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DOCUMENTATION ON THE PREPARATION OF THE DATABASE FOR THE RED SNAPPER STOCK ASSESSMENT SEDAR WORKSHOP

by

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1. Introduction

The purpose of this report is to document the procedures that are used to prepare the database with the commercial landings statistics that will be used in the SEDAR Stock Assessment Workshop for red snapper. These procedures are slightly different from the procedures used to prepare the commercial landings statistics database presented to the SEDAR Data Workshop that was held on April 19 - 23, 2004. Those differences are primarily based on the recommendations of that workshop.

The standards for the level of detail in the red snapper landings database for the SEDAR Stock Assessment Workshop remain the same as the standard established for the Data Workshop. The standards are monthly landings, by gear, water body (fishing area), and state/county where the fish were landed. A brief description of the collection procedures is presented in section 2.1.1 of the SEDAR Data Workshop report. Currently, the landings statistics are collected by individual trip in Florida, Alabama, Mississippi and Louisiana and are collected as monthly summaries in Texas. These data are provided to the Southeast Fisheries Science Center (SEFSC) and stored in the general canvass landings database as monthly totals, by dealer, state, county, gear and water body. The SEFSC general canvass database[1] includes landings data from 1962 through 2003. However, as noted in SEDAR-DW-22, there are several situations

[1]The general canvass landings statistics are stored in an Oracle database known as the Accumulative Landings System (ALS). The terms general canvass and ALS are often used interchangeably, but in a pure sense the term, “general canvass” refers to the data and the ALS refers to the database or system that house the data.

during the 1962-2003 time series that do not meet the level of resolution established for the SEDAR database. The following identifies these situations:

1. only annual data are available for 1962 - 1976;
2. for Florida, gear and fishing area are not available for monthly data for 1977 - 1996;
3. for Louisiana, gear and fishing area are not available for 1990 - 1999,
4. for Texas, an unusually large of allocations of red snapper landings were assigned to shrimp trawl gear for 1978 - 1983;
5. for Texas, gear and fishing area are not available for 1990 - 2003.

The following section provides a detailed description of procedures that are used to create the red snapper commercial landings database for the SEDAR Stock Assessment Workshop.

2. Procedures

The general canvass landings statistics contain nearly two dozen different gear codes. However, the previous assessments summarized the commercial landings into two gear categories - (1) bottom longline and (2) all other gear, which includes handlines, power assisted handlines/bandit rig, trawl and net gear, and all other types of gear. The same two gear aggregations are used for the development of the database for the Stock Assessment Workshop.

As noted above in the first item, only annual landings are available for the period 1962 through 1976 and the SEDAR database standard is monthly data. Recognizing that systematically collected size data are not available before 1983, the SEDAR Data Workshop panel could not recommend a method to allocate the annual landings by month for those years. Consequently, the SEDAR database only include annual data for this early period.

With regards to the second item above, the recommendations from the Data Workshop are to assign gear and fishing area to the monthly Florida west coast landing in the general canvass landings data using the SEFSC annual data for 1977-1984. The method used to distribute the monthly 1977-1984 landings by gear and grid is straightforward. The proportions are calculated from the annual general canvass by year, county, gear and grid, and these proportions are multiplied to the landings data aggregated by year and month from the general canvass data for the Florida west coast (state code, 11).

For the period, 1985 - 1996, gear and water body allocations are assigned in two ways. For the period, 1985 - 1989, the gear/water body assignments are from a data set prepared for the Data Workshop by staff from the Florida Marine Research Institute (FMRI), Florida Fish and Wildlife Conservation Commission. The FMRI data set includes gear and water body designations; however, these allocations were prepared from both the trip ticket data and the Saltwater Products License (SPL) data. For the beginning years of the trip ticket program, gear

and fishing area were not mandatory on the trip tickets and reporting of this information was incomplete. However, gear designations were reported on the SPL applications. FMRI personnel used the SPL information to supplement the gear/area designation on the trip ticket data for their data set.

The landings data in the FMRI data set are not used for the SEDAR database because there are differences between the SEFSC general canvass data and the FMRI data. These difference are fairly substantial for some year/ month combinations, notably in 1985 when the trip ticket program began. In addition, Florida has done some editing to their data that have not been supplied to the SEFSC. Thus, for purposes of the SEDAR database and the attempt to replicate the landings statistics used in prior assessments, the general canvass landings are used. However, the allocations by gear and water body from the Florida trip ticket data set are used to distribute the monthly landings in the SEFSC general canvass database by county, gear and grid. The same method of proportioning the monthly landings for the entire west coast was used for the 1985 - 1989 data that was used for the allocations of the monthly landings for 1977 - 1984. That is, the proportions of the landings by year, county, gear and grid were calculated from the FMRI data set, and those proportions are multiplied by the monthly landings from the SEFSC general canvass data by county. Landings from county, gear strata from unknown fishing areas are assigned fishing area from landings from known areas from the same year and county. If known area landings are not available for that year and county, then information from multiple years for that county are used.

The Data Workshop participants also noted that the SEFSC logbook program provides information on the gear used and area fished for Gulf of Mexico fisheries. The Workshop participants suggested that the logbook data are likely to provide more realistic information on the distribution of fishing effort than the general canvass data because the logbook data are reported by the fishermen, whereas the general canvass data are submitted by seafood dealers. The Data Workshop participants recommended that logbook data be used to assign fishing area to landings for the years in which logbook data are available (i.e., 1990-present).

Following the recommendations of the Data Workshop gear and fishing area are assigned to the SEFSC landings for all states for 1990 and later using the SEFSC logbook data. The logbook data account for nearly all of the landings for most of the years of the logbook program; therefore year and state resolution are used to assign gear and fishing area from the logbook data. The same procedure is used to distribute the monthly landings for all of the Gulf states, Florida west coast through Texas. The proportion of the landings recorded in the logbooks for each gear/grid combination during the period 1990 - 2003 is calculated for each year and state . These proportions are multiplied by the monthly general canvass landings data for each state.

There are some trips in the logbook data for which the fishing location (water body) is not reported. In order to provide a data set with a gear and water body designation for every gear and water body combination, a water body is assigned to the landings with an unknown water body. The same type of procedure is used to assign a water body to logbook records with unknown areas as the procedure used with the FMRI data. In contrast to the treatment of the

FMRI data, the logbook data are used to make water body allocations to the monthly landings at the state level rather than county level. This procedure is used because the logbook data cover a much larger fraction of the total landings. These treatments address the situations 3 and 5 described above.

The fourth situation is the questionably large allocations of red snapper landings to shrimp trawl gear during the period 1978 - 1983. Review of various assessment data bases available from the late 1980's and the 1990's show that the gear codes assigned to Texas landings may have been changed in the early 1990 (Figure 1). The landings data presented at the Data Workshop did not include the information on the different gear codes recorded in the earlier stock assessment data bases. Although various sources have been investigated, none of them appears to provide a reliable method of re-allocating the landings for shrimp trawls to another gear type. It remains unclear whether most of the red snapper landings assigned to trawls in the current landings data base were taken by trawls, handlines or longlines; bottom longline gear was being introduced to the fishery off Texas at this time, and some of these catches could or should be allocated to this gear because shrimp trawlers were being re-rigged with longline gear. As presented in section 2.1.1 of the SEDAR data workshop report, no changes have been made to the gear specifications in the general canvass data for the Texas landings for this period.

For the stock assessment workshop, the landings by gear category are aggregated into three geographic strata: non-US waters or Atlantic waters, U.S. waters east of the Mississippi and U.S waters west of the Mississippi. The Data Workshop also recommend that the handline landings from the eastern Gulf of Mexico be further stratified into northern and southern areas to account for differences in size composition, so northeast (NE) and southeast (SE) subregions are established for the handline gear group. The eastern and western regions are separated at the Mississippie River (statistical areas 1-12 in the east and 13-21 in the west); the eastern handline subregions consist of statistical areas 1-7 for the SE and 8-12 for the NE.

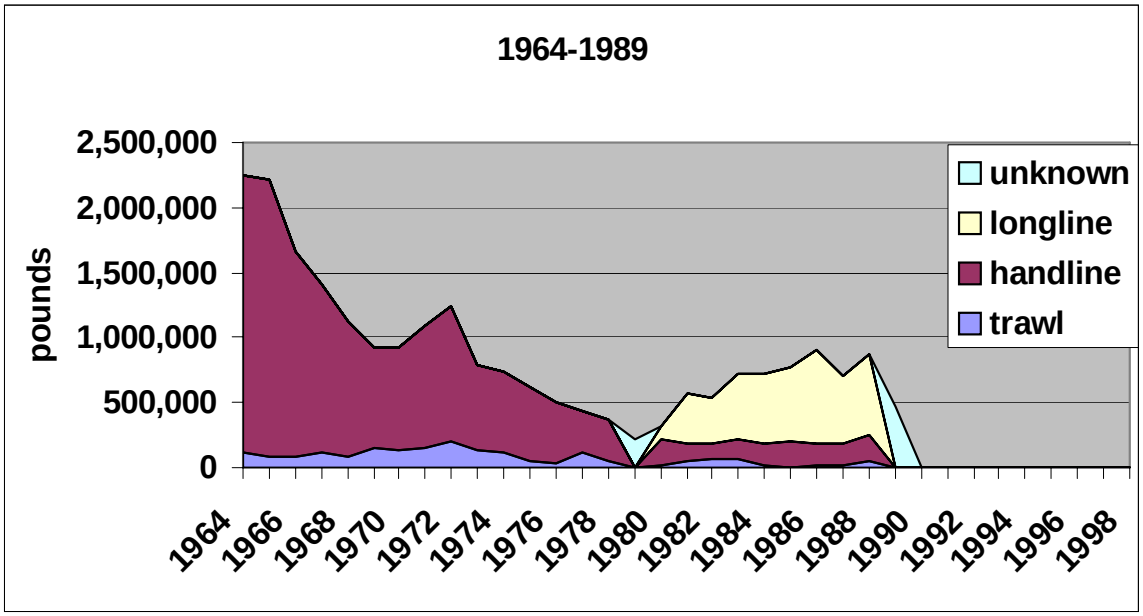
3. Results

During some of the period considered here (1962-2003) landings of red snapper from states bordering the Gulf of Mexico were taken from both United States waters and waters off other countries. However there is no information on the specific fishing area for 1962 and no information for Alabama in 1963. The information for 1964 and later indicates that up to 50% of the landings were considered to have been taken from outside of U.S. waters (Figure 2).

Total red snapper landings from U.S, waters by gear group and region are presented in Table 1 and Figures 3 (1964-2003) and Figure 4 (1984-2003). As shown in Table 1 the landings by longline are separated by region (east and west), but are shown aggregated in Figures 3 and 4 because the small quantities involved would be difficult to see.

Table 1. Landings of red snapper from U.S. waters in 1964-2003 by gear group (longline and handline combined with others) and region (east and west of the Mississippi River; NE refers to statistical area 8-12 and SE refers to statistical areas 1-7).

year	handline+ NE	handline+ SE	handline+ west	longline east	longline west	Grand Total
1964	1,758,520	1,848,150	3,590,301			7,196,971
1965	1,915,030	1,797,534	3,646,081			7,358,645
1966	1,531,449	1,567,316	3,041,229			6,139,994
1967	1,748,659	1,158,285	4,230,951			7,137,895
1968	1,440,724	1,176,822	5,160,886			7,778,432
1969	1,408,310	1,033,632	4,187,460			6,629,402
1970	1,303,461	1,005,993	4,652,728			6,962,182
1971	1,366,094	857,475	5,366,029			7,589,598
1972	1,472,114	902,208	4,841,776			7,216,098
1973	1,904,386	808,646	4,867,197			7,580,229
1974	1,861,812	1,905,753	4,433,800			8,201,365
1975	1,905,105	1,671,519	3,932,964			7,509,588
1976	1,695,350	1,592,776	3,325,599		1,074	6,614,799
1977	1,322,907	940,843	2,873,097			5,136,847
1978	1,222,205	774,147	2,694,000			4,690,352
1979	1,261,112	776,784	2,472,483			4,510,378
1980	1,275,269	620,479	2,516,508	94,005	44,054	4,550,316
1981	1,535,436	590,887	3,143,304	178,526	49,261	5,497,414
1982	1,730,710	558,448	3,661,535	226,574	71,617	6,248,884
1983	1,924,502	459,539	3,820,146	443,273	98,736	6,746,197
1984	1,181,640	450,276	2,906,413	368,449	762,672	5,669,450
1985	1,160,094	463,720	1,846,048	114,341	604,890	4,189,092
1986	712,324	147,506	1,933,384	75,897	831,375	3,700,486
1987	682,028	114,790	1,474,284	63,474	734,038	3,068,614
1988	746,491	111,625	2,355,132	76,685	670,131	3,960,064
1989	590,936	82,584	1,891,961	78,572	454,743	3,098,797
1990	550,452	147,290	1,757,928	74,816	120,424	2,650,911
1991	362,725	32,481	1,724,747	20,709	72,593	2,213,254
1992	358,438	14,658	2,632,608	5,103	19,786	3,030,593
1993	381,944	55,044	2,901,388	15,236	20,291	3,373,903
1994	487,420	39,703	2,671,459	7,959	15,809	3,222,350
1995	153,815	18,925	2,735,402	8,459	17,506	2,934,108
1996	222,101	11,880	4,044,132	7,588	27,362	4,313,063
1997	171,924	12,481	4,589,368	4,626	31,496	4,809,896
1998	352,636	26,533	4,267,684	5,505	27,236	4,679,593
1999	468,085	69,405	4,229,058	6,623	91,741	4,864,912
2000	601,445	63,993	3,983,046	8,795	180,068	4,837,346
2001	717,058	81,022	3,691,045	10,133	126,099	4,625,358
2002	959,260	94,765	3,569,829	18,471	140,644	4,782,969
2003	922,112	100,266	3,196,720	13,027	175,144	4,407,270



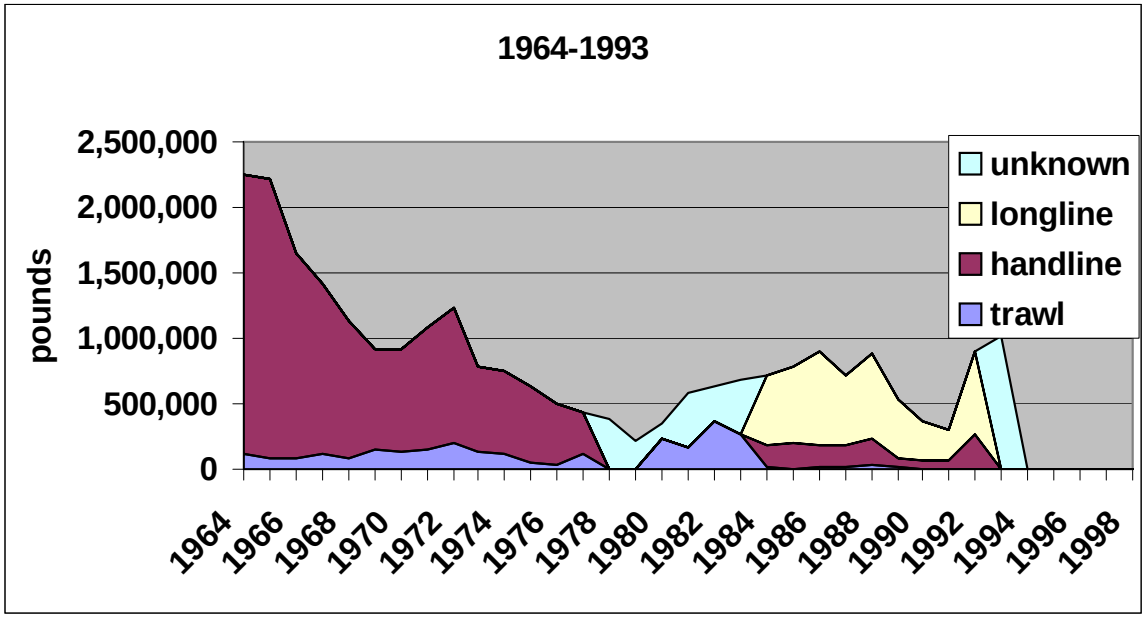


Figure 1. Texas landings of red snapper by gear from two assessment data set.

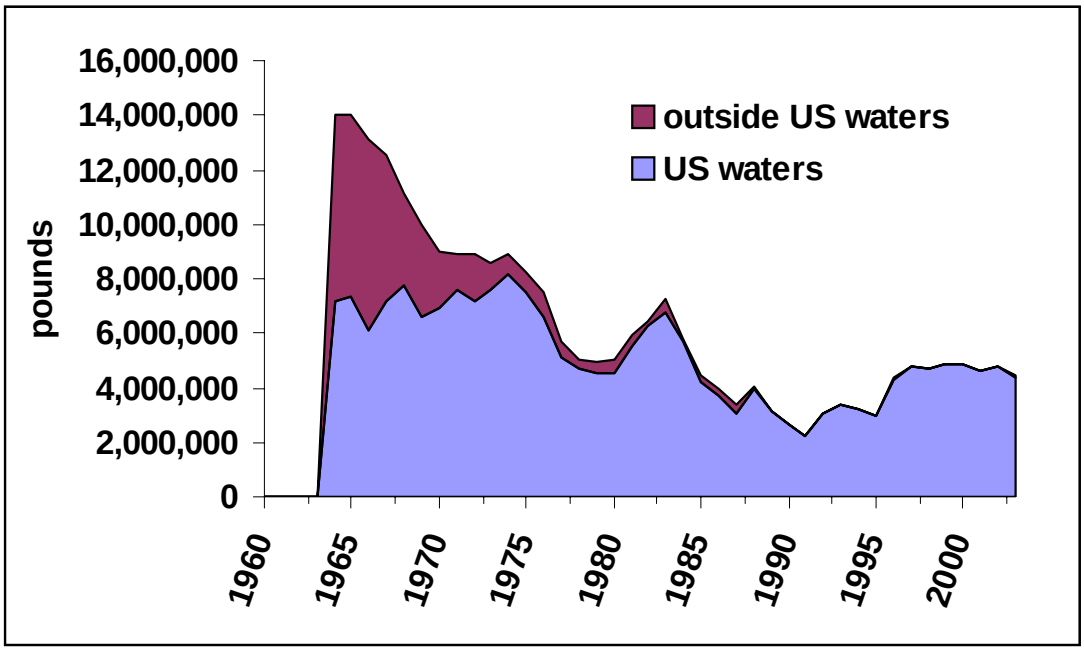


Figure 2. U.S. landings of red snapper from 1964 to 2003 from inside and outside U.S. waters.

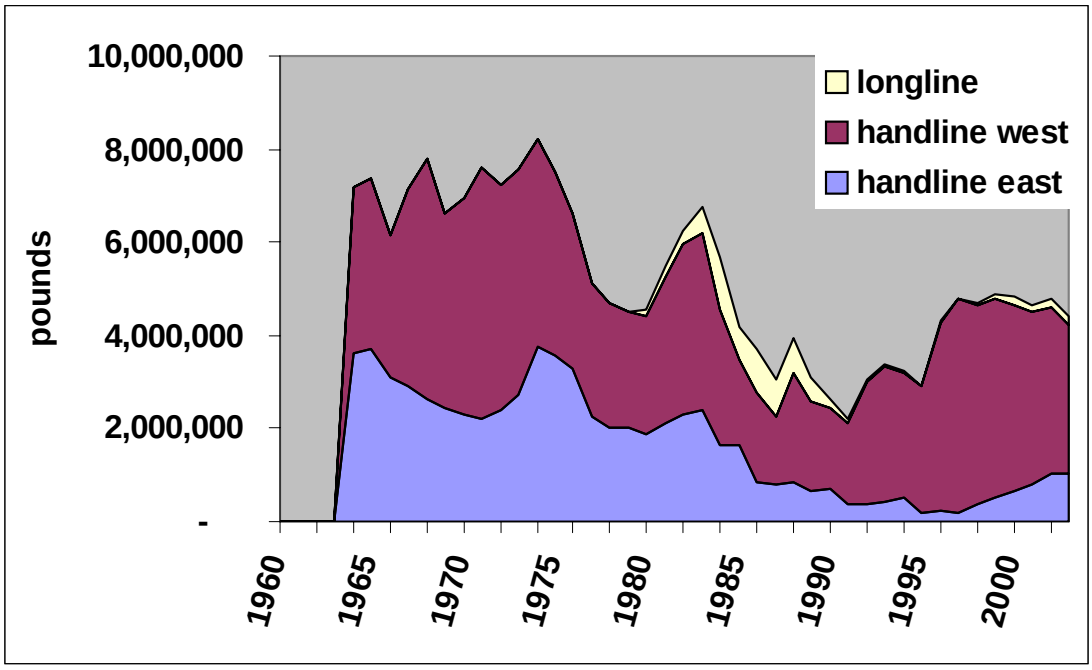


Figure 3. Landings from U.S. waters in 1964-2003 by gear group (longline and handline combined with others) and region (east and west of the Mississippi River).

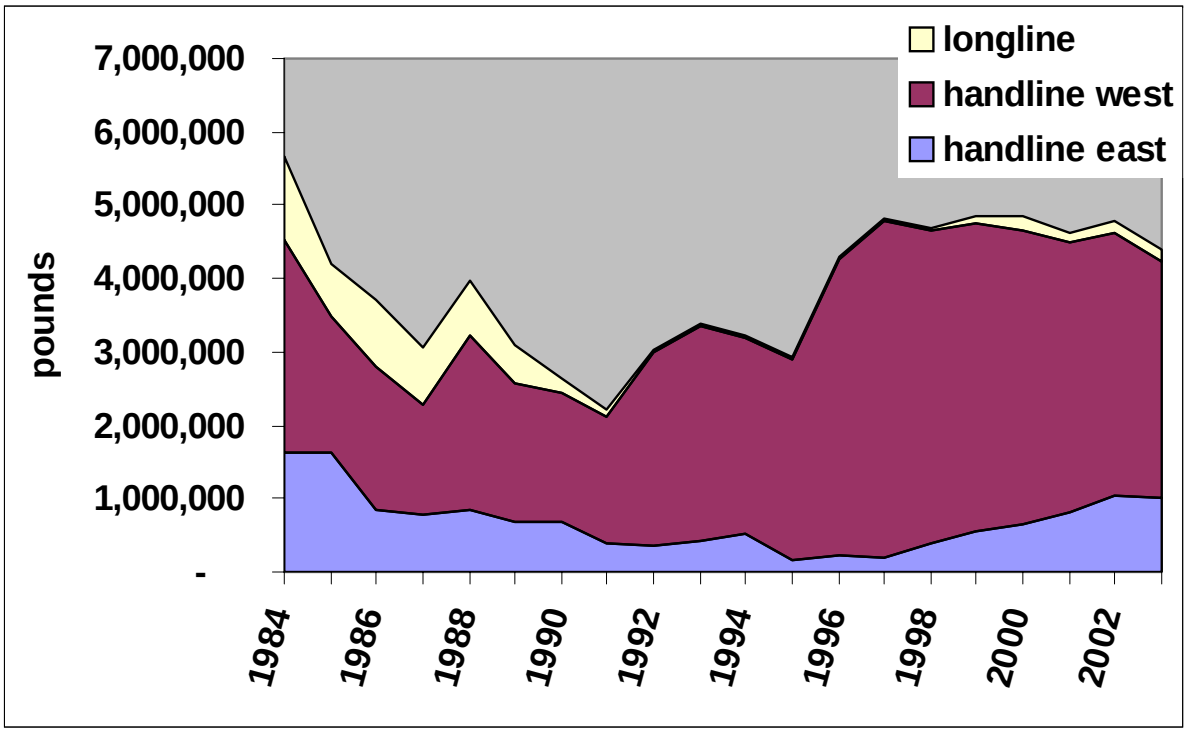


Figure 4. Landings from U.S. waters in 1984-2003 by gear group (longline and handline combined with others) and region (east and west of the Mississippi).