



Bruce Friedmann

Senior Environmental Scientist

EDUCATION

- University of California
B.A. Zoology
- Southern Maine Vocational Technical Institute,
Marine Science, and Engineering
South Portland, Maine

CERTIFICATIONS & TRAINING

- Army Corps of Engineers,
Wetland Delineation
Training Program

PUBLICATIONS

- VanHeukelem, W.F.,
R.M. Harrel, S.G.
Hughes, S. Lindell and B.
Friedmann. Optimal conditions for swim bladder inflation in striped bass larvae reared in intensive systems, 2000
- Northeastern Regional Aquaculture Center.
NRAC Pub. No. 00-006.
Univ. MA North Dartmouth, MA 5pp.
- Friedmann, B. and K. Shutty.
Effect of timing of oil film removal and first feeding on swim bladder inflation success among intensively cultured striped bass larvae. N. Am. J. Aquaculture.61 (1):43-46, 1999
- Friedmann, B.R. Culture techniques for the large-scale production of intensively-cultured striped bass, *Morone saxatilis*, fry and fingerlings, 1995

PROFESSIONAL EXPERIENCE

Senior Environmental Scientist

*Ecological Analysis LLC, Middletown, New York
2009– present*

- Provided support in the operation of a 900,000 sq. ft., indoor, 2 acres hydroponic commercial grow-out house for tilapia.
- Collected environmental field data and prepared SPDES documents for environmental impact analyses, including vegetation and/or wildlife surveys, ecosystem assessments and wetland delineations for projects in Sullivan County (Menderis Road, McKean Pond, and Westbourne Estates).
- Conducted wetland delineations and wetland permitting in Orange, Ulster and Sullivan Counties, obtaining Federal and State Jurisdictional Determinations on sites as diverse as occupied single home lots to undeveloped properties in excess of 850 acres in size.
- Resolved impact issues for protected species of threatened or endangered plants and wildlife, including the dwarf wedge mussel, small whorled pogonia, bog turtle, and bald eagle.

Chemical Treatment Plant Operator

*BASF Corporation, Peekskill, New York
2007-2017*

- Conducted plant operations at a coated mica manufacturing facility utilizing gas-fired belt furnaces, belt filters, bag houses, centrifugal separators, screw conveyors and tray dryers for a 10 metric ton (MT) daily production of specialty effects pigments for the automotive, cosmetics and plastics industries. Process operator at the facilities combined demineralized water plant and industrial pretreatment wastewater plant.

Environmental Scientist/ Consultant

*Tim Miller Associates, Inc. Cold Spring, New York
2005-2207*

- Collected environmental field data and prepared SPDES documents for environmental impact analyses, including vegetation and wildlife field survey,



- Kreamer, Q., B. Friedmann, and W. Dey. Larval striped bass (*Morone saxatilis*) mortality under intensive culture conditions: Evidence of the role of water composition and nutrition from tissue monitoring and diet-related phenomena. International Fish Health Conference Vancouver, B.C., 1988

PROFESSIONAL AFFILIATIONS

- New York State Wetlands Forum
- Orange County Land Trust,
- New York Flora Association

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Conducted stormwater runoff monitoring projects. Field sites were located within the lower Hudson River valley in towns of Dutchess Orange, Putnam, Rockland, Sullivan, Ulster, and Westchester Counties.

- Protected species for which field and literature investigations have been conducted include:
 - Indiana bat (*Myotis sodalis*)
 - Bog turtle (*Clemmys muhlenbergii*)
 - Gray petaltail (*Tachopteryx thoreyi*)
 - Willdenow's sedge (*Carex willdenowii* var. *willdenowii*)
 - Putty Root (*Aplectrum hyemale*)
 - Downey wood-mint (*Blephilia ciliata*)
 - Globe-fruited ludwigia (*Ludwigia sphaerocarpa*)
 - Virginia false gromwell (*Onosmodium virginianum*)
 - Hooker's orchid (*Platanthera hookeri*)
 - Wild comfrey (*Cynoglossum virginianum*)
 - Devil's bit (*Chamaelirium leuteum*)
 - Rattlebox (*Crotalaria sagittalis*)
 - Shining bedstraw (*Galium concinnum*)
 - Beaked agrimony (*Agrimonia rostellata*)
 - Narrow-leaved sedge (*Carex amphibola* var. *amphibola*)

Chemical Treatment Plant Operator

Nepera, Inc. Harriman, New York
2001-2005

- Conducted plant operations at a vitamin B3 manufacturing plant, a SCADA controlled, FDA-regulated manufacturing facility utilizing pressure/ temperature reactors, crystallizers, centrifuges, compactors, mills, and packaging equipment for a 10 MT daily production.

Chemical Treatment Plant Operator

LMS Engineers, LLC. Pearl River, New York
1999-2001

- Responsible for operational SPDES compliance of a SCADA-controlled waste metals removal pre-treatment system at an IBM computer chip manufacturing facility.



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Aquaculture Research Supervisor

Aquafuture, Inc., Turners Falls, Massachusetts

- Directly responsible for operations research hatchery and staff at a 600,000-gallon indoor commercial culture facility for hybrid striped bass.
- Supervised research projects under the aegis of NOAA, USDA / NRCA, and USDA / SBIR Programs, and the US-Israel Science and Technology Commission
- **Biology Laboratory Manager/ Aquatic Biologist**
EA Eng. Science and Technology, Newburgh, New York
1974-1996
- Directly responsible for operations of the environmental field and laboratory staff of the Alexandria, Egypt wastewater treatment program for USAID EIS. Supervised a field and laboratory staff of 12 Egyptian scientific professionals and technicians.
- Designed and directed the development of a program environmental database and provided related input to program reports.
- Conducted aquatic and terrestrial field surveys in New York, New Jersey, Florida, and Puerto Rico. Supervised design, construction and operational phases for various freshwater and saltwater aquaculture and bioassay testing facilities.
- Supervised freshwater and estuarine field studies for impact assessment of electric generating stations in New York and Florida watersheds. Performed trapping transects for marking and population estimates of small mammals. Supervised field collection activities for in situ vertebrate and invertebrate bioassay monitoring of sewerage effluent from Puerto Rican Sewage Authority (PRASA) treatment plants.
- Designed, constructed, and supervised a toxicology laboratory for the testing of freshwater bioassay organisms in accordance with the standard protocols of U.S. Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC).



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- Conducted Rapid Bioassessment Protocol (RBP) field fisheries surveys according to EPA RPD protocols. Field tested and conducted environmental risk assessment stream survey according to NYSDEC Biothreat model protocols.
- Developed and applied relational database programs to integrate and track. Information for samples processed concurrently in multiple labs. Queried, extracted, and condensed data for presentation in tables and reports. Prepared quarterly and annual operating reports.
- Prepared courtroom exhibits as staff assistant biologist during 316(b) Adjudicatory hearings for Hudson River utility companies. Co-authored related multiplant impact reports for regional electric utilities and provided data documentation and technical librarian services as support functions for staff witnesses.
- Responsible for hiring, training, daily scheduling and tasking up to 25 scientific professional and technicians.