Butterfish AP Informational Document - APRIL 2013
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****Note - Data Sources for the following are generally from unpublished NMFS Survey, Dealer, VTR, Permit, and MRFSS databases unless noted…everything should be considered preliminary at this point.**

Basic Biology

Butterfish (*Peprilus triacanthus*) are distributed from the Florida to Nova Scotia, occasionally straying as far north as the Gulf of St Lawrence (Bigelow and Schroeder 2002). Butterfish is a fast growing species that schools by size, makes seasonal inshore and offshore movements, and seldom attains an age greater than 3 years but can occasionally live up to 6 years. Butterfish mature at age 1, spawn during the summer months (June-August), and begin schooling at about 60 mm (Bigelow and Schroeder 2002). They exhibit a planktivorous diet, feeding mainly on zooplankton, ctenophores, chaetognaths, euphausiids and other organisms. Butterfish are preyed upon by a large number of medium-sized predatory fishes such as bluefish, weakfish, and spiny dogfish, marine mammals including pilot whales and common dolphins, seabirds such as greater shearwaters and northern gannets, large pelagic fish including swordfish, and invertebrates such as squid (http://www.nefsc.noaa.gov/publications/tm/tm145/tm145.pdf). SAW/SARC 49 (2010) explored consumption of butterfish by a subset of key finfish predators but estimates for marine mammals, birds, and invertebrates are not available.

Status of the Stock

The butterfish stock was most recently assessed at SARC 49 (2010). The SARC review panel did not accept the adequacy of the redefined BRPs or the BRPs used for stock status determination in the 2004 butterfish assessment. The review panel questioned the application of MSY theory to a short-lived recruitment-dominated population, particularly the use of equilibrium methods when trends in the data suggest the stock is declining even with low fishing mortality. It was agreed that overfishing was not likely occurring. The review panel concluded that the decline in the butterfish stock appears to be driven by environmental processes and low recruitment. Determination of an overfished versus not overfished condition was not resolved at the meeting, which left the overfished status of butterfish unknown. NMFS has since changed butterfish from overfished to unknown in its "status of stocks" accounting.

The NMFS Northeast Science Center has developed an empirical analysis of Atlantic butterfish survey and catch data that suggests fishing mortality has been relatively low in recent years (see http://www.mafmc.org/ssc-meetings/april-30-2013). That analysis also has information on updated NEFSC indices so they are not reproduced here, but the fall 2012 butterfish indices were down from 2011, due to an 88% drop in the catch of age zero fish to the lowest in the time series (all other age groups (1s, 2s, 3s, 4+s) were similar or higher in 2012 compared to 2011. A benchmark butterfish assessment is scheduled to occur in the summer and fall of 2013.

A variety of other fishery-independent surveys calculate butterfish indices. Staff is collecting these data and will present them to the SSC and forward them to the AP when they are available.

-Maine/New Hampshire Inshore Trawl Survey (http://maine.gov/dmr/rm/trawl/index.htm)

-Massachusetts Inshore Trawl Survey (Northern and Southern Zones) (http://www.mass.gov/dfwele/dmf/programsandprojects/resource.htm)

-Rhode Island URI Trawl Survey (2 locations, fixed survey - http://www.gso.uri.edu/fishtrawl/)

-Connecticut Long-Island Sound Trawl Survey (http://longislandsoundstudy.net/2010/03/long-island-sound-fish-trawl-survey-slide-presentation/)

-Delaware Bay Trawl Survey (http://www.dnrec.delaware.gov/fw/SiteCollectionDocuments/FW%20Gallery/Research/trawl%20doc.pdf)

-Northeast Area Monitoring and Assessment Program (NEAMAP) (http://www.neamap.net/)

-Southeast Area Monitoring and Assessment Program (SEAMAP) (http://sero.nmfs.noaa.gov/grants/seamap.htm)

-North Carolina Pamlico Sound Trawl Survey

-NJ Ocean Survey

Fishery Performance (See Figure 1)

Atlantic butterfish were landed by US fishermen from the late 1800's (when formal record keeping began) until 1962 (Murawski and Waring 1979). Reported landings averaged about 3,000 mt from 1920-1962 (Waring 1975). Beginning in 1963, vessels from Japan, Poland and the USSR began to exploit butterfish along the edge of the continental shelf during the late-autumn through early spring. Reported foreign landings of butterfish increased from 750 mt in 1965 to 15,000 mt in 1969, and then to about 32,000 mt in 1973. With the advent of extended jurisdiction in US waters, reported foreign catches declined sharply from 14,000 mt in 1976 to 2,000 mt in 1978. Foreign landings were completely phased out by 1987.

During the period 1965-1977, domestic butterfish landings averaged about 1,800 mt. From 1978-1987, average US landings averaged around 5,500 mt, with a historical peak of slightly less than 12,000 mt landed in 1984. The domestic market developed to supply butterfish to the Japanese market. A combination of lower abundance and market conditions are reported to be the cause for lower landings in the 1990s. Local availabilities in 2001 led to substantial landings by Seafreeze but the market was not supportive of high-volume sales and it took several years to reduce their butterfish inventory. Recent regulations precluded resumption of a directed fishery until January 16, 2013, when a limited directed fishery was re-established. However, despite the availability of quota and lack of trip limits, 2013 butterfish landings to date have been relatively low.

Discards are a major source of mortality and estimates are available in the empirical work cited above.

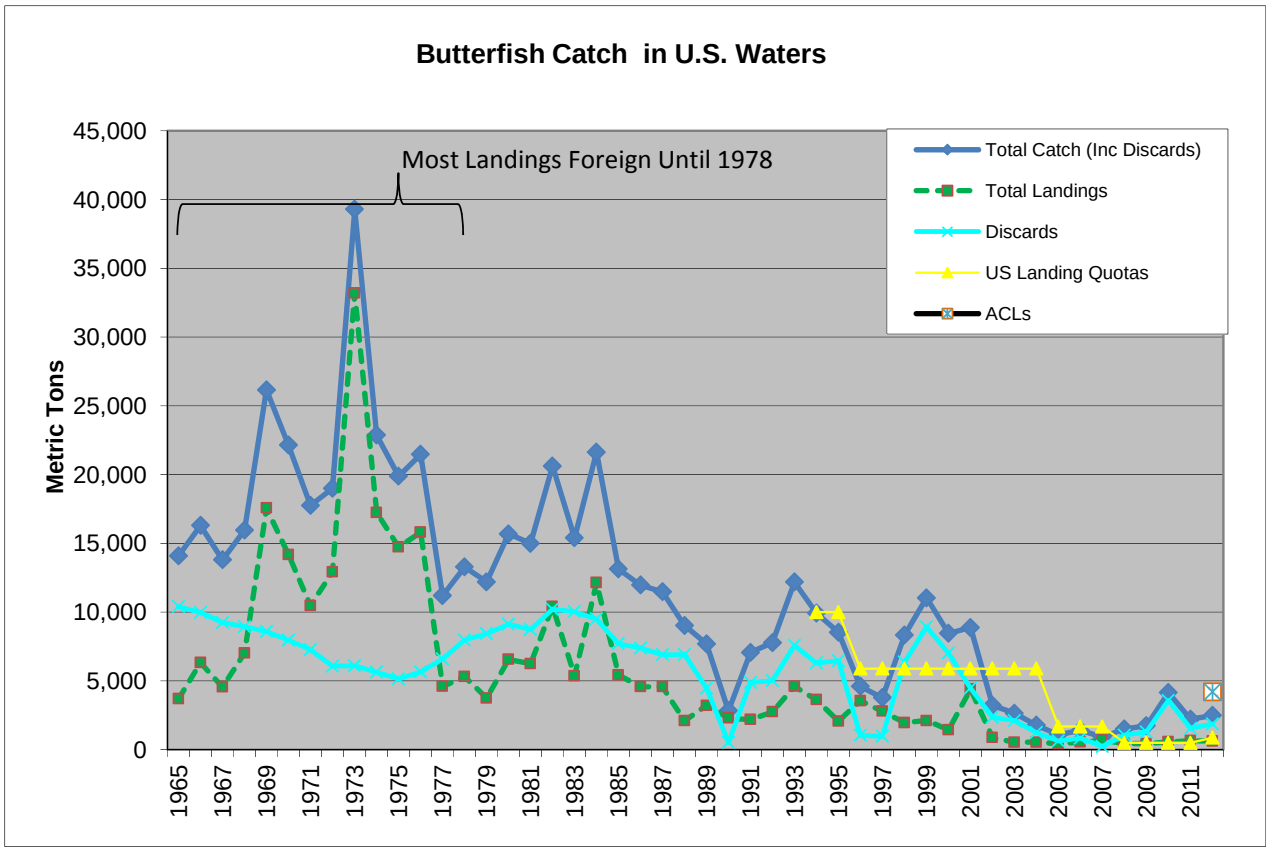

Figure 1. Butterfish catch within 200 miles of U.S. Coast (2012 Preliminary).
Source: SAW/SARC 49, unpublished NEFSC dealer reports

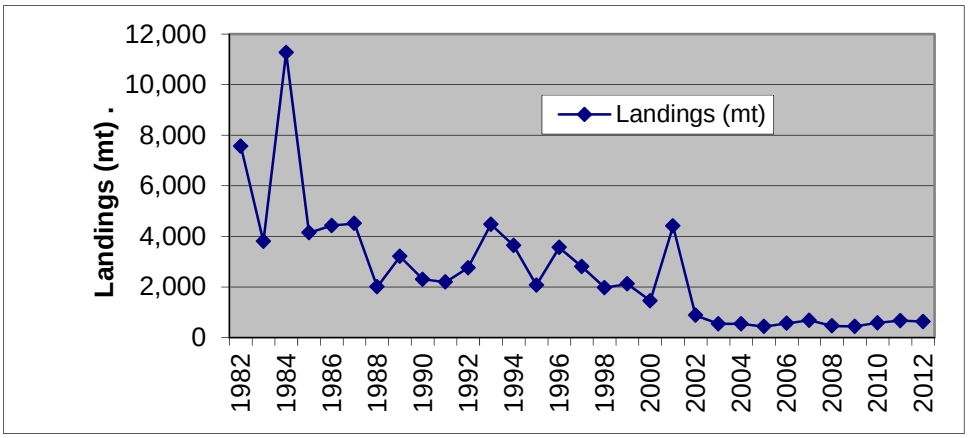

Figure 2. U.S. Butterfish landings.
Source: unpublished NEFSC dealer reports

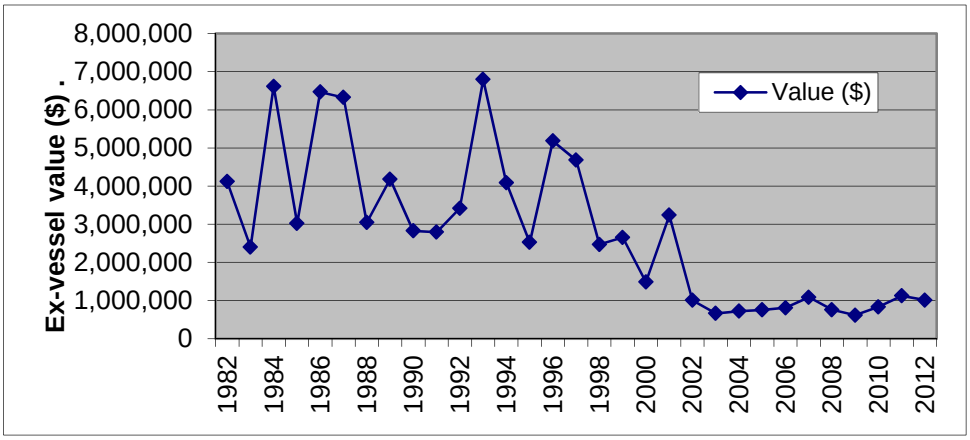

Figure 3. U.S. Butterfish ex-vessel revenues (nominal)
Source: unpublished NEFSC dealer reports

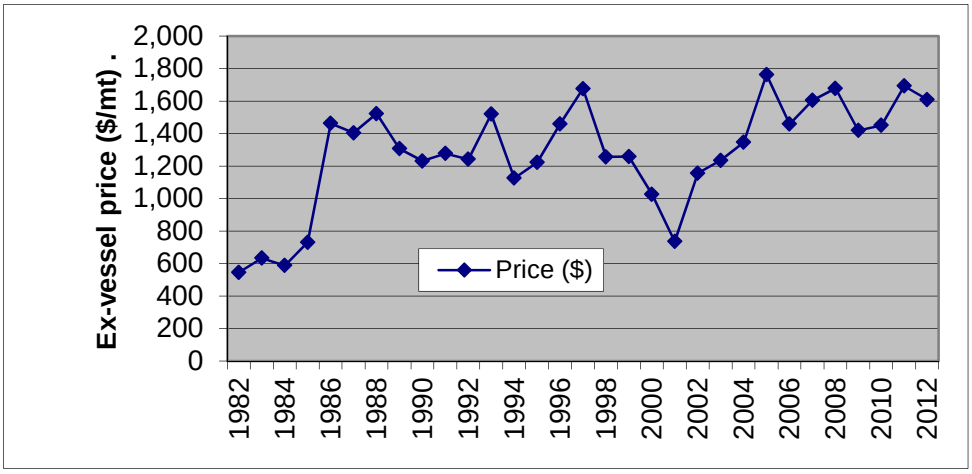

Figure 4. U.S. Butterfish ex-vessel prices (Nominal)
Source: Unpublished NMFS dealer reports

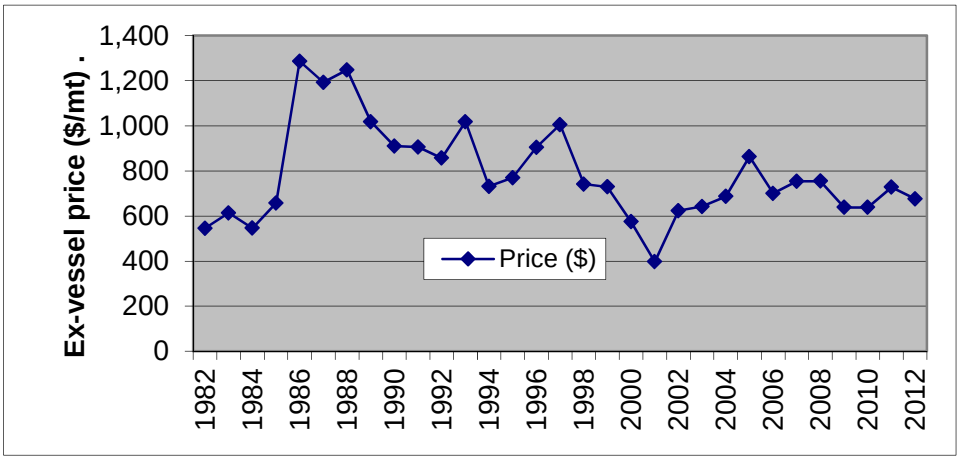

Figure 5. U.S. Butterfish ex-vessel prices (CPI adjusted, 1982 Base)
Source: Unpublished NMFS dealer reports

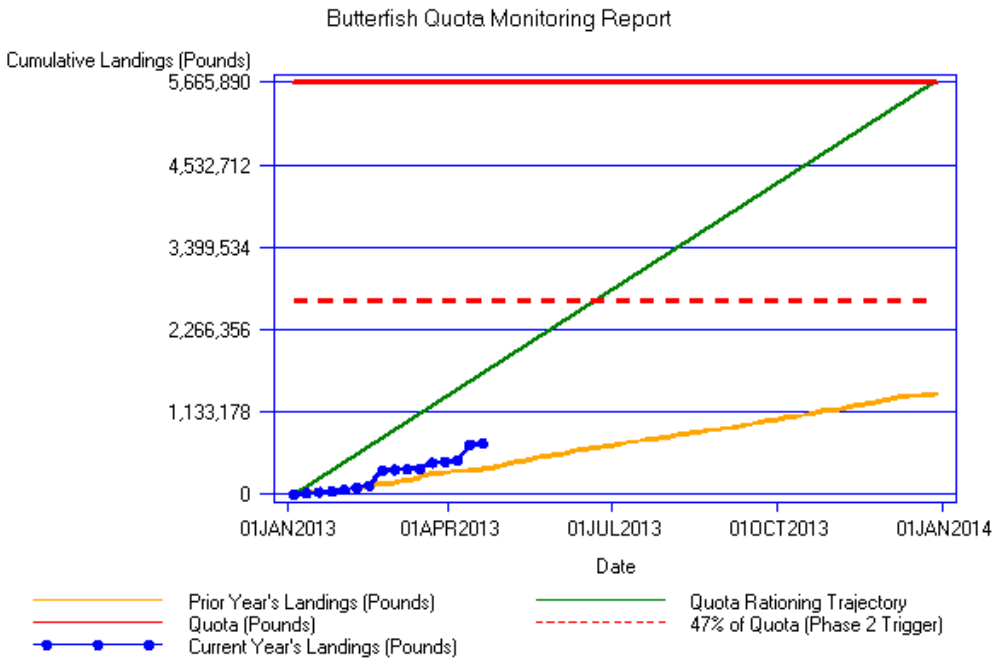

Figure 6. 2013 Landings to Date (April 21, 2013)
source: http://www.nero.noaa.gov/ro/fso/reports/reports_frame.htm

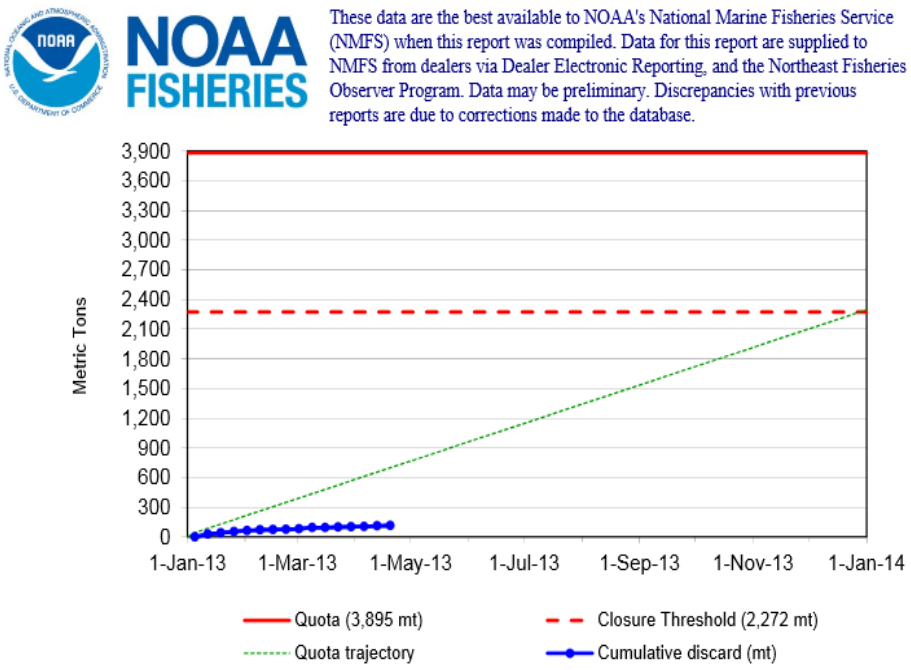

Figure 7. 2013 Butterfish/Loligo Cap to Date (April 21, 2013)
source: http://www.nero.noaa.gov/ro/fso/reports/reports_frame.htm

Specification Performance

Through 2012, dealer data triggered in-season management actions that instituted low trip limits when 80% of the DAH is landed. Mandatory reporting for butterfish was fully instituted in 1997 so specification performance since 1997 is most relevant. Table 1 lists the performance of the butterfish fishery compared to its DAH (recent landings have been regulated basically to be bycatch only). 2012 landings were about the same as 2011 - even though the quota was increased late in the year, the same trip limits as in 2011 remained in place until January 2013.

Table 1. Butterfish DAH Performance. (mt)

Year	Harvest (only commercial)	Quota	Percent of Quota Landed
1997	2,795	5,900	47%
1998	1,966	5,900	33%
1999	2,110	5,900	36%
2000	1,449	5,900	25%
2001	4,404	5,897	75%
2002	872	5,900	15%
2003	536	5,900	9%
2004	537	5,900	9%
2005	428	1,681	25%
2006	554	1,681	33%
2007	678	1,681	40%
2008	451	500	90%
2009	435	500	87%
2010	576	500	115%
2011	664	500	133%
2012	627	872	72%

Source: Unpublished NMFS dealer reports

The system that manages the new directed fishery begins with large closure buffers at the start of the year and then reduces the closure buffers as the year progresses. The year starts with no trip limits for directed permits using 3" or greater mesh, and then steps down to 5,000 pounds at one point and then 500 pounds as a final backstop. Given the low catches to date, the system remains untested (2013 is the first year of the new closure system).

Table 2. 2012 Atlantic butterfish landings (mt) by state (more than 10 Metric Tons)

STATE	MetricTons	Percent
RI	249	41%
NY	203	33%
MA	79	13%
CT	49	8%
NJ	34	6%

Source: unpublished NEFSC dealer reports

Table 3. 2012 Atlantic butterfish landings (mt) by month.

MONTH	MetricTons	Percent
1	25.7539	4%
2	43.1312	7%
3	67.8604	11%
4	42.8926	7%
5	68.3725	11%
6	55.792	9%
7	54.2103	9%
8	53.8424	9%
9	49.5301	8%
10	64.8009	10%
11	63.1071	10%
12	32.825	5%

Source: unpublished NEFSC dealer reports

Table 4. Vessels active in various annual landing ranges (pounds per vessel)

YEAR	Vessels 200,000+	Vessels 50,000 - 200,000	Vessels 10,000 - 50,000	Vessels 1,000 - 10,000
1982	29	31	35	107
1983	9	33	67	111
1984	41	35	47	100
1985	11	36	52	122
1986	7	14	52	113
1987	8	38	40	86
1988	4	15	54	86
1989	7	29	40	99
1990	1	22	58	110
1991	5	15	45	96
1992	7	25	32	90
1993	12	30	36	108
1994	6	20	40	124
1995	3	11	63	141
1996	6	15	86	129
1997	6	12	77	169
1998	2	14	69	153
1999	2	10	72	143
2000	1	9	54	159
2001	4	6	72	130
2002	0	3	46	123
2003	0	0	20	115
2004	0	0	24	96
2005	0	1	11	93
2006	0	1	24	91
2007	0	3	36	95
2008	0	1	21	98
2009	0	2	17	81
2010	0	1	37	81
2011	0	2	36	91
2012	0	1	38	87

Source: unpublished NEFSC dealer reports