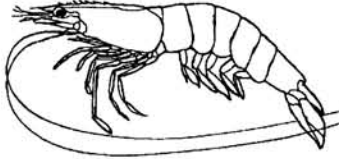




**UNITED STATES DEPARTMENT OF COMMERCE**  
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June 20, 2007

To All Concerned:

**FORECAST FOR THE 2007 BROWN SHRIMP SEASON IN THE WESTERN GULF OF MEXICO,  
FROM THE MISSISSIPPI RIVER TO THE U.S. - MEXICO BORDER.**

Prediction Summary

Each June, scientists at the National Marine Fisheries Service (NOAA Fisheries) Southeast Fisheries Science Center's Galveston Laboratory forecast brown shrimp production from the western Gulf of Mexico for the upcoming year (July 2007 – June 2008). Data obtained from NOAA Fisheries Galveston Laboratory's Fishery Management and Ecology Branches, NOAA Fisheries port agents, National Climatic Data and Weather Centers, Louisiana Department of Wildlife and Fisheries, Texas Parks and Wildlife Department, and the commercial shrimp industry contribute to this forecast. Juvenile brown shrimp abundance and growth estimates are obtained through monitoring the inshore commercial shrimp fisheries in Texas and the inshore and nearshore fisheries in Louisiana. Environmental variables are further quantified to assess the availability of habitat for growth and survival of young shrimp. Collectively, these indices provide the estimate of inshore stock strength prior to movement into the offshore fishery.

Brown shrimp abundance indices for the 2007 shrimp season suggest above average offshore production for the western Gulf of Mexico. The Galveston Bay bait index forecasts a slightly below average year at 25.9 million pounds from offshore Texas waters from July 2007 through June 2008. The 2007 Louisiana indices point to an above average yield of approximately 32.9 million pounds of brown shrimp this season from west of the Mississippi River to the Texas-Louisiana border. Overall, the western Gulf of Mexico could expect an annual brown shrimp production of approximately 58.8 million pounds during the 2007-2008 season. This is above the 1960-2005 historical average of 56.6 million pounds for the two-state area.

Postlarval brown shrimp begin entering estuaries in Texas and western Louisiana in mid-February and continue through July, depending on environmental conditions. Several waves of postlarvae may enter; however, peak recruitment occurs from February through early April. A wide array of environmental and biological parameters affects the fate of young shrimp entering the estuaries. Three environmental variables, temperature, salinity and water height, have been correlated with subsequent shrimp production. Optimal shrimp growth has been documented in waters of greater than 68° F. Favorable nursery area appears to be related to the distribution of high salinity waters as well as tidal water height in interior marshes. Rainfall this year has been above normal (Table 1) and resulted in lower salinities, most notably in May (Table 2). These lower salinities resulted in juvenile shrimp being concentrated in the lower areas of the Galveston Bay system during most of May. During the last week of May, southeast winds and high tides pushed higher salinity waters allowing brown shrimp to move into the upper areas of the bay. Once salinity increased throughout the bay system, catch-per-unit-effort increased slightly, with the highest catch-per-unit-effort occurring the last week of May. Moreover, a second wave of juvenile brown shrimp was observed moving out of the marshes at the end of our reporting period suggesting continued recruitment into the fishery.



## Environmental Model

The Environmental Model is used to predict the annual harvest related to the historical production. The model uses Galveston air temperature during mid-April (the key component), rainfall during early March, and bay water height during late April and early May. These components are additive in the model, thus higher values indicate higher catch. Temperature and water height (Table 3) values were above average this year and suggest above average production of brown shrimp from Texas as related to environmental conditions conducive for optimal shrimp growth and survival.

## Catch-Per-Unit-Effort in the Inshore Texas Fishery

Texas bay commercial brown shrimp catch rates (heads-on; pounds per hour) and size composition data for May 2007 were obtained from NOAA Fisheries port agents. Catch rates recorded during the reporting period may not adequately portray catch-per-unit effort due to low shrimping effort. Low dockside prices and high fuel costs contributed to the decrease in effort. Based on the data available, San Antonio and Matagorda Bays experienced above average catch rates as compared to the 1986-2005 historical average (Table 4). The catch rate in Galveston Bay was below the historical average. Small shrimp (i.e., 81-100 and 100+ count per pound) dominated the catch in most Texas bays. The dominant size category in Matagorda Bay was 71-80 count shrimp.

## Baxter Bait Index

Consistently, for the past 47 years, our most reliable estimate of subsequent brown shrimp production off the Texas coast comes from monitoring the Galveston Bay bait shrimp fishery during late April through mid-June (Baxter Bait Index; Table 5). Recruitment into the commercial bait fishery was approximately two weeks later this year as compared with previous years. Low salinities prevailed throughout most of May and concentrated shrimp in the lower section of Galveston Bay. This limited nursery habitat increased food competition and resulted in suboptimal growth during this time period. Increased salinities and high tides in the latter part of May resulted in a wider distribution of shrimp throughout the bay system, with highest CPUE occurring the last week of May. Moreover, a second wave of young shrimp was observed near the end of our reporting period indicative of continued recruitment into the fishery. Using the period from 1981 through 2006 in the bait versus offshore landings modified regression model, a value of 25.9 million pounds is the estimate of production from Texas offshore waters. This value is 0.1 million pounds below the average catch of 26.0 million pounds for the 1960 - 2005 period.

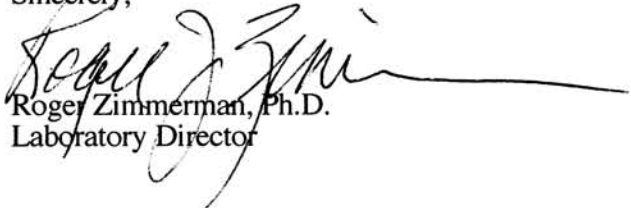
## Louisiana Inshore - Offshore Production

Catch information from Louisiana inshore and offshore fisheries in May is used to estimate total production for the biological year from May through April (Table 6). Using 2007 May catch data (9.7 million pounds) in our Louisiana model, we predict a harvest of 32.9 million pounds for Louisiana west of the Mississippi River for the 2007-2008 season. This is above the historical average of 30.6 million pounds. Louisiana Department of Wildlife and Fisheries scientists estimated that 1.90 million acres of marsh with salinities greater than 10 ppt were available this year for brown shrimp, a decrease of approximately 0.39 million acres as compared to this time last year.

## Forecast Summary

Collectively, the 2007 indices of juvenile shrimp abundance indicate an above average brown shrimp harvest for the western Gulf of Mexico during the July 2007 through June 2008 season. If you would like more information regarding this forecast, or for other marine fishery information, please contact us at 409-766-3500, or visit our web site at <<http://galveston.ssp.nmfs.gov/galv>>.

Sincerely,

  
Roger Zimmerman, Ph.D.  
Laboratory Director

attachments

Table 1. Rainfall and air temperature during 2007 for selected areas. Source: NOAA, National Climatic Data Center and National Weather Service, June 10, 2007.

	Year-to-Date Rainfall (Inches)	Rainfall (Inches Above/ Below Historical)	Departure: Above or Below Historical Monthly Average Air Temperature (°F) and Precipitation (inches)							
			JAN		FEB		MAR		APR	
			Temperature	Rainfall	Temperature	Rainfall	Temperature	Rainfall	Temperature	Rainfall
<b>TEXAS</b>										
Brownsville	11	2	-3	0	1	0	3	5	-2	-1
Corpus Christi	12	0	-2	3	0	-2	3	1	-2	-1
Houston	27	7	-1	2	0	-2	4	3	-2	0
Port Arthur	21	-3	0	2	-2	-3	4	2	-2	0
<b>LOUISIANA</b>										
Lake Charles	29	5	0	3	-3	-3	2	1	-4	-1
New Orleans	21	-7	1	-1	-2	-3	3	-3	-1	-3

Table 2. Salinities and water temperatures in West Galveston Bay during April and May, 1982-2007. Source for salinity and temperature data 1997-2007: Texas Parks and Wildlife Department.

Year	Offshore Catch (Millions of Pounds)	Salinity (PPT)			Water Temperature (°F)		
			APR	MAY		APR	MAY
1982	21.8		24	20		76	77
1983	18.2		24	28		66	74
1984	24.1		28	32		78	82
1985	30.4		21	25		79	82
1986	27.1		27	28		75	78
1987	27.2		32	31		84	79
1988	22.5		25	25		78	79
1989	30.3		26	25		77	83
1990	33.4		15	18		NA	84
1991	32.8		15	15		74	81
1992	24.6		15	21		73	82
1993	21.1		20	19		73	74
1994	25.5		21	20		78	79
1995	23.5		18	19		70	78
1996	22.3		30	29		77	81
1997	17.0		13	16		70	78
1998	27.0		22	30		71	86
1999	22.0		28	28		82	86
2000	31.1		31	29		81	82
2001	24.6		17	24		74	81
2002	21.2		21	24		75	82
2003	23.2		23	21		71	80
2004	20.0		14	10		72	77
2005	19.2		23	28		73	75
2006	31.4*		29	30		77	79
2007			23	19		70	80

\*Estimated

Table 3. Environmental Model prediction of the trend in catch of Texas brown shrimp offshore production (July-June).

Year	Direction of Prediction Relative to Average	Air Temperature	Rainfall	Water Height	Offshore Catch (Millions of Pounds)
1990	+	68.3	0.83	5.69	33.4
1991	+	73.2	0.11	5.87	32.8
1992	-	66.6	0.48	4.90	24.6
1993	-	66.9	0.86	5.41	21.1
1994	+	71.2	1.26	5.57	25.5
1995	+	72.7	1.07	5.38	23.5
1996	-	70.3	0.70	4.88	22.3
1997	+	68.3	0.37	5.47	17.0
1998	-	68.5	0.48	5.14	27.0
1999	+	70.8	0.24	5.34	22.0
2000	+	70.3	0.07	5.42	31.1
2001	+	74.3	0.49	5.19	24.6
2002	+	74.1	1.24	6.18	21.2
2003	+	68.9	0.17	5.55	23.2
2004	+	69.1	0.16	5.07	20.0
2005	+	72.9	1.67	6.10	19.2
2006	-	67.0	0.01	5.22	31.4*
2007	+	68.8	0.00	5.6	

Table 4. Estimated average May inshore commercial shrimp catch in pounds per hour (heads-on) for selected Texas Bays, 1986-2006.

Year	Selected Texas Bay Systems Pounds/Hour (heads-on)					Offshore Catch (Millions of Pounds)
	San Antonio	Corpus Christi	Aransas	Matagorda	Galveston	
1986	40	20	40	40	48	27.1
1987	45	20	41	45	50	27.2
1988	75	38	46	33	45	22.5
1989	29	25	26	18	31	30.3
1990	64	54	62	55	63	33.4
1991	41	38	56	31	23	32.8
1992	14	25	19	12	23	24.6
1993	44	32	28	32	28	21.1
1994	53	50	54	51	32	25.5
1995	38	45	38	ND	22	23.5
1996	40	32	43	30	18	22.3
1997	35	48	52	25	31	17.0
1998	56	48	37	37	26	27.0
1999	47	32	35	34	33	22.0
2000	45	32	29	32	42	31.1
2001	60	45	35	60	34	24.6
2002	44	35	38	19	16	21.2
2003	43	35	53	32	26	23.2
2004	NE	31	9	45	19	20.0
2005	53	36	30	33	9	19.2
2006	41	ND	ND	19	27	31.4*
<b>Historical Average</b>	<b>45</b>	<b>36</b>	<b>39</b>	<b>34</b>	<b>31</b>	
2007	47	ND	ND	47	14	
Dominant Count	81-100	81-100	100+	71-80	100+	

\*Estimated

NE - No effort.

ND - No data available.

Table 5. Texas offshore brown shrimp catch predictions (millions of pounds) based on Galveston Bay bait index values. Average catch (July-June) from 1960-2005 was 26.0 million pounds.

Year	Predicted Catch	Actual Catch	Difference
1960	29.1	34.0	4.9
1961	20.0	13.2	-6.8
1962	21.5	17.3	-4.2
1963	29.0	24.6	-4.4
1964	22.6	18.6	-4.0
1965	25.6	26.4	0.8
1966	-	31.1	-
1967	39.0	42.7	3.7
1968	22.0	27.9	5.9
1969	26.3	24.7	-1.6
1970	33.7	30.7	-3.0
1971	37.1	34.4	-2.7
1972	38.0	35.4	-2.6
1973	19.4	23.2	3.8
1974	23.8	25.8	2.0
1975	-	23.7	-
1976	23.8	25.7	1.9
1977	30.5	34.4	3.9
1978	25.5	27.7	2.2
1979	-	16.5	-
1980	26.7	26.6	-0.1
1981	29.3	41.3	12.0
1982	21.5	21.6	0.1
1983	17.8	18.1	0.3
1984	22.9	24.1	1.2
1985	29.0	30.3	1.3
1986	25.3	27.1	1.8
1987	25.7	27.2	1.5
1988	25.9	22.5	-3.4
1989	23.1	30.3	7.2
1990	-	33.3	-
1991	23.1	32.9	9.8
1992	24.1	24.7	0.6
1993	26.8	21.1	-5.7
1994	27.1	25.5	-1.6
1995	29.1	23.5	-5.6
1996	25.1	22.3	-2.8
1997	28.2	17.0	-11.2
1998	25.8	27.0	1.2
1999	24.5	22.0	-2.5
2000	30.0	31.1	1.1
2001	23.7	24.6	0.9
2002	26.6	21.2	-5.4
2003	21.6	23.2	1.6
2004	22.5	20.0	-2.5
2005	23.3	19.2	-4.1
2006	23.8	31.4	7.6
2007	25.9		

\*Estimated

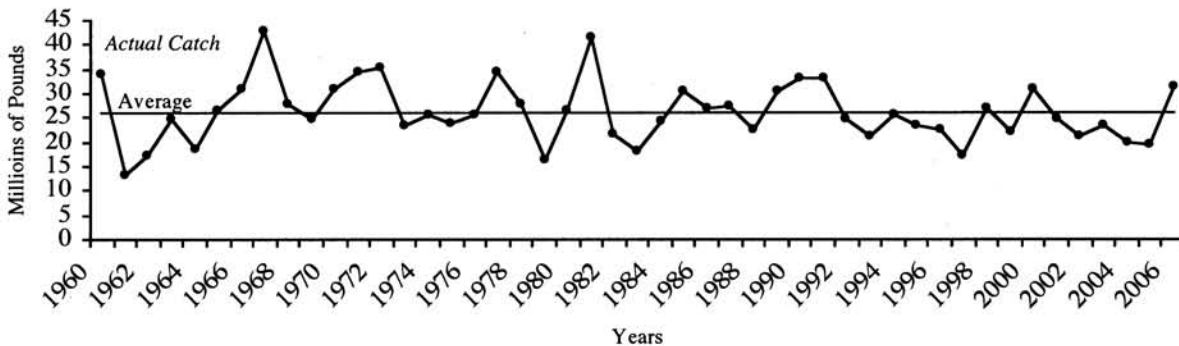


Table 6. Louisiana inshore and offshore brown shrimp prediction (millions of pounds) based on May catch index values. Average catch (May - April) from 1960-2005 was 30.6 million pounds. Acreage with salinities greater than 10 ppt is in millions of acres.

Year	Predicted Catch	Actual Catch	Difference	Acreage > 10 ppt
1960		16.0		
1961		9.1		
1962		7.3		
1963		16.9		
1964		9.6		
1965		17.7		
1966		18.7		
1967		29.5		2.30
1968		25.4		1.90
1969		25.2		1.60
1970		28.1		2.10
1971		30.7		1.90
1972		32.2		1.80
1973		17.9		1.00
1974		20.6		1.20
1975		18.1		1.30
1976		37.5		1.60
1977		49.1		1.80
1978		45.9		1.50
1979		36.7		1.20
1980		23.8		0.50
1981		44.3		2.80
1982		33.0		1.50
1983		24.9		0.90
1984		33.3		1.60
1985	40.3	33.7	-6.6	1.75
1986	50.0	44.1	-5.9	2.50
1987	32.9	40.0	7.1	1.50
1988	30.2	34.3	4.1	1.35
1989	43.7	37.6	-6.1	1.75
1990	60.0	45.9	-14.1	1.20
1991	35.4	32.0	-3.4	1.00
1992	26.3	28.2	1.9	1.55
1993	-	27.7	-	0.80
1994	31.7	24.6	-7.1	1.20
1995	36.5	31.7	-4.8	1.60
1996	31.8	35.3	3.5	1.85
1997	25.5	29.3	3.8	1.00
1998	40.3	34.2	-6.1	1.40
1999	45.0	42.7	-2.3	1.79
2000	47.1	43.9	-3.2	2.48
2001	62.4	42.1	-20.3	1.66
2002	39.0	36.3	-2.7	1.50
2003	42.0	45.0	3.0	1.35
2004	41.2	37.8	-3.4	0.74
2005	21.0	31.3	10.3	0.91
2006	37.8	41.2	3.4	2.29
2007	32.9			1.90

\*Estimated

