study. *In* The Changing Ocean Carbon Cycle: a midterm synthesis of the Joint Global Ocean Flux Study. *Edited by* R. B. Hanson, H. W. Ducklow, and J. G. Field. International Geosphere-Biosphere Programme Book Series 5. Cambridge University Press. pp. 155–186.

Bender, M., J. Orchardo, M. Dickson, R. Barber, and S. Lindley. 1999. In vitro O_2 fluxes compared with ^{14}C production and other rate terms during the JGOFS Equatorial Pacific experiment. Deep-Sea Research I 46: 637–654.

Lindley, S. T., and R. T. Barber. 1998. Phytoplankton response to natural and experimental iron addition. Deep-Sea Research II 45: 1135–1150.

Myers, J. M., R. G. Kope, G. J. Bryant, D. Teel, L. J. Lierheimer, T. C. Wainwright, W. S. Grant, F. W. Waknitz, K. Neely, S. T. Lindley, and R. S. Waples. 1998. Status review of chinook salmon from Washington, Idaho, Oregon, and California. U. S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-35, 443 p.

Foley, D. G., T. D. Dickey, M. J. McPhaden, R. R. Bidigare, M. R. Lewis, R. T. Barber, S. T. Lindley, C. Garside, D. V. Manov, and J. D. McNeil. 1997. Longwaves and primary productivity variations in the equatorial Pacific at 0˚, 140˚W. Deep-Sea Research II 44: 1801–1826.

Landry, M. R., R. T. Barber, R. R. Bidigare, F. Chai, K. H. Coale, H. G. Dam, M. R. Lewis, S. T. Lindley, J. J. McCarthy, M. R. Roman, D. K. Stoecker, P. G. Verity

and J. R. White. 1997. Iron and grazing constraints on primary production in the central equatorial Pacific: An EqPac synthesis. Limnology and Oceanography 42: 405–418.

Chai, F., S. T. Lindley, and R. T. Barber. 1996. Origin and maintenance of a high nitrate condition in the equatorial Pacific. Deep-Sea Research II 43: 1031–1064.

Barber, R.T., M. P. Sanderson, S. T. Lindley, F. Chai, J. Newton, C. C. Trees, D. G. Foley, and F. P. Chavez. 1996. Primary productivity and its regulation in the equatorial Pacific during and following the 1991–1992 El Niño. Deep-Sea Research II 43: 933 –969.

Lindley, S. T., R. R. Bidigare, and R. T. Barber. 1995. Phytoplankton photosynthesis parameters along 140˚W in the equatorial Pacific. Deep-Sea Research II 42: 441–463.

Barber, R. T., F. Chai, S. T. Lindley, and R. R. Bidigare. 1994. Regulation of equatorial primary production. *In*: Global Fluxes of Carbon and its Related Substances in the Coastal Sea-Ocean-Atmosphere System. *Edited by* S. Tsunogai, K. Iseki, I. Koike, and T. Oba. Proceedings of the 1994 IGBP Symposium, Sapporo, Japan. pp. 294–300.

Kolber, Z. S., R. T. Barber, K. H. Coale, S. E. Fitzwater, R. M. Greene, K. S. Johnson, S. Lindley, and P. G. Falkowski. 1994. Iron limitation of phytoplankton photosynthesis in the equatorial Pacific Ocean. Nature 371: 145–149.

Martin, J. H., K. H. Coale, K. S. Johnson, S. E. Fitzwater, R. M. Gordon, S. J. Tanner, C. N. Hunter, V. A. Elrod, J. L. Nowicki, T. L. Coley, R. T. Barber, S. Lindley, A. J. Watson, K. Van Scoy, C. S. Law, M. I. Liddicoat, R. Ling, T. Stanton, J. Stockel, C. Collins, A. Anderson, R. Bidigare, M. Ondrusek, M. Latasa, F. J. Millero, K. Lee, W. Yao, J. Z. Zhang, G. Friederich, C. Sakamoto, F. Chavez, K. Buck, Z. Kolber, R. Greene, P. Falkowski, S. W. Chisholm, F. Hoge, R. Swift, J. Yungel, S. Turner, P. Nightingale, A. Hatton, P. Liss, and N. W. Tindale. 1994. Testing the iron hypothesis in ecosystems of the equatorial Pacific Ocean. Nature 371: 123–129.

Henley, W. J., S. T. Lindley, G. Levavasseur, C. B. Osmond, and J. Ramus. 1992. Photosynthetic response of *Ulva rotundata* to light and temperature during emersion on an intertidal sand flat. Oecologia 89: 516–523.

Henley, W. J., G. Levavasseur, L. A. Franklin, S. T. Lindley, J. Ramus, and C. B. Osmond. 1991. Diurnal responses of photosynthesis and fluorescence in *Ulva rotundata* acclimated to sun and shade in outdoor culture. Marine Ecology Progress Series 75: 19–28.

In review:

Mantua, N., H. Bell, M. Daniels, J. Rinchard, J. Ludwig, D. Tillitt, D. Honeyfield, T. Lipscomb, J. Field, S. Lindley, T.H. Williams, J. Harding, A. Todgham, N. Fangue, C. Jeffres, A. Ward, J. Kindopp, D. Cocherell, F. Rowland, C. Richter, D. Walters, S. Foott, K. Kwak, M. Adkison, B. Kormos, P. Harte, F. Colwell, C.P. Suffridge, K. Shannon, B. Finney, I. Ruiz-Cooley, S. Litvin, A. Cranford, C. Ambrose, A. Reed, and R.C. Johnson. Widespread thiamine deficiency in

California Salmon linked to simplified anchovy-dominated marine prey base. Proc Nat Acad Sci.

Ford, M.A., S.T. Lindley, K.A. Barnas, A.O. Shelton, B.C. Spence, L.A. Weitkamp, D.M. Holzer, D.A. Boughton, E.E. Holmes, J.M. Myers, C.E. Jordan, H. Fish, M. Lierman, M.R. O'Farrell, N.J. Mantua, R.C. Johnson, W.H. Satterthwaite, and T.H. Williams. Abundance trends of Pacific salmon during a quarter century of ESA protection. Fish and Fisheries.

SELECTED REPORTS:

Weitkamp, L., E. Farley, A. Andrews, A. Billings, B. Chasco, C. Deeg, I. Ekmanis, S. Garcia, B. Gray, K. Howard, C. Kovach, S. Lindley, M. Litz, R. McCabe, J. Moss, J. Murphy, D. Nicolls, A. Pinchuk, T. Rogers, K. Shedd, W. Strasburger, G. Troina, A. Wells, B. Wells, and E. Wisegarver. 2022. Preliminary Findings of the International Year of the Salmon Pan-Pacific Winter High Seas Expedition Onboard the NOAA Ship Bell M. Shimada, during February 1-March 7, 2022. NPAFC Doc. [insert number]. 31 pp. USA (Available at https://npafc.org).

Medellín-Azuara, J., J. Lund, P. Goodwin, C. Enright, B. Bray, R. Argent, J. Ariyama, J. F. Bratton, J. Burau, M. Chotkowski, A. Escriva-Bou, J. Lee, S. Lindley, M. McWilliams, S. Peckman, N. Quinn, D. Senn, S. Siegel and J. Wolfe. 2017. Integrated Modeling of Estuarine Systems: Lessons for the Sacramento-San Joaquin Delta. UC Davis and the Delta Stewardship Council. 19 p.

He, X., J.C. Field, D.E. Pearson, L. Lefebvre, and S. Lindley. 2015. Status of bocaccio, *Sebastes paucispinis*, in the Conception, Monterey and Eureka INPFC areas for 2015. Pacific Fishery Management Council, Portland, Oregon. 460 p.

Payne, J., D.L. Erickson, M. Donnellan, and S.T. Lindley. 2015. Migration and habitat use of green sturgeon (*Acipenser medirostris*) near the Umpqua River estuary. Prepared for the Oregon Wave Energy Trust, Portland OR.

Lindley, S.T. and H. Davis. 2010. Using model selection and model averaging to predict the response of Chinook salmon to dam removal. A report for NOAA and USFWS in support of the Secretarial Decision on Klamath River dam removals.

Nelson, T.C., P. Doukakis, S.T. Lindley, A. Drauch Schreier, J.E. Hightower, L.R. Hildebrand, R.E. Whitlock, and M.A.H. Webb. 2010. Modern technologies for an ancient fish: tools to inform management of migratory sturgeon stocks. A report for the Pacific Ocean Shelf Tracking (POST) Project.

Lindley, S. T., C. B. Grimes, M. S. Mohr, W. Peterson, J. Stein, J. Anderson, C. Busack, L. Botsford, T. Collier, D. Bottom, A. Grover, D. Hankin, R. Kope, P. Lawson, A. Low, J. Ferguson, B. MacFarlane, M. Palmer-Zwahlen, F. Schwing, J. Smith, C. Tracy, R. Webb, B. Wells, and T. H. Williams. 2009. What caused the Sacramento River fall chinook salmon stock collapse? Report to the Pacific Fishery Management Council.

Cummins, K., C. Furey, A. Giorgi, S. Lindley, J. Nestler, and J. Shurts. 2008. Listen to the river: an independent review of the CVPIA fisheries program. Prepared under contract with Circlepoint for the U.S. Bureau of Reclamation and the U.S. Fish and Wildlife Service. 90 p.

Deas, M., P. Goodwin, S. Lindley, C. Woodley and T. Williams. 2008. Temperature Management and Modeling Workshop in support of an Operations Criteria and

Plan Biological Assessment and Biological Opinion. Report to the CALFED Science Program.

Lindley, S. T., L. Wooninck, and C. B. Grimes (eds.). 2007. Acoustic tagging and the Integrated Ocean Observing System: report from the workshop held 14-15 November 2006 in Santa Cruz, CA. NMFS SWFSC Administrative Report 2007-01.

Lindley, S., C. Legault, P. Mundy, J. Murphy and R. Waples. 2006. NMFS Science Center Evaluation of the Peer Reviews of the Long-Term Central Valley Project and State Water Project Operations Section 7 Consultation. 16 p. http://swr.nmfs.noaa.gov/pdf/ScienceCenterReportOnOCAPBiOpReviews.25May06.final.pdf.

Kitchell, J.F., C.Grimes, S.T. Lindley, D.Otis and C. Schwarz. 2003. Report to the Adaptive Management Work Group, Glen Canyon Dam Adaptive Management Program: an independent review of ongoing and proposed scientific methods to assess the status and trends of the Grand Canyon population of the humpback chub (*Gila cypha*).

Adams, P. B., C. B. Grimes, S. T. Lindley, and M. L. Moser. 2002. Status review for North American green sturgeon, *Acipenser medirostris*. National Marine Fisheries Service, Santa Cruz, California. 50 p.

Lindley, S. T. 1997. Estimating escapement of the Sacramento River winter-run chinook: a review of methods. NMFS SWFSC Administrative Report T-97-02. 19 p.