IMPACT OF MARKET DYNAMICS ON MISSOURI'S FURBEARER HARVEST SYSTEM [a]

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Abstract: Increased commercial demand for wild furs had substantial influence on various aspects of Missouri's furbearer harvest system. Significant ($P < .05$) positive correlations existed between inflated market values and fur trader numbers, trapper numbers, raccoon (*Procyon lotor*) hunter numbers, raccoon hunter individual efforts and harvests of high demand furbearers and certain other species. Little correlation existed following transformation of inflated values to inflation-adjusted standards. Trapper recruitment during active market periods concentrated heavily on young individuals. Mean trapper efforts and total catch were lower in 1977-78 than 1972-73 despite increased market demand and increased mean trapper expenditures. The reductions were attributed to equipment and experience deficiencies of newer trapping recruits, more restrictive trapping regulations, variable weather conditions during trapping periods and distribution of total catch among a greater number of participants.

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Harvests of furbearers differ sharply from those of most harvested wildlife because economic incentives assume an important role in determining annual harvest pressures. Furbearer populations are the ultimate supply component of the fur marketing system, while fashion consumers are the demand component. Market demands are expressed annually through mean pelt values. Pelt values or prices are determined when the capacity of populations to supply furs through hunting and trapping reaches equilibrium with current demands of fashion consumers or at the intersection of the economic supply curve and demand curve (Gregory 1972).

Annual harvests, viewed simply, are a function of species availability and annual harvest pressures. Annual hunting and trapping pressures are the mechanisms by which furs are harvested. Harvest pressures are manifested in two distinct forms: (1) through hunter and trapper numbers; and (2) through hunter and trapper individual efforts.

Fur traders are the initial step along the transport, processing, manufacturing and distribution route which leads eventually to the fur consumer. Traders effectively advertise pelt values and play important roles in the collection and disposition of pelts following their entry into the market.

The objective of this study was to determine the impact of changing market conditions on certain aspects of Missouri's furbearer harvest system. These aspects included fur trader activity, raccoon hunter numbers and individual efforts, furbearer trapper numbers and select characteristics, and finally, furbearer harvests themselves. The efforts of S.L. Sheriff who reviewed the paper are appreciated.

METHODS

The Missouri Department of Conservation has tabulated furbearer harvests and collected market statistics annually since the 1940-41 season. This report does not review the entirety of these data for the following reasons: (1) over extended time periods, fluctuations in animal population size have considerable impact on their availability to

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hunters and trappers and ultimately on harvest levels; and (2) social changes, economic depressions, major wars and changes in human mobility over extended time periods create additional sources of variation which influence manpower availability and hunter-trapper access to populations. To minimize these influences, the investigation was restricted primarily to the period 1967-1976 which includes the recent period of increased market demand for wild furs.

Wild furs enter the commercial market at the time of their initial sale from fur-taker to fur trader. Two types of fur traders are licensed by the Missouri Department of Conservation and authorized to purchase furs: (1) fur buyers purchase furs during and shortly following harvest seasons; and (2) fur dealers conduct transactions throughout the permit year. Total annual fur trader permit sales were used to gauge the commercial attractiveness of fur harvests under varying market conditions.

Furbearer pelt harvests were determined from transaction reports required of all licensed fur buyers and dealers (Erickson and Sampson 1977). Reporting procedures require purchasers to obtain and record the name, permit number and status (either hunter-trapper or dealer-buyer) of each seller. The number of each species sold and county where harvested are also recorded. Post-season report tabulation provided statewide harvest estimates. Furs originating outside Missouri were excluded from tabulation. Secondary sales (trader to trader) were also excluded to avoid recording duplications.

Average market values of all sizes and grades of pelts for each species were determined from trader interviews and observed sales at major Missouri fur auctions. Market data were evaluated using inflation-adjusted and unadjusted dollar values. Unadjusted or observed pelt values were transformed to inflation-adjusted standards by dividing the unadjusted values by corresponding 1967-base wholesale price indexes (U.S. Dept. of Labor, Bureau of Labor Statistics, Wholesale Prices and Price Indexes. Jan. 1967 - Jan. 1976).

Missouri furbearer hunters are required to possess current small game hunting permits. Data collected from post-season small game harvest mail surveys (Sampson and Erickson 1977a) were used to identify raccoon hunters from other small game hunters and to estimate raccoon hunter numbers, mean individual efforts and success rates annually from the 1967-68 to 1976-77 seasons. Small game harvest surveys included an initial mail contact with hunters and 2 follow-up mailings to nonrespondents. Hunters were asked to provide: (1) the number of each species killed; and (2) the number of days spent hunting each species.

Trapper numbers were determined from annual trapping permit sales. Estimates of trapper individual efforts and other characteristics were obtained from mail surveys following the 1972-73 and 1977-78 trapping seasons. Approximately 10 percent of licensed trappers were contacted by an initial mailing with 2 follow-up mailings to nonrespondents. Trappers were asked to indicate: (1) whether they had trapped during the season; (2) their total years of trapping experience; (3) their total trapping expenses for the survey season (traps, lures, gas, permits, etc.); and (4) their total catch of each species. Additionally, they were asked to report the total number of days traps were set and the average number of traps used during the season. The age distribution of trappers in 1976 was determined from trapping permit information and compared with trappers in 1956 as an additional method of evaluating trapper recruitment characteristics.

Linear correlation and regression procedures were used to describe relationships between market conditions and fur trader numbers; raccoon hunter numbers, individual efforts and success rates; trapper numbers and harvest magnitude. Trapper characteristics determined from 1972-73 and 1977-78 mail surveys could not be statistically compared because only summary information for the 1972-73 survey was available. They are provided to show general changes in trapper characteristics under varying market conditions with recognition that conclusive statements cannot be made.

RESULTS AND DISCUSSION

Escalating commercial demand for wild furs since 1970-71 has had considerable impact on various factors important to Missouri's furbearer harvest system. Analysis of these impacts, however, is complicated by certain inherent features: (1) dual harvest systems (hunting and trapping); (2) the overlap between recreational and commercial involvement by hunters and trappers; (3) the number of species included in the furbearer groups; and (4) the tendency for price adjustments of 1 species to influence harvests of other species either positively, by increasing incidental catches, or negatively, by diverting harvest effort from low demand to high demand species.

Missouri's Fur Market

During the period 1967-68 to 1976-77 substantial changes occurred in the total mean unadjusted value of all harvested furbearers used as a general market indicator (Fig. 1). Unadjusted values fluctuated modestly from the 1967-68 to 1969-70 seasons reaching a low in 1970-71. Demand climbed steadily from 1970-71 to 1976-77 with the exception of 1974-75 when mean values declined from the preceding season. The mean unadjusted value of all harvested furbearers increased 1020 percent from the 1970-71 to 1976-77 seasons. Demand increases beginning in 1970-71 were associated with renewed interest in long-haired furs on world fashion marketplaces. Much of this interest originated in overseas markets. Strong foreign demand was a major factor in determining mean pelt values.

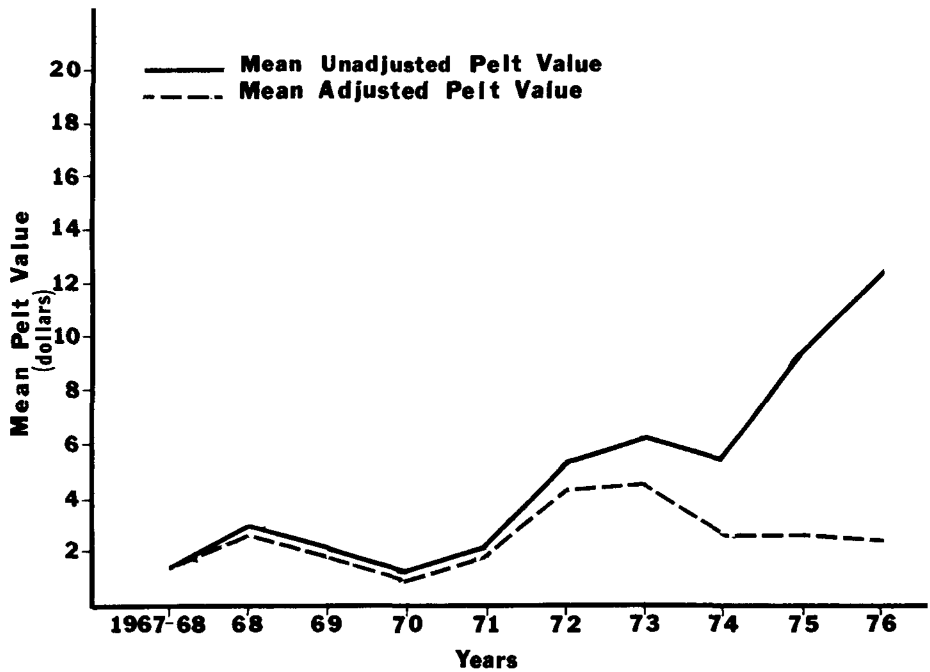

Fig. 1. Inflation-adjusted and unadjusted mean pelt values of all harvested furbearers 1967-68 to 1976-77.

Conversion of unadjusted mean pelt values to inflation-adjusted values dampened the magnitude of recent unadjusted value increases and removed successive 1975-76 and 1976-77 unadjusted value peaks (Fig. 1). Highest mean pelt values following inflation adjustment were noted in 1972-73 and 1973-74. Inflation-adjusted mean pelt values from 1974-75 to 1976-77 were essentially stable, creating a striking contrast with the annual trend of unadjusted pelt values during the same period.

Fur Traders

The total annual value of Missouri furbearer harvests during the study period ranged from $258,587 (unadjusted) in 1970-71 to $5,848,011 (unadjusted) in 1976-77. Increased mean pelt values and total harvest value increased the attractiveness of fur trading to potential traders. Trader permit sales ranged from 95 in 1970-71 to 300 in 1976-77. A significant $P < .01$) positive correlation was found between trader numbers and total unadjusted harvest value (Fig. 2). Trader numbers were not significantly correlated ($P > .05$) with inflation-adjusted harvest values. Fur trading is a purely commercial activity undertaken at widely varying degrees by different individuals. Because initial investment costs can be quite low, traders may, if they choose, participate only superficially. In fact, many Missouri traders do only supplement income from other sources with their buying

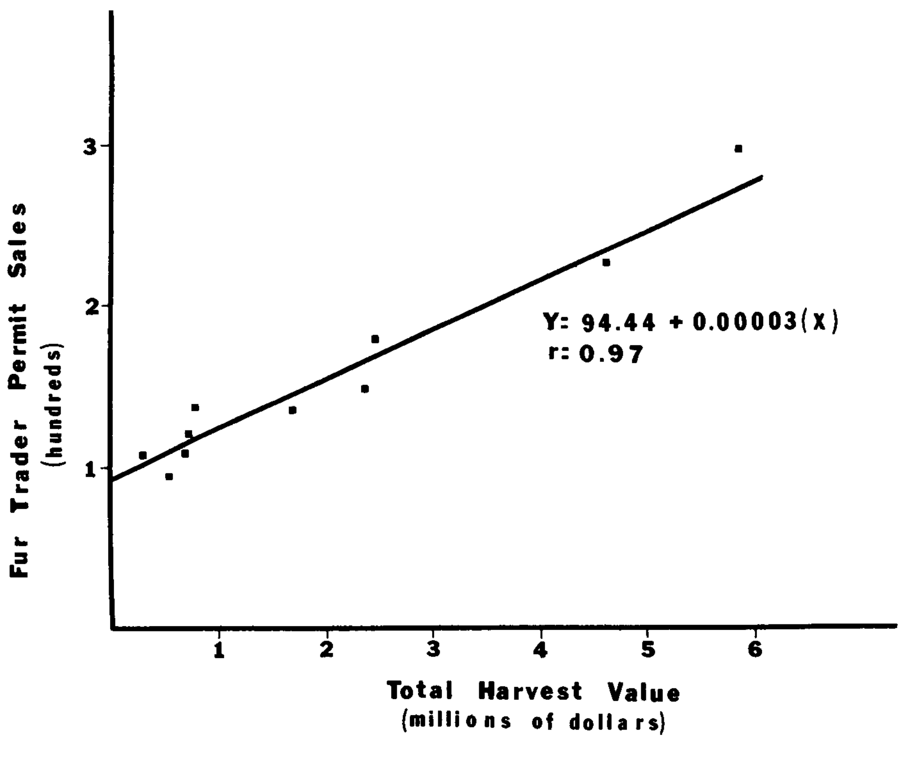

Fig. 2. Relationship of annual fur trader permit sales and total furbearer harvest value (values not inflation-adjusted).

activities. These optionally low initial investment costs may have encouraged trading activity during the study period. The absence of correlation between trader numbers and inflation-adjusted values suggests that potential traders did not consider inflation influence in their market assessments. As real as inflation costs may be in their impact, they had no apparent influence on trader recruitment patterns.

Furbearer Trappers

Trapper numbers provide an annual indicator of the current level of trapping interest. Prevailing market conditions are a major factor influencing trapper recruitment decisions and total trapper numbers (Saville 1958, Wilson 1955). Missouri trapping permit sales during the study period ranged from 2897 in 1968 to 7586 in 1976. Permit sales were significantly correlated ($P < .01$) with the mean unadjusted value of all harvested furbearers used as an annual indicator of market attractiveness (Fig. 3). Sales, however, were not correlated ($P > .05$) with inflation-adjusted pelt values suggesting that trapper perception of fur values and subsequent recruitment decisions were more dependent on individual recollections of past fur values than on the purchasing power of current pelt returns. Trappers appeared to compare current pelt values directly with values paid in previous years. Thus despite the rather stable inflation-adjusted values from 1974-75 to 1976-77, trapper numbers continued to climb with increasing unadjusted pelt values.

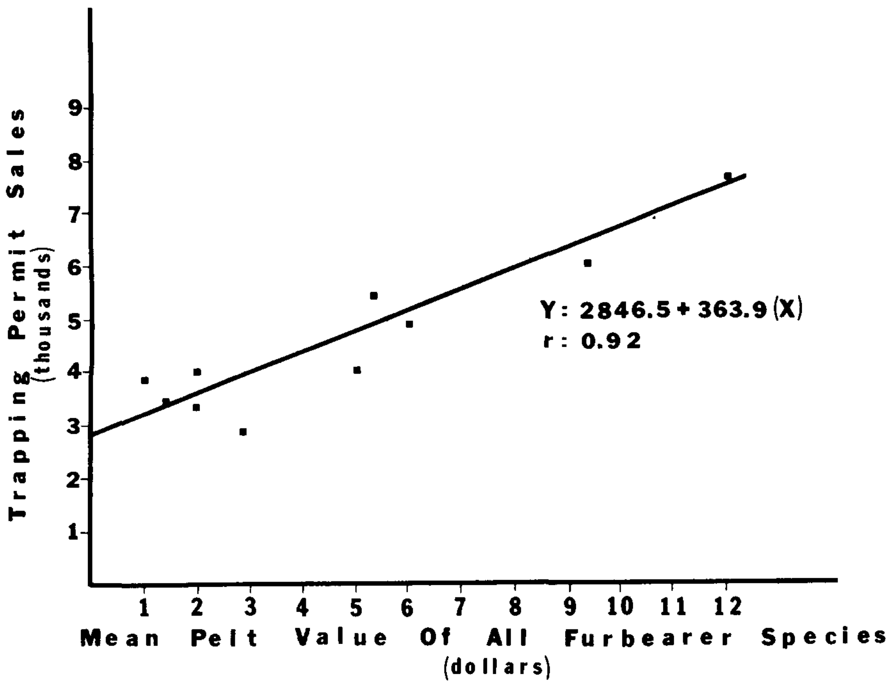

Fig. 3. Relationship of annual trapping permit sales and mean pelt value of all harvested furbearers (values not inflation-adjusted).

Determination of the age distribution of 1956 and 1976 trappers permitted examination of trapper recruitment characteristics. In 1956, during a period of relative market inactivity, 3648 trapping permits were issued. The age distribution of these trappers centered heavily on individuals between 31 and 60 years of age (Fig. 4). Their mean age was 43 years. Trappers evident in the central age classes of the 1956 distribution were probably recruited to trapping during the active market period of the 1940's. The estimate of 12,165 trappers active in 1942-43 was indicative of the level of trapping interest at that time (Sampson 1970). Reduced commercial demand and trapper attrition resulted in a reduction in trapper numbers by 1956, but a portion of the 1940's-recruited trappers remained active and thus visible in the 1956 age distribution.

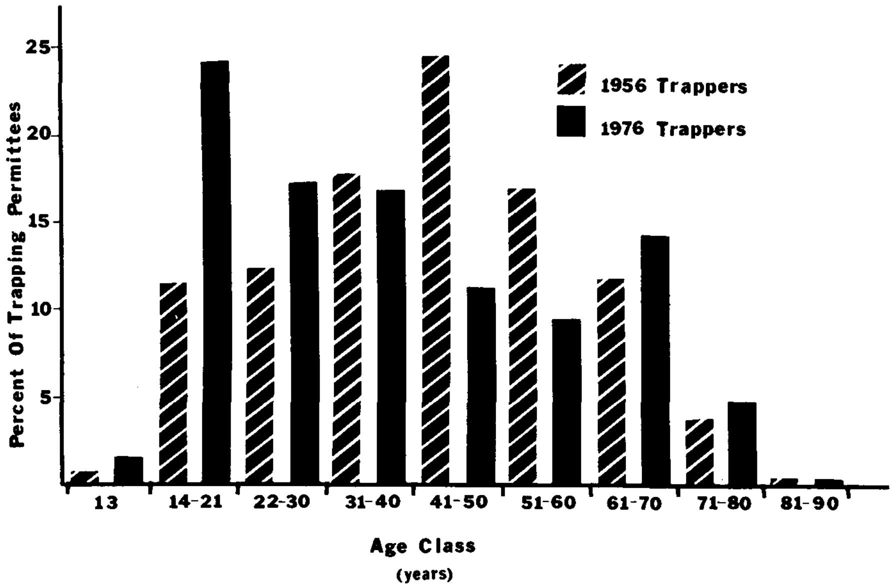

Fig. 4. Age distribution of trapping permittees in 1956 and 1976.

The age distribution of 1976 trappers indicated a resurgence of trapping interest among younger age-classes (Fig. 4). Their mean age during an active market period was 36 years. Brown and Yeager (1943) reported an average age of 33 years for Illinois fur trappers and hunters during the relatively active market of the late 1930's. Missouri trappers recruited in the 1940's and detected in the 1956 distribution remained visible in 1976 as a secondary peak at the 61-70 age class. Trapper recruitment appeared to concentrate heavily on younger age classes. Depressed market conditions reduced total trapper numbers, but sufficient interest was generated during the active market period of the 1940's to maintain some trapping involvement by previous recruits through the inactive periods of the 1950's and 1960's. There is undoubtedly much overlap between the commercial and recreational incentives which encourage trapping involvement. Heavy trapper recruitment during active markets suggested that the commercial incentive was a principle factor influencing initial recruitment decisions. Subsequent exposure to the recreational potentials of trapping and recovery of initial investment costs may have encouraged involvement by some trappers even following market declines. Additionally, reduced inter-trapper competition during depressed market periods may have allowed individual trappers to harvest more pelts than would have been possible during high demand years when trapping efforts were more competitive.

Noticeable differences were detected between trappers surveyed in 1972-73 and 1977-78 (Table 1). In both survey years, a sizeable portion of trapping permit holders did not trap. Trappers in 1977-78 were typically less experienced and averaged greater mean expenditures than 1972-73 trappers. Trappers in 1977-78 averaged fewer total traps and trapped fewer total days than did 1972-73 participants. A substantial portion of the reduction in trapping days resulted from inclement weather, shorter trapping season length and closed seasons on bobcat (*Lynx rufus*), red fox (*Vulpes vulpes*) and gray fox (*Urocyon cinereoargenteus*) in 1977-78. The 1977-78 trappers did, however, trap an average of 57.1% of the days legally available to them, compared with 45.8% in 1972-73. Trappers in 1977-78 averaged fewer animals in their total catch than 1972-73 trappers, again partially due to weather conditions, season length and closed seasons. In 1976-77, red and gray foxes and bobcats comprised 3.7% of Missouri's total harvest volume and 9.2% of the harvest's total value. Broader distribution of total catch among participants was also a factor contributing to reduced mean catch in 1977-78.

Table 1. Characteristics of Missouri Trappers in 1972-73 and 1977-78. Standard deviations of 1977-78 data in parenthesis.

	1972-73[a]	1977-78[b]
Number of trapping permits issued	4094	8710
Percentage of respondents who trapped	78.73	74.09
Mean trapping experience (years)	23.83	16.85 (18.25)
Mean trapping expenditures (unadjusted dollars)	76.64	93.26 (114.95)
Mean number of traps used (all types)	32.93	23.76 (20.04)
Mean number of day traps were set	30.66	20.56 (10.95)
Mean furbearer catch (all species)	73.44	31.49 (36.00)

[a] Season length: 67 days

[b] Season length: 36 days (red fox, gray fox, bobcat closed)

The influence of recent trapping recruits on trapper survey results was evident. Their numbers reduced mean trapping experience. Newer trappers were presumably less well-equipped than established trappers thus reducing the mean number of traps used. Inexperience probably contributed to the reduced mean catch. Thus while trapper expenditures and total trapper numbers increased under varying market conditions, recruit inefficiencies, weather conditions, shorter season length, closed seasons and broader distribution of total catch among trappers contributed to reduced mean effort and success.

Raccoon Hunters

Raccoon hunting is important to Missouri's furbearer harvest system because of the number of raccoon hunters, the relative value of raccoon pelts and the total number of animals harvested. In 1976-77, raccoons comprised 52.5% of Missouri's total furbearer harvest and 72.4% of the harvest's total value.

Raccoon hunting is viewed primarily as a recreational activity. Nonetheless, market shifts during the study period (Fig. 5) exerted considerable influence on raccoon hunter numbers and individual efforts. The noticeable similarity of Figs. 1 and 5 is indicative of the importance of raccoons to Missouri's total fur market. Estimates of raccoon hunter numbers ranged from 28,248 in 1967-68 when raccoon pelt value averaged $1.75 (unadjusted) to 43,676 in 1976-77 when pelt value averaged $17.10 (unadjusted). A significant positive correlation ($P < .05$) existed between hunter numbers and mean unadjusted pelt values (Fig. 6). Hunter numbers were not significantly correlated (P > .05) with inflation adjusted pelt values. Additionally, mean raccoon hunter days afield were significantly correlated (P < .05) with unadjusted pelt values (Fig. 7), but were not correlated (P > .05) with inflation-adjusted values. Hunters did not appear to perceive inflation costs as an important factor in determining recruitment or hunting intensity decisions.

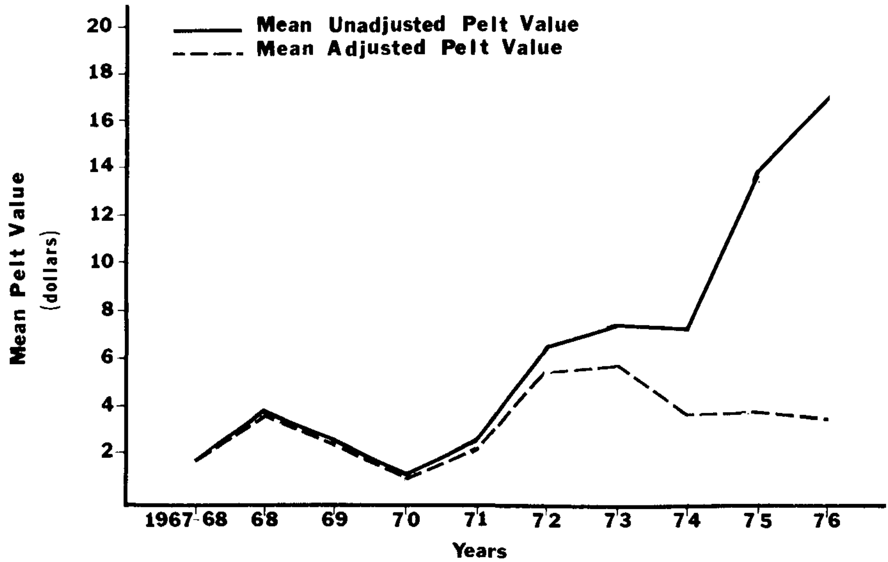

Fig. 5. Inflation-adjusted and unadjusted mean raccoon pelt values 1967-68 to 1976-77.

While hunter numbers and individual efforts were correlated with commercial demand, correlation between individual hunting success, measured as mean hunter harvest per season, and pelt value was not present (P <.05). Mean hunter harvests ranged from 10.8 raccoons per season in 1967-68 to 12.4 per season in 1973-74. This apparent lack of correlation is likely due to: (1) the distribution of total catch among more hunters under high demand conditions; (2) the probable reduced success of recently recruited, less experienced participants; and (3) variable weather conditions during harvest periods affecting hunting conditions and resulting hunting success. It was not felt that statewide raccoon populations changed substantially during the study period (Sampson and Erickson 1977b, Erickson and Sampson 1977).

Total Harvests

Predictably, increased hunting and trapping pressures during high demand periods stimulated increased total harvests of high demand species with the underlying constraint that animal population levels were capable of expanded harvest exploitation. A significant positive relationship (P <.01) was found between total furbearer harvest size (all species) and mean unadjusted value of all species (Fig. 8). A similar positive correlation (P < .01) existed between total raccoon harvest and mean unadjusted pelt value (Fig. 9). Relationships between total furbearer and raccoon harvest size and adjusted pelt value were not present (P > .05).

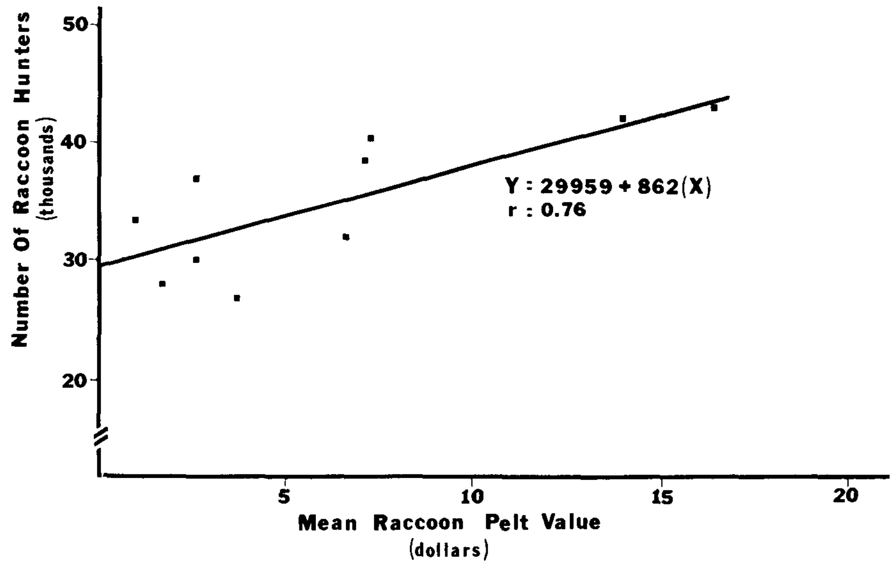

Fig. 6. Relationship of annual raccoon hunter numbers and mean raccoon pelt value (values not inflation-adjusted).

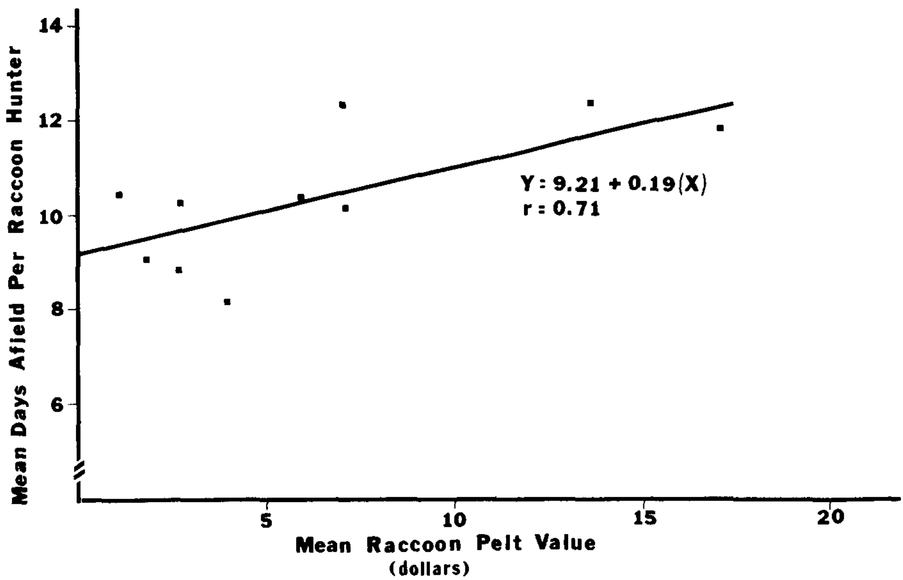

Fig. 7. Relationship of mean days afield per raccoon hunter and mean raccoon pelt value (values not inflation-adjusted).

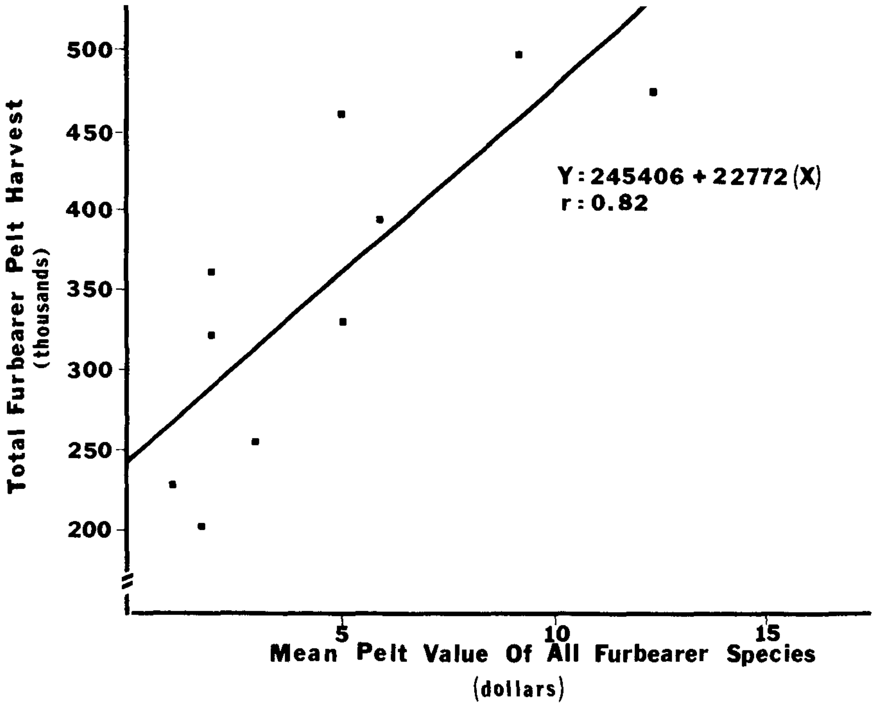

Fig. 8. Relationship of total annual furbearer pelt harvest and mean pelt value of all furbearer species (values not inflation-adjusted).

Market-harvest relationships for other furbearers were similar (Table 2). Harvests of high demand species such as coyote (*Canis latrans*), red fox, gray fox and bobcat characteristically had high positive correlation with unadjusted mean pelt values and no or reduced correlation with adjusted pelt values. Opossum (*Didelphis marsupialis*), striped skunk (*Mephitis mephitis*), and badger (*Taxidea taxus*) harvests were positively correlated ($P < .01$) with mean unadjusted pelt values, but increased harvests of these species were partially attributed to increased trapping effort for other higher demand furbearers in whose trap sets these animals might be incidentally taken. Market-harvest relationships for remaining furbearers were not significant ($P > .05$) with the exception of a significant ($P < .05$) negative correlation between weasel (*Mustela frenata*) harvest and inflation-adjusted mean pelt value. In this case, increased weasel harvests were likely the result of increased trapping effort for other species. Fairly stable unadjusted mean pelt values were eroded heavily by inflation thus creating a negative market-harvest relationship.

The influence of market demands and animal population size on furbearer harvest size has been viewed differently by different researchers. Seagears (1944) showed that New York red fox harvests were strongly correlated with pelt value. He concluded that annual harvests had little or no relationship with actual animal abundance. In contrast, Richard and Hine (1953) found little evidence to support market-harvest relationships for Wisconsin red fox through 1950. More recent efforts in Wisconsin (Pils and Martin 1978) using inflation-adjusted market data again did not reveal significant red fox pelt

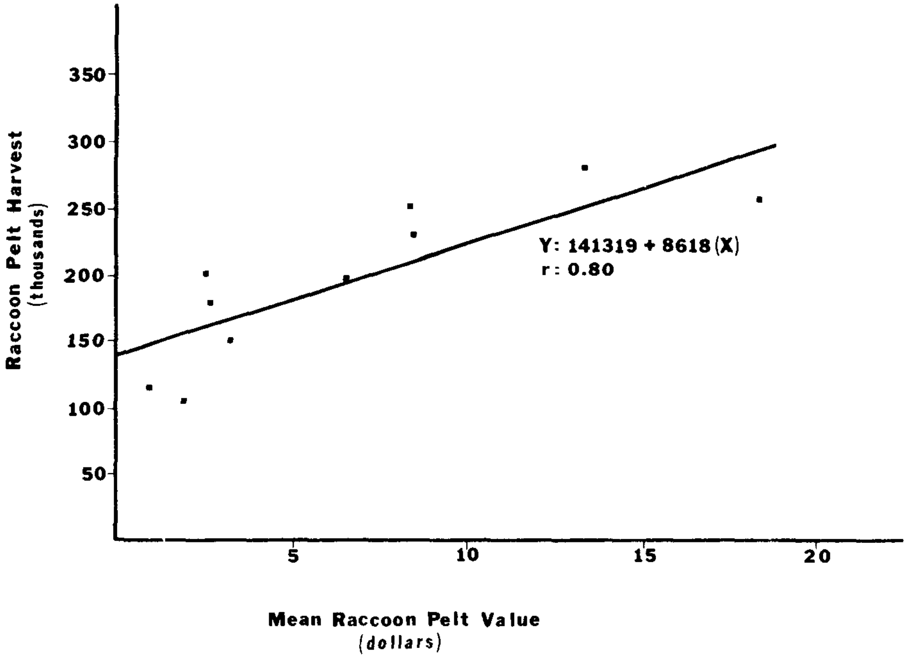

Fig. 9. Relationship of annual raccoon pelt harvest and mean raccoon pelt value (values not inflation-adjusted).

value harvest correlation for data from 1959-60 to 1975-76. Red fox mortality resulting from sarcoptic mange had an apparent influence on animal availability. Additionally, the diminished pelt value of infected animals reduced pelt sales even though these animals may have been taken by hunters and trappers. Wisconsin gray fox harvests, however, were correlated with pelt value (Petersen et al. 1977). Using the results of the current study and these others, it is apparent that market and population trends are both important factors in determining harvest size. It is impossible to view one without consideration for the other. Market shifts have a dramatic influence on total harvest effort. Population shifts influence animal availability. In Missouri, a generalized furbearer harvest (H) appears to function in the following way:

H = f (PS, HN, HE, NPHD, TN, TE, NPTD),

where PS represents population size; HN represents hunter numbers; HE represents hunter efforts; NPHD represents number of potential hunting days; TN represents trapper numbers; TE represents trapper efforts and NPTD represents number of potential trapping days. Additionally,

HN, HE, TN, TE = f (MPV),

where MPV represents mean pelt value. And,

NPHD, NPTD = f (WC, SL),

where WC represents weather conditions during harvest periods and SL represents respective hunting and trapping season lengths.

TABLE 2. Statewide furbearer pelt harvests (Y) from 1967-68 to 1976-77 and corresponding unadjusted (X_1) and inflation-adjusted (X_2) mean pelt values. Regression equations provided for significant ($P < .05$) correlations between harvest and adjusted and unadjusted mean pelt values.

	SPECIES																	
	Coyote			Red Fox			Gray Fox			Bobcat			Mink			Striped Skunk		
Season	(X_1)	(X_2)	(Y)	(X_1)	(X_2)	(Y)	(X_1)	(X_2)	(Y)	(X_1)	(X_2)	(Y)	(X_1)	(X_2)	(Y)	(X_1)	(X_2)	(Y)
1967-68	1.75	1.75	417	3.45	3.45	1068	1.50	1.50	957	2.75	2.75	37	6.00	6.00	3749	0.60	0.60	1021
1968-69	3.00	2.97	942	5.90	5.85	2154	2.42	2.40	1812	3.75	3.72	83	8.42	8.34	5122	0.89	0.88	959
1969-70	3.50	3.35	2443	5.00	4.79	2672	2.80	2.68	3219	4.00	3.83	160	6.15	5.89	6949	0.65	0.62	1489
1970-71	3.15	2.86	2906	4.05	3.68	1644	1.95	1.77	2024	4.00	3.63	91	3.95	3.59	4202	0.55	0.50	805
1971-72	3.40	3.00	4781	5.20	4.59	1698	2.25	1.98	2282	4.70	4.14	162	5.30	4.67	5433	0.60	0.53	1329
1972-73	9.55	7.95	9217	15.35	12.78	2400	7.00	5.83	4789	12.10	10.08	314	11.10	9.25	5437	1.15	0.96	2113
1973-74	10.40	7.85	12960	20.85	15.74	2624	11.65	8.80	6593	18.85	14.23	601	11.05	8.34	5198	2.20	1.66	2665
1974-75	6.55	3.25	11804	15.15	7.51	2566	9.80	4.86	6981	18.00	8.93	576	6.45	3.20	6622	1.35	0.67	2954
1975-76	7.20	2.03	14243	23.60	3.32	3337	18.90	5.33	9310	36.30	10.24	911	7.70	2.17	5863	1.30	0.37	2983
1976-77	18.70	3.85	24801	38.70	7.97	4234	26.70	5.50	12042	46.50	9.58	1107	14.10	2.90	6875	1.60	0.33	3390

	Coyote	Red Fox	Gray Fox	Bobcat	Mink	Striped Skunk
Y on X_1						
Correlation Coefficient	$r = 0.94^{**}$	$r = 0.90^{**}$	$r = 0.98^{**}$	$r = 0.99^{**}$	$r = 0.38^{n.s.}$	$r = 0.81^{**}$
Regression Equation	$Y = -1036 + 1412(X_1)$	$Y - 1487 + 66.5(X_1)$	$Y = 1423 + 421(X_1)$	$Y = 36.62 + 24.35(X_1)$		$Y = 389 + 1452(X_1)$
Y on X_2						
Correlation Coefficient	$r = 0.29^{n.s.}$	$r = 0.41^{n.s.}$	$r = 0.70^{*}$	$r = 0.75^{*}$	$r = 0.30^{n.s.}$	$r = 0.07^{n.s.}$
Regression Equation			$Y = 596 + 1083(X_2)$	$Y = -104 + 71.4(X_2)$		

	SPECIES																	
	Spotted Skunk			Weasel			Badger			Opossum			Muskrat			Beaver		
Season	(X_1)	(X_2)	(Y)	(X_1)	(X_2)	(Y)	(X_1)	(X_2)	(Y)	(X_1)	(X_2)	(Y)	(X_1)	(X_2)	(Y)	(X_1)	(X_2)	(Y)
1967-68	1.15	1.15	92	0.40	0.40	18	0.75	0.75	24	0.40	0.40	21678	0.75	0.75	63657	7.85	7.85	2989
1968-69	1.78	1.76	143	0.57	0.56	20	1.71	1.69	31	0.68	0.67	26697	0.91	0.90	64207	8.15	8.08	2567
1969-70	1.50	1.44	116	0.50	0.48	39	1.60	1.53	54	0.55	0.53	40981	1.10	1.05	105425	7.00	6.70	3771
1970-71	1.45	1.32	76	0.40	0.36	12	1.35	1.23	22	0.35	0.32	26668	0.92	0.83	71911	4.65	4.22	2257
1971-72	1.05	0.93	85	0.45	0.40	36	1.15	1.01	55	0.45	0.40	40559	1.30	1.15	92993	5.35	4.72	2938
1972-73	1.70	1.41	108	0.50	0.42	39	2.30	1.92	78	1.05	0.87	43688	2.05	1.71	69012	9.35	7.79	3275
1973-74	2.10	1.58	173	0.50	0.38	62	5.25	3.96	87	1.50	1.13	55641	2.15	1.62	58341	8.20	6.19	2098
1974-75	1.70	0.84	209	0.40	0.20	65	4.30	2.13	88	1.40	0.69	79795	2.40	1.19	94009	5.75	2.85	3246
1975-76	2.40	0.68	124	0.40	0.11	58	4.00	1.13	127	1.10	0.31	91611	3.00	0.85	89727	4.80	1.35	2320
1976-77	3.60	0.74	166	0.50	0.10	109	9.20	1.89	178	1.40	0.29	85415	4.10	0.85	82708	8.30	1.71	5888

	Spotted Skunk	Weasel	Badger	Opossum	Muskrat	Beaver
Y on X_1						
Correlation Coefficient	$r = 0.56^{n.s.}$	$r = 0.11^{n.s.}$	$r = 0.92^{**}$	$r = 0.79^{**}$	$r = 0.20^{n.s.}$	$r = 0.34^{n.s.}$
Regression Equation			$Y = 19.76 + 17.28(X_1)$	$Y = 11347 + 44962(X_1)$		
Y on X_2						
Correlation Coefficient	$r = -0.13^{n.s.}$	$r = -0.75^{*}$	$r = 0.29^{n.s.}$	$r = -0.08^{n.s.}$	$r = -0.20^{n.s.}$	$r = -0.30^{n.s.}$
Regression Equation		$Y = 93.9 - 140.9(X_2)$				

** Highly significant correlation ($P < .01$)

* Significant correlation ($P < .05$)

n.s. Correlation not significant ($P > .05$)

SUMMARY

Increasing commercial demands for long-haired furs from 1970 to 1976 influenced various features of Missouri's furbearer harvest system. Fur trader, fur trapper and raccoon hunter numbers were positively correlated with increased market demands. Raccoon hunter efforts increased proportionally with annual raccoon pelt value. Trapper surveys conducted in 1972-73 during the initial phase of demand escalation and again in 1977-78 indicated that despite increased pelt demand and mean trapper expenditures, mean trapper efforts and mean catch declined. The reductions were attributed to experience and equipment deficiencies of newer trappers, more restrictive trapping regulations and inclement weather in 1977-78 and broader distribution of catch among a greater number of trapping participants. The surveys also indicated that 1972-73 trappers were typically more experienced than trappers in 1977-78, a result of expanded trapper recruitment during the period of escalating demand. Examination of trapper age distributions in 1956 and 1976 illustrated that trapper recruitment was highest among younger age classes. Generation of trapping interest during high demand periods appeared to insure some trapping involvement through periods of reduced commercial demand. Some trappers, after exposure to trapping during active market periods, continued to trap through less active market periods, partially for recreational reasons. In addition, trappers may have been able to capitalize on high catch potentials resulting from diminished inter-trapper competition during slower market periods.

Total harvests of high demand furbearers and certain other species were typically correlated with unadjusted annual pelt values. Inflation-adjustment accomplished little in explaining market-effort and market-harvest relationships. The impact of inflation costs did not appear to discourage participant recruitment, their efforts or total harvests to any detectable degree. During the study period reviewed, observed or unadjusted market values were superior to inflation-adjusted values in examining market impacts. Participants appeared to evaluate market shifts on a dollar for dollar annual basis, perhaps explaining the consistent correlations observed.

Numerous factors are important in determining furbearer harvest size. Population size is critical becaue it determines ultimate animal availability, an important supply component. Market demands expressed through pelt values influence potential harvest effort, the mechanism by which furs are harvested. Weather constraints during harvest periods and season lengths additionally determine the number of days potentially available for hunting and trapping activity and influence total harvest effort.

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