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DESCRIPTIVE ANNUAL STATISTICS FOR BROWN AND WHITE SHRIMP IN LOUISIANA WATERS 1963-1976

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This document presents tables and graphs describing major aspects of the Louisiana shrimp fishery from 1963 to 1976. Annual statistics are given on pounds caught, value, vessel sizes, effort, and days fished for brown and white shrimp. These statistics are tabulated by species for both inshore and offshore waters. Also presented are tabulations of pounds by countsizes, pounds by NMFS grid zone, pounds per unit effort, and value per unit effort. All pound statistics represent catch in Louisiana waters and are heads-off weight.

These statistics were compiled from computer tapes of shrimp catch data prepared by the Department of Agricultural Economics and Rural Sociology at Texas A&M University. Any limitations of the statistics presented here may be assessed from the following brief description of the Texas A&M data.

The Texas A&M Shrimp Catch Data contain landings records, vessel characteristics, and effort statistics for the Gulf of Mexico, 1963-1976. These data were produced by combining and analyzing two data sets:¹

1. Wade Griffin, Estimation of Relative Fishing Power from Interviewed Landings to Total Landings. Texas A&M University, College Station, Texas. Unpublished manuscript. 23 pp.

- 1) NMFS shrimp landings data for the Gulf of Mexico 1963-1976 are records of the port, trip date, quantity, species, and sizes of shrimp comprising total landings in a given year. This information was gathered throughout each year from commercial shrimp dealers. Also included is information on area (NMFS grid zone), depth, and days fished for a small portion of landings. This supplemental information was obtained by interviewing the personnel of some of the vessels in port at the time data was gathered from the commercial shrimp dealers. Using these interview data, projections of area, depth, and days fished were then made for the rest of the landings records. Thus, the NMFS landings data consist of two types of records from commercial dealers: (1) those augmented by interview data and (2) those augmented by information projected from interview data. The former will be referred to as NMFS interviewed landings data, and the latter as NMFS non-interviewed landings data.
- 2) Coast Guard documentation records 1965-1975 contain vessel characteristics for documented vessels (five or more gross tons) operating in the Gulf of Mexico. The characteristics include type of construction, gross tonnage, keel length, year built, horsepower, and footrope length.

The creation of the Texas A&M data set involved three major steps:²

- 1) The addition of vessel characteristics for the documented vessels in the NMFS interviewed landings data;
- 2) The development of a fishing power index based on the documented vessels in the NMFS interviewed landings data;
- 3) The projection of relative fishing power and effort to the NMFS non-interviewed landings data based on computations for the NMFS interviewed landings data.

Step one was accomplished by matching Coast Guard records with NMFS interviewed landings records by vessel number. Step two was much more complex and is only briefly summarized here.

The procedure for calculating relative fishing power began by regressing catch per day fished for each species as a function of horsepower and footrope:

$$C = HP^{b_1} FR^{b_2}$$

where C is catch per day fished, HP is horsepower, FR is footrope length, and b_1 , b_2 are estimated coefficients.

2. Ibid.

The documented vessels were then grouped into classes. Using the coefficients estimated in the above equation, the relative fishing power (RFP) was computed for each documented vessel in class i for species j as follows:

$$RFP_{ij} = \frac{HP_i^{b_1} FR_i^{b_2}}{HP_s^{b_1} FR_s^{b_2}}$$

where HP_s and FR_s are horsepower and footrope length for the standard vessel. The effort of each documented vessel was calculated as

$$Effort_{ij} = RFP_{ij} * Days Fished_{ij}$$

Relative fishing power and effort were then calculated for undocumented vessels using these relationships:

$$RFP_u = RFP_D \frac{C_u}{C_D}$$

$$Effort_u = RFP_u * Days Fished_u$$

where the subscripts D and u stand for documented vessel and undocumented vessel respectively.

The last step in the analysis was to project RFP and effort to the NMFS non-interviewed landings data. To do this, non-interviewed landings records were matched with interviewed landings records by identifying similarities in area, depth, month, and species. In order to avoid a built-in correlation of catch with effort, projections to non-interviewed data were made based on trips rather than pounds. The projections involved the following calculations:

$$DF_{non} = (DF_{int} / TRIPS_{int}) * TRIPS_{non}$$

$$EFFORT_{non} = DF_{non} * RFP_{int}$$

where DF is days fished and the subscripts 'non' and 'int' are non-interviewed landings record and interviewed landings record respectively.

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Table 1. Pounds of brown and white shrimp caught in Louisiana inshore waters, 1963-1976 (statistics graphed in Fig. 1).

INSHORE WATERS			
YEAR	BROWN	WHITE	TOTAL
1963	9,349,724	16,356,765	25,706,489
1964	4,498,617	10,463,584	14,962,201
1965	9,739,045	7,443,227	17,182,272
1966	9,183,439	8,091,704	17,275,143
1967	12,784,887	6,687,810	19,472,697
1968	15,877,275	6,686,203	22,563,478
1969	15,441,202	11,674,304	27,115,506
1970	15,711,416	12,268,923	27,980,339
1971	18,799,941	11,561,167	30,361,108
1972	16,645,742	8,135,632	24,781,374
1973	12,071,060	5,496,178	17,567,238
1974	11,806,672	6,631,992	18,438,664
1975	9,485,996	4,908,690	14,394,686
1976	18,761,896	6,705,019	25,466,915
Avg.	12,868,351	8,793,657	21,662,008

Table 2. Pounds of brown and white shrimp caught in Louisiana offshore waters 1963-1976 (statistics graphed in Fig. 2).

OFFSHORE WATERS			
YEAR	BROWN	WHITE	TOTAL
1963	8,035,064	21,999,010	30,034,074
1964	5,528,939	20,035,140	25,564,079
1965	9,453,671	15,830,204	25,283,875
1966	11,470,628	13,921,948	25,392,576
1967	17,020,457	10,696,065	27,716,522
1968	13,024,213	10,416,193	23,440,406
1969	11,220,923	17,951,590	29,172,513
1970	15,953,521	18,197,757	34,151,278
1971	15,766,489	19,151,119	34,917,608
1972	17,284,321	17,685,782	34,970,103
1973	11,046,681	13,641,450	24,688,131
1974	10,519,600	12,658,004	23,177,604
1975	9,254,819	12,492,647	21,747,466
1976	21,098,939	19,150,626	40,249,565
Avg.	12,619,876	15,987,681	28,607,557

Table 3. Value in current dollars of brown and white shrimp caught in Louisiana inshore waters, 1963-1976 (statistics graphed in Fig. 3).

YEAR	BROWN	WHITE	TOTAL
1963	2,014,584	5,023,794	7,038,378
1964	1,236,609	4,614,568	5,851,177
1965	3,138,836	3,051,220	6,190,056
1966	3,078,216	4,840,737	7,918,953
1967	4,051,680	3,651,450	7,703,130
1968	4,824,771	4,051,871	8,876,642
1969	5,303,550	7,255,040	12,558,590
1970	4,988,520	6,498,168	11,486,688
1971	6,816,198	7,283,506	14,099,704
1972	8,455,755	6,912,139	15,367,894
1973	9,578,799	6,631,211	16,210,010
1974	4,832,383	4,445,088	9,277,471
1975	5,137,985	5,295,625	10,433,610
1976	13,781,170	10,120,998	23,902,168
Avg.	5,517,075	5,691,101	11,208,177

Table 4. Value in current dollars of brown and white shrimp caught in Louisiana offshore waters, 1963-1976 (statistics in Fig. 4).

YEAR	BROWN	WHITE	TOTAL
1963	4,498,825	10,535,143	15,033,968
1964	2,921,656	11,602,855	14,524,511
1965	5,567,327	9,689,958	15,257,285
1966	9,129,555	10,302,340	19,431,895
1967	9,678,091	8,706,803	18,384,894
1968	10,714,523	9,122,849	19,837,372
1969	9,635,702	14,841,258	24,476,960
1970	13,410,794	15,628,925	29,039,719
1971	16,084,989	20,885,678	36,970,667
1972	22,044,169	21,221,475	43,265,644
1973	17,663,468	22,624,650	40,288,118
1974	14,850,729	18,184,770	33,035,499
1975	18,675,896	23,470,586	42,146,482
1976	49,858,455	47,124,940	96,983,395
Avg.	14,623,870	17,424,445	32,048,315

Table 5. Days fished for brown and white shrimp in Louisiana inshore waters, 1963-1976 (statistics graphed in Fig. 5).

YEAR	BROWN	WHITE	TOTAL
1963	21,902	29,173	51,075
1964	13,340	29,515	42,855
1965	28,283	17,297	45,580
1966	23,309	25,463	48,772
1967	20,342	21,674	42,016
1968	28,828	21,325	50,153
1969	27,631	35,548	63,179
1970	25,519	26,551	52,070
1971	26,229	23,293	49,522
1972	36,563	21,423	57,986
1973	27,438	25,853	53,291
1974	28,753	25,823	54,576
1975	16,146	26,702	42,848
1976	43,491	21,699	65,190
Avg.	26,269	25,096	51,365

Table 6. Days fished for brown and white shrimp in Louisiana offshore waters, 1963-1976 (statistics graphed in Fig. 6).

YEAR	BROWN	WHITE	TOTAL
1963	11,463	32,153	43,616
1964	13,408	38,588	51,996
1965	14,509	34,102	48,611
1966	21,619	25,743	47,362
1967	22,628	23,666	46,294
1968	22,431	31,270	53,701
1969	19,969	46,686	66,655
1970	24,802	33,125	57,927
1971	23,368	33,787	57,155
1972	29,542	37,240	66,782
1973	26,579	41,876	68,455
1974	17,505	29,876	47,381
1975	14,204	38,600	52,804
1976	56,584	51,133	107,717
Avg.	22,758	35,560	58,318

Table 7. Units of effort for brown and white shrimp in Louisiana inshore waters, 1963-1976* (statistics graphed in Fig. 7).

YEAR	BROWN	WHITE
1963	7,112	16,119
1964	5,189	14,940
1965	9,219	7,779
1966	7,836	11,910
1967	8,686	11,398
1968	11,857	9,479
1969	15,534	16,981
1970	10,026	18,347
1971	14,421	12,500
1972	17,865	15,397
1973	14,332	13,499
1974	10,239	8,965
1975	5,225	7,157
1976	9,678	8,253
Avg.	10,516	12,337

Table 8. Units of effort for brown and white shrimp in Louisiana offshore waters, 1963-1976* (statistics graphed in Fig. 8).

YEAR	BROWN	WHITE
1963	9,069	26,230
1964	9,022	29,819
1965	10,778	27,238
1966	16,204	18,090
1967	18,412	18,625
1968	19,471	25,414
1969	18,113	35,970
1970	20,513	29,417
1971	22,438	31,451
1972	27,756	34,788
1973	22,842	35,019
1974	16,730	26,785
1975	13,587	37,936
1976	52,053	45,957
Avg.	19,785	30,196

*Units of effort cannot be compared between species. As explained in the introduction, effort is a composite of days fished and relative fishing power. Since relative fishing power is based on separate regressions for each species, the effort statistics are not comparable between species.

Table 9. Pounds per unit effort for brown and white shrimp in Louisiana inshore waters, 1963-1976 (statistics graphed in Fig. 9).

YEAR	BROWN	WHITE
1963	1,315	1,015
1964	867	700
1965	1,056	957
1966	1,172	678
1967	1,472	583
1968	1,339	705
1969	994	687
1970	1,567	669
1971	1,304	925
1972	932	528
1973	842	407
1974	1,153	739
1975	1,812	685
1976	1,939	812
Avg.	1,269	721

Table 10. Pounds per unit effort for brown and white shrimp in Louisiana offshore waters, 1963-1976 (statistics graphed in Fig. 10).

YEAR	BROWN	WHITE
1963	885	839
1964	613	672
1965	877	581
1966	708	765
1967	924	567
1968	669	410
1969	619	499
1970	777	618
1971	703	609
1972	623	508
1973	483	389
1974	629	473
1975	655	327
1976	405	417
Avg.	684	548

Table 11. Value (current dollars) per unit effort for brown and white shrimp in Louisiana offshore waters, 1963-76 (statistics graphed in Fig. 12).

YEAR	BROWN	WHITE
1963	283	312
1964	238	309
1965	340	392
1966	393	404
1967	466	316
1968	407	427
1969	341	427
1970	498	354
1971	473	583
1972	473	449
1973	668	491
1974	472	496
1975	981	738
1976	1,424	1,226
Avg.	533	495

Table 12. Value (current dollars) per unit effort for brown and white shrimp in Louisiana offshore waters, 1963-76 (statistics graphed in Fig. 12).

YEAR	BROWN	WHITE
1963	495	402
1964	324	389
1965	517	356
1966	563	565
1967	526	461
1968	550	359
1969	532	413
1970	653	531
1971	717	664
1972	794	610
1973	773	646
1974	888	679
1975	1,303	613
1976	958	1,025
Avg.	685	551

Table 13. Boats and vessels fishing for brown and white shrimp in Louisiana inshore waters categorized by size and expressed as a percentage of the NMFS data sample each year (1963-1976).*

Year	Length in Feet					
	Under 35	35-44	45-54	55-64	65-74	Over 74
1963	7.6	5.1	46.6	40.1	0.5	0.0
1964	5.8	3.1	31.0	58.3	1.6	0.3
1965	4.7	3.7	22.7	67.2	1.7	-
1966	7.1	2.8	20.7	67.2	2.2	-
1967	6.4	4.5	14.7	43.0	30.6	0.8
1968	7.0	2.3	10.9	30.1	49.0	0.8
1969	7.3	2.3	6.3	27.3	49.1	7.7
1970	9.2	0.9	8.3	21.3	56.8	3.4
1971	7.5	0.8	8.7	20.4	59.6	3.0
1972	6.5	0.9	7.6	20.7	51.7	12.6
1973	5.1	1.2	11.3	16.4	51.0	15.0
1974	3.6	1.1	8.1	16.2	66.5	4.6
1975	5.7	1.0	7.8	17.3	61.8	6.4
1976	16.8	0.8	7.3	22.6	44.8	7.7
Avg.	7.2	2.2	15.1	33.4	37.6	4.5

*These percentages can be compared from year to year if the assumption is made that the NMFS interviewed landings data is a truly random sample of the vessels operating in Louisiana waters in a given year.

Table 14. Boats and vessels fishing for brown and white shrimp in Louisiana offshore waters categorized by size and expressed as a percentage of the NMFS data sample in each year (1963-1966).*

Year	Length in Feet					
	Under 35	35-44	45-54	55-64	65-74	Over 74
1963	51.5	39.0	9.5	0.1	-	-
1964	48.5	38.6	12.7	0.2	-	-
1965	47.5	35.0	16.5	1.1	-	-
1966	51.6	20.8	24.5	3.1	-	-
1967	55.0	5.8	37.8	1.5	-	-
1968	57.2	10.7	27.5	1.4	0.2	3.0
1969	60.9	24.9	13.5	0.2	0.3	0.3
1970	61.8	9.8	27.3	1.0	-	-
1971	55.7	19.2	24.5	0.2	0.4	-
1972	68.8	18.5	12.4	0.3	0.1	-
1973	64.2	10.0	22.8	2.5	0.5	-
1974	59.8	7.6	31.8	0.7	-	-
1975	62.0	27.3	10.5	0.3	0.1	-
1976	53.8	12.1	31.9	1.6	0.6	-
Avg.	57.0	20.0	21.6	1.0	0.2	0.2

*Percentage of vessels declined in the 45-64 ft categories and increased in the categories above 65 ft. Of course, these percentages are comparable from year to year only if the assumption is made that the NMFS interviewed landings data is a truly random sample of vessels operating in Louisiana waters in a given year.

Table 15. Countsizes of shrimp (brown and white) caught in Louisiana inshore waters (expressed as a proportion of total pounds caught in each year from 1963 to 1976).

YEAR	Countsizes						
	<20	21-25	26-30	31-40	41-50	51-67	≥68
1963	0.00	0.02	0.04	0.09	0.09	0.30	0.46
1964	0.02	0.04	0.04	0.14	0.15	0.22	0.39
1965	0.01	0.01	0.01	0.06	0.08	0.16	0.68
1966	0.01	0.03	0.02	0.04	0.05	0.21	0.63
1967	0.01	0.03	0.04	0.08	0.06	0.15	0.63
1968	0.01	0.02	0.02	0.04	0.04	0.12	0.75
1969	0.01	0.02	0.02	0.06	0.05	0.11	0.72
1970	0.01	0.02	0.05	0.06	0.04	0.19	0.64
1971	0.00	0.01	0.03	0.06	0.06	0.13	0.70
1972	0.01	0.02	0.01	0.05	0.07	0.14	0.70
1973	0.01	0.01	0.01	0.04	0.02	0.05	0.86
1974	0.00	0.01	0.01	0.02	0.02	0.06	0.88
1975	0.01	0.01	0.01	0.03	0.02	0.04	0.88
1976	0.01	0.01	0.02	0.03	0.03	0.07	0.83
Avg.	0.01	0.02	0.02	0.06	0.06	0.14	0.70

Note that the "over 68" category clearly dominated the inshore catch of shrimp in the 14 year period. Interestingly, in the last 4 years (1973-1976) of the period, there was a marked increase in the proportion of the catch of both brown and white shrimp in the "over 68" category. The following table of average percentages of catch facilitates a comparison of the two time periods:

		≥68		
		Both species	Brown	White
10 yr period	1963-1972	63.0%	82.4%	40.6%
4 yr period	1973-1976	86.3%	95.8%	65.3%

Of course, the increase in the proportion of catch in the ≥68 range was matched by decreases in the proportions of catch in other countsizes categories. The most dramatic of these decreases occurred in the 51-67 range. The following table shows the percentages for the two time periods:

		51-67		
		Both species	Brown	White
10 yr period	1963-1972	17.1%	12.9%	21.7%
4 yr period	1973-1976	5.4%	2.5%	11.8%

Table 16. Countsizes of shrimp (brown and white) caught in Louisiana offshore waters (expressed as a proportion of total pounds caught in each year from 1963 to 1976).

Countsizes								
YEAR	15	15-20	21-25	26-30	31-40	41-50	51-67	≥67
1963	0.01	0.10	0.12	0.14	0.28	0.13	0.10	0.12
1964	0.03	0.19	0.13	0.09	0.19	0.08	0.15	0.14
1965	0.04	0.19	0.11	0.08	0.16	0.11	0.13	0.18
1966	0.04	0.14	0.10	0.09	0.18	0.10	0.16	0.19
1967	0.03	0.15	0.12	0.09	0.18	0.10	0.11	0.23
1968	0.04	0.17	0.14	0.10	0.19	0.08	0.10	0.18
1969	0.03	0.13	0.13	0.10	0.17	0.08	0.12	0.25
1970	0.04	0.17	0.17	0.11	0.16	0.08	0.09	0.17
1971	0.05	0.14	0.13	0.10	0.19	0.10	0.10	0.19
1972	0.04	0.14	0.13	0.10	0.18	0.09	0.10	0.21
1973	0.04	0.18	0.12	0.08	0.13	0.07	0.11	0.27
1974	0.05	0.17	0.17	0.10	0.14	0.07	0.09	0.20
1975	0.04	0.17	0.14	0.09	0.16	0.07	0.08	0.24
1976	0.02	0.15	0.15	0.12	0.17	0.06	0.10	0.22
Avg.	0.04	0.16	0.13	0.10	0.18	0.09	0.11	0.20

Table 17. Pounds of shrimp (brown and white) caught in Louisiana inshore waters classified by NMFS grid zone for each year (1963-1976).

YEAR	Total	Zone 12	Zone 13	Zone 14	Zone 15	Zone 16	Zone 17
1963	25,706,489	2,951,576	5,914,566	12,782,220	2,144,192	*	1,913,935
1964	14,962,201	2,348,985	4,227,039	6,431,672	1,302,549	*	651,956
1965	17,182,272	3,118,767	5,376,721	7,278,132	770,926	*	637,726
1966	17,252,817	3,693,498	5,743,027	5,582,187	1,835,738	*	398,367
1967	19,424,694	3,949,702	5,727,147	8,149,507	8,001,721	1,753	594,814
1968	22,563,478	4,131,677	6,400,350	11,186,905	370,659	*	473,887
1969	27,099,798	6,026,742	8,016,766	11,388,919	528,062	*	1,139,309
1970	27,980,339	4,402,465	9,764,604	12,396,451	300,612	*	1,116,207
1971	30,358,932	3,764,790	9,110,377	15,477,520	1,088,256	*	917,989
1972	24,781,374	3,319,658	8,016,911	10,519,433	1,462,469	*	1,462,903
1973	17,567,238	2,728,649	5,347,395	7,629,204	789,942	161	1,071,887
1974	18,435,853	2,534,911	6,515,671	6,933,246	903,501	20,873	1,527,651
1975	14,369,581	1,727,217	3,468,524	7,177,348	957,274	*	1,039,218
1976	25,466,915	2,712,335	8,355,558	12,212,844	659,876	6,937	1,519,365
Avg.	21,653,713	3,386,498	6,570,333	9,653,256	1,008,269	2,123	1,033,230

Table 18. Proportions of catch in inshore water zones. Pounds of shrimp (brown and white) caught in Louisiana inshore waters (1963-1976) classified by NMFS grid zone, and expressed as proportions of total catch in inshore waters.

YEAR	12	13	14	15	16	17
1963	0.114	0.230	0.497	0.083	-	0.074
1964	0.156	0.282	0.429	0.087	-	0.043
1965	0.181	0.312	0.423	0.044	-	0.037
1966	0.214	0.332	0.323	0.106	-	0.023
1967	0.203	0.294	0.420	0.051	-	0.030
1968	0.183	0.283	0.495	0.016	-	0.021
1969	0.222	0.295	0.420	0.019	-	0.042
1970	0.157	0.348	0.443	0.010	-	0.039
1971	0.124	0.300	0.509	0.035	-	0.030
1972	0.133	0.323	0.424	0.059	-	0.059
1973	0.155	0.304	0.434	0.044	-	0.061
1974	0.137	0.353	0.376	0.049	-	0.083
1975	0.120	0.240	0.498	0.066	-	0.073
1976	0.107	0.328	0.480	0.026	-	0.060
Avg.	0.161	0.300	0.438	0.051	-	0.048

Table 19. Catch in the subareas* of inshore water zone 12 expressed as proportions of the total catch (brown and white shrimp) in that zone from 1963 to 1975.

YEAR	2	3	4	5	6
1963	.227	-	.523	.122	.129
1964	.230	-	.449	.164	.157
1965	.017	.001	.532	.450	-
1966	.057	.018	.579	.185	.161
1967	.103	-	.620	.276	.001
1968	.073	.010	.693	.226	.042
1969	.120	.008	.641	.231	.001
1970	.070	.058	.626	.246	-
1971	.100	.025	.522	.352	.001
1972	.121	.063	.568	.246	.003
1973	.042	.002	.725	.231	-
1974	.062	.032	.623	.231	.053
1975	.240	.002	.435	.299	.025
Avg.	.112	.017	.581	.251	.044

*Code: 2 = Lake Borgne; 3 = Lake Pontchartrain; 4 = Breton Sound; 5 = Chandeleur Sound; and 6 = Garden Island Bay.

Table 20. Catch in the subareas* of inshore water zone 13 expressed as proportions of the total catch (brown and white shrimp) in that zone from 1963 to 1975.

YEAR	1	2	3	4	4
1963	.724	.069	.054	.074	.080
1964	.576	.006	.054	.226	.138
1965	.676	.088	.055	.069	.111
1966	.729	.003	.014	.176	.079
1967	.621	.090	.077	.101	.111
1968	.628	.046	.089	.089	.134
1969	.772	-	.036	.042	.149
1970	.774	.016	.057	.051	.102
1971	.685	.021	.040	.086	.169
1972	.705	.013	.033	.066	.184
1973	.820	.020	.047	.054	.060
1974	.795	.001	.041	.071	.091
1975	.858	-	.034	.050	.059
Avg.	.720	.029	.049	.090	.113

*Code: 1 = Barataria and Caminada Bays; 2 = Lake Salvador; 3 = Little Lake; 4 = East Bay; and 5 = Bay Adam.

Table 21. Catch in the subareas* of inshore water zone 14 expressed as proportions of the total catch (brown and white shrimp) in that zone from 1963 to 1975.

YEAR	1	2	3	4	5	6	7	8	9
1963	.377	.118	.108	.093	.198	.034	.042	.029	
1964	.420	.117	.139	.124	.160	.014	.014	.013	
1965	.413	.099	.140	.128	.193	.006	.005	.015	
1966	.438	.093	.082	.117	.210	.021	.018	.021	
1967	.404	.178	.078	.099	.176	.009	.033	.022	
1968	.299	.433	.048	.096	.035	-	.019	.070	
1969	.329	.148	.155	.122	.146	-	.035	.065	
1970	.446	.135	.097	.119	.141	-	.033	.029	
1971	.432	.114	.098	.129	.143	.003	.029	.029	.023
1972	.443	.100	.100	.086	.134	.013	.032	.044	.047
1973	.485	.086	.095	.074	.132	.013	.021	.045	.048
1974	.335	.099	.133	.083	.122	.021	.051	.082	.076
1975	.391	.130	.129	.077	.123	.015	.035	.044	.056
Avg.	.401	.142	.108	.104	.147	.011	.028	.039	.019

*Code: 1 = Timbalier Bay; 2 = Terrebonne Bay; 3 = Caillou Bay; 4 = Lake Barre; 5 = Lake Pelto; 6 = Lake Decade; 7 = Lake Mechant; 8 = Lake Felicity; and 9 = unidentified subarea.

Table 22. Catch in the subareas* of inshore water zone 15 expressed as proportions of the total catch (brown and white shrimp) in that zone from 1963 to 1975.

YEAR	1	2	3	4
1963	.120	.145	.735	
1964	.035	.092	.873	
1965	.033	.141	.825	
1966	.069	.228	.704	
1967	.138	.346	.516	
1968	-	.005	.995	
1969	.003	.013	.984	
1970	.202	.452	.246	
1971	.062	.273	.400	.261
1972	.087	.263	.400	.250
1973	.116	.227	.321	.336
1974	.135	.245	.314	.306
1975	.133	.295	.253	.318
Avg.	.087	.210	.582	.113

*Code: 1 = Lost Lake; 2 = Four League Bay; 3 = Vermilion and Cote Blanche bays; and 4 = unidentified subarea.

Table 23. Catch in the subareas* of inshore water zone 17 expressed as proportions of the total catch (brown and white shrimp) in that zone from 1963 to 1975.

YEAR	1	2	3	8
1963	.554	.446	-	-
1964	.754	.246	-	-
1965	.447	.553	-	-
1966	.853	.147	-	-
1967	.973	.025	-	.002
1968	.892	.108	-	-
1969	.940	.059	.001	-
1970	.981	.019	-	-
1971	.970	.030	-	-
1972	.996	.004	-	-
1973	1.0	-	-	-
1974	1.0	-	-	-
1975	.9997	.0003	-	-
Avg.	.874	.126		

*Code: 1 = Calcasieu Lake; 2 = Sabine Lake; 3 and 8 = unidentified subareas.

Table 24. The top five inshore subareas in Louisiana in terms of average pounds of shrimp (brown and white) caught from 1963-1975.

<u>Subarea</u>	<u>Area</u>	<u>Average Pounds Per Year</u>
Barataria and Caminada bays	13	4,637,556
Timbalier Bay	14	3,775,568
Breton Sound	12	2,028,903
Terrebonne Bay	14	1,404,112
Lake Pelto	14	1,364,272

Table 25. Pounds of shrimp (brown and white) caught in Louisiana offshore waters classified by NMFS grid zone for each year, 1963-1976.

YEAR	TOTAL	AREA 12	AREA 13	AREA 14	AREA 15	AREA 16	AREA 17
1963	30,025,675	1,484,340	7,251,984	3,785,393	10,088,097	4,003,903	3,411,958
1964	25,564,079	654,527	4,813,104	3,294,842	9,165,055	3,933,291	3,703,260
1965	25,283,875	284,812	3,733,717	4,317,860	7,324,998	4,992,276	4,630,212
1966	25,315,506	228,223	5,449,632	4,488,610	6,774,757	4,485,340	3,888,944
1967	27,580,917	127,317	5,321,496	6,024,153	6,272,115	4,493,529	5,342,307
1968	23,438,982	150,456	4,289,166	4,294,463	4,930,736	5,660,464	4,113,697
1969	29,169,278	671,999	6,399,371	4,142,099	7,779,787	5,498,436	4,677,586
1970	34,118,397	383,471	5,948,477	6,053,679	8,218,633	7,108,001	6,406,136
1971	34,917,381	311,218	6,557,269	4,008,916	9,305,799	6,178,213	8,555,966
1972	34,969,496	325,710	7,009,891	4,095,007	9,903,775	6,244,080	7,391,033
1973	24,680,737	287,953	5,906,883	2,075,183	6,263,979	4,334,108	5,812,631
1974	23,176,659	176,093	5,239,855	1,729,079	5,831,191	3,730,941	6,469,500
1975	21,310,966	133,956	4,695,010	2,696,629	6,141,135	3,512,335	4,131,901
1976	40,249,565	39,935	9,868,780	2,351,811	11,468,702	7,896,235	8,624,102
Avg.	28,557,251	375,715	5,891,760	3,811,266	7,819,197	5,147,939	5,511,374

Table 26. Proportions of catch in offshore water areas. Pounds of shrimp (brown and white) caught in offshore areas (NMFS grid zones) expressed as proportions of total catch in Louisiana offshore waters.

YEAR						
1963	0.049	0.242	0.126	0.336	0.133	0.114
1964	0.026	0.188	0.129	0.359	0.154	0.145
1965	0.011	0.148	0.171	0.289	0.197	0.183
1966	0.009	0.215	0.177	0.268	0.177	0.154
1967	0.005	0.193	0.218	0.227	0.163	0.194
1968	0.006	0.183	0.183	0.210	0.241	0.176
1969	0.023	0.219	0.142	0.267	0.189	0.160
1970	0.011	0.174	0.177	0.241	0.208	0.188
1971	0.009	0.188	0.115	0.267	0.177	0.245
1972	0.009	0.200	0.117	0.283	0.179	0.211
1973	0.012	0.239	0.084	0.254	0.176	0.236
1974	0.008	0.226	0.075	0.252	0.161	0.279
1975	0.006	0.220	0.127	0.288	0.165	0.199
1976	0.001	0.245	0.058	0.285	0.196	0.214
Avg.	0.013	0.206	0.136	0.273	0.180	0.192

Fig. 1 LOUISIANA INSHORE WATERS
 Pounds of Shrimp Caught 1963-1976
 T = Total
 B = Brown
 W = White

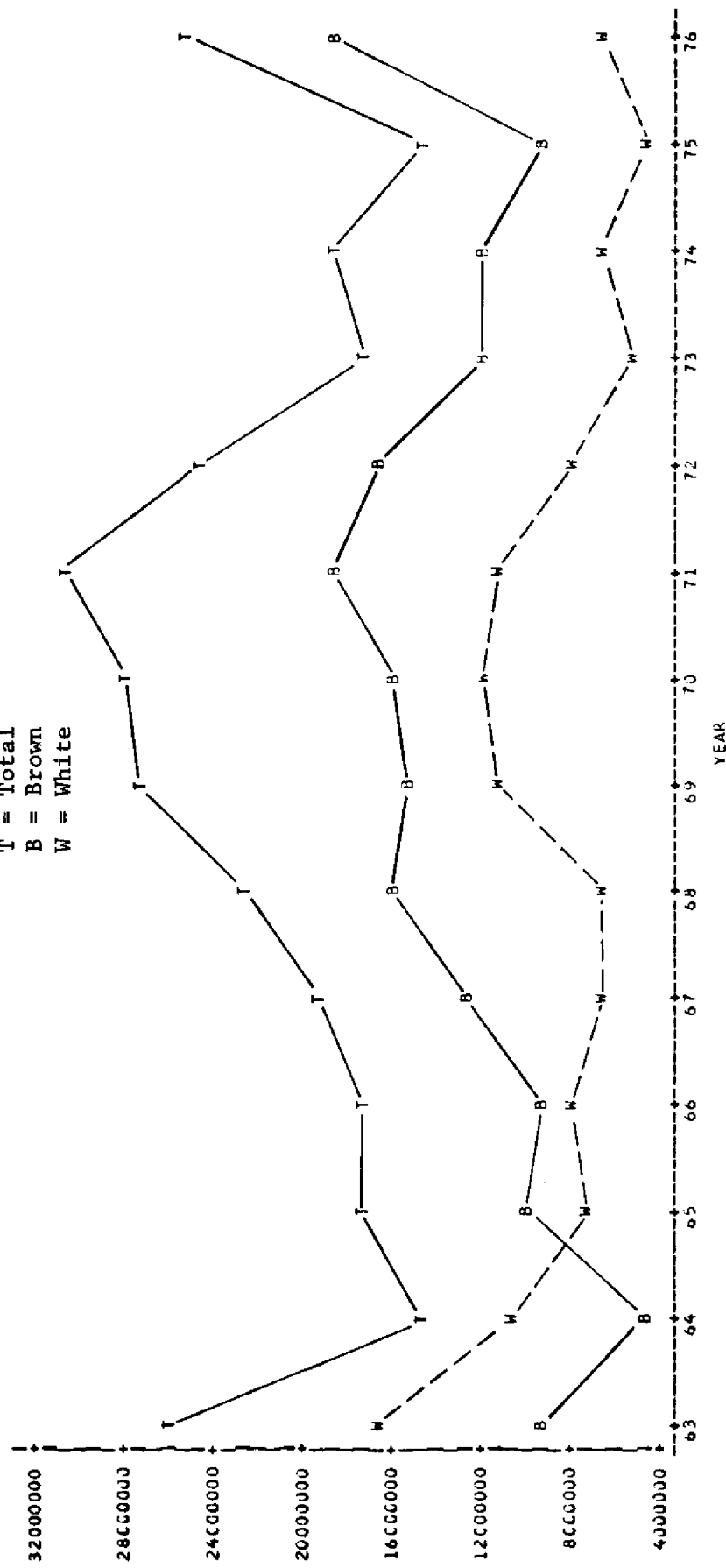


Fig. 1. Pounds of brown and white shrimp caught in Louisiana inshore waters, 1963-1976.

Fig. 2 **LOUISIANA OFFSHORE WATERS**
Pounds of Shrimp Caught 1963-1976
 T = Total
 B = Brown
 W = White

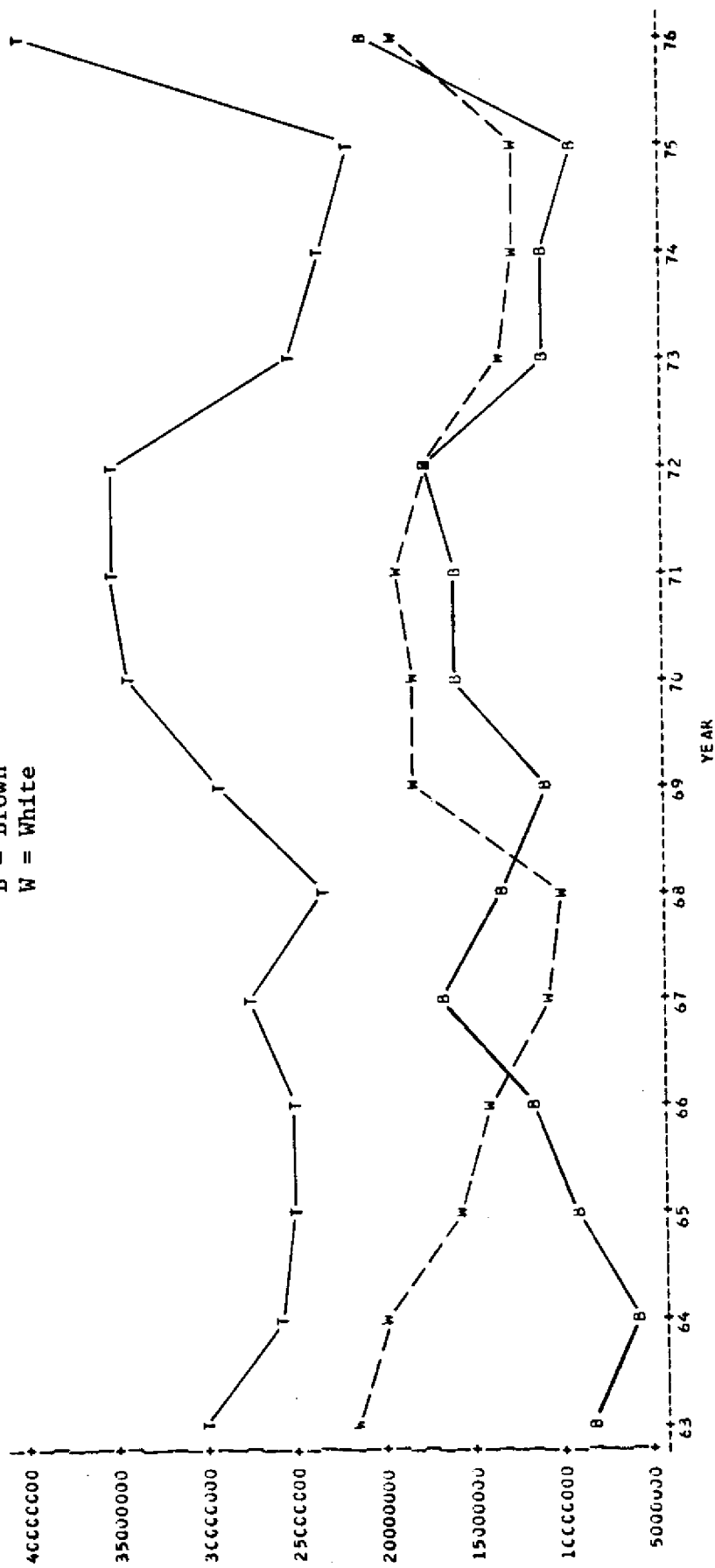


Fig. 2. Pounds of brown and white shrimp caught in Louisiana offshore waters, 1963-1976.

LOUISIANA INSHORE WATERS

Value of Shrimp Caught 1963-1976

T = Total
 B = Brown
 W = White

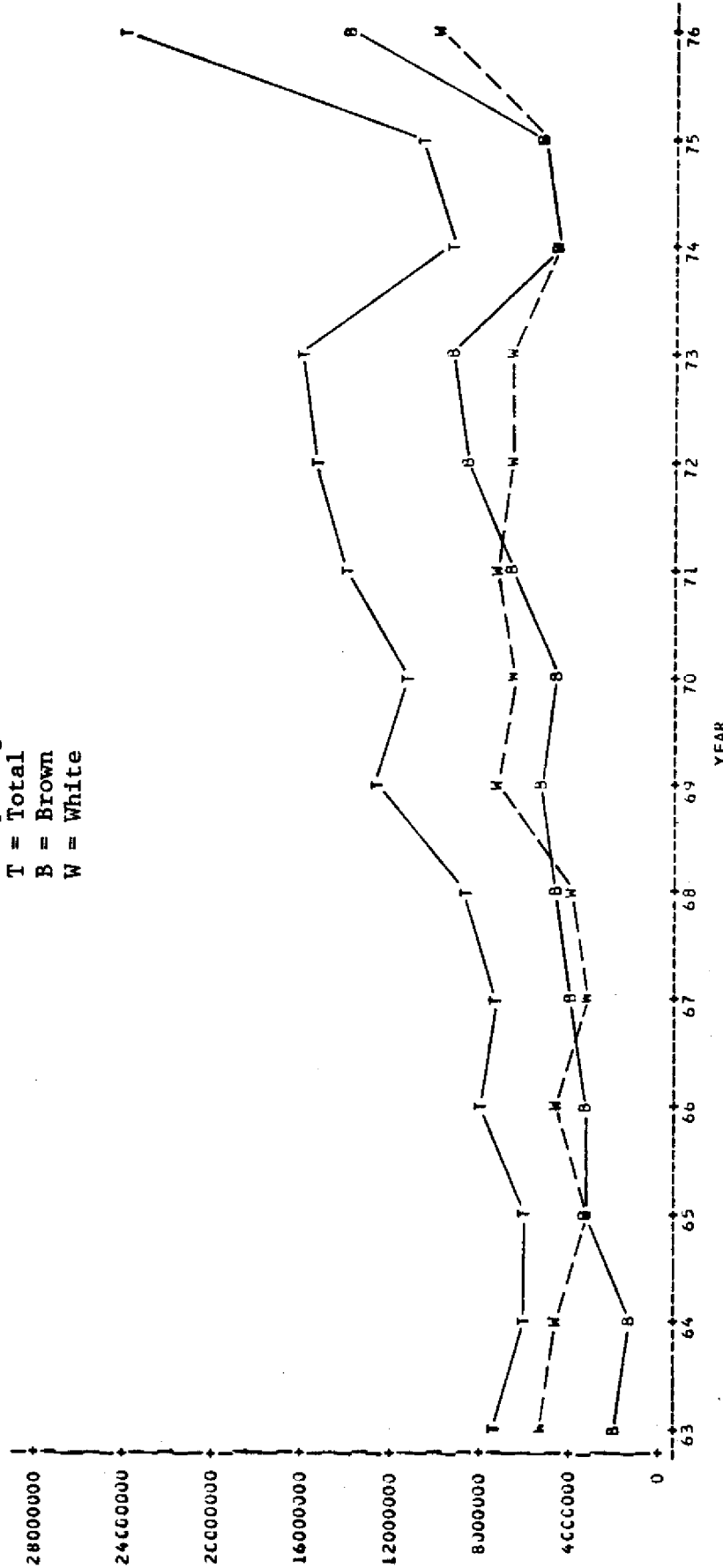


Fig. 3. Value in current dollars of brown and white shrimp caught in Louisiana inshore waters, 1963-1976.

LOUISIANA OFFSHORE WATERS

Value of Shrimp Caught 1963-1976

T = Total
 B = Brown
 W = White

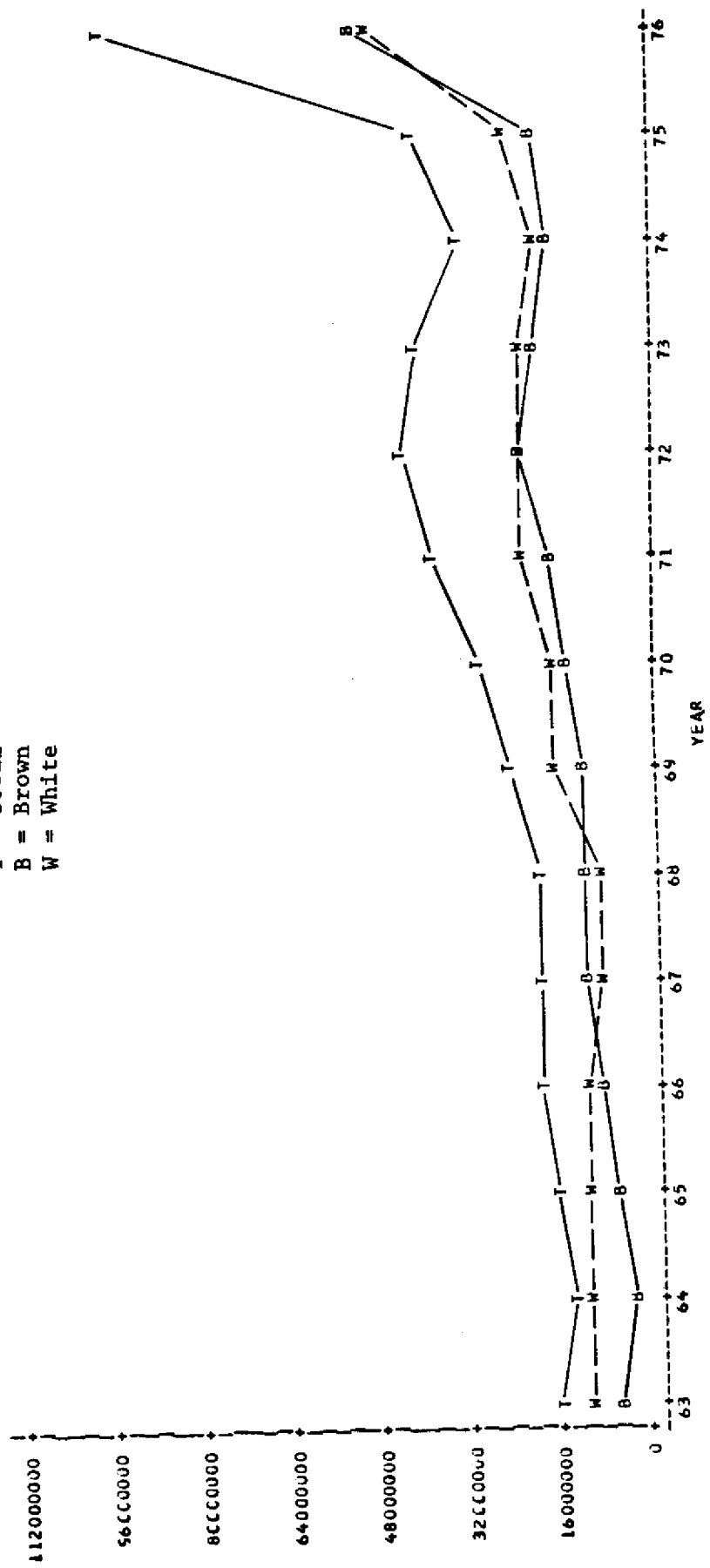


Fig. 4. Value in current dollars of brown and white shrimp caught in Louisiana offshore waters, 1963-1976.

Fig. 5 LOUISIANA INSHORE WATERS
 Days Fished for Shrimp 1963-1976
 T = Total
 B = Brown
 W = White

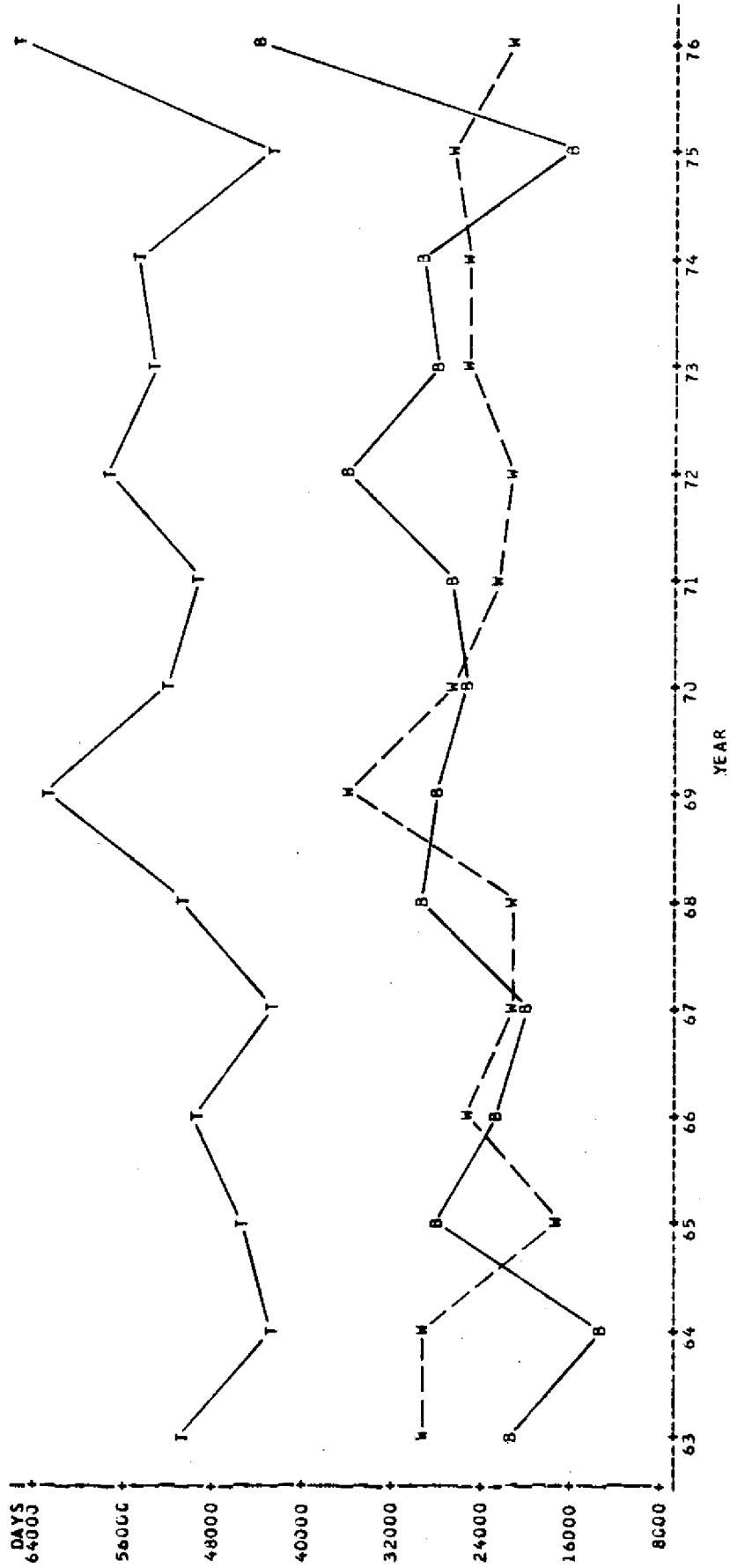


Fig. 5. Days fished for brown and white shrimp in Louisiana inshore waters, 1963-1976.

Fig. 6
 LOUISIANA OFFSHORE WATERS
 Days Fished for Shrimp 1963-1976
 T = Total
 B = Brown
 W = White

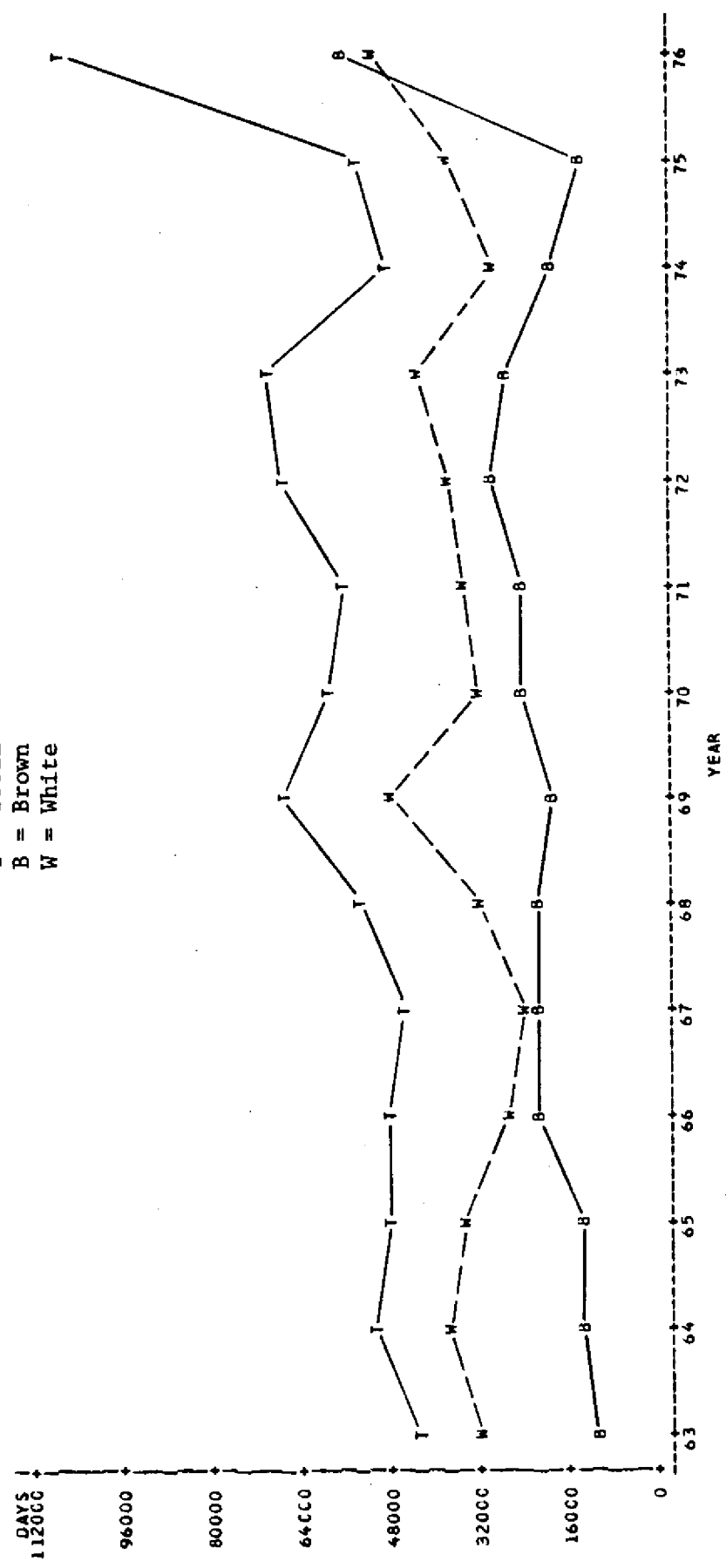


Fig. 6. Days fished for brown and white shrimp in Louisiana offshore waters, 1963-1976.

LOUISIANA INSHORE WATERS
 Units of Effort 1963-1976
 B = Brown
 W = White

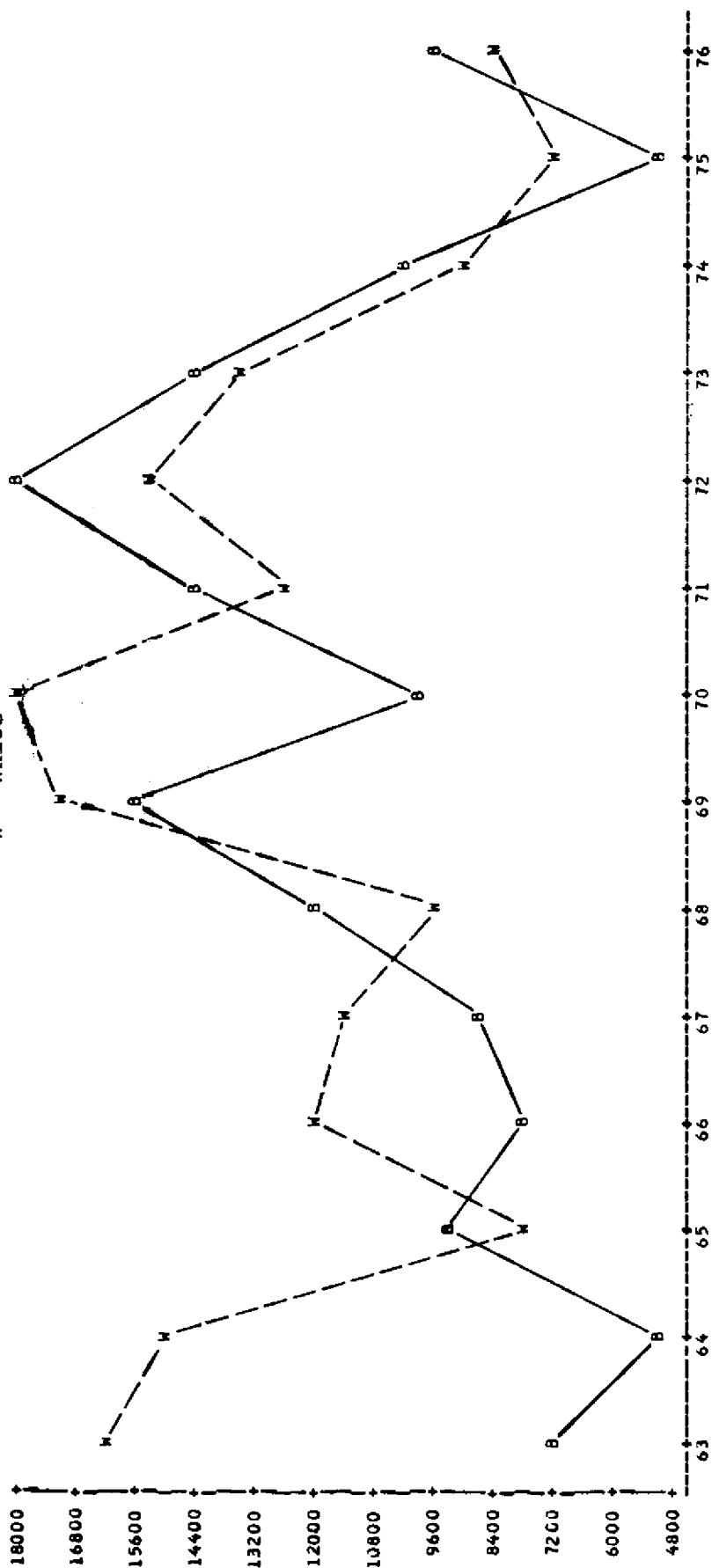


Fig. 7. Units of effort for brown and white shrimp in Louisiana inshore waters, 1963-1976.
 (Note: Units of effort cannot be compared between species. Effort is a composite of days fished and relative fishing power.)

LOUISIANA OFFSHORE WATERS

Units of Effort 1963-1976

B = Brown
W = White

Fig. 8

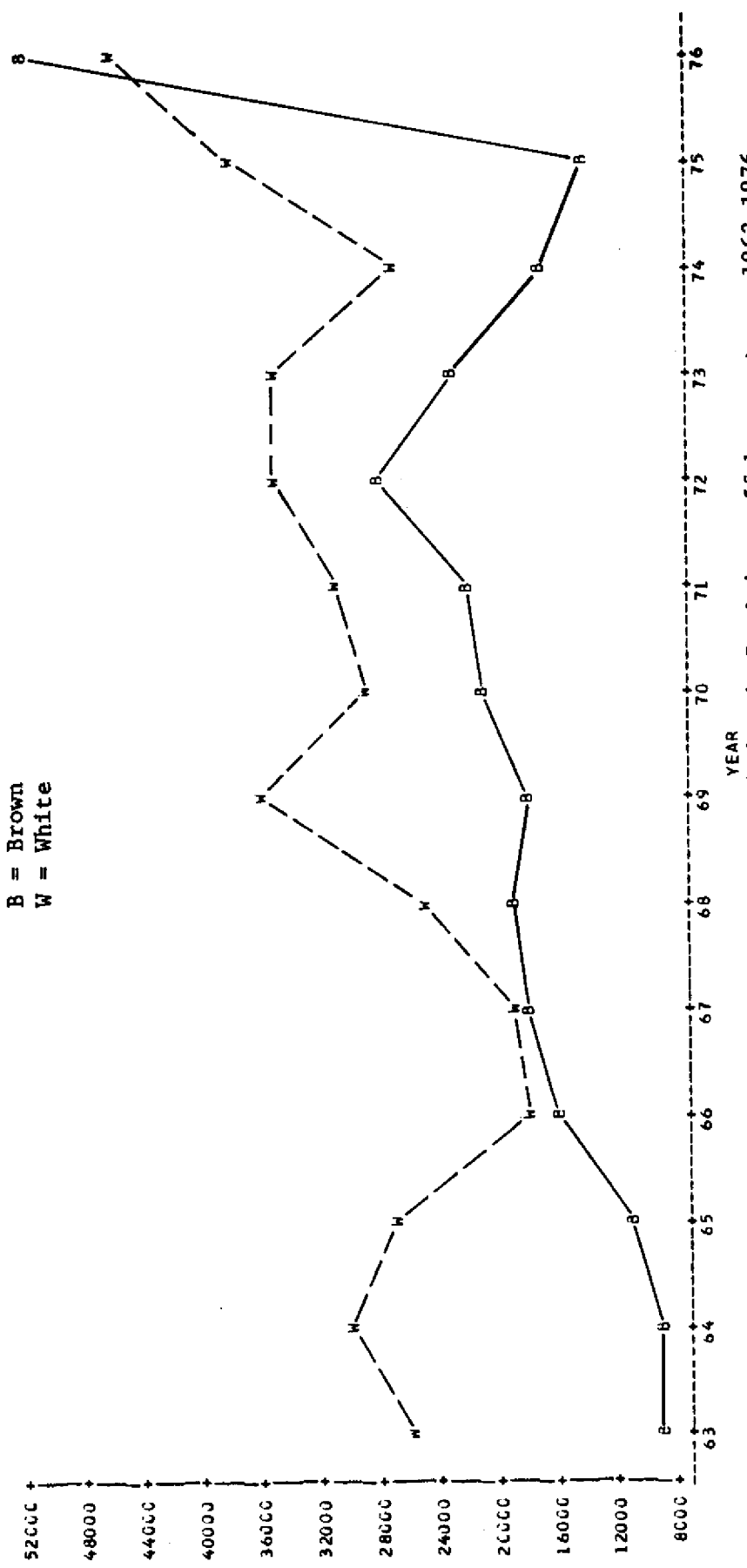


Fig. 8. Units of effort for brown and white shrimp in Louisiana offshore waters, 1963-1976. (Note: Units of effort cannot be compared between species. Effort is a composite of days fished and relative fishing power.)

FIG 9 LOUISIANA INSHORE WATERS

Pounds Per Unit Effort 1963-1976

B = Brown
W = White

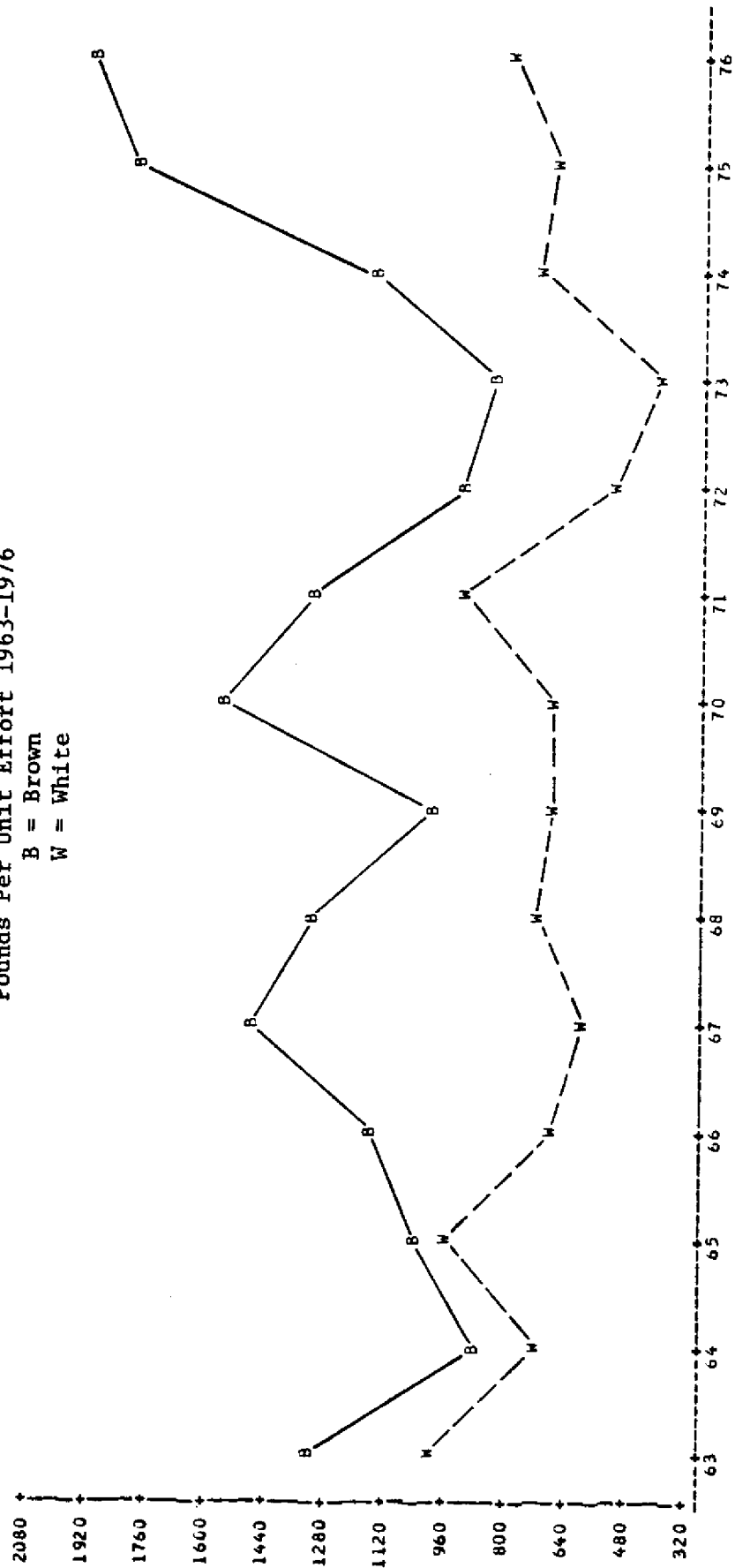


Fig. 9. Pounds per unit effort for brown and white shrimp in Louisiana inshore waters, 1963-1976.

LOUISIANA OFFSHORE WATERS
 Pounds Per Unit Effort 1963-1976
 B = Brown
 W = White

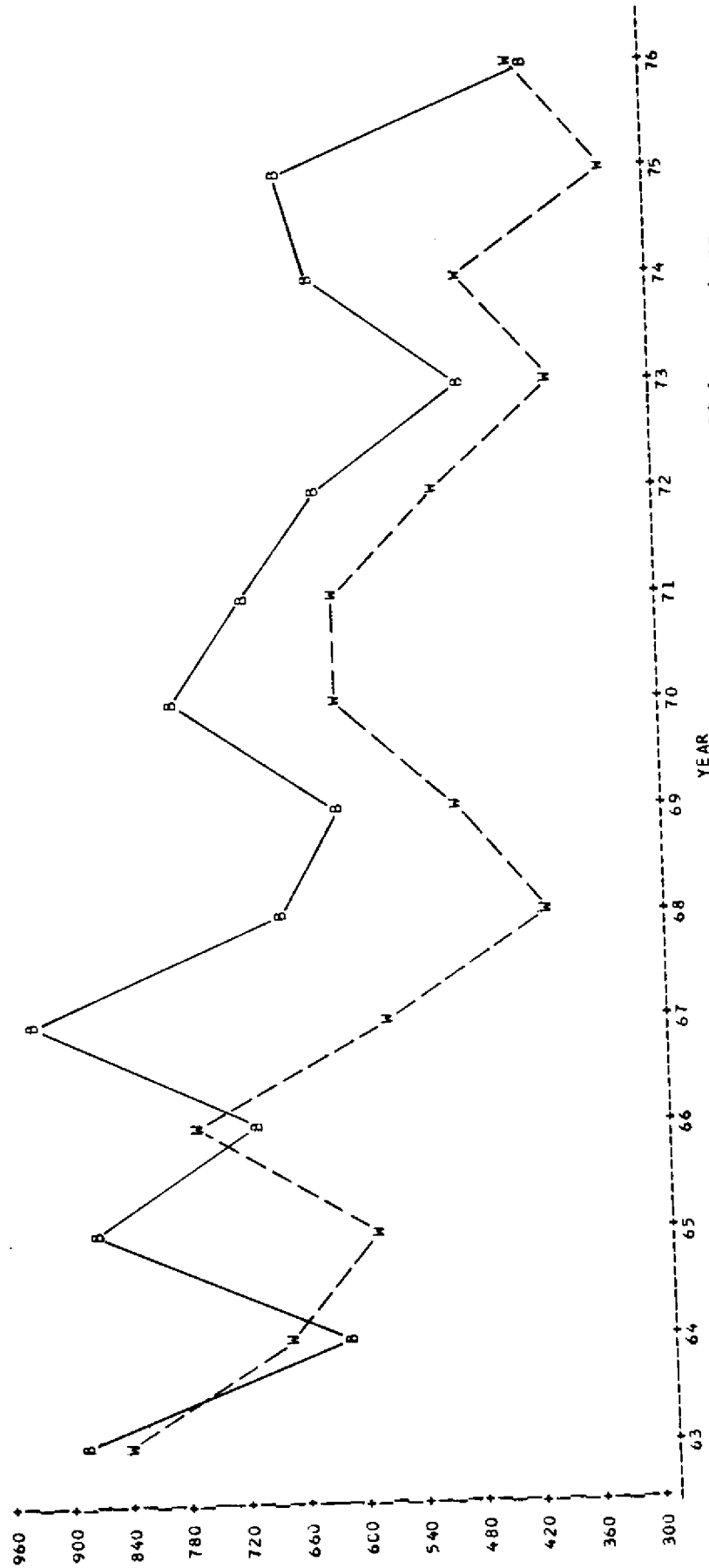


Fig. 10. Pounds per unit effort for brown and white shrimp in Louisiana offshore waters, 1963-1976.

LOUISIANA INSHORE WATERS

Value Per Unit Effort 1963-1976

B = Brown

W = White

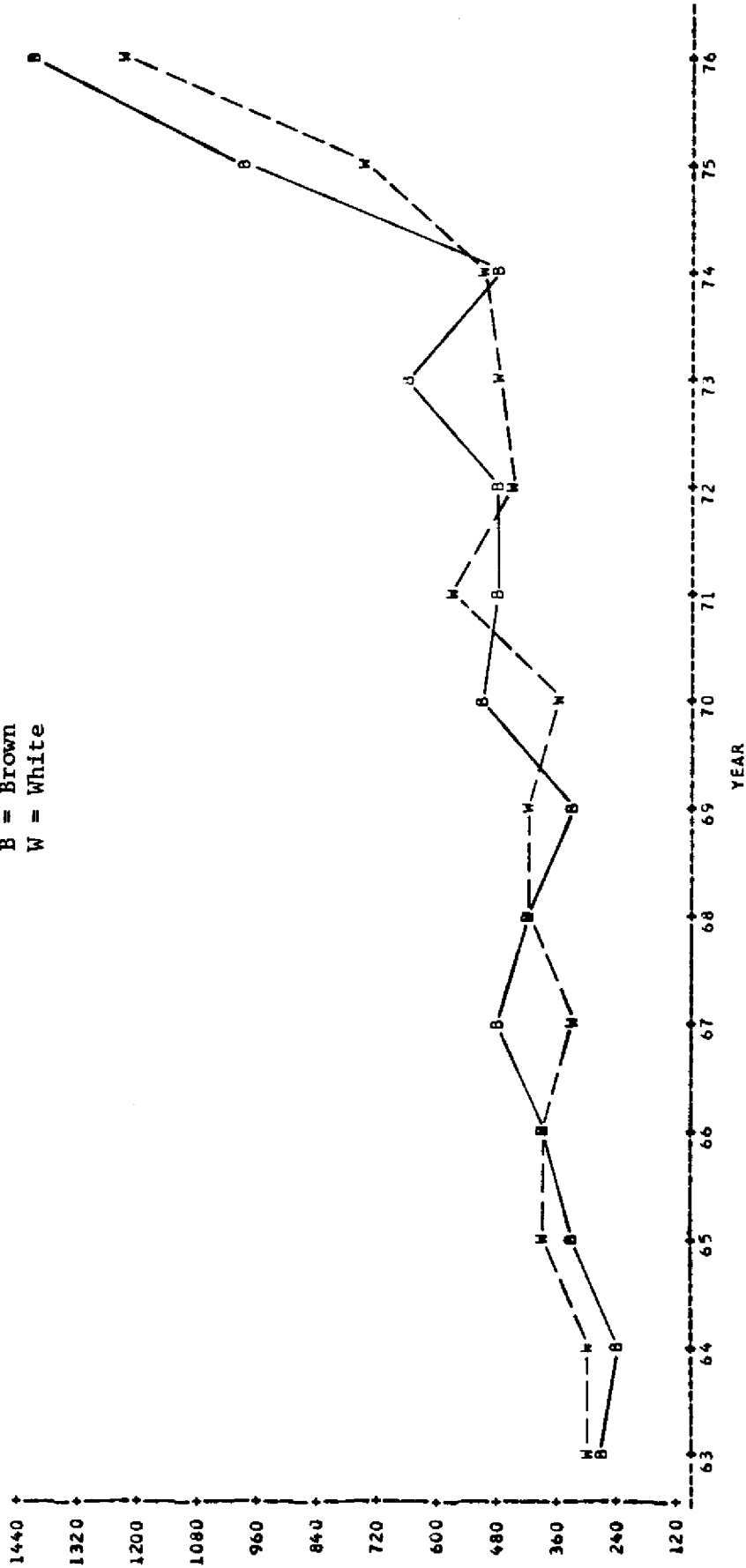


Fig. 11. Value (current dollars) per unit effort for brown and white shrimp in Louisiana inshore waters, 1963-1976.

LOUISIANA OFFSHORE WATERS

Value Per Unit Effort 1963-1976

B = Brown

W = White

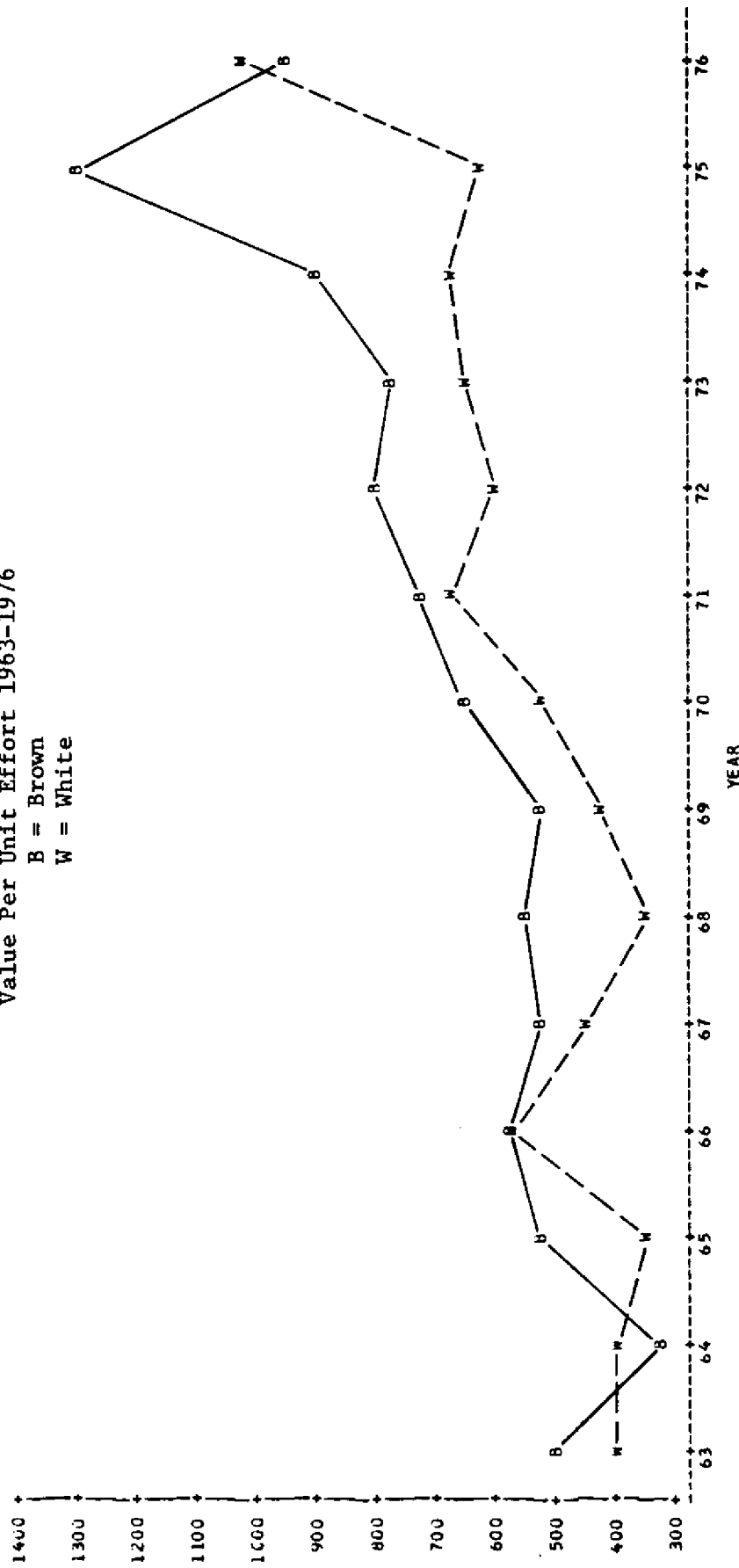
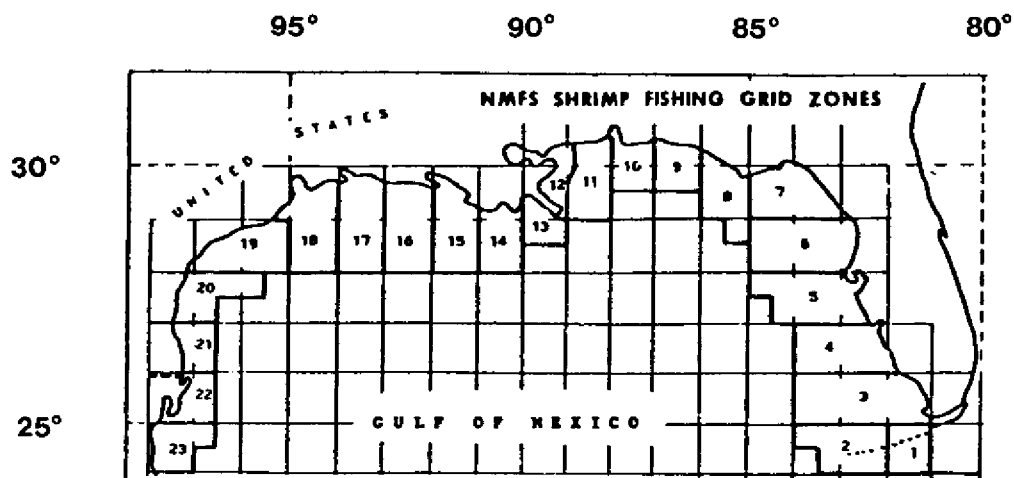


Fig. 12. Value (current dollars) per unit effort for brown and white shrimp in Louisiana offshore waters, 1963-1976.



- | | |
|----------------------------------|--------------------------------------|
| 12.2 Lake Borgne | 14.3 Caillou Bay |
| 12.3 Lake Pontchartrain | 14.4 Lake Barre |
| 12.4 Breton Sound | 14.5 Lake Pelto |
| 12.5 Chandeleur Sound | 14.6 Lake Decade |
| 12.6 Garden Island Bay | 14.7 Lake Mechant |
| 13.1 Barataria and Caminada Bays | 14.8 Lake Felicity |
| 13.2 Lake Salvador | 15.1 Lost Lake |
| 13.3 Little Lake | 15.2 Four League Bay |
| 13.4 East Bay | 15.3 Vermilion and Cote Blanche Bays |
| 13.5 Bay Adam | 17.1 Calcasieu Lake |
| 14.1 Timbalier Bay | 17.2 Sabine Lake |
| 14.2 Terrebonne Bay | |

Fig. 13. NMFS shrimp fishing grid zones and inshore subareas.