

ROBERT G. TITUS

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 CALIFORNIA DEPARTMENT OF FISH AND GAME • STREAM EVALUATION PROGRAM
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CURRICULUM VITAE**EDUCATION**

- 1991 PhD, Limnology, Uppsala University, Sweden. Dissertation: *Population regulation in migratory brown trout (Salmo trutta)*
- 1986 MSc, Biological Sciences, California State University, Sacramento. Thesis: *Comparative hooking mortality of Lahontan cutthroat trout at Heenan Lake, California*
- 1984–1985 Course work in limnology (24 semester units), Uppsala University, Sweden as participant in California State University International Program
- 1981 BA, Biological Sciences, California State University, Sacramento
- 1975–1978 Music major, San Francisco State University

POSITIONS

- 1993–present *Associate Fishery Biologist–Staff Environmental Scientist*, California Department of Fish and Game, Stream Evaluation Program, Sacramento, California
- 1999–2003 *Lecturer*, Department of Biological Sciences, California State University, Sacramento (please see below for specifics)
- 1996–2003 *Adjunct Professor*, Department of Biological Sciences, California State University, Sacramento
- 1992–1993 *Post-graduate Researcher*, Department of Forestry & Resource Management, (currently Environmental Science, Policy & Management), University of California, Berkeley
- 1987–1991 *Graduate Student Researcher/Lecturer*, Institute of Limnology, Uppsala University, Sweden
- 1986 *Fishery Biologist*, U. S. Bureau of Reclamation, Sacramento, California
- 1985 *Laboratory Assistant*, Institute of Limnology, Uppsala University, Sweden
- 1983–1984 *Biological Technician*, U. S. Bureau of Reclamation, Sacramento, California

POSITIONS (cont.)

- 1982–1983 *Graduate Student Assistant*, California Department of Water Resources, Delta Branch, Sacramento, California
- 1981 *Fish and Wildlife Seasonal Aid*, California Department of Fish and Game, Wild Trout Program, Rancho Cordova, California

TEACHING EXPERIENCE

Lecturer, Department of Biological Sciences, California State University, Sacramento

- Principles of Fishery Biology (**BIO 173**), fall 2000
- Conservation Policy and Administration (**BIO 270**), spring 1999, 2001, 2003
- Natural Resource Conservation (**BIO 118**), fall 2001, 2002, 2003

ACADEMIC SERVICE

Adjunct Professor, Department of Biological Sciences, California State University, Sacramento

- Service on graduate student committees: four since 1996
- Mentor to senior honors students: 2000-2001, 2002-2003
- Agency sponsor on biological internships (BIO 195): three students since 2000
- Service on Dean's committee to establish a CSUS Environmental Research Center: 2002-2003

ARTICLES

Titus, R. G., M. C. Volkoff, and W. M. Snider. *in press*. Use of otolith microstructure to estimate growth rates of juvenile Chinook salmon *Oncorhynchus tshawytscha* from a Central Valley, California stock. American Fisheries Society Symposium

Titus, R. G. and H. Mosegaard. 1992. Fluctuating recruitment and variable life history of migratory brown trout, *Salmo trutta* L., in a small, unstable stream. *J. Fish Biol.* 41:239–255.

Titus, R. G. and H. Mosegaard. 1991. Selection for growth potential among migratory brown trout (*Salmo trutta*) fry competing for territories: evidence from otoliths. *Can. J. Fish. Aquat. Sci.* 48:19–27.

Titus, R. G. 1990. Territorial behavior and its role in population regulation of young brown trout (*Salmo trutta*): new perspectives. *Ann. Zool. Fennici* 27:119–130.

Titus, R. G. and H. Mosegaard. 1989. Smolting at age 1 and its adaptive significance for migratory trout, *Salmo trutta* L., in a small Baltic-coast stream. *J. Fish Biol.* 35 (Suppl. A):351–353.

Titus, R. G. and C. D. Vanicek. 1988. Comparative hooking mortality of lure-caught Lahontan cutthroat trout at Heenan Lake, California. *Calif. Fish Game* 74:218–225.

Mosegaard, H. and R. Titus. 1987. Daily growth rates of otoliths in yolk sac fry of two salmonids at five different temperatures. Pages 221–227 in S. O. Kullander and B. Fernholm (eds.). *Proc. Fifth Cong. Europ. Ichthyol.*, Stockholm, 1985. *Swed. Mus. Nat. Hist.*, Stockholm.

MANUSCRIPTS

Titus, R. G., C. E. Zimmerman, and W. M. Snider. An integrated approach for characterizing individual life histories of steelhead rainbow trout. (in prep for submission to Calif. Fish Game)

Titus, R. G., D. C. Erman, and W. M. Snider. History and status of steelhead in California coastal drainages south of San Francisco Bay. (~300 page monograph in manuscript)

Titus, R. G. and D. C. Erman. Long-term demography of rainbow trout spawners in a small Sierra Nevada tributary relative to mainstem impoundment.

Titus, R. G. and H. Mosegaard. Spatial and fry-size effects in population regulation of migratory brown trout (*Salmo trutta*).

Mosegaard, H. and R. G. Titus. Mass-marking brown trout (*Salmo trutta*) alevins using thermally-coded otolith increment formation.

TECHNICAL REPORTS

Snider, B., and R. G. Titus. 2001. Lower American River emigration survey, October 1997–September 1998. Calif. Dept. Fish Game, Habitat Conservation Division, Stream Evaluation Program Technical Report No. 01-6. 21 pp. + 18 figs, app.

Snider, B., and R. G. Titus. 2000d. Timing, composition and abundance of juvenile anadromous salmonid emigration in the Sacramento River near Knights Landing, October 1998–September 1999. Calif. Dept. Fish Game, Habitat Conservation Division, Stream Evaluation Program Technical Report No. 00-06. 28 pp. + 30 figs, app.

Titus, R. G. 2000. Adult steelhead collected in the Calaveras River below New Hogan Dam in March 2000. Calif. Dept. Fish Game, Native Anadromous Fish Watershed Branch. Report prepared for Calif. Dept. Fish Game. 4 pp. + figs.

Snider, B., and R. G. Titus. 2000c. Timing, composition and abundance of juvenile anadromous salmonid emigration in the Sacramento River near Knights Landing, October 1997–September 1998. Calif. Dept. Fish Game, Habitat Conservation Division, Stream Evaluation Program Technical Report No. 00-05. 27 pp. + 29 figs, app.

Snider, B., and R. G. Titus. 2000b. Timing, composition and abundance of juvenile anadromous salmonid emigration in the Sacramento River near Knights Landing, October 1996–September 1997. Calif. Dept. Fish Game, Habitat Conservation Division, Stream Evaluation Program Technical Report No. 00-04. 30 pp. + 32 figs, app.

California Department of Fish and Game (Titus, R., A. Vejar, and D. McEwan). 2000. Steelhead rainbow trout in San Mateo Creek, San Diego County, California. Calif. Dept. Fish Game, Native Anadromous Fish Watershed Branch and South Coast Region. Report prepared for National Marine Fisheries Service. 22 pp. + photos, apps.

TECHNICAL REPORTS (cont.)

Snider, B., and R. G. Titus. 2000. Lower American River emigration survey, October 1996–September 1997. Calif. Dept. Fish Game, Habitat Conservation Division, Stream Evaluation Program Technical Report No. 00-02. 25 pp. + 26 figs, app.

Snider, B., R. G. Titus, and B. A. Payne. 1998. Lower American River, emigration survey, October 1995–September 1996. Calif. Dept. Fish Game, Environmental Services Division, Stream Evaluation Program Report. 19 pp + 30 figs, app.

Snider, B., and R. Titus. 1998. Evaluation of juvenile anadromous salmonid emigration in the Sacramento River near Knights Landing, November 1995–July 1996. Calif. Dept. Fish Game, Environmental Services Division, Stream Evaluation Program Report. 26 pp + 36 figs, app.

Snider, B., R. G. Titus, and B. A. Payne. 1997. Lower American River emigration survey, November 1994–September 1995. Calif. Dept. Fish Game, Environmental Services Division, Stream Flow Habitat Evaluation Program Report. 16 pp + figs.

Vyverberg, K., B. Snider, and R. G. Titus. 1997. Lower American River, chinook salmon spawning habitat evaluation, October 1994. Calif. Dept. Fish Game, Environmental Services Division, Stream Flow Habitat Evaluation Program Report. 39 pp + apps.

Snider, B., and R. Titus. 1996. Fish Community Survey, Lower American River, January through June 1995. Calif. Dept. Fish Game, Environmental Services Division, Stream Flow Habitat Evaluation Program Report. 28 pp + figs, app.

Snider, B., and R. G. Titus. 1995. Lower American River, emigration survey, November 1993–July 1994. Calif. Dept. Fish Game, Environmental Services Division, Stream Flow Habitat Evaluation Program Report. 21 pp + figs, app.

Titus, R. G. and H. Mosegaard. 1991. Multi-aged emigration of brown trout (*Salmo trutta*) in a small Baltic-coast stream: a mechanism for population persistence in an unstable environment. Page 20 in *The Role of Aquaculture in Fisheries*. Nordiske Jordbrugsforskeres Forening, Proc. from NJF seminar 194, Report No. 72.

Titus, R. G. 1984. San Luis Drain Report of Waste Discharge, Appendix A.3, Receiving and Supply Water Characteristics, Vol. III: Fishes. U. S. Bur. Reclam., Mid-Pacific Region, Sac., CA 141 p.

Titus, R. G., A. Pickard, and B. W. Collins. Effects of passage through low velocity fan pumps on juvenile chinook salmon and American shad. Interagency Ecological Study Program for the Sacramento–San Joaquin Estuary, Technical Report (DRAFT).

GRANTS/CONTRACTS

- 2001–2004: U.S. Fish and Wildlife Service, \$30,000 to *Comparative Growth of Central Valley, California Riverine and Delta Rearing Juvenile Chinook Salmon Based on Otolith Microstructure Patterns*. R. Titus, principal investigator.

GRANTS/CONTRACTS (cont.)

- 1997/98–98/99: California Department of Water Resources and U.S. Fish and Wildlife Service, \$25,000 per year to *Use of Otoliths to Evaluate the Role of Delta Rearing in the Life History of Central Valley Chinook Salmon and Steelhead*. R. Titus, principal investigator.
- 1997/98–98/99: East Bay Municipal Utility District, \$31,000 to *Growth Rates of Juvenile Chinook Salmon in the Lower American River: Backcalculation using Otoliths*. R. Titus, P.I.
- 1995/96: California Department of Fish and Game, Inland Fisheries Division, \$10,000 to *Big Sur River Steelhead Habitat Use Study*. R. Titus, applicant.
- 1992/93: California Department of Fish and Game, Environmental Services Division, \$59,540 to *Status of steelhead trout in California, with emphasis on central and south coast stocks*. R. Titus, author, coapplicant with D. C. Erman.
- 1989/90–91/92: Swedish Council for Forestry and Agricultural Research, \$140,000 to *Population regulation of migratory brown trout in small coastal streams*. R. Titus, primary author, coapplicant with H. Mosegaard.

SELECT PROFESSIONAL ACTIVITIES DURING 1993–2003

- On ongoing basis, referee manuscripts (#) for *Journal of Fish Biology* (2), *Transactions of the American Fisheries Society* (2), *North American Journal of Fisheries Management* (1), *California Fish and Game* (5), *Ecology* (1), and the proceedings of the first and second international symposia on otolith research and application (2)
- As an invited referee, evaluated study proposal, *Tagging Steelhead with Archival and Acoustic Tags*, for U.S. Geological Survey, Alaska Biological Science Center, January 2002
- Invited speaker, *Conservation of Salmon and Steelhead in California*, for Ecological and Environmental Issues Seminar (BIO 186B/ENVS 186B), CSU Sacramento, September 26, 2001
- Presented, *Recent Developments in Estimating Winter-Run Chinook Salmon Adult Escapement and Juvenile Production*, CALFED-sponsored Environmental Water Account (EWA) Salmonid Workshop, UC Davis, June 21, 2001
- Presented, *Determining Individual Life Histories of Steelhead Trout – Beyond Shapovalov*, American Fisheries Society, Sacramento-Davis Subunit meeting, June 20, 2001
- Presented, *Conservation of Salmon and Steelhead in California: Got Biology?*, faculty interview seminar, Dept. Biological Sciences, Calif. State Univ., Sacramento, April 16, 2001
- Chaired technical session, *Scale and Defining the Ecosystem in Central Valley Fisheries Restoration*, March 1999 meeting of the Cal-Neva Chapter, American Fisheries Society

PROFESSIONAL ACTIVITIES (cont.)

- Presented, *Changes in use of the American River with construction of the Folsom Project*, at the April 1998 meeting of the Cal-Neva Chapter, American Fisheries Society
- Presented, *Exploring Salmonid Lifestyles in Contrasting Environments*, Field Biology Group seminar, Dept. Biological Sciences, Calif. State Univ., Sacramento, March 1998
- Presented, *American River Salmon Studies*, at the annual meeting of the Interagency Ecological Program for Sacramento-San Joaquin Estuary at Asilomar, California, February 1997
- As an invited referee, evaluated project proposal for the 1996 Western Region's Water Resources Research Competitive Grants Program, led by the Wyoming Water Resources Center
- Presented, *Status of steelhead south of San Francisco Bay: a life history perspective*, at the March 1996 meeting of the Cal-Neva Chapter, American Fisheries Society, in Ventura, California
- Recipient of Certificate of Recognition, California State University, Sacramento Alumni Association, October 1995
- As an invited referee, evaluated project suggestion sheets for the 1993 annual research review of the University of California's Water Resources Center
- Organized and chaired technical paper sessions for the July 1993 meeting of the Western Division of the American Fisheries Society in Sacramento, California
- Presented, *California coastal rainbow trout south of San Francisco Bay: status and conservation of a unique salmonid resource*, in the symposium, Conservation and Genetics of Salmon, Trout, and Char, at the May 1993 meeting of the American Society of Ichthyologists and Herpetologists in Austin, Texas

PUBLIC OUTREACH

- Conducted "Salmon Walks" at Miners Ravine, Roseville, CA, November 1998-2000.
- Gave fish presentation/demonstration at Dry Creek "Creek Week," April 1998 and 1999.

CONTINUING EDUCATION

- Sampling Design, Department of Fish and Game Training Center, April 1999.
- Contracts Training, Department of Fish and Game Training Center, November 1997.
- Leadperson Workshop, Department of Fish and Game Training Center, October 1997.
- Statistics Refresher, Department of Fish and Game Training Center, October 1996.

PROFESSIONAL MEMBERSHIPS

American Fisheries Society, American Institute of Fishery Research Biologists (*Member level*), American-Hellenic Professional Society