Sean A. Hayes

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EDUCATION

NOAA Leadership Competencies Development Program (LCDP), 2014 – 2015
Ph.D., Ecology and Evolutionary Biology, University of California, Santa Cruz, CA, 2002
B.S., Biology, Cornell College of Ag and Life Science, Ithaca, NY, 1994
AAS, Fisheries and Wildlife Tech, State University of New York, Cobleskill NY 1991

RESEARCH INTERESTS

Biology of marine and anadromous fishes and marine mammals; Large-scale ecosystem dynamics; Social influence of fisheries on society.

SELECTIVE SERVICE

- Integrated Ocean Observing System Animal Telemetry Network Steering Committee member (2013-present)
- California Department of Fish and Wildlife's (CDFW) Coastal Monitoring Plan Technical Implementation Team (2011-present)
- Collaborative Adaptive Management Team Salmon Scoping Team (2014)
- Hosted 14th Salmon Ocean Ecology Meeting in Santa Cruz CA (2014)
- South-Delta Salmonid Restoration Collaboration (SDSRC) (2013)
- CDFW Central Valley Predation Workshop Strike Team (2012-2013)
- NMFS Southwest Region (SWR) and CDFW coho salmon recovery planning (2005-2014)
- Bay Delta Conservation Plan (BDCP) Fish Facilities Baseline Juvenile Salmonid Study Committee (2012-2013)
- Marine Mammal Commission panel to review biological effects of Point Reyes oyster culture on harbor seal colony (2010)

EXPERIENCE

NOAA Southwest Fisheries Science Center, La Jolla CA **10/2014-01/2015**

Acting Deputy Director of SWFSC (ZP 05-01-temporary)

- Provide leadership support to ~375 staff across 5 divisions
- Coordinate SWFSC activities with other FMC's and HQ

- Ensure training in procedural/regulation compliance
- Respond to short-term facility issues
- Prepare staff for and attend Magnuson-Stevens Act (MSA) council meetings
- Review all center manuscript submissions (50 during fall 2014)
- Organized a PMAC and a center wide speed talk session
- Conduct long range research cruise planning and scheduling in parallel for 3 SWFSC Divisions, coordinated with Scripps CalCOFI program and NMFS NWFSC
- Assignment part of NOAA LCDP, to train leadership skills for ZP-05 & SES positions.

NOAA Southwest Fisheries Science Center, Santa Cruz, CA 10/2005 - Present

Research Fisheries Biologist (ZP 04-04), Salmon Ocean & Estuarine Ecology Program Manager

Supervisory and Management Duties

Salmon Ocean & Estuarine Ecology Program Manager since October 2010

- Developed highly technical, multi disciplinary integrated research programs that address NMFS Endangered Species Act and MSA research and management objectives
- Supervise 16 employees
- Acquired/managed as principal or co-investigator $10 million in contracts/grants for complex integrated freshwater and marine ecosystem science.
- Managed the FE Division's Ecology Branch Section 10 Endangered Species Act permits
- Manage dynamic budget ~$2 million/yr of NMFS base funds and reimbursables
- Facilitation and conflict management with collaborators, stakeholders and land-owners
- Train staff in all of the above

Research Program

Oversaw the creation, development and/or expansion of six research efforts including:

- Large Riverine Survival and Migration Behavior Studies
- Juvenile Salmonid Predation Studies
- Ocean and Estuarine Ecology Studies
- Watershed Ecosystem and Population Dynamics Studies
- Coho Salmon Captive Broodstock
- Fisheries Technology Development

Collaborative Experience

Extensive experience working across management units to develop/implement research studies

- Developed and led coastal salmon research with CDFW, NMFS WCRO, UCSC, Cal Poly, non-profit NGO, and private lumber company
- Created coast-wide ocean salmon survey between NMFS NWFSC and SWFSC
- Lead fish telemetry studies across 500km Sacramento river in collaboration with CDFW, USFWS, UC Davis, and Cramer Fish Science
- Lead regionally focused salmon predation studies in collaboration with USFWS, USGS, CDFW, CDWR, University of Washington, UCSC, and SWFSC FRD

University of California Santa Cruz (UCSC), CA **10/2005 - Present**
Assistant Adjunct Professor of Ocean Sciences University of California Santa Cruz

- Performed guest lectures for UCSC, California State's Moss Landing Marine Labs, State University of New York Cobleskill, and California Polytechnic Institute.
- Advised Graduate students

NOAA Northwest Fisheries Science Center, Newport, OR **6/2009 - 9/2009**
NOAA Rotational Assignment Program (NRAP)
Served a temporary appointment with the NWFSC Fish Ecology group.

- Studied the research programs to develop inter-center collaborations and bring institutional knowledge to the SWFSC's salmon estuarine and ocean ecology program
- Conducted size biased juvenile to adult marine survival analysis of Chinook salmon populations returning to the Columbia River through scale analysis

NOAA Southwest Fisheries Science Center, Santa Cruz, CA **1/2002 - 9/2005**
Post-Doctoral Researcher

- Watershed Ecosystem and Salmon Population Dynamics Studies
- Salmon Hatchery/Wild Interaction studies

NOAA Southwest Fisheries Science Center, Honolulu, HI **4/2001 - 12/2001**
Ecologist - Protected species investigation

- Conducted three month field assessment of endangered Hawaiian Monk Seal populations at French Frigate Shoals, Northwest Hawaiian Islands
- Studied shark predation effects on population
- Studied foraging ecology using a 'crittercam' (video cameras attached to seals)
- Analyzed field data from radio-telemetry study to assess survivorship and movements of monk seal pups
- Analyzed observation data to assess shark predation effects on monk seal pups

University of California Santa Cruz, CA **9/1994 - 3/2000**
Graduate Student Researcher

- Conducted PhD Thesis research focused on mating strategies and reproductive success of male harbor seals in central California.
- Conducted additional fieldwork conducted on Amsterdam Island (Indian Ocean) on flight energetics and foraging ecology of yellow-nosed albatross using doubly labeled water measurements, satellite telemetry and altimeters.
- Conducted field work on Sub-Antarctic fur seals.
- Conducted acoustic and behavioral research on blue and fin whales in Baja California Mexico, Central California and Mediterranean Sea

REVIEWER EXPERIENCE

- Reviewed manuscripts for the following peer reviewed publications: *Aquatic Biology, Evolution, Canadian Journal of Zoology, Canadian Journal of Fisheries and Aquatic Sciences, Conservation Genetics, Ecology, Environmental Biology of Fishes, Journal of*

Fish Biology, *Marine Mammal Science*, *Marine Ecology Progress Series*, *Molecular Ecology*, *North American Journal of Fisheries Management*, *Proceedings of the Royal Society-B*, *Reviews in Fish Biology and Fisheries*, and *Transactions of the American Fisheries Society*.

- Reviewed grants for the National Oceanographic Partnership Program

AFFILIATIONS

American Fisheries Society member
Monterey Bay Salmon and Trout Project NOAA liaison board member
Marine Mammal Society member
California Representative to Salmon Ocean Ecology Conference program.

AWARDS

NOAA Bronze Medal Award for service to FEMA during Hurricane Katrina Recovery Effort

SELECTED PRESENTATIONS

Hayes, SA. (2014) California's water; where do salmon fit in. NOAA Central Library Brown Bag Seminar, Silver Spring Maryland, Dec 2, 2014.

Hayes, SA, Ammann, A, Hassrick, JL, Klimley, AP, Kurth, R, Merz, J, Lindley ST, Michel CJ, Notch, J, Null, R, Satterthwaite, W, Zeug, S. (2014) Out to sea and home free? Shifting the salmon freshwater-ocean survival paradigm: Is selection now favoring shorter fresh water life histories? 8th Biennial Bay-Delta Science Conference Oct 30, 2014.

Smith, JM, Cane, M. Cutter, G, Demer, DA, Gingras, M, Hayes, SA, Huff, D, Michel, C. (2014) Using a predator density manipulation study to quantify salmon smolt predation in the San Joaquin River. Is selection now favoring shorter fresh water life histories? 8th Biennial Bay-Delta Science Conference Oct 30, 2014.

Hassrick, JL, Ammann, AJ, Null, RE, Rueth, JC, Michel, CJ, Notch, J, Demetras, NJ, Hayes, SA. (2014) Sacramento River reach-specific survival rates of emigrating winter-run Chinook salmon smolts. 8th Biennial Bay-Delta Science Conference Oct 30, 2014.

Demer, DA, Cutter, GR, Hayes, SA, Renfree, J, Smith, JM, Huff, D, Michel CJ, (2014). Mobile acoustic sampling to quantify the distributions and behaviors of salmon smolt predators in the San Joaquin River. 8th Biennial Bay-Delta Science Conference Oct 30, 2014.

Amman A, Huff DD, Hayes SA, Harding JA, MacFarlane RB (2013) Ocean habitat of juvenile Chinook salmon at the southern end of their range. Paper presented at the NPAFC Third International Workshop on Migration and Survival Mechanisms of Juvenile Salmon and Steelhead in Ocean Ecosystems 2013, Honolulu Hawaii, Apr 25-26, 2013.

Cunningham KA, Hayes SA, Rub MW, Reichmuth C. (2012) High-frequency hearing in seals and sea lions and the implications for detection of ultrasonic coded transmitters. In: Acoustical Society of American 164th meeting, Kansas City, Missouri, 22-26, Oct 2012. vol 132. p 2009.

Friedland KD, Ward BR, Welch DW, Hayes SA (2013) The effects of post-smolt growth and thermal regime on the marine survival of steelhead trout (*Oncorhynchus mykiss*) from the Keogh River, B.C. Paper presented at the NPAFC Third International Workshop on Migration and Survival Mechanisms of Juvenile Salmon and Steelhead in Ocean Ecosystems 2013, Honolulu Hawaii.

Hassrick JL, Sydeman WJ, Santora JA, Hayes SA (2013) Coastal association of juvenile Chinook salmon and krill in the northern California Current. Paper presented at the North Pacific Anadromous Fish Commission Third International Workshop on Migration and Survival Mechanisms of Juvenile Salmon and Steelhead in Ocean Ecosystems, Waikiki, Hawaii, Apr 25-26.

Hayes SA (2013) KEYNOTE: Challenges, changes and contingencies for California coast salmonids. In: 47th Annual Conference of the California-Nevada Chapter of the American Fisheries Society: Biodiversity of California-Nevada Fishes, Davis, CA, Apr 4-6, 2013.

Hayes SA, Amman AJ, Chapman ED, Frechette DM, Huff DD, Michel CJ, Merz JE, Null R, Osterback AK, Satterthwaite WH, Singer G, Zeug SC (2013) Shifting the Salmon Freshwater-Ocean Survival Paradigm: Are Fewer Juvenile Salmon Entering the Marine Food Web Than Previously Thought? In: American Fisheries Society 143rd Annual Meeting, Little Rock Arkansas, https://afs.confex.com/afs/2013/webprogram/Paper11621.html.

Sabal M, Hayes SA, Carr M, Merz JE, Setka J, Del Real C, Bilski R (2013) Striped Bass Predation On Juvenile Salmon: Take 'Em Or Leave 'Em. In: American Fisheries Society 143rd Annual Meeting, Little Rock Arkansas, https://afs.confex.com/afs/2013/webprogram/Paper12893.html.

Hayes, S.A., Ammann, A.J., Bond, M.H., et al. (2009-2013) From Ridge Tops to Wave Tops, exploring the life history of Central California Steelhead in stream, estuarine and ocean habitats. *Invited speaker:* Oregon State University Hatfield Marine Science Center, Jul 9 2009, Moss Landing Marine Labs. Nov 12, 2009, San Jose State University Feb 10, 2010, NWFSC Monster Jam seminar series Mar 14, 2014.

Hayes, S.A. (2012). Salmon in the California Central Valley "Ecosystem". *Invited speaker*: University of Washington School of Fisheries and Aquatic Species. Dec 6, 2012.

Hassrick JL, Ammann AJ, Crandall E, Garza JC, Harding J, Hayes SA, Lindley ST, Losekoot M, Santora JA, Sydeman WJ (2012) Salmon-krill dynamics and dispersal of Central Valley Chinook stocks entering the California Current Ecosystem. Paper presented at the 7th Biennial Bay-Delta Science Conference, Sacramento, CA, Oct 16-18, 2012.

Hayes SA, Ammann AJ, Chapman ED, Hassrick J, Kindopp J, Klimley AP, Kurth R, Lindley ST, Cyril J. Michel, Null RE, Merz JE, Singer GP, Zeug SC (2012) Tracking juvenile salmon with micro-transmitter technology: Lessons learned from a pilot Sacramento River study. In: 7th Biennial Bay-Delta Science Conference; Ecosystem Reconciliation: Realities Facing the San Francisco Estuary Sacramento, CA, Oct 16-18, 2012.

Hayes SA, Beckman B, Crandall E, Garza JC, Emmett RL, Harding JA, O'Farrell MR, Wells BK Jacks and Jills or just Jacks? (2012) A potential method for ocean surveys to reduce uncertainty in sibling forecast models. In: 14th Salmon Ocean Ecology Meeting, Newport Or http://oregonstate.edu/conferences/event/salmonoceanecology/ Mar 21-22, 2012.

Hayes SA, Bond MH, Moore JW, Satterthwaite WH (2012) Exploring the if's, when's and where's of steelhead estuarine and ocean habitat use (with speculation about the why's?) In: 142 Annual Meeting of the American Fisheries Society, Minneapolis-St Paul MN, Aug 19-23, 2012.

Hayes, S.A., Amman, A., Bond, M.H., Collins, A., Frechette, D.M., Hanson, C.V., Harding, J., Jones, A.W., MacFarlane, B., Osterback, A.K., Perez, J., Ralston, I., Sturm, E.A., and Wells, B.K. (2011) Challenges to Coho Recovery in Central California-Insights from a

Local Life Cycle Station. *In* 29th Annual Salmonid Restoration Conference, San Luis Obispo.

Hayes, S.A., Amman, A., Bond, M.H., Collins, A., Frechette, D.M., Harding, J., Jones, A.W., MacFarlane, B., and Osterback, A.K. (2011) Bar Built estuary and lagoon use by central California salmonids; pre-ocean purgatory or lost paradise? *In* 29th Annual Salmonid Restoration Conference, San Luis Obispo.

Hayes, S.A., Teutschel, N.M., Michel, C., Champagne, C., Frechette, D., Costa, D.P., Mellinger, D., Yack, T., and MacFarlane, R.B. (2011) Mobile Receivers: Releasing the mooring to see where fish go. Salmon Ocean Ecology Meeting, Seattle WA.

Michel CJ, Retford NA, Sobieraj AJ, Amman A, Hayes SA, Lindley ST (2011) Which way home? Route selection and movement of returning California Central Valley adult Chinook salmon near their upper thermal limit. In: 141St Annual Meeting of American Fisheries Society, New Frontiers in Fisheries Management and Ecology: Leading the way in a changing world, Seattle WA, Sept 4-8, 2011.

Frechette, D., Osterback, A.K., Hayes, S.A., Bond, M.H., Moore, J.W., Shaffer, S.A., and Harvey, J.T. (2010) Where does marine survival begin? Tracking sources of smolt mortality between the smolt trap and the sea. *In* 12th Annual Salmon Ocean ecology meeting. *Edited by* R.B. MacFarlane, Santa Cruz CA.

Hayes, S.A., Bond, M.H., Charrier, G., Frechette, D.M., Garza, J.C., Gilbert-Horvath, E., MacFarlane, R.B., Moore, J.W., Moss, C., Osterback, A.-M.K., Pearse, D.E., Shaffer, S.A., Streig, D., and Sturm, E. (2010) Exploring the impacts of and ways to improve salmon hatcheries as a recovery tool in small coastal watersheds. *In* 44th Annual meeting of American Fisheries Societey Cal-Neva chapter, Redding CA.

Hayes, S.A., Hanson, C.V., Bond, M.H., Pearse, D.E., Jones, A., Garza, J.C., and MacFarlane, R.B. (2010) Emigration behavior of resident and anadromous juvenile *Oncorhynchus mykiss*: exploring the interaction among genetics, physiology and habitat. *In* Pacific Coast Steelhead Management Meeting, Redmond, OR.

Hayes, S.A., Ammann, A.J., Bond, M.H., MacFarlane, RB. (2009) Using electronic tags to study central California steelhead and coho salmon. 11th Annual Salmon Ocean ecology meeting, Juneau Alaska.

Hayes, S. A., M. H. Bond, and R. B. MacFarlane. (2008) Using Archival Tags to Study Central California Steelhead and Coho Salmon. Advances in Fish Tagging and Marking Technology, American Fisheries Society, Auckland, New Zealand Feb 24-28 2008.

Hayes, S.A. (2007) Exploring the evolution of aquatic mating systems in pinnipeds. *In* 17th Biennial Conference on the Biology of Marine Mammals. Capetown South Africa.

Bond, M.H., Hanson, C.V., Hayes, S.A., et al. (2007) Does loss of the estuary = loss of anadromy in southern steelhead? *In* AFS 137th Annual Meeting. San Francisco, California Sept 2-6th.

Bond, M.H., Hayes, S.A., Sturm, E., et al. (2007) Coho Salmon on the edge, challenges faced at the southern end of their range. *In* AFS 137th Annual Meeting. San Francisco, California Sept 2-6th.

Bond, M.H., Hayes, S.A., Hanson, C.V., et al. (2007) The influence of estuarine habitat on coastal California steelhead ocean survival. *In* California Estuarine Research Society. Bodega Bay Marine Lab, Mar 18-20th.

Hayes, S.A., Ammann, A.J., Bond, M.H., et al. (2007) Bar-built estuaries and salmonids on the central coast: A case study of Scott Creek. *In* California Estuarine Research Society. Bodega Bay Marine Lab, Mar 18-20th.

Hayes, S.A., Bond, M.H., Freund, E.V., et al. (2007) Using archival tags to monitor freshwater and marine habitat use and predation of central California steelhead and coho salmon. *In* American Fisheries Society 137th Annual Meeting. San Francisco, California Sept 2-6th.

Hayes, S.A., Bond, M.H., Harding, J., et al. (2007) From barriers to beaches, monitoring central California coho and steelhead in Scott Creek. *In* AFS 137th Annual Meeting. San Francisco, California Sept 2-6th.

Bond, M.H., Hayes, S.A., Hanson, C.V., et al. (2006) Movement patterns of steelhead in a central California stream: using passive integrated transponders to monitor fish behavior. *In* AFS 136th Annual Meeting, Lake Placid, NY, Sept. 10-14.

Hayes, S.A., Hanson, C.V., Bond, M.H., et al. (2006) 50 years since Shapovalov and Taft: Steelhead on the central California coast today. *In* AFS 136th Annual Meeting, Lake Placid, NY, Sept. 10-14.

Bond, M.H., Hayes, S.A., Hanson, C.V., et al. (2005) Size-Dependent Mortality of Coastal California Steelhead and the Estuarine Life History. In American Fisheries Society 135th Annual Meeting. Anchorage, AK.

Pearse, D.E., Hayes, S.A., and Garza, J.C. (2005) Over the falls? Genetic interactions between anadromous steelhead and resident rainbow trout in a small coastal California stream. In Society for the Study of Evolution. Fairbanks, AK.

Hayes, S.A., Bond, M.H., Hanson, C.V., et al. (2005) Reversed growing seasons for coastal salmonids living at their southern extreme: Growth patterns of a steelhead living in a Mediterranean climate. In AFS 135th Annual Meeting. Anchorage, AK.

Hayes, S.A., Bond, M.H., Hanson, C.V., et al. (2004) Interactions between endangered wild and hatchery salmonids; can the pitfalls of artificial propagation be avoided in small coastal streams? *In* Fisheries Society of the British Isles Nature and Culture: Comparative Biology and Interactions of Wild and Farmed Fish. Imperial College, London.

Hayes, S.A., Hanson, C.V., Bond, M.H., et al. (2003) Seasonal Fluctuations of Na+, K+ -ATPase in Central California Salmonids prior to Ocean Entry. In West. Div. of AFS. San Diego, CA.

GRANTS

Anadromous Fisheries Restoration Program and CADFW 2014- **Winter Run Chinook acoustic tagging and survival study** $160,000. Collaboration with A. Ammann, J. Hassrick

California Fisheries Restoration Grant Program 2013 **Scott Creek Life Cycle Monitoring Station** $494,000. Collaboration with J. Kiernan, S. Sogard, D. Pearse, C. Garza.

California Department of Water Resources 2013 **Quantifying and manipulating predator densities at the San Joaquin and Old River Confluence to evaluate the effects on juvenile salmonid survival.** PI Sean Hayes. $2,333,000 Collaboration with USBR, USGS, USFWS, CA DFW and CA DWR.

NMFS ASTWG 2011 **Integration of Fish Tracking Receiver on NDBC Buoy Platform** $186,780 collaboration with NWS NOAA Buoy Data Center- P. Lessing and L. Bernard

California Fisheries Restoration Grant Program 2011 **Monitoring Coho Salmon and Steelhead Recovery in Scott Creek Watershed after 2009 Lockheed Martin Wildfire** $309,000 in collaboration with S. Sogard, J. Moore, B. Dietterick

California Fisheries Restoration Grant Program 2011 **Enhancing NOAA SWFSC Coho Captive Broodstock Program** $139,000 in collaboration with E. Sturm

National Cooperative Fisheries Research Program **Movement of adult Chinook salmon across Point Reyes, California: combining acoustic tagging and genetics**. -$182,000, in collaboration with M. O'Farrell and C. Garza

California DFG ERP **Survival and migratory patterns of juvenile spring and fall run Chinook salmon in Sacramento River and Delta** (a JSAT array) $1,746,000 in collaboration with P. Klimley, C. Michel, A. Amman, S. Lindley, J. Merz and B. Null

California OPC Postdoctoral fellow project: **Tracking migration and survival in juvenile fall, winter, and spring run Chinook salmon in the Sacramento River and Delta** $184,000

California DFG AFRP **Survival and migratory patterns of wild juvenile spring and fall run Chinook salmon from Deer and Mill Creeks through the Sacramento River and Delta** (a JSAT array) $400,000 in collaboration with C. Michel, A. Amman, S.Lindley

Bay Delta Conservation Program USBR funding 2010: $439,000 "**Predator densities and associated salmonid smolt mortality around water diversions"** in collaboration with S. Lindley and C. Michel

California Fisheries Restoration Grant Program 2010: **Monitoring the life cycle of coho salmon and steelhead trout in Scott Creek** $612,069

National Science Foundation 2009. **Fire, food webs, and fish** $154,000 collaboration with J. Moore (PI)

West Coast & Polar Regions Undersea Research Center (NURP) 2009: **A low cost roving oceanographic acoustic array for the Northeast Pacific- expanding the role of the elephant seal as an oceanographic sampler** $168,141

California Fisheries Restoration Grant Program 2008: **Monitoring salmonids in Coastal Santa Cruz and San Mateo Counties** $198,299

NOAA Advance Sampling and Technology Working Group 2008**: Multi-scattering detection, enumeration, and identification of anadromous species during migrations in streams and rivers-** $76,000 collaboration with D. Demer (PI)

California Sea Grant Program 2007: **Exploring the impact of avian predators on central California salmonids** $255,000, collaboration with S. Shaffer (PI) and J. Moore

NOAA Advance Sampling and Technology Working Group 2007: **Acoustic identification and enumeration of epipelagic fish and jellyfish** $90,500 collaboration with D. Demer (PI)

California Fisheries Restoration Grant Program 2006: **Coho salmon and steelhead population dynamics on the central California coast: full life cycle monitoring, redd surveys, and coho recolonization** $299,066

California Fisheries Restoration Grant Program 2004: **Monitoring life history traits of ESA-listed salmonids on the central California coast** $192,000

PUBLICATIONS

Hayes, SA, Criss, A, Beechie TJ, Wulff, R Speir,C, and Lindley ST. (*in prep)* California's Central Valley: advancements in science and technology provide a turning point for salmon restoration. Planned submission to: Frontiers in Ecology and the Environment

Demetras, NJ, Huff, DD, Michel CJ, Smith JM, Hayes SA and Lindley ST. (*in prep*) A passive, baited, GPS-enabled predation event recorder to measure juvenile Chinook salmon

predation in a river environment. Planned submission to: North American Journal of Fisheries Management.
Hayes, SA, 2015. Central Valley salmon- finding a balance for fish and water. Fisherman's News February Edition.
Frechette DM, Osterback AK, Hayes SA, Moore A, Shaffer SA, Harvey JT (*in press*) Tracking avian predation of juvenile salmonids in Central California. North American Journal of Fisheries Management.
Phillis C, Moore JW, Buoro M, Hayes S, Garza C, Pearse D. (2014) Shifting thresholds: rapid evolution of migratory life histories in steelhead/rainbow trout, *Oncorhynchus mykiss*. PeerJ PrePrints 2:e361v1 http://dx.doi.org/10.7287/peerj.preprints.361v1 (in review with Journal of Heredity)
Cunningham KA, Hayes SA, Rub MW, Reichmuth C (2014) Auditory detection of ultrasonic coded transmitters by seals and sea lions. Journal of the Acoustical Society of America. 135 (4): 1978-1985 [http://dx.doi.org/10.1121/1.4868371]
Beakes, M.P., Moore, J.W., Hayes, S.A., and Sogard, S.M. 2014. Wildfire and the effects of shifting stream temperature on salmonids. Ecosphere **5**(5): http://dx.doi.org/10.1890/ES1813-00325.00321.
Friedland KD, Ward BR, Welch DW, Hayes SA (2014) The effects of post-smolt growth and thermal regime on the marine survival of steelhead trout (*Oncorhynchus mykiss*) from the Keogh River, B.C. Marine and Coastal Fisheries. 6(1) 1-11. DOI:10.1080/19425120.2013.860065
Hayes SA, Kocik JF (2014) Comparative estaurine and marine migration ecology of Atlantic salmon and steelhead - blue highways and open plains. Rev Fish Biol Fish DOI 10.1007/s11160-014-9348-8
Frechette DM, Collins AL, Harvey JT, Hayes SA, Huff DD, Jones AW, Langford AE, Moore JW, Osterback AK, Retford NA, Satterthwaite WH, Shaffer SA (2013) A bioenergetics approach to assessing potential impacts of avian predation on juvenile steelhead (*Oncorhyncus mykiss*) during freshwater rearing. N Am J Fish Manage 33(5):1024-1038
Hayes SA, Teutschel NM, Michel CJ, Champagne C, Robinson PW, Fowler M, Yack T, Mellinger D, Simmons S, Costa DP, MacFarlane RB (2013) Mobile Receivers: Releasing the mooring to 'see' where fish go. Environ Biol Fish 96(2):189-201 DOI 10.1007/s10641-011-9940-x
Osterback A-MK, Frechette DM, Shelton AO, Hayes SA, Bond MH, Shaffer SA, Moore JW (2013) High predation on small populations: avian predation on imperiled salmonids Ecosphere 4(9):116. http://dx.doi.org/10.1890/ES13-00100.1
Frechette D, et al. (2012) Assessing avian predation of juvenile salmonids using PIT tag recoveries and mark-recapture methods N Am J Fish Manage 32(6):1237-1250, http://dx.doi.org/10.1080/02755947.2012.728171
Hayes SA, Bond MH, Wells BK, Hanson CV, Jones AW, MacFarlane RB (2012) Using archival tags to infer habitat use of Central California steelhead and coho salmon. In: Parsons B, et al. (eds) Proceedings of the 2nd International Symposium on Advances in Fish Tagging and Marking Technology. vol 76. American Fisheries Society, p 471-492
Hayes SA, Hanson CV, Bond MH, Pearse D, Garza JC, MacFarlane RB (2012) Should I stay or should I go? The influence of genetic origin on emigration behavior and physiology by resident and anadromous juvenile *Oncorhynchus mykiss*. N Am J Fish Manage 32(4):772-780

Moore JW, Carlson SM, Twardochleb L, Hwan JL, Fox JM, Hayes SA (2012) Trophic tangles through time: opposing direct and indirect effects of an invasive omnivore PLoS ONE 7(11):e50687

Satterthwaite WH, Hayes SA, Merz JE, Sogard S, Frechette DM, Mangel M (2012) State-Dependent Migration Timing and Use of Multiple Habitat Types in Anadromous Salmonids. Trans Am Fish Soc 141(3):781-794

Eric P Bjorkstedt, Ralf Goericke SM, Ed Weber, William Watson, Nancy Lo, William T Peterson, Richard D Brodeur, Toby Auth, Jennifer Fisher, Cheryl Morgan, Jay Peterson, John Largier, Steven J Bograd, Reginaldo Durazo, Gilberto Gaxiola-Castro, Bertha Lavaniegos, Francisco P Chavez, Curtis A Collins, Bob Hannah, John Field, Keith Sakuma, Will Satterthwaite, Michael O'Farrell, Sean Hayes, Jeff Harding, William J Sydeman, Sarah Ann Thompson, Pete Warzybok, Russell Bradley, Jaime Jahncke, Richard T Golightly, Stephanie R Schneider, Robert M Suryan, Amanda J Gladics, Cheryl A Horton, Sung Yong Kim, Sharon R Melin, Robert L DeLong, Jeffrey Abell (2012) State of the California Current 2011–2012: Ecosystems Respond To Local Forcing as La Nina Wavers and Wanes. CalCOFI Rep

Claiborne AM, Fisher JP, Hayes SA, Emmett RL (2011) Size at Release, Marine Survival, and Age of Maturity for Hatchery Spring Chinook Salmon 2002-2005. Trans Am Fish Soc 140:1135-1144

Hayes, S.A., Bond, M.H., Hanson, C.V., Jones, A., Amman, A., Harding, J., Perez, J., and MacFarlane, R.B. (2011). Down, Up, Down and "smolting" twice? Seasonal movement patterns by juvenile steelhead in coastal watersheds with bar closing estuaries. Can. J. Fish. Aquat. Sci. 68:1341-1350.

Moore, J.W., S.A. Hayes, W.G. Duffy, S.P. Gallagher, C. Michel & B.E. Wright. (2011) Nutrient fluxes and the recent collapse of coastal California salmon populations Can. J. Fish. Aquat. Sci. 68:1161-1170.

Claiborne, A.M., Fisher, J.P., Hayes, S.A., and Emmett, R.L. (2011) Size at Release, Marine Survival, and Age of Maturity for Hatchery Spring Chinook Salmon 2002-2005. 140:1135-1144.

Hayes, S.A., Bond, M.H., Wells, B., Hanson, C.V., Jones, A.W. and MacFarlane, R.B. (2011) Using Archival Tags to infer habitat use of Central California Steelhead and Coho Salmon. *In* Advances in Fish Tagging and Marking Technology. American Fisheries Society, Auckland, New Zealand.

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PERSONAL INTERESTS

Dogs, home improvement, outdoor-camping/fishing, triathlon sports (Ironman level), yoga, and cooking