

## **JEFFREY A. CROOKS**

Tijuana River National Estuarine Research Reserve  
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### **PROFESSIONAL PREPARATION**

Colorado State University, Zoology, B.S., 1984-1987  
San Diego State University, Biology, M.S., 1988-1992  
Scripps Institution of Oceanography, UC San Diego, Oceanography, Ph.D., 1992-1998  
Smithsonian Environmental Research Center, Post-Doctoral Fellow, 1999-2002

### **APPOINTMENTS**

*Lead Scientist* - Tijuana River National Estuarine Research Reserve, 2002-present  
*Research Associate* - Scripps Institution of Oceanography, UCSD, 2007-present  
*Affiliated Faculty* - Environmental & Ocean Science, University of San Diego, 2012-present  
*Adjunct Faculty* - San Diego State University, 2007-2012  
*Part-Time Lecturer* - University of San Francisco, 2001-2002

### **SYNERGISTIC ACTIVITIES**

*Co-President* - Society for the Study of Marine Bioinvasions, 2018-present  
*Wetlands Advisory Board* - City of San Diego (Mayoral Appointment), 1997-1999; 2009-present  
*Associate Editor* - Marine Ecology, 2010-present  
*Science Advisory Panel* - Southern California Wetlands Recovery Project, 2006-present  
*Strategic Advisory Board* - Southern California Coastal Ocean Observing System, 2006-present  
*NERRS System-Wide Monitoring Program Oversight Committee*, 2010-present  
*Science Advisory Committee* - Ormond Beach Restoration Project, 2010-present  
*Science and Technical Advisory Committee* - ReWild Mission Bay, 2015-present  
*Science Advisory Committee* - San Diego Bay Living Shorelines Project, 2013-present  
*Coastal Resilience Ventura* - The Nature Conservancy, 2011-2013  
*Ballast Outreach Advisory Team*, 2000-2007  
*Invited Participant* - National Invasive Species Act Reauthorization Conference, 2001  
*Invited Participant* - U.S. Fish and Wildlife Service Workshop on Marine Bioinvasions, 1998  
*Invited Participant* - National Forum on Species Invasions in U.S. Marine & Fresh Waters, 1996

### **GRANTS (P.I. & CO-P.I.)**

*Causes and Consequences of Hypoxic Events in Low-Inflow Estuaries* – NOAA Coastal

Hypoxia Research Program (L Levin, P.I.), 2018-2021

*Pre-Restoration Monitoring of the Tijuana Estuary Tidal Restoration Project* – California Coastal Conservancy (J Crooks, P.I.), 2017-2019

*Marshes on the Margins* - NOAA Ecological Effects of Sea Level Rise Program (M Cooper, P.I.) 2016-2020

*Monitoring and Management of Lagoon Mouths in Southern California* - NERR Science Collaborative (J Crooks, P.I.), 2015-2017

*Climate Change Impacts in San Diego's Coastal Wetlands* - Blasker Environment Grant, the San Diego Foundation (J Crooks, P.I.), 2015-2016

*Detection Anthropogenic Freshwater Impacts in Los Peñasquitos Lagoon* - County of San Diego and Los Peñasquitos Lagoon Foundation (J Crooks, P.I.), 2014-2017

*Ecosystem Monitoring of Los Peñasquitos Lagoon* - Coastal Conservancy, LPL Foundation (J Crooks, P.I.), 2004-present

*Restoration Monitoring of South San Diego Bay Salt Ponds* - Coastal Conservancy (J Crooks, P.I.), 2011-present

*Climate Change Adaptation in the Tijuana River Valley* - Coastal and Ocean Climate Applications, NOAA (J Crooks, P.I.), 2012-2016

*Temporal Investigations of Marsh Ecosystems (TIME): Using Temporal Information to Steer Wetland Recovery* - NERRS Science Collaborative (K Goodrich, P.I.), 2012-2015

*Eutrophication Monitoring of San Diego County Estuaries* – Southern California Coastal Water Research Project (M Sutula, P.I.), 2008-2009

*Invasive Ecosystem Engineers in the Salt Marshes of Southern California, USA, and Northern Baja California, Mexico* - Western Regional Panel, Aquatic Nuisance Species Task Force (J Crooks, P.I.), 2006-2007

*Invaders at the Interface: Adaptive Management for Invasive Species in a Coastal Wetland Reserve* - The San Diego Foundation (J Crooks, P.I.), 2006-2007

*Restoration of High Salt Marsh and Upland Transition Zone in the Tijuana River Estuary* - Southern California Wetlands Recovery Project (J Crooks, P.I.), 2004-2005

*The Invasion and Impacts of Tamarisk in Tijuana Estuary Salt Marshes and Ecosystem Recovery After its Removal* - California Sea Grant (L Levin, P.I.), 2004-2006

*Broad-Scale Non-Indigenous Species Monitoring along the West Coast in National Marine Sanctuaries and National Estuarine Research Reserves* - National Fish and Wildlife Foundation (G Ruiz, P.I.), 2003-2005

*Quantitative Analysis of Spatial Patterns of Marine Invasions for North America: Establishing a National Baseline & Database* - National Sea Grant (G Ruiz, P.I.), 2003-2005

*Experimental Eradication of an Invasive Snail in San Francisco Bay* – NOAA (G Ruiz P.I.), 200-2002

*Ballast Water and Fouling Community Study* - Port of Oakland (G Ruiz, P.I.), 2000-2002

*Understanding Patterns and Effects of Nonindigenous Species on Multiple Spatial Scales: A Quantitative and Comparative Approach* - National Sea Grant (G Ruiz, P.I.), 2000-2002  
*Contrasting Effects of Ecosystem Alteration by Two Exotic Wetland Invertebrates* - National Sea Grant (L Levin, P.I.), 1998-2000  
*Mildred Mathias Grant* - University of California Natural Reserve System, 1992

#### **FELLOWSHIPS & AWARDS**

*E.W. Scripps Fellowship* - Scripps Institution of Oceanography, 1996  
*Short-Term Invitational Fellowship* - Japan Society for the Promotion of Science, 1996  
*PADI Foundation Fellowship*, 1993  
*Mabel Myers Scholarship* - San Diego State University, 1992  
*President's Scholarship* - Colorado State University, 1984

#### **PUBLICATIONS**

Crooks, JA. 1992. The ecology of the introduced bivalve, *Musculista senhousia*, in Mission Bay, San Diego. M.S. Thesis. San Diego State University, San Diego, California.

Crooks, JA. 1996. The population ecology of an exotic mussel, *Musculista senhousia*, in a southern California bay. *Estuaries* 19(1): 42-50.

Levin, L, J Gage, P Lamont, L Cammidge, C Martin, A Patience, and JA Crooks. 1997. Infaunal community structure in a low oxygen, organic-rich habitat on the Oman continental slope, NW Arabian Sea. Pages 223-230 in *Responses of Marine Organisms to Their Environments*. Proceedings of the 30th Marine Biology Symposium.

Crooks, JA. 1998. The effects of the Introduced Mussel and Anthropogenic Agents on Benthic Ecosystems of Mission Bay, San Diego. Ph.D. Thesis. University of California, San Diego, California.

Crooks, JA. 1998. Habitat alteration and community-level effects of an exotic mussel, *Musculista senhousia*. *Marine Ecology Progress Series* 162: 137-152.

Crooks, JA. and ME Soulé. 1999. Lag times in population explosions of invasive species: Causes and implications. Pages 103-125 in OT Sandlund, PJ Schei, and A Viken (editors), *Invasive Species and Biodiversity Management*, Kluwer Academic Publishers, The Netherlands.

Crooks, JA and HS Khim. 1999. Architectural vs. biological effects of a habitat-altering, exotic mussel, *Musculista senhousia*. *Journal of Experimental Marine Biology and Ecology* 240: 53-75.

Crooks, JA. 2000. Scale-dependent effects of an introduced, habitat-modifying mussel in an urbanized wetland. Pages 154-156 in J Pederson (editor), *Proceedings of the 1<sup>st</sup> National Conference on Marine Bioinvasions*.

Dexter, DM and JA Crooks. 2000. Subtidal benthic communities and the invasion of an exotic mussel in an urbanized southern California bay: A long-term history. *Bulletin of the Southern California Academy of Sciences* 99: 128-146.

- Crooks, JA. 2001. Assessing invader effects within changing ecosystems: Historical and experimental perspectives on the role of an exotic mussel in an urbanized lagoon. *Biological Invasions* 3: 23-36.
- Crooks, JA. 2001. Oh what a tangled web ... The invasion of the mussel *Musculista senhousia* into marine ecosystems. *Dreissena* 11: 1-5.
- Ruiz, GM and JA Crooks. 2001. Marine invaders: Patterns, effects, and management of non-indigenous species. Pages 3-17 in P Gallagher and L Bendell-Young (editors), *Waters in Peril*, Kluwer Academic Publishers.
- Talley, TS, JA Crooks and LA Levin. 2001. Habitat utilization and alteration by the burrowing isopod, *Sphaeroma quoyanum*, in California salt marshes. *Marine Biology* 138: 561-573.
- Crooks, JA. 2002. Characterizing the consequences of invasions: The role of introduced ecosystem engineers. *Oikos* 97: 153-166.
- Crooks, JA. 2002. Predators of the invasive mussel, *Musculista senhousia*. *Pacific Science* 56: 49-56.
- Crooks, JA. 2002. The process of biological invasion: The arrival, establishment, and integration of exotic species into ecosystems. *Bulletin of the Japan Ecological Society, Kanto Division* 50: 15-22.
- Crooks, JA. 2003. Restoration of the tidal wetlands at the Tijuana River National Estuarine Research Reserve. *Bight Bulletin* 6: 4-8.
- Crooks, JA. 2005. Lag times and exotic species: the ecology and management of biological invasions in slow motion. *Ecoscience* 12: 316-329.
- de Rivera, CE, GM Ruiz, JA Crooks, K Wasson, S Lonhart, P Fofonoff, BP Steves, SS Rumrill, MS Brancato, WS Pegau, DA Bulthuis, RK Preisler, GC Schoch, E Bowlby, A DeVogelaere, MK Crawford, SR Gittings, AH Hines, L Takata, K Larson, T Huber, AM Leyman, E Collinetti, T Pasco, S Shull, M Anderson, and S Powell. 2005. Broad-scale non-indigenous species monitoring along the west coast in National Marine Sanctuaries and National Estuarine Research Reserves, Report to National Fish and Wildlife Foundation.
- Crooks, JA. 2006. The arrival, establishment, and integration of an invasive marine mussel into foreign ecosystems. Pages 113-115 in F Koike, MN Clout, M Kawamichi, M De Poorter, and K Iwatsuki (editors), *Proceedings of the International Conference on Assessment and Control of Invasion Risks*, Shoukadoh Book Sellers, Kyoto, Japan, and IUCN Press, Gland, Switzerland.
- Crooks, JA. 2006. *Musculista senhousia*. in PD Boersma, S Reichard, A Van Buren (editors), *Invasive Species of the Pacific Northwest*, University of Washington Press.
- Crooks, JA and A Suarez. 2006. Hyperconnectivity, invasive species, and the breakdown of natural barriers to dispersal. Pages 451-478 in KR Crooks & M.A Sanjayan (eds.), *Connectivity Conservation: Maintaining Connections for Nature*, Cambridge University Press, New York.
- Byers, JE, K Cuddington, CG Jones, TS Talley, A Hastings, JG Lambrinos, JA Crooks, and WG

- Wilson. 2006. Using ecosystem engineers to restore ecological systems. *Trends in Ecology and Evolution* 21: 493-500.
- Hastings, A, JE Byers, JA Crooks, K Cuddington, CG Jones, JG Lambrinos, TS Talley, WG Wilson. 2007. Ecosystem engineering in space and time. *Ecology Letters* 10: 153-164.
- Talley, TS and JA Crooks. 2007. Habitat conversion associated with bioeroding marine isopods. Pages 185-202 in KMD Cuddington, JE Byers, A Hastings, and WG Wilson (editors), *Ecosystem Engineers: Plants to Protists*, Elsevier.
- Whitcraft, CR, DM Talley, JA Crooks, J Boland, and J Gaskin. 2007. Invasion of tamarisk (*Tamarix* spp.) in a southern California salt marsh. *Biological Invasions* 9(7): 875-879
- Whitcraft, CR, LA Levin, D Talley, and JA Crooks. 2008. Utilization of invasive tamarisk by salt marsh consumers. *Oecologia* 158: 259-272.
- Crooks, JA. 2009. The role of exotic marine ecosystem engineers. Pages 287-304 In G Rilov and JA Crooks (editors), *Marine Bioinvasions: Ecological, Conservation, and Management Perspectives*, Springer.
- Crooks, JA and G Rilov. 2009. The establishment of marine invasive species. Pages 173-175 in G Rilov and JA Crooks (editors), *Biological Invasions in Marine Ecosystems: Ecological, Management, and Geographic Perspectives*, Springer.
- Crooks, JA and G Rilov. 2009. Geographic perspectives of invasions in the sea. Pages 389-391 in G Rilov and JA Crooks (editors), *Biological Invasions in Marine Ecosystems: Ecological, Management, and Geographic Perspectives*, Springer.
- Crooks, JA and G Rilov. 2009. Future directions for marine invasions research. Pages 621-625 in G Rilov and JA Crooks (editors), *Biological Invasions in Marine Ecosystems: Ecological, Management, and Geographic Perspectives*, Springer.
- Rilov, G and JA Crooks. 2009. Marine bioinvasions: conservation hazards and vehicles for ecological understanding. Pages 3-11 in G Rilov and JA Crooks (editors), *Marine Bioinvasions: Ecological, Conservation, and Management Perspectives*, Springer.
- Rilov, G and JA Crooks. 2009. *Marine Bioinvasions: Ecological, Conservation, and Management Perspectives*. Springer.
- Crooks, JA, AL Chang, and GM Ruiz. 2010. Aquatic pollution increases the relative success of invasive species. *Biological Invasions* 13: 165-176.
- Jones, CG, JL Gutierrez, JE Byers, JA Crooks, JG Lambrinos, and TS Talley. 2010. A framework for understanding physical ecosystem engineering by organisms. *Oikos* 119: 1862-1869.
- Crooks, JA. 2011. Lag times. Pages 404-410 in D Simberloff and M Rejmanek, *Encyclopedia of Introduced Invasive Species*, University of California Press.
- Simberloff, D and 141 signatories. 2011. Non-natives: 141 scientists object. *Nature* 475: 36.
- Levin, LA and JA Crooks. 2012. Functional consequences of invasive species in coastal and estuarine systems. Pages 17-51 in E Wolanski and DS McLusky (editors), *Treatise on Estuarine and Coastal Science*, Volume 7, Academic Press.
- Uyeda, K, D Deutschman, and JA Crooks. 2013. Abiotic limitation of invasive plants in the high

salt marsh transition zone. *Estuaries and Coasts* 36: 1125-1136.

- McLaughlin, K, M Sutula, L Busse, S Anderson, J Crooks, R Dagit, D Gibson, K Johnston, and L Stratton. 2014. A regional survey of the extent and magnitude of eutrophication in mediterranean estuaries of southern California, USA. *Estuaries and Coasts* 37: 259-278
- Crooks, JA, KR Crooks, and AJ Crooks. 2015. Observations of the non-native Pacific oyster (*Crassostrea gigas*) in San Diego County, California. *California Fish and Game* 101(2): 101-107.
- Johnston, K, I Medel, SS Anderson, ED Stein, CR Whitcraft, and JA Crooks. 2015. Estuarine Wetland Monitoring Manual (Level 3): Application and Assessment of US EPA Three-Tiered Monitoring Strategy to Southern California Coastal Wetlands. The Bay Foundation.
- Azzurro, E, F Maynou, J Belmaker, and JA Crooks. 2016. Lag times in Lessepsian fish invasion. *Biological Invasions* 18: 2761-2772.
- Crooks, JA, AL Chang, and GM Ruiz GM. 2016. Decoupling the response of an estuarine shrimp to architectural components of habitat structure. *PeerJ* 4:e2244
- Crooks, JA, DM Talley, M Cordrey, C Whitcraft, J Lorda-Solorzano, K Uyeda, H Bellringer, J McCullough, and M Almeida. 2016. Unnatural history: Biological invasions into coastal ecosystems. Pages 193-203 in *Proceedings of the US – Iran Symposium on Wetlands*, March 28-30, 2016, Irvine, California.
- Novoa, A, TS Talley, DM Talley, JA Crooks, and NB Reynolds. 2016. Spatial and temporal examination of bivalve communities in several estuaries of Southern California and northern Baja California, MX. *PLoS ONE* 11(2): e0148220. doi:10.1371/journal.pone.0148220
- Raposa, KB, K Wasson, E Smith, JA Crooks, P Delgado, SH Fernald, MC Ferner, A Helms, LA Hice, JW Mora, B Puckett, D Sanger, S Shull, L Spurrier, R Stevens, and S Lerberg. 2016. Assessing tidal marsh resilience to sea-level rise at broad geographic scales with multi-metric indices. *Biological Conservation* 204: 263-275.
- Safran, S, S Baumgarten, E Beller, JA Crooks, R Grossinger, J Lorda, T Longcore, D Bram, S Dark, E Stein, and T McIntosh. 2017. Tijuana River Valley Historical Ecology Investigation. San Francisco Estuary Institute-Aquatic Science Center, Publication #760.
- Chang, AL, C Brown, JA Crooks, and GM Ruiz. 2017. Dry and wet periods drive rapid shifts in community assembly in an estuarine ecosystem. *Global Change Biology*: 1-16.
- Rosencranz, JA, KM Thorne, KJ Buffington, JY Takekawa, RF Hechinger, TE Stewart, RF Ambrose, GM MacDonald, MA Holmgren, JA Crooks, RT Patton, and KD Lafferty. 2018. Sea-level rise, habitat loss, and potential extirpation of a salt marsh specialist bird in urbanized landscapes. *Ecology and Evolution* 313, 77.
- Goodrich, KA, D Boudreau, JA Crooks, A Eguiarte, and J Lorda. 2018. The role of social capital in climate change adaptation in a binational community. Chapter 18 in PR Lachapelle and DE Albrecht (editors). *Approaches to Address Climate Change at the Community Level*, Community Development Research and Practice Series. Routledge, U.K.
- Thomsen, J, B Morton, H Ossenbrügger, JA Crooks, P Valentich-Scott, and K Haynert. 2018.

- The mytilid plicate organ: revisiting a neglected organ. *Journal of Molluscan Studies*: 1-4: Lonhart, SI, R Jeppesen, R Beas-Luna, JA Crooks, and J Lorda. 2019. Shifts in the distribution and abundance of coastal marine species along the eastern Pacific Ocean during marine heatwaves from 2013-2018. *Marine Biodiversity Records* 12:13.
- Uyeda, K., DH Deutschman, and JA Crooks. in press. Effects of salt and drought stress on germination of non-native plants in the salt marsh to upland transition zone. *Estuaries and Coasts*.
- Wasson, K, K Raposa, M Almeida, K Beheshti, JA Crooks, A Deck, N Dix, C Garvey, J Goldstein, DS Johnson, S Lerberg, P Marcum, C Peter, B Puckett, J Schmitt, E Smith, K St. Laurent, K Swanson, M Tyrell, and R Guy. in press. Pattern and scale: evaluating generalities in crab distributions and marsh dynamics from small plots to a national scale. *Ecology*.
- Harvey, M, SN Giddings, ED Stein, JA Crooks, C Whitcraft, T Gallien, L Tiefenthaler, H Meltzer, G Pawlak, K Thorne, K Johnston, R Ambrose, SC Schroeter, HM Page, and H Elwany. submitted. Effects of offshore elevated water levels and waves during the 2015-2016 El Niño in Southern California Estuaries. *Estuaries and Coasts*.