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Historical Trends in American Animal Use and Perception

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Changes in American attitudes and behaviors toward animals from 1900-1976 will be examined. The data are derived from an empirical analysis of 4,873 animal-related newspaper articles. Four newspapers were used in this analysis—the Los Angeles Times; Hartford Courant; Buffalo, Wyoming Bulletin; and the Dawson, Georgia News. A content analysis procedure was employed to record animal-related information in the articles, and these data were subjected to a variety of statistical analyses. A comparison of the results with a 1978 national survey of American attitudes and behaviors is briefly attempted. Finally, some policy implications of the data are considered.

Zusammenfassung

Aenderungen in der Einstellung und Verhalten von Amerikanern gegenüber Tieren von 1900-1976 werden hier untersucht. Die Daten stammen von einer empirischen Analyse von 4,873 Zeitungsartikeln, die auf Tiere Bezug haben. Vier Zeitungen wurden für diese Analyse verwendet: Los Angeles Times; Hartford Courant; Buffalo, Wyoming Bulletin; and Dawson, Georgia News. Eine Analyse der Inhalte wurde unternommen, um tierbezogene Information festzuhalten und die gewonnenen Daten wurden einer Anzahl von statistischen Analysen unterworfen. Ein Vergleich der Resultate mit einer im Jahre 1978 veranstalteten nationalen Untersuchung von Einstellungen und Verhaltensweisen von Amerikanern ist kurz angestrebt. Schliesslich werden einige Rückschlüsse von den Daten auf Richtlinien erwogen.

Introduction

The presumption of most historians is that contemporary Americans are more concerned about wildlife than ever before. But do we perhaps presume too much? Is our age truly distinctive in its degree of environmental and wildlife awareness, at least among ordinary Americans? Do the many legislative changes in environmental law and protection introduced since World War II actually reflect substantive shifts in the average person's perceptions of animals? In fact,

we probably need to be aware that the passage of laws can often reflect more the attributes of power and persuasiveness of special interest groups than the pressing concerns of the general public.

The purpose of this paper is to review the results of a study of historical trends in American animal use and perception during the twentieth century. Three interrelated objectives guided this research, including:

1. Assessing the extent of change in American animal use and perception

during the 20th century

2. Reviewing this change among diverse groups in American society

3. Determining the rate and progress of this change.

Methodology

An analogous study in Canada by Bos *et al.* (1977) suggested the idea of analyzing the content of newspaper articles over a period of time as a good indicator of public perceptions and uses of animals. Despite the tendency of newspapers to report on primarily "newsworthy" events, a number of factors recommended its use. First, newspapers tend to be oriented to local constituencies. Second, if judiciously selected, newspapers can reflect urban and rural, as well as regional differences. Third, by selecting newspapers in continuous publication throughout the century, historical changes can be examined in a way that is relatively undistorted by interpretive recall. Finally, because of their local and continuous publication, newspapers can reflect the experiences and concerns of a large fraction of the general public.

Various reference books were used to identify possible newspapers for this analysis including the *Ayers Directory of Publications* (1977) and, to a lesser extent, the *American Newspaper Market's Circulation* (1978) and *Newspapers in Microform U.S.* (1973). Twenty newspapers (7 urban and 13 rural) were identified as possibilities. Four were eventually selected, which represented two rural, two urban, and altogether four regional locations. The two urban newspapers were the *Los Angeles Times*—representing the Far West—and the *Hartford Courant*—the Northeast. The two rural papers were the *Buffalo Bulletin* (Buffalo, WY)—the "Rocky Mountain Newspaper"—and the *Dawson News* (Dawson, GA), representing the South. Buffalo (population, 3,500) is in east-central Wyoming on the edge of

the shortgrass prairie, some 108 miles from the urban area of Casper, Wyoming. Dawson (population, 5,500) is in central-western Georgia, some 60 miles from the metropolitan area of Casper on the Alabama border.

The considerable time required for this type of analysis necessitated a random sampling of newspaper issues. Seventeen issues were chosen in a single year, with 2- to 3-year intervals between annual reviews. Every third year starting with 1900 was selected for analysis, except for critical historical periods, when every other year was chosen. The 2-year-interval historically significant periods included the wilderness cult/Teddy Roosevelt era from 1900-1906, World War I, the Depression, and World War II. Thus, a total of 31 years were included in the analysis.

Seventeen to eighteen newspaper issues were selected for a single year, yielding approximately 550 issues for each newspaper analysis. Using the perpetual calendar of the *World Almanac* (1977), starting dates in each year were randomly identified, with issues chosen each successive third week. In consecutive weeks, the following day of the week was selected to assure a roughly equal sampling of days.

Time constraints necessitated a smaller sampling of the *Hartford Courant*. Specific issue selection for this newspaper was based on the *Los Angeles Times* sample, with the date of every third *Los Angeles Times* issue included in the *Hartford Courant* sample. This sampling procedure resulted in 86 *Hartford Courant* issues, based on six editions per year.

The most critical and difficult methodological step was the development of a standardized, empirical procedure for recording the content of the animal-related articles. An acceptable content analysis procedure necessitated seven formats being drafted, reviewed, and

modified before a final system evolved. Seventeen types of information were collected. Basic descriptive information included the newspaper in which the article occurred, the issue date, the location of the article, its relative importance (in relation to the issue and in general), the geographic scope of the article (e.g., local, national, international), and the type of article (e.g., general news, column, etc.). Information on specific animals in the article included the taxonomic identity of the animals, if appropriate; the type of wild animal (e.g., terrestrial mammal, songbird, etc.); the relationship of the animal to human beings (e.g., game, pet, livestock, etc.); if the animal was wild, its population status (e.g., endangered, rare, etc.); the geographic location of the animal (e.g., region of the U.S., country); and the exotic/native status of the animal relative to the U.S. Detailed information on 31 separate animal-related activities was gathered, including such activities as hunting, fishing, trapping, animal-related fashion and art, birdwatching, animal-related food gathering and processing, nonconsumptive wildlife use, animal-inflicted damage, animal ecology,

animal rights and welfare, pet ownership, wildlife management, etc.

The final category of information collected considered attitudes toward animals. A typology of 10 attitudes was used, based on a system developed previously (Kellert, 1976). One-sentence definitions of each attitude are provided in Table 1, although more lengthy descriptions are available elsewhere (Kellert, 1980). The strength or intensity of the attitudes was measured on a 1-to-10 scale, with 1 indicating the most intense expression and, 10, the attitude as present but only in a peripheral or marginal way. At least one attitude was coded for each article, although this attitude was not necessarily coded as strongly present. For example, if an article consisted of a short descriptive statement of an animal, it might receive a neutralistic code of 10, with no other attitude cited. On the other hand, more than one attitude was often present in an article and sometimes each received "strongly present" codes.

Five persons were trained to analyze and record the content of the articles. Each coder analyzed at least 50

TABLE 1 Attitudes Toward Animals—Definitions

Aesthetic	Primary interest in the artistic and symbolic characteristics of animals
Dominionistic	Primary interest in the mastery and control of animals typically in sporting situations
Ecologicistic	Primary concern for the environment as a system, for interrelationships between wildlife species and natural habitats
Humanistic	Primary interest and strong affection for individual animals, principally pets; regarding wildlife, primary focus on large animals with common anthropomorphic associations
Moralistic	Primary concern for the right and wrong treatment of animals, with strong opposition to exploitation or cruelty toward animals
Naturalistic	Primary interest and affection for wildlife and the outdoors
Negativistic	Primary orientation a dislike or fear of animals
Neutralistic	Primary orientation a neutral relation to and emotional detachment from animals
Scientific	Primary interest in the physical attributes and biological functioning of animals
Utilitarian	Primary concern for the practical and material value of animals or the animal's habitat

TABLE 2. Frequency of Articles by Year, 1900-1976*

Year	Frequency	%	Year	Frequency	%
1900	130	2.7	1936	142	2.9
1902	111	2.3	1938	166	3.4
1904	119	2.4	1940	111	2.3
1906	140	2.9	1942	98	2.0
1909	164	3.4	1944	110	2.3
1912	109	2.2	1946	82	1.7
1914	106	2.1	1949	181	3.7
1916	119	2.4	1952	173	3.5
1918	114	2.3	1955	178	3.7
1921	200	4.1	1958	196	4.0
1924	190	3.9	1961	174	3.6
1927	259	5.3	1964	275	5.6
1930	213	4.4	1967	210	4.3
1932	157	3.2	1970	170	3.5
1934	196	4.0	1973	139	2.9
			1976	141	2.9

*Total number of articles = 4,873; average number of articles/year = 157; number of issues = 1,777; average articles/issue = 2.74

articles before being allowed to work on the sample newspaper issues. Despite extensive coder training, the interpretive requirements of content analysis render the technique difficult to standardize and completely remove from subjective bias. A large sample size, careful coder training, and the use of only a few coders may have minimized these problems.

Results

Numbers of Articles on Animals

A total of 4,873 animal-related articles were analyzed for the 75-year period. An average of 157 articles occurred per year, or 2.74 per newspaper issue.

Somewhat unexpectedly, no discernible trend appeared toward increasing numbers of animal-related articles during the century (Fig. 1). The greatest number of articles in a single year was 275, in 1964, although 1921, 1927, 1930 and 1967 also had more than 200 articles (Table 2). When the 75 years were distin-

guished according to critical historical periods, three periods were found to have had an average of more than 200 articles per year—1921-1927, 1930-1936, and 1961-1967. The periods with the lowest number of articles were the two World Wars—1916-1918 and 1940-1944—each averaging less than 115 articles per year.

Interestingly, the periods with the greatest number of animal-related ar-

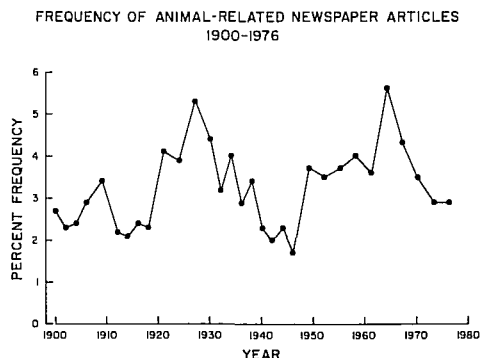


FIGURE 1

ticles were among three of four eras identified by Rose (1971) as major conservation periods of the twentieth century. The most important conservation-related influence of the 1920's was a technological development—the automobile—that markedly stimulated public interest in wildlife and the outdoors (Trefethen, 1976). National parks and wilderness areas became, for the first time, readily accessible to tourists, campers, and sportsmen and, as a consequence, an unprecedented demand for recreational use of natural resources occurred. The 1930's, on the other hand, focused the nation's attention on the results of grossly unwise resource use and depletion, accompanied by the first large-scale federal attempts at wildlife and public land management. Additionally, the 1930's remained a period of extensive recreational interest in wildlife and the natural environment. Finally, the 1960's witnessed the emergence of broad public concern for wildlife conservation, which was symbolically marked by the celebration of "Earth Day" as the decade drew to a close. The two World Wars, in contrast, shifted the country's attention away from environmental concerns, as the imperatives of a nation in conflict focused concern on the suffering and needs of people.

The animal-related articles were also distinguished according to broad stylistic categories. The general news category was, by far, the most common, accounting for 63 percent of all animal-related articles during the century. On the other hand, this type of article decreased significantly from 79 percent of the total during 1900-1915 to 55 percent in 1961-1976. Pictorial stories were second in overall frequency, but increased dramatically from just 3.4 percent of the total at the beginning of the century to nearly 19 percent since 1960. Similarly, hunting and fishing columns increased markedly from not occurring at all in 1900-1915 to accounting for 4 percent of

the total from 1961-1976. Animal-related feature stories accounted for nearly 11 percent of the total and remained relatively constant during the initial and final 15 years examined, although decreasing markedly from 1946-1960. Animal-related editorial page articles accounted for just 2 percent of the total, although increases have been noted in recent years.

Attitudes Toward Animals

One of the most interesting analyses considered the frequency of occurrence of the different attitudes toward animals. The relative percentage and rank of each attitude during critical periods and for the entire 75-year period are summarized in Table 3 and Fig. 2.

The greater occurrence of the utilitarian attitude was especially impressive (Fig. 3). The preponderance of this attitude during the war periods was particularly striking, most notably in World War I, when the utilitarian perspective accounted for a remarkable two-thirds of all attitude classifications. On the other hand, a substantial decline in the utilitarian attitude has also been observed during recent decades. Illustrative of this decrease, just 12 percent separated the utilitarian attitude from the next most frequent attitude (the neutralistic) from 1970-1976, compared with a 36 per-

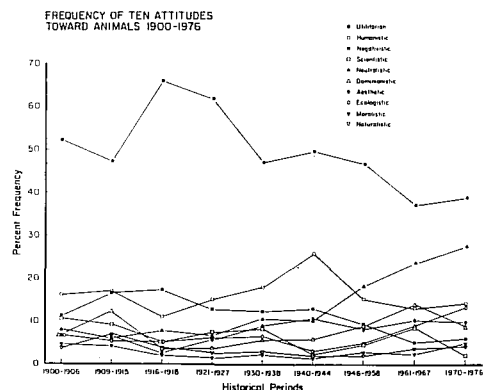


FIGURE 2

TABLE 3 Percent and Relative Rank of Basic Attitudes Toward Animals by Historical Period

Historical Period	1900-06	1909-15	1916-18	1921-27	1930-38	1940-44	1946-58	1961-67	1900-1976	Overall \bar{X} % and rank, 1900-1976
Naturalistic	3.8 ^a	6.8 ⁶	3.9 ⁶	2.5 ⁹	3.1 ⁹	2.1 ⁸	2.1 ¹⁰	3.8 ⁹	4 ⁹	3.4 ⁹
Ecologicalistic	6.6 ⁶	5.5 ⁹	5.2 ⁹	6 ⁶	6.6 ⁷	3.2 ⁷	5 ⁷	9 ⁶	13.4 ⁴	6.8 ⁸
Humanistic	16.2 ²	17 ²	9.1 ³	15.1 ²	18.1 ²	26.1 ⁷	15.4 ³	13.3 ⁴	14.2 ³	16.1 ²
Moralistic	4.6 ⁷	4.2 ¹⁰	2.1 ⁹	1.5 ¹⁰	2.4 ¹⁰	1.5 ⁹	3 ⁹	2.6 ¹⁰	4.9 ⁸	2.9 ¹⁰
Scientific	10.6 ⁴	9.2 ⁵	5.2 ⁵	7.5 ⁴	8.5 ⁶	2.1 ⁸	4.8 ⁸	8.9 ⁷	2.1 ¹⁰	6.9 ⁷
Aesthetic	6.6 ⁶	6.5 ⁷	2.5 ⁸	5.9 ⁷	9.1 ⁵	10.7 ⁴	8.3 ⁶	10.5 ⁵	9.9 ⁵	8.1 ⁵
Utilitarian	52.2 ¹	47.2 ¹	65.9 ¹	61.8 ¹	47.2 ¹	49.8 ¹	46.8 ¹	37.2 ¹	38.9 ¹	48.5 ¹
Dominionistic	6.6 ⁶	12.3 ⁴	3.5 ⁷	3.7 ⁸	5.8 ⁸	6 ⁶	9 ⁵	14 ³	8.5 ⁶	7.9 ⁶
Negativistic	11.4 ³	16.8 ³	17.5 ²	12.9 ³	12.5 ³	13.2 ³	9.5 ⁴	5.2 ⁸	6 ⁷	11 ⁴
Neutralistic	8 ⁵	5.7 ⁸	7.8 ⁴	6.6 ⁵	10.6 ⁴	10.3 ⁵	18.5 ²	23.8 ²	27.5 ²	13.9 ³

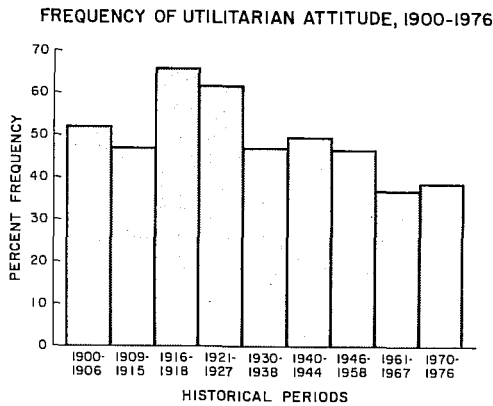


FIGURE 3

cent difference when contrasted with the second most frequent attitude (the humanistic) in 1900-1906. This decrease in the utilitarian attitude was quite pronounced in the *Los Angeles Times*, declining from a high of over 50 percent during World War I to just over 20 percent since 1970. (The *Hartford Courant* results are excluded from this discussion due to insufficient sample size.) In striking contrast, the utilitarian perspective decreased slightly in the rural newspapers and, in the *Dawson News*, this attitude still accounted for nearly two-thirds of all attitude classifications from 1970-1976.

The humanistic attitude was the second most frequently recorded attitude during the century—found in approximately 16 percent of the articles examined, although its relative rank dropped to fourth by 1961-1976. The humanistic perspective achieved its greatest prominence during World War II, when 26 percent of the articles included this attitude. Like the utilitarian attitude results, very pronounced urban/rural differences were observed. In the *Los Angeles Times*, the humanistic perspective substantially increased and, since World War II, has occurred in nearly 30 percent of this newspaper's articles (Fig. 4). In contrast, this attitude decreased so precipitously in the rural newspapers that, by 1961-1976,

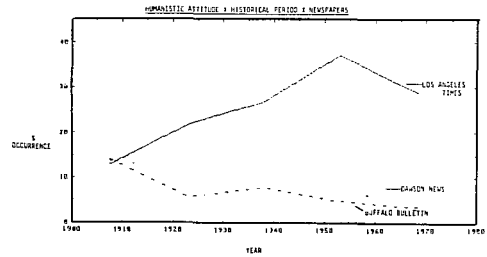


FIGURE 4

it was observed in only 3 percent of the *Dawson* and *Buffalo* newspapers. Thus, the rural newspapers were characterized by a marked decline in the humanistic perspective, in addition to the continuing importance of the utilitarian attitude. The *Los Angeles Times*, in contrast, revealed the opposite pattern, with substantial decreases in the utilitarian perspective being accompanied by major increases in the humanistic attitude. This urban/rural difference was also reported in a 1978 survey of 3,107 Americans (Kellert and Berry, 1981).

The neutralistic attitude ranked third in overall frequency of occurrence. Additionally, this attitude steadily increased during the 75-year period, particularly since World War II, and ranked second after 1970 (Fig. 5). An increase in the neutralistic attitude was especially pronounced in the rural newspapers. In the *Buffalo Bulletin*, prior to 1930, this

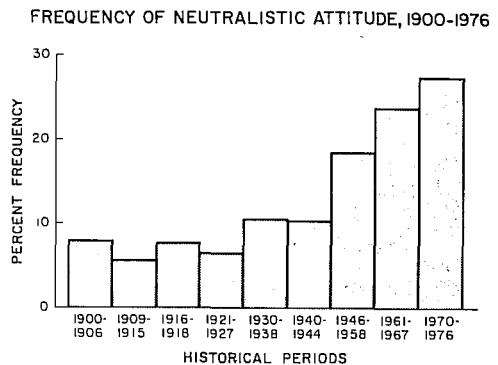


FIGURE 5

attitude occurred in 6 percent of the articles but, since 1960, in over 40 percent. In contrast, in the Los Angeles Times, the neutralistic attitude appeared in 18 percent of the articles from 1946-1960, but in just 8 percent since 1961.

The negativistic attitude decreased markedly, although this attitude ranked fourth overall and occurred in 11 percent of the articles (Fig. 6). From 1900-1946, the negativistic attitude was found in approximately 14 percent of the articles but, since World War II, in just 7 percent. This attitude dramatically declined in the rural newspapers, although only gradually in the Los Angeles Times.

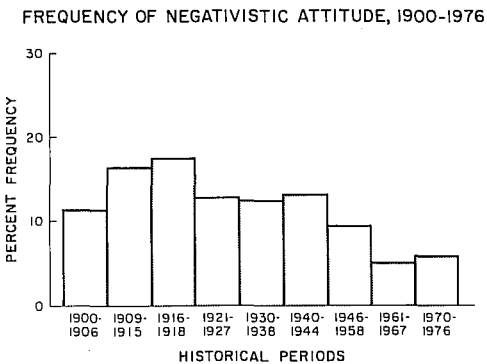


FIGURE 6

The more frequent occurrence of the utilitarian, humanistic, negativistic and neutralistic attitudes paralleled results reported in a 1978 national survey on public attitudes toward wildlife (Kellert, 1980). Percentage differences among the attitudes, however, were substantially larger in the historical than in the national survey studies.

The aesthetic attitude was the fifth most frequently occurring attitude, although it was found in less than 10 percent of the articles. This attitude increased slightly during the 75-year period, occurring in 5.6 percent of the articles prior to 1930, but nearly 10 percent since that time. The aesthetic perspec-

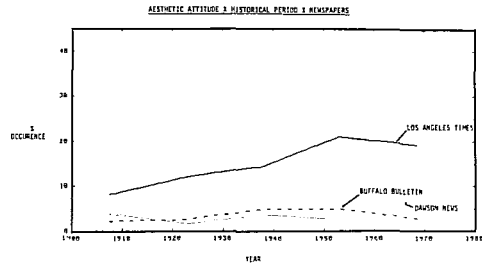


FIGURE 7

tive was far more prevalent in the Los Angeles Times than in the rural newspapers in recent decades (Fig. 7). This result further suggested that an appreciative, emotional and less pragmatic perspective of animals was more typical of the urban than rural areas, especially since World War II.

The dominionistic attitude was present in approximately 8 percent of the articles and ranked sixth during the century. It occurred erratically, however, with no trend clearly evident. This attitude appeared more often in the Los Angeles Times, particularly since 1960.

The ecologicistic attitude occurred in 7 percent of the articles and ranked seventh overall. This attitude has significantly increased since World War II, however, and, by 1970-1976, ranked fourth, appearing in over 13 percent of the articles reviewed. This growth was especially evident in the Los Angeles Times: the ecologicistic attitude increased from occur-

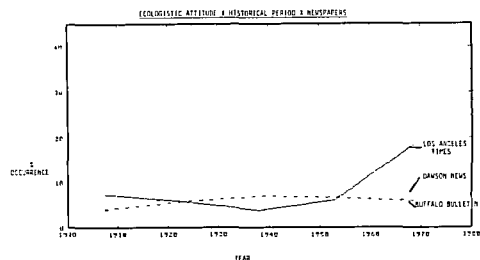


FIGURE 8

ring in the 6 percent of this newspaper's articles prior to 1960 to over 18 percent since that time (Fig. 8). The ecologicistic perspective increased only slightly in the rural newspapers.

The scientific attitude ranked eighth overall and was found in approximately 7 percent of the articles. This perspective substantially decreased during the century. Until 1927, the scientific attitude ranked fourth or fifth in frequency of occurrence but, since 1970, was the least common attitude, observed in just 2 percent of the articles. Differences in frequency of this attitude among newspapers were slight after 1940 although, prior to that time, the scientific attitude occurred far more often in the rural newspapers.

The naturalistic attitude was rarely encountered throughout the century. In recent years, this attitude was somewhat more prevalent in the *Los Angeles Times*, but was still found in only 8 percent of this newspaper's articles since 1960.

Finally, the least frequently occurring attitude was the moralistic, present in just 3 percent of the articles. Moreover, this attitude changed only slightly and appeared in no more than 5 percent of the articles during any time period. This result was especially surprising because the moralistic perspective was among the four most prevalent attitudes revealed in the 1978 national survey (Kellert, 1980). This disparity of historical and survey analysis results reflects the difficulty of comparing findings based on widely varying methodologies. Nevertheless, the historical findings do suggest the limited importance of animal cruelty and rights considerations as newsworthy events during the century. This result was particularly evident in the rural newspapers, in which the moralistic attitude has been practically nonexistent since World War II. In marked contrast, the moralistic perspective occurred far

more often in the *Los Angeles Times*—present in 8 percent of this newspaper's articles since World War II. This urban/rural difference was similar to results reported in the 1978 national study (Kellert, 1980).

Types of Animals Covered by the Press

The frequency of various animal-related activities and types of animals was also examined. Farming and livestock production were the most frequently covered activities during the century, accounting for some 25 percent of the total. Coverage of farm and livestock activities significantly decreased, however, and since 1960, represented just 15 percent of the total (Table 4). In a related finding, livestock declined from 42 percent of all animal classifications prior to 1946 to approximately 25 percent since 1960 (Table 5). During World War I, livestock accounted for a remarkable 63 percent of all animal citations. These shifts were especially pronounced in the *Los Angeles Times*: farming declined from 13 percent of this newspaper's activity classifications during 1900-1915 to just 5 percent since 1961. Corresponding declines in the *Buffalo Bulletin* were 22.5 to 16.4 percent but, in the *Dawson News*, farming actually increased from 32.7 to 42 percent during the same time periods.

Hunting and fishing activities and game animal classifications increased significantly during the century. From 1900-1946, the proportion of game animals remained relatively unchanged, accounting for roughly 15 percent of the total; hunting and fishing activities each consisted of approximately 6 percent of the activity classifications. From 1946-1960, however, game animals increased to approximately 25 percent of all animal citations and, even more dramatically, from 1961-1976, this proportion climbed to 39 percent of the total. Additionally,

TABLE 4 Animal Relationship Activities by Frequency (Percent) by 15-Year Period*

Activity	1900-1915	1916-1930	1931-1945	1946-1960	1961-1976
Hunting	6.5	5.7	7.7	11.6	17.1
Fishing	7.6	4.0	6.8	7.6	9.4
Fashion	1.1	1.4	0.9	0.9	1.7
Nonconsumptive use	1.3	0.5	1.0	1.4	1.9
Animal damage	12.5	8.7	8.9	6.7	4.2
Study/ecology	5.4	4.8	3.9	3.6	3.9
Wildlife management	1.5	2.0	2.3	2.8	2.1
Farming	22.0	39.1	23.4	27.1	15.5
Disease	1.9	2.8	2.7	2.3	1.4
Protection/rights	0.9	1.0	0.8	1.0	1.2
Pets	10.3	7.4	13.5	9.5	9.3
Work/protection	3.8	3.3	3.5	2.2	1.0
Illegal acts	3.0	2.6	2.8	3.5	3.9
Entertainment	7.8	8.9	13.2	15.0	13.4
Zoos/parks	1.6	1.0	2.0	1.4	1.9
Humor/human interest	5.7	4.7	4.0	1.7	1.4
General description	7.0	2.2	2.8	1.7	10.8

* $\chi^2 = 540.18$; $P = <.001$

since 1960, game animals, for the first time, displaced livestock as the most frequent classification. Relatedly, the proportion of hunting-related articles increased significantly although, somewhat unexpectedly, the amount of coverage of fishing changed slightly. Hunting increased to 12 percent of all activity classifications from 1946 to 1960 and to 17 percent from 1961-1976 (for the first time, replacing farming and livestock as the most frequent activity). Fishing, on the other hand, increased from 6 percent to a little over 9 percent of activity classifications during the same periods.

Coverage of animal-related entertainment (e.g., shows, circuses) experienced

fairly rapid growth during the century. This activity accounted for an unexpected 12 percent of the activity classifications and increased from 8.5 percent of the total prior to 1930 to over 14 percent since World War II. Relatedly, show/circus animals rose from 3.5 percent of all animal classifications from 1900-1916 to a high of 11 percent since 1960.

Pet animal classifications changed slightly during the century and accounted for roughly 10 percent of the total. Paralleling the decline in livestock-related activities, the animal damage category decreased from 12 percent of the total from 1900-1915 to 4 percent since 1961. Nonconsumptive wildlife-related activi-

ties and wildlife study and ecology comprised only a small proportion of the activities and, surprisingly, changed only slightly during the century. For example, nonconsumptive wildlife use accounted for just 1.3 percent of the activities from 1900-1915 and a mere 2 percent since 1961. Finally, general descriptive articles concerning animals comprised 5 percent of the activity classifications and increased from 2 percent of the total prior to 1960 to nearly 11 percent since 1961.

The frequency of specific animals cited was also recorded but, for brevity's sake, these data will be presented in summary form. The dog, horse and cow were the most frequently mentioned animals (Table 6). The most commonly cited wild animal was the deer, ranking eighth overall. Interestingly, pets, livestock, and game animals were all included among the 10 most frequently occurring animal categories. Among vertebrate classes, mammals accounted for two-thirds of the animal citations; birds, 14 percent; fish, 8 percent; and reptiles and amphibians, 3 percent. Invertebrates comprised 9 percent of the animal classifications.

The great majority of animal-related articles focused on local issues and native

animals, and this parochial tendency increased during the century. Nearly 75 percent of the articles emphasized local considerations, 8 percent were regionally oriented, 13 percent had a national emphasis, and just 4 percent focused on international matters. Additionally, the proportion of locally oriented articles increased from 55 percent of the total from 1900-1915 to a remarkable 88 percent since 1960. In contrast, articles of national significance decreased from over 20 percent of the total to approximately 6 percent during the same periods. This trend toward a more local emphasis was especially evident in the rural newspapers. In the *Buffalo Bulletin*, locally oriented articles increased from 28 percent of the total from 1900-1915 to an incredible 99.8 percent since 1961. The proportion of local articles in the *Los Angeles Times* changed slightly from 69 to 73 percent during the same periods.

Articles on native wildlife accounted for 84 percent of all wildlife classifications, and increased from 74 percent of the total from 1900-1915 to over 91 percent since 1960. Finally, articles concerning rare, endangered or extinct animals were infrequently encountered, appear-

TABLE 5 Animal Relationship by Frequency (Percent) by 15-Year Period*

Relationship	1900-15	1916-30	1931-45	1946-60	1961-76
Furbearer	1.5	1.3	1.0	1.1	2.4
Game	18.4	12.9	18.5	25.3	39.0
Livestock	39.9	50.1	36.7	37.2	24.5
Pest	11.5	14.9	8.6	6.1	4.5
Pet	17.4	13.4	24.4	16.6	15.9
Predator	3.8	2.3	2.8	1.8	1.6
Show/circus	6.3	4.1	6.5	10.5	11.0

* $\chi^2 = 384.04$; $P = <.001$

TABLE 6 Thirty Most Frequently Occurring Animal Categories, 1900-1976

Rank	Animal	No.	Rank	Animal	No.
1	Dog	549	19	Mule/burro/donkey	46
2	Horse	370	20	Antelope	
3	Cow	360		Bear	45
4	Fowl/poultry	213	21	Nonpoisonous snake	
5	Unspecified livestock	208		Elephant	44
6	Pig	197	22	Hare/rabbit	39
7	Sheep	121	23	Rattlesnake	
8	Deer	116		Unspecified Insect	38
9	Unspecified game fish	106	24	Grasshopper	
10	Trout	96		Bull	35
11	Fish	90	25	Rat	34
12	Unspecified game animal	88	26	Lion	
13	Weevil	86		Monkey	30
14	Elk	82	27	Wasp/bee	26
15	Cat	73	28	Fox	25
16	Ducks/waterfowl	69	29	Fly	
17	Unspecified bird	53		Turkey	24
18	Unspecified mammal	48	30	Shark	
				Tuna Fish	23

ing in just 1.6 percent of the articles. The greatest proportion of articles on endangered or threatened species occurred during the initial and latter parts of the century.

Summary and Policy Implications

There are several possible policy and management implications that can be derived from these results.

1. The absence of any trend toward increasing numbers of animal-related articles during the century suggests some caution regarding greatly expanded programs based on the presumption of rapid growth in wildlife and natural area interest.

2. Major increases in hunting, fishing, and other wildlife-related activities suggests a shift toward more recreational and appreciative interests in wildlife. These results qualify the first-listed policy implication and may indicate the need to plan for more leisure-oriented wildlife demands.

3. The frequency of wildlife-related interest during the 1920's—possibly due to the impact of the automobile—reflects the value of anticipating the effects of changing technologies (e.g., off-road vehicles, air travel) on the future demand for wildlife resources.

4. The 1930's results suggest the difficulty of presuming that periods of economic downturn, even depression,

will result in a diminished interest and demand for wildlife-related experiences.

5. The greater frequency of animal-related articles during the 1960's, and the lack of a trend since that time, may indicate the need for caution when reacting to the pressures of a period marked by ideological fervor.

6. Major increases in animal-related pictorial articles represent a significant public awareness challenge when one notes the visual ease of communicating the plight of, for example, baby harp seals, as compared with the difficulty of visually depicting the consequences of habitat loss, particularly when such loss involves obscure and aesthetically unappealing creatures (e.g., the snail darter).

7. The greater frequency of the utilitarian attitude during the century indicates that a pragmatic relationship to animals remains a dominant perspective in American life. On the other hand, the substantial declines in this attitude, particularly in the urban areas, suggests a decrease in materialistic orientations to animals.

8. Major increases in the aesthetic and humanistic attitudes in the urban newspapers intimates the growth of a more appreciative and emotional perspective toward animals among city residents. Additionally, a pronounced increase in the ecologicistic attitude in the urban areas suggests a more protectionist attitude toward wildlife and natural habitats among urban residents. Significant contrasts with the rural areas on these attitude dimensions intimates major urban/rural differences in the decades ahead.

9. Although the utilitarian attitude remained dominant in the rural areas, a marked decline in the negativistic and substantial increase in the neutralistic attitudes implies a more positive view toward animals among rural residents.

10. The infrequent occurrence of the moralistic perspective throughout

the century reflects the limited importance of animal cruelty and rights considerations as newsworthy issues, especially in the rural areas.

11. Far greater emphasis on locally oriented animal issues, on native wildlife, and an infrequent consideration of rare and endangered species issues suggests a strong parochial bias among most Americans.

Considerable refinement of the research methods and a broadening of the data base will be required before a clear historical picture of American animal use and perception emerges. Historical studies are necessarily fraught with uncertainty, particularly when novel, empirically oriented techniques are employed. Nevertheless, the need to understand the past in attempting to avoid previous mistakes when planning for an uncertain future rationalizes the effort. It is hoped that this exploratory study will lead to other empirical attempts to understand the role of animals in American history.

References

- Anonymous (1978) *American Newspaper Market's Circulation 1977-1978*. American Newspaper Markets, Inc., Malibu, CA.
- Anonymous (1978) *Ayer Directory of Publications 1977*. Ayer Press, Bala Cynwyd, PA.
- Anonymous (1978) *World Almanac and Book of Facts 1977*. Newspaper Enterprise Association, New York, NY.
- Bos, W., Brisson, L. and Eagles, P. (1977) A study of attitudinal orientations of central Canadian cultures toward wildlife. Waterloo Research Institute, University of Waterloo, project no. 702-17.
- Kellert, S.R. (1976) Perceptions of animals in American society, In: *Forty-First North American Wildlife Conference*.
- Kellert, S.R. (1980) Contemporary values of wildlife in American society, In: Shaw, W.W. and Zube, E.H. (eds.), *Wildlife Values*. Center for Assessment of

Noncommodity Natural Resource Values.

- Kellert, S.R. (1980) Public attitudes toward critical wildlife and natural habitat issues, In: *Transactions of the 45th North American Wildlife and Natural Resources Conference*.
- Kellert, S.R. and Berry, J.K. (1980) Knowledge, affection and behaviors toward wildlife and natural habitats. National Technical Information Service, accession no. PB-81-173106, Springfield, VA.
- Rose, H.M. (1971) Conservation in the United States, In: Smith, G.H. (ed.), *Conservation of Natural Resources*. John Wiley and Sons, New York, NY.
- Trefethen, V.B. (1976) *The American Landscape: 1776-1976—Two Centuries of Change*, The Wildlife Management Institute, Washington, DC.
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Stray-Dog Control in Cyprus: Primitive and Humane Methods

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In Cyprus, a dog control scheme was started in 1971 within the context of an all-inclusive anti-echinococcosis campaign. At the time, it was estimated that there were more than 100,000 dogs in the island, almost all of which were strays (even many of those that were purportedly "owned"). These had been identified as infectious agents of echinococcosis in Cyprus (the average surgical incidence in humans, over the 30-year period prior to 1970, was 12.9/100,000). The destruction of stray dogs is accomplished by using guns that fire a syringe containing a euthanizing drug. In the past (prior to 1970), various inhumane methods used by dogcatchers or other individuals included hitting the dog on the head with a sharp tool, hanging the dog from a tree, poisoning it with baits, or shooting it with a hunting gun. Despite an initial negative reaction on the part of both the general public and dog owners, the organized destruction of stray dogs that started in 1971 was continued without interruption. At present, the dog population is under control, and all stray and unwanted dogs are euthanized. The Cyprus experience, in which the initiative for dog control was undertaken by the Department of Veterinary Services, can well serve as an example for many other countries.

Zusammenfassung

Im Jahre 1971 wurde auf Zypern ein Hundekontroll-Programm im Zusammenhang mit einer umfangreichen Anti-Echinokokkus Kampagne begonnen. Damals rechnete man mit einer Hundepopulation auf der Insel von schätzungsweise 100,000,