

**Status and Trends of Shellfish Populations in Barnegat Bay,
New Jersey, with major focus on the hard clam,
*Mercenaria mercenaria.***

Quality Assurance Project Plan

**June 22, 2010
Revised January 7, 2011
Revised January 27, 2011**



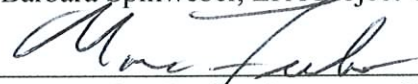
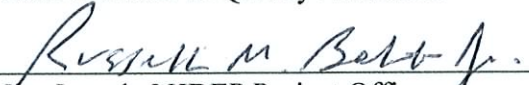
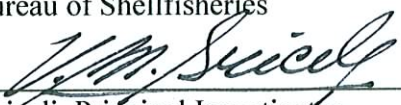



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1. Project Objectives, Organization, and Responsibilities

1.1.Purpose of Study and Background Information

The northern quahog (= hard clam), *Mercenaria mercenaria*, is the dominant suspension-feeding shellfish (bivalve) resource occurring in high salinity, coastal bay (lagoonal) ecosystems on the US Atlantic coast, where it supports important commercial and recreational fisheries. It is also the most valuable aquaculture species on the US east coast. Because of its wide distribution in relation to temperature, salinity and sediment type, as well as its long lifespan, the hard clam can serve as one of the primary indicators of the overall health of the Barnegat Bay-Little Egg Harbor (BB-LEH) estuary in New Jersey (NJ). Hard clam populations have experienced a marked decline in this system, as evidenced by reduced bottom densities of hard clams recorded between surveys conducted in the mid-1980s and 2001, and reflected in reduced landings of hard clams in Ocean County, NJ since the 1960s. Two epifaunal (non-burrowing) shellfish species, the oyster, *Crassostrea virginica* and the northern bay scallop, *Argopecten irradians irradians*, were also once important resources in the BB-LEH ecosystem, but very little is known about their status in this ecosystem.

Small-scale efforts to restore hard clam populations in this estuary are underway and could be expanded in future. The Barnegat Bay Shellfish Restoration Program (BBSRP), a collaborative and multifaceted endeavor involving Rutgers Cooperative Research and Extension, the NJDEP Division of Fish and Wildlife, the non-profit organization ReClam the Bay, and the American Littoral Society has been conducting hard clam restoration activities in BB since 2005. In parallel with the BBSRP activities, the NJDEP Division of Fish and Wildlife has been conducting hard clam restoration activities within the Sedge Is. Marine Conservation Zone (MCZ), where commercial clam harvest is not allowed and recreational clamming is permitted, since 2006, with promising results.

It is anticipated that this study will provide information on the historic spatial extent of hard clam distribution within Barnegat Bay using previously collected data. This spatial analysis will be evaluated with co-collected environmental data (e.g., salinity, sediment characteristics) where available to determine historically optimum habitat for hard clams within the Bay. The known tolerance and optimum ranges for key environmental parameters for *M. mercenaria* will be compared with the published literature on environmental conditions in the bay to identify areas where successful restoration is most likely.

1.2. Project Goals

The main goal of our proposed study is thus to review the historical and current status of hard clam populations in BB-LEH and evaluate their potential for rehabilitation under present or recent environmental conditions (see assessment by Kennish 2001).

This study will address 4 specific goals:

- 1) Construct a history of hard clams in the Barnegat/Little Egg Harbor Bays system
- 2) Identify knowledge and data gaps,
- 3) Identify potentially suitable areas within the estuary for implementation of restoration
- 4) Provide prioritized recommendations for future research and implementation actions.

1.3. Secondary Data

The project will not be collecting any primary data. The information which will be used will be sourced from existing data bases from NJDEP and other agencies. The group will work with the NJDEP Bureau of Shellfisheries to access historic stock assessment records, with the NMFS to access

landing figures, with the County of Ocean Historical Society for supporting documentation about the distant past shellfisheries.

We will be examining information which would include abundance of the target species, possible changes in water quality in the estuary, and population growth in the watershed. Data needed include abundance of the target species, and size structure where available. This information will be related to what is known in the published literature on relevant water quality parameters in the estuary such as salinity, dissolved oxygen and temperature, as well as food supply (e.g. chlorophyll levels). We will also be identifying periods of brown tide events which may have impacted abundance.

The group will reach out to local industry for their input on issues relating to stock reductions. There is still a cadre of older baymen who have excellent recollection about trends, stock abundance, harvests, harvest locations, environmental changes, anthropogenic inputs, and anecdotal information about changes that have occurred over time.

1.4. Planned Approach

In order to achieve the first objective, the PIs will review historic data sources, including but not limited to stock assessment records, landing figures, permit applications, lease applications, license applications, and supporting historic anecdotal documentation about the distant past shellfisheries. Once the data has been compiled, the PIs will summarize the state of knowledge regarding hard clams in the bay and identify where there are substantial gaps. Using the data available, the PIs will identify the areas in the Bay where successful restoration is most likely by comparing historic optimum habitat with that available today. Lastly, the PIs will provide prioritized recommendations for future research and implementation actions based on the results of the second and third objectives.

Because the extent of available data is unknown, the exact mechanism by which the data summary will be accomplished cannot be decided at this time. Rather, the PIs will use their considerable experience to select those methods of analysis and/or evaluation of the data which are best suited to the task at hand. Justification for the selected methods of any data analysis will be included in the final report, as will any deviations to the approach outlined herein.

1.5. Project Organization and Responsibilities

Drs. Monica Bricelj and John Kraeuter have been instrumental in development of a hard clam population dynamics model (Hofmann et al., 2006) and are working on a companion larval model (publ. in prep.) focusing primarily on the effects of food supply and brown tide, and their interactions with temperature, on hard clam larval recruitment. This model can be used to make predictions on the effects of perturbations such as brown tide, poor food supply and climate change on clam populations within the system. Both are internationally known for their work on hard clams and their relationship to their environment.

Dr. Bricelj will be the principal investigator and will coordinate the proposed effort. She will be responsible for carrying out nearly every aspect of this project, in collaboration with the PIs, including data gathering and analyses, quality assurance, writing most of the report and reviewing and editing sections that are provided by contributors. The Principal Investigator will be writing the final report.

Dr. Krauter the Co-PI, will be responsible for implementing the project work plan such as compiling existing data on hard clam stocks in Barnegat Bay, entering data in Excel spread sheets, assuring secondary data quality, performing data analyses where necessary and appropriate, analysis of literature data and unpublished records, writing portions of the resulting report and editing the final report.

Gef Flimlin has worked for over three decades with the fishermen in NJ and will be responsible for input from the local Barnegat Bay community and provide updates on the efforts of the Barnegat Bay Shellfish Restoration Program and work of ReClam the Bay Inc. volunteers. He will act as the key contact with industry to obtain their feedback about changes in hard clam abundance over time. He is also responsible for the production of the QAPP.

1.6. Project Schedule

- Compilation of all relevant published literature and reports by the group.
 - A month after signature of this document
- Contact local baymen to provide available, relevant information from retired and currently working baymen and ReClam the Bay Volunteers who have historical recreational input (e.g. clam growth rates)
 - 90 days after signature of this document
- Visit by Krauter & Bricelj to the Bureau of Shellfisheries, NJ DEP to obtain information derived from clam leases, shellfish licenses and where relevant, that from waterfront permit applications that require a bottom survey
 - By the end of 4 mo from signature of this document
- Exchanges among PIs will primarily be via e-mail or phone, but one meeting of the 3 PIs is anticipated during this project to coordinate information and data accumulated.
- Preparation of full draft of the report for final review by PIs
 - 6 wks before end of project
- Submission of final report
 - 1 wk before end of project

2. Sources of Secondary Data

2.1. Data Sources

This project will rely entirely on existing shellfish population data, which will be obtained primarily from agencies, institutions and companies that have already conducted surveys in the estuary. They will evaluate these data in the context of existing published literature on spatial and temporal patterns of key environmental parameters directly relevant to hard clam stocks. Analysis of unpublished environmental monitoring records for the bay, and their use as indicators of water quality, is outside the scope of the present study and is ongoing via other funded projects.

2.2. Data Generators

Data generators are, generally speaking, the agencies, research institutions, and other organizations that collect (or have collected) suitable (in terms of type of data being relevant to Barnegat Bay Partnership goals, covering an adequate geographic and temporal scale, and being of adequate quality) environmental data. In addition, it is possible that data providers, scientists and researchers contacted in the preparation of this report may be able to point to other suitable monitoring

programs unknown to us, that we will, in turn, pursue and evaluate for relevance and adequacy.

This process is being undertaken because through discussions between Rutgers, the Barnegat Bay Partnership, and NJDEP, it has become quite evident that there are severe data gaps for the hard clam stocks in the bays. This issue of paucity of data is the real reason for this work. If we don't know what is readily available, we can't know where to proceed and what to look for.

In addition to available reports from government agencies, the standard scientific literature and the classic autoecological study by Carriker (1961), the most significant bay wide resource assessments on the hard clam in BB-LEH are the reports of Campbell (1965, 1966, 1969); Joseph (1987), Gastrich and Celestino (2003) and McCloy (1983). Prior studies by Kennish and co-authors (1975, 1978, 1980, 1984, 1989) provide additional key information on growth, mortality and lifespan of hard clams within a selected portion of the BB-LEH system. We will review all clam abundance data sets for BB-LEH available from NJDEP, including those based on surveys conducted in the mid-1980s, and that by Celestino in 2001 (reported in Gastrich and Celestino 2003). With the assistance of NJDEP, we will access, where possible, information derived from surveys of clam leases, shellfish licenses, and where relevant, that from waterfront permit applications that require a bottom survey.

An additional source of data to be utilized during this project will be current and retired baymen. It is anticipated that these individuals, through long-term regular observations (many spanning decades), will have insight into phenomenon that are not well captured by the sporadic sampling conducted by the state and federal agencies. These insights will hopefully lead to actionable items that the investigators will be to obtain quality-controlled data for, *i.e.* weather events recorded in the meteorological data that may have impacted shellfish stocks between agency sampling events. The information provided by the baymen will also help to fill out the narrative associated with the shellfish resource within Barnegat Bay, and will be identified as anecdotal if corroborating data cannot be obtained.

Discussions with the baymen will occur in two formats, individual talks and a group discussion. Individual retired and active commercial clammers will be contacted by the Marine Extension Agent who has had an ongoing relationship with many commercial and recreational baymen, and they will be advised of the proposed project. They will then be asked a short series of questions relating to their experiences with the shellfish resource in Barnegat Bay. While the exact questions have not been decided upon at this time, at a minimum they will include their name, the amount of time they spend (spent) as a clammer, and the area they clammed in. For the group discussion, the PI's will be included on the agenda of a regularly scheduled NJ Shellfisheries Association meeting. Similar to the individual discussions, the PIs will introduce the project and then ask for feedback on a short series of questions. The finalized discussion questions will be included as an appendix to the final report. The responses to the questions asked to both the individuals and the association will be recorded, with the information stored in a matter consistent with that set forth in the data storage and record maintenance section (4.4) below.

2.3. Hierarchy of Data Sources

In general, data from past hard clam stock assessment programs, that were or are carried out by agencies, universities, or research institutions, with known and adequate quality control and quality assurance procedures will be preferred. If these conditions are not met, less desirable data may be gathered if they can provide at least partial indication of the condition of hard clams stocks. Limitations and/or gaps in the available data used in preparing this synoptic review (e.g. reduced spatial and/or temporal coverage) will be mentioned, and associated caveats in resulting data interpretation will be noted as appropriate. For example, for certain indicators, available data may only cover a limited window in time but still be crucial to complement and place in perspective other available data. Even if data are not of the best quality, they may represent the best available knowledge of the Barnegat/ Little Egg Harbor system and may point to the need for improved data collection efforts.

2.4. Rationale for Selecting Data Sources

Given the specificity of this project's data needs (i.e., various types of hard clam stock assessment data and co-reported relevant environmental variables collected from the Barnegat/Little Egg Harbor Estuaries, spanning decades), in many cases there may be a single data source available. Available data sources that the PIs judge will provide useful information to accomplish the goals of this project will be used.

2.5. List of Sources of Secondary Data

The sources of all secondary data presented will be identified in the final project report. This will include the method of data collection, when known. This will be accomplished through a combination of maps, tables, and/or text descriptions.

Size and time constraints may make it impossible to include a full list of sources. In this case, the report, and any other materials produced will provide references, including those on data quality.

3. Quality of Secondary Data

3.1. Quality Requirements

Data should meet the following quality requirements. However, given the paucity of environmental data within our study area for some indicators, it is likely that some datasets will not meet one or more requirements. These data may still be valuable for our purposes and, if used, any shortcomings will be noted.

- Data were generated by a reliable source. Although the identity of the data generator does not guarantee data quality, it provides a simple screening criterion when multiple data sources are available. The following are indicators of data source reliability:
 - o Data generator is generally trusted and respected (federal, state, and local agencies, or research institutions.
 - o Data are published in peer-reviewed articles or publications
 - Data have been collected for purposes similar to ours; i.e., to assess the status and trends in a particular environmental indicator
 - Monitoring Program has a QAPP or similar plan documenting quality assurance and quality control procedures to ensure data accuracy, precision,

representativeness, and comparability.

- Data have been widely used and/or trusted by scientists and professionals in the subject

- Completeness

- o Spatial coverage

- Dataset provides good coverage of the geographic area of interest (e.g., as many of the small locally named bays and tributaries in the Estuary as possible are represented) and the same sites are included in each sampling effort

- o Temporal coverage

- Enough historical data are available (the farther back in time, the better) to allow assessing any trends in abundance and condition of hard clam populations.

- Adequate sampling frequency. Although more frequent sampling is desirable, yearly (or even less frequent) data may be adequate to assess long-term trends.

- Data distribution through the historical period. It is already obvious that major stock assessments were few and far apart, and examination of these data sets will be limited by the paucity of information.

3.2. Data Review and Evaluation

The quality of the secondary data will be based on data quality requirements defined in Section 3.1 of this document. In determining, data quality, the completeness of the data set will be assessed first, by inspecting data description (usually metadata) or the dataset itself—whichever is more easily available. If completeness is deemed adequate, other quality requirements will be assessed by inspecting the QAPP, other QA/QC documentation, metadata, and/or other information obtained from data providers.

3.3. Disclaimers

The report produced as deliverable will inform of the existence of this QAPP. A disclaimer will be included indicating that the contents of the report will be based on the best scientific judgment of the authors (the project PIs) and will discuss any limitations regarding the quality of the data.

4. Data Reporting, Data Reduction, Data Validation, and Records Management

4.1. Data Reduction

Reduction/synthesis of existing data may be required to graphically display the information in a condensed, more easily understandable format and, in some cases, to establish or show specific data trends or characteristics. The following are some examples of anticipated or possible data reduction procedures (provided that adequate data are available):

- For most indicators, the presence or absence of a trend over time will be shown by means of an x-y chart. Data may also be shown in reduced table form.
- Indicators that involve counts or otherwise depend on the level of effort will be normalized and reported per unit effort whenever possible.
- Data units may need to be changed for report consistency and/or to allow comparisons across data sources
- Certain datasets may be reduced and presented as percentages.

- Some data reduction may also be needed to display data in map form.

4.2. Data Validation

The reporting of accurate project data will generally be ensured by carefully conducting and clearly expressing data reduction (if and when needed) and visual inspection of data before including in final report. Specifically:

- Citation of all the publications and reports used in the preparation of the synthesis report will be provided, and a list of references included in the report.

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form and inspected to detect any anomalous value, if it's representation is germane to the overall intent of the work. The PIs have substantial experience working with clam population data, and will use best professional judgment when evaluating data that lie on the fringes or outside of expected values. If apparently anomalous values are detected, any data reduction will be verified. If the seeming anomaly is present in the original dataset, the data generator will be contacted for clarification if possible and/or the issue will be discussed with the Science and Technology Advisory Committee (STAC) and other appropriate parties. Any decision to eliminate “anomalous values” will be documented in the report. (Section 2.5).

- It is certain that most datasets will only be available in hard copy format. In these cases, data will be manually entered into a spreadsheet, if needed for decision making and comparison. To ensure an error-free copy, summary statistics will be checked if possible. In the example cited, the dataset consists of the number of items collected under various assessment categories, along with the total across categories. This will be compared to the sum of the numbers entered manually. In addition, a few individually values will be cross-checked as well.
- The source of the data reported on parameters of salinity, dissolved oxygen, temperature, etc, shall be identified. Brown Tide data shall also include the source of Brown Tide determinations. Any other environmental data reported will also include the source and any limitations of the data.

4.3. Deliverables

The deliverable of this project will be a report. The report will include a summation of the current state of knowledge regarding the status of hard clam in Barnegat Bay, as well as an identification of gaps in the knowledge base. Prioritized recommendations for future research and implementation actions will also be given. If sufficient data is available, a map identifying suitable locations for restoration and strategies to implement that restoration will be provided.

In addition to the full report, a brief summary will be produced for inclusion in the BBP quarterly newsletter. The full final report will be provided to the BBP in both electronic and hard copy. The BBP will maintain a copy of the report on their website for public distribution, and the report will be distributed by the BBP to their partners for their consideration.

4.4. Records Management

The following project-related documents and records will be kept by the Barnegat Bay Partnership office (or if space is not adequate there, at one of the Rutgers offices) for as long as possible and for a minimum of three years from the date of the final Financial Status Report to EPA, as stipulated by 40 CFR § 31.42:

- Original files, and materials (either electronic or in print) obtained from the data providers, including datasets, data quality information, reports, and other relevant information pertaining to the data and data interpretation
- A final version of the report, including any graphs or tables.
- The BBNEP is welcome to seek and retain reviews of the final report for their records. This will not be the responsibility of the PIs.
- Other relevant documents and materials.

5. References

- Bricelj, V.M., 2009. The Hard Clam Research Initiative: Factors controlling *Mercenaria mercenaria* populations in South Shore Bays of Long Island, NY. New York Sea Grant Report NYSGI-T-09-001, 43 pp. <http://www.seagrant.sunysb.edu/hclam/article.asp?ArticleID=308>
- Campbell, R. 1965, 1966, 1969. Effect of effluent from an atomic power plant on the adjacent portion of Barnegat Bay, New Jersey. Special interim reports to the U.S. Department of HEW, Public Health Service, Bureau of State Services, Div. of Environ. Engineering and Food Protection, Shellfish Sanitation Branch, Northeast Research Center, Narragansett, RI
- Carriker, M.R. 1961. Interrelation of functional morphology, behavior and autoecology in early life states of the bivalve *Mercenaria mercenaria*. J. Elisha Mitchell Sci. Soc. 77:168-241
- Gastrich, M.D., M. Celestino, 2003. Shellfish stock assessment of Little Egg Harbor Bay. (DRST Proposal # 2002011). NJ Dept. Environ. Protection. 41 pp.
- Hoffman, E.E., J.M. Klinck, J.N. Kraeuter, E.N. Powell, R.E. Grizzle, S.C. Buckner, V.M. Bricelj, 2006. A population dynamics model of the hard clam, *Mercenaria mercenaria*: development of the age- and length-frequency structure of the population. J. Shellfish Res. 25(2): 417-444.
- Joseph, J. W., 1987. Inventory of New Jersey's Estuarine Shellfish Resources. US. Department of Commerce. Project No. 3-405-R: 2, 79 pp.
- Kennish, M.J., R.K. Olsen. 1975. Effects of thermal discharges on mortality of *Mercenaria mercenaria* in Barnegat Bay, New Jersey. Environ. Geol. 1: 41-64.
- Kennish, M.J., 1978. Effects of thermal discharges on mortality of *Mercenaria mercenaria* in Barnegat Bay, New Jersey. Environ. Geol. 2: 223-254.
- Kennish, M.J., R.E. Loveland, 1980. Growth models of the northern quahog *Mercenaria mercenaria* (Linne). Proc. Natl. Shellfish. Assoc. 70: 230-239.
- Kennish, M.J., J.J. Vouglitois, D.J. Danila, R.A. Lutz, 1984. Shellfish. Chapter 7 In: Kennish, M.J., R.A. Lutz (eds). Ecology of Barnegat Bay, New Jersey. Lecture notes on coastal and estuarine studies 6. Springer-Verlag, NY, pp. 171-200.
- Kennish, M.J., 1989. Shell microgrowth analysis: *Mercenaria mercenaria* as a type example for research in population dynamics. In: Rhoads, D.C., R.A. Lutz (eds.). Skeletal growth of aquatic organisms. Plenum Press, NY, pp. 255-294.
- Kennish, M.J.(ed.), 2001. Physical description of the Barnegat Bay-Little Egg Harbor estuarine system. In: M.J. Kennish, Ed., Barnegat Bay-Little Egg Harbor, New Jersey: Estuary and Watershed Assessment. J. Coastal Res. Sp. Issue 32, pp 13-27.

- Kraeuter, J.N., M.J. Kennish, J. Dobarro, S.R. Fegley, G.E., Flimlin Jr. 2003. Rehabilitation of the northern quahog (hard clam) (*Mercenaria mercenaria*) habitats by shelling – 11 years in Barnegat Bay, New Jersey. *J. Shellfish Res.* 22: 61-67.
- McCloy, T.W., J.W. Joseph. 1983. Inventory of New Jersey's Estuarine Shellfish Resources. U.S. Department of Commerce. Project No. 3-405-R: 3, 101 pp.
- Olsen, P.S., J.B. Mahoney, 2001. Phytoplankton in the Barnegat Bay-Little Egg Harbor estuarine system; species composition and picoplankton bloom development. *J. Coastal Res.* SI (32): 115-143.



RECEIVED

State of New Jersey

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MAR 24 PM 2:17

NJDEP/OQA

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

March 18, 2011

Mr. Jim Vasslides
Project Manager / Program Scientist
Barnegat Bay Partnership

Dear Mr. Vasslides: Jim:

Please find attached the Quality Assurance Project Plan (QAPP) for the proposed study entitled, "Status and Trends of Shellfish Populations in Barnegat Bay, New Jersey, with major focus on the hard clam, *Mercenaria mercenaria*."

As requested, I have signed the QAPP 'as is' on behalf of James W. Joseph (Chief, Bureau of Shell Fisheries), but as I discussed with both you and John Kraueter, I have done this with some reservation. Apparently, your group never received the Bureau's comments on the draft QAPP and you have since explained that it was too late to make revisions. I will say that after reviewing the Bureau's comments, I believe that they were largely minor in nature, with one exception.

As discussed, please be advised that the Department of Environmental Protection is signing this QAPP under the following conditions:

- 1) Section 4.4 Records Management: The document indicates that our original documents may be stored off site for a minimum of three years. You have also noted that since the PIs will likely be either photocopying or electronically copying our data at our Nacote Creek office, those "copies" would be considered "materials.... obtained from data providers". However, the section still states that project-related documents are also "Original files and materials (either electronic or in print) obtained from the data providers...". You stated in your March 14, 2011 email, "there is no expectation that the DEP originals will be stored (removed) by the PIs, just the photocopies/electronic versions." I

appreciate your consideration in this matter and I am signing the QAPP with the understanding that no original DEP documents will be removed from our office(s).

- 2) Please be advised that our Nacote Creek office does not have a commercial photocopier. If photocopying of our original documents is necessary, our Bureau of Marine Fisheries (next door) has a commercial copier. If significant use is required, then the project would have to reimburse the Bureau of Marine Fisheries for copying usage (fee per page, which is roughly \$0.02/page).

I apologize for the long delay in getting this document signed and forwarded. I do not anticipate any other substantive issues working with the PIs towards the project's objective and I look forward to seeing the finished product. If you have any questions or would like to discuss this, please do not hesitate to contact me at the Delaware Bay Office at (856) 785.0730.

Sincerely,



Russell Babb, Supervising Biologist
Marine Fisheries Administration
Bureau of Shell Fisheries

- c. J. Joseph
B. Muffley
T. McCloy
M. Celestino