



UNIVERSITY OF MASSACHUSETTS
AMHERST

MASSACHUSETTS COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT

COOPERATING AGENCIES

University of Massachusetts
U.S. Geological Survey
Massachusetts Division of Fisheries and Wildlife
Massachusetts Division of Marine Fisheries
Wildlife Management Institute

Dept. Forestry & Wildlife Mgt.
Holdsworth Natural Resources Center
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May 1, 1999

Dr. John Portnoy
Cape Cod National Seashore
99 Marconi Site Drive
Wellfleet, MA

Dear John:

Attached is a copy of the original budget for the project entitled "Patterns and processes for freshwater fish distribution in northeastern National Parks: an inventory, a monitoring protocol, and a model for governing processes." In addition, I enclose a revised budget to which I have made the following changes:

- (a) 1998 and 1999 have been lumped together because we did not get a functional budget here at UMASS until this fiscal year.
- (b) UMASS charges NPS a 25% indirect cost not the 15% that we originally budgeted. Consequently, most budget categories were reduced slightly to absorb this added cost.
- (c) Because you have graciously offered to pick up housing costs this year, 1999, I have reduced the travel cost for site visits and only left enough for the across park monitoring.
- (d) This 1999 travel (housing) savings has been added to supplies and equipment which was underbudgeted initially.
- (e) Because, in 2000, the cost of housing will only be \$2,500 for two people at CACO, we have also reduced the amount of travel in FY2000 to absorb the reduction in the second year of finding (\$132,000 to \$118,500).

All of the goals of the project remain the same. I think we are on track and making good progress. If I can provide additional information, please let me know.

Sincerely,

Martha E. Mather
Martha E. Mather
413-545-4895

REVISED

REVISED BUDGET - Patterns and processes for freshwater fish distribution in northeastern National Parks: an inventory, a monitoring protocol, and a model of governing processes

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Labor			
Technician	\$17,416		
Graduate student	\$12,500	\$15,000	\$12,500
Technician	\$22,000	\$24,000	
Technician	\$6,000	\$6,000	
Travel			
Mileage and repairs	\$5,378	\$6,000	\$4,000
Site visits	\$3,000	\$6,200	
Professional meetings	\$1,500		\$2,000
Consultant			
Zooplankton, L. Yako	\$2,500	\$1,500	
Supplies	\$19,340	\$13,000	\$2,600
Equipment	\$15,966	\$2,000	
TOTAL DIRECT	\$105,600	\$73,700.00	\$21,100
INDIRECT (25%)	\$26,400	\$18,425	\$5,275
TOTAL	\$132,000	\$92,125	\$26,375
GRAND TOTAL			\$250,500

Mather- Freshwater fish proposal

BUDGET - Patterns and processes for freshwater fish distribution in northeastern National Parks: an inventory, a monitoring protocol, and a model of governing processes

	<u>1ST YEAR</u> <u>FY 1998</u>	<u>2ND YEAR</u> <u>FY 1999</u>	<u>3RD YEAR</u> <u>FY 2000</u>	<u>4TH YEAR</u> <u>FY 2001</u>
Labor				
Technician ¹	\$6,200	\$19,000		
Graduate student ²		\$15,000	\$15,000	\$12,500 ¹⁵
Technician ³		\$24,000	\$24,000	
Technician ⁴		\$6,000	\$6,000	
Travel				
Mileage and repairs	\$1,200 ⁵	\$6,000 ¹³	\$6,000	
Site visits		\$17,000 ¹⁴	\$17,000 ¹⁴	
CACO-Lodging	\$1,900 ⁶			
PerDiem	\$560 ⁷			
Other-Lodging	\$2,025 ⁸			
PerDiem	\$600 ⁹			
Professional meetings				\$2,000
Consultant¹⁰				
Zooplankton, L. Yako	\$1,000	\$1,500	\$1,500	
Supplies¹¹	\$1,515	\$15,065	\$13,000	\$2,000
Equipment¹²		\$10,000	\$2,000	
TOTAL DIRECT	\$15,000	\$113,565	\$84,500	\$16,500
INDIRECT (15%)	\$2,250	\$17,035	\$12,675	\$2,475
TOTAL	\$17,250	\$130,600	\$97,175	\$18,975
GRAND TOTAL				\$264,000



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July 15, 1998

Dr. John Portnoy
National Park Service
Cape Cod National Seashore
Wellfleet, MA 02667

Dear John:

Thanks for the thoughtful comments on the proposal entitled "Patterns and processes for freshwater fish distribution in northeastern National Parks: inventory, monitoring, and a model of governing processes." I have tried to incorporate all reviewer comments into the revised proposal as follows:

Portnoy

- (1) Later this summer, I will contact both Karsten Hartell and Dave Halliwell as sources of information on southeastern Massachusetts freshwater fish communities and habitat associations. I know Dave personally and I know of Karsten's reputation. I agree these are excellent contacts. These suggestions are included in the "Methods-Compilation of Existing Information" section.
- (2) More information on fish collection methods are included in the "Methods-General Survey: extensive" section. I outline below (Roman #2a-e) where and how this information has been added.
- (3) I agree that examining fish stomach contents especially in concert with zooplankton sampling may reveal some interesting information. This has been added to the "Methods - Intensive survey: CACO" section.
- (4) As suggested, I will plan to use existing data on water column nutrients and chlorophyll a obtained in April and August as part of the Kettle Pond Monitoring Program as well as biweekly data on temperature, conductivity, pH, light, dissolved oxygen. I will make sure that those ten kettle parts are part of the

intensive survey sample. This suggestion is noted in the revised "Methods - Intensive survey: CACO" section of the proposal.

- (5) I have clarified in the "Overview" section that CACO's freshwater estuaries (Pamet and Herring Rivers and Pilgrim Lake) will be sampled during the extensive survey.
- (6) I agree that migratory species could have a major influence on trophic dynamics and nutrient budgets. Thus, I have clarified in the objectives that migratory fish movements will be monitored and their functional ecology quantified in both the streams and ponds.

Roman

- (1) I agree that we need to make extensive use of all existing background data relative to National Park aquatic resources. Consequently, I have clarified in both the "Specific objectives" and "Methods" sections that compilation of historical records will include synthesis and critical review of the available literature, both peer review and grey, especially relative to NPS resources. In addition, I have elaborated, as suggested, that the findings of the present study will be compared to and integrated into the existing local/regional literature.
- (2) Additional methods related to the following have been added to the "Methods-General survey: extensive" section.
 - (a) Methods have been added on mesh size, dimensions, brief description, deployment methods, and quantitative information obtained from seines, trap nets, block nets, gillnets, and electrofishing.
 - (b) In addition, throw traps are included as an additional fish collection method for the shallow littoral zone.
 - (c) Large invertebrates that are collected will also be identified and enumerated.
 - (d) Methods for water chemistry are also clarified for both the extensive and intensive sampling programs.
 - (e) Quantitative assessments of specific habitats, especially the amount and type of substrate, and the amount, spatial distribution, and species composition of vegetation, have been added to the "Methods-General survey: extensive" section. These methods will be outlined in the final protocol.
- (3) I agree that the goal should be to recommend a monitoring program that is capable of detecting change in fish communities, with some statistical degree of

certainty. I plan to include recommendations for monitoring a suite of characters that are expected to contribute to changes. In addition, recommendations will be made on how the fish sampling program can best fit with other monitoring protocols. These thoughts are added to the "Methods - Protocol" section of the proposal.

- (4) The protocols will include data management and analysis guidance. These points have been added to the "Protocol" section of the proposal.

Bennett

- (1) The goal of the conceptual model is to document the state and cause of the "current state of affairs." Along with historical information, this can then set the stage for future restoration if that is the direction the NPS decides to take relative to management. This is clarified in the "Specific Objectives" section of the proposal.

Walasewicz

- (1) The goal of the monitoring is to collect information that is as general to northeastern National Park resources as possible while still documenting accurately conditions at each park. Hence, the protocol will focus on one general methodology for each habitat type where possible. When unique resources exist at each park, individual protocols for specific types of fish resources will be included. These thoughts are included in the "Methods - Protocol" section of the proposal.
- (2) I will need to rely on the expertise of Park personnel throughout the study and will stay in close contact with Steve and others relative to general and specific sampling activities. I plan to request their input and integrate their knowledge at most stages of the sampling. These thoughts are included in the "Methods - Protocol" section of the proposal.

Farris/Norm

- (1) After a preliminary reconnaissance of existing data, literature and a site visit to each park, specific testable, falsifiable hypotheses will be identified. At this point, it seems premature to be too specific. However, I appreciate the concern that vague, overly general tests are unlikely to yield the information we desire.
- (2) Fishing pressure and the introduction of exotic species will be included in the functional model as outlined in the "Specific objectives" section of the proposal.
- (3) This study will be integrated into other studies in the initial sampling protocol development, field tests, final synthesis, and recommendations. This point has been added to the "Reporting" section of the proposal.

Jones

- (1) Specific information on Marsh Billings and all other specific parks and sites will be incorporated into both the background synthesis, sampling plan, and final report.

Moring

- (1) Acadia and CACO clearly have different fisheries resources and John Moring and I have, through necessity, taken somewhat different approaches. However, John and I have talked and will continue to talk about how to maximize commonalities. Based on both studies, I am certain that we can produce some synthetic insights about the structure and function of northeastern aquatic communities and effective monitoring plans.

I believe I have responded to all reviewer comments. I look forward to working with you and other park personnel on this exciting project. Please let me know what else I can do to move the funding process forward. Once initiated, I will be in touch with you and the others about the first steps we will take this summer and fall.

Sincerely,



Martha E. Mather, Ph.D
413-545-4895
mather@forwild.umass.edu