

Anne R. Kapuscinski

Environmental Studies Program, 6182 Steele Hall, Dartmouth College, Hanover, NH 03755

Education

Oregon State University, Fisheries (aquaculture focus), Ph.D. 1984

Oregon State University, Fisheries (aquaculture focus), M.S 1980 (Minor in Water Resources)

Swarthmore College, Biology, B.A. 1976

Positions

Dartmouth College

Sherman Fairchild Distinguished Professor of Sustainability Science, since July 2009

Chair of Environmental Studies Program, July 2011-June 2014

University of Minnesota

Professor, Dept of Fisheries, Wildlife and Conservation Biology, 1994-2009 (Assoc. Prof, 1989-1994, Assist Prof 1984-1989)

Sea Grant Extension Specialist (aquaculture and environment), 1984-2009

Director, Institute for Social, Economic and Ecological Sustainability, 1996-2009

Oregon State University

Fish Genetics Research Assistant / Aquaculture Instructor / Project leader, 1981-1984

Weyerhaeuser Company

Aquaculture Research Technician (Pacific salmon, freshwater prawns) 1976-1977

Selected Honors

Rachel Carson Environmental Award, Natural Products Association, 2014

Distinguished Service Award, *Society for Conservation Biology* – global award for extraordinary contributions to conservation research, teaching and conservation policy, 2008

Pew Fellow in Marine Conservation – global marine conservation award, 2001

U.S. Secretary of Agriculture Honor Award – USDA individual award, environment, 1997

Sea Grant Association National Student Award – for article based on M.S. thesis, 1983

Selected Recent Research Grants and Synergistic Activities (*lead PI and # co-PI)

Development of Cost-Viable and Fishmeal- and Fish Oil-Free Feeds for Nile Tilapia Using Microalgal Cells and Co-Products, USDA NIFA 2016-2017

*Life-cycle environmental benefits and financial resilience of integrated food-energy systems: closing the loop on nutrient, water, and energy, USDA NIFA, AST 2015-2017

*Integrated Food Energy Systems (IFES) – lead Dartmouth Team IFES

IGERT: Risk analysis of introduced species and genotypes, NSF 2007-2012

Aquaculture best management practices, MN Department of Natural Resources, 2008-2009

#The future of energy and Minnesota's water resources, Legislative and Citizens Commission on Minnesota Resources, 2008-2010

Genetic effects of hatchery trout on wild Lake Superior steelhead, MN Sea Grant, 2003-2006

*Ecosystem science & sustainability initiative, Archibald Bush Foundation, 2004-2008

#Transgenic fish: testing models to assess risk, USDA-BRAG Program 2000-2004

*National workshop on aquaculture standards, USDA Agricultural Marketing Service, UMN Extension, Packard Foundation, 2000

Professional Activities and Selected External Appointments

Consultative Group on International Agriculture Research (CGIAR), WorldFish Center Board of Trustees 2004-2007, Chair of Science Advisory Committee 2007-2011
Global Environmental Facility, Scientific and Technical Advisory Panel, 2002-2006
UN, Food and Agriculture Organization and World Health Organization: seven expert consultations on integrated food-energy systems, aquaculture, biotechnology, 1998-2013
National Academy of Science Committees: Chair, Research to Improve Evaluation of Impacts of Genetically Engineered Organisms on Terrestrial and Aquatic Wildlife, 2007-2008; Biological Confinement of Genetically Engineered Organisms, 2002-2004; Atlantic Salmon of Maine, 2001-2004; Protection of Pacific Northwest Salmon, 1992-1995
Conference on assessing ecological impacts of tilapia in Thailand: farm escapes, transgenics and genetically improved strains, Bangkok, Thailand, 2007, organizer
International Organic Aquaculture Workshops, University of Minnesota, 2000 and 2003
CGIAR Study Panel on Safe Use of Gene Technology and Its Products, 2003-2004
FDA Food Safety Advisory Committee, Biotechnology Subcommittee, 2002-2005
USDA Advisory Committees to the Secretary: Agricultural Biotechnology (ACAB), 2000-2002, Agricultural Biotechnology Advisory Committee (ABRAC), 1992-1996
AAAS Nominating committee, Section on Agriculture, Food & Renewable Resources, member, 2000-2004; chair 2003-2004
USDA Delegation to People's Republic of China, Aquaculture and Marine Biotechnology, 1995
USDA Delegation to OECD, Workshop on Aquatic Biotechnology, 1993
North Central Regional Aquaculture Center of USDA, Research Technical Committee Chair, 1988-1992; Board of Directors, *ex officio* 1988-1992; Executive Committee of Technical Committee, 1995-1996
Chair, Steering Committee of NCA-23 Subgroup on Aquaculture, led proposal to Congress to establish USDA North Central Regional Aquaculture Center, 1986-1987

Selected Major Editorial and Review Positions

Elementa: Science of the Anthropocene (<http://elementascience.org/>); inaugural Editor in Chief of Sustainability Transitions domain
Biological Invasions, Guest Editor, special issue on Genetic Biocontrol of Invasive Fish 2011-14
Lead Editor of book series, *Environmental Risk Assessment of Genetically Modified Organisms* (4 volumes), CABI Publishing, 2003-2008
Editorial Board, *Environmental Biosafety Research*, 2002-2012
USDA Review Panel, Animal Genome and Genetic Mechanisms, NRI Grants Program, 2002

Selected Teaching

Founder & Chair of interdisciplinary Sustainability Minor (Dartmouth since 2010) and Sustainability Studies Minor (University of Minnesota 2006-2009)
Environment and Society: Towards Sustainability? – Dartmouth (undergraduate course)
Sustainable Aquaculture - University of Minnesota (graduate/senior course)

Collaborators

William Ardren (US FWS), Richard Bawden (MSU), Genya Dana (State Dept), John Donaldson (South Africa Biodiversity Institute), Kathy Draeger (MN Regional Sustainable Development Partnership), Nicholas Jordan (UMN), Uthairat Na-Nakorn (Kasetsart Univ, Thailand), Tyler Pavlowich (Dartmouth), David Peart (Dartmouth), Peter Reich (UMN), Laura Schmitt-Olabisi

(MSU), Wansuk Senanan (Burapha Univ, Thailand), Leah Sharpe (NOAA Fisheries), Brian Stenquist (MN Dept of Natural Resources).

Refereed Publications (past four years)

Sarker, P. K., M. M. Gamble, S. Kelson, and A. R. **Kapuscinski**. 2015. Nile tilapia (*Oreochromis niloticus*) show high digestibility of lipid and fatty acids from marine *Schizochytrium sp.* and of protein and essential amino acids from freshwater *Spirulina sp.* feed ingredients. *Aquaculture Nutrition* (doi: 10.1111/anu.12230).

Gerst, M., M. Cox, K. Locke, M. Laser, and A.R. **Kapuscinski**. 2014. A taxonomic framework for assessing governance challenges and environmental effects of integrated food-energy systems. *Environmental Science and Technology*: 8 pp. & Suppl. Info. DOI 10.1021/es504090u

Kelson, S.J., A.R. **Kapuscinski**, D. Timmins, and W.R. Ardren. 2014. Fine-scale genetic structure of brook trout in a dendritic stream network. *Conservation Genetics*: 12pp. DOI [10.1007/s10592-014-0637-5](https://doi.org/10.1007/s10592-014-0637-5).

Kapuscinski, A.R. and L. M. Sharpe. 2014. Introduction: genetic biocontrol of invasive fish species. *Biological Invasions* (special issue): DOI: 10.1007/s10530-014-0681-6

Johnson, K., G. Dana, N. R. Jordan, K. J. Draeger, A. **Kapuscinski**, L. K. Schmitt Olabisi and P. B. Reich. 2012 Using participatory scenarios to stimulate social learning for collaborative sustainable development. *Ecology and Society* 17(2): article 9 (22 pages). <http://www.ecologyandsociety.org/vol17/iss2/art9/>

Dana, G., A.R. **Kapuscinski** and J. Donaldson. 2012. Integrating diverse scientific and practitioner knowledge in ecological risk analysis: a case study of biodiversity risk assessment in South Africa. *Journal of Environmental Management* 98: 134-146.

Sukmanomon, S., Senanan, W., **Kapuscinski**, A., Na-Nakorn, U. 2012. Genetic diversity of feral populations of Nile tilapia (*Oreochromis niloticus*) in Thailand and evidence of genetic introgression. *Kasetsart Journal (Natural Science)* 46: 1-18. <http://kasetsartjournal.ku.ac.th/>

Hill, J.E., A. R. **Kapuscinski** and T. Pavlowich. 2011. Fluorescent transgenic zebra reio more vulnerable to predators than wild-type. *Transactions of the American Fisheries Society* 140(4): 101-105.

Pennington, K. M. and A. R. **Kapuscinski**. 2011. Predation and food limitation influence fitness traits of growth-enhanced transgenic and wild-type fish. *Transactions of the American Fisheries Society* 140:221-234. <http://www.tandfonline.com/doi/abs/10.1080/00028487.2011.545012>

Hove, M.C., B. E. Sietman, J.E. Bakelaar, J.A. Bury, D. J. Heath, D. J. Hornbach and A.R. **Kapuscinski**. 2011. Early life history and distribution of pistolgrip (*Tritogonia verrucosa*

(Rafinesque, 1820) in Minnesota and Wisconsin. *The American Midland Naturalist* 165(2):338-354.

Pennington, K. M., A. R. **Kapuscinski**, M. S. Morton, A. M. Cooper, and L. M. Miller. 2010. Full life-cycle assessment of gene flow consistent with fitness differences in transgenic and wild-type Japanese medaka fish (*Oryzias latipes*). *Environmental Biosafety Research* 9(2010):41-57. <http://www.ebr-journal.org/10.1051/ebr/2010005>

Schmitt-Olabisi, L., A.R. **Kapuscinski**, K. Johnson, P. Reich, B. Stenquist, and K. Draeger. 2010. Using scenario visioning and participatory system dynamics modeling to investigate the future: Lessons from Minnesota 2050. *Sustainability* 2(8): 2686-2706. www.mdpi.com/2071-1050/2/8/2686

Cooper, A.M., **Kapuscinski**, A.R., and Miller, L.M. 2009. Conservation of population structure and genetic diversity under captive breeding of remnant coaster brook trout (*Salvelinus fontinalis*) populations. *Conservation Genetics* 11(3): 1087-1093.

Schmitt Olabisi, L. P.B. Reich, K. A. Johnson^a, A. R. **Kapuscinski**^a, S. Suh^a, and E. Wilson^a. 2009. Reducing greenhouse gas emissions for climate stabilization: framing regional options. *Environmental Science and Technology* 43(6): 1696-1703. (^a these co-authors contributed equally and are listed alphabetically).

Refereed Manuscripts

Sarker, P.K., A. R. **Kapuscinski**, A.J. Lanois, E.D. Livesey, K.P. Bernhard, M.L.Coley. Towards sustainable aquafeeds: complete substitution of fish oil with marine microalga *Schizochytrium sp.* improves growth, feed efficiency, and health-promoting fatty acid profiles in Nile tilapia (*Oreochromis niloticus*). *PLOS One*: in review.

Kapuscinski, A.R., L. Schmitt-Olabisi, K. Johnson, N. Jordan, P. Reich, R. Bawden, K. Draeger, G.V. Dana, and B. Stenquist. Learning systems for sustainability: knowledge for action in an uncertain world. *Ecology and Society*: in revision.

Patent Pending

Kapuscinski, A.R and Sarker, P.K., 2015. Aquaculture Feed Formulation and Aquaculture Product Produced With the Same. U.S. Provisional Application, DC0562US. L2. Filing date: January 23, 2015.

Selected Non-refereed Publications

Institute on the Environment, CR Planning, & Bonestroo (**Kapuscinski** core management team & co- chair of habitat chapter). 2008. Minnesota Statewide Conservation and Preservation Final Plan: 330 pp. www.lccmr.leg.mn/statewideconservationplan/SCPP_FinalPlan.html

- NRC (National Research Council) (**Kapuscinski** chair of committee and workshop, report produced by contracted rapporteur). 2008. Genetically engineered organisms, wildlife and habitat. A workshop summary. National Academy Press, Washington D.C.
- Kapuscinski**, A.R. 2008. Risk assessment and monitoring in genetic improvement programs. Pages 74-87 in *FAO Technical Guidelines for Responsible Fisheries, Aquaculture: Genetic Resource Management*. No. 5, Supplement 3, Aquaculture 3. Genetic Resource Management. Rome, Food and Agriculture Organization.
- Brister, D. J. and A. R. **Kapuscinski**. 2007. A life cycle framework to identify effects of aquaculture on environmental, economic and social sustainability goals: A tool for organic and other eco-labeling systems. *FAO Expert Workshop on Guidelines for Aquaculture Certification*.
- FAO/WHO 2007. (**Kapuscinski chair**) *FAO/WHO Expert Consultation on the Safety Assessment of Foods Derived from Recombinant-DNA Animals*, Geneva, 26 February-2 March 2007. www.who.int/foodsafety/biotech/meetings/animals_2007/en/index.html
- Bartley, D. and A. R. **Kapuscinski**. 2007. What makes fishery enhancements responsible? In Nielsen, J., J. Dodson, K. Friedland, T. Hamon, N. Hughes, J. Musick and E. Verspoor (eds). *Proceedings of the Fourth World Fisheries Congress: Reconciling Fisheries with Conservation*. American Fisheries Society Symposium 49: 945-965.
- Kapuscinski**, A.R. and T. J. Patronski. 2005. *Genetic Methods for Biological Control of Non-native Fish in the Gila River Basin*. Contract report to the US Fish and Wildlife Service. University of Minnesota, Institute for Social Economic and Ecological Sustainability. MN Sea Grant Publication F 20. 100 pp. Available at www.seagrant.umn.edu/publications/F20
- CGIAR Study Panel (**Kapuscinski** one of 5 co-authors). 2004. *Safe Use of Gene Technology and Its Products*. Report to the CGIAR Science Council, January 2004.
- FAO/WHO 2003. (**Kapuscinski rapporteur**). *FAO/WHO Expert Consultation on the Safety Assessment of Foods Derived from Genetically Modified Animals Including Fish*, Rome, 17-21 November 2003. Food and Agriculture Organization of the United Nations, Rome. Available at ftp://ftp.fao.org/es/esn/food/gmanimal_report_en.pdf
- Scientific and Technical Advisory Panel (STAP) of the Global Environment Facility (GEF) (**Kapuscinski** member of small writing group and one of 15 co-authors). 2004. A conceptual design tool for exploiting the interlinkages between the focal areas of the GEF. A report focusing on the needs of the Global Environment Facility. STAP Secretariat, Washington D.C. 47pp.
- Miller, L.M., A.R. **Kapuscinski** and W. Senanan. 2004. A biosafety approach to addressing risks posed by aquaculture escapees. Pages 56-65 In M.V.Gupta, D.M. Bartley, B.O. Acosta (eds.) *Use of Genetically Improved and Alien Species for Aquaculture and Conservation of Aquatic Biodiversity in Africa*. World Fish Center Conference Proceedings 68.

Kapuscinski, A.R., R. M. Goodman, S. D. Hann, L. R. Jacobs E. ,E. Pullins, C. S. Johnson, J. D. Kinsey, R. L. Krall, A. G.M. La Viña, M. G. Mellon, and V. W. Ruttan. 2003. Making Safety First a Reality for Biotechnology Products. *Nature Biotechnology* 21(6): 599-601. (Invited Commentary)

Kapuscinski, A.R. and D. J. Brister. 2001. Genetic impacts of aquaculture. Pages 128-153 in K.D. Black, ed. *Environmental Impacts of Aquaculture*. Sheffield Academic Press, UK.

Kapuscinski, A.R. 2003. The national safety first initiative. In A. Eaglesham, C. Carlson and R.W.F. Hardy, eds. *NABC Report 14 on Foods for Health: Integrating Agriculture, Medicine and Food for Future Health*. Pages 91-99. National Agricultural Biotechnology Council: Ithaca, NY.

Brister, D.J. and A.R. **Kapuscinski**. 2001. *Environmental Assessment Tool for Aquaculture in the Great Lakes*. Version 1.2. Part One Introductory Material, Supporting Text and Summary Documentation; Part Two: Assessment Pathway Flowcharts. Prepared for the Great Lakes Fishery Commission. 167 pp. + Appendices. Available at: www.glfc.org.