

RHODE ISLAND AND PROVIDENCE PLANTATIONS DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT

DIVISION OF MARINE FISHERIES



2018 Crustacean Sector Management Plan

TABLE OF CONTENTS

INTRODUCTION.....	2
AMERICAN LOBSTER.....	X
HORSESHOE CRABS.....	X
JONAH CRABS.....	X
OTHER CRUSTACEANS.....	X
LITERATURE CITED.....	X
TABLES AND FIGURES.....	XX
SIGNATURE PAGE.....	XX

INTRODUCTION

This plan is developed and updated annually pursuant to RI Gen. Law 20-2.1-9(5), which states that the Director of the Department of Environmental Management (DEM) develop conservation and management plans in support of regulations that may restrict the issuance of commercial fishing licenses. Such restrictions were clearly contemplated by the Rhode Island General Assembly as a means to limit fishing effort and to rebuild depleted fishery resources. As articulated in statute, these plans shall focus on fishery resources with the greatest value to the state.

To meet the purposes of the act, the licensing program created two licensing endorsement categories for the commercial crustacean fishery: *Lobster* and *Crustaceans Other* (e.g., crab, shrimp).

Within each endorsement category is an *exit/entry ratio*, or the number of new individual license opportunities provided for each license not renewed. Exit/entry ratios are reviewed annually by the Rhode Island Marine Fisheries Council, and presented for public comment at a public hearing in accordance with the requirements of the Administrative Procedures Act (RIGL Chapter 42-35). Determining the level of fishing effort and impacts to the resource that a particular license type collectively represents, and thus determining the number of licenses desired in a given fishery as a means to limit such effort, is a primary goal of the licensing program.

This plan emphasizes American lobster in recognition of their great commercial and recreational value to Rhode Island citizens.

AMERICAN LOBSTER

Stock Status: The lobster resource in Narragansett Bay and Rhode Island coastal waters (Lobster Conservation Management Area 2, Southern New England lobster stock unit) has been deemed exploited over multiple decades (ASMFC 1996, 2000, 2006a, 2009, Gibson 2000). A stock decline in 2002 prompted the Atlantic States Marine Fisheries Commission (ASMFC) to initiate emergency remedial action in LCMA 2, which encompasses Rhode Island state waters. The three ASMFC lobster stock assessments conducted since 2002 have concluded that the southern New England lobster stock (including Area 2) is in poor condition based on the recommended biological reference points, below the abundance threshold, at or near the fishing mortality threshold, depleted and at the overfishing threshold (ASMFC 2006a), and below the effective exploitation threshold (ASMFC 2009, ASMFC 2015) (Table 1).

Agency trawl surveys document the abundance decline that triggered the 2002 ASMFC emergency action in LCMA 2. RI DEM trawl surveys conducted in Narragansett Bay and Rhode Island coastal waters since 1979 show that local lobster abundance dropped from high levels in the mid-1990's to low levels in 2002-2003. Although surveys conducted during 2005-2008 caught slightly more lobster, abundance has not recovered

to former (1990s) levels and remains below the time-series average. URI scientists have observed similar time series patterns in lobster catches conducted by the University of Rhode Island Graduate School of Oceanography (URIGSO) survey in state waters. Both Massachusetts and Connecticut have reported lobster declines to the east in Buzzards Bay and to the west in Long Island Sound. The decline in abundance of both sub-legal and legal lobster from 1997 to 2002 was preceded by a steep decline in the abundance of newly settled lobster from 1990 to 1996. These abundance patterns are consistent with the generally accepted time lag of 6-7 years between first settlement and attainment of legal size. Warming waters, shell disease, oil spills and chemical contaminants, and increasing finfish predation have likely increased the natural mortality rate and reduced the number of lobster surviving from settlement to legal size. The combined effects of reduced settlement and declining early-life survivorship have impacted the fishery, reducing recruitment. RI DEMs ventless trap survey has shown slight increases in sublegal lobster abundance over the last few years, but still below the time series (2006-2016) average. Given the time lag from settler to adult, the increase in legal abundance observed in 2004-2006 was not unexpected. Settler abundance slightly increased from 2013-2015, but decreased in 2016.

The ASMFC lobster technical committee last updated the coast-wide lobster stock assessment, including evaluation of new models that can consider increased natural mortality rate, in 2015. Revisions to their definitions of stock areas and recommendations for new biological reference points were made at that time as well. The ASMFC lobster management board accepted the assessment results and peer review which have since been published for public information (ASMFC 2015). This last assessment showed that the southern New England (SNE) stock of lobster, spanning the region from Cape Cod to New Jersey, is at low abundance and considered severely depleted. The assessment results and peer review comments pertain to a broader stock area than the Rhode Island marine waters.

The ASMFC lobster technical committee recently reexamined various stock status indicators to understand the recent population (2008-2013) in relation to previous years. All abundance (spawning stock biomass, recruitment, YOY) indicators for the SNE stock are close to or below the median abundances for the entire time series, with several below the 25%ile (ASMFC 2015). The SNE stock continues to be below the reference abundance threshold and below the effective exploitation threshold, meaning *the stock is depleted but overfishing is not occurring* (Table 1). Current abundance of the SNE stock is the lowest observed since the 1980s even though exploitation rates have declined since 2000. In general, stock indicators and model results both reflect the same stock status: overall abundance, spawning stock biomass, and recruitment are all at low levels throughout SNE lobster stock; the stock has not rebuilt since the last assessment and is still in poor condition.

In response to the assessment and peer review, the ASMFC lobster management board tasked the ASMFC lobster technical committee to evaluate how changes to different management strategies (e.g. minimum and maximum gauge changes, trap reductions,

closed seasons) may result in increased egg production to increase recruitment under favorable conditions. In May 2017, the ASMFC American Lobster Management board approved moving forward with increasing SNE egg production by 5%. Lobster Conservation Management Teams (LCMT) have provided proposals to reach the 5% based on the suite of tools noted above. The proposals will be reviewed in August, 2017 by the ASMFC Lobster Board.

Management Program: Regional management of the lobster resource is the responsibility of the ASMFC. Amendment 3 to the fishery management plan (ASMFC 1997) and associated addenda govern the interstate management program and peer reviewed coast wide stock assessments (ASMFC 2000, 2006a, 2009, 2014) provide information on lobster biology and resource status. The ASMFC management program is organized by lobster management area (LCMA) with Rhode Island state waters being part of Area 2. DEM complies with the LCMA 2 plan through a set of management measures including minimum/maximum gauge and escape vent sizes, trap limits, protection of egg-bearing females, v-notching, a trap reduction schedule (to be implemented over a 6 year period), and a 10% conservation tax on trap allocation transfers designed to further reduce the number of traps deployed. Both state (RI-MA) and federal waters are included in LCMA 2 making cooperative management essential.

Performance of Fishery: The regional lobster resource has undergone a decline in abundance and fishery performance. The decline has resulted in removal of latent effort in the fishery and reduced landings compared to the 1990s. The number of lobster trap allocations (LTAs) in 2017 did not differ greatly than 2016 across fishing license type (Table 2). Most fishermen holding LTAs are have multipurpose licenses. The trap reduction program continued in 2016-2017, with total traps reduced based on the 5% reduction and the conservation tax (Table 3). Total lobster landings in 2016 were 2.26 million pounds, with an ex-vessel value of over \$12 million.

Division Management and Licensing Recommendations: The state should continue to work with the ASMFC to further reduce fishing mortality and to rebuild the lobster resource throughout the region. Attrition is clearly occurring in the industry, reducing the number of participants and active traps. The state began to neutralize latent effort through the trap reductions imbedded in Addendum XVIII starting in 2016 so that it cannot re-activate if resource conditions improve. Participation in Area 2 is based on historical performance and the state has reviewed lobster licensing and made appropriate changes in preparation for limited access-historical performance. A lobster trap allocation transferability program that was initiated with Addendum XII has been developed in consultation with ASMFC and NOAA Fisheries via Addenda XVIII, XIX, and XXI. This can be used to bring new individuals into the fishery without increasing effort above that qualified in the initial trap allocation.

In view of ASMFC compliance requirements and state law, it is recommended that the moratorium on the issuance of new lobster endorsements be continued for 2018.

RI Marine Fisheries Council: The IAC met on August 10, and the Council met on October 2. No recommendations were offered for 2018 for changes to the current moratorium on the issuance of new lobster endorsements.

HORSESHOE CRAB

Stock Status: An updated coast wide Horseshoe Crab stock assessment was conducted in 2013 showing that the fishing mortality rate is slightly above the F_{msy} reference point and stock abundance has not yet recovered toward B_{msy} . A regional update will be initiated in 2018 at the Commission level.

Management Program: The commercial horseshoe crab fishery is managed at the regional level by the ASMFC Interstate FMP for horseshoe crabs. In state waters, DEM uses time and area closures, possession limits and state established quotas, as well as a permitting/reporting program to achieve compliance with the FMP. For the 2017 fishing year, DEM regulations were adopted establishing broader time closures, improved reporting and reporting compliance measures, a minimum size of 7 inches (prosomal width), and daily possession limits for the bait fishery.

Performance of Fishery: The use of time closures and possession limits in the State's bait fishery has greatly restricted harvest during peak spawning activity and resulted in reduced fishing mortality rates and harvest equity among participants. However, due to a small quota and the nature of accountable commercial harvest, overages may occur annually and must be deducted from the following year possibly resulting in a shorter harvest season and may limit resource access.

Division Management and Licensing Recommendations: . The Division will continue to monitor harvest levels to determine the effects of the management measures and strategy implemented in 2017, however it is too soon to conclude if these measures are effective as intended. Considering the bait fishery has remained open longer than it has in the last 10 years would be an indication of its effectiveness. The Division recommends maintaining as an un-restricted species in the *Other Crustaceans* endorsement category for 2018.

RI Marine Fisheries Council: The IAC met on August 10, and the Council met on October 2. No recommendations were offered for 2018 for any changes with horseshoe crab licensing and permitting requirements.

JONAH CRAB

Stock Status: An ASMFC Fishery Management Plan for the Jonah Crab (*Cancer borealis*) fishery was implemented on June 1, 2016. The management plan ties Jonah Crab harvest to fishers holding a Lobster Trap Allocation (LTA) with elements including permitting, minimum size requirements, and the prohibition of egg bearing females. Additional addenda recently adopted by the ASMFC establishes incidental bycatch

limits for non-trap gear and non-lobster trap gear and limits on claw harvest. Recent *Cancer* crab abundance from the URIGSO trawl survey is below the time-series mean. Currently, there is an endeavor by state, federal, and academic scientists to collect data on Jonah crab life history and population characteristics to perform a formal stock assessment. No time table has been set for such an assessment.

Management Program: Jonah crab is managed at the regional level by the ASMFC FMP for Jonah crab, which was first adopted in 2016 with and includes an (LTA) requirement, a minimum size limit of 4.75 inches and the prohibition of egg bearing females. Additional addenda recently adopted by the ASMFC establishes incidental bycatch limits for non-trap gear and non-lobster trap gear and limits on claw harvest DEM achieves FMP compliance through state regulations adopted in 2016, including minimum size (i.e., 4.75”), minimum escape vent and trap size.

Per Addendum I, a bycatch limit of 1,000 crabs per trip for non-trap and non-lobster fishermen was set. To avoid the unintentional outcome of this addendum of creating small industries operating solely under this provision, the ASMFC Jonah Crab Board aimed to define bycatch. As per ASMFC, Jonah crab caught under the bycatch limit must comprise an amount lower, in pounds, than the target species the deployed gear is targeting. Target species is further defined as: “those species primarily sought by the fishermen in the fishery” and are “the subject of directed fishing effort.” Addendum II, adopted in early 2017 allows Jonah crab fishermen to detach and harvest claws at sea, with a required minimum claw length of 2.75” if the volume of claws landed is greater than five gallons. Claw landings less than five gallons do not have to meet the minimum claw length standard.

Performance of the Fishery: In 2016, over 3.65 million pounds of Jonah Crab were harvested for an ex-vessel value near \$300,000. Due to the infancy of the FMP and state regulations, it is too early to determine the effects of management measures.

Division Management and Licensing Recommendations: In view of ASMFC compliance requirements and state law, it is recommended that RI remains compliant with the ASMFC provisions, and continues its work toward collecting biological and fishery information on Jonah Crab for a future, formal stock assessment. No changes to Jonah crab licensing requirements are recommended for 2018.

OTHER CRUSTACEANS

Stock Status: Commercial landings of crustacean species other than lobster, horseshoe crabs and Jonah crabs include green crabs (*Carcinus maenas*), rock crabs (*Cancer irroratus*), blue crabs (*Callinectes sapidus*), deep-sea red crabs (*Chaceon quinque-dens*), and mantis shrimp (*stomatopoda*). Landings of deep-sea red crabs (*Chaceon quinque-dens*) come strictly from federal waters and participation is limited by federal permit.

Management Program: A control date of June 1, 2016 was established for Atlantic Rock crabs however no other management measures have been adopted or proposed in 2017. Blue crab harvested are subject to a minimum size of 5 inches from shell tip to tip. Harvest is limited to 25 individuals, unless using a scoop or crab net, trot, or hand line.

Performance of the Fishery: A total of 698,985 pounds of these species were landed in RI in 2017 for a total ex-vessel value of \$534,747. Ninety-seven (97) percent of the poundage can be attributed to Atlantic Rock Crab.

Division Management and Licensing Recommendations: Continue to include crustaceans species other than lobster in the *Crustacean Other* endorsement and maintain open entry into this endorsement category.

RI Marine Fisheries Council: The IAC met on August 10, and the Council met on October 2. No recommendations were offered for 2018 for any changes with *Crustaceans Other* endorsement for 2018.

LITERATURE CITED

Atlantic States Marine Fisheries Commission (ASMFC). 1996. A review of the population dynamics of American lobster in the northeast. Special Report No. 61 of the Atlantic States Marine Fisheries Commission.

Atlantic States Marine Fisheries Commission (ASMFC). 2000. American lobster stock assessment report for peer review. Stock assessment report No. 00-01 (Supplement) of the Atlantic States Marine Fisheries Commission. July 2000.

Atlantic States Marine Fisheries Commission (ASMFC). 2003a. Total allowable landings for area 2. Report of the ASMFC lobster modeling subcommittee, January 2003.

Atlantic States Marine Fisheries Commission (ASMFC). 2003b. Lobster conservation management area 2: goals and management measures. Report of the ASMFC lobster technical committee, July 2003.

Atlantic States Marine Fisheries Commission (ASMFC). 2006a. American lobster stock assessment for peer review. Stock Assessment Report No. 06-03 (Supplement) of the Atlantic States Marine Fisheries Commission. January 2006.

Atlantic States Marine Fisheries Commission (ASMFC). 2006b. Terms of Reference and Advisory Report to the American lobster stock assessment peer review. Stock Assessment Report No. 06-03 of the Atlantic States Marine Fisheries Commission. January 2006.

- Atlantic States Marine Fisheries Commission (ASMFC). 2009. American lobster stock assessment for peer review. Stock Assessment Report No. 09-01 (Supplement) of the Atlantic States Marine Fisheries Commission. February 2009.
- Atlantic Coastal Cooperative Statistics Program. (2012) 2012 Rhode Island Cancer Crab Landings Data; generated by Anna Webb; using ACCSP Data Warehouse [online application], Arlington, VA: Available at <http://www.accsp.org> --> Data Center --> Data Warehouse --> Login; accessed July 8, 2013.
- Atlantic States Marine Fisheries Commission (ASMFC). 2013. Horseshoe Crab Stock Assessment Update. August 2013.
- Atlantic States Marine Fisheries Commission (ASMFC). 2015. American lobster benchmark stock assessment and peer review report. Stock Assessment Report (Supplement) of the Atlantic States Marine Fisheries Commission. August 2015.
- Atlantic States Marine Fisheries Commission (ASMFC).2015. Interstate Management Plan for Jonah Crab. August 2015
- Atlantic States Marine Fisheries Commission (ASMFC).2016. Addendum I to the Interstate Management Plan for Jonah Crab: Incidental Bycatch Limits for Non-Trap Gear and Non-Lobster Traps. May 2016
- Atlantic States Marine Fisheries Commission (ASMFC). 2017. Addendum II to the Interstate Fishery Management Plan for Jonah Crab: Coastwide Standard for Claw Landings and Bycatch Definition. January 2017.
- Drinkwater, K.F. and D.G. Mountain. 1997. Climate and Oceanography. Pages 3-25 in J. Boreman, B.S. Nakashima, J.A. Wilson, and R.L. Kendall, editors. Northwest Atlantic groundfish: perspectives on a fishery collapse. American Fisheries Society, Bethesda Maryland.
- Gibson, M.R. 2000. Alternative assessment and biological reference points for the Rhode Island inshore lobster stock with estimations of unfished stock size. Report to the Atlantic States Marine Fisheries Commission and lobster assessment peer review panel.
- Gibson, M.R., and S. Olszewski. 2001. Stock Status of Horseshoe Crabs in Rhode Island in 2000 with Recommendations for Management. RI Division of Fish and Wildlife. Research Reference Document 01/01.
- Gibson, M.R., and T. E. Angell. 2006. Estimating the reduction in fishing mortality rate on area 2 lobster associated with the North Cape v-notching program. RI Division of Fish and Wildlife. Report to the ASMFC lobster technical committee.

Hilborn, R., and C.J. Walters. 1992. Quantitative fisheries stock assessment choice, dynamics and uncertainty. Chapman and Hall, New York. 570 p.

Katz, C.H., J.S. Cobb, and M. Spaulding. 1994. Larval behavior, hydrodynamic transport, and potential offshore recruitment in the American lobster, *Homarus americanus*. Mar. Ecol. Prog. Ser. 103: 265-273.

Wahle, R., M. Gibson, R. Glenn, P. Lawton, D. Robichaud, J. Tremblay, and C. Wilson. 2006. New England Lobster Settlement Index: Update 2005 Climate Controls.

TABLES

Table 1 - Revised threshold reference points with stock status variables for the Southern New England lobster stock unit.

Variable	SNE
Effective Exploitation	
Effective Exploitation Threshold	0.41
Recent effective exploitation 2011-2013	0.27
Effective Exploitation Below Threshold?	YES
Reference Abundance (number of lobster)	
Abundance Threshold	24,000,000
Recent Abundance 2011-2013	10,000,000
Abundance Above Threshold?	NO

Table 2 - Rhode Island Commercial Fishing License and Lobster License/Endorsement Issuance Data, 2013-2017.

License Type	2013	2014	2015	2016	2017
MULTI-PURPOSE LICENSE	829	816	804	802	789
<i>MPL with Area 2 Lobster Trap Allocation (LTA)</i>	317	308	298	304	304
<i>DOCKSIDE SALE ENDORSEMENT</i>	241	236	236	245	242
PRINCIPAL EFFORT LICENSE	655	615	593	580	586
<i>LOBSTER ENDORSEMENT with LTA</i>	34	29	25	21	19
<i>NON-LOBSTER CRUSTACEAN ENDORSEMENT</i>	35	36	33	33	35
<i>DOCKSIDE SALE ENDORSEMENT</i>	13	12	11	13	15
COMMERICAL FISHING LICENSE	420	404	412	416	429
<i>LOBSTER ENDORSEMENT with LTA</i>	5	3	3	4	4
<i>NON-LOBSTER CRUSTACEAN ENDORSEMENT</i>	100	101	95	95	104
<i>DOCKSIDE SALE ENDORSEMENT</i>	14	16	16	15	18

Table 3. Description of allocated traps, maximum traps fished, and the reduction of traps in 2016. Traps retired include those associated with the reduction program decrease and the conservation transfer tax.

	# of Traps Allocated	# of Traps Transferred	Max # of Traps Fished	# of Traps Retired due to Reductions
Area 2	83259	1748	38815	4562
Area 3	40875	0	28450	2151

