

**STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**

Division of Fish and Wildlife
Marine Fisheries



2012 Management Plan for the Shellfish Fishery Sector

Developed in association with the
commercial fishing licensing provisions set forth in the
“Commercial Fishing Licensing Regulations”

November 10, 2011

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.

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STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
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SUPERSEDED RULES AND REGULATIONS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rules and regulations, and any policies regarding the administration and enforcement of this regulation shall be superseded.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

Quahog Endorsement

Commercial Landings: There are two very distinct peaks in commercial landings of quahogs in Rhode Island since 1947 (Figure 1). The first occurred in 1955 followed by a rapid decline until 1974 and then a second peak in 1985. The landings have since declined reaching their lowest levels in most recent years. In 2010, 271 metric tons (meat weight) were harvested. This is a 17% increase over 2009 landings. Landings have generally declined since 1985 is due to several factors including the implementation of possession limits and seasons, reduction of fishable areas due to pollution closures, limited number of licenses available and reduction in the number of participants. According to the SAFIS reporting system, a majority of the landings by count were harvested from Greenwich Bay, Conditional Areas A & B, and the West Passage of Narragansett Bay (Table 1). In 2010, 83% of the landings were from these areas. Most of the quahogs landed by count are littlenecks, followed by top-necks, chowders and cherrystones.

Resource Assessment: RIDFW conducts a survey of quahogs in Narragansett Bay on an annual basis, that commenced in 1993 (Ganz et al 1999). Both fished and unfished sections of the bay are sampled. The sampling consists of towing a small hydraulic dredge (0.36 meter sweep) for a distance of 30.5 meters at each station. Pressurized water is delivered to the dredge manifold which dislodges shellfish from the substrate. The dredge is designed to retain legal-sized quahaugs ($\geq 25.4\text{mm}$). All species retained in the dredge when hauled are identified and all shellfish are counted and measured. Based on the survey, the stratified mean density of quahogs in Narragansett Bay declined since 1997 to 2003 and then increased gradually to 2009. Minimal survey work was conducted in 2010-2011 due to vessel age and repair needs. We concluded that the annual bayside survey will be reconfigured to concentrate on specific areas of concern on a rotational basis. Sampling intensity will be sufficient to produce precise estimates of biomass by size class. Surveys will include pollution closed areas and spawner sanctuaries. In addition, research is being conducted to improve the precision of the survey by relating observed quahaug densities to mapping of submerged sediments.

It is apparent that the availability of new commercial licenses in recent years has not caused a substantial rise in landings until the aforementioned increase in 2010.

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.

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, enhance, and rebuild quahog resources in Narragansett Bay **and the coastal ponds with appropriate management strategies including transplanting, area closures, establishment of spawner sanctuaries, and daily possession limits based upon sustainability.**
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 via establishment of shellfish management areas.
6. Provide for a simple, uniform and enforceable set of regulations.

Fishery Management and Licensing Recommendations: In 2011, the Department issued 25 new quahog endorsements for the basic commercial fishing license. A new 2:1 exit/entry ratio for the quahog fishery was implemented. RIDFW believes that the number of individuals that are licensed to fish in this fishery is more an industry-based economic issue than a resource management issue. With the SAFIS system in place, and with the RIDFW's plans to refine the resolution of shellfish landings data with regard to areas fished, the RIDFW will have the ability to set harvest limits by area. As such, the number of people participating in the fishery is becoming less relevant from a resource management perspective. The new standard would strike an appropriate balance, allowing for a significant number of new licenses while not flooding the fishery with new participants. These licensees were restricted to 3 bushels per day statewide.

In 2011 the Department issued 422 principal effort licenses with quahog endorsements compared to 451 in 2010, a difference of 29 licenses. Principal effort license holders with quahog endorsements have access to full harvest levels. For student shellfish licenses there was a net increase of 6 (49 in 2010; 55 in 2011) and a net increase of 16 over 65 shellfish licenses (201 in 2010; 217 in 2011). These two license categories are restricted to basic harvest levels.

The provision set forth in section 6.7-4 (h) allowing an actively fishing basic commercial fishing license holder with a quahog endorsement to upgrade to a principal effort license

with a quahog endorsement and an actively fishing student shellfish license holder to upgrade to a basic commercial fishing license with a quahog endorsement will be continued in 2012.

Future Management Considerations and Recommendations: 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 regulations will be possible.

The Narragansett Bay Commission's combined sewer overflow project combined with more-intensive water quality monitoring by DEM Water Resources, has resulted in water quality improvements in the Providence River as well as a decreased number and duration of rainfall-induced closures in Conditionally Closed Areas "A" and "B". The high densities of quahaug broodstock observed in the Providence River combined with prior rainfall-induced closures in the Conditionally Closed Areas have resulted in a significant and sustained level of harvest. In order to sustain this harvest, it is recommended that an area-specific management plan be developed and implemented for the Providence River, Conditional Area "A", Conditional Area "B" and the recently established "Conimicut Triangle". Alternatives include, but are not limited to, establishing new shellfish management areas, establish area-specific fishing periods, and adopt realistic possession limits. Establishment of "shellfish management areas" throughout RI coastal waters and comprehensive regulations would allow improved management by DEM and increased flexibility.

Soft-shell Clam Endorsement

Commercial Landings: Since 1999, commercial landings of soft-shell clams in Rhode Island have increased by 661%. With the introduction of SAFIS landings have been coded by area and month since 2006. The majority of landings have come from Upper Narragansett Bay, 86% in 2009 (Table 2). These account for the rapid rise in landings associated with several large year classes occurring in the area of Conimicut Point.

Resource Assessment: Soft-shell clam resources are distributed in the inter-tidal zones of Narragansett Bay and the coastal ponds and estuaries with the bulk, estimated at about 86%, located in the Upper Narragansett Bay, particularly in the Conimicut Point area. In recent years and due to the successful results from the Narragansett Bay Commission's combined sewer overflow project, measurable water quality improvements were recorded in the Providence River resulting in a substantial reduction in the number of rainfall-induced closures in Conditionally Closed Areas "A" and "B" and opening of new areas,

such as the new soft-shell clam grounds in the Conimicut Pt Area, AKA “triangle”. The “triangle’ area opened on June 13th, 2010 with the only change to the existing regulations consisting of increasing the minimum size from 1 ½” to 2”. The daily catch limit of 12 bushels was not changed resulting in dramatic reductions in abundance for about 593 licensed fishermen holding a soft-shell endorsement and 700 Multi-purpose licenses. The effective effort has reached its highest in peak summers with 160 participants per month and as low as 20 per month (Figure 4). However, the high abundance and the isolated characteristics of the Conimicut Point area attracted new fishing effort beyond the level of sustainability (Lazar, 2010).

The dynamic characteristics of the area combined with resource access limited by conditional and permanent shellfishing closures, makes reliable abundance estimates difficult to obtain. However, an analysis of catch-per-unit-effort (CPUE) derived from commercial landings was conducted in 2007 (Murphy, 2007) and further analyzed by (Lazar, 2010) demonstrated evidence of stock depletion by year and by month from 2006 to 2009. CPUE measurements are often used as a measure of population abundance. In the absence of a fishery independent survey of the resource CPUE based on commercial landings is the only information available regarding population abundance. CPUE provides a relative measure of abundance providing information on trends. Based on the analysis there was strong evidence that between the years 2006 and 2009 the abundance of soft-shell clams has declined in the Upper Bay as a result of the rapid rise in landings. This was evidenced by a rapid decrease in CPUE. There were no other significant trends observed for other areas of the State due partially to sample size. The bulk of soft-shell clam landings are known to occur in “Conditional Area A” from the SAFIS data and from evidenced by the spike in daily landings after each rainfall-induced closure is lifted. A further decline was observed in 2009 as indicated in Figure 3. The main cause of the decline is likely in response to the spike in the number of participants when the area is open combined with the liberal 12 bushel possession limit

The Department is undergoing an extensive sampling and monitoring program for soft-shell fishery in Rhode Island with particular focus on the newly opened area in Conimicut Point. Results will be presented to the Shellfish Advisory Panel, the RI Marine Fisheries Council in 2012.

Fishery Management and Licensing Recommendations: Soft-shell clams are managed entirely within state waters by the Department of Environmental Management with advice from the Rhode Island Marine Fisheries Council. For 2008, in response to increased landings and evidence of population decline in upper Narragansett Bay, RIDEM limited the number of eligible participants in the fishery to the level present in 2007. The Department issued 175 commercial fishing licenses and 284 principle effort licenses with soft-shell clam endorsement for 2011. Other restrictions in the fishery include permanent and conditional pollution closures, seasons, establishment of Conimicut Shellfish Management Area, a daily possession limit reduction from 12 bushels per day to 3 bushels per day in the area, a minimum size increase to 2 inches statewide and management closures.

The status quo allows for one new license/endorsement to be issued for every 5 eligible licenses (MPLs, PELs with soft-shell clam endorsements, and CFLs with soft-shell clam endorsements) that retire (5:1 exit/entry ratio). Under that scenario, 12 new soft-shell clam endorsements would be made available for 2012. The Division could only support the 5:1 exit/entry ratio, provided the stocks recover after the 2010 depletion, and with the caveat that, to prevent further localized depletions, sustainable levels of removal will need to be established for the fishery, either through effort control, possession limit adjustments, area-specific quotas, or a combination thereof and outlined below.

Future Management Considerations and Recommendations: The Narragansett Bay Commission's combined sewer overflow project combined with more-intensive water quality monitoring by DEM Water Resources (DEMWR), has resulted in further water quality improvements in the Providence River as well as decrease the number of rainfall-induced closures in Conditionally Closed Areas "A" and "B". In 2011 DEMWR modified the rainfall thresholds for Conditional Areas A and B and created a third Conditional Area C (the Conimicut triangle). Landings from the high densities of soft-shell clams at Conimicut Point area, currently subject to rainfall-limited harvest, have declined significantly since the overfishing that took place in 2010. Stocks could further decline without implementation of more realistic and sustainable management measures. The isolated characteristics of the Conimicut Point fishery make the clams particularly vulnerable to variations in fishing effort. Additionally, a permanent pollution closure line bisecting the bed makes enforcement problematic.

Establishment of a restriction against the use of mechanical harvest, and/or air-assisted, and water-assisted harvest methods for shellfish species in Narragansett Bay and the salt ponds with provisions for certain fisheries would aid in protecting soft-shell clam stocks. Individuals fishing for razor clams have been observed harvesting soft-shell clams with water pumps and air compressors facilitating large-scale areas of disturbance and rapid shellfish removal.

Alternatives to protect this fishery include, but are not limited to, establishing new shellfish management areas, establishment of area-specific fishing periods, adoption of more realistic possession limits statewide, and maintaining the minimum legal size of 2 inches. Measures should be implemented for the Providence River while the aforementioned pollution-closure boundary at Conimicut Point is in effect.

The Department is undergoing an extensive sampling and monitoring program for soft-shell fishery in Rhode Island with particular focus on the newly opened area in Conimicut Point. Results and further management recommendations will be proposed through the process of the Administrative Procedure Act.

Whelk Endorsement

Recently, the RIDFW conducted a new comprehensive analytical assessment on whelk resources in RI (Gibson, 2010). This work constitutes the first attempt to assess the status of whelk and their fishery in Rhode Island waters. As such, it addresses statutory

requirements for sustainable shellfish management plans (RIGL 20-2-44) and duties of the Director to develop fishery management plans in support of commercial licensing (RIGL 20-2.1-9(5)).

Commercial Landings: A commercial fishery for whelks has existed in Rhode Island for many years and until September 2009, it was not regulated or the subject of a stock assessment. Two species are commonly landed; the channeled and knobbed whelks, *Busycotypus canaliculatus* and *Busycon carica*. According to National Marine Fisheries Service (NMFS) statistics, Rhode Island whelk landings were 85,000 pounds of meat weight in 1950 and increased over time to a peak in 1986 at 347,000 pounds. After several years of high landings, the fishery declined rapidly and from 1994 to 2003, reported landings were less than 2200 pounds. Since 2006, whelk landings by species have been monitored through the Standard Atlantic Fisheries Information System (SAFIS) e-dealer reporting system. SAFIS captures landings from both state and federally permitted fishers. Current landings are 100,000 to 150,000 pounds and are almost exclusively (96%) channeled whelk (RIDFW- unpublished data). Ex-vessel value of whelks from 1950 to 1976 was steady at about \$1.25 per pound of meat in standard 2008 dollars. It then increased sharply from \$1.27 to \$3.24 from 1976 to 1983. From 2004 to 2008, value has fluctuated around \$3.00 per pound (Gibson, 2010)

Resource Assessment: On the basis of a Biomass Dynamic Model observations, it was concluded that $F_{msy} = 0.33$ is an appropriate overfishing reference point for whelk in Rhode Island and an $F = 0.25$ would be an appropriate fishing mortality target providing a buffer between the overfishing threshold. Current F rate is at or below this level indicating that overfishing is not occurring (Gibson, 2010). Biomass was estimated to be near the B_{msy} reference level so an overfished condition is not likely. In addition, the YPR analysis indicated that the recently enacted minimum size of 2.5" shell width would produce little benefit to spawning stock biomass since the fishery harvests few animals smaller and some remain immature at 2.5". A second increase to 2.75" shell width would increase SSB/R levels about 7% at current F and provide a pre-cautionary buffer against recruitment declines without reducing fishery yield much. An increase to 3.0" shell width would produce a more substantive increase in SSB/R (23%) but with an YPR loss of 15%. The fishery seems to have operated in a pulse fishing mode with periodic increases in abundance that attracted fishing effort. High fishing mortality rates ensued (1960's, 1980's), the stock declined, effort dissipated, and a biomass recovery followed. A minimum size limit alone cannot prevent reoccurrence of these fishing pulses. To avoid opportunistic expansions in effort, consideration will need to be given to effort limitation via license/permitting or through output controls such as catch limits and quotas (Gibson, 2010).

Fishery Management and Licensing Recommendations: Whelks are managed entirely within state waters by the Department. Currently there is no licensing system to control the directed effort for whelk fishery in Rhode Island. To avoid opportunistic expansions in effort, considerations shall be given to control fishing effort by introducing a new endorsement in the licensing system directed at whelk fishing. The goal of the new endorsement will be to cap and monitor effort through the use of the endorsement

category and avoid future the boom and bust cycles that were observed over recent years (Gibson, 2010). Other management measures should be considered to control output to limit fishing mortality such as quotas, daily possession limits, closed seasons, and a minimum size based upon sexual maturity.

Other Shellfish Endorsements

Other species of shellfish commercially harvested within Rhode Island waters include oysters, blue mussels, and razor clams. While these species are not routinely assessed by RIDFW and little data is available to conduct comprehensive analytical assessments, landings data and anecdotal evidence from the commercial fishing industry are useful pieces of information in identifying populations that warrant further research.

Commercial Landings: Regarding the oyster stock, landings have decreased since the late 1990's (Figure 4). 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. Recently dead oysters (open shells) are visual evidence of the oyster disease effects. This occurs in both fished and unfished RI waters. Further investigation into the effects of fishing effort is certainly warranted; however, until the extent of the influence that fishing effort and poor recruitment has on abundance is ascertained the Division recommends reducing the daily possession limit accordingly. Establishment of new spawner sanctuaries and harvest moratoria are considered important components of the collaborative oyster-restoration efforts that are underway. Initiating further research and monitoring to track abundance and recruitment success is needed.

Management Program- oysters, blue mussels, and razor 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. The Department in cooperation with both federal government and non-government organizations has been conducting oyster restoration in the salt ponds and Narragansett Bay.

In 2006, the NRCS provided funding for a statewide oyster restoration project to help increase the spawning and recruitment levels sufficient to reestablish a self-sustaining oyster population. The RIDEM is overseeing and authorizing the placement of the stocked oysters into the state's waters. Currently, there are six established shellfish spawner sanctuaries in state waters with habitat suitable for placement of the oysters. They are in designated portions of Winnapaug and Ninigret Ponds, Potters Pond, Jenny's Creek, and Bissell cove. The Nature Conservancy (TNC) is also assisting with restoration efforts. A current proposal is to place clean surf clam shell and place it in the spawner

sanctuaries of established shellfish management areas. The culch would provide a substrate for juvenile attachment.

Licensing Options and Recommendations- No changes are recommended for the licensing program for shellfish that fall under the non-quahog endorsement category excluding soft-shell clams and whelks until better data is available on their status. It is also recommended that new commercial licenses continue to have basic harvest levels equal to current licensees for this endorsement.

Shellfish Harvesting Methods Clarification

Current harvesting regulations were developed and implemented to facilitate harvest of specific shellfish species of economic interest to the commercially fishing community. Permissible harvest methods were implemented with the intent of minimizing habitat impacts and protecting juvenile stocks while allowing a reasonable harvest. As demand has developed for alternative species of mollusks, crustaceans, and finfish; requirements relating to fishing methods have remained stagnant.

Species-specific regulatory language has resulted in commercial fishing activities targeting unregulated (or under-regulated) species. Industry has interpreted existing regulatory language to mean that harvest of unregulated species is permissible by fishing methods considered too intrusive or unsuitable by RIDFW. Examples include: dredging for whelk, horseshoe crabs (and other unregulated species) and the use of mechanical harvest methods (including air-assisted and water-assisted methods) in pursuit of razor clams and mantis shrimp in direct proximity to regulated species and inside established pollution closures. The species-specific regulations tie the hands of law enforcement. The insufficiencies also make proper resource management and habitat protection problematic.

Regulations need to be crafted that address omissions and insufficiencies in the regulations that do not prevent these activities (and associated impacts) while facilitating intended fishing opportunities.

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Table 1. Total count of Quahogs landed commercially in RI in 2010 by Area and Market category

	Little Neck	Top Neck	Cherry	Chowder	Unknown	Total
NULL	143,211	34,430	39,615	19,854	0	237,110
RI 1 - UPPER NARRAGANSETT BAY	2,567,235	1,415,539	80,028	907,572	0	4,970,374
RI 1A - CONDITIONAL AREA A	238,179	127,921	7,894	84,685	0	458,679
RI 2 - GREENWICH BAY	2,270,494	539,729	43,161	89,971	0	2,943,355
RI 3 - NARRAGANSETT BAY-WEST PASSAGE	6,766,410	3,041,942	731,324	1,686,658	0	12,226,334
RI 4 - NARRAGANSETT BAY-EAST PASSAGE	1,065,576	612,132	4,020	592,208	0	2,273,936
RI 5 - SAKONNET RIVER	112861	32107	161	55087	0	200,216
RI 6B - BLOCK ISLAND	34363	481	0	93	0	34,937
RI 6N - NINIGRET POND	82142	4946	826	805	0	88,719
RI 6P - POINT JUDITH POND	230224	78083	747	30456	0	339,510
RI 6Q - QUONOHONTAUG POND	8402	1375	68	205	0	10,050
RI 6W - WINNAPAUG POND	6611	4379	0	1622	0	12,612
Total	13,525,709	5,893,064	907,844	3,469,216	0	23,795,832

Table 2. Commercial soft-shell clam landings (pounds) by area

	2008		2009		2010	
Unknown	8,820	1%	46,169	9%	7,922	1%
Upper Narragansett Bay	519,762	73%	351,635	71%	138,754	20%
Area 1A Conimicut Triangle					498,901	71%
Greenwich Bay	5,704	1%	4,182	1%	70	0%
Narragansett Bay – West Passage	151,825	21%	72,660	15%	36,227	5%
Narragansett Bay – East Passage	4,856	1%	5,636	1%	2,692	0%
Sakonnet River	860	0%	1,930	0%	427	0%
Point Judith Pond	20,115	3%	11,240	2%	13,405	2%
Quonochontaug Pond	2,218	0%	1,181	0%	197	0%
Ninigret Pond	388	0%	52	0%	37	0%
Winnapaug	72	0%	5	0%	110	0%
Total	714,620		494,689		698,741	

Figure 1: Quahog Landings in meat weight in Rhode Island (2006 – 2010)

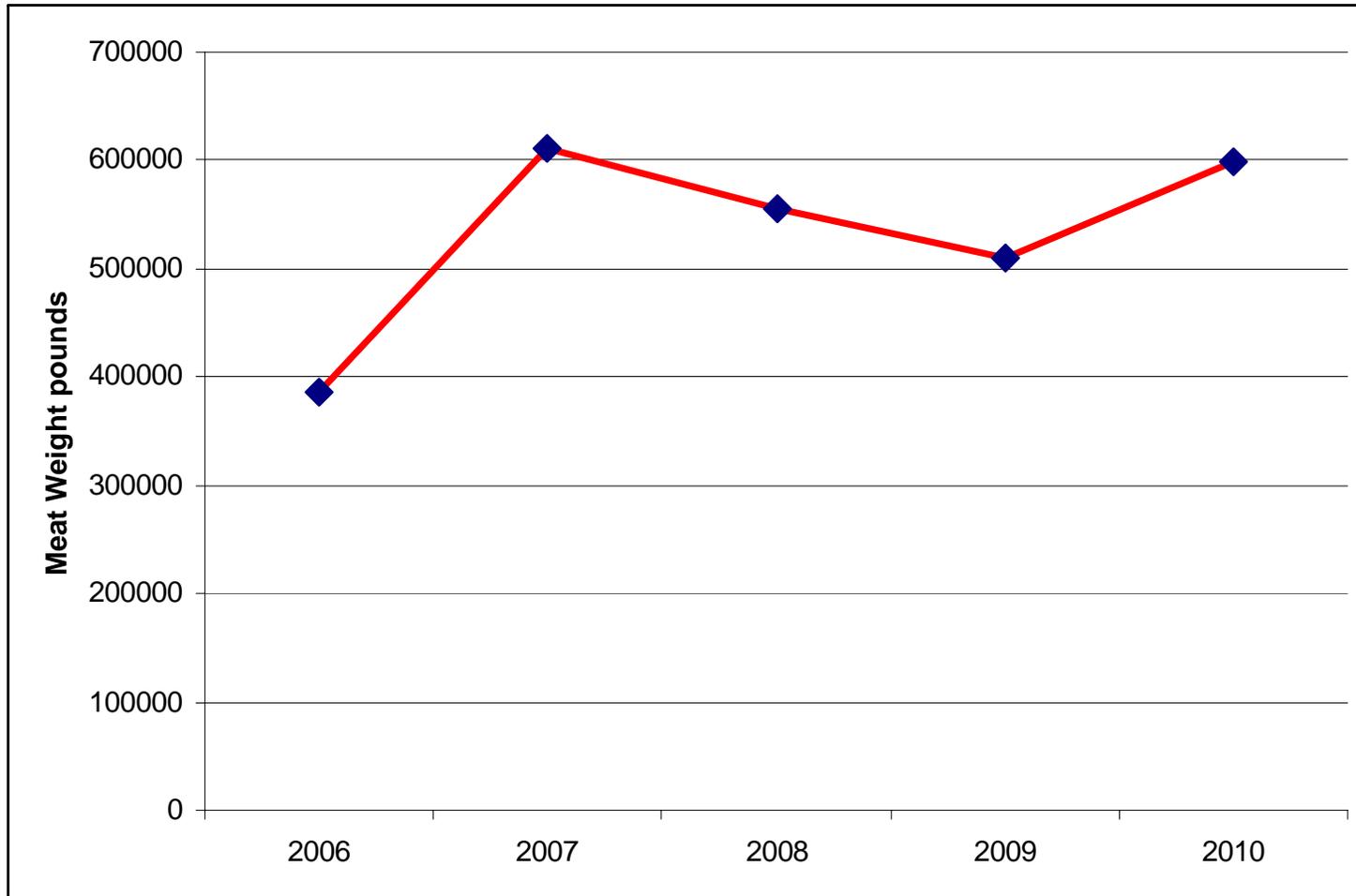


Figure 2: Mean Density of quahogs (#/m²) from the hydraulic dredge survey (1994-2009)

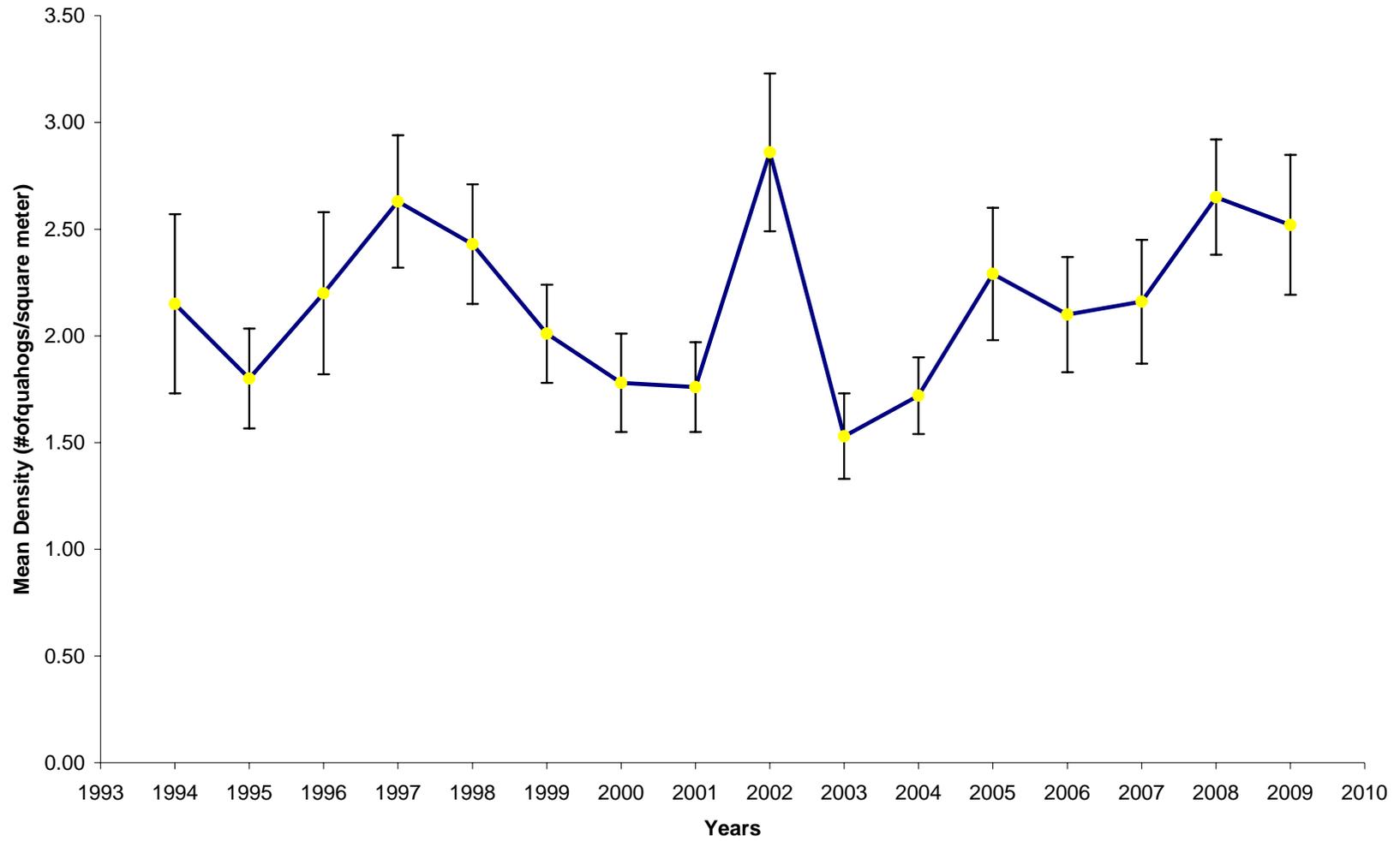


Figure 3: Soft-shell Clam Landings by month-year and the number of participating Fishermen

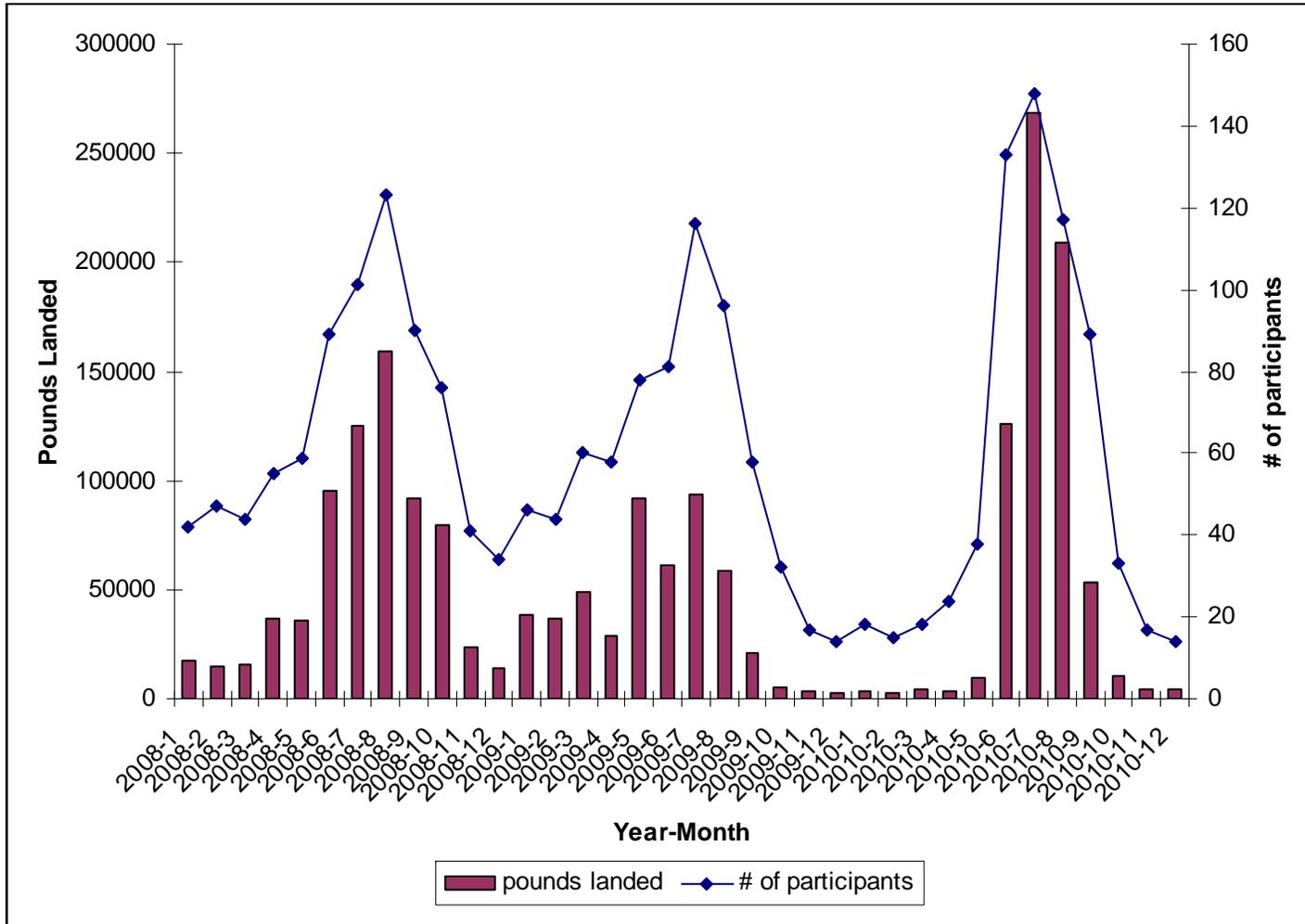


Figure 4: Oyster Landings in Rhode Island (wild-harvest only)

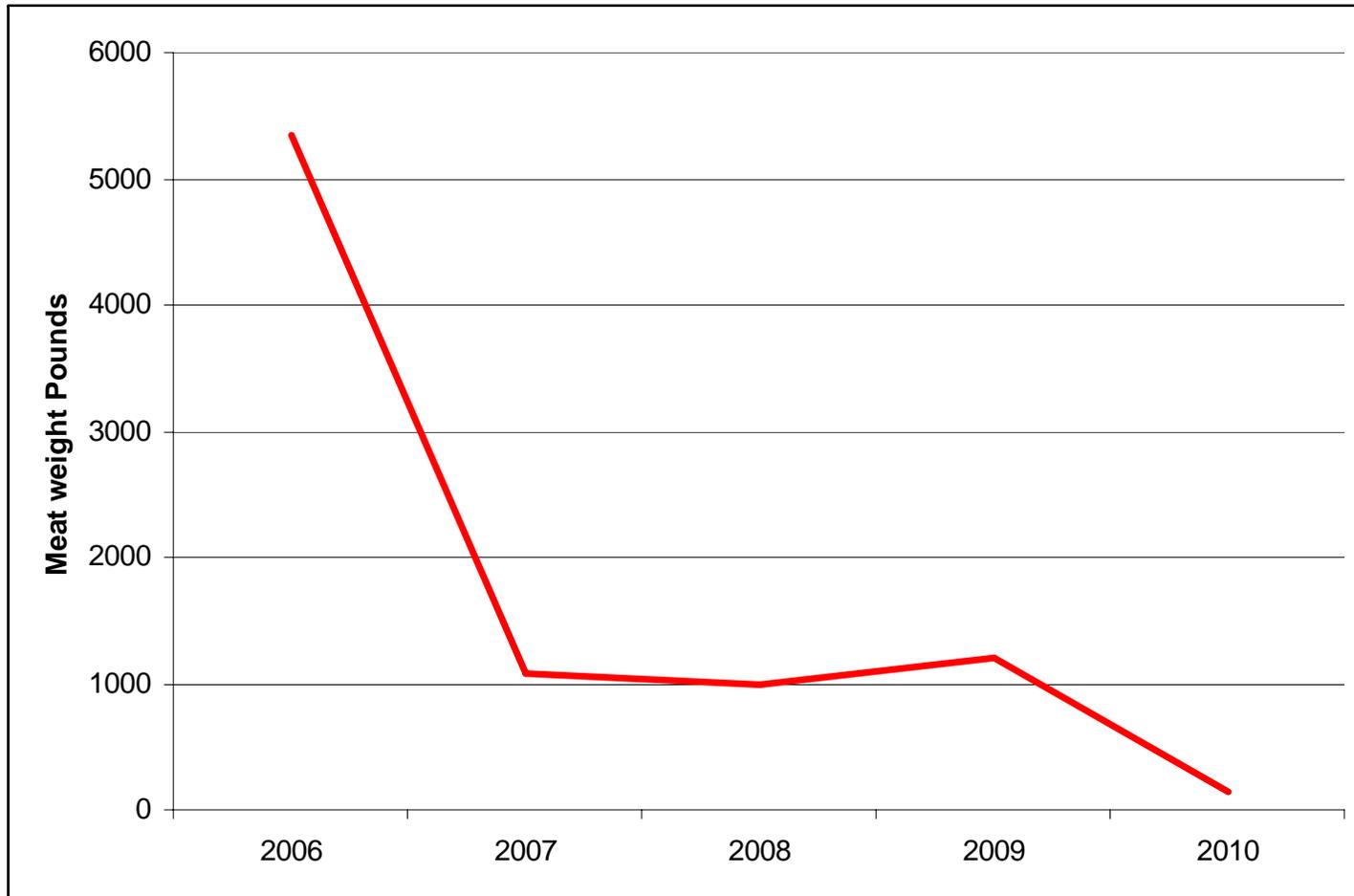
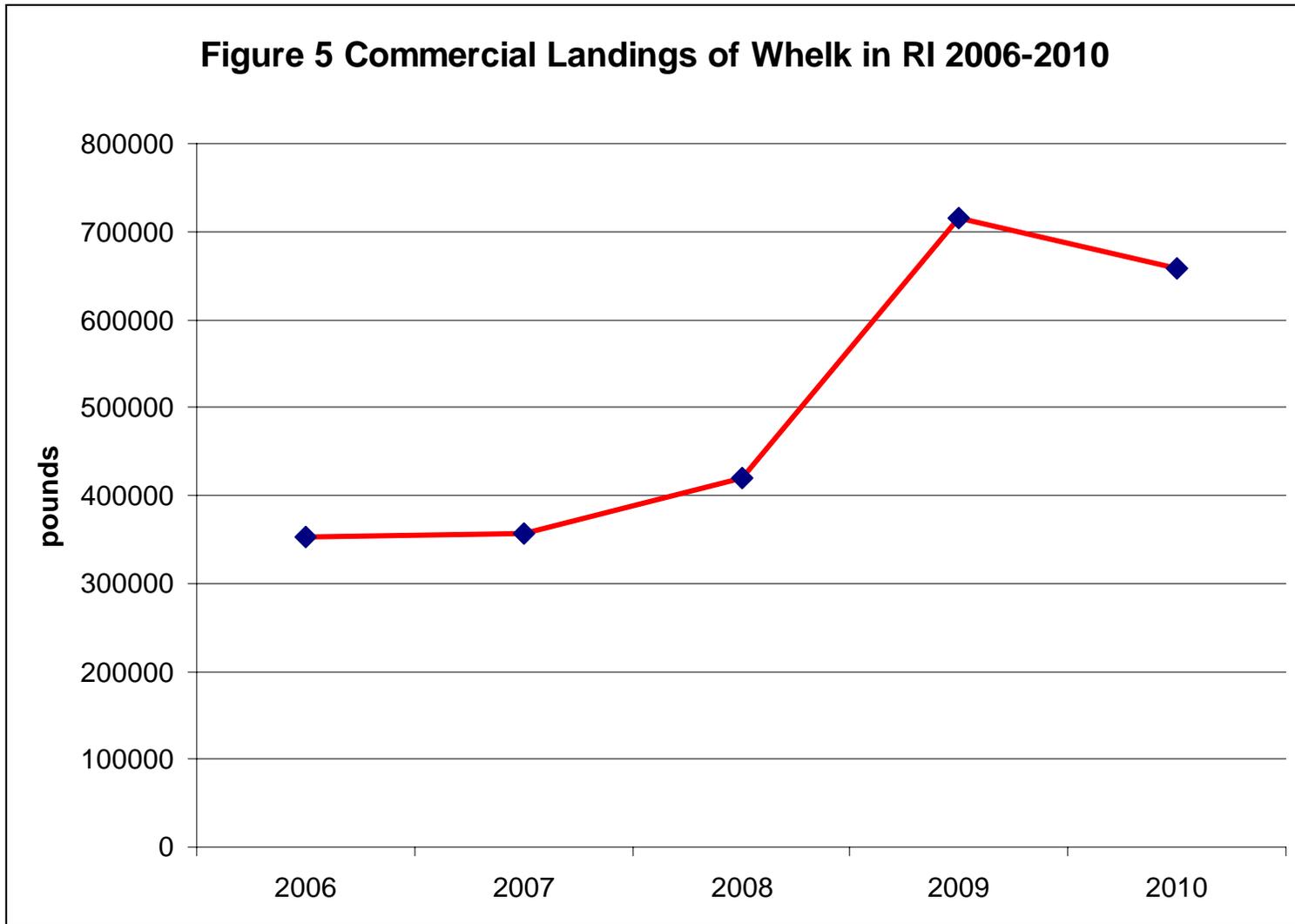


Figure 5 Commercial Landings of Whelk in RI 2006-2010



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 10th day of November, 2011 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.

Janet L. Coit, Director
Department of Environmental Management

Notice Given: 09/16/2011
Public Hearing: 10/17/2011

Filing date: 11/10/2011
Effective date: 11/30/2011

ERLID# 6582