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Appendix 5.2D
Biological Resources Resumes

Rene Langis

Senior Biologist and Environmental Permitting Specialist

Education

PhD, Water Sciences, University of Quebec
MS, Environmental Engineering, University of Montreal
BS, Environmental Biology, Mc Gill University

Distinguishing Qualifications

- Twenty-five years of experience in addressing biological issues in environmental impact assessments and reports (including CEQA and NEPA documents)
- Sixteen years of environmental permitting experience in the United States, including negotiations with USACE, USFWS, NMFS and state environmental agencies
- Manager for numerous environmental and biological studies and analyses, including environmental and permitting tasks for the a variety of public and private organizations
- Authored a comprehensive study on status of chemical contaminants in the Canadian tundra and boreal forest ecosystems
- Deputy Director of the Pacific Estuarine Research Laboratory (PERL) in San Diego, California (1988-1991)
- Recognized expertise in the functional assessment of restored and constructed salt marsh wetlands, and treatment wetlands

Relevant Experience

Dr. Langis is a senior technical consultant with over 25 years of experience in applied aquatic ecology, and environmental consulting. He has **c**oordinated and negotiated environmental compliance issues and mitigation plans with resources agencies for several projects. Dr. Langis is currently the CH2M Senior Technical Consultant for various wetland and creek restoration projects.

As deputy director of the Pacific Estuarine Research Laboratory, Dr. Langis conducted post-doctoral research in the functional development of restored and constructed salt marshes. Major projects involved the ecological assessment of a newly restored and created salt marsh in San Diego Bay, studying the effect of soil amendments to accelerate functional development in constructed salt marshes, monitoring water quality of the Tijuana Estuary, and using *Scirpus* freshwater wetlands under a pulse-discharge regimen for wastewater treatment.

Representative Projects

Permitting Lead, Shell Pond Cleanup and Wetland Restoration Project. Environmental Permitting Lead for the clean-up and tidal marsh restoration of a 73-acre wastewater retention pond located within the San Francisco Bay mash land. Tasks included participation in development of wetland restoration concept, as well as CEQA documentation and multi-agency permitting and coordination (USACE, Regional Water Quality Control Board, San Francisco Bay Conservation and Development Commission, and California Fish and Game Department, USFWS and NOAA-NMFS).

Senior Technical Consultant, Twelvemile Creek Bank Stabilization. Senior Technical Consultant for design and implementation of geomorphic bank stabilization measures along Twelvemile Creek, Liberty, South Carolina. Task was part of the Schlumberger Technology Corporation Twelvemile Creek Dredging Project.

Rene Langis

Senior Biologist, Wetland Mitigation Concepts, Pittsburgh California. Task manager for the development of several mitigation wetland concepts in San Francisco Bay Delta for the Pittsburgh Dow Chemical facility.

Senior Biologist, San Jose/Santa Clara WPCP Pond A18 Master Plan. Managed and prepared the water and endangered species, sediment quality sections of the opportunities and constraints report for future use of a former South Bay salt pond (Pond A18).

Environmental Lead, City of San Jose Trail Projects; City of San José, San José, CA. Environmental Lead for design and environmental support for various City of San Jose Trail Projects. Task included the preparation of various documents necessary to bring projects in compliance with NEPA.

Senior Biologist, Santa Clara Habitat Conservation Plan; Santa Clara County, CA. Senior biologist on the Santa Clara Habitat Conservation Plan Environmental Impact Report/Statement (EIR/S). Managed the preparation of the biological resource chapter of the EIS/EIR, as well as prepared the sections describing impacts and mitigation for specific Santa Clara County species.

Permitting Manager, Saratoga Creek Raw Water Intake Improvement Project, San Jose Water Company, CA. Managed the CEQA clearance (Categorical Exemption) and permits/authorizations, including UA Army Corps of Engineers (Section 404), Regional Water Quality Control Board (RWQCB) Water Quality Certification (Section 401), and California Department of Fish and Game (CDFG) Streambed Alteration Agreement (Section 1602), including coordination of protective measures for the federally listed California red-legged frog.

Environmental Coordinator and Lead Biologist, Coyote Watershed Program; Santa Clara Valley Water District; San José, CA. Responsible for US Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Game permitting, regulatory negotiation and environmental documentation per CEQA and NEPA. The program is implementing a series of stream restoration and flood control improvement projects within the watershed, many of which under an accelerated schedule. Major issues include wetlands, endangered species, cold water fisheries, and habitat conservation and restoration. Dr. Langis also conducted a number of interagency meetings that included the National Marine Fisheries Service, US Fish and Wildlife Service, USACE (Regulatory Branch), California Fish and Game, and the Regional Water Quality Control Board to discuss project impacts and proposed mitigation.

Project Manager, Phase II of the Gilroy Hot Springs Road Repair Project; Santa Clara County; Gilroy, CA: Conducted resource agency coordination for the realignment of a section of Coyote Creek using fluvial geomorphic and bio-engineered methods. This project involved the preparation of an Initial Study/Negative Declaration per CEQA and the preparation of US Army Corps of Engineers (Section 404), Regional Water Quality Control Board (Section 401), and California Department of Fish and Game permits. The project required Section 7 Consultations for the federally listed California red-legged frog and the preparation of a mitigation plan for the state protected foothill yellow legged frog.

Project Manager, Upper Penitencia Creek Flood Control Project Environmental Impact Statement/Report (EIS/R), Phase 1; USACE; San Jose, CA. Dr. Langis was the Project Manager for Phase 1 of the EIS/EIR completed in August 2006. Managed the collection of data, evaluation and documentation of the existing condition along Upper Penitencia Creek as well as the preparation of a Waters of the US and Wetland Delineation Report.

Project Manager, Nesting Bird Surveys for the Upper Guadalupe River Flood Control Project; USACE; San José, CA. Coordinated the seasonal nesting raptor and bird surveys in Reach 10 of Upper Guadalupe River for compliance with the Migratory Bird Treaty Act and California Fish and Game Code from 2008 through 2011.

Rene Langis

Senior Aquatic Biologist, Pond A-4 Tidal Wetland Restoration; Santa Clara Valley Water District, Santa Clara, CA. Task leader for preparation of the Water Quality Section of the Opportunity and Constraints Memorandum. Task included analysis of existing conditions and of potential effects on water quality of opening Pond to tidal exchange including potential effect on mobilization of toxic material.

Senior Technical Consultant, Caltrans District 4 On-Call Environmental Services; San Francisco Bay Area, CA. Senior reviewer– task leader, intimately familiar with Caltrans projects, procedures, and document standards. Provided senior review on the preparation of Natural Environment Study reports and Biological Assessments as well as provided strategy and support for Caltrans' permitting efforts with the California Department of Fish and Game, US Fish and Wildlife Service, California Regional Water Quality Control Board, and US Army Corps of Engineers.

Permitting Manager, Seismic Retrofit of Richmond-San Rafael Bridge; Caltrans District 4 CA; Richmond, CA. Task manager for all environmental permitting efforts associated with the seismic retrofit of the Richmond-San Rafael Bridge. Required permits included permits from USACE, RWQCB, and BCDC as well as Section 7 Endangered Species Act consultations with FWS. Coordinated the preparation of environmental permits/authorizations, including US Army Corps of Engineers Individual Permit (Section 404), Dredge Material Management Office Permit, San Francisco Bay Conservation and Development Commission Major Permit, RWQCB Water Quality Certification (Section 401), United States Fish and Wildlife Service/National Marine Fisheries Service (USFWS/NMFS) Section 7 Consultation Endangered Species Act. Also prepared a mitigation and monitoring plan for potential negative impacts to eelgrass beds. Coordinated the development of mitigation and monitoring plans for the peregrine falcon, the Pacific herring, harbor seals, and double-crested cormorants. Incorporated permit requirements in project PS&E.

Permitting Manager, Los Esteros Critical Energy Facility Permanent Stormwater Outfall; Calpine Corporation, San José CA: Task manager for the preparation and coordination of US Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Game (CDFG) permit applications, as well as coordinated with National Marine Fisheries Service and CDFG regarding rare, threatened and endangered species.

Project Manager, Montevina Raw Water Pipeline, San Jose Water Company, San José, CA: Managed the preparation of environmental document under CEQA (Initial Study Negative Declaration) and permits/authorizations, including Section 404 and 401 of the Clean Water Act and Section 1602 of the California Fish and Game Code.

Permitting Specialist, On-call Environmental Services; Alameda Public Works Agency; Oakland, CA. Managed CEQA compliance and permitting/authorizations, including Section 404-401 of the Clean Water Act and Section 1602 of California Fish and Game Code.

Publications

Kimmelshue, J.E., R. Langis, M. Dellinger and J. Bays. 2000. Wildlife Habitat and Treatment Wetlands Design and Construction. Treatment Wetlands for Water Quality Improvement - Quebec 2000 Conference Proceedings (Selected Papers). CH2M HILL, Waterloo.

Kimmelshue, J.E., M. Dellinger, R. Langis, and J. Bays. 2000. Basin 2000/Lyons Creek wildlife habitat and treatment wetlands design and construction. WEFTEC 2000 Technical Proceedings.

Langlois, C. and R. Langis. 1995. Presence of airborne contaminants in the wildlife of northern Québec. *Science of the Total Environment*, 160/161: 391-402.

Langlois, C., R. Langis and M. Pérusse. 1995. Mercury contamination in Northern Québec environment and wildlife. *Water, Air and Soil Pollution* 80: 1021-1024.

Rene Langis

Gibson, K.D., J.B. Zedler and R. Langis. Limited response of cordgrass (Spartina foliosa) to soil amendments in a constructed marsh. 1994. *Ecological Applications* 4(4): 757-767.

Zedler, J.B., M. Busnardo, T. Sinicrope, R. Langis, R. Gersberg and S. Baczkowski. 1994. Pulse-discharge wastewater wetlands: the potential for solving multiple problems by varying hydroperiod. In: Mitsch, W.J. (ed.) *Global Wetlands, Old World and New*. Elsevier, Amsterdam: 363-368.

Busnardo, M.J., R.M. Gersberg, R. Langis, T.L. Sinicrope and J.B. Zedler. 1992. Nitrogen and phosphorus removal by wetland mesocosms subjected to different hydroperiods. *Ecological Engineering* 1: 287-307.

Sinicrope, T.L., R. Langis, R.M. Gersberg, M.J. Busnardo and J.B. Zedler. 1992. Metal removal by wetland mesocosms subjected to different hydroperiods. *Ecological Engineering* 1 : 309-322.

Zedler, J.B. and R. Langis. 1992. Urban Wetland Restoration: A San Diego Bay Example. *Proceedings: Third Annual "Country in the City" Symposium, Portland, Oregon*, April 1990; Audubon Society of Portland.

Zedler, J.B. and R. Langis. 1992. Urban Wetland Restoration: A San Diego Bay Example. *Proceedings: Third Annual "Country in the City" Symposium, Portland, Oregon, April 1990*; Audubon Society of Portland, 1992.

Langis, R., M. Zalejko and J.B. Zedler. 1991. Nitrogen assessments in a constructed and natural salt marsh from San Diego Bay. *Ecological Applications* 1(1):40-51, 1991.

Zedler, J.B., R. Langis, J. Cantilli, M. Zalejko and S. Rutherford. 1989. Assessing the functioning of constructed marshes. pp. 311-318, in Hughes, H.G. and T.M. Bonnicksen, eds., *Restoration '89: The new management challenge. Proceedings of the first annual meeting of the Society for Ecological Restoration*, January 16-20, 1989, Oakland, CA; Society for Ecological Restoration, Madison, WI.

Zedler, J.B., R. Langis, J. Cantilli, M. Zalejko, K. Swift and S. Rutherford. 1988. Assessing the functions of mitigation marshes in southern California. pp. 323-330, in Kusler, J.A., S. Daly and J. Brooks, eds., *Urban Wetlands, Proceedings: National Wetlands Symposium*, June 26-29, 1988. Oakland, CA., Association of Wetland Managers, Berne, NY.

Cluis, D., R. Langis and P. Couture. 1988. Contribution of atmospheric and groundwater sources to surface water quality during extreme hydrologic events. *Atmosphere Ocean* 28(3):437-448.

Langis, R., D. Proulx, J. de la Noüe and P. Couture. 1988. Influence of a biofilm on an intensive Daphnia culture. *Aquacultural Engineering* 7:21-38.

Langis, R., P. Couture, J. de la Noüe and N. Méthot. 1986. Induced response on algal growth and phosphate removal by three molecular weight DOM fractions from a secondary effluent. *J. Wat. Pollution Control Fed*., 58:1073-1077.

Specialized Training

- Fluvial Geomorphology in River and Stream Restoration: Principles and Applications Symposium taught by Dr. G. Matthias Kondolf of U.C. Berkeley. Owens Valley Laboratory, Bishop, CA
- Creating and Using Wetlands for Wastewater and Stormwater Treatment/Water Quality Improvement, Part I and II, University of Wisconsin, Madison
- Tidal Wetland Restoration, American Society of Civil Engineers , 1997
- Jurisdictional Delineation of Wetlands, University of California Berkeley
- Wetlands Regulation and Mitigation, University of California Davis

Melissa Fowler

Small Mammal Ecologist/Wildlife Biologist

Education

MS, Environmental Studies, Emphasis: Environmental Science, California State University, Fullerton
BS, Biological Science, California State University, Fullerton
AA, Liberal Studies, Fullerton College, Fullerton

Relevant Experience

Melissa Fowler is a biologist specializing in small mammal ecology, particularly desert species, and wildlife biology. She has over 14 years of experience conducting a variety of wildlife studies in a range of California habitats, including aquatic (freshwater and marine) and terrestrial ecosystems, and has worked with a wide range of species that include large carnivores, small mammals, raptors and other avian species, reptiles, marine fishes and aquatic macroinvertebrates. Melissa has conducted a variety of surveys for commercial and federal projects including botanical surveys, wildlife surveys, habitat assessments, vegetation mapping, biological monitoring, rare plant surveys (primarily in the Mojave Desert), re-vegetation monitoring and wetland delineations. She has a scientific collecting permit for mammals and reptiles in Kern, Los Angeles, Riverside, and San Bernardino Counties and the coast horned lizard in Region 5 (SC-11611). In addition, she has prepared a wide variety of environmental documents, including Application for Certifications (AFC), Environmental Impact Reports/Environmental Impact Statements (EIR/EIS), Environmental Impact Assessments/Environmental and Social Impact Assessments (EIA/ESIA), permitting, environmental compliance-related documents and mitigation plans.

Representative Projects

Biologist; Southern California Gas Company; Pipeline Safety Enhancement Plan (PSEP); California. Conducts reconnaissance surveys, habitat assessments, pre-construction clearance surveys, wetland delineations in support of permitting and biological constraint analyses for various PSEP projects throughout southern California.

Designated Biologist; Huntington Beach Energy Project (HBEP); AES Southland Development; Orange County, California. Prepared the biological resources section for an AFC for a natural gas-fired power plant, coordinated with resource agencies, conducted site surveys, technical representative for public workshops, responded to California Energy Commission (CEC) data requests and comments in the discovery phase, and presented expert witness testimony. Designated Biologist for the compliance phase, which includes overseeing compliance with Conditions of Certification (COCs), training and managing biological monitors, and senior review of project compliance documents. Prepared project-related compliance documents, including Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), and Worker Environmental Awareness Program (WEAP).

Designated Biologist; Carlsbad Energy Center Project (CECP); NRG Energy; San Diego County, California. Responsible for overseeing compliance with project COCs, training and managing biological monitors, and senior review of project compliance documents. Prepared project-related compliance documents, including monthly compliance reports, BRMIMP, and WEAP. Provided WEAP to onsite personnel.

Biologist; Alamitos Energy Center (AEC); AES Southland Development; Los Angeles County, California. Prepared the biological resources section for an AFC for a natural gas-fired power plant, coordinated with resource agencies and conducted site reconnaissance survey. Prepared the supplemental AFC and site survey for AEC.

Biologist; Redondo Beach Energy Project (RBEP); AES Southland Development; Los Angeles County, California. Prepared the biological resources section for an AFC for a natural gas-fired power plant, coordinated with resource agencies and conducted site reconnaissance survey. Responded to CEC data requests and comments; participated in agency site tour.

Biologist; San Timoteo Canyon Derailment; Union Pacific Railroad; Riverside County, California. Conducted re-vegetation monitoring of site restoration activities for derailment affected areas, replanting of native vegetation and establishment of weed management areas were conducted in accordance with U.S. Army Corps of Engineers (USACE) (USACE #2006 01654-JPL) and State Water Resources Control Board (State Water Board) (WDID #836C343929) requirements. Prepared annual re-vegetation monitoring report.

Biologist; Confidential Client; United Arab Emirates. Prepared biological resources and marine ecology sections for a Terms of Reference/scoping report for a confidential project. Prepared the biological resources section for the associated EIA.

Biologist; Confidential Client; Saudi Arabia. Prepared baseline sections for terrestrial biological resources and marine ecology, impact assessments, and mitigation sections for an EIA for a chemical plant.

Biologist; Confidential Client; Saudi Arabia. Prepared baseline sections for terrestrial ecology and marine ecology, impact assessments, and mitigation sections for an EIA for an expansion project for an existing refinery.

Biologist; Confidential Client; Iraq. Prepared baseline ecology, impact assessment, and mitigation sections for an ESIA for a water treatment plant. Ecology baseline included terrestrial and wetland habitats.

Biologist; Confidential Wind Energy Client; Riverside County, California. Prepared application packages for a proposed wind energy project for a Lake and Streambed Alteration (LSA) Notification for California Department of Fish and Wildlife (CDFW) and the CWA Section 401 WQC for the Colorado River Basin RWQCB.

Biologist; Confidential Wind Energy Client; San Bernardino County, California. Conducted delineation surveys of ephemeral washes for a potential mitigation site in the Mojave Desert. Prepared associated report and analyzed the suitability of confidential location as a mitigation site for a solar project.

Biologist and Task Manager; Los Angeles World Airports (LAWA); Los Angeles, California. Prepared cost estimate and met with client for the Riverside Fairy Shrimp relocation project to help determine the cost effectiveness of mitigation site alternatives. Coordinated with client and subcontractors, ensured tasks are within scope of work, finalized and distributed deliverables, prepared meeting agendas and summaries.

Biologist; TID Almond 2 Power Plant; Turlock Irrigation District; Stanislaus County, California. Conducted construction and dewatering monitoring for the giant garter snake within areas of suitable habitat.

Biologist; Terra-Gen Power, LLC; Kern County, California. Supported multiple projects by conducting wetland delineations, habitat assessments, vegetation mapping, condor and raptor monitoring and multiple wildlife surveys, desert tortoise and Mohave ground squirrel monitoring, geotechnical escorting, potholing monitoring, preconstruction clearance surveys, assisted with protocol southwestern willow flycatcher surveys, supported project permitting, including multiple LSAs and Section 401 Waste Discharge Requirements (WDR), and prepared technical memos. Lead the re-vegetation monitoring effort for multiple projects and prepared associated annual reports.

Biologist; North Sky River Wind Energy Project; NextEra; Kern County, California. Conducted rare plants surveys along a transmission line corridor. Attended county planning meeting and participated in the renewable energy forum, which included multiple stakeholders. Assisted with biological monitoring during the construction phase.

Biologist; Chiquita Canyon Landfill Master Plan Revision; Waste Management, Inc.; Los Angeles County, California. Revised and updated the biological resources section of the Draft EIR. Conducted vegetation mapping, oak tree surveys, re-vegetation monitoring, amphibian surveys, and updated all vegetation mapping in accordance with the expanded project boundary.

Biologist; Alpine Solar Project; NRG Solar Alpine, LLC; Los Angeles County, California. Conducted preconstruction surveys for coast horned lizards, burrowing owls and badgers, rare plants surveys and assisted with preparing the biological technical report for an additional 35-acre project.

Biologist and Field Lead; Tehachapi Renewable Transmission Project (TRTP) – Segments 4-11 Compliance Monitoring; Southern California Edison (SCE); California. CH2M provided environmental compliance support to SCE during construction of the TRTP in accordance with the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). The TRTP includes construction of new and upgrade of 173 miles of transmission lines, construction of one new substation, major upgrade of one existing substation and upgrade of other ancillary facilities. When complete the TRTP will deliver up to 4300 MW of renewable energy to the Los Angeles Basin and the western Inland Empire. Provided general project support including preparing mitigation plans, conducting historical research on oil fields and obtaining abandonment details when applicable for the entire project. Field lead for preconstruction photographic documentation, coordinated with subcontractors, quality assurance/quality control of fieldwork and data, developed field protocols to streamline and standardize fieldwork and prepared task-related deliverables.

Biologist; Devers-Palo Verde No. 2 Transmission Line Project (DPV2) - Compliance Monitoring; SCE; California. CH2M provided environmental compliance support to SCE during construction of the DPV2 in accordance with the NEPA and CEQA. The DPV2 included construction of 153 miles of new transmission lines, construction of one new substation, major upgrades of two existing substations and upgrade of other ancillary facilities. Data entry of environmental data sheets, compiled all environmental data entry into a single database, prepared summaries of surveys needed and tasks completed at a proposed substation, and reviewed project-related mitigation plans.

Experience Prior to CH2M

Research Assistant; Vertebrate Ecology and Conservation Laboratory of Dr. Paul Stapp; California State University; Fullerton; 2009. Assisted with the completion of a long-term research project in the Mojave National Preserve. Monitoring the abundance of small mammals, and the effects of large and small herbivores and granivores on post-fire vegetation recovery.

Research Associate; Irvine Ranch Conservancy; Irvine, California; 2007 to 2009. Established and managed the wildlife and human access monitoring project with remote cameras, supervised and directed project volunteers, trained project interns, maintained and created the project database, quality control of database, compiled data entry from various project interns, edited and contributed with preparing project-related documents, collaborated with other organizations, and coordinated and facilitated small mammal monitoring projects with consultants. Assisted with other department projects as needed, such as restoration projects.

Professional Organizations/Affiliations

American Society of Mammalogists

California Native Plant Society
Ecological Society of America Honors and Awards (CAN employees: Honours and Awards)

Specialized Training

- California Rapid Assessment Method (CRAM) Trained Professional (2014)
- Certified Ecologist, Ecological Society of America (2013-2018)
- Wetland Training Institute: Basic Wetland Delineation 40-hour Training (2012)
- Desert Tortoise Council: Introduction to Surveying, Monitoring, and Handling Techniques Workshop (2011)
- Legends of the Fall: Exploring the Clandestine Flora of Early Fall in the Eastern Mojave Desert Workshop (2011)
- Occupational Safety and Health Administration 10-hour Construction Safety and Health certified
- Safety Coordinator - Construction
- CPR, AED, and First Aid certified
- Unites States Fish and Wildlife Service, Pacific Pocket Mouse Monitoring Workshop for Marine Corps Base Camp Pendleton Pacific Pocket Mouse Working Group (2007)

Publications and Presentations

“Small mammal community structure in response to post-fire vegetation changes in the Mojave National Preserve.” California State University, Fullerton (2010).

“Foraging behaviors of *Chaetodipus* spp. (pocket mice) in response to predation risk.” Published in Dimensions (2006).

“Foraging of *Chaetodipus* pocket mice in response to rattlesnake odors” (poster). Presented at the American Society of Mammalogists in Springfield, Missouri. Co-authored with Dr. Paul Stapp (2005).

“Foraging behavior of desert rodents in response to rattlesnake olfactory cues and predation risk” (poster). Presented at the Southern California Animal Behavior annual meeting in Riverside, California. Co-authored with Dr. Paul Stapp (2005).

"Road effects on desert perennials, *Larrea tridentata* and *Ambrosia dumosa*, across a bajada in the eastern Mojave Desert" (poster). Presented at the Society for Advancement of Chicanos and Native Americans in Science (SACNAS) Anaheim, California. Co-authored with Robert Rodarte, Victor Galvan, Susana Espino-Hernandez, and Maria Vega-Velez (2002).

"Anthropogenic effects on water quality and the potential impact on diversity of macroinvertebrates in southern California creeks" (poster). Presented at the Society for Advancement of Chicanos and Native Americans in Science (SACNAS) in Anaheim, California. Co-authored with Robert Rodarte, Victor Galvan, Susana Espino-Hernandez, and Maria Vega-Velez (2002).

“Differential Habitat Use by Fishes in Upper Newport Bay: Evidence for Nursery Function.” A presentation to the local community of the Upper Newport Bay at the Marine Studies Center in Newport, California. Co-authored with Victor Galvan, Susana Espino-Hernandez, Robert Rodarte, Maria Vega-Velez, and Dr. Michael Horn (2002).

Mark Canfield

Biologist

Education

B.S. Biology: Ecology. California State University Long Beach. 2004.

Distinguishing Qualifications

- More than 8 years' experience conducting biological studies throughout southern California.
- Authorized Biologist (USFWS) - California red-legged frog (CRLF) and arroyo toad (ARTO).
- Served as authorized biologist/handler for CRLF and ARTO for Tehachapi Renewable Transmission Project, Southern California Edison, Los Angeles County, CA.

Relevant Experience

Mark Canfield is a wildlife biologist with over 8 years of experience in research and monitoring of native southern California wildlife. Mr. Canfield is experienced in vertebrate inventory, population monitoring, and habitat assessment survey techniques, which include: visual surveys, plant surveys, small mammal, turtle, carnivore, and pitfall trapping; remote sensing (camera trap and YSI water quality sensors); radio-telemetry; environmental DNA (eDNA) survey; dip-net and seine surveys; exotic species removal; and translocation of FESA-listed amphibian species. Mr. Canfield has worked extensively throughout California's diverse array of habitats within San Diego, Orange, Riverside, San Bernardino, Los Angeles, Ventura, and Santa Barbara Counties. He has worked on projects in cooperation with various regulatory and other agencies including the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, National Forest Service, National Parks Service, California State Parks Department, United States Marine Corps, United States Army, non-governmental organizations, and municipalities.

Representative Project Experience

Biologist; Pipeline Safety Enhancement Plan (PSEP); San Diego Gas and Electric/Sempra Energy Utilities/Southern California Gas Company; Southern California; (January-December 2015). Mr. Canfield conducts pre-construction biological surveys for rare plants, special status wildlife, and nesting birds. In addition to biological surveys, he also serves as Environmental Monitor during construction activities, which require a full- time monitor on site (e.g. trenching), to ensure client compliance with local, state, and federal environmental permitting regulations.

Biologist; West of Devers Upgrade Project, Southern California Edison, Riverside County, CA (April 2015). Mr. Canfield conducted rare plant surveys as part of a pre-construction discovery and mapping survey crew within the alignment and designated buffer areas.

Authorized Biologist; **Tehachapi Renewable Transmission Project, Southern California Edison, Los Angeles County, CA (2014).** Mr. Canfield was one of the authorized biologists/handlers for California red-legged frog (CRLF) and arroyo toad (ARTO) in project areas that fell within the seasonal restriction areas for these species.

Biologist; **I-15/I-215 Interchange Improvement Project, Caltrans, Devore, CA, (2014).** Mr. Canfield assisted in the installation of avian exclusion devices and monitored nesting bird activity on Project bridges. He also conducted nesting bird surveys for Project vegetation clearance along I-15 and performed construction monitoring/compliance supervision within ESAs. In addition, he performed small mammal trapping targeted to San Bernardino kangaroo rat (SBKR) for translocation out of project right-of-way.

Biologist; Palomar Street Improvement Project, City of Wildomar, Wildomar, CA (2014). Preconstruction evaluation of Palomar Street widening Project. Mr. Canfield conducted USFWS protocol level presence/absence surveys for least Bell's vireo and yellow-billed cuckoo.

Biologist; SR-47 Schuyler Heim Bridge Replacement, Caltrans, Los Angeles, CA (2014). Mr. Canfield conducted peregrine falcon surveys for nesting activity on the Schuyler Heim and Badger Bridges as well as general bird species presence/absence observations.

Biologist; High Speed Rail Project, California High-Speed Rail (HSR) Authority, Los Angeles County, CA (2014). Mr. Canfield conducted protocol rare plant surveys along the proposed Project route from Palmdale to Los Angeles in support of preparation of a Project Level EIR/EIS. Surveys conducted in linear transects within sections of proposed HSR corridor and the corresponding 1,000 foot buffer in the Palmdale, Lancaster, and Acton region.

Lead Biologist; Exotic Water Snake (*Nerodia fasciata*) Removal and Trap Efficacy Project. Ken Malloy-Harbor Regional Park: Machado Lake, Harbor City, CA (2010). Project conducted to assess the population status of introduced banded watersnakes (*Nerodia fasciata*) in Machado Lake, to test various methods of watersnake capture, and to reduce the snake population in the lake. Managed field operations and three person crew for 10 week aquatic trapping effort. Other responsibilities included coordinating with property owner, coordinating snake specimen chain of custody with Sacramento research institution, and on site public relations. Developed new method for trap configuration and placement in water at 3 m depth.

Biologist; Herpetofaunal Pitfall Survey, Marine Corps Base Camp Pendleton (MCBCP), San Diego County, CA (2009-2011). Project conducted for AC/S Environmental Security, Marine Corps Base Camp Pendleton, to assess wildfire impacts on herpetofaunal communities over a two year period. Handling/processing of all endemic, as well as exotic, herpetofauna with the exception of venomous snakes. Small mammals were also a significant part of this effort. Data QA/QC and summary reporting were regular activities throughout the project.

Biologist; MSCP Post Fire Recovery Herpetofaunal Pitfall Surveys, Santa Ysabel Open Space Preserve, San Diego County, CA (2009-2012). Post fire project to assess wildfire impact on herpetofaunal communities. Mr. Canfield processed all endemic, as well as exotic, herpetofauna and small mammals for physical character data.

Biologist; Marine Corps Base Camp Pendleton (MCBCP) Arroyo Toad (*Anaxyrus californicus*) Monitoring Project, San Diego County, CA (April-July 2009-2012). Long-term project conducted for AC/S Environmental Security, Marine Corps Base Camp Pendleton, to monitor arroyo toad populations within the Santa Margarita River, San Onofre Creek, and San Mateo Creek. Mr. Canfield conducted diurnal protocol surveys for the presence of eggs and tadpoles, in addition to protocol night surveys for juveniles and adults. Eggs and tadpoles were visually observed, juveniles and adults were processed (sexed, weighed, measured, photographed) and released. Habitat data was collected in the presence of eggs and/or tadpoles during daytime surveys. Observed >1000 tadpoles, 41 juveniles, 17 adults

Biologist; Arroyo Toad (*Anaxyrus californicus*) Upland Habitat Use on MCBCP Project, San Diego County, CA (weekly, 2011-2014). Long-term, ongoing project conducted for AC/S Environmental Security, Marine Corps Base Camp Pendleton, with the objective to determine habitat use and upland movement patterns in arroyo toad populations. Mr. Canfield conducted protocol night surveys within the Santa Margarita River, San Onofre Creek, and San Mateo Creek drainages to capture, process (sex, weigh, measure, and photograph), and fit adult toads with radio-transmitter belts. Radio-transmitter belted individuals were then tracked once per week, diurnally, and animal location, as well as habitat

data, recorded. Once every six weeks, radio-transmitter belted individuals were tracked and retrieved from burrows during the night for animal welfare inspection. Mr. Canfield also conducted pitfall trapping to capture toads moving through the upland habitat between the months February-June, 2012-2014. Data collection and processing followed the night survey protocol, with radio- transmitter fitting and animal release. Toads too small for radio transmitters were toe-clipped according to location and released. All other non-toad animal captures were documented and animals released. Handled > 1300 adults over the course of the project. Observed >1000 tadpoles.

Biologist; Aquatic Vertebrate Surveys in Silverado Creek, Irvine Ranch Conservancy, Orange County, CA (Mar-Jun 2012). Short-term project conducted for Irvine Ranch Conservancy to assess presence/absence of arroyo toad and western pond turtle in Silverado Creek. Mr. Canfield participated in several protocol surveys that utilized visual detection, dip nets, and seines for detection of arroyo toad and western pond turtle.

Biologist; California Red-Legged Frog Genetics Project, Ventura and Santa Barbara Counties, CA (May, 2010). A project conducted in the spring of 2010 to determine genetic relationships of CRLF populations throughout the state. Mr. Canfield performed multiple, protocol, day and night surveys across Ventura and Santa Barbara counties. Adults were captured and processed (sexed, weighed, measured, swabbed, photographed, and toe clipped for tissue collection) and released. Handled 33 adults, observed >150 tadpoles.

Biologist; California Red-Legged Frog Egg Mass Surveys, East Las Virgenes Creek and San Francisquito Canyon Ventura and Los Angeles Counties, CA (2009-2013). A long term project monitoring the California red-legged frog populations in East Las Virgenes Creek and San Francisquito Canyon. Mr. Canfield participated in protocol egg mass surveys during the months of February-March, 2009-2013, to determine CRLF breeding. Egg mass physical characteristics were measured and recorded, as well as microhabitat characteristics around the egg masses. Adults were captured and processed (sexed, weighed, measured, swabbed, photographed, and PIT tagged) when detected, and released. Handled 13 adults, observed >30 tadpoles, observed 47 egg masses

Biologist; California Red-Legged Frog Surveys, Aliso Canyon, Angeles National Forest, Los Angeles County, CA (2009-2013). Mr. Canfield performed protocol visual encounter, as well as dip net/hand capture surveys for CRLF in the greater Aliso Canyon drainage during Oct.-Dec., 2009. Egg mass surveys were conducted during subsequent years (Jan.-Mar. 2010-2013) to assess presence/absence, post Station Fire. Egg mass physical characteristics were measured and recorded, as well as microhabitat characteristics around the egg masses. Adults were captured and processed (sexed, weighed, measured, swabbed, photographed, and PIT tagged) when detected, and released. Handled 4 adults, observed 11 egg masses.

Biologist; Sierra Madre Yellow-Legged Frog (*Rana muscosa*) Surveys, San Gabriel, San Bernardino, San Jacinto, and Palomar Mountains, CA (May-Oct., 2009-2013). Mr. Canfield was involved in numerous protocol surveys monitoring mountain yellow-legged frog populations within their remaining range. Surveys were visual detection/dip net capture. Adults were captured and processed (sexed, weighed, measured, swabbed, photographed, and PIT tagged) when detected, and released. Tadpoles were recorded when detected. Handled 53 adults, 72 juveniles, observed >1000 tadpoles, observed 3 egg masses.

Sierra Madre Yellow-Legged Frog (*Rana muscosa*) Translocation, San Gabriel Mountains, CA (Sep. 2013). Mr. Canfield participated in the translocation of approximately 60 juvenile mountain yellow-legged frogs from Devil's Canyon (Angeles National Forest) to another suitable canyon on the desert side of the San Gabriel Mountains. Handled 84 juveniles, observed > 200 tadpoles. All work performed was protocol directed.

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Sierra Madre Yellow-Legged Frog (*Rana muscosa*) Discovery Surveys, San Bernardino Mountains, CA (June-August, 2013). Biologist. Mr. Canfield performed protocol diurnal visual surveys for detection of mountain yellow-legged frog in Burnt Canyon.

Biologist; Distribution and Abundance Assessment of the Western Pond Turtle (*Actinemys marmorata*) on Marine Corps Base Camp Pendleton (MCBCP), San Diego County, CA (2010-2011). Two-year project throughout the coastal regions of Camp Pendleton. Performed turtle trapping using commercial hoop net traps baited with mackerel chunks or sardines. Turtles were processed and PIT tagged. Gravid females were x-rayed. Exotic species removed from wild and given to local herpetological society for adoption.

Biologist; Distribution and Abundance Assessment of the Western Pond Turtle (*Actinemys marmorata*) in Orange and San Bernardino Counties, CA (2010). Turtle trapping effort to obtain tissue samples in support of genetic analysis of turtle distribution. Performed turtle trapping using commercial hoop net traps baited with mackerel chunks or sardines in Victorville area, Mojave River, Aliso Creek, Oso Creek, and San Juan Creek. Visual protocol surveys performed in Carbon, Tonner, Brea and Soquel Canyons.

Biologist; Desert Tortoise (*Gopherus agassizii*) Population Assessment, Monitoring, and Translocation Project, US Geological Survey, U. S. Army National Training Center, Fort Irwin, San Bernardino County, CA (June-July, 2011). Tortoise were tracked weekly using radio telemetry transmitters attached to the carapace, and assessed monthly for welfare (nasal swabs, blood). Daily data QA/QC and GIS mapping were performed to ensure permit compliance and to provide accurate tracking maps for subsequent telemetry work.

Biologist; Habitat Connectivity and Human Impacts on Puente Hills Bobcat (*Lynx rufus*) population, Puente Hills Habitat Preservation Authority, Puente Hills Preserve, CA (2012-2013). Three-year project to develop models of wildlife movement and habitat connectivity within the Preserve. Mr. Canfield installed, monitored, and maintained 18 remote camera traps throughout Preserve. Live trapping of bobcats was conducted in late winter resulting in two successfully captured and collared bobcats. Project was postponed indefinitely due to litigation between Preserve and other land interests.

Biologist; Pacific Pocket Mouse (*Perognathus longimembris pacificus*) Monitoring Project, Marine Corps Base Camp Pendleton (MCBCP), San Diego County, CA (2010-2013). Assisted in trapping and processing of animals for population monitoring. Also performed installation, monitoring and maintenance of passive detection tracking tubes at sites throughout the base.

Biologist; Stephen's kangaroo rat (*Dipodomys stephensi*, SKR) Monitoring Project, Marine Corps Base Camp Pendleton (MCBCP), San Diego County, CA (2010-2013). Assisted in trapping and processing of SKR for population monitoring.

Biologist; Santa Ana Sucker (*Catostomus santaanae*) Big Tujunga Die-Off Surveys, Angeles National Forest, CA (2011). Performed seine survey in Big Tujunga Canyon in support of die-off investigation. Later assisted in tissue preparation and preservation for subsequent analysis.

Bioogist; Post Fire (Station Fire) Fish Survey, Angeles National Forest, CA (2009). Mr. Canfield conducted seine surveys for arroyo chub (*Gila orcuttii*), speckled dace (*Rhinichthys osculus*), Santa Ana sucker (*Catostomus santaanae*), and rainbow trout (*Onchorynkus mykiss*) in creeks and rivers throughout fire-affected areas in support of post-fire population assessment efforts.