MISSISSIPPI MAIL SURVEY OF TRAPPER HARVEST AND EFFORT FOR THE 1976-77 THROUGH 1982-83 SEASONS

by

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INTRODUCTION

Trapper harvest mail surveys have been conducted annually since the 1976-77 season. These surveys provide indices for monitoring changes in harvest and trapper effort among seasons to determine trends. It should be noted that changes in such factors as harvest regulations, habitat conditions, the socio-economic environment and seasonal weather conditions, as well as changes in furbearer population levels may be reflected in and monitored by changes in trapper harvest and effort indices.

Mail surveys to obtain wildlife harvest data result in parameter estimates which contain sampling, response and non-response biases. As a result, of these biases the degree of accuracy of the estimates is unknown. Filion (1980) reviewed these biases and their effect on the estimates. Although parameter estimates obtained from mail surveys may not be totally accurate, assuming all biases remain constant, they provide good indices for trend determinations. At the present time these mail surveys provide the best, most economically practical method available. As Wright (1978) has indicated, until the wildlife profession can develop more accurate methods of estimating population numbers, measures of absolute harvest are relatively meaningless and indices to harvest should be adequate.

The objective of the trapper survey is to provide a statistically reliable set of statewide harvest indices for furbearer species in Mississippi. Until more accurate methods are available these indices will serve as harvest and effort estimators. No effort was made to interpret the data presented here. The purpose of this publication is to compile existing information for future availability.

METHODS

The methods used for these surveys have varied over the years due to changes in laws relating to trapping and changes in personnel assigned to the study. The different methods used are presented below:

1976-77 and 1977-78 Seasons

Methods used for the 1976-77 season trapper harvest survey are described by Guynn et. al. (1978). Names and addresses of 1,160 trappers were randomly selected from a 1976-77 file of 2,448 resident trapping license stubs (2,742 licenses were sold, but due to accounting procedures complete files were not available until after December 31, 1977). The initial mailing made September 21, 1977 consisted of the questionnaire (Figure 1), a cover letter and a stamped return envelope. A reminder postcard was mailed to non-respondents on October 5, 1977. A second reminder consisting of a cover letter, the questionnaire and a stamped return envelope was mailed to the remainder of the non-respondents on October 19, 1977. All responses received prior to January 1, 1978 were included in the analysis. Responses were edited and coded for key punching and verification.

No records are available of exact procedures followed with the 1977-78 survey. However, the basic questionnaire was essentially the same as for the 1976-77 season and it is assumed, from reviewing the raw data, that procedures were quite similar to those for the 1976-77 season.

1978-79 and 1979-80 Seasons

Effective July 1, 1978 all licensed trappers were required to obtain a permanent trapper identification number to be displayed on all traps. This number was obtained from the MDWC so that a central file was available. This file was used for the survey mailing list for these two seasons. This provided a current list of names and addresses of most trappers during the 1978-79 season. However, by the 1979-80 season some of these people had changed addresses, did not trap or were deceased, so that the list was not as accurate as it had been the previous year. This indicated a need for revising the sampling procedure for the next season's survey. Again exact procedures for these two years surveys are not available but the raw data provided the same basic information for analysis as previous years'

surveys. It appears that all trappers with an identification number were sent a survey form during these two years, and only one questionnaire mailing was made.

1980-81 through 1982-83 Seasons

Beginning with the 1980-81 season the Mississippi trapper license was modified to provide an extra copy of the trapper's name, address and trapper identification number. This copy was in the form of a prepaid postcard addressed to the MDWC. After the license was issued this extra copy was filled out by the trapper and mailed to the MDWC. This provided the MDWC Furbearer Biologist with an annual list of virtually all licensed trappers for each season. A copy of the questionnaire (Figure 2) was sent to each trapper on this list at the end of each trapping season. The questionnaire was designed and perforated so that the section containing the requested information could be torn off and mailed. This portion of the questionnaire was printed with the MDWC address and pre-paid postage. Only one questionnaire mailing was made.

Returns were edited for legibility and directly keypunched according to the layout in Appendix I. Appendix II provides the SAS computer package program (Helwig and Council, 1979) written to read, modify and output these raw data as a single SAS data set with one observation per respondent.

Analysis

Estimates in this report may vary from those found in past Federal Aid reports. All estimates presented in this report are based on final trapping license sales figures and analytical methods which may vary from those originally used. All estimates presented in this report were made using the same analytical methods (see Appendix III) and are therefore as comparable as possible. The SAS program performing the statistical calculations is given in Appendix IV.

RESULTS

Survey returns and number of trapper licenses sold each year are shown in Table 1 and Figure 3. The expanded statewide harvest estimates, average catch per trapper, average catch per successful trapper and percent successful trappers are shown for each year in Tables 2 through 8 and are depicted graphically by species in Figures 4 through 17. Average catch per license holder and percent successful license holders are shown for the 1976-77 and 1979-80 seasons rather than average catch per trapper and percent successful trappers. During these seasons, the available data indicated that survey respondents were not asked whether or not they actually trapped. Since there was no method of separating license holders who did not trap from these who trapped, computations had to be made on the basis of all license holders for those seasons. The figures show trends through only the 1981-82 season. Graphs were completed before 1982-83 data were available.

Indicators of trapper effort by year (average number of days trapped per trapper, average number of traps used per trapper and average trapline length per trapper) are shown in Tables 9 through 11 and Figures 18 through 20. Pelt prices are shown in Table 12 and trends in Figures 4 through 17. Prices shown in the table are the average prices for each Mississippi Trapper Association sale. Prices are presented in this manner because records of the total number of pelts sold in each sale were not available for some sales. Therefore a weighted average could not be computed. Also, the variation in prices at different sales during the same year may be of future interest. Prices were graphed by averaging figures from each sale during a year (weighting each sale equally) and then showing the high average and low average sale price.

The precision of all estimates is shown as standard errors in the tables and is graphed as 95 percent confidence intervals in the figures.

Adequate data were not available to provide statistically reliable harvest figures by county. However, county data are available for such purposes as verifying occurrence of species in certain counties or documenting past and future range expansion by such species as coyotes and nutria.

DISCUSSION

It should be remembered that there were some differences in sampling techniques during the years of these surveys. The major difference was that for the 1976-77 and 1977-78 seasons a sample of trappers was sent questionnaires, while questionnaires were sent to virtually all licensed trappers in the later surveys. Although questions pertaining to effort varied among years, the data needed for harvest estimates were the same for all years. The number of days trapped was not asked for the 1976-77 season and snares were not included as a trap type for the 1976-77, 1977-78 and 1978-79 seasons. Snares were being used only on a very limited basis during these periods. Since the 1980-81 survey a special effort has been made to standarized survey procedures so that data after this date would be comparable.

When interpreting trends in harvest and trapper effort there are several elements to consider. These are very similar to those listed by Steffen (1983) for interpretation of hunter survey data. Elements to consider are listed below:

1. Changes in population numbers.
2. Habitat changes.
3. Correlations between the harvest and effort parameters.
4. Seasonal weather conditions (e.g. heavy rainfall and freezing weather negatively affect trapping operations).
5. Changes in regulations and laws.
6. Changes in trapper access (e.g. a 1978 law required landowner permission to trap).
7. The shifting of trapper emphasis among species (influenced by pelt prices and demand).

8. Economic changes:
   e.g. (a) Gasoline costs
   (b) License costs
   (c) Leisure time available
   (d) Unemployment levels
   (e) Overall fur prices
9. Immigration of new inexperienced trappers into the trapping population.
10. Emigration of experienced trappers from the trapping population.
11. Harvest and effort incidental to trapping for other species (e.g. land sets for fox may take raccoon, bobcat or coyote and otter may be taken in beaver sets).

Bobcat, red and gray fox, raccoon, opossum and coyote are also taken by hunting. Hunting harvest estimates often exceed trapping harvest estimates and should be considered when evaluating trends for these species.

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TABLE 1. Numbers of trapping licenses sold, trappers surveyed and usable survey returns for the 1976-77 through 1982-83 seasons.

	No. Licenses Sold	No. Trappers Surveyed	No. Usable Returns
1976-77	2881	1160	620
1977-78	2742	Not available	527
1978-79	2605	Not available	1104
1979-80	3691	Not available	1193
1980-81	3132	3025	1452
1981-82	3027	2864	1228
1982-83	2404	2201	979

TABLE 2. Expanded statewide harvest estimates, average catch per license holder, average catch per successful trapper and percent successful license holders by furbearer species for the 1976-77 season.

Species	Harvest[a]	S E	Average Catch[a] Per License Holder	S E	Average Catch Per Successful Trapper	S E	n[b]	Percent[a] Successful License Holders	S E
Mink	22,105	1,566	7.67	0.54	11.80	0.78	403	65.0	1.7
Raccoon	61,528	3,247	21.36	1.13	25.61	1.29	517	83.4	1.3
Muskrat	41,473	3,686	14.40	1.28	31.21	2.50	286	46.1	1.8
Red Fox	6,301	506	2.19	0.18	4.97	0.35	273	44.0	1.8
Gray Fox	6,454	1,135	2.24	0.39	19.56	2.86	71	11.5	1.1
Bobcat	4,517	429	1.57	0.15	4.54	0.37	214	34.5	1.7
Opossum	49,098	2,986	17.04	1.04	24.63	1.38	429	69.2	1.6
Otter	1,482	233	0.51	0.08	4.31	0.54	74	11.9	1.2
Spotted skunk	1,915	305	0.66	0.11	5.64	0.72	73	11.8	1.1
Striped skunk	2,537	321	0.88	0.11	5.15	0.51	106	17.1	1.3
Coyote	469	91	0.16	0.03	2.53	0.35	40	6.5	0.9
Weasel	274	127	0.10	0.04	2.81	1.21	21	3.4	0.6
Nutria	4,308	1,105	1.50	0.38	13.06	3.11	71	11.5	1.1
Beaver	19,326	2,087	6.71	0.72	16.00	1.59	260	41.9	1.8

[a] n = 620

b - Sample size for average catch per successful trapper

TABLE 3. Expanded statewide harvest estimates, average catch per trapper, average catch per successful trapper and percent successful trappers by furbearer species for the 1977-78 season.

Species	Harvest[a]	S E	Average Catch[b] Per Trapper	S E	Average Catch Per Successful Trapper	S E	n[c]	Percent[b] Successful Trappers	S E
Mink	15,791	1,730	6.68	0.73	10.80	1.12	281	61.9	2.1
Raccoon	52,780	3,557	22.29	1.47	24.44	1.57	415	91.4	1.2
Muskrat	29,772	4,229	12.60	1.78	28.19	3.76	203	44.7	2.1
Red Fox	4,090	429	1.73	0.18	4.18	0.38	188	41.4	2.1
Gray Fox	13,616	1,667	5.75	0.70	9.66	1.12	271	59.7	2.1
Bobcat	3,273	408	1.39	0.17	4.13	0.45	152	33.5	2.0
Opossum	36,972	2,379	15.60	0.98	20.42	1.18	348	76.7	1.8
Otter	973	177	0.41	0.07	3.07	0.45	61	13.4	1.4
Spotted skunk	1,212	206	0.51	0.09	4.09	0.53	57	12.6	1.4
Striped skunk	1,753	265	0.74	0.11	4.43	0.52	76	16.7	1.6
Coyote	395	112	0.17	0.05	2.62	0.62	29	6.4	1.0
Weasel	68	19	0.03	0.01	1.18	0.11	11	2.4	0.6
Nutria	5,692	2,369	2.41	1.00	24.31	9.73	45	9.9	1.3
Beaver	15,984	1,901	6.76	0.80	14.63	1.59	210	46.3	2.1

[a] n = 527

[b] n = 454

c - Sample size for average catch per successful trapper.

TABLE 4. Expanded statewide harvest estimates, average catch per trapper, average catch per successful trapper and percent successful trappers by furbearer species for the 1978-79 season.

Species	Harvest[a]	S E	Average Catch[b] Per Trapper	S E	Average Catch Per Successful Trapper	S E	n[c]	Percent[b] Successful Trappers	S E
Mink	12,879	566	4.97	0.22	7.99	0.32	683	62.4	1.1
Raccoon	59,200	1,808	22.90	0.70	24.67	0.74	1017	92.9	0.6
Muskrat	20,354	1,325	7.83	0.51	18.01	1.07	479	43.7	1.1
Red Fox	4,667	264	1.81	0.10	3.86	0.20	512	46.8	1.1
Gray Fox	13,051	596	5.05	0.23	8.11	0.34	682	62.3	1.1
Bobcat	3,263	194	1.26	0.07	3.51	0.18	394	36.0	1.1
Oppossum	52,310	1,608	20.24	0.62	23.43	0.69	946	86.4	0.8
Otter	1,045	86	0.39	0.03	2.72	0.17	163	14.9	0.8
Spotted skunk	1,841	152	0.71	0.06	4.00	0.27	195	17.8	0.9
Striped skunk	3,610	235	1.40	0.09	5.48	0.29	279	25.5	1.0
Coyote	779	102	0.27	0.04	2.77	0.32	119	10.9	0.7
Weasel	94	22	0.04	0.01	1.67	0.31	24	2.2	0.3
Nutria	3,164	485	1.22	0.19	12.19	1.68	110	10.0	0.6
Beaver	17,192	1,038	6.64	0.40	13.85	0.77	526	48.0	1.1

[a] n = 1104

[b] n = 1095

c - Sample size for average catch per successful trapper

TABLE 5. Expanded statewide harvest estimates, average catch per license holder, average catch per successful trapper and percent successful license holders by furbearer species for the 1979-80 season.

Species	Harvest[a]	S E	Average Catch[a] Per License Holder	S E	Average Catch Per Successful Trapper	S E	n[c]	Percent[a] Successful License Holders	S E
Mink	20,259	1,310	5.49	0.35	8.87	0.55	738	61.9	1.2
Raccoon	72,053	2,141	19.52	0.58	20.94	0.61	1112	93.2	0.6
Muskrat	38,899	3,050	10.54	0.83	24.75	1.82	508	42.6	1.2
Red Fox	4,415	380	1.20	0.10	3.53	0.28	404	33.9	1.1
Gray Fox	12,475	615	3.40	0.17	6.26	0.28	644	54.0	1.2
Bobcat	3,066	183	0.83	0.05	2.84	0.13	349	29.3	1.1
Opossum	58,088	1,875	15.74	0.51	18.72	0.57	1003	84.1	0.9
Otter	1,532	145	0.41	0.04	2.80	0.21	177	14.8	0.8
Spotted skunk	1,581	205	0.43	0.06	3.81	0.43	134	11.2	0.8
Striped skunk	2,729	236	0.74	0.06	4.26	0.29	207	17.4	0.9
Coyote	1,151	148	0.31	0.04	2.60	0.29	143	12.0	0.8
Weasel	111	35	0.03	0.01	2.00	0.50	18	1.5	0.3
Nutria	7,821	1,513	2.12	0.41	19.30	3.51	131	11.0	0.7
Beaver	19,352	1,104	5.24	0.30	11.25	0.57	556	46.6	1.2

[a] n = 1193

c - Sample size for average catch per successful trapper

TABLE 6. Expanded statewide harvest estimates, average catch per trapper, average catch per successful trapper and percent successful trappers by furbearer species for the 1980-81 season.

Species	Harvest[a]	S E	Average Catch[b] Per Trapper	S E	Average Catch Per Successful Trapper	S E	n[c]	Percent[b] Successful Trappers	S E
Mink	16,754	771	5.60	0.26	8.66	0.38	897	65.8	0.9
Raccoon	49,594	1,182	16.67	0.39	18.26	0.41	1259	92.4	0.5
Muskrat	30,185	1,728	10.23	0.59	21.11	1.12	663	48.6	1.0
Red Fox	2,487	146	0.84	0.05	2.83	0.14	408	29.9	0.9
Gray Fox	7,965	320	2.70	0.11	5.51	0.19	670	49.2	0.9
Bobcat	2,230	129	0.76	0.04	2.85	0.13	363	26.6	0.9
Opossum	27,235	848	9.19	0.28	13.08	0.37	965	70.8	0.9
Otter	1,044	80	0.35	0.03	2.56	0.15	189	13.9	0.7
Spotted skunk	1,048	107	0.36	0.04	3.74	0.31	130	9.5	0.6
Striped skunk	2,869	387	0.97	0.13	5.81	0.74	229	16.8	0.7
Coyote	947	70	0.32	0.02	2.35	0.13	187	13.7	0.7
Weasel	22	5	0.01	<0.01	1.00	0.00	10	0.7	0.2
Nutria	4,765	693	1.62	0.24	12.84	1.75	172	12.6	0.7
Beaver	18,162	926	6.15	0.31	12.33	0.58	683	50.1	1.0

[a] n = 1452

[b] n = 1363

c - Sample size for average catch per successful trapper

TABLE 7. Expanded statewide harvest estimates, average catch per trapper, average catch per successful trapper and percent successful trappers by furbearer species for the 1981-82 season.

Species	Harvest[a]	S E	Average Catch[b] Per Trapper	S E	Average Catch Per Successful Trapper	S E	n[c]	Percent[b] Successful Trappers	S E
Mink	15,064	859	5.21	0.30	7.90	0.43	774	66.6	1.1
Raccoon	46,320	1,258	16.04	0.43	17.42	0.45	1079	92.8	0.6
Muskrat	27,100	1,533	9.43	0.53	19.95	1.02	551	47.4	1.1
Red Fox	2,026	114	0.70	0.04	2.51	0.11	328	28.2	1.0
Gray Fox	5,936	267	2.06	0.09	4.32	0.16	557	47.9	1.1
Bobcat	1,942	124	0.68	0.04	2.83	0.14	278	23.9	1.0
Opossum	26,186	977	9.08	0.34	13.85	0.46	767	66.0	1.1
Otter	833	68	0.29	0.02	2.32	0.13	146	12.6	0.7
Spotted skunk	887	130	0.31	0.05	4.24	0.52	85	7.3	0.5
Striped skunk	2,477	213	0.86	0.07	5.15	0.36	195	16.8	0.8
Coyote	1,104	81	0.38	0.03	2.30	0.12	195	16.8	0.8
Weasel	44	12	0.02	< 0.01	1.38	0.24	13	1.1	0.2
Nutria	6,692	1,482	2.33	0.52	16.55	3.56	164	14.1	0.7
Beaver	14,694	893	5.12	0.31	10.53	0.59	566	48.7	1.1

[a] n = 1228

[b] n = 1163

c - Sample size for average catch per successful trapper

TABLE 8. Expanded statewide harvest estimates, average catch per trapper, average catch per successful trapper and percent successful trappers by furbearer species for the 1982-83 season.

Species	Harvest[a]	S E	Average Catch[b] Per Trapper	S E	Average Catch Per Successful Trapper	S E	n[c]	Percent[b] Successful Trappers	S E
Mink	9,911	677	4.57	0.31	8.12	0.52	497	56.9	1.3
Raccoon	35,247	1,232	16.28	0.56	17.68	0.59	812	92.9	0.7
Muskrat	16,752	1,216	7.73	0.56	18.85	1.23	362	41.4	1.3
Red Fox	1,640	121	0.76	0.06	2.66	0.16	251	28.7	1.2
Gray Fox	5,090	288	2.37	0.13	4.67	0.23	444	50.8	1.3
Bobcat	1,270	87	0.58	0.04	2.43	0.12	213	24.4	1.1
Opossum	24,151	1,277	11.22	0.59	17.25	0.84	570	65.2	1.2
Otter	535	54	0.25	0.03	2.20	0.15	99	11.3	0.8
Spotted skunk	651	127	0.30	0.06	3.63	0.64	73	8.4	0.7
Striped skunk	1,923	163	0.89	0.08	4.96	0.32	158	18.1	1.0
Coyote	1,073	102	0.50	0.05	2.68	0.21	163	18.6	1.0
Weasel	10	4	< 0.01	< 0.01	1.00	0.00	4	0.5	0.2
Nutria	2,581	460	1.20	0.21	10.84	1.76	97	11.1	0.8
Beaver	8,236	688	3.79	0.32	9.56	0.73	351	40.2	1.3

[a] n = 979

[b] n = 874

c - Sample size for average catch per successful trapper

TABLE 9. Average number of days trapped per trapper for the 1976-77 through 1982-83 seasons.

Season	Average No. Days Trapped per Trapper	S E
1976-77	Not available	
1977-78	44.68	1.29
1978-79	44.81	0.69
1979-80	41.08	0.66
1980-81	38.76	0.57
1981-82	37.28	0.61
1982-83	35.68	0.74

TABLE 10. Average trapline length per trapper for the 1976-77 through 1982-83 seasons.

Season	Average Trapline Length (Miles)	S E
1976-77	9.16	0.66
1977-78	9.89	0.86
1978-79	9.25	0.56
1979-80	7.58	0.42
1980-81	6.89	0.35
1981-82	7.38	0.43
1982-83	6.39	0.35

TABLE 11. Average numbers of traps used per trapper for the 1976-77 through 1982-83 seasons.

Season	Average Number Traps	S E	Average Number Leghold Traps	S E	Average Number Conibear Traps	S E	Average Number Snares	S E
1976-77	32.28	1.07	29.52	0.96	2.76	0.34	Not Asked	
1977-78	31.26	1.05	28.68	0.98	2.74	0.34	Not Asked	
1978-79	29.27	0.69	26.91	0.63	2.39	0.17	Not Asked	
1979-80	29.53	0.73	26.55	0.64	2.80	0.25	0.17	0.05
1980-81	29.00	0.59	25.60	0.50	3.06	0.23	0.33	0.05
1981-82	28.72	0.63	26.18	0.55	2.28	0.17	0.27	0.05
1982-83	28.56	0.84	26.26	0.74	2.06	0.28	0.24	0.06

TABLE 12. Average price per pelt by species for each Mississippi Trapper Association sale from the 1976-77 through 1982-83 seasons.

Species	1976-77[a]			1977-78				1978-79		
	December	January	February	December	January 13	January 27	February	December	January	February
Mink	7.00	18.73	11.89	10.67	11.58	15.03	9.77	-	24.43	22.22
Raccoon	14.36	16.73	14.09	13.15	11.61	12.93	9.99	16.19	18.30	17.82
Muskrat	3.88	5.14	5.15	4.94	4.72	4.83	4.68	-	5.16	4.71
Red Fox	49.33	39.31	36.56	35.54	-	50.00	39.10	53.74	59.18	50.56
Gray Fox	31.81	34.57	33.46	31.02	29.51	34.67	23.35	45.10	56.89	52.53
Bobcat	51.09	59.71	63.49	37.27	-	36.78	39.30	60.25	96.24	110.36
Opossum	1.52	2.90	2.98	3.05	2.65	4.02	2.85	3.84	6.12	5.10
Otter	43.08	48.54	43.91	-	22.77	30.18	29.15	46.00	49.13	47.81
Spotted Skunk	-	-	-	-	-	-	-	-	-	12.50
Striped Skunk	2.50	-	4.63	-	4.10	-	-	-	-	3.53
Coyote	30.00	24.00	28.00	-	-	-	17.52	-	36.62	47.50
Weasel	-	-	-	-	-	-	-	-	-	-
Nutria	-	-	-	-	-	3.87	6.19	3.75	3.00	3.00
Beaver	5.28	8.25	10.53	7.48	8.56	6.44	5.16	-	9.00	7.47

[a] One March beaver only sale average price = $12.10

TABLE 12. Average price per pelt by species for each Mississippi Trapper Association sale from the 1976-77 through 1982-83 seasons. (Continued)

Species	1979-80			1980-81			1981-82		1982-83		
	December	January	February	December	January	February	January	February	December	January	February
Mink	21.55	27.27	26.09	20.98	18.58	16.87	19.13	18.99	12.01	15.70	11.87
Raccoon	11.20	13.34	12.53	9.64	11.98	14.95	18.53	21.06	10.13	15.13	10.65
Muskrat	5.82	6.94	6.14	5.57	5.95	6.35	4.03	4.38	2.68	2.98	2.16
Red Fox	42.06	36.84	38.80	38.44	45.03	48.83	41.23	46.52	35.25	34.00	30.34
Gray Fox	47.44	45.18	46.97	37.43	35.11	42.91	28.90	30.69	23.62	30.07	30.96
Bobcat	56.91	55.76	74.86	46.35	70.56	75.56	46.31	50.29	36.07	36.57	40.51
Opossum	4.68	4.35	3.85	1.73	1.74	1.99	2.19	1.87	.49	1.42	1.06
Otter	60.00	65.32	49.93	27.83	32.04	31.59	26.00	24.07	12.41	12.90	12.59
Spotted Skunk	-	-	-	-	-	7.05	-	-	-	-	-
Striped Skunk	-	-	5.62	-	-	2.95	-	1.29	-	-	3.50
Coyote	-	10.71	12.83	10.50	15.60	14.49	27.60	28.99	15.08	10.77	10.26
Weasel	-	-	-	-	-	-	-	-	-	-	-
Nutria	4.00	-	6.86	4.82	6.99	6.66	2.44	3.57	1.98	1.32	1.50
Beaver	12.90	14.96	19.44	7.14	8.71	9.05	9.62	9.27	3.91	4.80	5.14

What county do you live in? _____

What counties did you trap in last season (Winter 1976-77)? _____

_____

How many traps did you use? Leghold: _____ Conibear (killer) traps ____

What was your catch for this past season (Winter 1976-77)?
(Please do not include furs that you bought from someone else in these figures. Under the column heading "others taken", include all animals not taken by hunting and trapping such as road-killed animals or animals someone else gave you, etc.)

	Total No. Trapped	Total No. Taken by Hunting	Others Taken	Total No. Sold
Mink				
Raccoon				
Muskrat				
Red Fox				
Bobcat				
Oppossum				
Gray Fox				
Otter				
Spotted Skunk (Civet)				
Striped Skunk				
Coyote				
Weasel				
Nutria				
Beaver				

If the catch figures in question 4 represent a partnership effort, how many licensed trappers (including yourself) were in your party? _____

How long was your trapline? _____ miles

Where did you sell your catch? If you sold your fur to more than one of the following, give the fraction of the total dollar value of all your fur sold to each. Example: 1/2 A. 1/4 B. 1/4 D.

_____ A. Mississippi Trappers Association Fur Sales

_____ B. Another Trapper or Individual

_____ C. Mississippi Fur Buyers

_____ D. Out-of-State Fur Buyers

What portion of your annual income would you say was derived from trapping?

_____ 25% or less

_____ 26% to 50%

_____ 51% to 75%

_____ Over 75%

Figure 1. Questionnaire used for the 1976-77 survey of licensed trappers in Mississippi.

How old are you? _____

How many years have you been trapping? _____

During the trapping season, do you trap full time _____ or part time _____?

Would you support establishment of a renewable license for trappers similar to a drivers' license?

_____ Yes

_____ No

_____ No Opinion

Would you favor requiring that beginning trappers pass a practical test before receiving their first license?

_____ Yes

_____ No

_____ No Opinion

How would you describe the numbers of animals found in your county?

	High	Medium	Low	None
Mink	_____	_____	_____	_____
Raccoon	_____	_____	_____	_____
Muskrat	_____	_____	_____	_____
Red Fox	_____	_____	_____	_____
Bobcat	_____	_____	_____	_____
Opossum	_____	_____	_____	_____
Gray Fox	_____	_____	_____	_____
Otter	_____	_____	_____	_____
Spotted Skunk (Civet)	_____	_____	_____	_____
Striped Skunk	_____	_____	_____	_____
Coyote	_____	_____	_____	_____
Weasel	_____	_____	_____	_____
Nutria	_____	_____	_____	_____
Beaver	_____	_____	_____	_____

Figure 1. Questionnaire used for the 1976-77 survey of licensed trappers in Mississippi (Continued).

TRAPPER HARVEST SURVEY (1980-81)

A. Please answer the following questions:

1 . Did you trap for furbearers in Mississippi during the 1980-81 season?
Yes(1) ☐ No(2) ☐

2 . In what county did you do most of your trapping?

_____

3 . How many days (or nights) did you have traps set? _____

4 . How many traps did you use? Legholds _____

Conibear (killer type) _____ Snares _____

5 . How long was your trapline? _____ miles

6 . If you trapped river otter, please give the number trapped in each habitat type.

Habitat Type	No. Trapped
River or Stream	_____
Beaver Pond	_____
Coastal Marsh	_____
Natural Lake or Pond	_____
Man-made Lake or Pond	_____
Drainage Ditch	_____

7 . If you trapped bobcat, did you (check appropriate answer(s)):
(1) ☐ Catch bobcat in sets made specifically for bobcat
(2) ☐ Catch bobcat in sets made for other species

8 . Your age: _____ yrs.

B. What was your catch for this past season (1980-81)? If you trapped with a partner, include only your portion of the partnership catch.

	Total No. Trapped	Total No. Taken by Hunting	Others Taken e.g.Road-Kills	Total No. Sold
(1) Mink	_____	_____	_____	_____
(2) Raccoon	_____	_____	_____	_____
(3) Muskrat	_____	_____	_____	_____
(4) Red Fox	_____	_____	_____	_____
(5) Gray Fox	_____	_____	_____	_____
(6) Bobcat	_____	_____	_____	_____
(7) Opossum	_____	_____	_____	_____
(8) Otter	_____	_____	_____	_____
(9) Spotted Skunk (Civet)	_____	_____	_____	_____
(10) Striped Skunk	_____	_____	_____	_____
(11) Coyote	_____	_____	_____	_____
(12) Weasel	_____	_____	_____	_____
(13) Nutria	_____	_____	_____	_____
(14) Beaver	_____	_____	_____	_____

NO POSTAGE REQUIRED

Figure 2. Questionnaire used for the 1980-81 survey of licensed trappers in Mississippi.

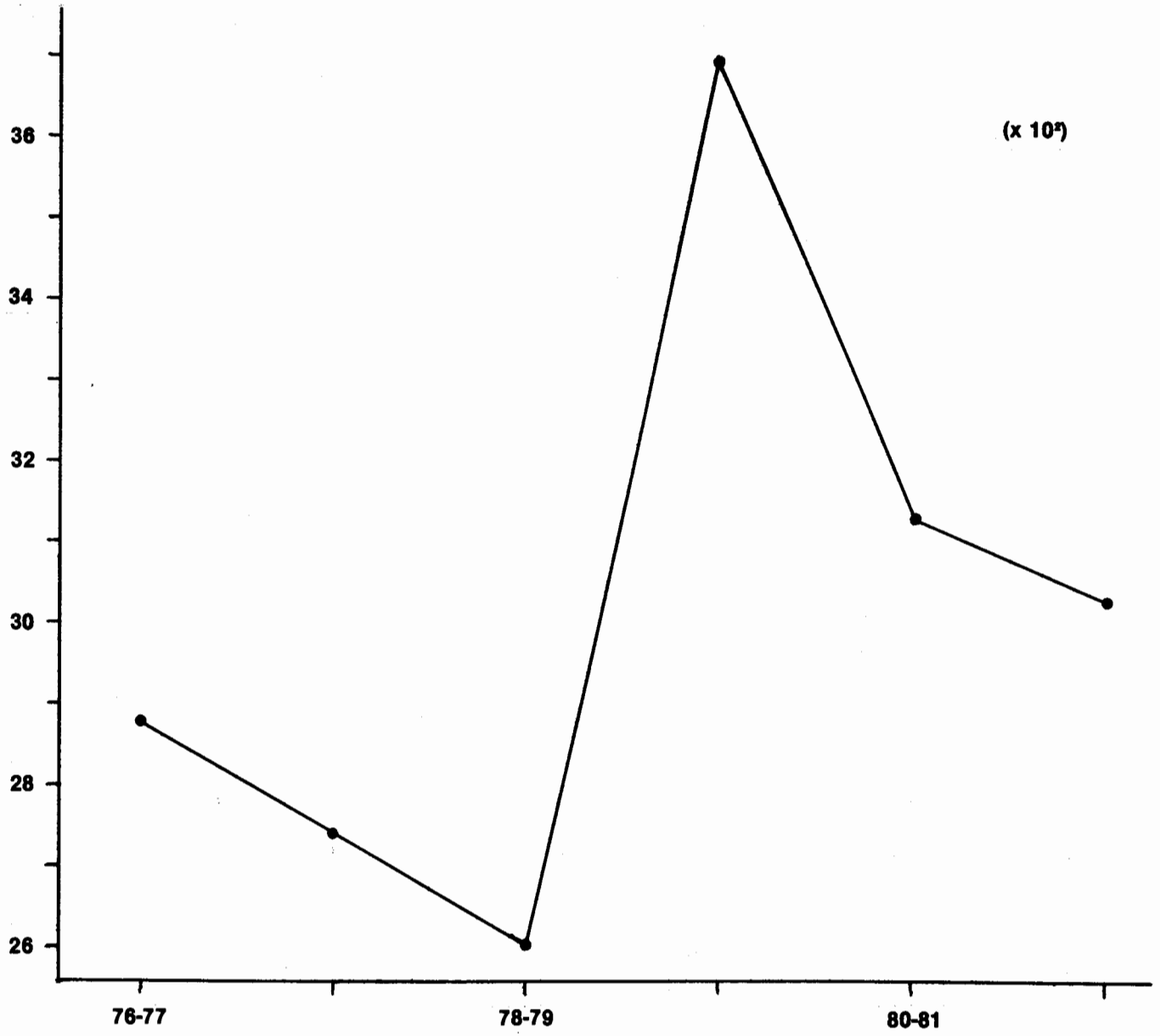

Figure 3. Trapping license sales trends for the 1976-77 through 1981-82 seasons.

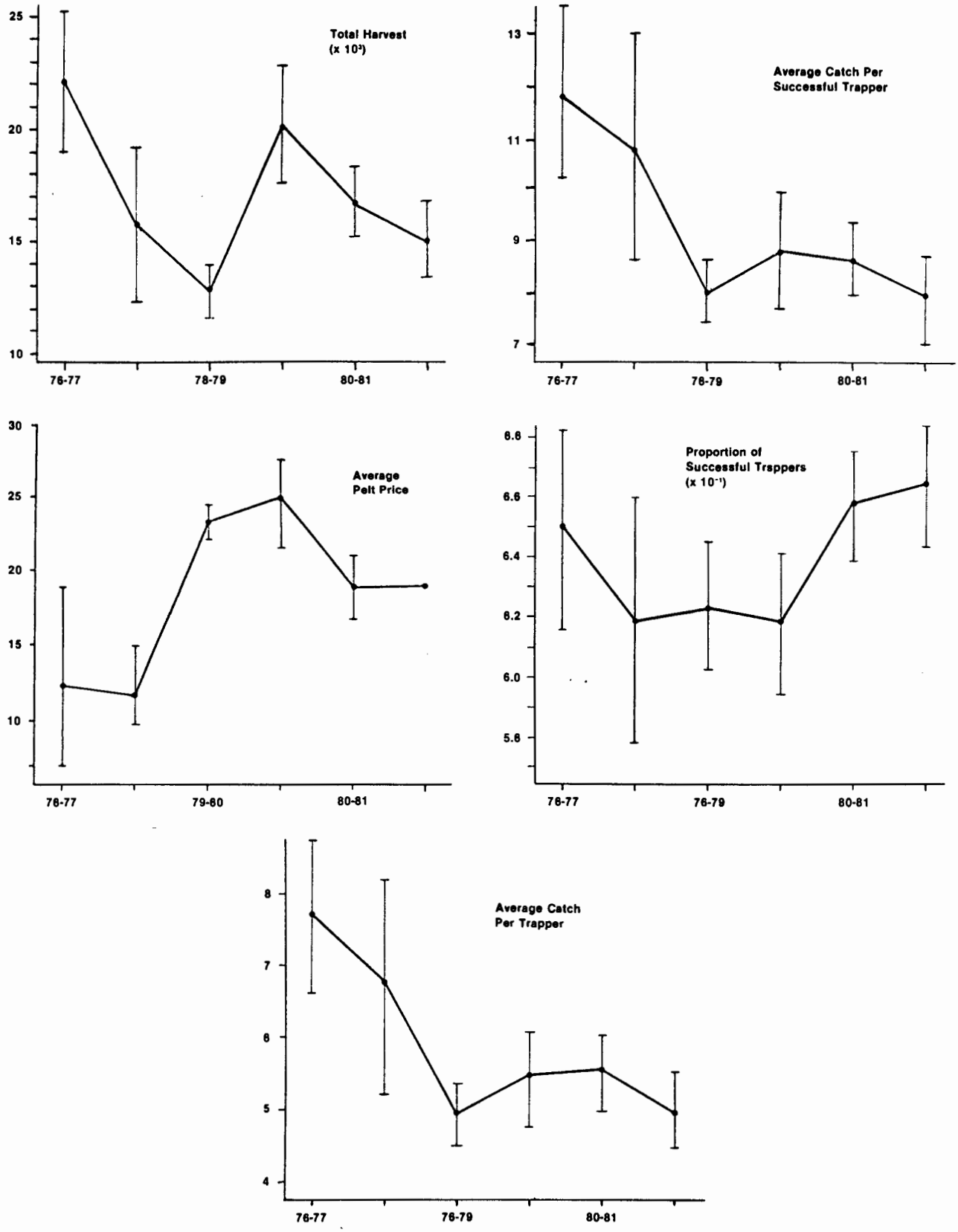

Figure 4. Seasonal trends in mink trapping harvest indices and pelt prices in Mississippi. Vertical lines represent 95% confidence intervals, except for prices. For prices vertical lines represent high and low average sale prices.

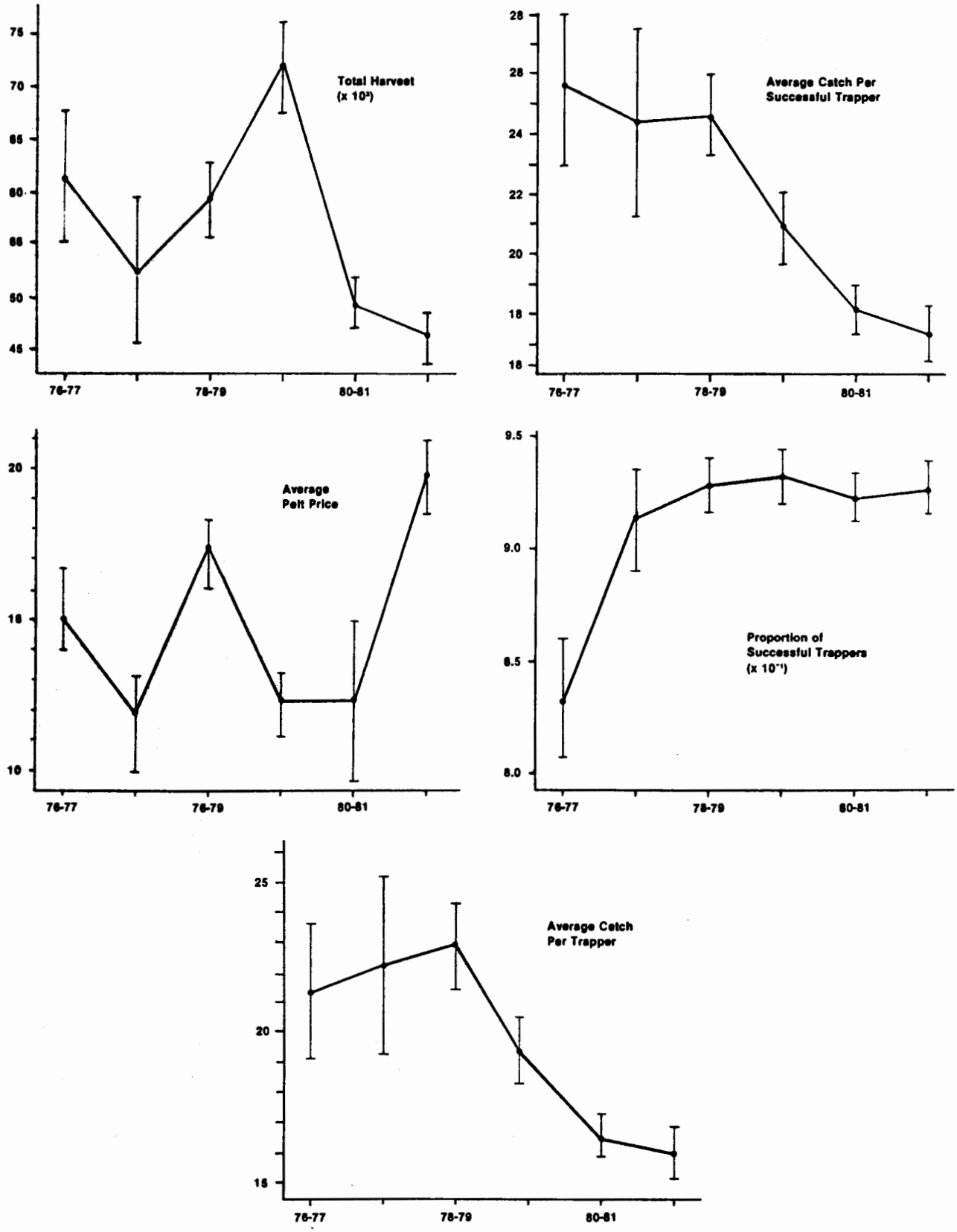

Figure 5. Seasonal trends in raccoon trapping harvest indices and pelt prices in Mississippi. Vertical lines represent 95% confidence intervals, except for prices. For prices vertical lines represent high and low average sale prices.

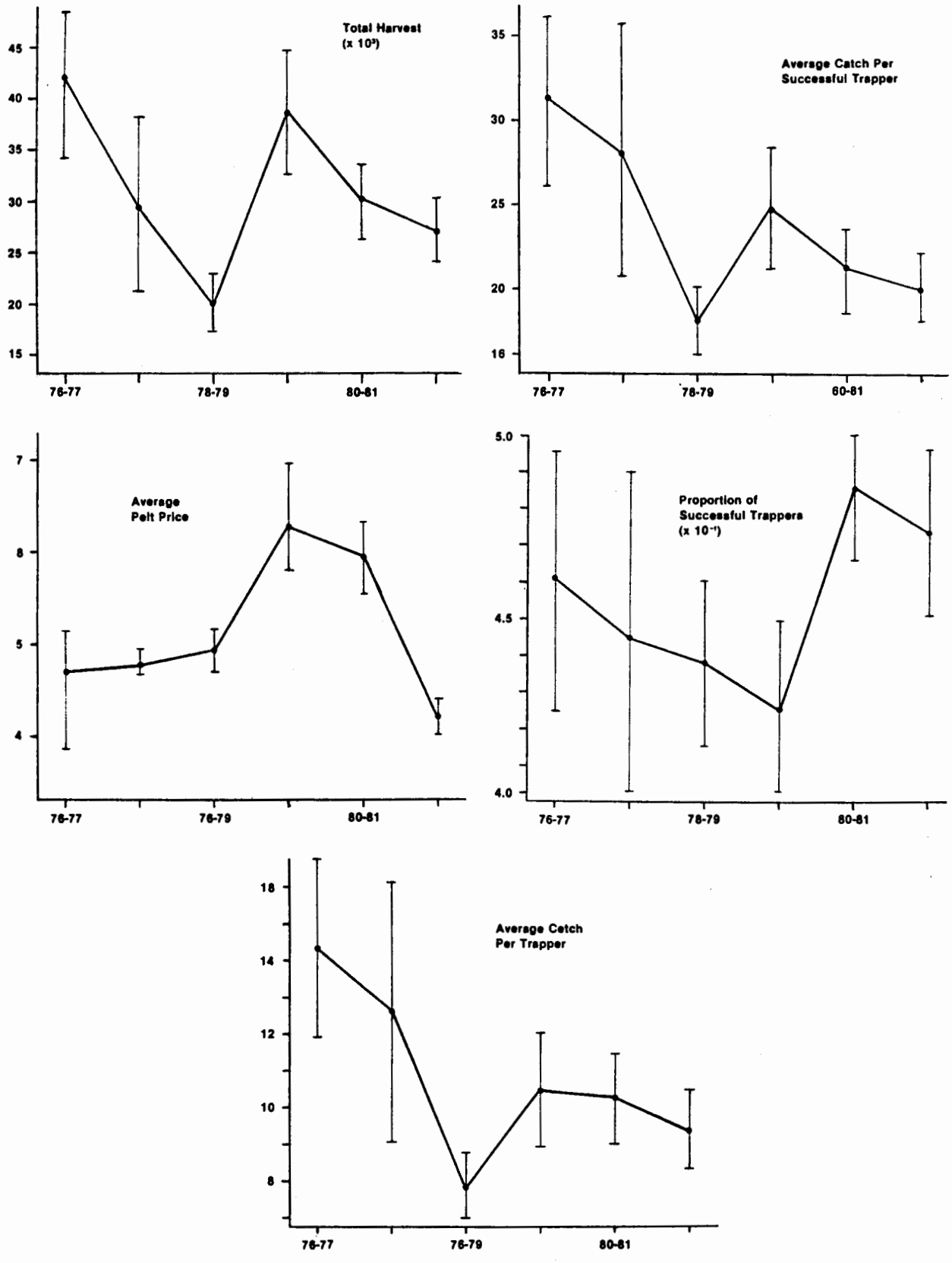

Figure 6. Seasonal trends in muskrat trapping harvest indices and pelt prices in Mississippi. Vertical lines represent 95% confidence intervals, except for prices. For prices vertical lines represent high and low average sale prices.

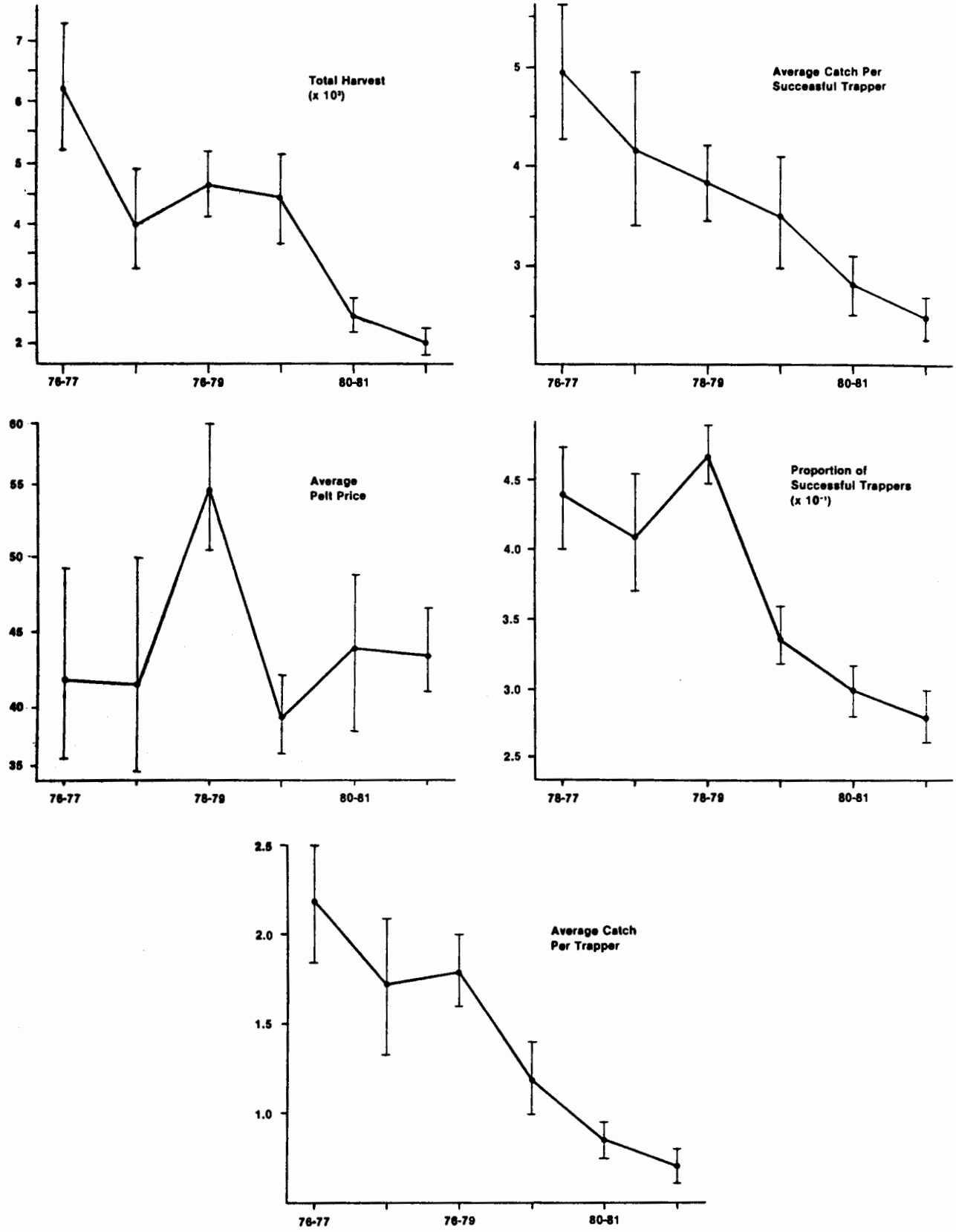

Figure 7. Seasonal trends in red fox trapping harvest indices and pelt prices in Mississippi. Vertical lines represent 95% confidence intervals, except for prices. For prices vertical lines represent high and low average sale prices.

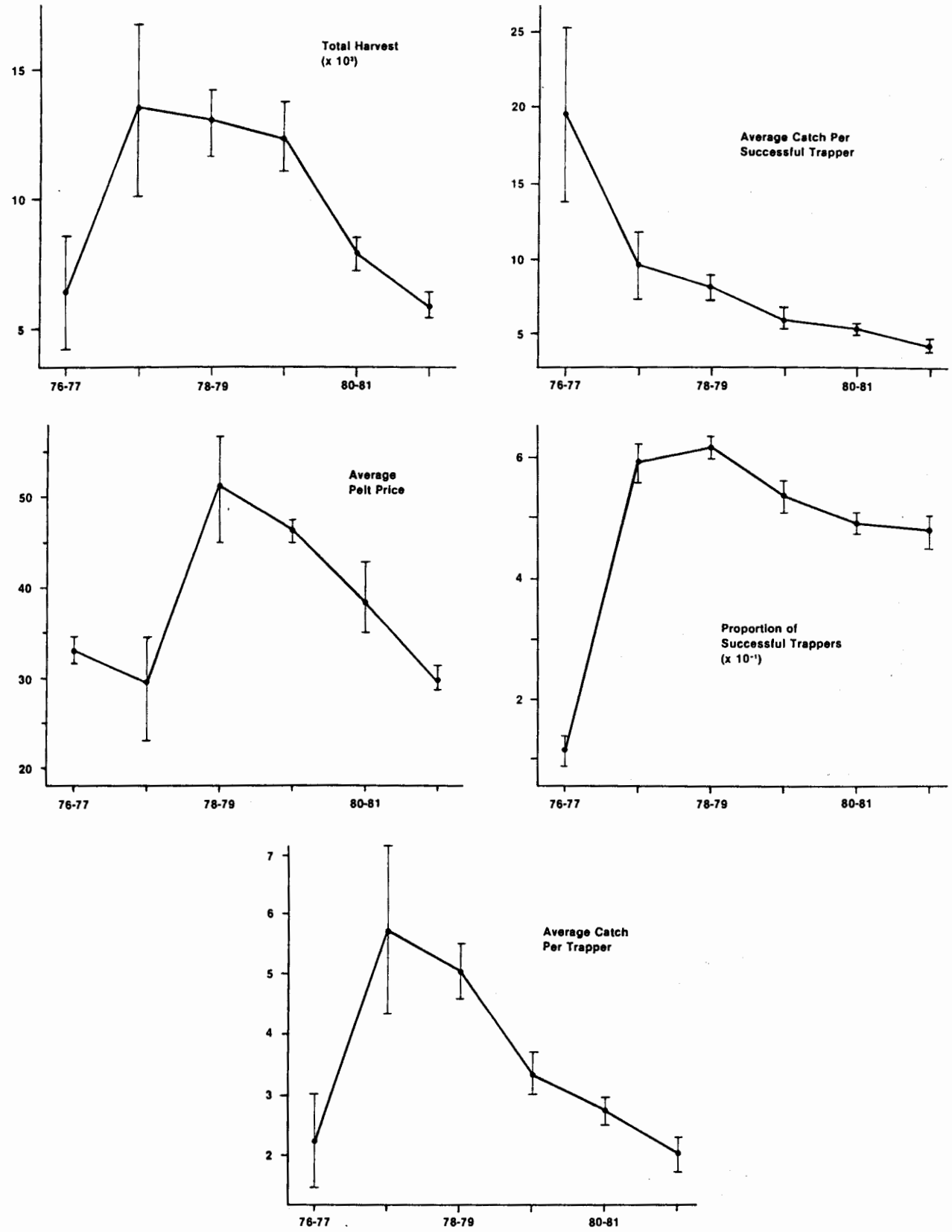

Figure 8. Seasonal trends in gray fox trapping harvest indics and pelt prices in Mississippi. Vertical lines represent 95% confidence intervals, except for prices. For prices vertical lines represent high and low average sale prices.

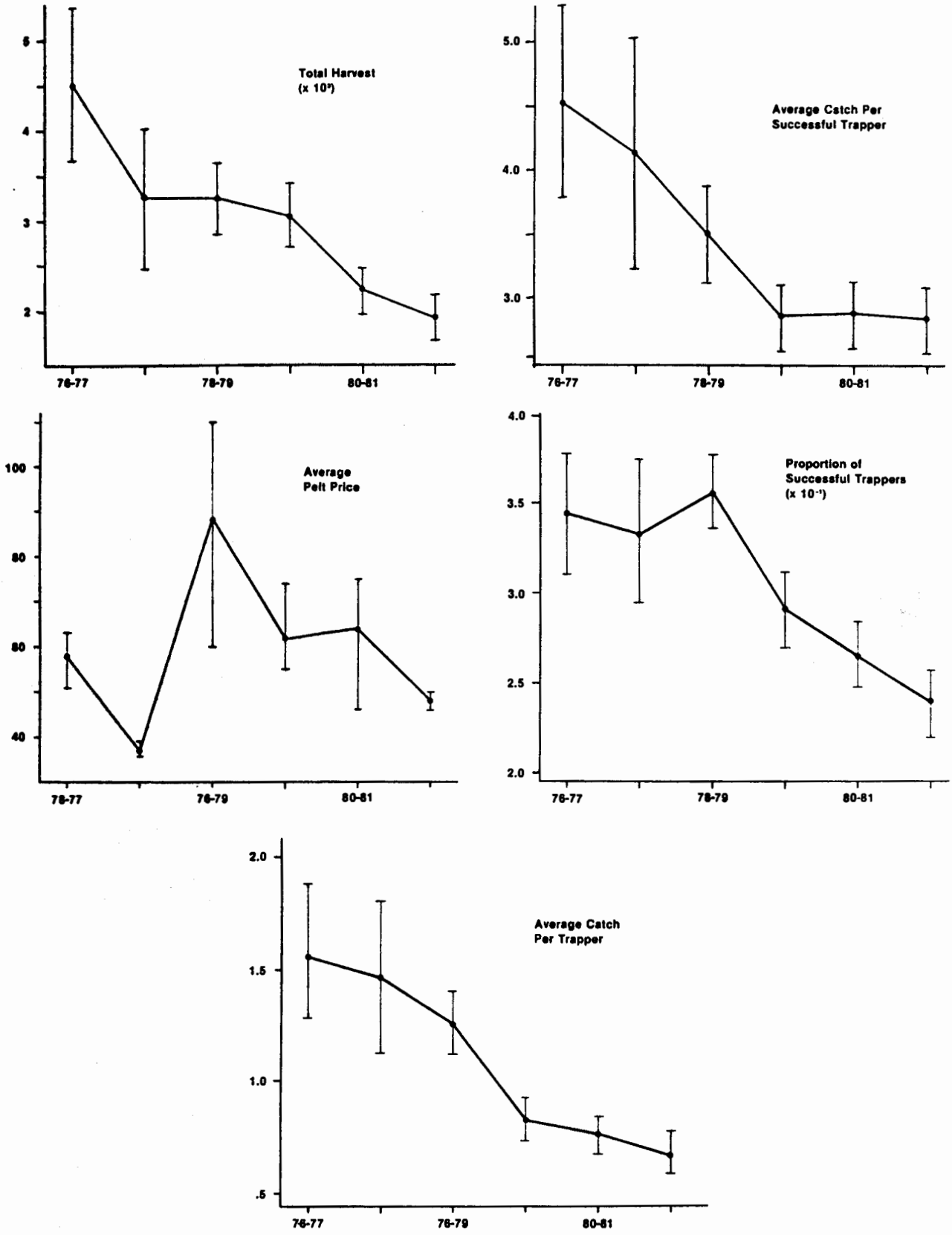

Figure 9. Seasonal trends in bobcat trapping harvest indices and pelt prices in Mississippi. Vertical lines represent 95% confidence intervals, except for prices. For prices vertical lines represent high and low average sale prices.

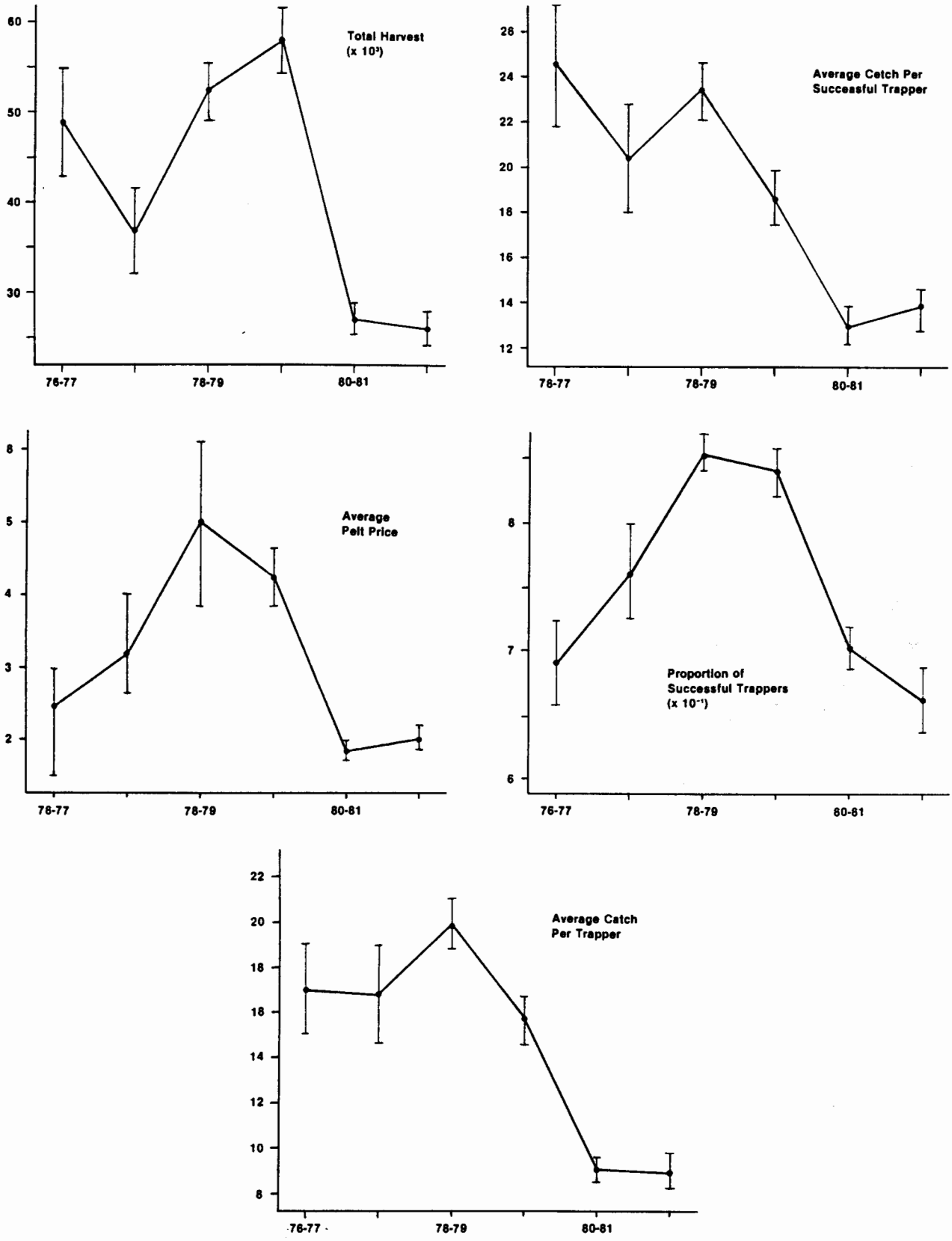

Figure 10. Seasonal trends in opossum trapping harvest indices and pelt prices in Mississippi. Vertical lines represent 95% confidence intervals, except for prices. For prices vertical lines represent high and low average sale prices.

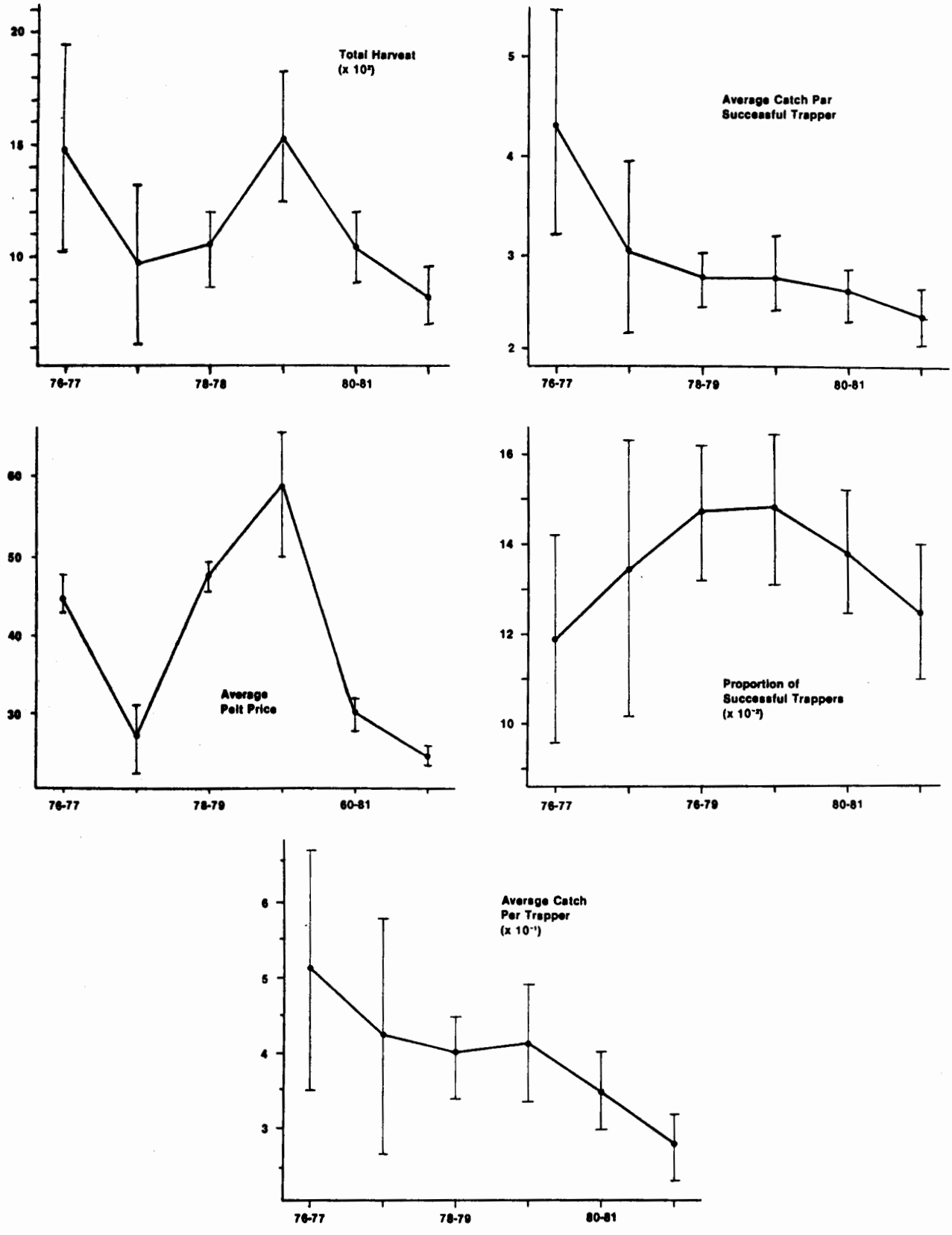

Figure 11. Seasonal trends in otter trapping harvest indices and pelt prices in Mississippi. Vertical lines represent 95% confidence intervals, except for prices. For prices vertical lines represent high and low average sale prices.

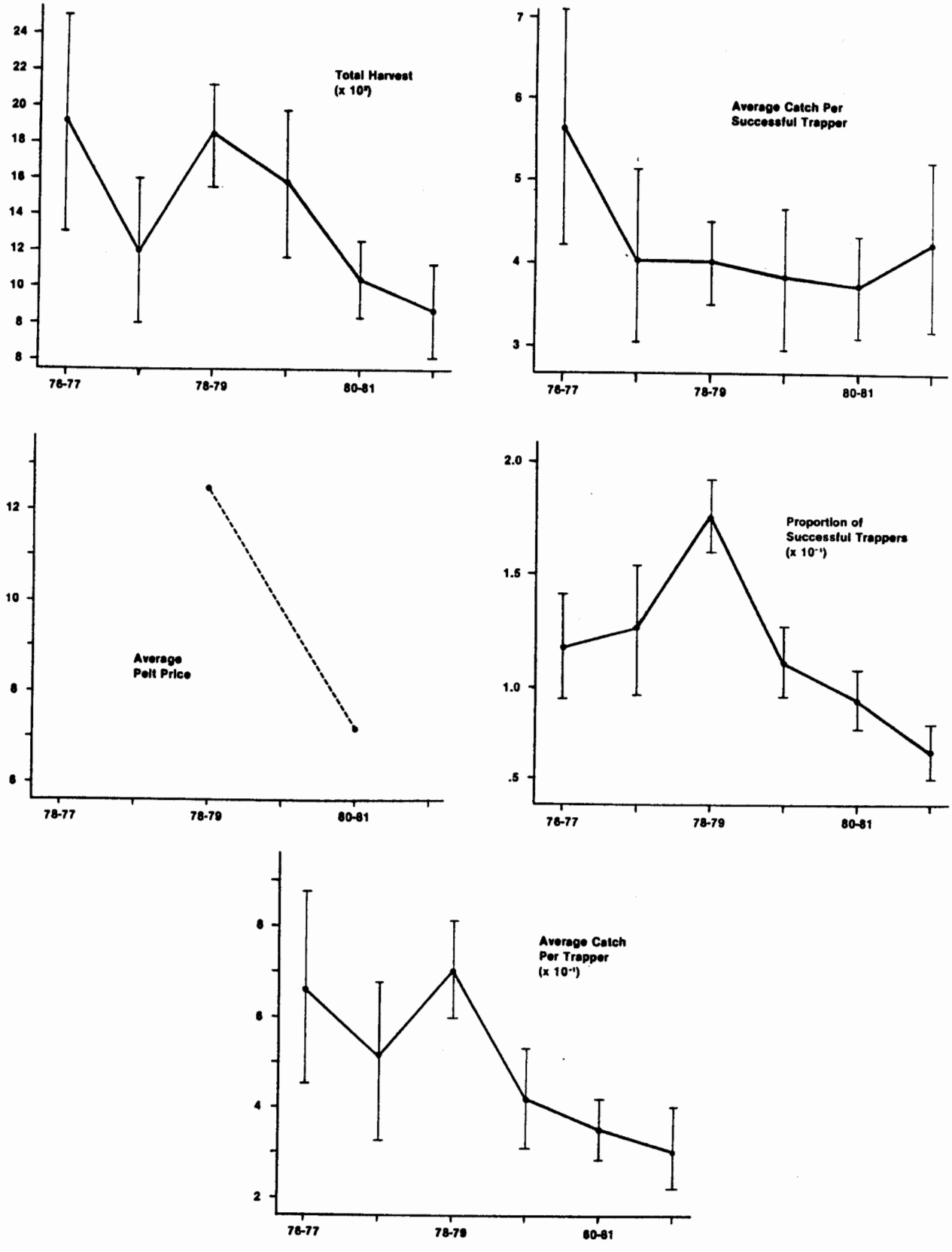

Figure 12. Seasonal trends in spotted skunk trapping harvest indices and pelt prices in Mississippi. Vertical lines represent 95% confidence intervals, except for prices. For prices vertical lines represent high and low average sale prices.

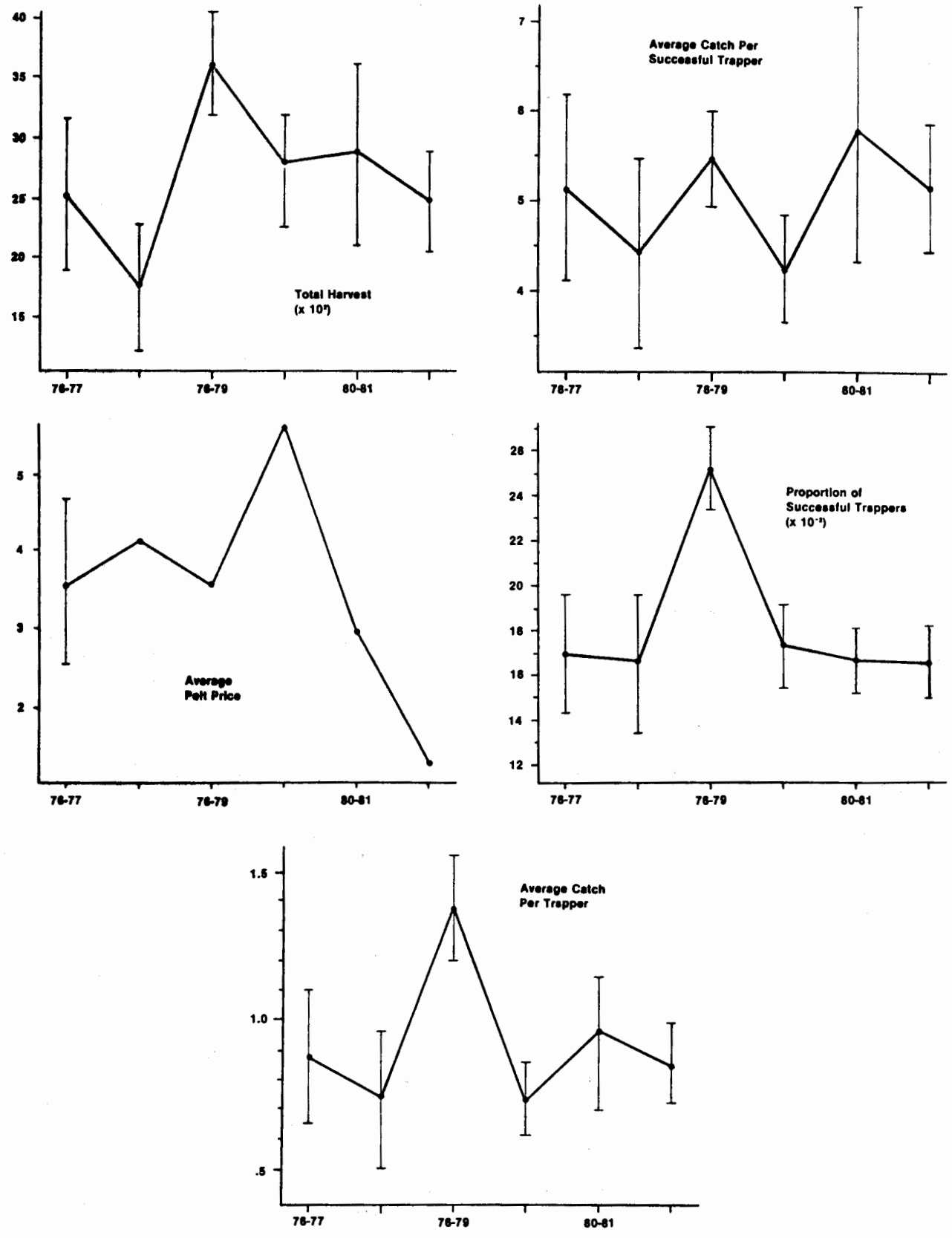

Figure 13. Seasonal trends in striped skunk trapping harvest indices and pelt prices in Mississippi. Vertical lines represent 95% confidence intervals, except for prices. For prices vertical lines represent high and low average sale prices.

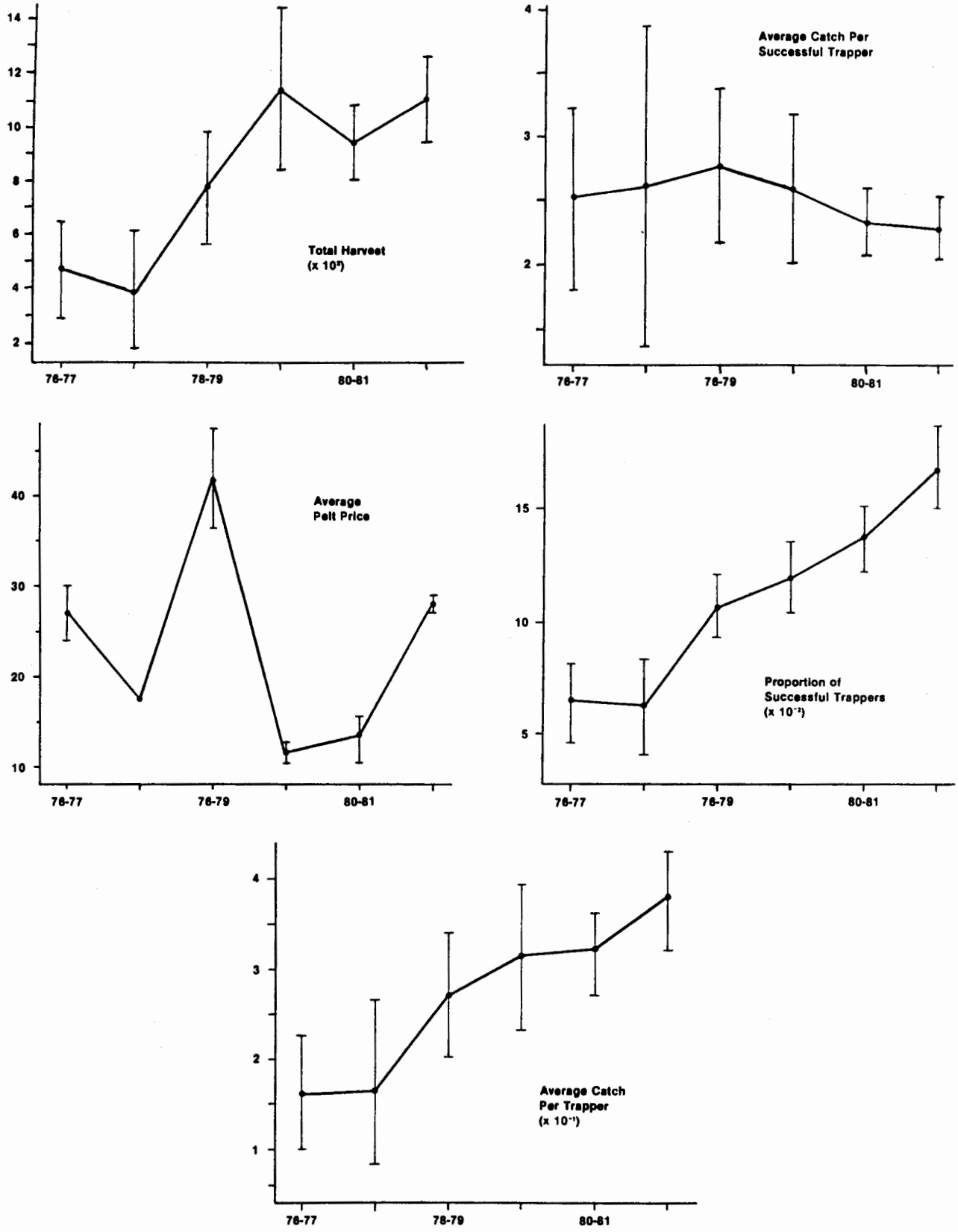

Figure 14. Seasonal trends in coyote trapping harvest indices and pelt prices in Mississippi. Vertical lines represent 95% confidence limits, except for prices. For prices vertical lines represent high and low average sale prices.

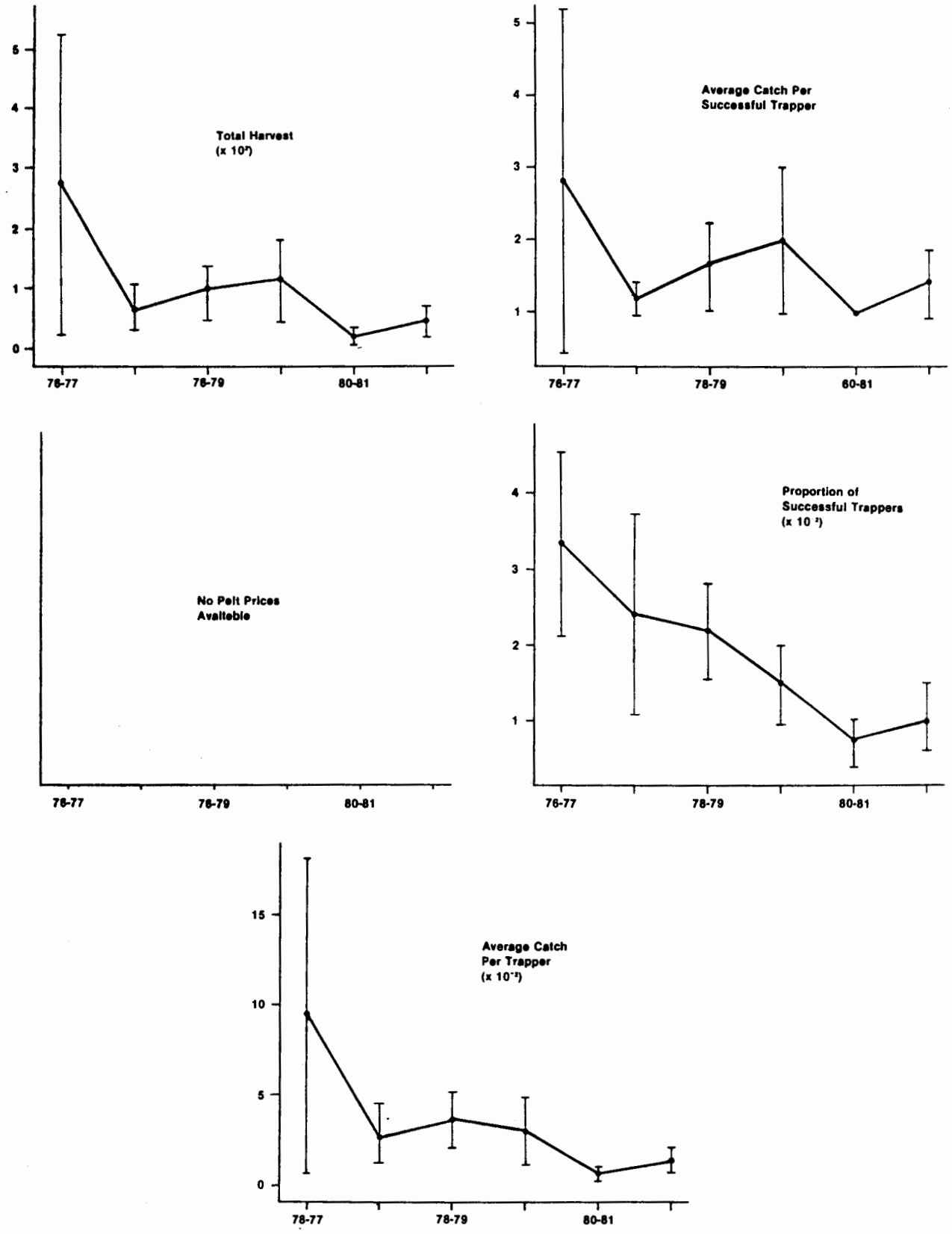

Figure 15. Seasonal trends in weasel trapping harvest indices and pelt prices in Mississippi. Vertical lines represent 95% confidence intervals, except for prices. For prices vertical lines represent high and low average sale prices.

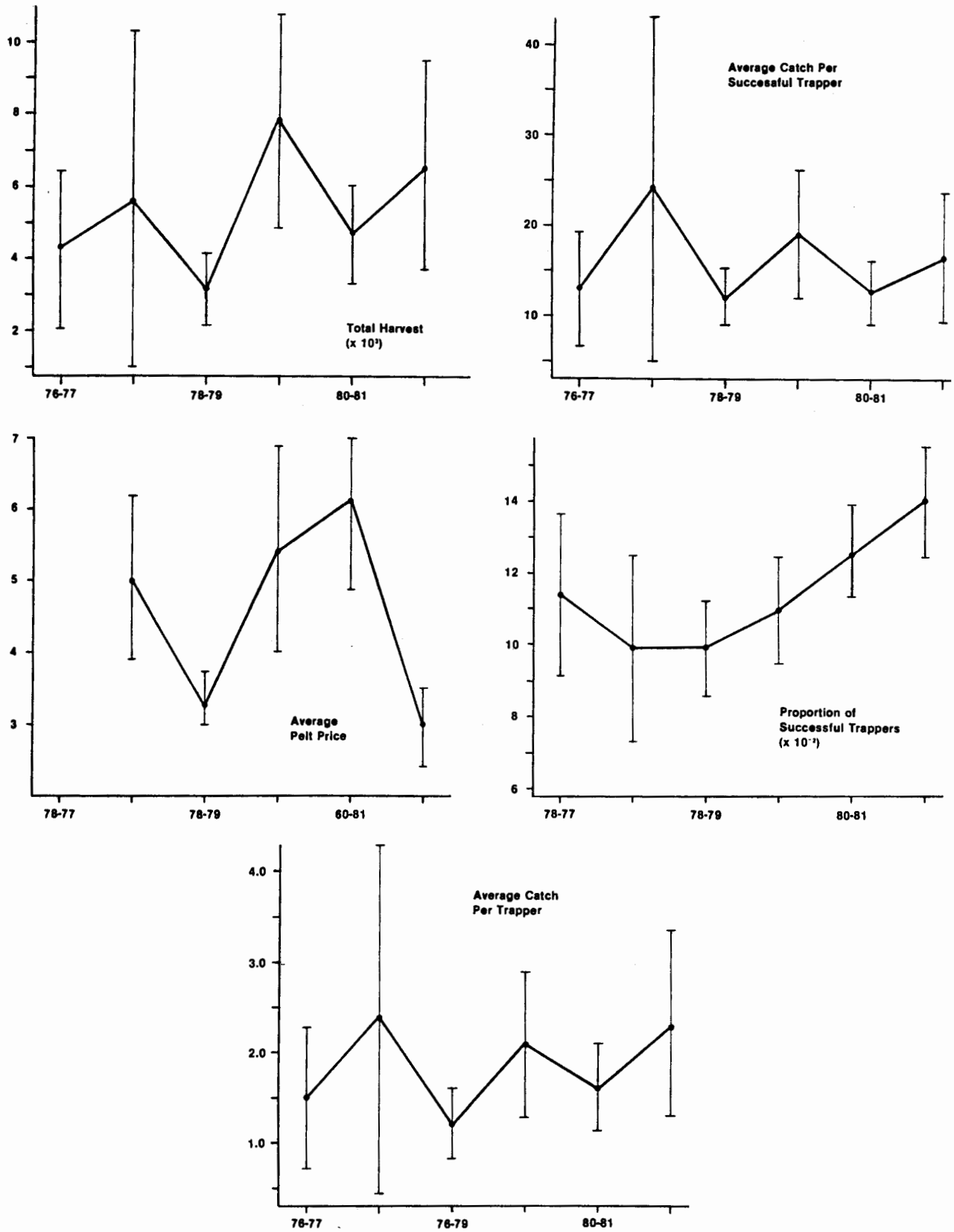

Figure 16. Seasonal trends in nutria trapping harvest indices and pelt prices in Mississippi. Vertical lines represent 95% confidence intervals, except for prices. For prices vertical lines represent high and low average sale prices.

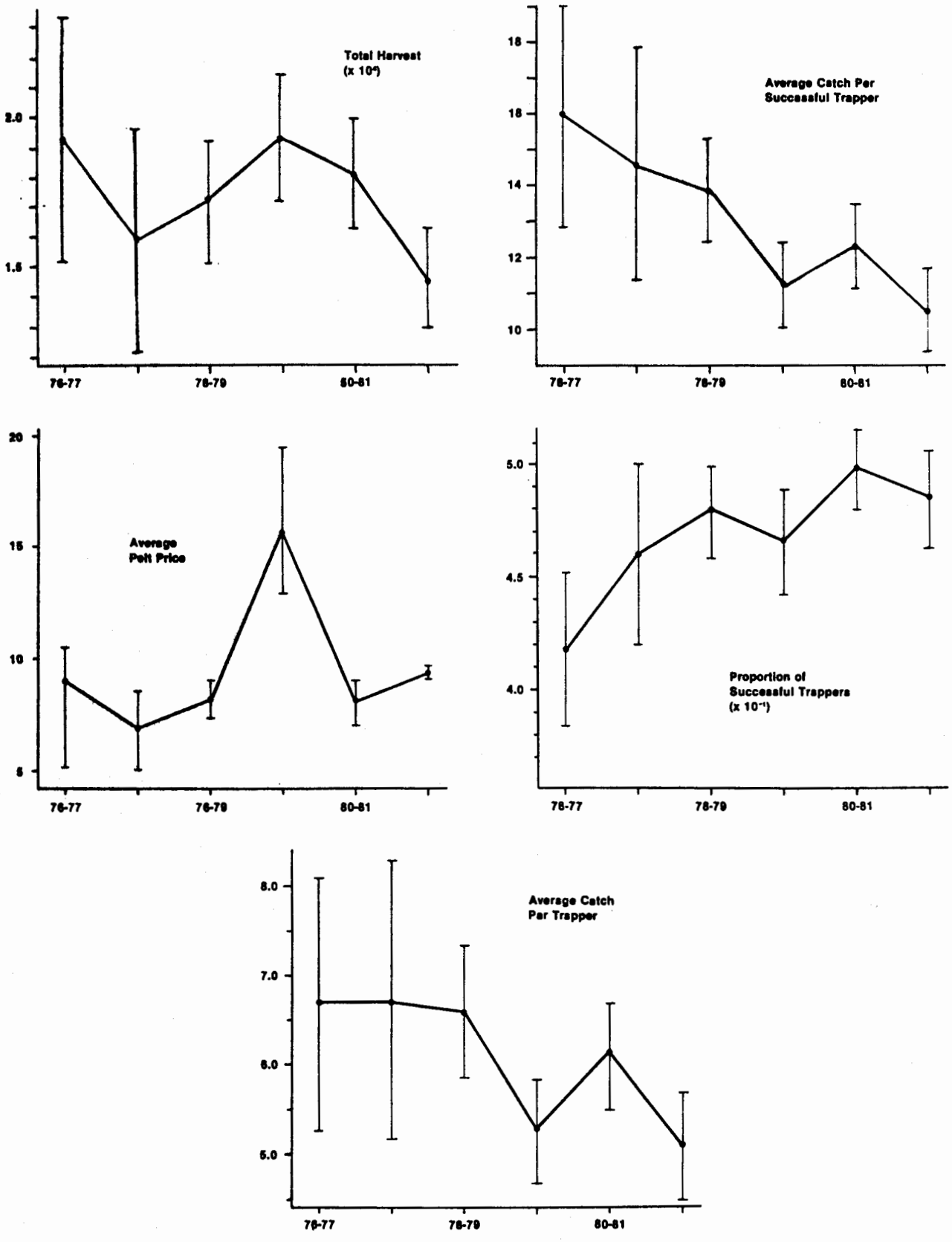

Figure 17. Seasonal trends in beaver trapping harvest indices and pelt prices in Mississippi. Vertical lines represent 95% confidence intervals, except for prices. For prices vertical lines represent high and low average sale prices.

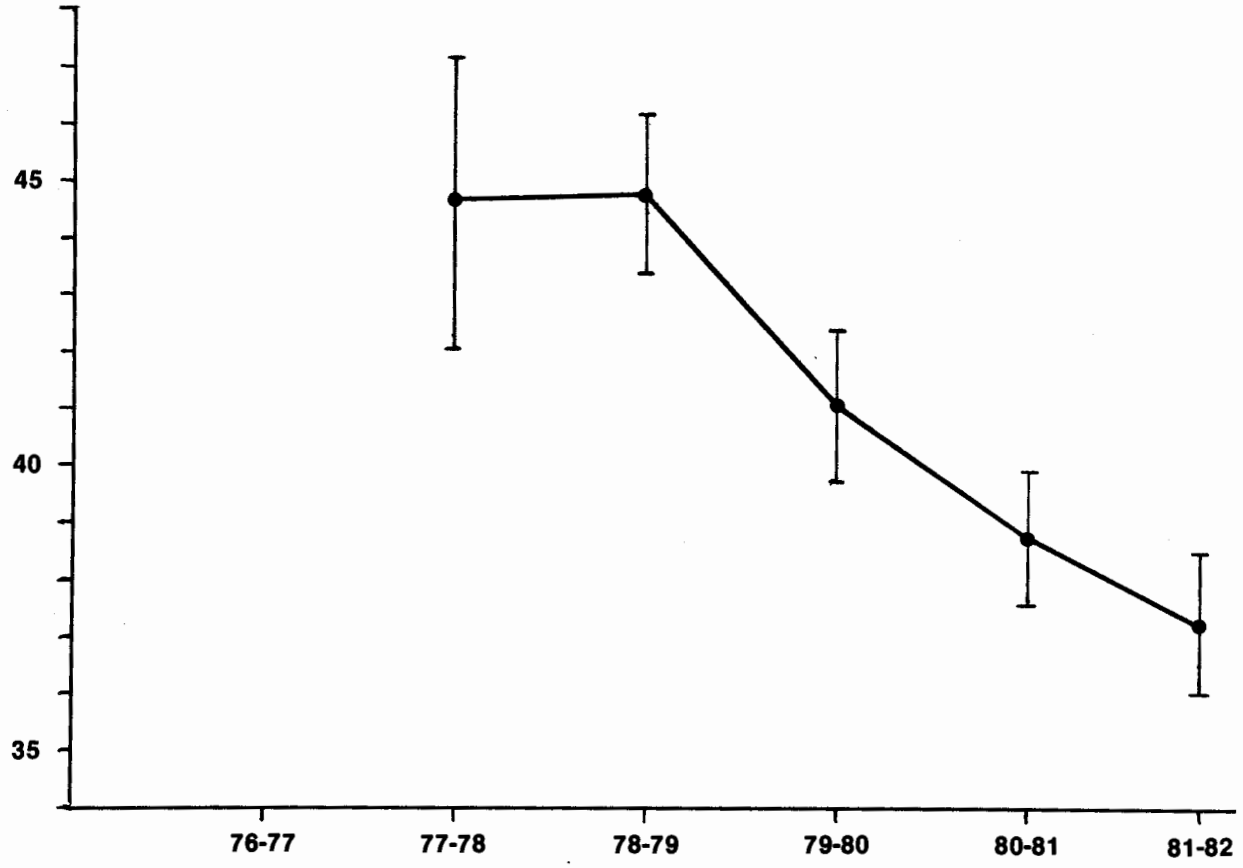

Figure 18. Average number of days trapped per trapper for the 1977-78 through 1981-82 seasons. Vertical lines represent 95% confidence intervals.

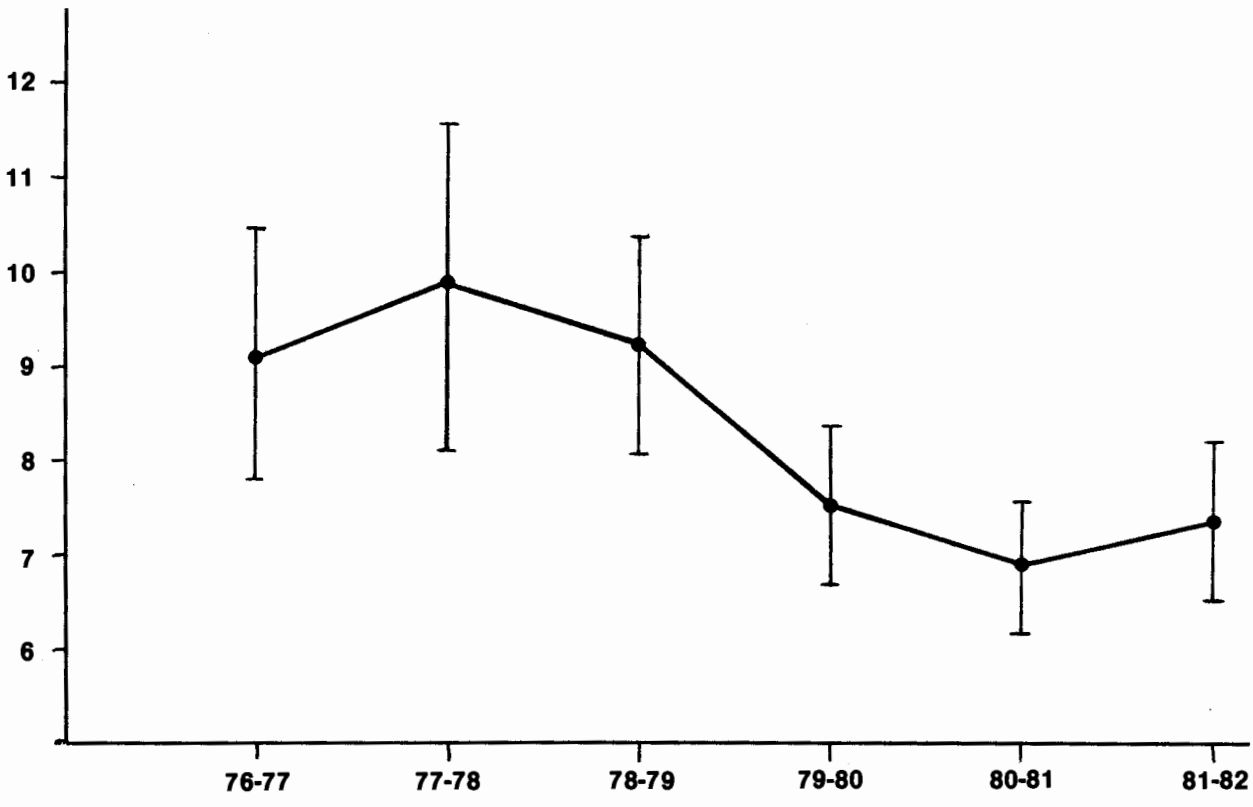

Figure 19. Average trapline length in miles for the 1976-77 through 1981-82 seasons. Vertical lines represent 95% confidence intervals.

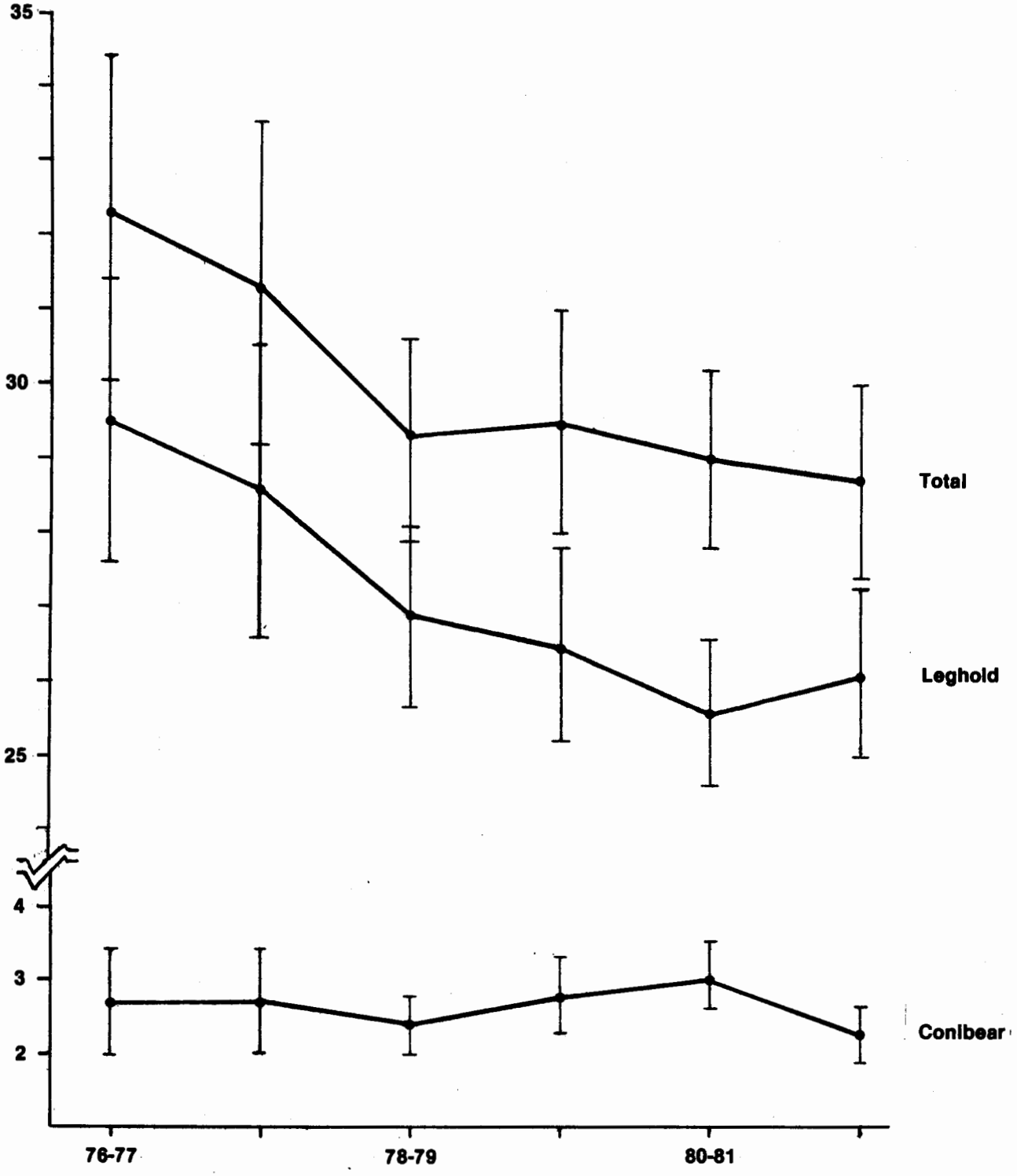

Figure 20. Average numbers of traps used per trapper for the 1976-77 through 1981-82 seasons. Vertical lines represent 95% confidence intervals.

Appendix I. Keypunch instructions for returned questionnaire.

General

When data are missing, skip to the next column(s) which are to contain data.

A red pen was used to edit returns. Punch, or do not punch, as indicated by the red markings.

Part A - All of Part A goes on a single cord.

Input Data	Columns	
ID	1-5	
Part - A	6	
#1	7	
#2 (county code)	8-9	
#3	10-12	
#4 (leghold)	13-15	
(conibear)	16-18	
(snares)	19-21	
#5	22-25	
#6 (river or stream)	26-27	
(beaver pond)	28-29	
(marsh)	30-31	
(natural lake)	32-33	
(man-made lake)	34-35	
(ditch)	36-37	
#7	38	(when both are checked punch 3)
#8	39-40	

Part B

Punch only lines which have species code circled in red.

Every species is punched on an individual card.

Appendix I. (Continued)

Do not punch information from two different trappers on the same card.

Input Date	Columns
ID	1-5
Part - B	6
Species Code	7-8
Trapped	9-11
Hunting	12-14
Others	15-27
Sold	18-20

Appendix II.

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=GFTS01.GPGM014.DATA

//GFGM014 JOB (GF00,5309),STEFFEN,CLASS=A,MSGLEVEL=1,MSGCLASS=A
// EXEC ERSAS,OPTIONS='PAGESIZE=60',REGION=2000K
//IN DD DSN=GFTS01.TRAP.DATA,UNIT=DISK,DISP=OLD
//OUT DD DSN=GFTS01.YR8586.DATA,UNIT=DISK,DISP=(,CATLG),
//             SPACE=(TRK,(50,10),RLSE)
*********************************************************************
*    THE FOLLOWING PROGRAM READS DATA AS PUNCHED FROM THE TRAPPER   *
* HARVEST SURVEY.  IT READS BOTH PARTS A AND B, MERGES THEM TO-     *
* GETHER, AND OUTPUTS A SAS DATA SET WITH ONE OBSERVATION PER       *
* RESPONDENT.                                                       *
*********************************************************************
*    THIS PROGRAM IS STORED SAS DATA IN THE GF PANVALET LIBRARY     *
* (GF.SOURCE.LIBRARY) WITH THE NAME "GPGM014".                      *
*********************************************************************
*    THE INPUT FILE IS AS FOLLOWS:                                  *
*    (1)  IN = DS FILE RESULTING FROM ORIGINAL QUESTIONNAIRE
*         KEYPUNCHING.                                              *
*********************************************************************
*    THE OUTPUT FILE IS AS FOLLOWS:                                 *
*    (1)  OUT = FINAL SAS DATA SET WITH ONE OBSERVATION OF ALL      *
*         QUESTIONNAIRE DATA PER RESPONDENT.                        *
*********************************************************************;
DATA PARTA (KEEP = PART ID DIDTRAP CTY DAYS LEG CONI SN LEN TYPE
   SET AGE YRT)
 PARTB (DROP =DIDTRAP CTY DAYS LEG CONI SN LEN SET AGE YRT TYPE);
  INFILE IN;
  INPUT PART $ 6 ID 1-5 @;
  IF PART = 'A' THEN INPUT DIDTRAP 7 CTY 8-9 DAYS 10-12 LEG 13-15
    CONI 16-18 SN 19-21 LEN 22-26 TYPE 27 AGE 28-29 YRT 30-31;
  IF PART = 'A' THEN OUTPUT PARTA;
IF PART = 'B' THEN INPUT
  SP 7-8 TRAP 9-11 HUNT 12-14 OTHER 15-17 SOLD 18-20;
IF PART = 'B' THEN OUTPUT PARTB;
DATA B; SET PARTB;
  DROP PART;
 PROC SORT; BY SP ID;
*********************************************************************
* THE FOLLOWING STATEMENTS REARRANGE THE ENTIRE DATA SET TO ONE     *
* OBSERVATION PER RESPONDENT.                                       *
*********************************************************************;
DATA MINK; SET B;
  IF SP=1;
  MINKT=TRAP;
  MINKH=HUNT;
  MINKO=OTHER;
  MINKS=SOLD;
DATA COON; SET B;
  IF SP=2;
  COONT=TRAP;
  COONH=HUNT;
  COONO=OTHER;
  COONS=SOLD;
DATA RAT; SET B;
  IF SP=3;
  RATT=TRAP;
  RATH=HUNT;
  RATO=OTHER;
  RATS=SOLD;
DATA RFOX; SET B;
  IF SP=4;
  RFOXT=TRAP;
  RFOXH=HUNT;
  RFOXO=OTHER;
  RFOXS=SOLD;
DATA GFOX; SET B;
  IF SP=5;
  GFOXT=TRAP;
  GFOXH=HUNT;
  GFOXO=OTHER;
  GFOXS=SOLD;
DATA CAT; SET B;
  IF SP=6;
```

Appendix II. (Continued)

```
  CATT=TRAP;
  CATH=HUNT;
  CATO=OTHER;
  CATS=SOLD;
DATA OP; SET B;
  IF SP=7;
  OPT=TRAP;
  OPH=HUNT;
  OPO=OTHER;
  OPS=SOLD;
DATA OTTER; SET B;
  IF SP=8;
  OTTERT=TRAP;
  OTTERH=HUNT;
  OTTERO=OTHER;
  OTTERS=SOLD;
DATA SPSK; SET B;
  IF SP=9;
  SPSKT=TRAP;
  SPSKH=HUNT;
  SPSKO=OTHER;
  SPSKS=SOLD;
DATA STSK; SET B;
  IF SP=10;
  STSKT=TRAP;
  STSKH=HUNT;
  STSKO=OTHER;
  STSKS=SOLD;
DATA COY; SET B;
  IF SP=11;
  COYT=TRAP;
  COYH=HUNT;
  COYO=OTHER;
  COYS=SOLD;
DATA WE; SET B;
  IF SP=12;
  WET=TRAP;
  WEH=HUNT;
  WEO=OTHER;
  WES=SOLD;
DATA NUT; SET B;
  IF SP=13;
  NUTT=TRAP;
  NUTH=HUNT;
  NUTO=OTHER;
  NUTS=SOLD;
DATA BEAV; SET B;
  IF SP=14;
  BEAVT=TRAP;
  BEAVH=HUNT;
  BEAVO=OTHER;
  BEAVS=SOLD;
DATA ALLB; MERGE MINK COON RAT RFOX GFOX CAT OP OTTER SPSK STSK COY
  WE NUT BEAV;
  BY ID;
  IF ID=566 THEN NUTT=3000;
  DROP SP TRAP HUNT OTHER SOLD;
DATA ALLA; SET PARTA;
  DROP PART;
  PROC SORT;  BY ID;
*************************************************************************
*  OUTPUTTING AND INSERTING ZEROS IN FINAL SAS DATASET.                 *
*************************************************************************;
DATA OUT.YR8586; MERGE ALLA ALLB;
  BY ID;
  ARRAY ZERO
    MINKT COONT RATT RFOXT GFOXT CATT OPT OTTERT SPSKT STSKT COYT
    WET NUTT BEAVT
    MINKH COONH RATH RFOXH GFOXH CATH OPH OTTERH SPSKH STSKH COYH
    WEH NUTH BEAVH
    MINKO COONO RATO RFOXO GFOXO CATO OPO OTTERO SPSKO STSKO COYO
    WEO NUTO BEAVO;
  DO OVER ZERO;
    IF ZERO=. THEN ZERO=0;
      END;

   PROC CONTENTS DIRECTORY HISTORY POSITION;
  PROC PRINT DATA = OUT.YR8586 (OBS = 100);
  //
```

Appendix III.

(1) Total harvest for each species

(a) $\hat{Y}$ = estimate of population total (total catch for all trappers) (Cochran 1977:21)

$$= N \bar{y}$$

where, N = total number of license buyers

$\bar{y}$ = sample mean catch for all trapping license holders

$$= \frac{\sum_{i=1}^{n} y_i}{n}$$

where, y_i = catch for the i^{th} license holder ($i = 1,2,...n$)

n = number of sampled license holders who provided usable responses

Note: If a license holder did not trap, then $y_i = 0$

Appendix III. (Continued)

(b) $S_{\hat{y}}$ = standard error of the total catch for all trappers

$$= N\,(S_{\bar{y}})$$

where, N = total number of license buyers

$S_{\bar{y}}$ = standard error of the mean catch per license buyer

$$= \sqrt{S^2_{\bar{y}}}$$

where, $S^2_{\bar{y}} = \frac{S^2}{n}\left(\frac{N-n}{N}\right)$

Where, S^2 = sample variance

$$= \frac{\sum_{i=1}^{n} (y_i - \bar{y})^2}{n-1}$$

Appendix III. (Continued)

(2) Average seasonal harvest per trapper

(a) $\bar{y}_m$ = estimate of mean take per license buyer who trapped.

= estimate of the mean over the m^{th} subpopulation of license buyers who actually trapped (Cochran 1977:34).

$$= \sum_{K=1}^{n_m} \frac{y_{mk}}{n_m}$$

where, y_{mk} = harvest per k^{th} license buyer who trapped.

$K = 1, 2, 2, \ldots n_m$

n_m = sample number of license buyers who trapped.

(b) $S_{\bar{y}_m}$ = standard error of the mean harvest per license buyer who trapped.

$$= \sqrt{S^2_{\bar{y}_m}}$$

where, $S^2_{\bar{y}_m} = \frac{S_m^2}{n_m} \left(\frac{N-n}{N}\right)$

where, S_m^2 = sample variance of license buyers who trapped.

$$= \frac{\sum_{K=1}^{n_m} (y_{mk} - \bar{y}_m)^2}{n_m - 1}$$

Appendix III. (Continued)

(3) Average seasonal harvest per successful trapper of each species

(a) $\bar{y}_j$ = estimate of mean take per successful trapper

= estimate of the mean over the j^{th} subpopulation of successful species specific trappers (Cochran 1977:34).

$$= \sum_{k=1}^{n_j} \frac{y_{jk}}{n_j}$$

where, y_{jk} = take per k^{th} trapper who harvested the j^{th} species

= take per k^{th} successful trapper

K = 1, 2, 3, ..., n_j

n_j = sample number of successful trappers of the j^{th} species.

(b) $S_{\bar{y}_j}$ = standard error of the mean take per successful trapper of the j^{th} species (Cochran 1977:35)

$$= \sqrt{S^2_{\bar{y}_j}}$$

where, $S^2_{\bar{y}_j} = \frac{S_j^2}{n_j} \left(\frac{N-n}{N} \right)$

where, S_j^2 = sample variance of successful trappers of the j^{th} species

$$= \frac{\sum_{k=1}^{n_j} (y_{jk} - \bar{y}_j)^2}{n_j - 1}$$

(4) Percent successful trappers of each species

(a) p_j = estimate of the proportion of successful trappers of the j^{th} species (Cochran 1977:63).

$$= \frac{n_j}{n_m}$$

(b) S_{p_j} = standard error of the proportion of successful trappers of the j^{th} species (Cochran 1977:63).

$$= \sqrt{S^2_{p_j}}$$

$$\text{where } S^2_{p_j} = \frac{p_j(1 - p_j)}{n_m - 1} \left(\frac{N-n}{N}\right)$$

(5) Total number of successful trappers of each species

(a) $\hat{A}_j$ = estimate of the total number of successful trappers of the j^{th} species (Cochran 1977:63).

$$= Np$$

$$\text{where, } p = \frac{n_j}{n}$$

(b) $S(\hat{A}_j)$ = standard error of the total number of successful trappers of the j^{th} species (Cochran 1977:63).

$$= \sqrt{V(\hat{A}_j)}$$

$$\text{where, } V(\hat{A}_j) = \frac{N^2 p(1-p)}{n - 1} \left(\frac{N-n}{N}\right)$$

Appendix IV.

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=GFTSO1.GPGMO13.DATA

//GFGMO13 JOB (GFOO,5309),STEFFEN,CLASS=A,MSGLEVEL=1,MSGCLASS=A
// EXEC ERSAS,OPTIONS='PAGESIZE=60'
//IN DD DSN=GFTSO1.YR8586.DATA,UNIT=DISK,DISP=SHR
*************************************************************************
*  THE FOLLOWING PROGRAM PERFORMS STATISTICAL CALCULATIONS (ESTIMATES,  *
*  STANDARD ERRORS, CONFIDENCE LIMITS AND SAMPLE SIZES) FOR THE         *
*  STATEWIDE TRAPPER HARVEST INDICES.                                   *
*************************************************************************
*    THIS PROGRAM IS STORED AS DATA IN THE GF PANVALET LIBRARY          *
*  (GF.SOURCE.LIBRARY) WITH THE NAME "GPGMO13".                         *
*************************************************************************
*    THE INPUT FILE IS AS FOLLOWS:                                      *
*      (1) IN = SAS DATA SET CREATED BY THE JOB NAME "GPGMO14".         *
*************************************************************************;
* MACRO DO1 = TRAPPING SEASON                                           *
* MACRO DO2 = TOTAL NUMBER OF TRAPPERS                                  *
* MACRO DO3 = SAS DATA SET NAME - E.G. YR7980                           *
*************************************************************************;
MACRO DO1 1985-86 %
MACRO DO2 1358 %
MACRO DO3 YR8586 %
OPTIONS NODATE;
DATA TRAP; SET IN.DO3;
DATA SPECIES;
INPUT SP 1-2 SPECIES $ 3-16;
CARDS;
1 MINK
2 RACCOON
3 MUSKRAT
4 RED FOX
5 GRAY FOX
6 BOBCAT
7 OPOSSUM
8 OTTER
9 SPOTTED SKUNK
10 STRIPED SKUNK
11 COYOTE
12 WEASEL
13 NUTRIA
14 BEAVER
;
*************************************************************************
*   MACRO GO CONTAINS THE PROGRAM PERFORMING THE ANALYSIS.              *
*************************************************************************;
MACRO DO4 TRAPPING ONLY %
MACRO GO
DATA NEW; SET TRAP;
  SP=1; NUMBER=MINKT; OUTPUT;
  SP=2; NUMBER=COONT; OUTPUT;
  SP=3; NUMBER=RATT; OUTPUT;
  SP=4; NUMBER=RFOXT; OUTPUT;
  SP=5; NUMBER=GFOXT; OUTPUT;
  SP=6; NUMBER=CATT; OUTPUT;
  SP=7; NUMBER=OPT; OUTPUT;
  SP=8; NUMBER=OTTERT; OUTPUT;
  SP=9; NUMBER=SPSKT; OUTPUT;
  SP=10; NUMBER=STSKT; OUTPUT;
  SP=11; NUMBER=COYT; OUTPUT;
  SP=12; NUMBER=WET; OUTPUT;
  SP=13; NUMBER=NUTT; OUTPUT;
  SP=14; NUMBER=BEAVT; OUTPUT;
  KEEP SP NUMBER DIDTRAP;
PROC SORT DATA=NEW; BY SP;
DATA SUBNEW; SET NEW;
IF DIDTRAP=1;
PROC MEANS NOPRINT; BY SP;
VAR NUMBER;
OUTPUT OUT=SUBTRAP N=NJ MEAN=AVG STDERR=STDERRA;
PROC MEANS DATA=NEW NOPRINT; BY SP;
  VAR NUMBER;
  OUTPUT OUT=TRAP1 N=N MEAN=AUG STDERR=STDERR;
*************************************************************************
```

Appendix IV. (Continued)

```
* CALCULATING TOTAL FOR ALL TRAPPERS WITH C.L.                          *
*************************************************************************;
DATA ONE; SET TRAP1;
POP = D02;
  STDERR=STDERR*SQRT((POP-N)/POP);
  STDERRT=POP*STDERR;
  TOTAL=POP*AUG;
  T=1.97;
  UPPERT=TOTAL+(T*STDERRT);
  LOWERT=TOTAL-(T*STDERRT);
DROP STDERR;
*************************************************************************
*CALCULATING AVG FOR ALL TRAPPERS                                       *
*************************************************************************;
DATA THREE; MERGE ONE SUBTRAP; BY SP;
STDERRA=STDERRA*SQRT((POP-N)/POP);
UPPERA=AVG+(2*STDERRA);
LOWERA=AVG-(2*STDERRA);
*************************************************************************
* CONSIDERING ONLY SUCCESSFUL TRAPPERS OF EACH SPECIES*
*************************************************************************;
DATA TWO; SET NEW;
  IF NUMBER _=0;
  PROC MEANS NOPRINT; BY SP;
    VAR NUMBER;
    OUTPUT OUT=TRAP2 N=NUMS MEAN=AUGS STDERR=STDERRAS;
DATA ALL; MERGE THREE TRAP2; BY SP;
*************************************************************************
* CALCULATING PROPORTION + TOTAL SUCCESSFUL TRAPPERS WITH C. L.*
*************************************************************************;
  P=NUMS/NJ;
  Q=1-P;
  VP=((P*Q)/(NJ-1))*((POP-N)/POP);
  STDERRP=SQRT(VP);
  UPPERP=P+(2*STDERRP);
  LOWERP=P-(2*STDERRP);
  TOTALSUC=POP*P;
STDERRS=POP*STDERRP;
  UPPERSUC=POP*UPPERP;
  LOWERSUC=POP*LOWERP;
*************************************************************************
* CALCULATING AVG. TAKE / SUCCESSFUL TRAPPER WITH C. L.                 *
*************************************************************************;
  STDERRAS=STDERRAS*SQRT((POP-N)/POP);
  UPPERAS=AUGS+(2*STDERRAS);
  LOWERAS=AUGS-(2*STDERRAS);
AVGS = AUGS;
  KEEP SP N TOTAL STDERRT LOWERT UPPERT AVG STDERRA LOWERA UPPERA P
       STDERRP LOWERP UPPERP TOTALSUC LOWERSUC UPPERSUC AVGS STDERRAS
       STDERRS LOWERAS UPPERAS NUMS NJ;
DATA FINAL; MERGE ALL SPECIES; BY SP;
PROC PRINT D;
ID SPECIES;
VAR N        TOTAL STDERRT LOWERT UPPERT;
TITLE ESTIMATE OF TOTAL FUR HARVEST FOR D01 - D04;
PROC PRINT D;
ID SPECIES;
VAR NJ       AVG STDERRA LOWERA UPPERA;
TITLE ESTIMATE OF AVERAGE CATCH PER TRAPPER FOR D01 - D04;
PROC PRINT D;
ID SPECIES;
VAR NJ       P STDERRP LOWERP UPPERP;
TITLE ESTIMATE OF PROPORTION OF SUCCESSFUL TRAPPERS FOR D01 - D04;
PROC PRINT D;
ID SPECIES;
VAR NJ       TOTALSUC STDERRS LOWERSUC UPPERSUC;
TITLE ESTIMATE OF NUMBER OF SUCCESSFUL TRAPPERS FOR D01 - D04;
DATA; SET FINAL;
N = NUMS;
PROC PRINT D;
ID SPECIES;
VAR N        AVGS STDERRAS LOWERAS UPPERAS;
TITLE ESTIMATE OF AVERAGE CATCH PER SUCCESSFUL TRAPPER FOR D01 - D04;
X
GO
```

Appendix IV. (Continued)

```
MACRO D04 ALL METHODS %
DATA TRAP; SET TRAP;
MINKT = MINKT+MINKH+MINKO;
COONT = COONT+COONH+COONO;
RATT=RATT+RATH+RATO;
RFOXT=RFOXT+RFOXH+RFOXO;
GFOXT=GFOXT+GFOXH+GFOXO;
CATT=CATT+CATH+CATO;
OPT=OPT+OPH+OPO;
OTTERT=OTTERT+OTTERH+OTTERO;
SPSKT=SPSKT+SPSKH+SPSKO;
STSKT=STSKT+STSKH+STSKO;
COYT=COYT+COYH+COYO;
WET=WET+WEH+WEO;
NUTT=NUTT+NUTH+NUTO;
BEAVT=BEAVT+BEAVH+BEAVO;
GO
//
```