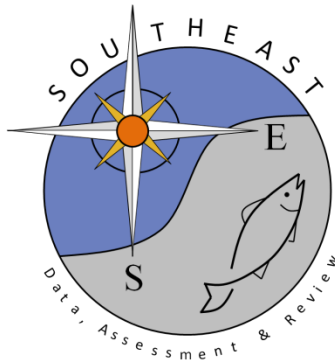


# Building a Timeline of Major Socioeconomic Events Affecting Lobster Fisheries in Puerto Rico

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SEDAR57-DW-03

6 June 2018



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Please cite this document as:

Rios, A. and J. Agar. 2018. Building a Timeline of Major Socioeconomic Events Affecting Lobster Fisheries in Puerto Rico. SEDAR57-DW-03. SEDAR, North Charleston, SC. 6 pp.

## Building a Timeline of Major Socioeconomic Events Affecting Lobster Fisheries in Puerto Rico

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June 2018

Sustainable Fisheries Division Contribution Number: SFD-2018-04

### Introduction

In this working paper we summarize socioeconomic events that potentially influenced spiny lobster landings in the Commonwealth of Puerto Rico. Figure 1 provides a general timeline of the events identified thus far. The events are sorted into 3 categories: economic, environmental, or regulatory. Some details regarding how each event affected the lobster fishery are included in Tables 1-3. The information summarized in this working paper is intended to serve as a starting point for further discussion of major events. After the SEDAR 57 Data Workshop (June 20-22 2018), this pre-decisional draft working paper should be updated to highlight the most significant events and elaborate on how they affected the spiny lobster fishery of Puerto Rico.

In addition to summarizing major socioeconomic events, we compiled time series of quantitative socioeconomic indicators. Table 4 includes the annual nominal ex-vessel price for Spiny Lobster using data from DNER trip tickets. The prices reported in the Trip Tickets by fishermen in Puerto Rico are considered to represent dockside or ex-vessel prices. The nominal values are not adjusted for inflation. The ex-vessel price timeseries is also plotted in Figure 2.

### Conclusion

Stock assessments conducted through the SEDAR framework in the US Caribbean traditionally do not incorporate quantitative socioeconomic data. However, documenting major socioeconomic events is useful as it provides supplemental information that can be used to better interpret changes observed in the spiny lobster fishery of Puerto Rico. Additionally, by expanding and elaborating on the events summarized here, this document will help identify key socioeconomic events and indicators that can be used to quantitatively investigate responses observed in the fishery data that are related to major socioeconomic events.

**References**

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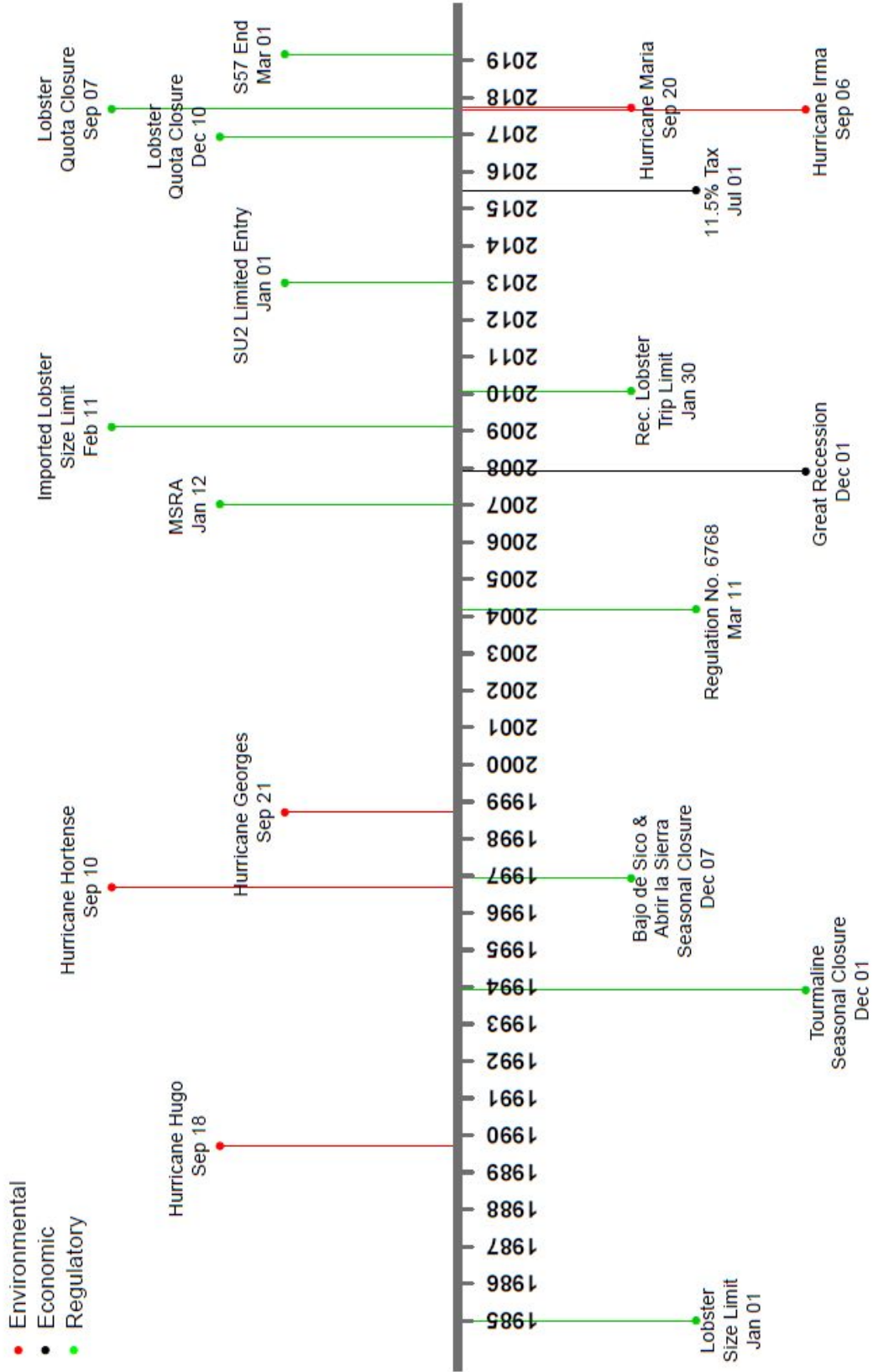


Figure 1. Timeline of Major Socio-Economic Events Affecting Lobster Fisheries in Puerto Rico from 1985 to present.

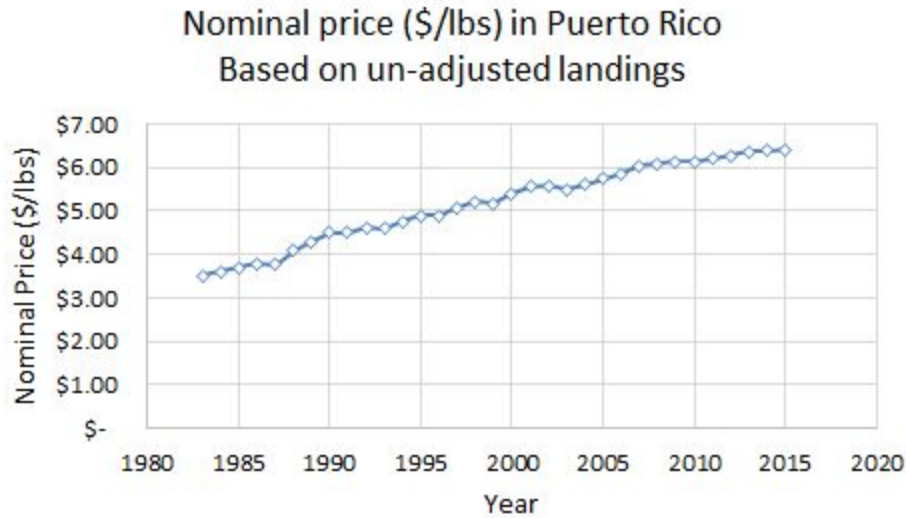


Figure 2. Annual nominal ex-vessel prices from DNER trip tickets for Spiny Lobster from 1983 to 2015. Nominal means not adjusted for inflation.

Table 1. Major economic influences to the lobster fisheries in Puerto Rico (PR) and in the United States Virgin Islands (USVI).

Region	Year	Event
Global	2007	Great Recession. With impacts lasting nearly a decade, the negative impacts of the recession led to the closure of many restaurants and to a decrease in commercial fishing activity (personal communication, May 29, 2018).
PR	2015	11.5% Tax. The general sales and use rate, Impuesto Sobre Ventas y Uso (IVU), increased from 7% to 11.5%. Higher general sales can indirectly affects demand of fish in PR.

Table 2. Major environmental influences to the lobster fisheries in Puerto Rico and in Puerto Rico (PR) and in the United States Virgin Islands (USVI).

Region	Year	Event
PR	1989	Hurricane Hugo. Severe damage, especially in eastern part of the island. Extensive damage of reefs on the east and southeast sides of Culebra (Schwab and Rodriguez 1992).
	1996	Hurricane Hortense
	1998	Hurricane Georges
	2017	Hurricane Irma
	2017	Hurricane Maria

Table 3. Major regulatory influences to the lobster fisheries in Puerto Rico and in Puerto Rico (PR) and in the United States Virgin Islands (USVI).

<b>Region</b>	<b>Year</b>	<b>Event</b>
PR	1936	No-egg bearing. The fisheries Act of 1936 prohibits the harvest of egg-bearing females and requires traps to have a self-destruct panel.
Caribbean EEZ	1985	Spiny Lobster Size Limit. Spiny lobsters with a carapace length of less than 3.5 inches must be returned immediately to the water unharmed (49 FR 50049).
SW PR	1993	Tourmaline Bank Seasonal Closure. Seasonal spatial closures implemented to protect red hind spawning aggregations during the spawning season (58 FR 53145). Fishing prohibited December 1 through February 28.
SW PR	1996	Bajo de Sico & Abrir la Sierra Seasonal Closure. Seasonal spatial closures implemented to protect red hind spawning aggregations during the spawning season (61 FR 64485). Fishing prohibited December 1 through February 28.
PR	2004	Regulation 6768. Resentment to Regulation No. 6768. As a consequence, many fishers left the fishery while others continued fishing commercially without licenses (Matos-Caraballo and Agar 2011).
USA EEZ	2007	MSRA. The Magnuson-Stevens Reauthorization Act established annual catch limits and accountability measures (MSRA 2006).
Caribbean EEZ	2009	Imported Spiny Lobster Size Limit. Minimum carapace length of 3.5 inches implemented for imported spiny lobster to enhance the conservation of the spiny lobster resource and improve effectiveness of law enforcement related to such conservation (76 FR 82414).
Caribbean EEZ	2012	Spiny Lobster Rec Trip Limit. Bag limit of 3 spiny lobster per person per day with a vessel limit of 10 spiny lobster per vessel per day (76 FR 82414).
SW PR	2010	Bajo de Sico Season Expanded. Bajo de Sico seasonal closure changed from a 3-month closure to a 6-month closure. Fishing prohibited October 1 through March 31 (75 FR 67247).
NW PR	2013	SU2 Limited Entry
PR EEZ	2016	Spiny Lobster Quota Closure. Fishing year reduced by the amount necessary to ensure that landings do not exceed the applicable ACL in 2016 (81 FR 34283). Closed December 10 through December 31.
PR EEZ	2017	Spiny Lobster Quota Closure. Fishing year reduced by the amount necessary to ensure that landings do not exceed the applicable ACL in 2017 (82 FR 31489). Closed September 7 through September 30.

Table 4. Annual ex-vessel prices for Spiny Lobster from 1983 to 2015.

<b>Year</b>	<b>Nominal Price (\$/lbs)</b>
1983	\$3.51
1984	\$3.60
1985	\$3.69
1986	\$3.78
1987	\$3.78
1988	\$4.08
1989	\$4.29
1990	\$4.51
1991	\$4.51
1992	\$4.61
1993	\$4.59
1994	\$4.76
1995	\$4.89
1996	\$4.90
1997	\$5.08
1998	\$5.22
1999	\$5.17
2000	\$5.39
2001	\$5.56
2002	\$5.59
2003	\$5.49
2004	\$5.61
2005	\$5.75
2006	\$5.85
2007	\$6.03
2008	\$6.09
2009	\$6.14
2010	\$6.14
2011	\$6.21
2012	\$6.27
2013	\$6.36
2014	\$6.39
2015	\$6.40
2015	\$6.48