

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Division of Fish and Wildlife
Marine Fisheries



Management Plan for the Shellfish Fishery Sector

developed in association with the
commercial fishing licensing provisions set forth in the
“Rules and Regulations Governing the Management of Marine Fisheries”

December 5, 2006

TABLE OF CONTENTS

RULE #1 PURPOSE	3
RULE #2 AUTHORITY	3
RULE #3 ADMINISTRATIVE FINDINGS	3
RULE #4 APPLICATION	3
RULE #5 REGULATIONS	pp 4 - 10
RULE #6 SEVERABILITY	3
RULE #7 SUPERSEDED RULES AND REGULATIONS	3
RULE #8 EFFECTIVE DATE PAGE	11

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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

BUREAU OF NATURAL RESOURCES

FISH AND WILDLIFE &
LAW ENFORCEMENT

PURPOSE

The purpose of these rules and regulations is to manage the marine resources of Rhode Island.

AUTHORITY

These rules and regulations are promulgated pursuant to Chapter 42-17.1, Section 20-1-4, Section 20-2.1 and Public Laws Chapter 02-047, in accordance with Chapter 42-35 of the Rhode Island General Laws of 1956, as amended.

ADMINISTRATIVE FINDINGS

Rules and regulations are based upon the need to modify existing regulations (RIGL 20-3-2 through 20-3-6).

APPLICATION

The terms and provisions of these rules and regulations shall be liberally construed to permit the Department to effectuate the purposes of state law, goals, and policies.

DEFINITIONS

See Rhode Island Marine Statutes and Regulations, Part I, '1.3.

SEVERABILITY

If any provision of these Rules and Regulations, or the application thereof to any person or circumstances, is held invalid by a court of competent jurisdiction, the validity of the remainder of the Rules and Regulations shall not be affected thereby.

SUPERSEDED RULES AND REGULATIONS

On the effective date of these rules and regulations, all previous rules and regulations, and any policies regarding the administration and enforcement of this regulation shall be superseded. However, any enforcement action taken by, or application submitted to, the Department prior to the effective date of these Rules and Regulations shall be governed by the Rules and Regulations in effect at the time the enforcement action was taken, or application filed.

Management Plan for the Shellfish Fishery Sector

Bay Quahog Endorsement

Stock Status

The quahog resource in Narragansett Bay is currently fully exploited with biomass below that needed to produce maximum sustainable yield (MSY). A biomass dynamic model is used by the Rhode Island Division of Fish and Wildlife (RIDFW) to assess the overall stock in Narragansett Bay (Gibson 1999). The assessment was updated in 2006 to incorporate new landings and survey data and to adjust nominal license effort to include only active participants. The adjustment, based on RIDFW boat counts and analysis of dealer landing slips, reduced the latent effort bias in the catch per unit effort calculations. The new assessment results indicate that stock biomass in 2005 (18,307 MT) was only about 44% of that needed to support biomass at maximum sustainable yield, B_{msy} , (41,275 MT) (Figure 1). Fishing mortality rates (F) have declined over the past decade and in 2005 was equal to 0.11, well below the target $75\%F_{msy} = 0.17$ and the over fishing definition, $F_{msy} = 0.23$ (Figure 2).

Recent low biomass follows an extended period of heavy over fishing and was likely exacerbated by an increase in predation by benthic invertebrates. The reduction in F in recent years is related to declining effort and landings are currently well below the MSY level for a rebuilt stock (Figure 3). Projections indicate that the stock can increase in biomass at a moderate rate if F remains at current levels.

Although the assessment is conducted on a bay wide basis, resource status may vary spatially within the overall stock area depending on intensity of harvest, proximity to protected spawning beds, and hydrodynamic conditions, which disperse larvae. The distribution of quahogs in the bay is patchy and the fishery selectively exploits patches of higher value product (new recruit necks) as they appear. Because of these factors, the bay wide assessment represents an average condition and not necessarily those at a local level.

Management Program- Quahogs are managed entirely within state waters by the Department of Environmental Management with advice from the Rhode Island Marine Fisheries Council. The Department, through the RIDFW, uses a set of management areas and a rotational transplant/harvest system to manage the resource. Permanent and conditional pollution closures restrict the fishery in addition to seasons, possession limits, and management closures.

A fishery management plan specifies that bay wide fishing mortality rates (F) should be maintained near the target level but below the F_{msy} over fishing definition to allow for biomass rebuilding (Ganz et al. 1999). This requires maintenance of fishing effort near current levels. The rotational harvest and transplant/spawner sanctuary program should be expanded to include more areas. Recent boat counts and analysis of dealer landings slips indicate that about 350 active shell fishers prosecute the quahog fishery. Gibson (1999) recommended a target fishing mortality rate equal to 75% of the F_{msy} value to preserve an adequate level of spawner biomass in the face of uncertainty.

Since current active effort is sufficient to generate F at the target level on a bay wide basis, additional effort will move the fishery toward the over fishing level and reduce the rate of biomass rebuilding. New licenses will essentially compete for a limited yield with current licenses.

Fishery Management Goals and Objectives:

Goal- The following goal is consistent with the objectives of the Rhode Island quahog management plan (Ganz et al. 1999).

Rhode Island will have a healthy bay quahog resource and a fishery management regime which provides for sustainable harvest, cooperative management by stakeholders, and appropriate opportunities for fishery participation.

Objectives-

1. Maintain fishing mortality rates and brood stock abundance at levels that minimize the risk of stock depletion and recruitment failure.
2. Conserve and rebuild quahog resources in Narragansett Bay with appropriate management strategies including transplanting, area closures and spawner sanctuaries.
3. Maintain existing social and cultural characteristics of the fishery wherever possible.
4. Provide for cooperative management with industry and efficient operation, consistent with biological objectives.
5. Provide for adaptive management that is responsive to unanticipated short term events or circumstances.
6. Provide for a simple, uniform and enforceable set of regulations.

Licensing Options and Recommendations:

In 2006, the Department issued 43 new quahog endorsements for the basic commercial fishing license. This decision was based on the Division assessment of license renewals, which indicated that 143 principal effort licenses issued in 2004 were not renewed in 2005. Due to uncertainty in the activity of the non-renewed licenses, an exit/entrance ratio of 3 to 1 was applied, resulting in the availability of the 43 new licenses. These licensees were restricted to half the possession limits allowed to principal effort and multipurpose license holders.

In 2006 the Department issued 586 principal effort licenses with quahog endorsements compared to 633 in 2005, a difference of 47. Principal effort license holders with quahog endorsements have access to full harvest levels. For student shellfish licenses there was a net decrease of 1 license (72 in 2005; 71 in 2006) and a net increase of 37 over 65 shellfish licenses (93 in 2005; 130 in 2006). These two licenses categories are restricted to basic harvest levels.

According to the most recent assessment for quahogs, rates of fishing mortality have been declining since 1999 and are currently below the estimated level that would lead to maximum sustainable yield (F_{msy}). Estimates of biomass are below maximum sustainable yield but have been constant since 1994. Since fishing mortality has declined to below F_{msy} and even though the biomass is below B_{msy} , the fishery could withstand a minimal increase in effort through the issuance of new licenses or quahog endorsements. Theoretically, as long as fishing mortality remains below F_{msy} biomass should increase. Based on this assessment and concerns over an ageing population of licensed quahog fishermen, issuance of new licenses or endorsements should be considered based on a conservative exit/entry ratio such as 3 to 1, as recommended by industry to recruit new participants into the fishery.

As specified in regulation, new entry into the quahog fishery will be facilitated initially through the issuance of quahog endorsements to basic commercial license holders. These license holders will be permitted to prosecute the fishery on a limited basis, i.e. half the possession limit allowed to multipurpose and principal effort license holders. Applying the 3:1 ratio to the 47 licenses that were not renewed in 2006 as previously described results in 16 new quahog endorsements that will be available to basic commercial license holders in 2007. These figures are based only on the number of principal effort licenses with quahog endorsements that were not renewed and do not include multipurpose licenses that were not renewed.

Future Management Considerations-

DEM needs to continue work with industry to ensure a healthy quahog fishery consisting of resource sustainability and a licensing system that will maintain an active group of fishermen and facilitate entry of new participants.

Improvements in the landings data collection system along with RIDFW resource surveys will provide for innovations in management. Acquisition of fishery landings by market class and stratum will allow for stratum specific assessment and management. Fishery selectivity will be directly estimable and biological reference points can be refined to manage size composition in the harvest and spawning stock. In concert with transplanting and spawner sanctuaries, area specific regulation will be possible.

Non-Quahog Endorsement:

Stock Status- Other species of shellfish commercially harvested include soft-shelled clams, oysters, surf clams, and blue mussels. These species are not routinely assessed by RIDFW. Insufficient data is available to conduct analytical assessments. However, catch per unit effort indices suggest that soft-shelled clams and oysters are at high and low levels of abundance, respectively (Figure 4). Since abundance seems relatively high for soft-shelled clams and lacking information on mortality rates, there is no basis to impose more restrictive regulations. Regarding the oyster stock, the CPUE trend suggests a decrease in abundance thereby triggering the need to consider harvest restrictions. According to local researchers studying oyster populations within Narragansett Bay, the effects of disease, environmental conditions, poor sets of new recruits, and fishing

pressure are all responsible for the sharp decline in abundance levels (Oviatt et. al, 1998). It is a reasonable assumption that given such high rates of natural mortality, fishing pressure can lead to local depletions of the resource. Further investigation into the effects of fishing effort is certainly warranted, however, until the extent of the influence that fishing effort has on abundance is ascertained the Division recommends maintaining status quo for 2007 and initiating further research to determine if management action is needed.

In August 2003 a substantial anoxic event occurred within Greenwich Bay resulting in the death of many organisms. Four species of fish, three crab species and one species of shellfish (soft-shelled clams) were observed dead from the event. An estimated one billion soft-shelled clams perished, mostly young of the year. The impact on the population is uncertain but caution should be taken in regards to fishing pressure.

Management Program- Steamer clams, oysters, blue mussels, and surf clams are managed in state waters by the Department of Environmental Management with advice from the Rhode Island Marine Fisheries Council. Additional federal regulations apply to surf clams and ocean quahogs in the EEZ. The Department uses seasons and possession limits to manage the state waters fishery. Permanent and conditional pollution closures further restrict the fishery in addition to the above management measures.

Fishery Management and Licensing Recommendations- No changes are recommended to the management program for other shellfish until better data is available on resource status. New commercial licenses should have basic harvest levels equal to current licensees.

Literature Cited

Ganz A.; Lazar N.; Valliere A.(1999). Narragansett Bay Quahog Management Plan. RI Division of Fish and Wildlife. Report to the Narragansett Bay Project and RI Marine Fisheries Council.

Gibson, M.R. 1999. Assessment of quahogs (*Mercenaria mercenaria*) in Narragansett Bay: technical analyses in support of a bay wide quahog management plan. RI Division of Fish and Wildlife. Res. Ref. Doc. 99/2.

Oviatt, C, Wolff, N, VanKeuren, D, and Nicosia, E. (1998). Oysters (*Crassostrea virginica*) as indicators of a climate warming trend in Northeast waters. CR822051-010 Final report. Funding agency: Environmental Protection Agency.

Figure 1. Estimated Exploitable Biomass of Quahogs in Narragansett Bay Relative to Bmsy

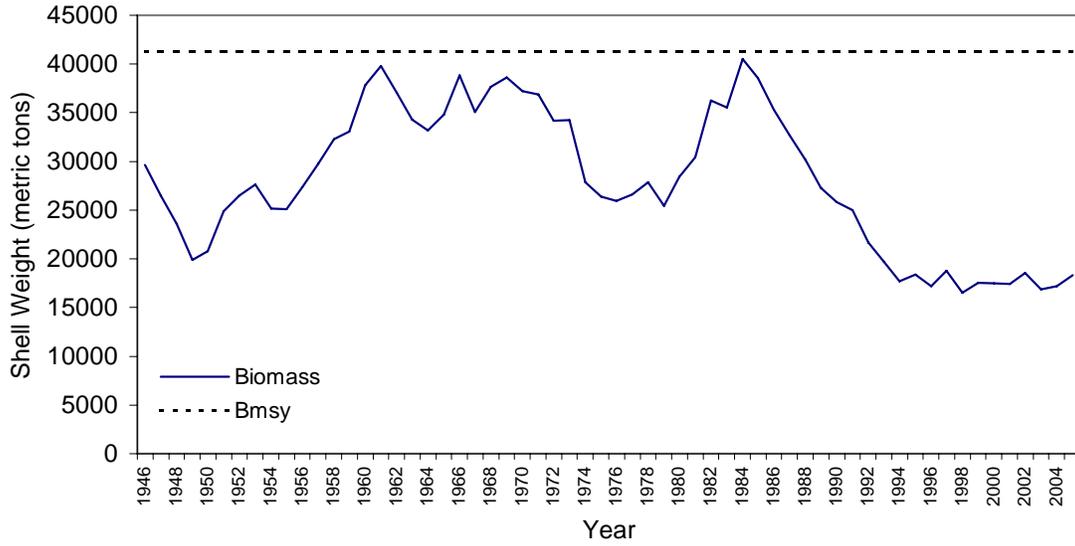


Figure 2. Estimated Rate of Fishing Mortality on Quahogs in Narragansett Bay Relative to Fmsy

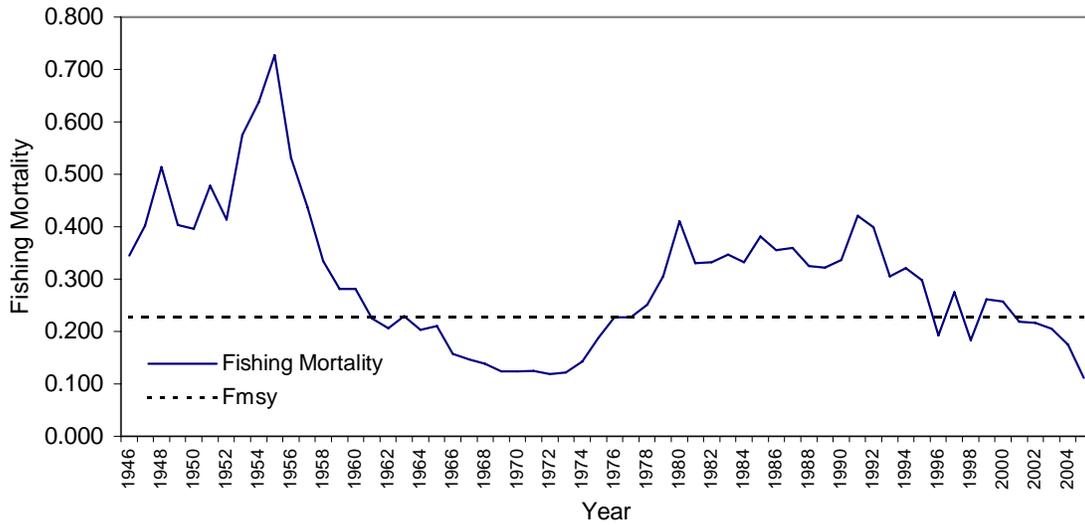


Figure 3. Commercial quahog landings in RI relative to estimated MSY

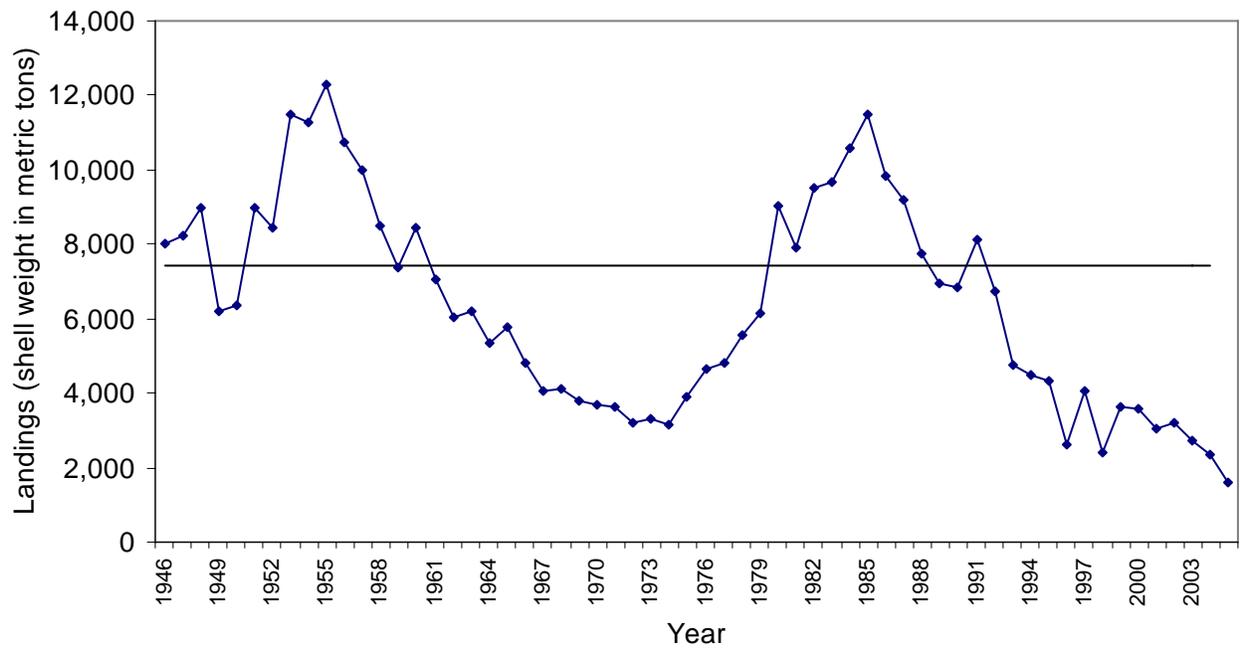
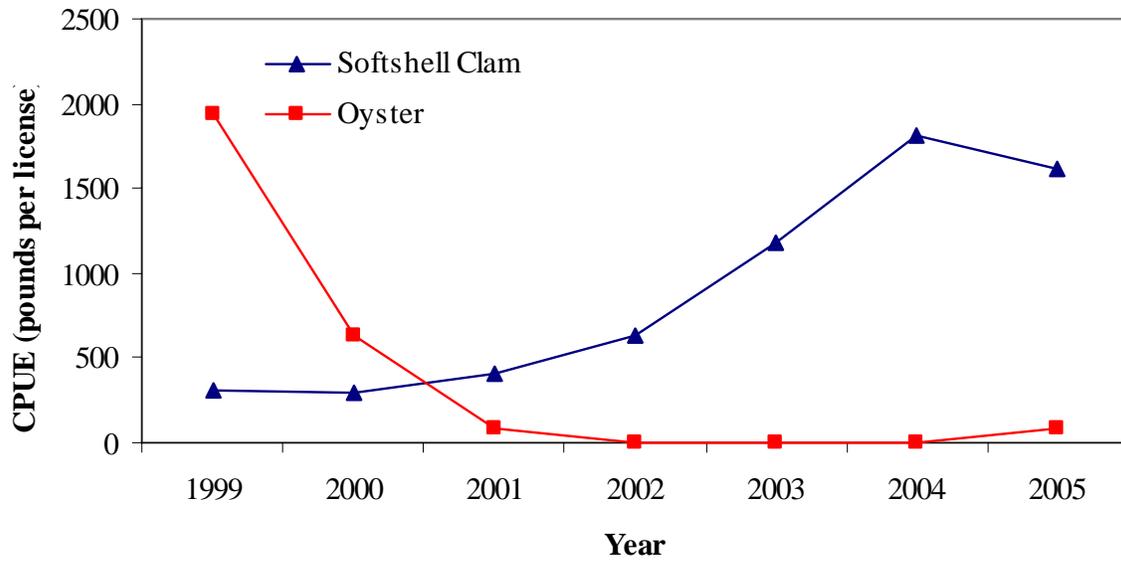


Figure 4. Landings of Soft-Shell Clams and Oysters per Active License in RI



Rule 8. EFFECTIVE DATE

The foregoing rules and regulations Rhode Island Marine Statutes and Regulations, after due notice, are hereby adopted and filed with the Secretary of State this 5th day of December 2006 to become effective 20 days from filing, unless **otherwise indicated below**, in accordance with the provisions of Chapter 42-17.1, Section 20-1-4, Section 20-2.1 and Public Laws Chapter 02- 047, in accordance with Chapter 42-35 of the Rhode Island General Laws of 1956, as amended.

W. Michael Sullivan
Director, Department of Environmental Management

Notice Given: 09/15/2006

Public Hearing: 10/16/2006

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Effective date: 12/25/2006