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# Jonah Crab Fishery

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A Briefing for the  
Atlantic States  
Marine Fisheries  
Commission

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April 21, 2014

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# Jonah Crab Fishery

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## Executive Summary

Jonah crab has long been considered a bycatch of the lobster industry. In recent years, however, increased targeted fishing pressure on Jonah crab, likely due to fast growing market demand, has seriously compromised the long-term health of the fishery. In the absence of a comprehensive management plan and stock assessment process, harvest of Jonah crab is at risk of compromising the sustainability of the resource, ultimately resulting in inaccessible raw product and lost markets. This is particularly impactful to fishermen who rely on Jonah crab for their livelihoods and to the processors and dealers who have invested in processing technology and building markets for Jonah crab.

Jonah crab has no stock assessment or fishery management plan of its own, due in part to limited data on its population, growth rates, distribution, and sexual maturity. In addition, the limited dealer reports available often don't differentiate by species, confusing Jonah crab (*Cancer borealis*) with rock crab (*Cancer irroratus*).

As Jonah crab increases in value to the region, protecting the resource becomes progressively important. According to the National Ocean Economics Program data, 11,473,264 pounds of Jonah crab was landed in the U.S. in 2012 with a total ex-vessel value of \$8,154,806. In fact, the harvest has increased steadily over the past decade. Massachusetts, followed by Rhode Island,

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has landed the greatest amount of Jonah crab in the region for the past three years. These numbers are based on reporting data from federal waters, where the vast majority of Jonah crab is presently harvested.

In 2012, Delhaize America, a major grocery retailer with approximately 1,700 stores from Maine to Florida, recognized that Jonah crab does not meet its criteria for sustainable harvest. It faced a decision to either discontinue the item or to engage the industry and others in a formal Fishery Improvement Project (FIP) to address the fishery's sustainability concerns. Over the past year, Jonah crab processors, fishermen, state and federal management representatives, and scientists have worked with Delhaize America to better understand the sustainability concerns of the fishery and to develop a set of recommendations for its management. Facilitated by the Gulf of Maine Research Institute (GMRI), the FIP has conducted a pre-assessment benchmark against Marine Stewardship Council criteria (Appendix A: MSC Pre-Assessment) and developed a work plan (Appendix B: Jonah Crab FIP Work Plan) that outlines a series of deliverables that will address threats to the fishery's sustainability.

The FIP Work Group requests that the ASMFC Policy Board make management of Jonah crab a priority over the coming year in order to address the following problems:

- The crab resource is unregulated in federal waters, with most of the landings coming from Area 3.
- Landings and effort are increasing rapidly and in an unregulated manner.
- There are no minimum size protections for Jonah crab, nor are there regulations to protect spawning biomass, including restrictions on the harvest of females.
- If left unregulated, the expanding crab fishery threatens the effectiveness of the lobster industry's conservation measures to reduce traps in the water and avoid interactions with right whales.
- Supermarkets and other major buyers are positioning to discontinue selling processed and whole Jonah crab unless it is managed sustainably.
- With the loss of market access, the ex-vessel price of Jonah crab is likely to decline.
- With continued unregulated harvest of Jonah crab, the long-term availability of this resource for harvest is compromised.

Specifically, the Work Group's recommendations to the ASMFC include the following:

- Incorporate Jonah crab into the Lobster Management Plan;
- Tie the harvest of Jonah crab to the lobster license and trap tagging requirements as is currently done in Massachusetts, New Hampshire, and Maine. For states that do not have a lobster license, require a license and trap tags for the harvest of Jonah crab.
- Require a 5" minimum carapace width (CW), with an enforcement tolerance.
- Prohibit the harvest of female Jonah crabs.
- Require full reporting of Cancer crabs by species to better understand the fishery and to establish baseline data.

This document provides additional background and justification for the Work Group's recommendations.

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## Market Demand for Sustainability

Over the past decade, retailers around the world have taken a hard look at how their purchasing impacts the sustainability of the globe's fishery resources. The vast majority of retailers – including Wal-Mart, Giant Eagle, Delhaize America, and Wegmans – have made commitments to sourcing sustainable seafood. While each retailer might have a slightly different definition of sustainability, all recognize that they have a role to play in motivating responsible harvest, ultimately contributing to long-term sustainability of the resource.

Delhaize America has committed to sourcing only seafood that is well-managed and not at risk of over exploitation. As the company reviewed Jonah crab, it discovered that the fishery is not well managed and there is very little scientific data to determine whether the fishery is being overexploited.

Rather than abandon the product, Delhaize America engaged with GMRI and other partners to implement a FIP. Globally, FIPs have been initiated as industry-led voluntary efforts to identify and address sustainability concerns in fisheries (for additional information on FIPs, visit <http://www.sustainablefish.org/fisheries-improvement>).

The Conservation Alliance for Seafood Solutions ([www.solutionsforseafood.org](http://www.solutionsforseafood.org)) includes 18 NGOs from North America that engage with the seafood buying marketplace to encourage and inform sustainable sourcing. This Alliance has agreed that encouraging fishery improvements is beneficial to sustainability and has developed formal guidelines (Appendix C: Guidelines for Supporting Fishery Improvement Projects) for FIPs to be recommended to their buyer partners (Appendix D: Summary of NGO and Retailer and Food Service Partnerships).

The Jonah crab FIP follows these guidelines closely, and all information – including the participation agreement, work plan, Work Group, and budget – is made available on a public web site at <https://sites.google.com/site/jonahcrabfip>. The Work Group members are:

- Chair: Ray Swenton, Bristol Seafood
- David Borden, Atlantic Offshore Lobstermen's Association
- Josanna Busby, Delhaize America
- Lanny Dellinger, Rhode Island Lobstermen's Association
- Bill Gerencer, M.F. Foley Company
- Adam LaGreca, Rome Packing
- Derek Perry, Massachusetts Division of Marine Fisheries
- David Spencer, F/V Nathaniel Lee
- Steve Train, Atlantic States Marine Fisheries Commission
- Rick Wahle, University of Maine
- Jon Williams, The Atlantic Red Crab Company

This Work Group has committed to collaboratively address the sustainability concerns in the Jonah crab fishery. The FIP recognizes that, in the absence of appropriate management measures for the Jonah crab fishery, the market demand for this product – and hence the price per pound

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and overall value – is at risk of decreasing precipitously, as major retailers implement their sustainable seafood commitments.

## Threats to Biological Sustainability

Although Jonah crab has long been considered a bycatch of the lobster fishery, increasing market for this product – in both live and processed forms – has resulted in increasing targeted effort on Jonah crab. Over the past twenty years, landings of Jonah crab in New England have more than quadrupled (Figure 1.) with the majority landed in Massachusetts, followed by Rhode Island (Figures 2 and 3). The majority of these landings are coming from the Southern New England management area, followed by Georges Bank (Figures 4 and 5).

In the absence of a stock assessment, it isn't possible to determine whether increased landings are market driven or a reflection of an increasing biomass. However, reduced fisheries dependent and independent catch per unit effort (CPUE) data (Figures 6 and 7) may indicate that the biomass may be starting to decrease.

Further, offshore fishing for crab in the absence of a lobster permit or trap tags, which is presently permissible, threatens the lobster industry's effort control plan and conservation measures to reduce whale and other mammal interactions.

Finally, there are no protections in place for undersized or female Jonah crab to preserve a fecund population of crabs that will ensure a sustainable population in perpetuity.

In the absence of effective and robust control measures for the harvest of Jonah crab, the fishery will be harvested unsustainably. The consequences will be dire for fishermen who rely on Jonah crab for their livelihoods, and for the seafood processors that have invested in processing capacity and building markets for Jonah crab products.

# Jonah Crab Fishery

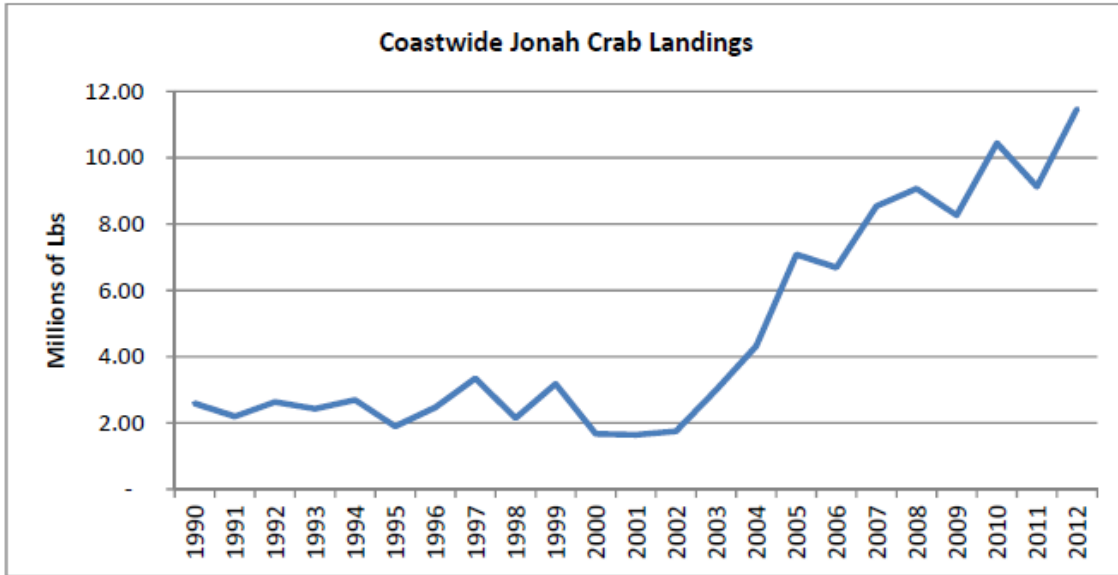


Figure 1: Coast-wide (all states) landings of Jonah crabs 1990-2012, as reported by the Atlantic Coastal Cooperative Statistics Program (ACCSP). Heidi Henninger, Atlantic Offshore Lobsterman's Association (AOLA).

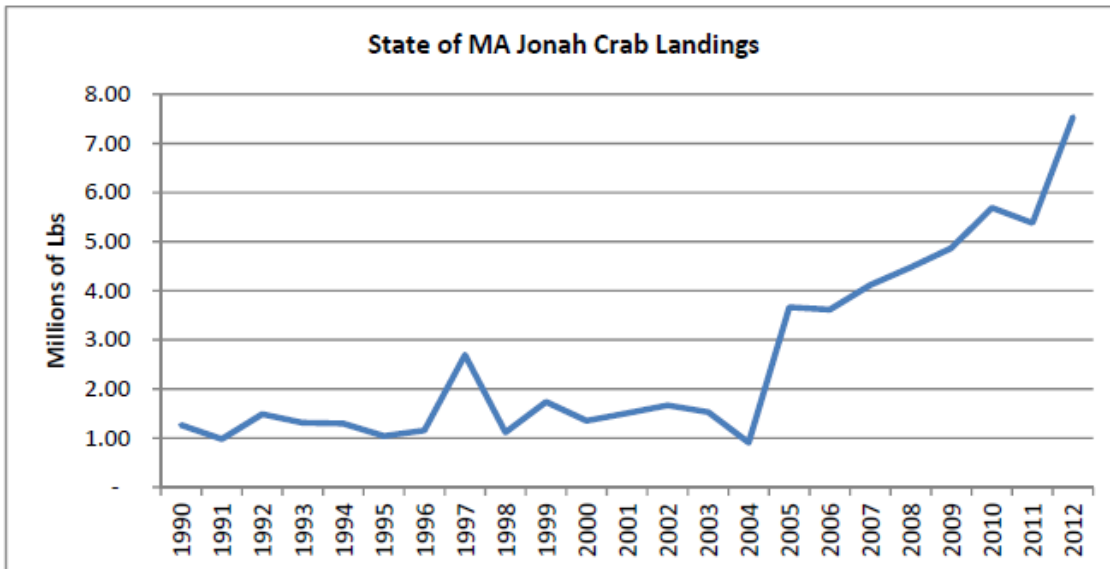


Figure 2: State of Massachusetts landings of Jonah crabs 1990-2012, as reported by ACCSP. Heidi Henninger, AOLA.

# Jonah Crab Fishery

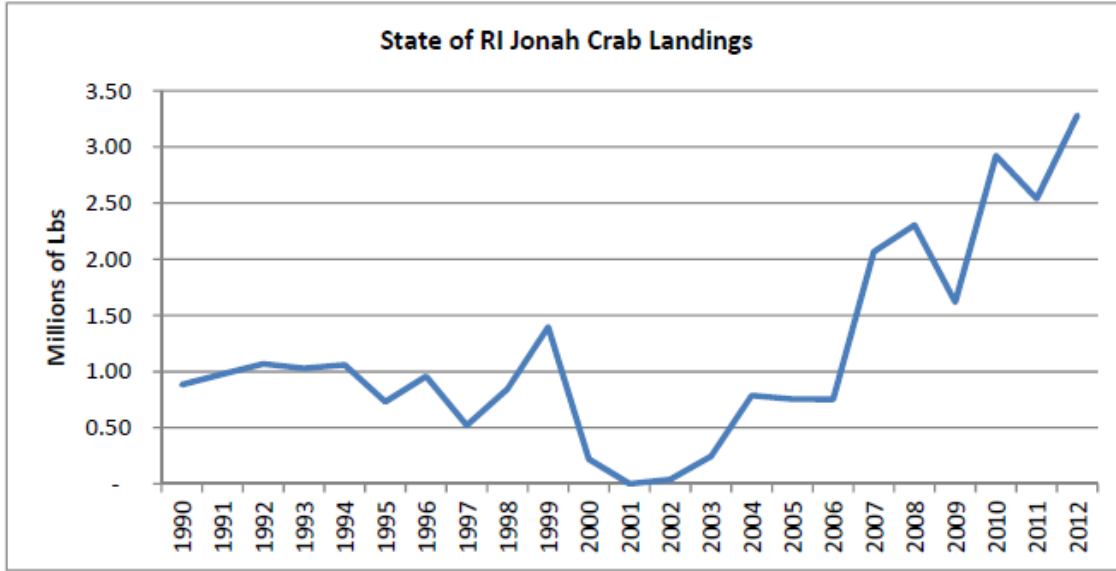


Figure 3: State of Rhode Island landings of Jonah crab 1990-2012, as reported by the ACCSP. Heidi Henninger, AOLA.

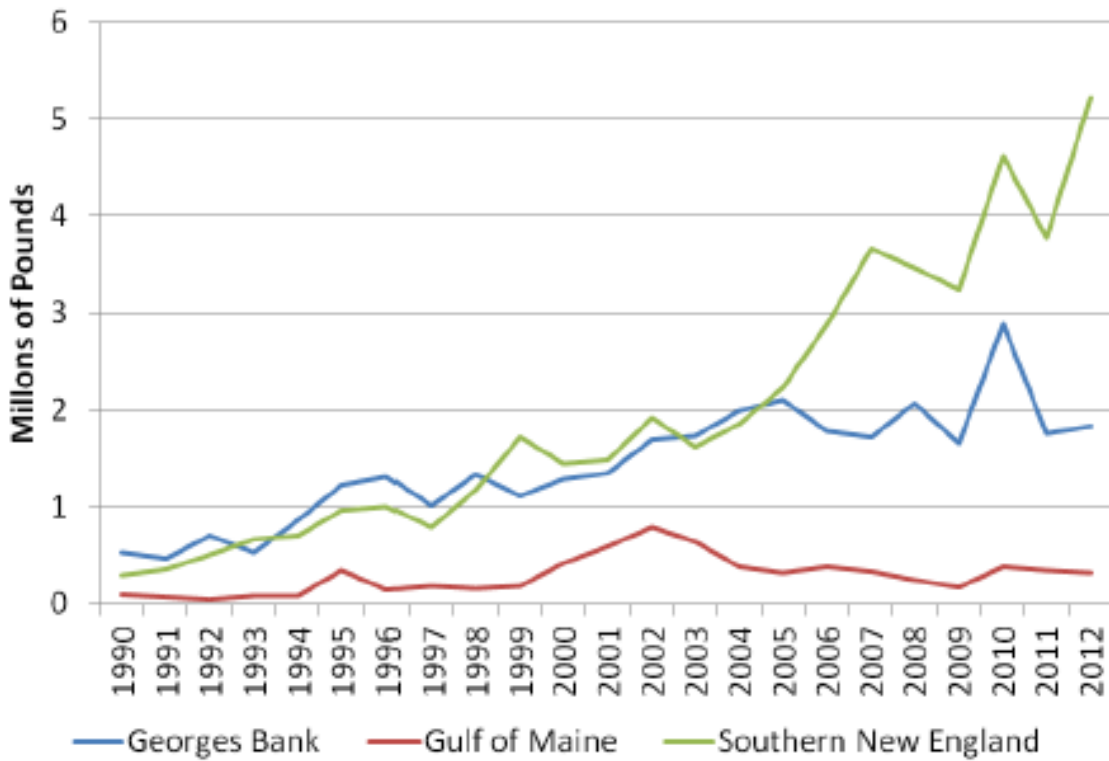


Figure 4: Massachusetts Cancer crab landings (Jonah and rock crabs) by region, 1990-2012.

# Jonah Crab Fishery

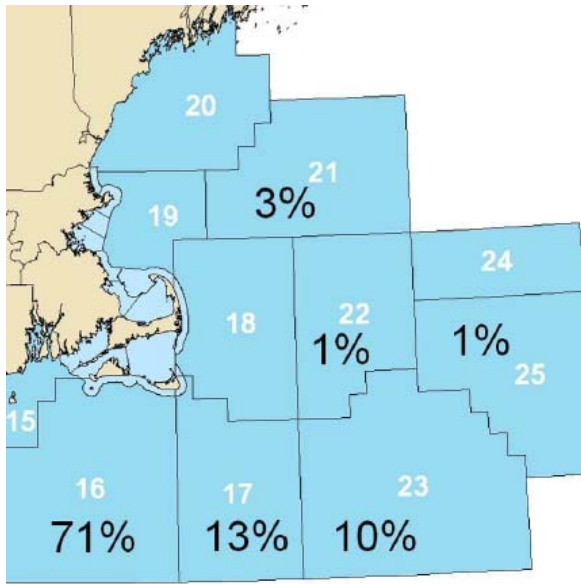


Figure 5: Percentage of Jonah crab landed in Massachusetts by MA Statistical Reporting Areas (SRA) (white numbers), 1990-2012. All areas without a given percentage are <1% of landings. The lighter blue shaded areas are SRA 1 through 14 and collectively are responsible for 1% of all MA Jonah crab landings.

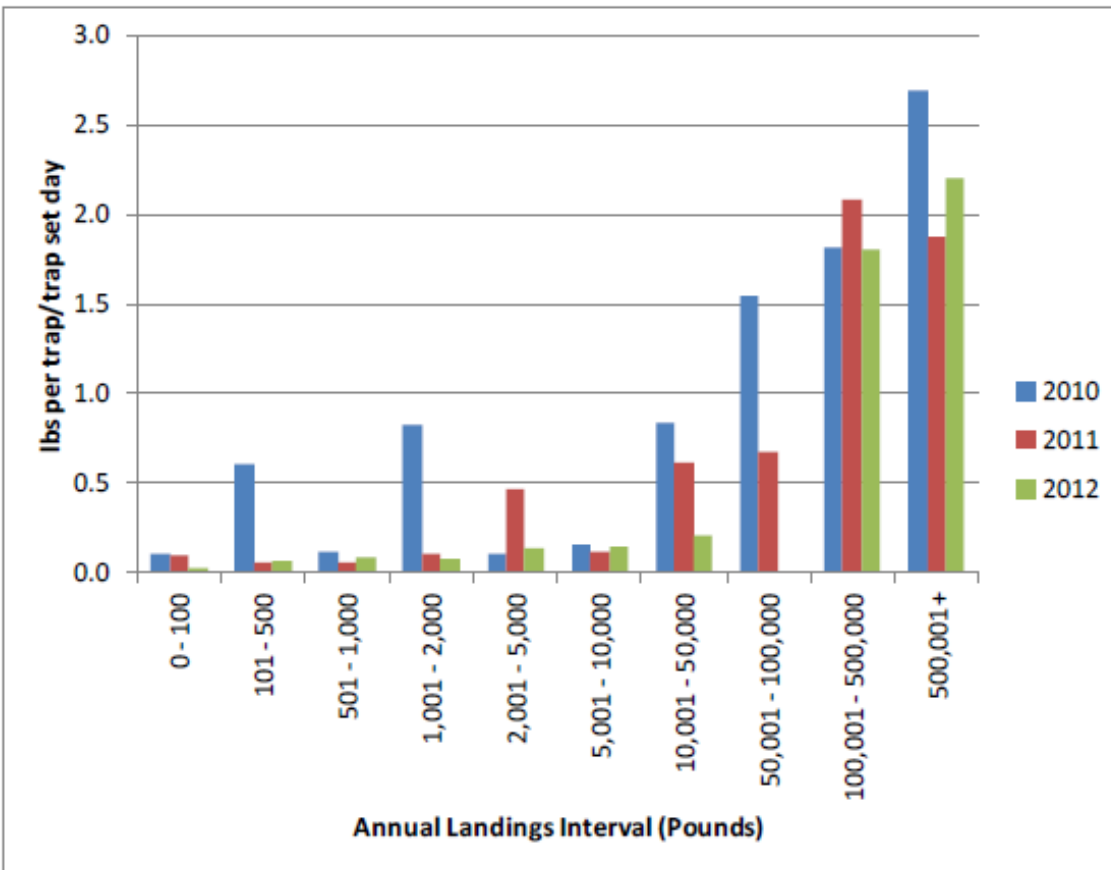
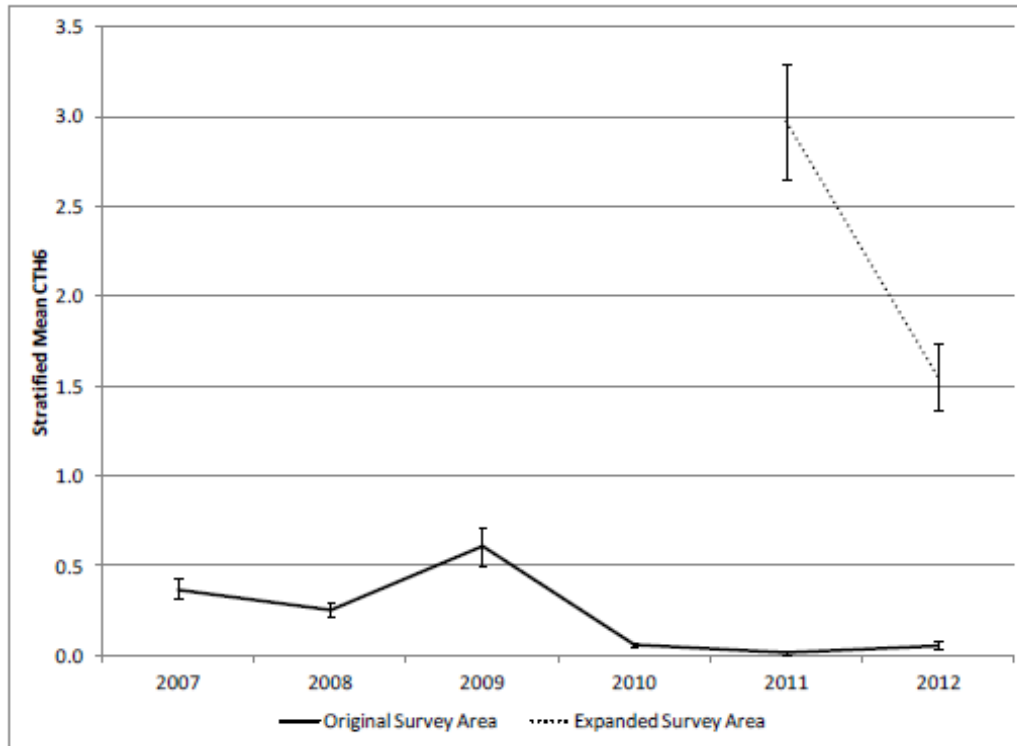


Figure 6: Catch per unit of effort (CPUE) data by landings interval (from DMF trip level reporting and NMFS VTR data).



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*Figure 7: Jonah crab catch per trap haul from MA DMF Ventless Trap Survey. The original survey area was done in state waters; the expanded survey was conducted in both state and federal waters. Error bars around the data points are standard error.*

## Jonah Crab Management

Jonah crab is managed differently from state to state, and management is completely absent in federal waters. The table below is a summary of state-by-state management measures for Jonah crab.

In Massachusetts and Rhode Island – the states with the highest Jonah crab landings – there is no minimum landing size. There is also no commercial limit to the amount of Jonah crab that can be harvested, and traps are limited only when harvested with lobsters. In federal waters, when fishermen do not harvest lobsters, there are no licensing requirements and no trap limits for Jonah crab. There exist no protections for female Jonah crab.

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<b>Summary of Federal and State Crab Regulations</b>	Limit on Trap Qty	Gear Restrictions	Limit on Trap Size	Commercial License required Y/N	Minimum landing Size	Maximum Landing Size	Sex Restrictions	Closed seasons	Closed Areas
<b>New Jersey</b>	N	biodegradable panel	Y	Y	3" - 4.5" varies by hardness (per blue crab regs)	N	No egg bearers	Y	Y
<b>New York</b>	N	escape panel	Y	N	3" - 4.5" varies by hardness (per blue crab regs)	N	No egg-bearers	N	Y
<b>Massachusetts</b>	Y - Lobster limit	Y - Lobster traps	Y-lobster traps	Y	N	N	No egg bearers	Yes; closed Jan 1 - Apr 30 in state waters	N
<b>Maine</b>	Y - Lobster limit	Y - Lobster traps	Y-lobster traps	Y	N	N	None indicated	Dec 30 - Apr 1 in rivers	Y
<b>Rhode Island</b>	N	N	N	Y	N	N	No egg-bearers	N	N
<b>New Hampshire</b>	Y - lobster limit 1200	Y - Lobster traps	Y-lobster traps	Y	N	N	None indicated	N	N
<b>Connecticut</b>	?	Y - lobster trap	Y-lobster traps	Y	3.5" - 5" varies by hardness (per blue crab and lobster regs)	N	No egg bearers	May 1 - Nov 30; commercial closed Dec 1 - Apr 30	N
<b>Maryland</b>	N	Turtle BRD (juvenile), escape vent	Y	N	3.5" - 5" varies by hardness (per blue crab and lobster regs)	N	Comm no females at certain times, Rec no females	Y, opens April 1 - Dec 15	Y
<b>Virginia</b>									

# Jonah Crab Fishery

Summary of Federal and State Crab Regulations (con't)	Commercial Catch Reporting	Harvest Limits Commercial	Harvest Limits Recreational	Recreational License required Y/N	Recreational Limit on Trap Qty	Notes	Source(s)
<b>New Jersey</b>	Y	N	One bushel per day	Y	Y	Blue Crab Regs	<a href="http://www.state.nj.us/dep/fgw/njregs.htm">http://www.state.nj.us/dep/fgw/njregs.htm</a>
<b>New York</b>	Y	50/day	50/day	N	N	Blue Crab Regs	<a href="http://www.dec.ny.gov/outdoor/7894.html">http://www.dec.ny.gov/outdoor/7894.html</a> ; <a href="http://www.dec.ny.gov/outdoor/fishing.html">http://www.dec.ny.gov/outdoor/fishing.html</a>
<b>Massachusetts</b>	Y	N	25/day	N for hand harvest; Y if trap or SCUBA	10 traps	Rec: Blue Crab Regs, applied to other species; Commercial: lobster regs	<a href="http://www.mass.gov/eea/agencies/dfg/dmf/laws-and-regulations/recreational-regulations/">http://www.mass.gov/eea/agencies/dfg/dmf/laws-and-regulations/recreational-regulations/</a> ; <a href="http://www.mass.gov/eea/agencies/dfg/dmf/laws-and-regulations/commercial-regulations/">http://www.mass.gov/eea/agencies/dfg/dmf/laws-and-regulations/commercial-regulations/</a>
<b>Maine</b>	Y	200 lbs./day or 500 lbs./trip	N	N/Y	5 traps; no license for hand harvest	Lobster Regs	<a href="http://www.maine.gov/ifw/fishing/regulations_seasons/index.htm">http://www.maine.gov/ifw/fishing/regulations_seasons/index.htm</a> ; <a href="http://www.maine.gov/dmr/lawsandregs/re">http://www.maine.gov/dmr/lawsandregs/re</a>
<b>Rhode Island</b>	Y	N	N	Y	N		Scott Olszewski <a href="http://www.wildlife.state.nh.us/Fishing/fishing.htm">http://www.wildlife.state.nh.us/Fishing/fishing.htm</a> ; <a href="http://www.wildlife.state.nh.us/pubs/digests/SW_2011.pdf">http://www.wildlife.state.nh.us/pubs/digests/SW_2011.pdf</a>
<b>New Hampshire</b>	Y	N	N	Y if more than 12 crabs taken	?		
<b>Connecticut</b>	Y	N	N	Y	10 traps hauled per day	Blue Crab regs; Lobster Regs incl other crab	<a href="http://www.ct.gov/dep/cwp/view.asp?a=2696&amp;q=322740&amp;depNAV_GID=1647; Matt_Gates">http://www.ct.gov/dep/cwp/view.asp?a=2696&amp;q=322740&amp;depNAV_GID=1647; Matt_Gates</a>
<b>Maryland</b>	Y	25 bushels per vessel/day	Y, varies 1 bushel hard crabs, 2 doz soft	N/Y	N, limited harvest qty	Blue Crab Regs	<a href="http://www.dnr.state.md.us/fisheries/regulations">http://www.dnr.state.md.us/fisheries/regulations</a>
<b>Virginia</b>	Y						<a href="http://www.dgif.virginia.gov/fishing/">http://www.dgif.virginia.gov/fishing/</a>

## Current Data Collection Programs

Data collection for Jonah crab varies from state to state and survey to survey. Appendix B of the attached MSC pre-assessment (Appendix A) includes a comprehensive overview of data collected on Jonah crab. A great deal of data, albeit inconsistent, exists for Jonah crab. Unfortunately, because this fishery has been considered a low priority, very little of it has been analyzed.

The only survey that exists for Jonah crab applies to only inshore Rhode Island waters. The University of Rhode Island and Rhode Island Department of Environmental Management conduct an annual survey of the abundance of Cancer crab species. The 2012 Rhode Island state assessment indicated that the fishing mortality rate in the state fishery exceeded  $F_{MSY}$ , but the biomass had not fallen below  $B_{MSY}$  and was not considered overfished (RIDEM 2012<sup>1</sup>). After a

<sup>1</sup> Rhode Island Department of Environmental Management, 2012. 2013 Management Plan for the Crustacean Fishery Sector.

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stable fishing mortality rate from 1971 to 2004, the Rhode Island Jonah and rock crab fishery has experienced a sharp increase in fishing effort and decrease in crab abundance.

Massachusetts, Maine, and New Hampshire conduct inshore trawl surveys, but these surveys only provide minimal data on crab species and are primarily used to assess finfish species and none of these surveys are conducted in the federal waters south of New England where approximately 75% of the commercial fishery is executed. The federal trawl survey also offers a time series of Cancer crab abundance and distribution data, distinguished by species, although the data have not yet been analyzed.

Fishery dependent data is comprised of landings data. Unfortunately, it is likely that Jonah crab are confused for other types of crabs in reporting, thus compromising the reliability of that data.

## Biology

For the fishery overall, biological reference points are unknown, as are geographical differences in size, fecundity, and recruitment.

Also, the size at sexual maturity and to what extent it might vary from one area to the next is poorly documented. In a study conducted in Canada, the size at 50% morphometric maturity for males was determined to be 127.6mm (5.02”) CW (Moriyasu et al, 2002<sup>2</sup>). Existing minimum size restrictions in the Bay of Fundy and the Scotian Shelf for Jonah crab are 121mm and 130mm (4.76” and 5.12”) respectively. Little is known about female maturity in Canada, but the size at 50% maturity is believed to be around 92 mm (3.62”) CW and females can reach a maximum size of 150 mm (5.91”) CW (Pezzack et al. 2011<sup>3</sup>). Male maturity off of Virginia is estimated to be 90-100 mm (3.54-3.94”) and approximately 85 mm (3.35”) for females (Carpenter 1978<sup>4</sup>, Wenner et al. 1992<sup>5</sup>).

What little maturity data exists on Jonah crabs comes from the fringes of their commercially exploitable range. No data exists in the offshore area south of New England where approximately 75% of the commercial fishery currently operates. Male Jonah crabs reach

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<sup>2</sup> Moriyasu M, Benhalima K, Duggan, D, Lawton P, Robichaud D (2002) Reproductive biology of male Jonah crab, *Cancer borealis* Stimpson, 1859 (Decapoda: Cancridae) on the Scotian Shelf, Northwestern Atlantic. *Crustaceana* 75: 891-913.

<sup>3</sup> Pezzack, D. S., C.M. Frail, A. Reeves, M. J. Trembleay. 2011. Assessment of the LFA 41 Offshore Jonah crab (*Cancer borealis*) (NAFO 4X and 5Zc). DFO Can. Sci. Advis. Sec. Res. Doc. 2010/113:vii-52.

<sup>4</sup> Carpenter, R. K. 1978. Aspects of the growth, reproduction, and abundance of the Jonah crab, (*Cancer borealis*) Stimpson, in Norfolk Canyon and the adjacent slope. MA Thesis, University of Virginia, Charlottesville.

<sup>5</sup> Wenner, E. L., C.A. Barans, G. F. Ulrich. 1992. Population structure and habitat of Jonah crab, *Cancer borealis* Stimpson 1859, on the continental slope off the Southeastern United States. *Journal of Shellfish Research* 11(1):95-103.

<sup>6</sup> Schields J. D. 1993. The reproductive ecology and fecundity of *Cancer* crabs. In: Wenner A, Kuris A (eds) *Crustacean issues vol. 7—crustacean egg production*. A. Balkema, Rotterdam.

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maturity at a larger size in Canada (5") than they do in Virginia (4"). Northern hemisphere congeneric crab species also reach maturity at larger sizes in more northerly sections of their range (Shields 1993<sup>6</sup>), making it likely that the size of male maturity is between 4 and 5" where most of the commercial fishery is conducted.

Jonah crab is an assessed species in Canada for the small bycatch fishery in the eastern Gulf of Maine and Southeast Nova Scotia. There may be additional biological data that can be procured from their assessment, but likely not much.

### Value of the Jonah Crab Fishery

The impact of size and other restrictions on the market for Jonah crab is an important consideration. In Massachusetts, Jonah crab was the 5<sup>th</sup> most valuable species landed in 2013 (Table 1). According to 2012 data from the National Ocean Economics Program, the ex-vessel value of Jonah crab in New England was \$8,086,559 (average \$0.71/pound), which was up from \$5,530,388 (average \$0.61/lb) just the year before. The steady increase in the fishery's value is depicted in Figures 8 and 9 below.

Species	Pounds (Whole)**	Value
Scallop, Sea	244,404,049	\$333,047,038
Lobster, American	14,956,166	\$60,216,990
Oyster, Eastern	10,539,126	\$10,291,065
Goosefish	9,589,132	\$8,937,279
<b>Crab, Jonah</b>	<b>10,070,775</b>	<b>\$8,930,604</b>
Flounder, Winter	5,388,992	\$8,775,488
Herring, Atlantic, Sea	76,375,477	\$8,727,482
Cod, Atlantic	4,142,359	\$8,303,059
Pollock, Atlantic	7,934,667	\$7,655,851
Haddock	3,975,609	\$5,556,242

Table 1: Ten most valuable Massachusetts fisheries from Standard Atlantic Fisheries Information System (SAFIS) for 2013.

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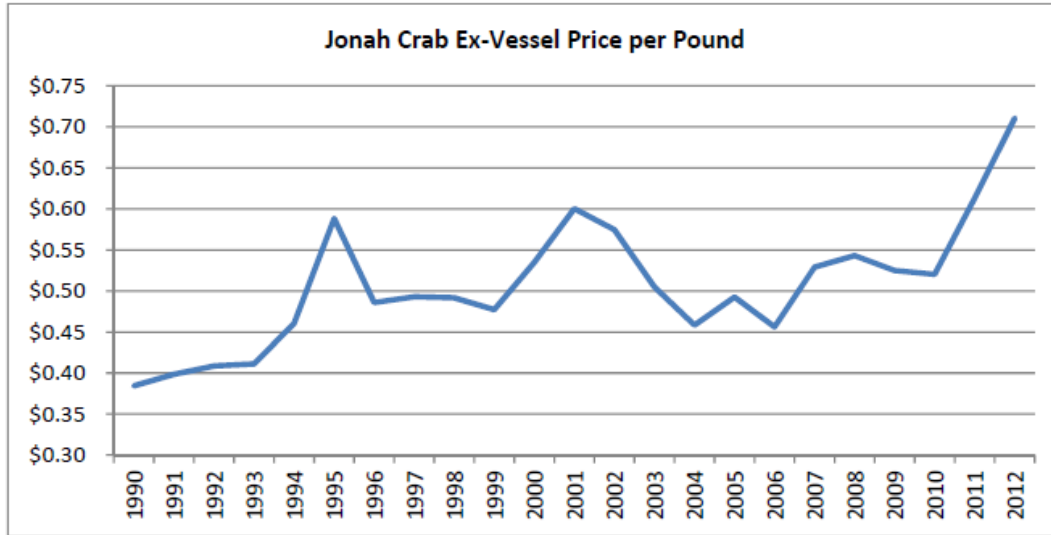


Figure 8: Coastwide (all states) ex-vessel price per pound of Jonah crab 1990-2012, as reported by the ACCSP. Heidi Henninger, AOLA.

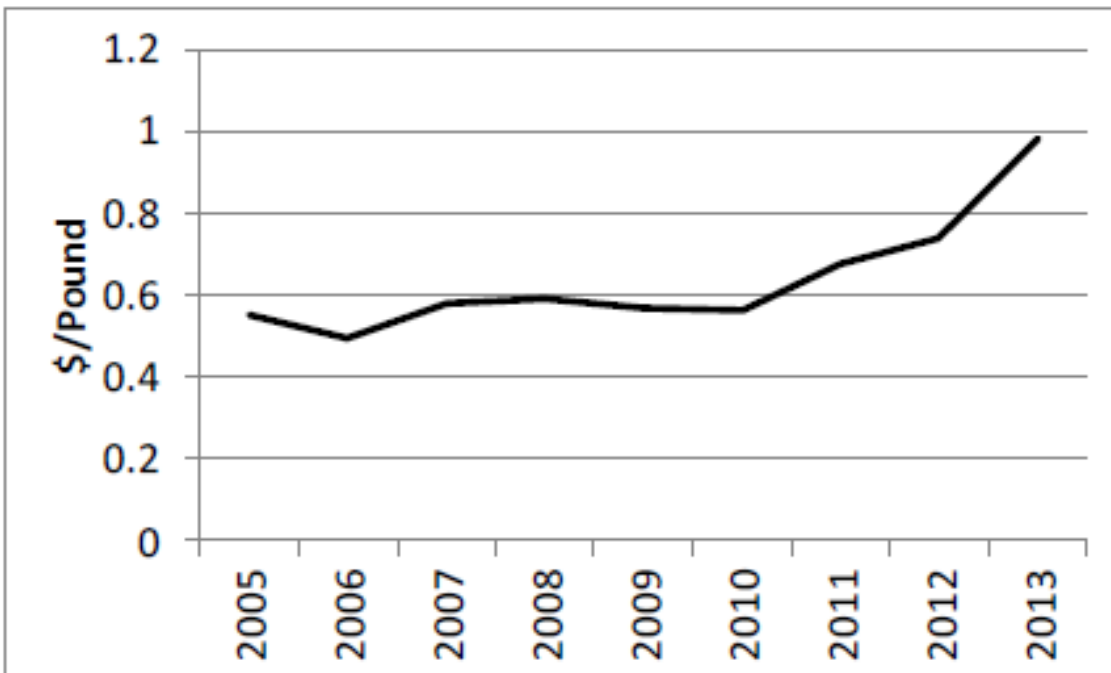


Figure 9: Price per pound for Jonah crab landed in MA from SAFIS.

## FIP Work Group Recommendations

The Jonah Crab FIP Work Group met seven times (five in person and two by phone) to discuss the threats to the Jonah crab fishery and to develop recommendations that would protect this valuable resource from overexploitation. These discussions were informed by contracted data

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collection done by the University of Maine and GMRI, which culminated in a pre-assessment against MSC criteria (Appendix A).

Following are the Work Group's management and data collection recommendations, which are also outlined briefly in the attached Work Plan (Appendix B).

## Data Collection Recommendations

- Develop a standard list of data points that are recommended for all surveys, including:
  - Documentation of egg-bearing individuals.
  - Documentation of size of individuals captured (i.e., carapace width).
  - Abundance (i.e., how many were caught).
  - Weight of catch.
  - Sex of individuals caught.
  - Specifications on gear being used.

*Justification: While data for Jonah crab are presently sporadic, there are numerous opportunities through existing and ongoing state and federal surveys to collect a robust data set that can inform Jonah crab fishery management. Having a shared protocol will enable this data to be integrated and analyzed throughout the fishery's region.*

- Develop a sub sampling protocol for fishery-dependent data collection done by observers, including sizes and sexes of the individuals landed versus discarded.

*Justification: To better understand the Jonah crab stock structure, particularly from one area to the next, information about what is discarded at sea is essential, in addition to what is landed.*

- Analyze survey data to determine size at maturity for females by comparing egg-bearing females with size data; and
- Conduct research to determine size-specific fecundity (clutch size) and evaluate the geography of size at maturity; and
- Conduct research to determine whether there is a significant difference between the size at physiological maturity and functional maturity in males. The question is whether males must be considerably larger than females to mate with females. The concern is whether harvesting large males will deplete the pool of large males competent to mate.

*Justification: The literature on size at sexual maturity for Jonah crab is lacking. While some research has been done to indicate female Jonah crab are sexually mature at 3.5" CW and males at 5.02", very little is known about whether there are variations in size at sexual maturity from one harvest area to the next, including no information from where the majority of the commercial catch is currently caught.*

## Management Recommendations

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- Incorporate the management of Jonah crab into the lobster management plan through the ASMFC; and
- Tie the harvest of Jonah crab with the lobster license and trap tagging requirements. Require a lobster license in order to harvest Jonah crab. In the absence of a lobster license, require a license for the harvest of Jonah crab.

*Justification: The Jonah crab and lobster fisheries in offshore waters are inextricably tied, as licensed lobstermen presently harvest 98.3% of the Jonah crab landed from federal waters for the region (personal communication, Burton Shank, NOAA Fisheries Science Center, November, 2013). Requiring a lobster license and trap tags for Jonah crab harvest would retain that connection while respecting and building on conservation measures already in place in the lobster fishery, such as trap density reductions.*

*Massachusetts, Maine, and New Hampshire already tie Jonah crab harvest to lobster licenses. The lobster fishery is managed under effort controls that address whale entanglement issues. By tying the harvest of Jonah crab to the existing lobster management plan, managers would avoid increasing trap numbers, additional costs to states for plan development and enforcement, and determining resource allocation for the Jonah crab fishery.*

*Further, at this point in time, there is not enough information to determine a separate FMP for Jonah crab. For example, there would be very little data that would inform a TAC.*

- Require all Cancer crab landed to be reported by species. Educate harvesters and dealers to achieve consistent species identification.

*Justification: Existing data on Jonah crab landings is suspect because of inconsistent reporting by species. Fishermen and dealers use many common names for Cancer crabs interchangeably. Any future stock assessment using fishery-dependent data will require accurate and complete landings data.*

- Require a 5" minimum CW for Jonah crab.

*Justification: In the absence of a minimum size restriction for Jonah crab and the preservation of brood stock, the population is at risk of long-term unsustainability. The scientific advisors on the Jonah crab FIP Work Group (Burton Shank, NOAA; Rick Wahle, University of Maine; and Derek Perry, Massachusetts DMF) agree that, based on the best available science regarding size at sexual maturity, a 5-inch minimum CW would maintain reproductive capacity in the fishery. From a market perspective, processors have indicated that they do not want to purchase crabs that are smaller than 5.25" CW, while dealers of live crab have indicated that a minimum harvest size of 5" would reflect a marketable size (per personal communication with three Jonah crab processors and one live dealer). While interviews with Jonah crab buyers indicate little interest in crabs smaller than 5" CW, markets are emerging that warmly welcome smaller crab, including for use as bait. While the FIP Work Group does not recommend rules restricting Jonah crab from being used as bait, it*



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*does maintain that all restrictions (e.g., minimum size) be applied for harvest of all Jonah crab, regardless of its ultimate use.*

- Prohibit the harvest of female Jonah crabs.

*Justification: The protection of females in the Jonah crab fishery is a critical factor in ensuring long-term sustainability of the fishery. This recommendation is consistent with existing rules in the lobster fishery. A 5" CW size restriction would protect most female crabs from harvest, as very few females exceed this size. However, the Work Group wants to be explicit that protection of female crabs is of utmost importance. In particular, the Work Group recommends a zero tolerance for egg-bearing Jonah crab.*

- Consider a tolerance level for the enforcement of rules.

*The majority of the Work Group members recommend designating a tolerance level for the enforcement of the minimum size restriction, because it will likely not be possible to measure each individual given the numbers landed per trip. Previous attempts to measure Jonah crab with calipers and measuring boards have demonstrated that Jonah crabs are very difficult to measure even if there were small volumes (i.e., three people using a measuring board have recorded three different measurements for the same crab).*

*There is precedent in other fisheries for tolerance levels (See Appendix E, Crab Species With Tolerances, for a summary). The tolerance level should be set to allow for mistakes, while also avoiding a leniency that allows for significant harvest of undersized product, as has also been observed in other fisheries (i.e., fishermen have been observed to fish right up to the tolerance level, basically resulting in a decreased size restriction). For the enforcement of a 5" size restriction on male crab, the Work Group recommends a tolerance between 1% and 10%. For female crab, the Work Group recommends a tolerance not to exceed 1%. The Work Group recommends a zero tolerance on the harvest of egg-bearing females.*

*The Work Group also requests that the ASMFC includes options for sampling protocols developed by enforcement in the informational documents that go out for public comment. These protocols should include a sufficient sample size that is statistically representative of the catch being audited.*

# Jonah Crab Fishery

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## **! Emergency Measure Recommendation**

The Jonah Crab FIP Work Group is increasingly concerned that a robust market for smaller female Jonah crab already exists and is growing. The group requests that the ASMFC consider implementing an interim measure prohibiting the possession of female Jonah crab (with a 0.5-1% enforcement tolerance). The process of establishing a management plan for Jonah crab is likely to take a couple of years, at which point the long-term reproductive capacity might already be seriously compromised.

## **List of Appendices**

**Appendix A: MSC Pre-Assessment**

**Appendix B: Jonah Crab FIP Work Plan**

**Appendix C: Guidelines for Supporting Fishery Improvement Projects**

**Appendix D: Summary of NGO and Retailer and Food Service Partnerships**

**Appendix E: Crab Species With Tolerances**