SPECIES COMPOSITION OF THE VARIOUS AMBERJACK SPECIES IN THE GULF OF MEXICO

by

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Introduction

Before 1990, various amberjack species were reported as amberjack under one generic code (0030) in the general canvass data base (accumulative landing system, ALS). These species included the greater amberjack, *Seriola dumerili*, lesser amberjack, *Seriola fasciata*, almoco jack, *Seriola rivoliana*, and banded rudderfish, *Seriola zonata*. After 1992, specific codes were assigned to each species, but a significant portion of landings of various amberjack species were still reported under the general code 0030 in the ALS data until 2000. This has caused problems in allocating the actual landing among different amberjack species in the historical landing data. The aim of this report is to analyze and document the species composition of the various amberjacks in the landings from the Gulf of Mexico.

Methods

Three methods were used to analyze the species composition of amberjacks. These methods were based on different assumptions:

Method I. The average percentage of the landings of the four amberjack species from the ALS records in the recent years was used to estimate the species composition of amberjack landings. The assumption for this method was that dealers identify and record the four amberjack species correctly. There are two possible sources of error for this method. One source of error is the misidentification of the various amberjack species by dealers. The other source of error is caused by the limitations of the data entry forms for each state. For example, in Texas, only the greater amberjack is listed in the data entry form, hence all the different amberjack species are reported as the greater amberjack even if dealer can identify different amberjack species.

Method II. The percentage of the four amberjack species in the TIP (Trip Interview Program) data was used to estimate the species composition of amberjack landings. Briefly, the average number of fish for each amberjack species recorded in the TIP sample record was calculated to estimate the species composition. The assumption for this method was that trips and fishes were sampled randomly such that species composition in the TIP data represents the species composition in the landings. The possible sources of error include non-random sampling of trips, and selective sampling of amberjack species from individual trips.

Method III. The species composition of amberjacks identified by TIP agents and recorded in the TIP database was used. Briefly, the species composition was estimated by comparing the species names listed in the TIP landing records, which were reported by dealers, with the species names listed in the TIP sample records, which were reported by port agents. However, only a small number of agents recorded the TIP data in a way that allowed the species composition to be estimated. As a result, the species composition could be calculated for only a limited number of dealer sites, and for only a certain period of time. The assumption for this method was that the species composition of amberjacks for a localized dealer site and during a particular time period could be applied to the entire Gulf area.

It should be noted that data used for this analysis only included fish caught in the Gulf of Mexico. Fish caught in the Atlantic ocean but registered in Gulf states were not included.

Results & Discussion

Method I

Percentages for the four amberjack species landed in the five Gulf states, as calculated from ALS data taken from 1962 to 2004, are shown in Table 1. Percentages for the four amberjack species in landings from the Gulf states are shown in Tables 2a-2e. The mean percentages for the four amberjack species were calculated from ALS data taken from those years where only a small percentage of landings was recorded under the generic code 0030 (Table 3). The mean percentages of the four amberjack species caught in the Gulf area were calculated from ALS data taken from 2000 to 2004. For Florida, ALS data from 1998-2004 were used. For Louisiana, ALS data from 2000-2004 were used. For Alabama, data from 2002-2004 were used. For Mississippi, data from 1993-2004 were used. For Texas, data from 1994-2004 were used.

Some uncertainties exist in these landing data. For example, after 1992, some of the greater amberjacks that were gutted and had their heads and tails removed (core fish, code 417 in the Florida state data base), were recorded as amberjacks in the ALS database (Joshua Bennet, personal communication). Also, the data entry form used by dealers in Texas (Aquatic product report) only listed the greater amberjack, so all other amberjack species were reported as greater amberjacks in Texas. In addition, it may have been difficult for dealers to distinguish the smaller-sized greater amberjack from the lesser amberjack.

Method II

Percentages for the four amberjack species in the Gulf calculated from TIP sample data collected from 1984 to 2003 are shown in Table 4. Percentages for the four amberjack species calculated from the TIP sample records from the five Gulf states are shown in Tables 5a-5e. The mean percentages for the four amberjack species were calculated from TIP sample records taken from those years where the total sample size was larger than 100 (Table 6). No mean percentages were calculated for Alabama and Mississippi because sample sizes for these states were less than 100 for all years.

The main strength of this method was that port agents were generally trained better than dealers in fish identification. Also, all TIP agents used the same data entry procedures in all Gulf states. This helped avoid the data entry problems encountered by dealers mentioned earlier in method I. However, agents may have had a tendency to try to collect fish for all species caught in a trip. Therefore, minor species may have been overestimated.

III. Method 3

The species composition of landings recorded as amberjack by dealers and identified as other species by TIP port agents is shown in Table 7. Only data from those years with sample sizes larger than 100 were selected. Because of the small sample sizes in most areas and years, Table 7 only includes data from a few dealer sites in Florida and from the year 2000. The species composition of landings recorded as greater amberjack by dealers and identified as other species by TIP port agents is shown in Table 8. The species composition for landings recorded as amoco jack and banded rudderfish was not estimated due to small sample sizes. Results from Tables 7 and 8 were combined to give the species composition for amberjacks in the Gulf (Table 9). No state-specific results were estimated due to the small sample sizes.

This method has more uncertainty compared with the previous two methods because of the small sample sizes. Because the species composition can only be calculated from data from a limited number of dealer sites and for a limited period of time, it may be less reliable to apply the results from this method to the entire Gulf area.

Concluding Remarks

Results from either method I (Table 3) or method II (Table 6) can be used to allocate the historical amberjack landings to different amberjack species. As discussed above, each method has its own assumptions, strengths, and weaknesses. Readers may also use the data provided in this paper and their own criteria and assumptions to calculate the species composition for the various amberjacks.

Table 1- Percentage of landings for the four amberjack species caught in the Gulf of Mexico, calculated from ALS data.

Year	Percent amberjack	Percent greater amberjack	Percent lesser amberjack	Percent amoco jack	Percent banded rudderfish
1962	100.00%	0.00%	0.00%	0.00%	0.00%
1963	100.00%	0.00%	0.00%	0.00%	0.00%
1964	100.00%	0.00%	0.00%	0.00%	0.00%
1965	100.00%	0.00%	0.00%	0.00%	0.00%
1966	100.00%	0.00%	0.00%	0.00%	0.00%
1967	100.00%	0.00%	0.00%	0.00%	0.00%
1968	100.00%	0.00%	0.00%	0.00%	0.00%
1969	100.00%	0.00%	0.00%	0.00%	0.00%
1970	100.00%	0.00%	0.00%	0.00%	0.00%
1971	100.00%	0.00%	0.00%	0.00%	0.00%
1972	100.00%	0.00%	0.00%	0.00%	0.00%
1973	100.00%	0.00%	0.00%	0.00%	0.00%
1974	100.00%	0.00%	0.00%	0.00%	0.00%
1975	100.00%	0.00%	0.00%	0.00%	0.00%
1976	100.00%	0.00%	0.00%	0.00%	0.00%
1977	100.00%	0.00%	0.00%	0.00%	0.00%
1978	100.00%	0.00%	0.00%	0.00%	0.00%
1979	100.00%	0.00%	0.00%	0.00%	0.00%
1980	100.00%	0.00%	0.00%	0.00%	0.00%
1981	100.00%	0.00%	0.00%	0.00%	0.00%
1982	100.00%	0.00%	0.00%	0.00%	0.00%
1983	100.00%	0.00%	0.00%	0.00%	0.00%
1984	100.00%	0.00%	0.00%	0.00%	0.00%
1985	100.00%	0.00%	0.00%	0.00%	0.00%
1986	100.00%	0.00%	0.00%	0.00%	0.00%
1987	100.00%	0.00%	0.00%	0.00%	0.00%
1988	100.00%	0.00%	0.00%	0.00%	0.00%
1989	100.00%	0.00%	0.00%	0.00%	0.00%
1990	99.97%	0.00%	0.00%	0.03%	0.00%
1991	98.22%	0.00%	1.00%	0.71%	0.06%
1992	21.37%	76.70%	0.85%	0.90%	0.18%
1993	34.38%	63.07%	1.01%	1.30%	0.24%
1994	24.66%	71.29%	1.31%	2.25%	0.49%
1995	30.15%	64.26%	2.39%	2.41%	0.80%
1996	25.12%	68.82%	2.98%	1.90%	1.18%
1997	22.81%	69.02%	3.68%	3.78%	0.72%
1998	15.48%	76.20%	3.25%	4.04%	1.03%
1999	23.35%	65.08%	4.15%	5.35%	2.07%
2000	0.84%	88.76%	4.47%	4.52%	1.40%
2001	1.07%	83.66%	5.56%	6.81%	2.89%
2002	0.56%	81.43%	11.71%	4.98%	1.32%
2003	0.84%	88.48%	6.67%	3.29%	0.71%
2004	0.88%	90.19%	6.00%	2.60%	0.32%

Table 2a - Percentage of landings for the four amberjack species caught in Florida, calculated from ALS data.

Year	Percent amberjack	Percent greater amberjack	Percent lesser amberjack	Percent amoco jack	Percent banded rudderfish
1962	100.00%	0.00%	0.00%	0.00%	0.00%
1963	100.00%	0.00%	0.00%	0.00%	0.00%
1964	100.00%	0.00%	0.00%	0.00%	0.00%
1965	100.00%	0.00%	0.00%	0.00%	0.00%
1966	100.00%	0.00%	0.00%	0.00%	0.00%
1967	100.00%	0.00%	0.00%	0.00%	0.00%
1968	100.00%	0.00%	0.00%	0.00%	0.00%
1969	100.00%	0.00%	0.00%	0.00%	0.00%
1970	100.00%	0.00%	0.00%	0.00%	0.00%
1971	100.00%	0.00%	0.00%	0.00%	0.00%
1972	100.00%	0.00%	0.00%	0.00%	0.00%
1973	100.00%	0.00%	0.00%	0.00%	0.00%
1974	100.00%	0.00%	0.00%	0.00%	0.00%
1975	100.00%	0.00%	0.00%	0.00%	0.00%
1976	100.00%	0.00%	0.00%	0.00%	0.00%
1977	100.00%	0.00%	0.00%	0.00%	0.00%
1978	100.00%	0.00%	0.00%	0.00%	0.00%
1979	100.00%	0.00%	0.00%	0.00%	0.00%
1980	100.00%	0.00%	0.00%	0.00%	0.00%
1981	100.00%	0.00%	0.00%	0.00%	0.00%
1982	100.00%	0.00%	0.00%	0.00%	0.00%
1983	100.00%	0.00%	0.00%	0.00%	0.00%
1984	100.00%	0.00%	0.00%	0.00%	0.00%
1985	100.00%	0.00%	0.00%	0.00%	0.00%
1986	100.00%	0.00%	0.00%	0.00%	0.00%
1987	100.00%	0.00%	0.00%	0.00%	0.00%
1988	100.00%	0.00%	0.00%	0.00%	0.00%
1989	100.00%	0.00%	0.00%	0.00%	0.00%
1990	100.00%	0.00%	0.00%	0.00%	0.00%
1991	98.18%	0.00%	1.53%	0.19%	0.10%
1992	6.78%	91.61%	1.37%	0.16%	0.07%
1993	24.01%	73.09%	1.71%	0.81%	0.39%
1994	25.42%	71.03%	2.36%	0.49%	0.71%
1995	35.46%	58.01%	4.26%	0.84%	1.43%
1996	23.23%	68.94%	5.34%	0.63%	1.85%
1997	1.85%	89.20%	6.42%	1.28%	1.26%
1998	0.70%	90.56%	4.85%	2.29%	1.60%
1999	0.00%	89.45%	4.67%	2.65%	3.23%
2000	0.01%	89.86%	4.95%	2.93%	2.27%
2001	0.00%	84.82%	6.49%	3.93%	4.76%
2002	0.00%	84.05%	10.16%	3.52%	2.27%
2003	0.00%	91.78%	4.28%	2.70%	1.24%
2004	0.73%	91.08%	5.62%	1.98%	0.58%

Table 2b - Percentage of landings for the four amberjack species caught in Alabama, calculated from ALS data.

Year	Percent amberjack	Percent greater amberjack	Percent lesser amberjack	Percent amoco jack	Percent banded rudderfish
1983	100.00%	0.00%	0.00%	0.00%	0.00%
1984	100.00%	0.00%	0.00%	0.00%	0.00%
1985	100.00%	0.00%	0.00%	0.00%	0.00%
1986	100.00%	0.00%	0.00%	0.00%	0.00%
1987	100.00%	0.00%	0.00%	0.00%	0.00%
1988	100.00%	0.00%	0.00%	0.00%	0.00%
1989	100.00%	0.00%	0.00%	0.00%	0.00%
1990	100.00%	0.00%	0.00%	0.00%	0.00%
1991	100.00%	0.00%	0.00%	0.00%	0.00%
1992	100.00%	0.00%	0.00%	0.00%	0.00%
1993	100.00%	0.00%	0.00%	0.00%	0.00%
1994	100.00%	0.00%	0.00%	0.00%	0.00%
1995	100.00%	0.00%	0.00%	0.00%	0.00%
1996	100.00%	0.00%	0.00%	0.00%	0.00%
1997	100.00%	0.00%	0.00%	0.00%	0.00%
1998	95.93%	0.00%	0.00%	4.07%	0.00%
1999	100.00%	0.00%	0.00%	0.00%	0.00%
2000	95.07%	0.00%	0.00%	4.93%	0.00%
2001	90.30%	8.60%	1.00%	0.09%	0.00%
2002	32.24%	50.61%	17.16%	0.00%	0.00%
2003	48.69%	44.45%	6.11%	0.75%	0.00%
2004	46.24%	47.97%	5.79%	0.00%	0.00%

Table 2c - Percentage of landings for the four amberjack species caught in Mississippi, calculated from ALS data.

Year	Percent amberjack	Percent greater amberjack	Percent lesser amberjack	Percent amoco jack	Percent banded rudderfish
1982	100.00%	0.00%	0.00%	0.00%	0.00%
1983	100.00%	0.00%	0.00%	0.00%	0.00%
1984	100.00%	0.00%	0.00%	0.00%	0.00%
1985	100.00%	0.00%	0.00%	0.00%	0.00%
1986	100.00%	0.00%	0.00%	0.00%	0.00%
1987	100.00%	0.00%	0.00%	0.00%	0.00%
1988	100.00%	0.00%	0.00%	0.00%	0.00%
1989	100.00%	0.00%	0.00%	0.00%	0.00%
1990	100.00%	0.00%	0.00%	0.00%	0.00%
1991	100.00%	0.00%	0.00%	0.00%	0.00%
1992	100.00%	0.00%	0.00%	0.00%	0.00%
1993	7.60%	82.44%	0.26%	9.71%	0.00%
1994	3.70%	80.63%	1.39%	14.28%	0.00%
1995	28.37%	53.93%	0.00%	17.70%	0.00%
1996	8.56%	84.59%	0.43%	6.42%	0.00%
1997	1.61%	90.88%	0.02%	7.50%	0.00%
1998	7.21%	69.44%	4.12%	19.22%	0.00%
1999	14.37%	65.77%	1.26%	18.60%	0.00%
2000	5.69%	79.98%	4.20%	10.13%	0.00%
2001	6.06%	63.59%	15.92%	14.43%	0.00%
2002	38.97%	35.72%	10.18%	15.13%	0.00%
2003	28.14%	42.04%	6.72%	23.10%	0.00%
2004	40.39%	42.28%	10.07%	7.26%	0.00%

Table 2d - Percentage of landings for the four amberjack species caught in Louisiana, calculated from ALS data.

Year	Percent amberjack	Percent greater amberjack	Percent lesser amberjack	Percent amoco jack	Percent banded rudderfish
1983	100.00%	0.00%	0.00%	0.00%	0.00%
1984	100.00%	0.00%	0.00%	0.00%	0.00%
1985	100.00%	0.00%	0.00%	0.00%	0.00%
1986	100.00%	0.00%	0.00%	0.00%	0.00%
1987	100.00%	0.00%	0.00%	0.00%	0.00%
1988	100.00%	0.00%	0.00%	0.00%	0.00%
1989	100.00%	0.00%	0.00%	0.00%	0.00%
1990	99.74%	0.00%	0.00%	0.26%	0.00%
1991	92.26%	0.00%	0.00%	7.74%	0.00%
1992	93.65%	0.00%	0.00%	6.35%	0.00%
1993	96.13%	0.00%	0.22%	3.65%	0.00%
1994	89.31%	0.00%	0.35%	10.35%	0.00%
1995	89.49%	0.00%	0.36%	10.15%	0.00%
1996	92.86%	0.00%	0.09%	7.05%	0.00%
1997	88.20%	0.00%	0.11%	11.69%	0.00%
1998	86.17%	0.00%	0.46%	13.37%	0.00%
1999	82.15%	0.00%	4.69%	12.75%	0.41%
2000	0.00%	84.19%	5.49%	10.30%	0.01%
2001	0.00%	81.02%	4.93%	13.84%	0.21%
2002	0.00%	75.30%	16.44%	8.04%	0.22%
2003	0.00%	83.34%	11.89%	4.72%	0.05%
2004	0.00%	89.32%	7.01%	3.64%	0.03%

Table 2e - Percentage of landings for the four amberjack species caught in Texas, calculated from ALS data.

Year	Percent amberjack	Percent greater amberjack	Percent lesser amberjack	Percent amoco jack	Percent banded rudderfish
1984	100.00%	0.00%	0.00%	0.00%	0.00%
1985	100.00%	0.00%	0.00%	0.00%	0.00%
1986	100.00%	0.00%	0.00%	0.00%	0.00%
1987	100.00%	0.00%	0.00%	0.00%	0.00%
1988	100.00%	0.00%	0.00%	0.00%	0.00%
1989	100.00%	0.00%	0.00%	0.00%	0.00%
1990	100.00%	0.00%	0.00%	0.00%	0.00%
1991	100.00%	0.00%	0.00%	0.00%	0.00%
1992	100.00%	0.00%	0.00%	0.00%	0.00%
1993	100.00%	0.00%	0.00%	0.00%	0.00%
1994	0.00%	100.00%	0.00%	0.00%	0.00%
1995	0.00%	100.00%	0.00%	0.00%	0.00%
1996	0.00%	100.00%	0.00%	0.00%	0.00%
1997	0.00%	100.00%	0.00%	0.00%	0.00%
1998	0.00%	100.00%	0.00%	0.00%	0.00%
1999	0.00%	100.00%	0.00%	0.00%	0.00%
2000	0.00%	100.00%	0.00%	0.00%	0.00%
2001	0.00%	100.00%	0.00%	0.00%	0.00%
2002	0.00%	100.00%	0.00%	0.00%	0.00%
2003	0.00%	100.00%	0.00%	0.00%	0.00%
2004	0.00%	100.00%	0.00%	0.00%	0.00%

Table 3- Mean percentage of landings for the four amberjack species caught in the Gulf of Mexico (average of data from 2000-2004), in Florida (average of data from 1998-2004), in Alabama(average of data from 2002-2004), in Mississippi (average of data from 1993-2004),in Louisiana (average of data from 2000-2004),and in Texas (average of data from 1994-2004).

Area	Percent greater amberjack	Percent lesser amberjack	Percent amoco jack	Percent banded rudderfish
Gulf	87.24%	6.94%	4.48%	1.34%
FL	88.98%	5.87%	2.86%	2.28%
LA	82.63%	9.15%	8.11%	0.10%
AL	82.76%	16.81%	0.43%	0.00%
MS	78.40%	5.41%	16.20%	0.00%
TX	100.00%	0.00%	0.00%	0.00%

Table 4- Total numbers and percentage of samples for the four amberjack species collected by TIP sampling agents in the Gulf of Mexico from 1984-to 2003.

Year	total sample size	Percent greater amberjack	Percent lesser amberjack	Percent amoco jack	Percent banded rudderfish
1984	188	97.87%	0.00%	2.13%	0.00%
1985	411	85.16%	0.00%	14.84%	0.00%
1986	145	88.81%	0.00%	11.19%	0.00%
1987	44	90.24%	0.00%	9.76%	0.00%
1988	778	69.47%	0.00%	30.53%	0.00%
1989	471	100.00%	0.00%	0.00%	0.00%
1990	936	76.89%	0.11%	22.67%	0.33%
1991	2118	59.33%	2.53%	29.86%	8.28%
1992	2698	55.96%	11.35%	32.58%	0.11%
1993	1671	69.15%	2.77%	25.08%	3.01%
1994	3001	45.52%	9.50%	29.66%	15.33%
1995	2549	31.33%	6.63%	40.17%	21.86%
1996	1958	37.90%	5.93%	37.95%	18.21%
1997	1856	53.25%	3.09%	37.87%	5.80%
1998	1215	61.18%	5.57%	24.25%	9.00%
1999	1813	65.67%	2.05%	20.21%	12.06%
2000	1517	79.96%	0.00%	14.54%	5.50%
2001	1609	65.15%	0.00%	17.11%	17.73%
2002	1558	89.02%	0.26%	10.47%	0.26%
2003	894	79.91%	0.00%	19.98%	0.11%

Table 5a- Total numbers and percentage of samples for the four amberjack species collected by TIP sampling agents in Florida from 1988-to 2003.

Year	total sample size	Percent greater amberjack	Percent lesser amberjack	Percent amoco jack	Percent banded rudderfish
1988	14	100.00%	0.00%	0.00%	0.00%
1989	19	100.00%	0.00%	0.00%	0.00%
1990	432	98.79%	0.00%	0.48%	0.72%
1991	811	75.70%	0.25%	2.42%	21.63%
1992	944	86.56%	0.00%	13.11%	0.33%
1993	986	71.91%	0.10%	22.88%	5.11%
1994	1943	47.30%	8.70%	20.43%	23.57%
1995	1954	26.66%	6.65%	38.33%	28.35%
1996	1456	33.59%	5.29%	36.68%	24.45%
1997	1481	55.37%	1.82%	35.72%	7.09%
1998	1178	62.48%	5.31%	22.92%	9.29%
1999	1775	65.59%	2.03%	20.06%	12.32%
2000	1504	80.60%	0.00%	13.85%	5.55%
2001	1595	65.47%	0.00%	16.64%	17.89%
2002	1529	88.94%	0.26%	10.54%	0.26%
2003	750	84.00%	0.00%	15.87%	0.13%

Table 5b- Total numbers and percentage of samples for the four amberjack species collected by TIP sampling agents in Alabama.

Year	total sample size	Percent greater amberjack	Percent lesser amberjack	Percent amoco jack	Percent banded rudderfish
2003	80	80.52%	0.00%	19.48%	0.00%

Table 5c- Total numbers and percentage of samples for the four amberjack species collected by TIP sampling agents in Mississippi from 1993 to 2003.

Year	total sample size	Percent greater amberjack	Percent lesser amberjack	Percent amoco jack	Percent banded rudderfish
1993	50	46.00%	4.00%	50.00%	0.00%
1994	34	17.65%	29.41%	52.94%	0.00%
1995	10	0.00%	0.00%	100.00%	0.00%
1997	1	100.00%	0.00%	0.00%	0.00%
1998	7	57.14%	42.86%	0.00%	0.00%
1999	15	93.33%	6.67%	0.00%	0.00%
2000	3	33.33%	0.00%	66.67%	0.00%
2002	3	100.00%	0.00%	0.00%	0.00%
2003	1	100.00%	0.00%	0.00%	0.00%

Table 5d- Total numbers and percentage of samples for the four amberjack species collected by TIP sampling agents in Louisiana from 1984-to 2003.

Year	total sample size	Percent greater amberjack	Percent lesser amberjack	Percent amoco jack	Percent banded rudderfish
1984	188	97.87%	0.00%	2.13%	0.00%
1985	411	85.16%	0.00%	14.84%	0.00%
1986	143	88.81%	0.00%	11.19%	0.00%
1987	41	90.24%	0.00%	9.76%	0.00%
1988	81	64.20%	0.00%	35.80%	0.00%
1989	196	100.00%	0.00%	0.00%	0.00%
1990	462	56.06%	0.22%	43.72%	0.00%
1991	773	29.50%	6.47%	64.04%	0.00%
1992	1542	33.46%	19.33%	47.21%	0.00%
1993	501	58.28%	8.58%	33.13%	0.00%
1994	909	35.97%	11.66%	52.15%	0.22%
1995	555	45.74%	7.04%	47.22%	0.00%
1996	442	46.47%	8.88%	44.65%	0.00%
1997	344	42.22%	8.98%	48.20%	0.60%
1998	26	7.69%	7.69%	84.62%	0.00%
1999	20	40.00%	0.00%	60.00%	0.00%
2000	10	0.00%	0.00%	100.00%	0.00%
2001	14	28.57%	0.00%	71.43%	0.00%
2002	26	92.31%	0.00%	7.69%	0.00%
2003	63	30.16%	0.00%	69.84%	0.00%

Table 5e- Total numbers and percentage of samples for the four amberjack species collected by TIP sampling agents in Texas from 1990 to 1999.

Year	total sample size	Percent greater amberjack	Percent lesser amberjack	Percent amoco jack	Percent banded rudderfish
1990	24	100.00%	0.00%	0.00%	0.00%
1991	494	79.96%	0.00%	20.04%	0.00%
1992	187	91.94%	1.08%	6.99%	0.00%
1993	134	98.50%	0.00%	1.50%	0.00%
1994	115	99.13%	0.00%	0.87%	0.00%
1995	30	86.67%	0.00%	13.33%	0.00%
1996	60	80.00%	0.00%	20.00%	0.00%
1997	30	70.00%	0.00%	30.00%	0.00%
1998	4	50.00%	0.00%	50.00%	0.00%
1999	3	100.00%	0.00%	0.00%	0.00%

Table 6 - The mean percentage of samples for the four amberjack species collected by TIP sampling agents in the Gulf of Mexico, Florida, Louisiana, and Texas (average of data from all years with sample size larger than 100). Mean values for Alabama and Mississippi were not estimated because sample sizes for all years were less than 100.

Area	Percent greater amberjcak	Percent lesser amberjack	Percent amoco jack	Percent banded rudderfish
Gulf	69.03%	2.62%	22.16%	6.19%
FL	67.35%	2.17%	19.28%	11.19%
LA	59.96%	5.93%	34.04%	0.07%
TX	92.38%	0.27%	7.35%	0.00%

Table 7- Species compositions for amberjack landings from the Gulf of Mexico recorded by TIP port agents.

Landing_species reported by dealers	Species identified by port agents	Percent
amberjack	almaco jack	7.27%
amberjack	banded rudderfish	7.27%
amberjack	greater amberjack	85.45%

Table 8- Species compositions for greater amberjack landings from the Gulf of Mexico, as recorded by TIP port agents.

Landing_species reported by dealers	Species identified by port agents	Percent
greater amberjack	unidentified species	1.41%
greater amberjack	almaco jack	9.94%
greater amberjack	banded rudderfish	1.59%
greater amberjack	greater amberjack	90.82%
greater amberjack	lesser amberjack	1.54%

Table 9- Species compositions for amberjack landings from the Gulf of Mexico recorded by TIP port agents after taking into account the species composition for greater amberjack landings in Table 8.

Landing_species reported by dealers	Species identified by port agents	Percent
amberjack	greater amberjack	77.61%
amberjack	lesser amberjack	1.32%
amberjack	almaco jack	15.77%
amberjack	banded rudderfish	8.63%