

# MICHAEL C. RUBINO

## SUMMARY

Over twenty five years of experience leading programs and projects in the private sector, federal government, and international finance organizations all focused on addressing natural resources challenges through innovative solutions. These efforts involved marine resources, aquaculture, agriculture, and renewable energy initiatives. In recent years, I have built and directed NOAA's aquaculture program. I created internal and external partnerships to resolve regulatory issues, advance scientific knowledge, transfer technology, and increase public acceptance of aquaculture's role in our nation's food supply. These efforts contributed to an 8 percent per year increase in US marine aquaculture production and associated job creation during the past 5 years.

## EDUCATION

**Ph.D. Natural Resources**, University of Michigan, Ann Arbor, 1984

**M.A. Economics**, University of Michigan, Ann Arbor, 1977

**B.A. with Honors in Economics**, Vassar College, 1975

**Harvard Agribusiness Seminar**. 2005.

**Young Professionals Program. Commission of the European Community**, Brussels, Belgium. 1978.

## EXPERIENCE

**National Oceanic and Atmospheric Administration (NOAA)**

**Director, Office of Aquaculture, National Marine Fisheries Service (NMFS)** 2011 – present.

**Manager, NOAA Aquaculture Program** 2004 -- 2011.

Direct the federal government's marine aquaculture office and coordinate a NOAA-wide \$25 million aquaculture program (components at NMFS, National Sea Grant College Program, and National Ocean Service).

- Manage 10 staff at headquarters and 5 in regional offices, a budget of \$9.3 million (including science center R&D) and oversee or coordinate administration of \$10 million to \$15 million per year in external grants.
- Serve as the federal government's lead official for marine aquaculture as Vice Chairman of Interagency Working Group on Aquaculture. Co-led team of scientists from federal agencies that drafted The National Strategic Plan for Federal Aquaculture Research published by the White House Office of Science Technology Policy (2011).
- Serve on the NMFS Leadership Council that sets agency policy and strategy for fisheries regulations, habitat restoration, endangered species conservation, and aquaculture.
- Design permit regulations and accompanying science tools (siting, water quality, and genetics models; monitoring guidelines) that have expedited permitting of thousands of acres of aquaculture farms while maintaining environmental safeguards.
- Co-design and develop aquaculture regulations with other federal agencies including regulations that opened federal waters to finfish farming for the first time.

- Co-drafted and worked with the Administration and Congress to introduce national aquaculture legislation and drafted and secured approval for National Ocean Policy and Presidential aquaculture directives.
- Brief Congress and White House officials; worked with the Administration and Congress to create a Congressional budget line for aquaculture at NMFS and increase appropriations from \$3 million to \$9.3 million.
- Initiate and manage external partnerships including the National Shellfish, Technology Transfer, and NOAA-US Department of Agriculture Alternative Feeds Initiatives responsible expansion of shellfish farming, innovative technology, and development of plant based alternatives to the use of fish meal and fish oil in aquaculture feeds.
- Leverage NOAA science base funds with private sector cooperative agreements.
- Advance the public's understanding and acceptance of aquaculture via social media, web, video, journal articles, speeches, and TV, radio, and newspaper interviews.
- Serve as the senior federal representative to the US-Japan Natural Resources committee on aquaculture and other bilateral and multilateral science agreements.
- Hired and mentor a diverse staff.

**Manager, New Funds Development, Carbon Finance Unit, The World Bank.** 2002 – 2003.  
Managed small team that designed and raised investment funds for the Community Development Carbon Fund (started at \$50m) and the BioCarbon Fund (\$20m).

**Advisory and Consulting Work.** 1999 – 2001, 2004. Examples:

- Designed a renewable energy and energy efficiency fund for Central and Eastern Europe for an insurance company and a food and fiber investment fund for private investors.
- Undertook investment fund raising and business analysis for algae biotech, aquaculture, health/nutrition, forestry, seafood, and online artisan startup companies.
- Managed team of consultants that developed an environmental investment strategy for the Multilateral Investment Fund (Inter American Development Bank).

**Project Officer. International Finance Corporation (IFC), Environmental Unit.** 1992 - 1998.  
Designed and raised capital for environmental investment funds (with private, bilateral, foundation, IFC, and Global Environment Facility (GEF) investments):

- ◆ Terra Capital Fund (\$15m biodiversity fund for Latin America),
- ◆ Renewable Energy and Energy Efficiency Fund (\$50m),
- ◆ IFC/GEF Small and Medium Scale Enterprise Program (\$20m).

**Partner. Palmetto Aquaculture Company.** 1987 – 2010.

Raised shrimp in South Carolina tidal ponds. Co-responsible for all scientific and business aspects: technology, design, pond water quality, stocking, feeds, harvest, and marketing.

**CEO. Bluewaters, Inc., Columbia, SC.** 1987 - 1992.

- Co-founded and managed a \$2.5m aquaculture venture from Phase 1 and Phase 2 Small Business Innovation Research (SBIR) grants from the National Science Foundation to pilot projects and initial commercial production of crayfish (in South Carolina, Dominica, Jamaica) financed by venture capital and a US Agency for International Development loan. Directed 5 scientists and field personnel and all aspects of the operation (R&D, financing, payroll, pond and hatchery construction). Conducted collaborative research with Auburn University.
- Undertook agribusiness venture development and research work for private and public sector clients in the Caribbean, Latin America, Europe, and the US.

**Principal. The Traverse Group, Inc.,** Washington, DC/Ann Arbor, MI. 1984-1987.  
Coastal resources and environmental engineering projects.

**LANGUAGES** French - fluent  
German and Spanish - fair

**AWARDS** US Department of Commerce Silver Award 2013  
NOAA Administrator's Awards 2011, 2016  
World Bank Team Award 2003  
Fellowships for graduate study in economics and natural resources

### **OTHER ACTIVITIES**

**Board of Advisors.** Fisheries Finance Fund Project of **Coastal Enterprises, Inc.,** a nonprofit financing organization in Maine, to design a national network of financing institutions supporting working waterfront businesses. 2015 – 2016.

**Adjunct Faculty. University of Rhode Island.** 2008-2009. Served on a dissertation committee.

**Board of Directors, Environmental Resources Trust,** a non-profit pioneer of renewable energy credits and carbon offset and energy efficiency financing. 2004 – 2006.

**Member, Panel of Experts** advising the **World Business Council for Sustainable Development's** seminal work on sustainable business practices "Financing Change: the Financial Community, Eco-efficiency, and Sustainable Development." 1996.

**Trustee. Vassar College.** 1986-1990. Investment and Finance Committee, Chairman, Investor Responsibility Committee.

**Vice Chairman, Maryland's Aquaculture Advisory Committee.** Appointed by Governor, 1988-1992 terms; Elected Vice Chairman, 1989-1992.

**Soccer.** Player, former coach and referee. National Class C Coaching License.

**Author.** Articles on aquaculture, environmental finance, and natural resources policy (e.g., in *International Affairs, Aquaculture Economics & Management, Human Organization, J. of Shellfisheries Research, Reviews in Fishery Science, and Environmental Finance*).

**Media Interviews.** Widely quoted in national media such as the New York Times, Washington Post, Boston Globe, Associated Press, and regional newspapers and trade press. Appeared on national and local radio and TV shows (e.g., Kojo Nnandi on NPR, AquaKids, and the Frontline documentary *The Fish on My Plate*).

**Speaker** at numerous conferences including the American Association for the Advancement of Science, World Aquaculture Society, American Fisheries Society, Sustainable Seafood Summit, National Shellfisheries Association, Consortium for Ocean Leadership, the World Bank's Environmentally Sustainable Development Conferences and conferences sponsored by Scientific American, the Royal Institute of International Affairs, the World Business Council for Sustainable Development New England Aquarium, Aquarium of the Pacific, seafood and soybean

trade associations, the Friedrich Naumann Stiftung, the Smithsonian Institution, the German Marshall Fund, German government, the Center for Strategic and International Studies, the World Resources Institute, Swiss Re, and the Hannover Messe.

**Member** American Association for the Advancement of Science, World Aquaculture Society, American Fisheries Society, and National Shellfisheries Association.

## **SELECTED PUBLICATIONS**

Knapp, G. and M.C. Rubino. 2016. "The Political Economics of U.S. Marine Aquaculture." *Reviews in Fisheries & Aquaculture Science*. 24(3), 213-229.

Rust, M., J. Morris, K. Amos, L. Juarez, A. Bagwill, and M. Rubino. 2014. "Environmental Effects of Salmon Net-Pen Culture." *Fisheries*. 39(11):508-524.

Kite-Powell, H.L., M.C. Rubino, and B. Morehead. 2013. "The Future of U.S. Seafood Supply." *Aquaculture Economics & Management*, 17(3):228-250.

Trushenski, J.T., L. Juarez, G. Jensen, M. Freeze, M. Schwartz, J. Silverstein, J. Bader, J. Rolland, and M. Rubino. 2012. AFS and Aquaculture—Addressing the High Stakes of a Sustainable Seafood Supply. *Fisheries*, 37:390-396.

Rubino, Michael C. 2008. "At the Crossroads: the Future of U.S. Aquaculture." *Sea Technology*, 48(4)4.

Rubino, Michael C. 2008. "Offshore Aquaculture in the United States: Introduction to Economic Considerations." In Michael C. Rubino, ed. *Offshore Aquaculture in the United States: Economic Considerations, Implications and Opportunities*. NOAA Technical Memorandum NMFS F/SPO-103. Silver Spring, MD, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

Newcombe, Kenneth and Michael Rubino. 2002. "World Bank Broadens Its Carbon Reach." *Environmental Finance*, 3(9):18-19.

Rubino, Michael. 2002. "Finance for Sustainable Development: Biodiversity." In, Matthias Buck et.al. eds, *International Environmental Policy Making: Transatlantic Cooperation and the World Summit on Sustainable Development*. Munich: Okom Verlag.

Rubino, Michael C. with Diana Propper de Callejon and Tony Lent. 2000. *Biodiversity and Business in Latin America*. IFC Discussion Paper. Washington, DC: International Finance Corporation.

Rubino, Michael C. 2000. "Biodiversity Finance." *International Affairs*, 76 (2):223-240.

Brugger, Ernst A., Michael C. Rubino, and Richard Wells. 2000. Environmental Investment Strategy for the Multilateral Investment Fund. Report to the Inter-American Development Bank.

Rubino, Michael. 1995. "Outline for Proposed Biodiversity Enterprise Fund for Latin America." In Hooten, A.J. and M. E. Hatziolos, eds., *Sustainable Financing Mechanisms for Coral Reef Conservation*. Environmentally Sustainable Development Proceedings Series No. 9. The World Bank.

Rubino, Michael C. and Charles A. Wilson. 1993. *Issues in Aquaculture Regulation*. Bethesda, Md: Bluewaters Inc.. Sponsored by NOAA, USDA, and State of Maryland.

Rubino, Michael C. 1992. "Economics of Red Claw Aquaculture." *J. of Shellfish Research*, 11(1):157-162.

Rubino, Michael C. 1992. "Aquaculture and Wetlands: Regulatory Issues and Aquaculture Uses of Wetlands." In J. Kusler and C. Lassonde, eds. *Altered, Artificial, and Managed Wetlands: Focus: Agriculture and Forestry*. Berne, NY: Association of State Wetland Managers.

Mandelker, Daniel R., Michael C. Rubino, and Kenneth I. Rubin. 1992. *Intergovernmental Decisionmaking and Environmental Protection and Public Works*. Report A-122. Washington, DC: US Advisory Commission on Intergovernmental Relations.

Wilson, C.A., D.G. Dunkelberger, N.C. Alon, and M.C. Rubino. 1990. "Tidal Pond Culture in South Carolina: A Sustainable Alternative for Shrimp Mariculture." *Aquaculture Magazine*, July/August, 1990, pp 54-61.

Mugler, Mark W. and Michael C. Rubino. 1989. "Chapter 9: Water Resources." In Joel B. Smith and Dennis Tirpak, eds. *The Potential Effects of Global Climate Change on the United States*. USEPA Report to Congress, pp 161-179.

Rubino, M.C. and R.W. Stoffle. 1989. "Who Will Control the Blue Revolution: Economic and Social Feasibility of Caribbean Mithrax Crab Culture." *Human Organization*, 49(4):386-394.

Rubino, M.C. and R.W. Stoffle. 1989. "Caribbean *Mithrax* Crab Mariculture and Traditional Seafood Distribution." Proceedings of the 39<sup>th</sup> Annual Gulf and Caribbean Fisheries Institute meeting, Bermuda, November 1986, p 134-145.

Stoffle, R.W., M. Rubino, and D.L. Rasch. 1988. "Fishermen and Crab Mariculture in the Caribbean." *Practicing Anthropology*, 10(1):10-14.

Rubino, Michael C. and John A. Armstrong. 1985. "Evaluating Development Alternatives for Coastal Peat Marshes." In *Tropical Peat Resources—Prospects and Potential*. International Peat Society Proceedings of Symposium in Kingston, Jamaica, Feb. 25-March 1, 1985.