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## **EDUCATION**

1988-1993 Bachelor of Science, Biological Sciences, Stanislaus State University  
1993-1998 Master of Science, Biological Sciences, Sacramento State University

## **FULL-TIME PROFESSIONAL POSITIONS**

2008-present *Senior Environmental Scientist*, California Department of Fish and Game (Water Branch), Sacramento, CA, Supervisor of Performance Measures Unit for the Ecosystem Restoration Program, technical advisor to Bay-Delta Conservation Plan, USFWS Smelt Working Group, and Water Operations Management Team

2008 *Staff Environmental Scientist*, California Department of Fish and Game (Water Branch), Sacramento, CA, DFG technical advisor to the Ecosystem Restoration Program, Bay-Delta Conservation Plan, Operations Criteria and Plan, and other policy directives to balance fisheries and human water needs in the San Francisco Bay-Delta

2007 – 2008 *Staff Environmental Scientist*, CALFED Science Program, Sacramento, CA Environmental Water Account Coordinator, Interagency Ecological Program Liason, Interagency Ecological Program Pelagic Organism Decline Management Team member, Organizer of several Science Program workshops, contract manager for Science Program grants

2006 – 2007 *Environmental Scientist C*, CALFED Science Program, Sacramento, CA Environmental Water Account Coordinator, Organizer of several Science Program workshops, contract manager for Science Program grants

2000-2006 *Environmental Scientist C*, California Department of Water Resources (Ecological Studies Branch), Sacramento, CA , Interagency Ecological Program researcher and Management Team member, Interagency Ecological Program Pelagic Organism Decline researcher and Management Team member, Delta Smelt Working Group member, CALFED Data Assessment Team (DAT) note-taker

1998-2000 *Environmental Specialist II*, California Department of Water Resources (Ecological Studies Branch), Sacramento, CA, Interagency Ecological Program researcher, technical writer

## PART-TIME PROFESSIONAL POSITIONS

- 1997-1998      *Scientific Aide*, California Department of Water Resources (Ecological Studies Branch), Sacramento, CA
- 1995-1997      *Fisheries Biologist* (GS-5), U.S. Fish and Wildlife Service (Juvenile Salmonid Monitoring Program), Stockton, CA
- 1995-1996      *Scientific Aide/Graduate Student Assistant*, California Department of Fish and Game (Bay-Delta Division), Stockton, CA
- 1995            *Scientific Aide*, California Department of Fish and Game (Region II Water Pollution Control Laboratory), Rancho Cordova, CA
- 1994            *Scientific Aide*, California Department of Fish and Game (Region II Headquarters), Rancho Cordova, CA
- 1991-1994      *Scientific Aide*, California Department of Fish and Game (Bay-Delta Division), Stockton, CA

## REFEREED PUBLICATIONS

- Culberson, S.D., C.B. Harrison, C. Enright, and M.L. Nobriga. 2004. Sensitivity of larval fish transport to location, timing, and behavior using a particle tracking model in Suisun Marsh, California. *American Fisheries Society Symposium* 39:257-268.
- Feyrer, F., M.L. Nobriga, and T.R. Sommer. 2007. Multi-decadal trends for three declining fish species: habitat patterns and mechanisms in the San Francisco Estuary, California, USA. *Canadian Journal of Fisheries and Aquatic Sciences* 64:723-734.
- Kimmerer, W.J., S.R. Avent, S.M. Bollens, F. Feyrer, L.F. Grimaldo, P.B. Moyle, M. Nobriga, and T. Visintainer. 2005. Variability in length-weight relationships used to estimate biomass of estuarine fish from survey data. *Transactions of the American Fisheries Society* 134:481-495.
- Kimmerer, W.J., and M.L. Nobriga. 2008. Investigating particle transport and fate in the Sacramento-San Joaquin Delta using a particle tracking model. *San Francisco Estuary and Watershed Science* 6: <http://repositories.cdlib.org/jmie/sfews/vol6/iss1/art4>.
- Lehman, P.W., S. Teh, G. Boyer, M. Nobriga, E. Bass, and C. Hogle. 2009. Initial impacts of *Microcystis aeruginosa* blooms on the aquatic food web in the San Francisco Estuary. *Hydrobiologia*: In press.
- Matica, Z., and M. Nobriga. 2005. Modifications to an agricultural water diversion to permit fish entrainment sampling. *California Fish and Game* 91:53-56.
- Nobriga, M.L. 2002. Larval delta smelt diet composition and feeding incidence: environmental and ontogenetic influences. *California Fish and Game* 88:149-164.
- Nobriga, M.L. 20XX. Bioenergetic modeling evidence for a context-dependent role of food limitation in California's Sacramento-San Joaquin Delta. *California Fish and Game*: In press.

- Nobriga, M.L., and F. Feyrer. 2007. Shallow-water piscivore-prey dynamics in California's Sacramento-San Joaquin Delta. *San Francisco Estuary and Watershed Science* 5: <http://repositories.cdlib.org/jmie/sfews/vol5/iss2/art4>.
- Nobriga, M.L., F. Feyrer. 2008. Diet composition in San Francisco Estuary striped bass: does trophic adaptability have its limits? *Environmental Biology of Fishes* 83: 495-503.
- Nobriga, M.L., F. Feyrer, and R.D. Baxter. 2006. Aspects of Sacramento pikeminnow biology in nearshore habitats of the Sacramento-San Joaquin Delta, California. *Western North American Naturalist* 66:106-114.
- Nobriga, M.L., F. Feyrer, R.D. Baxter, and M. Chotkowski. 2005. Fish community ecology in an altered river delta: spatial patterns in species composition, life history strategies and biomass. *Estuaries* 28:776-785.
- Nobriga, M.L., Z. Matica, and Z.P. Hymanson. 2004. Evaluating entrainment vulnerability to agricultural irrigation diversions: a comparison among open-water fishes. *American Fisheries Society Symposium* 39:281-295.
- Nobriga, M. L., T. R. Sommer, F. Feyrer, and K. Fleming. 2008. Long-term trends in summertime habitat suitability for delta smelt, *Hypomesus transpacificus*. *San Francisco Estuary and Watershed Science* 6: <http://repositories.cdlib.org/jmie/sfews/vol6/iss1/art1>.
- Sommer, T., C. Armor, R. Baxter, R. Breuer, L. Brown, M. Chotkowski, S. Culberson, F. Feyrer, M. Gingras, B. Herbold, W. Kimmerer, A. Mueller-Solger, M. Nobriga, and K. Souza. 2007. The collapse of pelagic fishes in the upper San Francisco Estuary. *Fisheries* 32(6):270-277.
- Sommer, T., W.C. Harrell, and M.L. Nobriga. 2005. Habitat use and stranding risk of juvenile Chinook salmon on a seasonal floodplain. *North American Journal of Fisheries Management* 25:1493-1504.
- Sommer, T., B. Harrell, M. Nobriga, R. Brown, P. Moyle, W. Kimmerer and L. Schemel. 2001. California's Yolo Bypass: evidence that flood control can be compatible with fisheries, wetlands, wildlife, and agriculture. *Fisheries* 26(8):6-16.
- Sommer, T., W. Harrell, M. Nobriga, and R. Kurth. 2003. Floodplain as habitat for native fish: lessons from California's Yolo Bypass. P. 81-87 in Faber, P.M. (ed.) *California riparian systems: processes and floodplain management, ecology, and restoration*. 2001 Riparian habitat and floodplains conference proceedings, Riparian habitat joint venture, Sacramento, CA.
- Sommer, T.R., M.L. Nobriga, W.C. Harrell, W. Batham, and W.J. Kimmerer. 2001. Floodplain rearing of juvenile Chinook salmon: evidence of enhanced growth and survival. *Canadian Journal of Fisheries and Aquatic Sciences* 58:325-333.

## **NON-REFEREED REPORTS AND PRESENTATIONS**

- Baxter, R., R. Breuer, L. Brown, M. Chotkowski, F. Feyrer, M. Gingras, B. Herbold, A. Mueller-Solger, M. Nobriga, T. Sommer, K. Souza. 2008. Pelagic organism decline progress report: 2007 synthesis of results. Interagency Ecological Program Report, available online at [http://www.science.calwater.ca.gov/pod/pod\\_index.html](http://www.science.calwater.ca.gov/pod/pod_index.html)
- Baxter, R. D., M. L. Nobriga, S. B. Slater, and R. W. Fujimura. 2009. Effects analysis for the California Endangered Species Act Incidental Take Permit for longfin smelt (*Spirinchus thaleichthys*) for the State Water Project, available online at

<http://www.delta.dfg.ca.gov/data/longfinSmelt/documents/LongfinSmeltIncidentalTakePermitNo.2081-2009-001-03.asp>

- California Department of Water Resources and U.S. Bureau of Reclamation. 2000. Biological Assessment of State Water Project and Central Valley Project impacts on spring-run chinook salmon and steelhead. (Editor and co-author)
- Enos, C., J. Sutherland, and M. Nobriga. 2007. Results of a two-year fish entrainment study at the Morrow Island Distribution System in Suisun Marsh. *Interagency Ecological Program Newsletter* 20(1): 10-19.
- Feyrer, F., M. Nobriga, and T. Sommer. 2006. Multidecadal habitat trends: patterns and mechanisms for three declining fish species in the San Francisco Estuary. Oral presentation (by M. Nobriga) at the 2006 CALFED Science Conference, Sacramento, CA.
- Kimmerer, W., L. Brown, S. Culberson, M. Nobriga, and J. Thompson. 2008. Aquatic ecosystem. In Healey, M, Dettinger, M, and Norgaard, R. (eds). *State of Science for the Bay-Delta System*. CALFED Science Program report.
- Kimmerer, W., and M. Nobriga. 2005. Development and evaluation of bootstrapped confidence intervals for the IEP fish abundance indices. *Interagency Ecological Program Newsletter* 18(2): 68-75.
- Kimmerer, W., M. Nobriga, and B. Bennett. 2005. Use of the DSM-2 particle tracking model to evaluate fish entrainment risk: the first 500 runs. Oral presentation (by M. Nobriga) at the 2005 Interagency Ecological Program Annual Meeting, Pacific Grove, CA.
- Kneib, R.T., C.A. Simenstad, M.L. Nobriga, and D.M. Talley. 2008. Tidal marsh biological conceptual model - Delta Regional Ecosystem Restoration and Implementation Plan (DRERIP).
- Kurth, R., and M. Nobriga. 2001. Food habits of larval splittail. *Interagency Ecological Program Newsletter* 14(3): 40-42.
- Matica, Z., and M. Nobriga. 2002. Modifications to an agricultural water diversion to permit fish entrainment sampling. *Interagency Ecological Program Newsletter* 15(3): 32-35.
- Nobriga, M. 1998. Evidence of food limitation in larval delta smelt. *Interagency Ecological Program Newsletter* 11(1): 20-24.
- Nobriga, M.L. Ontogenetic patterns in the feeding ecology and habitat use of larval delta smelt. 2001. Oral presentation at the 2001 California-Nevada Chapter of the American Fisheries Society Annual Meeting, Sacramento, CA.
- Nobriga, M. 2007. Report on the CALFED Science Program Workshop "Defining a Variable Delta to Promote Estuarine Fish Habitat." [http://science.calwater.ca.gov/events/workshops/workshop\\_variable.html](http://science.calwater.ca.gov/events/workshops/workshop_variable.html)
- Nobriga, M. 2007. Fish-centric considerations for Delta conveyance planning. Oral presentation at CALFED Science Program Workshop: Science issues relating to Delta conveyance infrastructure: through-Delta options. September 11, 2007, Sacramento, CA. [http://www.science.calwater.ca.gov/events/workshops/workshop\\_dci.html](http://www.science.calwater.ca.gov/events/workshops/workshop_dci.html)
- Nobriga, M. 2007. Where do delta smelt and longfin smelt spawn and how do they get there? Oral presentation at CALFED Science Program Workshop Unraveling the mystery: where do delta smelt and longfin smelt spawn and how do they get there? November 15, 2007, Sacramento, CA.

- Nobriga, M. 2008. Aquatic habitat conceptual model. Sacramento (CA): Delta Regional Ecosystem Restoration and Implementation Plan.
- Nobriga, M. 2008. Invasive species in the Delta: ch-ch-ch-ch-changes, turn and face the strange...Oral presentation at the June 2008 meeting of the Southern California Water Forum, Los Angeles, CA.
- Nobriga, M. 2008. The ebb and flow of X2 in the management of freshwater flows into California's Bay-Delta system. Oral presentation at a workshop titled "Priming the pump: how will southern California make up for the water it will lose from the Delta because of pumping restrictions to protect threatened species?" Aquarium of the Pacific, Long Beach, CA.
- Nobriga, M. L. 2009. A synopsis of the state of science regarding the feeding ecology of San Francisco Estuary striped bass and its effects on listed fishes. Expert Report prepared for the California Department of Fish and Game regarding case #.CV 08-397-OWW, Dated October 1, 2009.
- Nobriga, M., and P. Cadrett. 2001. Differences among hatchery and wild steelhead: evidence from Delta fish monitoring programs. Interagency Ecological Program Newsletter 14(3): 30-38.
- Nobriga, M., and M. Chotkowski. 2000. Recent historical evidence of centrarchid increases and tule perch decrease in the Delta. Interagency Ecological Program Newsletter 13(1): 23-27.
- Nobriga, M., M. Chotkowski, and R. Baxter. 2003. Baby steps toward a conceptual model of predation in the Delta: preliminary results from the Shallow Water Habitat Predator-Prey Dynamics Study. Interagency Ecological Program Newsletter 16(1): 19-27.
- Nobriga, M., and F. Feyrer. 2008. How do altered ecosystems work? (One bass, two bass, don't grow too fast). Oral presentation at the 2008 Interagency Ecological Program Annual Meeting, Pacific Grove, CA.
- Nobriga, M., F. Feyrer, and R. Baxter. 2006. Aspects of Sacramento squawfish...er, pikeminnow biology in nearshore habitats of the Sacramento-San Joaquin Delta. Oral presentation (by F. Feyrer) 2006 American Fisheries Society California-Nevada Chapter Annual Meeting. Ventura, CA.
- Nobriga, M.L., F. Feyrer, R. Baxter, and M. Chotkowski. 2004. An evaluation of factors influencing fish assemblages in nearshore habitats of the delta. Oral presentation at the 2004 CALFED Science Conference, Sacramento, CA. Also presented as *Fish community ecology in the delta: the profound role of submerged aquatic vegetation* at the 2005 Interagency Ecological Program Annual Meeting, Pacific Grove, CA.
- Nobriga, M.L., F. Feyrer, R. Baxter, and M. Chotkowski. 2004. Ecological evaluation of young piscivores in nearshore habitats of the Delta. Oral presentation at the 2004 CALFED Science Conference, Sacramento, CA.
- Nobriga, M, Herbold, B. 2009 (in preparation). Conceptual model for delta smelt (*Hypomesus transpacificus*) for the Delta Regional Ecosystem Restoration and Implementation Plan (DRERIP).
- Nobriga, M., Z. Hymanson, and R. Oltmann. 2000. Environmental factors influencing the distribution and salvage of young delta smelt: a comparison of factors occurring in 1996 and 1999. Interagency Ecological Program Newsletter 13(2): 55-65.
- Nobriga, M., Z. Hymanson, K. Fleming, and C. Ruhl. 2001. Spring 2000 delta smelt salvage and Delta hydrodynamics and an introduction to the Delta Smelt Working Group's decision tree. Interagency Ecological Program Newsletter 14(2): 42-46.

- Nobriga, M., Z. Matica, and Z. Hymanson. 2002. Assessing fish entrainment vulnerability to agricultural irrigation diversions: a comparison among native and non-native species. *Interagency Ecological Program Newsletter* 15(3): 35-44.
- Nobriga, M.L., Z. Matica, and Z.P. Hymanson. 2003. Evaluating entrainment vulnerability to agricultural irrigation diversions: a comparison among open-water fishes. Oral presentation (by M. Nobriga) at the 2003 CALFED Science Conference, Sacramento, CA, and (by Z. Hymanson) at the 2003 American Fisheries Society Larval Fishes Conference, Santa Cruz, CA. Also presented as *Patterns of fish entrainment through screened and unscreened agricultural diversion siphons* at the 2002 Interagency Ecological Program Annual Meeting, Pacific Grove, CA.
- Nobriga, M.L., T.R. Sommer, and F. Feyrer. 2006. Long-term change in summertime habitat for pelagic fishes in the San Francisco Estuary. Oral presentation at the 2006 American Fisheries Society National Meeting, Lake Placid, New York.
- Nobriga, M., T. Veldhuizen, and Z. Hymanson. 1999. Delta smelt concerns result in changes in SWP and CVP operations. *Interagency Ecological Program Newsletter* 12(3): 33-34.
- Sommer, T, M. Nobriga, and B. Harrell. 1998. Results of 1997 Yolo Bypass studies. *Interagency Ecological Program Newsletter* 11(1): 39-42.
- Sommer, T., M. Nobriga, B. Harrell, W. Batham, R. Kurth, and W. Kimmerer. 2000. Floodplain rearing may enhance growth and survival of juvenile chinook salmon in the Sacramento River. *Interagency Ecological Program Newsletter* 13(3): 26-30.
- Sommer, T., K. Reece, F. Mejia, and M. Nobriga. 2009. Delta smelt life-history contingents: a possible upstream rearing strategy? *Interagency Ecological Program Newsletter* 22(1): 11-13.
- U.S. Fish and Wildlife Service. 2008. Biological Opinion for delta smelt *Hypomesus transpacificus*, for the coordinated operation of the Central Valley Project and State Water Project. (Co-author)

## MISCELLANEOUS

- |              |                                                                                                                                                                                                                    |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2000-present | Member of the American Fisheries Society                                                                                                                                                                           |
| 2003-Present | Referee for Technical Journals (Transactions of the American Fisheries Society, Fisheries, San Francisco Estuary and Watershed Science, Aquatic Ecology, Environmental Science & Policy, California Fish and Game) |