

## VITA

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**NATIONALITY:** U.S. Citizen

### EDUCATION:

1985-1989	Univ. Oklahoma; PhD.	- Ecology
1985-1988	Univ. Oklahoma; M.A.	- Statistics
1982-1984	Univ. Oklahoma; M.S.	- Zoology
1978-1982	Ohio State Univ.; B.A.	- Philosophy
1978-1982	Ohio State Univ.; B.S.	- Zoology

### PROFESSIONAL EXPERIENCE:

2014- Present	Professor and Director, Southeast Environmental Research Center
2012- 2014	Utah EPSCoR Program Director and PI
2012- 2014	Utah National Science Foundation EPSCoR Director
2009 - 2010	Director, Long-Term Ecological Research Program, National Science Foundation
2008 – 2010	Program Officer, Division of Environmental Biology, National Science Foundation
2007 – 2008	Bullard Fellow, Harvard University
2007 - 2008	Distinguished Professor in Environmental Sciences, University of Notre Dame
2004 - Present	Graduate Faculty, University of Notre Dame
2003 - Present	Full Professor, Utah State University
2003 - 2006	Associate Dean and Director of Research and Graduate Education, College of Natural Resources
1996 - 2003	Associate Professor, Utah State University
1994 - Present	Adjunct Professor, University of Puerto Rico
1991 - 1996	Assistant Professor, Utah State University
1991 - 1994	Adjunct Lecturer, Otago University, New Zealand
1989 - 1993	Associate Scientist, CEER, University of Puerto Rico
1989 - 1991	Post-doctoral Fellow, Otago University, New Zealand (with C. Townsend)
1988 - 1989	ORAU Fellow
1982 - 1989	Graduate research assistant, Department of Zoology and The Oklahoma Biological Survey, University of Oklahoma
1980 - 1982	Research assistant, Department of Zoology and The Ohio Cooperative Fisheries Unit, Ohio State University

### TEACHING EXPERIENCE:

University of Notre Dame  
Aquatic Field Ecology  
The Philosophy of Ecology

Utah State University  
Biometry, Experimental Design, Quantitative Methods in Ecology, Sampling Designs for Ecology, Biostatistics, Competition, Philosophy of Science and Management, Ecology for non-majors, Ecology for majors, Conservation Biology, Biodiversity, Honors Integrated

Science; Philosophical Approaches to Ecological Statistics

Otago University

Stream Ecology, Summer Science camp for high school students

University of Oklahoma

Lecturer, Honors Program for gifted high school students

Lecturer, Principles of Ecology

Laboratory Instructor, Limnology

Teaching Assistant, Invertebrate Zoology

**UNIVERSITY AND PROFESSIONAL COMMITTEES:**

Utah State University

2012-2014	Faculty Senate Executive Council
2012-2014	President's Advisory Council
2012-present	Athletic Council
2011-present	Sustainability Council
2010-present	Faculty Senate
2009-present	Research Council
2003-present	Millville Advisory Board (chair)
2003-present	Biotech Research Advisory Committee
2003 -2006	CNR EPC and Graduate Education Committee (chair)
2003-2006	Curriculum Committee (chair)
2003-2006	Center For Integrative Biology Advisory Committee
2001-2006	Academic Standards Committee
2000-2006	Educational Policy Committee
1998-2006	Graduate Council
2000	CNR restructuring leadership
1998	CNR core course committee
1997-1998	Ecology Center Advisory Committee
1995-1999	CNR undergraduate education committee
1997-2001	Graduate Academic Review Committee (chair)
various yrs	Seminar Committee
various yrs	Undergraduate Advisory Committee

I currently sit on 15 graduate committees in the College of Natural Resources, Biology, Mathematics and Statistics, and Engineering as well as PhD committees at the University of Notre Dame, the University of Puerto Rico and the University of Pennsylvania

**Professional**

Luquillo LTER Science Council  
Klamath Basin Recovery Team  
STREON Steering Committee Member  
Center for Embedded Network Sensing (CENS), UCLA, Advisory Committee  
Long-Term Ecological Research Information Management committee member  
Long-Term Ecological Research, LTERArts Advisory Board  
University of Puerto Rico- IGERT Advisory Board  
North American Benthological Society – Program Chair (2008)  
Consortium of Regional Ecological Observatories (Co-chair)  
Intermountain Regional Observatory Network (Co-chair)  
June Sucker Recovery Team  
Bonneville Basin Recovery Team  
Ecological Society of America - Program Committee

**AWARDS:**

- 2010 Distinguished Service Award – Division of Environmental Biology, National Science Foundation
- 2009 Distinguished Service Award – Division of Environmental Biology, National Science Foundation
- 2009 Directors Award for Collaboration – National Science Foundation
- 2008 Harvard University Bullard Fellow
- 2007 University of Notre Dame Environmental Sciences Visiting Fellow
- 1999 Research recognition award – Mexican Government
- 1997 Research Paper of the Year - Mexico
- 1995 Researcher of the Year - American Fisheries Society
- 1994 finalist - NSF Presidential Young Scholar Award - Utah State
- 1990 UNESCO Young Scientist Fellow - New Zealand
- 1990 Best Dissertation - University of Oklahoma
- 1989 Presidential Post-Doctoral Fellow – Otago University
- 1988 Best student presentation - North American Benthological Society meeting, Tuscaloosa, Alabama
- 1986 Best poster in Arts and Sciences - University of Oklahoma, Graduate College Research Competition

**PROFESSIONAL SOCIETIES:**

American Institute of Biological Sciences  
American Fisheries Society  
American Society of Limnology and Oceanography  
American Society of Naturalists  
Ecological Society of America  
North American Benthological Society  
Conservation Biology  
Society of Restoration Ecology

**REVIEWER FOR:**

Proposals:                   DIVERSITAS  
                                  European Union  
                                  National Science Foundation  
                                  National Institute of Health  
                                  Environmental Protection Agency  
                                  U.S.D.A. Competitive Grants Program  
                                  Cal-Fed program

Manuscripts:               Ecology  
                                  Ecology Letters  
                                  Restoration Ecology  
                                  Transactions for the American Fisheries Society  
                                  Journal of the North American Benthological Society  
                                  Oikos  
                                  Freshwater Biology  
                                  North American Fisheries  
                                  Freshwater Ecology  
                                  Evolution  
                                  Copeia  
                                  American Naturalist

Conservation Biology  
Oecologia  
Science  
Nature  
BioScience  
Limnology and Oceanography  
Fundamental and Applied Limnology  
Trends in Ecology and Evolution  
Functional Ecology  
Hydrobiologia  
Crustacean Biology

**STUDENTS FINISHING UNDER MY SUPERVISION:**

Otago University (with C. Townsend)

1990 Angus McIntosh, B.Sc. Honours  
1991 Kerri-Anne Edge, B.Sc. Honours  
1991 Kathy Shave, B.Sc. Honours  
1991 Tania King, B.Sc. Honours  
1992 Brent Evans, M.Sc.  
1994 Angus McIntosh, PhD

Utah State University

1992 Kathy Coghill, M.S.  
1994 Robert Black, PhD  
1995 Laura Hartt, M.S.  
1996 Matt Petersen, M.S.  
1996 Pete Cavalli, M.S.  
1996 Heather Thomas, M.S.  
1997 Craig Schaugaard, M.S.  
1998 Bert Lewis, M.S.  
1998 Heather Thomas, PhD  
1999 Nick Bouwes, PhD  
2000 Jessica Gourley, M.S.  
2001 Eric Archer, M.S.  
2002 Matt Townsend, M.S.  
2002 Paul Badame, MNR  
2003 Josh Mace, MNR  
2004 Stephanie Rohan, M.S.  
2005 Leah Rigsby, M.S.  
2005 Eric Billman, M.S.  
2005 Tamara Heartsill-Scalley, PhD  
2006 Kris Buelow, M.S.  
2006 David Kikkert, M.S.  
2006 Praveena Pepalla, MNR  
2008 Catherine Hein, PhD  
2009 Stephanie Kraft, M.S.  
2009 Kevin Landom, M.S.  
2010 Brian Hines, M.S.  
2013 David Cole, Ph.D.  
2014 Omar Perez-Reyez, Ph.D.  
2014 Kit Wheeler, Ph.D.

## Research Experience for Undergraduates

2002 Summer Kartchner, USU  
2003 Alejandro Barberena, Univ. Puerto Rico  
2003 Vanessa Welsch, USU  
2003 Christine Mingione, Notre Dame  
2006 Sara Redd, USU  
2007 Maria Ocasio Torres, Univ. Puerto Rico  
2012 Tyler Nelson, Utah State University  
2012 Kristina Krone, Williams College

Post-docs Normand Bergeron, Utah State University (with J. Schmidt)  
Liz Bergey, Utah State University  
Phaedra Budy, Utah State University  
Felipe Blanco, Utah State University  
Jacob Parnell, Utah State University  
Samuel Rivera, Utah State University

## CURRENT GRADUATE STUDENTS

David Pluth - M.S.  
Deanna Stroud - M.S.  
Jason Barr – Ph.D.  
Maria Ocasio-Torres, Ph.D. – University of Puerto Rico

## INVITED LECTURES:

2013 Florida International University, Southeast Environmental Research Center – Theory-driven, Place-based, Long Term Research: Past, Present and Future.  
2013 University of Maryland, Center for the Environment – From Genes to Human-dominated Landscapes: Theory Driven, Place-based, Long Term Research  
2013 Washington State University – Overlapping River-Road Networks: Understanding the Complexity of Physical, Ecological and Human Interactions  
2012 University of Utah - Stream restoration: bringing back ecological function.  
2010 Society of International Limnology, Salzburg University, Austria – Plenary Talk - Rivers, Trees and Shrimp: A View of a Complex System After Twenty Years of Observation  
2010 University of Georgia, Institute of Ecology – The Complexity of Overlapping River-road Networks: It's an Uphill Battle  
2010 President's Council on Science and Technology – The role of long-term environmental observatories for understanding ecological and evolutionary change  
2009 University of Notre Dame – Integrating Social and Ecological Science  
2009 University of Maryland Baltimore County – Biocomplexity: integrating ecological research into a social sciences framework  
2008 University of Puerto Rico – The complexity of overlapping river and road networks  
2008 University of Louisiana-Lafayette – Oh the places you'll go: Long-term ecological research opportunities  
2008 University of Vermont – NSF funding opportunities in the aquatic sciences.  
2008 Harvard Forest, Harvard University – Using Hydrological connectivity as a framework for integration across disciplines  
2008 NSF, LTER mini-symposium – Hydrologic connectivity as a framework for integrating socio-ecological systems  
2007 University of Louisville – The biocomplexity of river-road networks in the tropics  
2007 University of New Hampshire – The complexity of river-road networks and human behavior.

- 2007 Harvard University – Of fish and men: the saga of an endangered fish and the imperiled ecosystem whence it came.
- 2006 Colorado State University, Dept. of Civil and Environmental Engineering – Seeking analyses for complex, non-linear dynamics of aquatic systems: The Puerto Rico Biocomplexity Example
- 2006 National Science Foundation and HBCU - Interdisciplinary research opportunities for graduate students
- 2006 North American Benthological Association Symposium – Comparing Temperate and Tropical Stream Ecology
- 2005 National Science Foundation – River-road networks and the complexity of foodwebs
- 2005 Northern Arizona University – The role of species in ecosystem function
- 2003 University of Notre Dame – Species diversity and ecosystem function
- 2003 University of Puerto Rico – The importance of shredders in tropical streams
- 2003 Colorado State University – Biocomplexity: What is it?
- 2003 North American Benthological Association Symposium – Tropical Stream Ecology
- 2002 Panama – Organization of Tropical Studies – What can ecologists learn from tropical stream ecologists?
- 2002 University of Puerto Rico – The role of biodiversity in Puerto Rican stream food webs.
- 2002 Utah State University Sustainability Conference – Water Development in the neo-tropics.
- 2001 Brigham Young University – Linking species to ecosystems: Puerto Rican stream foodwebs.
- 2001 Oregon State University – Floodplain restoration in the Colorado River Basin.
- 1999 Department of Landscape Architecture, Utah State University - What is sustainability?
- 1998 University of Puerto Rico - Geomorphological control of food web structure
- 1996 University of Montana, Flathead Lake Biological station - Using Ecological Principles to solve conservation problems
- 1994 Leon University, France - The role of introduced brown trout on the Taieri River Community.
- 1994 Leon University, France - Patch dynamics and The River Continuum Concept: can hierarchical organization save a dying concept?
- 1994 Austrian Freshwater Institute - The role of nonnative fish predators on the Colorado River Fish Community
- 1994 University of Prague - Assessing non-native fish effects in large rivers: a physical habitat template approach. (in conjunction with the Regulated Rivers Conference)
- 1994 University of Prague - Planning Reservoir Releases to enhance endangered fish habitat availability in the Colorado River Basin: Geomorphic interactions with non-native species effects. (in conjunction with the Regulated Rivers Conference).
- 1994 Desert Fishes Council, Symposium on the Upper Colorado River Program - Upper Colorado Recovery Implementation Program: directions for management of nonnative and native fish interactions.
- 1994 Desert Fishes Council, Symposium on the Upper Colorado River Program - Upper Colorado Recovery Implementation Program: Investigations and management directions for bonytail reintroductions.
- 1993 Association of Tropical Biology - Symposium on Island vs mainland ecology - Community structure on tropical islands and mainlands: Mechanistic explanations or biogeography?
- 1993 North American Benthological Society - Symposium on Chemical cues in aquatic systems - Responses of a freshwater shrimp to chemical and tactile stimuli from a large decapod predator
- 1993 Annual meeting of the Society of Range Management, Albuquerque, New Mexico - Stream habitat restoration and its effects on native and introduced trout: An abiotic and biotic evaluation (with R. Black and J. Kershner)
- 1993 Annual meeting of the North American Benthological Society, Calgary, Alberta, Canada - The response of native and introduced trout to coarse woody debris: An abiotic and biotic evaluation (with R. Black and J. Kershner)
- 1992 Lincoln University, New Zealand - Long-term ecological research in the Taieri River Drainage, Otago

- 1992 Christchurch University, New Zealand - Understanding stream community structure: The need for hierarchical analyses through time and space
- 1991 Utah Department of Wildlife Resources, Non-game section annual meeting -Experimental approaches for determining the impacts of introduced species on natives
- 1991 University of Oklahoma - Impacts of exotic species on New Zealand stream ecosystem dynamics
- 1991 Otago University - They shall not pass: A tale of the wily brown trout and some insignificant little tiddlers
- 1991 New Zealand Department of Conservation - Land-use changes and introduced fish species: How natural are New Zealand Stream communities?
- 1991 Symposium on geomorphology and stream ecology - North American Benthological Society - Flow variability and the dominance of *deleatidium* in two contrasting New Zealand streams (with M. Scarsbrook and C. Townsend)
- 1991 Utah State University - Hierarchical analyses for understanding stream community dynamics: The New Zealand Experience
- 1991 University of Puerto Rico - The relative importance of land use practices and introduced species on New Zealand stream community dynamics
- 1990 International Symposium on Spatial Information and Research-Hierarchical design and the use of geographic information systems to bridge the gap between river science and management
- 1990 Ecological Society of America Symposium - A vector algebraic approach to understanding cumulative effects in disturbed watersheds (with A. Covich)
- 1990 University of Otago - Predator-induced life-history shifts in a freshwater snail
- 1990 Woods Hole - jointly sponsored by the American Malacological Society - The role of chemical cues in antipredation strategies in freshwater snails
- 1990 Dartmouth - Hierarchical designs for understanding stream dynamics
- 1990 Dartmouth - Life history responses of snails to crayfish predators: Coevolved response?
- 1989 University of Otago Graduate Student Symposium - Long-term ecological research in a tropical forest
- 1989 Symposium sponsored by The Ecological Society of America and the Organization for Tropical Students - Effects of highly variable flow on detrital processing by decapod crustaceans in rainforest streams (with A. Covich)
- 1989 Symposium sponsored by the Institute of Tropical Forestry - Spatial and temporal analysis of woody debris and benthic invertebrates in two Puerto Rican streams (with A. Covich and D. Certain)
- 1989 Utah State University - Direct and indirect effects of crayfish predation on snail population dynamics: Is bigger really better?
- 1988 University of Oklahoma - Crayfish predation on snail community and population dynamics: Evaluating direct and indirect effects

#### **REGIONAL, NATIONAL AND INTERNATIONAL SEMINARS:**

I have presented 135 lectures/seminars at scientific conferences in addition to the invited seminars above

#### **PEER-REVIEWED PUBLICATIONS:**

Archer, SK. and TA Crowl. 2014. Retention of learned predator recognition in an endangered Sucker *Chasmistes liorus liorus*. Aquatic Biology. DOI: 10.3354/ab00558

Ocasio-Torres, M.E., T.A. Crowl and A.M. Sabat. 2014. Long rostrum in an amphidromous shrimp induced by chemical signals from a predatory fish. Freshwater Science 33:xx-xx.

Perez-Reyes, O., **Crowl, T.A.**, Hernandez-Garcia, P.J. Ledesma-Fuse, R., Villar-Fornes, F.A. and Covich, A.P. 2013. Freshwater decapods of Puerto Rico: a checklist and reports of new localities. Zootaxa 3713:329-344.

- Rivera, S., P. Martinez de Aguita, R.D. Ramsey and **T.A. Crowl**. 2013. Spatial modeling of tropical deforestation using socioeconomic and biophysical data. *Small Scale Forestry*. DOI 10.10007/s11842-012-9214-2
- Garner, J., A.L. Porter, N.C. Newman and **T.A. Crowl**. 2012. Assessing Research Networks and Disciplinary Engagement Changes Induced by an NSF Program. *Journal of Research Evaluation*.
- Choat, D., C. Prather, M. Michel, M. Barnes, D. Hoekman, C. Patrick, J. Ruegg and **T.A. Crowl**. 2012. Integrating theoretical components: A graphical model for graduate students and researchers. *BioScience* 62:594-602.
- Brokaw, N., **T.A. Crowl**, A.E. Lugo, W.H. McDowell, F.N. Scatena, R.B. Waide and M.R. Willig (eds.). 2012. *A Caribbean Forest Tapestry: The Multidimensional Nature of Disturbance and Response*. Oxford University Press, Oxford, U.K
- Lugo, A.E., R.B. Waide, M.R. Willig, **T.A. Crowl**, F.N. Scatena, J. Thompson, W.L. Silver, W.H. McDowell and N. Brokaw. 2012. Ecological Paradigms for the Tropics, in: *A Caribbean Forest Tapestry*, N. Brokaw, **T.A. Crowl**, A.E. Lugo, W.H. McDowell, F.N. Scatena, R.B. Waide and M.R. Willig, eds. Oxford University Press, Oxford, U.K.
- W.H. McDowell, **T.A. Crowl** and 22 authors. 2012. Geographic and Ecological Setting of the Luquillo Mountains, in: *A Caribbean Forest Tapestry*, N. Brokaw, **T.A. Crowl**, A.E. Lugo, W.H. McDowell, F.N. Scatena, R.B. Waide and M.R. Willig, eds. Oxford University Press, Oxford, U.K.
- Brokaw, N. **T.A. Crowl** and 23 authors. 2012. Response to Disturbance, in: *A Caribbean Forest Tapestry*, N. Brokaw, **T.A. Crowl**, A.E. Lugo, W.H. McDowell, F.N. Scatena, R.B. Waide and M.R. Willig, eds. Oxford University Press, Oxford, U.K.
- Crowl, T.A.** and 11 authors. 2012. When and Where Biota Matter, in: *A Caribbean Forest Tapestry*, N. Brokaw, **T.A. Crowl**, A.E. Lugo, W.H. McDowell, F.N. Scatena, R.B. Waide and M.R. Willig, eds. Oxford University Press, Oxford, U.K.
- Porter, A.L., J. Garner and **T.A. Crowl**. 2012. The RCN (Research Coordination Network) experiment: Evidence of the relationship between funded interdisciplinary networking and scholarly impact. *BioScience* 62:282-288.
- Parnell, J. J., G. Rompato, **T. A. Crowl**, B.C Weimer and M.E. Pfrender. 2011. Phylogenetic distance in Great Salt Lake microbial communities. *Aquatic Microbial Ecology* 6:267-273.
- Latta, L.C., M. Baker, **T.A. Crowl**, J.J. Parnell, B. Weimer, D.B. DeWald and M.E. Pfrender. 2011. Species and genotype diversity drive community and ecosystem properties in experimental microcosms. *Evolutionary Ecology* 25:1107-1125.
- Hein, C.L., A.S. Pike, J.F. Blanco, A.P. Covich, F.N. Scatena, C.P. Hawkins and **T.A. Crowl**. 2011. Effects of coupled natural and anthropogenic factors on the community structure of diadromous fish and shrimp species in tropical island streams. *Freshwater Biology* 56:1002-1015
- Perez-Reyes, O. and **T.A. Crowl**. 2010. Comparisons of the decapod community structure in urban and natural streams in Puerto Rico. *Integrative and Comparative Biology* 50:E280.
- Hein, C.L. and **T.A. Crowl**. 2010. Running the predator gauntlet: do freshwater shrimp (*Atya lanipes*) migrate above waterfalls to avoid fish predation? *Journal of the North American Benthological Society* 29(2):431-443.



- Crowl, T.A.** 2009. Putting philosophy back in the PhD: faculty response. *Frontiers in Ecology and the Environment*. 7:390-391.
- Heartsill-Scalley, T., **T.A. Crowl** and J. Thompson. 2009. Tree species distributions in relation to stream distance in mid-montane wet forest, Puerto Rico. *Caribbean Journal of Science* 45: 52-63.
- Parnell, J. J., **T. A. Crowl**, et al. 2009. Biodiversity in microbial communities: system scale patterns and mechanisms. *Molecular Ecology* **18**(7): 1455-1462.
- Kikkert, D. A., **T. A. Crowl**, and A.P. Covich. 2009. Upstream migration of amphidromous shrimps in the Luquillo Experimental Forest, Puerto Rico: temporal patterns and environmental cues. *Journal of the North American Benthological Society* **28**(1): 233-246.
- Covich, A.P., **T.A. Crowl**, C.L. Hein, M.J. Townsend and W.H. McDowell. 2009. Predator-prey interactions in river networks: A drainage basin comparison of shrimp spatial refugia. *Freshwater Biology* 54:450-465.
- Cross, W.F., A.P. Covich, **T.A. Crowl**, J.P. Benstead and A. Ramirez. 2008. Secondary production, longevity and consumption rates of freshwater shrimps in two tropical streams of contrasting geomorphology and food web structure. *Freshwater Biology* 53:2504-2519.
- Cole, D.D., K.E. Mock, B.L. Cardall and **T.A. Crowl**. 2008. Morphological and genetic structuring in the Utah Lake sucker complex. *Molecular Ecology* 17:5189-5204.
- Crowl, T.A.**, T.O. Crist, R.R. Parmenter, G. Belovsky and A.E. Lugo. 2008. The spread of invasive species and infectious disease as drivers of ecosystem change in an increasingly connected world. *Frontiers in Ecology and the Environment*. 6:238-246.
- Billman, E.J. and **T.A. Crowl**. 2007. Population dynamics of a June Sucker refuge population. *Transactions of the American Fisheries Society* 136:959-965.
- Miller, S.A. and T.A. Crowl. 2006. Effects of common carp (*Cyprinus carpio*) on macrophytes and invertebrate communities in a shallow lake *Freshwater Biology* 51: 85-94.
- Covich, A.P., T.A. Crowl, and T. Heartsill-Scalley. 2006. Effects of drought and hurricane disturbance on headwater distributions of palaemonid river shrimp (*Macrobrachium* spp.) in the Luquillo Mountains, Puerto Rico. *Journal of the North American Benthological Society* 25:99-107.
- Crowl, T.A., V. Welsh, T. Heartsill-Scalley and A.P. Covich. 2006. Effects of different types of conditioning on rates of leaf-litter shredding by *Xiphocaris elongata*, a neotropical freshwater shrimp. *Journal of the North American Benthological Society* 25:198-208.
- Beard, K.H., K.A. Vogt, D.J. Vogt, F.N. Scatena, A. P. Covich, R. Sigurdardottir, T.C. Siccama, and T.A. Crowl. 2005. The response of structural and functional characteristics of a tropical forested ecosystem to multiple, natural disturbances in legacy environments. *Ecological Monographs*. 75:345-361.
- Belovsky, G. E., D. B. Botkin, T. Crowl, K. Cummins, J. Franklin, Malcolm Hunter, A. Joern, D. B. Lindenmayer, J. MacMahon, C. Margules, and M. Scott. 2004. Ten Suggestions to Strengthen Ecology. *BioScience* 54:345-351.
- Covich, A.P., T.A. Crowl and F.N. Scatena. 2003. Effects of extreme low flows on freshwater shrimps in a perennial tropical stream. *Freshwater Biology* 2003 48:1199-1206.
- Covich, A.P., T.A. Crowl and F.N. Scatena. 2002. Defining Effects of Drought on Shrimp in Neotropical Headwater Streams, Puerto Rico. *Verhandlungen Internationale Vereinigung Limnologie*. 28:

- Crowl, T.A., A.P. Covich, F.N. Scatena, R. Phillips, M.J. Townsend and D.K. Vinson. 2002. Particulate organic matter dynamics in tropical headwater streams: a comparison of biotic and abiotic factors. *Verhandlungen Internationale Vereinigung Limnologie*. 28:1-5.
- Townsend, M.J., T.A. Crowl, R. Phillips, A.P. Covich and F.N. Scatena. 2002. Indirect and direct abiotic controls on a species-poor stream insect assemblage. *Verhandlungen Internationale Vereinigung Limnologie*. 28:101-104.
- Crowl, T.A., W.H. McDowell, A.P. Covich, and S.L. Johnson. 2001. Freshwater shrimp effects on detrital processing and nutrients in a tropical headwater stream. *Ecology* 82:775-783 .
- Horan, D.L., J.L. Kershner, C.P. Hawkins and T.A. Crowl. 2000. Effects of habitat area and complexity on Colorado River cutthroat trout density in Uinta Mountain streams. *Transactions of the American Fisheries Society* 129:1250-1263.
- Crowl, T.A., N. Bouwes, M.J. Townsend, A.P. Covich, and F.N. Scatena. 2000. Estimating the potential role of freshwater shrimp on an aquatic insect assemblage in a tropical headwater stream: A bioenergetics approach. *Verhandlungen Internationale vereinigung fur Theoretische und Angewandte Limnologie*. 27:6-2403-2407.
- Covich, A.P., T.A. Crowl, and F.N. Scatena. 2000. Linking habitat stability to floods and droughts: Effects on decapods in montane streams. *Verhandlungen Internationale vereinigung fur Theoretische und Angewandte Limnologie*. 27:1-5.
- Covich, A.P., M.A. Palmer, and T.A. Crowl. 1999. The role of benthic invertebrate species in Freshwater Ecosystems. *BioScience* 49:119-128.
- Johnson, S.L., A.P. Covich, T.A. Crowl, A. Estrada-Pinto, J. Bithorn and W. Wurtsbaugh. 1998. Do seasonality and disturbance influence reproduction in freshwater atyid shrimp in headwater streams, Puerto Rico? *Verhandlungen Internationale Vereinigung Limnologie* 26:2076-2081.
- Ibarra-Flores, F., J.R. Cox, M. Martin-Rivera, T.A. Crowl, B.E. Norton, R.E. Banner, and R.W. Miller. 1999. Soil Physicochemical changes following buffelgrass establishment in Mexico. *Arid Soil Research and Rehabilitation* 13:39-52.
- Covich, A.P., T.A. Crowl, S.L. Johnson, and F.N. Scatena. 1998. Drought effects on pool morphology and neotropical stream benthos. Pages 91-96. In: Segarra-García, R.I., editor. *Tropical hydrology and Caribbean Water Resources, Proceedings of the Third International Symposium on Water Resources*. American Water resources Association 98-2.
- Crowl, T.A., C.R. Townsend, N. Bouwes, and H. Thomas. 1997. Scales and causes of patchiness in stream invertebrate communities: top down predator effects? *Journal of North American Benthological Society* 16:277-285.
- Townsend, C.R., T.A. Crowl, C.J. Arbuttle and M.R. Scarsbook. 1997. The relationship between land use and physiochemistry, food resources and macroinvertebrate communities in tributaries of the Taieri River, New Zealand: a hierarchically scaled approach. *Freshwater Biology* 37:177-191.
- Covich, A.P., T.A. Crowl, S.L. Johnson, and M. Pyron. 1996. Distribution and abundance of tropical freshwater shrimp along a stream corridor: Response to disturbance. *Biotropica* 28:484-492.
- Ibarra-Flores, F., J.R. Cox, M. Martin-Rivera, T.A. Crowl, D.F. Post, R.W. Miller, and G.A. Rasmussen. 1995. Relationship between buffelgrass survival, organic carbon, and soil color in Mexico. *Soil Sci. Soc. Am. J.* 60:1120-1125.
- Allibone, R.M., T.A. Crowl, J.M. Holmes, J.M. King, R.M. McDowall, C.R. Townsend and G.P. Wallis.

- Isozyme analysis of *Galaxias* species (Teleostei: Galaxiidae) from the Taieri River, South Island, New Zealand: A species complex revealed. *Biological Journal of the Linnaean Society* 57:107-127.
- Ibarra-Flores, F., J.R. Cox, M. Martin-Rivera, T.A. Crowl, D.F. Post, R.W. Miller, and G.A. Rasmussen. 1995. Relationship between buffelgrass survival, organic carbon, and soil color in Mexico. *Soil Sci. Soc. Am. J.* 59:1120-1125.
- Ibarra-Flores, F., J.R. Cox, M. Martin-Rivera, T.A. Crowl, and C.A. Call. 1995. Predicting buffelgrass survival across a geographic and environmental gradient. *J. Range Manage.* 48:53-59.
- McIntosh, A.R., T.A. Crowl and C.R. Townsend. 1994. Size-related impacts of introduced brown trout on the distribution of native, common river galaxias. *New Zealand Journal of Marine and Freshwater Research* 28:135-144.
- Crowl, T.A. and A. Covich. 1994. Responses of freshwater shrimp to chemical and tactile stimuli from large decapod predators: Implications for habitat selection, *Journal of the North American Benthological Society* 13:291-298..
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- McIntosh, A.R., C.R. Townsend and T.A. Crowl. 1992. Competition for space between introduced brown trout (*Salmo trutta* L.) and a native galaxiid (*Galaxias vulgaris* Stokell) in a New Zealand stream. *Journal of Fish Biology*, 41:63-81.
- Crowl, T.A., C.R. Townsend and A. McIntosh. 1992. The effects of introduced trout on Austral-Asian fish communities. *Reviews in Fish Biology and Fisheries*, 2:217-241.
- Covich, A.P., T.A. Crowl, S.L. Johnson, D. Varza and D.L. Certain. 1991. Post-Hurricane Hugo increases in Atyid shrimp abundances in a Puerto Rican Montane Stream. *Biotropica*, 23:448-454.
- Townsend, C.R. and T.A. Crowl. 1991. Fragmented population structure in native New Zealand fish: An effect of introduced brown trout? *Oikos*, 61:347-354.
- Covich, A.P. and T.A. Crowl 1990. Effects of hurricane stormflow on transport of woody debris in a rain

forest stream (Luquillo, Puerto Rico), Proceedings of the International Symposium on Tropical Hydrology, 1990:197-205.

- Crowl, T.A. and A.P. Covich. 1990. Predator-induced life-history shifts in a freshwater snail: A chemical mediated and phenotypically plastic response. *Science*, 247:949-951.
- Crowl, T.A. 1990. Life-history strategies of a freshwater snail as a result of stream permanence and predation: Balancing conflicting demands. *Oecologia*, 84:238-243.
- Crowl, T.A., C.R. Townsend and A.P. Covich 1990. Hierarchical design and the use of geographic information systems to bridge the gap between river science and management. Proceedings of the International Symposium of the Spatial Information Research Centre, 2:27-35.
- Crowl, T.A. and G.D. Schnell 1990. Factors determining population density and size distributions of a freshwater snail in streams: Effects of spatial scale. *Oikos*, 59:359-367.
- Crowl, T.A. 1989. Effects of crayfish size, orientation and movement on the reactive distance of largemouth bass foraging in clear and turbid water. *Hydrobiologia*, 183:133-140.
- Crowl, T.A. and J.E. Alexander, Jr. 1989. Parental care and foraging ability in male water bugs (*Belostoma flumineum*). *Canadian Journal Zoology*, 67:513-515.
- Crowl, T.A. and J. Boxrucker 1989. Competitive effects of two introduced planktivores (threadfin Shad and inland silversides) on white crappie in Lake Thunderbird, Oklahoma. Proceedings of the Annual conference of Southeastern Association of Fish and Wildlife Agencies, 41:348-360.

#### **NON PEER-REVIEWED PUBLICATIONS:**

My students and I have written over 80 Federal and State Agency reports.

#### **RESEARCH SUPPORT:**

2014	National Science Foundation, Long-Term-Ecological-Research: Luquillo Experimental forest (\$75,000); Total NSF award – \$2.8 million
2013	Utah Lake Restoration Program (CUP) - \$155,000
2012-2017	National Science Foundation EPSCoR Track 1; iUTAH - \$20,000,000
2012-2017	Utah Science, Technology and Research Program (USTAR); Supporting funds for iUTAH - \$200,000
2012-2014	National Science Foundation: A Drupal Approach to Collecting, Coalating and disseminating Jurisdiction-Specific Data - \$170,787
2012	Utah Lake Restoration Program (CUP) - \$278,000
2012-2014	National Science Foundation, Long-Term-Ecological-Research: Luquillo Experimental forest (\$90,000); Total NSF award – \$2.8 million
2011	National Science Foundation, Long-Term-Ecological-Research: Luquillo Experimental forest (\$45,000); Total NSF award – \$6.8 million
2011	Utah Lake Restoration Program (\$238,000).
2007 - 2010	Utah Lake Restoration Program (\$1,279,000)
2006 - 2010	National Science Foundation, Long-Term-Ecological-Research: Luquillo Experimental forest (\$125,000); Total NSF award – \$6.8 million
2006 - 2008	Center for Integrative Biology, Below Species diversity effects on Ecosystem Function (\$108,000); Mike Pfrender, Co-PI.
2003 - 2008	National Science Foundation, Biocomplexity in the Environment: Dynamics of coupled river and road networks (\$340,807). Total NSF award - \$ 4.7 million
2006	Utah Lake Restoration Program (\$245,000)

2005 Utah Lake Restoration Program (\$225,000)

2004 June Sucker Recovery Program: Ecosystems Ecology of Utah Lake (\$282,000)

2003 June Sucker Recovery Program: Various research topics for the recovery of June Sucker (\$269,000)

2002 June Sucker Recovery Program: Various research topics for the recovery of June Sucker (\$162,000)

2001-2006 National Science Foundation, Long-Term-Ecological-Research: Luquillo Experimental forest (\$125,000); Total NSF award - \$6.2 million

2000 National Science Foundation, Long-Term-Ecological-Research: Luquillo Experimental Forest (\$15,660)

2000 U.S. Fisheries and Wildlife Service - Upper Colorado River Research (\$56,000.)

1999 National Science Foundation, Long-Term-Ecological-Research: Luquillo Experimental Forest (\$15,660)

1999 U.S. Fisheries and Wildlife Service - Upper Colorado River Research (\$290,568)

1998 National Science Foundation, Long-Term-Ecological-Research: Luquillo Experimental Forest (\$15,660)

1998 U.S. Fisheries and Wildlife Service - Upper Colorado River Research (\$231,160.)

1997 National Science Foundation, Long-Term-Ecological-Research: Luquillo Experimental Forest (\$15,660)

1997 U.S. Fisheries and Wildlife Service - Upper Colorado River Research (\$73,110.)

1996 National Science Foundation, Long-Term-Ecological-Research: Luquillo Experimental Forest (\$15,660)

1996 U.S. Fisheries and Wildlife Service - Upper Colorado River Research (\$337,987.)

1995 National Science Foundation, Long-Term-Ecological-Research: Luquillo Experimental Forest (\$15,660)

1995 U.S. Fisheries and Wildlife Service - Upper Colorado River Research (\$311,500)

1994 National Science Foundation, Long-Term-Ecological-Research: Luquillo Experimental Forest (\$98,660 over 6 years)

1994 U.S. Fisheries and Wildlife Service - Upper Colorado River Research (\$210,000.)

1994 U.S. Forest Service - Habitat restoration as a template for restoring native trout populations in high-mountain streams \$25,400.

1994 Department of Interior, Bureau of Reclamation - Development of an endangered fish experiment station (\$100,000)

1994 Utah Division of Wildlife Resources - Food web interactions in intermountain west lakes and reservoirs (\$46,000)

1994 IAFWA - Foodweb stability: the role of exotic species. \$41,000 (D. Beachamp, Co-PI)

1993 Department of Interior, U.S. Fish and Wildlife Service - Upper Colorado River Research (\$246,781; J. Schmidt, Co-PI)

1993 Dept. of Interior (through BOR) - Development of an endangered fish experiment station. \$90,000

1993 Utah Division of Wildlife Resources - Investigation of trophic competition and vulnerability to predation of gizzard shad and June sucker. \$61,334

1993 U.S. Forest Service - Colorado cutthroat trout restoration. \$24,600

1992 Dept. of Interior (through UDWR) - Upper Colorado River Research I. (J. Schmidt, Co-PI). \$50,660

1992 Dept. of Interior (through UDWR) - Upper Colorado River Research II. (J. Schmidt, Co-PI). \$54,810

1992 U.S. Forest Service - Historical importance of coarse woody debris in stream ecosystem function (J. Kershner, Co-PI). \$30,000

1992 U.S. Forest Service - Hierarchical analysis for stream ecosystems. \$17,000

1992 U. S. Forest Service - Habitat restoration as a template for restoring native trout populations in high-mountain Uinta streams (J. Kershner and R. Black, Co-PIs). \$25,000

1991 Utah Division of Wildlife Resources - Investigation of trophic competition and vulnerability to predation of gizzard shad and June sucker (T. Modde, Co-PI).

\$65,954

1991 Utah State University, New Faculty Grant - On the use of chemically-mediated anti-predation behaviors for determining phylogenetic and ecological relationships in freshwater pulmonate snails. \$19,097

1991 Ministry of Research, New Zealand - Land-use impacts on the Taieri River Ecosystem. NZ \$72,000

1991 Department of Conservation (DOC), New Zealand - Determination of native fish distributions with emphasis on determining the 'gene pool' in the Taieri River. NZ \$56,000

1990 U.S. Forest Service - Using hierarchical models to predict trout abundances and distributions on small streams (J. Kershner, Co-PI). \$42,000

1990 Department of Conservation - National Office - Genetic differentiation of native galaxiids: Effects of introduced predators. NZ \$18,000

1989 Otago Research Council - Land-use effects on Otago Stream community dynamics (C. Townsend, Co-PI). NZ \$65,000

1989 DSIR - Hydrology Group - Land-use effects on Otago stream community dynamics (C. Townsend, Co-PI). NZ \$5,000

1989 Otago Regional Council - Land-use effects on Otago stream community dynamics (C. Townsend, Co-PI). NZ \$17,000

1989 Otago Fish and Game Council - Land-use effects on Otago stream community dynamics (C. Townsend, Co-PI). NZ \$9,000