ANTI-POACHING CAMPAIGNS — A TOOL OF WILDLIFE LAW ENFORCMENT?

by
KIRK H. BEATTIE
Graduate Research Assistant
Department of Wildlife and Fisheries
Mississippi State University, Starkville, Ms.

ABSTRACT

A survey of Wildlife Law Enforcement Directors throughout the United States was used in assessing the status of anti-poaching campaigns. Thirty-five of the 45 state wildlife agencies returning the questionnaire have an anti-poaching campaign in progress. Personal contact is the medium most frequently used (34 of 35 agencies). Six (17.1%) agencies reported that they had been able to evaluate the effectiveness of their anti-poaching campaigns in eliciting the cooperation of citizens in reporting wildlife violations. Fear of involvement and of being called as a witness was the most frequently cited barrier preventing persons from reporting wildlife violations. A conservationist attitude was cited most frequently as the reason for reporting a violation. Discontinuities seemed apparent in the frequency and percent use of various media in anti-poaching campaigns. The top priority goal of research concerned with developing effective anti-poaching campaigns is one of considering all possible elements of the communication situation.

INTRODUCTION

Numerous wildlife managers and researchers interested in wildlife conservation have previously discussed the applicability of various techniques and strategies to wildlife law enforcement situations: aircraft (Perroux 1961, 1967, Hines 1964, Milstead 1964, Farish 1967), stiffer fines imposed by judges (Dahlen 1957), functional computer analysis of violations (Giles et al. 1971, Clark 1972), laboratory analysis (Magee 1959), patrol area concept (Hazel 1968), photography (Steele and Brown 1962), public relations and education (Thompson 1948, Harris 1951, Bennet 1955, Henson 1957, Beam 1968, Hanna 1968), radio-equipped units (McQuerry 1957, Walters 1957, Brown 1962, Strunk 1965), undercover investigations (Harris 1963, Kirkpatrick 1968, Ballew 1971, Lamarche 1972), and wide latitude in matters of search and seizure (Swindell 1957). However, after reviewing the literature, I am unable to locate any professional papers or scientific articles that have addressed the applicability of anti-poaching campagins as a means of increasing the effectiveness of wildlife law enforcement.

"Campaigns" generally refer to attempts in the short run to reinforce, activate, or change opinions, attitudes, and actions. My definition of an anti-poaching campaign is "an attempt (short or long term) to reinforce, activate, or change opinions, attitudes, and actions toward wildlife violations and/or wildlife violators through the use of well-organized, structured tactics, strategies, time schedules, personnel time-allotments, and definitive media-usage schedules."

How do personnel of a state wildlife agency determine how and when to initiate an anti-poaching program? What are the media, techniques, strategies, and methods to be employed? How is the effectiveness of the program to be determined? What are the barriers preventing persons from reporting wildlife violations as well as the reasons behind the reporting of violations? Is an egoistic or altruistic appeal to be used? How do we achieve maximum benefits from a minimum investment?

A questionnaire survery of state wildlife agencies was undertaken in an attempt to answer several of these questions. The results of the survey are discussed in the following sections of the paper. I wish to thank C. J. Perkins and D. C. Guynn for critically reviewing this manuscript.

METHODS

A four page, fourteen item questionnaire was developed (Table 1). The questionnaire contained ten "open-ended" questions and four "closed" questions. Initial questionnaires, along with a cover letter, were mailed on 14 May, 1975 to the Director of Law Enforcement of all state wildlife agencies of the United States. Names and addresses of these officials were obtained from the 1975 *Conservation Directory*, published by the National Wildlife Federation. In several cases the directory did not denote the state wildlife agency as having a distinct, separate law enforcement division, in which case the questionnaire was mailed to the Director of the agency. The Chief of Law Enforcement was requested to enlist the assistance of the Director of the Information and Education Section concerning questions that were also applicable to his Section. Five follow-up letters were sent to questionnaire nonrespondents between 25 May, 1975 and 5 July, 1975 (an additional copy of the original questionnaire was included with four of the follow-up letters).

Table 1. The fourteen questions contained in the questionnaire sent to the Chief of Law Enforcement of all state wildlife agencies of the United States.*

Question No.	*Question*
1	Does your Game and Fish Department have a routine, persuasive, educational program that is designed to elicit the cooperation of citizens in reporting wildlife violations (i.e.; "routine" in this case would refer to a program that did not have a prescribed, structured, plan-of-attack but, rather, presented information to publics on an irregular, non-patterned basis)?
2	Does your Game and Fish Department have an educational, persuasive program in which definite strategies, time schedules, personnel time-allotments, and definite media usage schedules are used to persuade citizens of your state to report wildlife violations?
3	If your agency does have a program as defined by either Question #1 or Question #2, what media are used in presenting the information to the publics (e.g. television, radio, state game and fish magazine, newspapers, personnel contact, sportsmen monitor system, violator report forms, etc.)? PLEASE LIST THE MEDIA BY THE IMPORTANCE YOU ASSIGN TO THEM, BEGINNING WITH THE MEDIA WITH THE HIGHEST ASSIGNED PRIORITY.
4	If your agency does have a program as defined by either Question #1 or Question #2, please list the *five* most effective media, beginning with the most effective media, used in attempting to persuade citizens of your state to report wildlife violations.
5	Has your state agency been able to evaluate the effectiveness of your persuasive, educational program in eliciting the cooperation of citizens in reporting wildlife violations?
6	If your agency has been able to evaluate the effectiveness of your program, please list the techniques or means of evaluation used (e.g., increased number of complaints from citizens, decreased poaching rate attributed to increased public support of game laws, etc.).
7	What do you feel are some of the barriers (reasons) that prevent persons from reporting wildlife violations in your state, assuming they have witnessed a violation?
8	What do you think are some of the reasons people have in reporting wildlife violations in your state?
9	What were the total number of reports of wildlife violations received by you from citizens of your state in 1974 (e.g., from letters, telephone calls, personal contact, etc.)?
10	What one wildlife violation was reported most frequently by citizens of your state in 1974?
11	What percentage (roughly) of all closed-season cases were successfully prosecuted as the result of a report from a citizen of your state in 1974?
12	What were the total number of arrests made in which persons were convicted of illegally attempting to or illegally killing mule deer and/or whitetail deer during the closed season of 1974 in your state?
13	What was the average fine assessed persons convicted of illegally attempting to or illegally killing mule deer and/or whitetail deer during the closed season of 1974 in your state?
14	What were the average monetary expenditures made by each deer hunter while hunting deer in your state between January 1, 1974 and December 31, 1974 (the information may be derived if hunter report cards were sent out in a hunter survey but if the information is not available, please check the appropriate answer)?

* Response categories omitted for brevity.

RESULTS AND DISCUSSION

Questionnaires were completed and returned by 45 (90.0%) of the 50 state wildlife agencies as of 15 July, 1975 (approximately two months following initial questionnaire mailings). Agencies not returning the questionnaires in completed form by 15 July, 1975 were Alaska, Louisiana, Nebraska, Nevada, and Utah. The Alaska Department of Game and Fish reported that they did not have time to complete the questionnaire. No correspondence was received from the other four agencies.

Presence of Anti-Poaching Campaigns

Questions one and two were used to determine whether a state agency utilized a routine anti-poaching campaign and/or a definite anti-poaching campaign. Routine in this case refers to a persuasive, educational program that does not have a prescribed, structured plan-of-attack when attempting to elicit the cooperation of citizens in reporting wildlife violations but, rather, presents information to publics on an irregular, non-patterned basis. A definite anti-poaching campaign refers to a persuasive, educational program in which definite strategies, time schedules, personnel time-allotments, and media usage schedules are used in attempting to persuade citizens to report wildlife violations.

Table 2. State wildlife agencies utilizing a *routine*, persuasive, educational program (#1) and/or a persuasive, educational program in which *definite* strategies, time schedules, personnel time-allotments, and media usage schedules are used when attempting to persuade persons to report wildlife violations (#2).

State	*#1*	*#2*	*State*	*#1*	*#2*
Alabama	yes	no	Massachusetts	yes	no
Alaska	*	*	Michigan	no	no
Arizona	no	no	Minnesota	yes	no
Arkansas	yes	no	Mississippi	yes	no
California	yes	no	Missouri	yes	no
Colorado	no	no	Montana	yes	no
Connecticut	yes	no	Nebraska	*	*
Delaware	yes	no	Nevada	*	*
Florida	yes	no	New Hampshire	yes	no
Georgia	yes	no	New Jersey	no	no
Hawaii	yes	no	New Mexico	yes	no
Idaho	yes	no	New York	yes	no
Illinois	no	no	North Carolina	yes	yes
Indiana	no	no	North Dakota	yes	yes
Iowa	yes	no	Ohio	yes	yes
Kansas	yes	yes	Oklahoma	yes	no
Kentucky	no	no	Oregon	yes	no
Louisiana	*	*	Pennsylvania	no	no
Maine	no	no	Rhode Island	yes	no
Maryland	yes	no	South Carolina	yes	yes
South Dakota	no	no	Virginia	yes	no
Tennessee	yes	yes	Washington	yes	yes
Texas	yes	no	West Virginia	yes	yes
Utah	*	*	Wisconsin	yes	no
Vermont	yes	no	Wyoming	yes	no

Total for #1: 35 (77.8% of 45) yes
10 (22.2% of 45) no

Total for #2: 8 (17.8% of 45) yes
37 (82.2% of 45) no
8 (22.9% of 34 states answering yes to #1) yes

* Agencies not responding to questionnaire.

Thirty-five (77.8%) of the 45 responding agencies maintain a routine program while 10 (22.2%) agencies do not use a routine program (Table 2). Ten (22.2%) of the 45 agencies do not have a routine or definite program in progress. Eight (22.9%) of the 35 agencies that have a routine program also have a definite program (i.e., some information is presented on an irregular, non-patterned basis while other stimula are presented along definitive guidelines).

Media Usage

I am using the term medium (singular of media) as denoting the channel of communication between the source(s) and receiver(s) of a message. Question three was designed to determine the media (including techniques and methods) and the assigned importance of media as they are used by state wildlife agencies in routine or definite anti-poaching campaigns (Table 3).

Table 3. Frequency and percentage of state wildlife agencies utilizing various media in anti-poaching programs.

Media	*No. agencies using this media**	*% agencies using this media**
Personal contact	34	97.1
Newspaper releases	28	80.0
Radio	26	74.3
Television	21	60.0
State game and fish magazine	19	54.3
Violator report forms	12	34.3
Presentations to groups	5	14.3
Sportsmen monitor system	5	14.3
Department publications	4	11.4
"Wanted" posters	3	8.6
Hunting brochures	2	5.7
Watts line(s)	2	5.7
Affiliation with sportsmen groups	1	2.9
Flyers at check stations	1	2.9
Flyers with licenses	1	2.9
Hunter questionnaires	1	2.9
State game and fish television show	1	2.9
"Stop" signs	1	2.9

* Based upon 35 state agencies using a routine or definite program.

Personal contact (face-to-face interaction) is the medium used most frequently by state wildlife agencies in anti-poaching campaigns (34 of 35 agencies use this medium). Newspaper releases are the second most frequently used medium (28 agencies, 80.0%), followed by radio (26,74.3%), television (21,60.0%), and state wildlife agency magazines (19,54.3%).

Violator report forms are used by 12 (34.3%) of the agencies. Violator report forms are used by some states as part of the HOW (Help Out Wildlife) program created by the National Rifle Association. If a person witnesses a wildlife violation or has knowledge of the occurrence of a violation, he is requested to record pertinent information on the card and then contact the local warden of the agency or the central office of the agency. Violator report forms have met with variable success. The New Mexico Game and Fish Department distributed 10,000 violator report forms to citizens of its state between 1969 and 1974 and, as of October of 1974, have not received a single one returned in completed form (personal communication, Jim Vaught, New Mexico Game and Fish Department). The Vermont Fish and Game Department printed 100,000 violator report forms in hunting regulations booklets and have received no reports directly from the forms. Yet, of the nine agencies considering violator report forms to be one of the five most effective media, two agencies consider the forms to be the most effective, two agencies consider it to be the second most effective, three agencies consider it to be the third most effective, and two agencies consider it to be the fourth most effective medium (Table 4).

Presentations (talks, lectures, exhibits) to groups (civic, educational, sportsmen) are used by 5 (14.3%) of the 35 agencies maintaining anti-poaching campaigns.

Table 4. Frequency and percent use of media ranked by assigned effectiveness by 35 state wildlife agencies maintaining a routine or definite anti-poaching campaign.

	Total freq.		*#1**		*#2**		*#3**		*#4**		*#5**	
Media	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Personal contact	30	85.7	21	70.1	4	13.3	1	3.3	1	3.3	3	10.0
Newspaper releases	27	77.1	7	25.9	4	14.8	8	29.7	7	25.9	1	3.7
Radio	20	57.1			4	20.0	7	35.0	6	30.0	3	15.0
Television	17	48.6			3	17.6	3	17.6	6	35.3	5	29.5
State game and fish magazine	17	48.6	1	5.9	6	35.3	4	23.5	2	11.8	4	23.5
Violator report forms	9	25.7	2	22.2	2	22.2	3	33.4	2	22.2		
Presentations to groups	7	20.0			2	28.6	3	42.8	1	14.3	1	14.3
Department publications	3	8.6					1	33.3			2	66.7
Sportsmen monitor system	2	5.8	1	50.0	1	50.0						
Flyers at check stations	1	2.9			1	100.0						
Flyers with licenses	1	2.9	1	100.0								
Published regulations	1	2.9			1	100.0						
Rewards	1	2.9			1	100.0						
"Stop" signs	1	2.9	1	100.0								
"Wanted" posters	1	2.9			1	100.0						

* #1 is the medium considered most effective by agencies, #2 is the medium assigned secondary effectiveness, #3 is the medium assigned tertiary effectiveness, etc.

Sportsmen monitor systems, or variations of them, are used by 5 (14.3%) agencies. Persons interested in becoming involved in this type of program are requested to take a short training course under the direction of the wildlife agency sponsoring the program. These persons are informed of what their volunteer duties will entail and are given various courses in law enforcement techniques and procedures. Following completion of the course they are authorized to become a sportsmen monitor. They do not have the authority to arrest violators but merely serve the function of "volunteer eyes" for the agency. One of the state agencies using this system considers it to be the most effective medium (or technique) while another agency considers it secondary in effectiveness. The remaining three agencies utilizing this system do not consider it to be among the five most effective media. As with violator report forms, the sportsmen monitor system approach to anti-poaching campaigns has met with highly variable success.

The remaining media and their frequency of use are fairly self-explanatory and are listed in Table 3. However, for the sake of clarity several of them will be discussed.

"Wanted" posters are currently used by 3 (8.6%) agencies in their anti-poaching campaigns. These posters (cardboard or heavy paper) usually depict a simulated violation in the form of a photograph or drawing. These posters look very similar to the "outlaw posters" of the Old West and request persons to report violation encounters to the proper authorities. Apparently these agencies are relying on the old adage "one picture is worth a thousand words." Of the three agencies who distribute these posters, one agency considers them to be secondary in effectiveness and the remaining two do not consider them to be among the five most effective media used by them (Table 4).

Flyers enclosed with hunting licenses and applications and distributed at check stations are used by one agency and are considered the most effective and second most effective media, respectively, by that agency. The flyers are very similar to "wanted" posters but are in the form of handbills rather than posters.

"Stop" signs are the final type of media to be clarified. They are roughly identical in shape, size, and color configuration to traffic stop signs. The words "Stop Wildlife Violations" or something to that effect are printed on the signs which are then located in areas visited by sportsmen and violators alike. The North Carolina Wildlife Resources Commission considers the "stop" sign to be their most effective medium.

Perceived Media Effectiveness

Question four was designed to determine the relative effectiveness of various media used in anti-poaching campaigns (as perceived by Directors of Law Enforcement and/or Directors of Information and Education). In most cases the ranking of media by effectiveness was probably based more on the intuition, practical experience, and knowledge of the person(s) completing the questionnaire than on scientifically validated research. This statement is not meant to denigrate those officials but merely to show the state-of-the-art of communication dissemination theory. The frequency and percent use of media ranked by assigned effectiveness by 35 state wildlife agencies maintaining a routine or definite anti-poaching program appears in Table 4.

Personal contact was listed as one of the media used in anti-poaching campaigns by 34 agencies (Question #3, Table 3) but was considered by only 30 (88.3%) agencies to be one of the five most effective media. One agency did not consider personal contact as a medium in their anti-poaching program (i.e.; personal contact undoubtedly plays a part in their program but the agency does not consider it a "manageable resource"). Personal contact is considered by 21 (70.1%) agencies to be the most effective medium, second by 4 (13.3%) agencies, third by 1 (3.3%) agency, fourth by 1 (3.3%) agency, and fifth by 3 (10.0%) agencies (the burden of determining criteria for effectiveness was on the agency). I think most communication theorists, researchers, and practitioners would agree that personal contact is the most effective medium, with the qualification that "effectiveness" is defined as the "greatest positive (desired) change in attitude initiation, activation, reinforcement, and change/individual/communication situation" (Asch 1940, Festinger 1950, Katz 1957, Katz and Lazarsfeld 1955, Lazarsfeld et al. 1968, Marcus and Bauer 1964, Merton and Kitt 1950, Rosenau 1961, Sherif 1952).

The frequency and percent use of other media ranked by effectiveness (from most effective to fifth most effective) is self-explanatory in Table 4. The apparent discrepancy in relative assignments of media frequency and percent use among agencies will be discussed in the conclusion of this paper.

Number of Media Utilized

The number of media utilized by state wildlife agencies in routine and definite anti-poaching programs appears in Table 5. The number of media utilized ranged from one in Rhode Island and

Oregon to ten in Idaho, with a median and mode of five. The mean number of media used by agencies maintaining a routine program was 4.3. The mean number of media used by state wildlife agencies maintaining both routine and definite programs was 4.9 (13.9% greater).

Table 5. Number of media utilized by state wildlife agencies in routine and definite anti-poaching campaigns.*

State	*No. media*	*State*	*No. media*	*State*	*No. media*
Alabama	5	Louisiana	**	Ohio	4
Alaska	**	Maine	NA***	Oklahoma	4
Arizona	NA***	Maryland	5	Oregon	1
Arkansas	5	Massachusetts	4	Pennsylvania	NA***
California	3	Michigan	NA***	Rhode Island	1
Colorado	NA***	Minnesota	5	South Carolina	7
Connecticut	3	Mississippi	6	South Dakota	NA***
Delaware	2	Missouri	5	Tennessee	6
Florida	5	Montana	6	Texas	5
Georgia	3	Nebraska	**	Utah	**
Hawaii	5	Nevada	**	Vermont	3
Idaho	10	New Hampshire	4	Virginia	5
Illinois	NA***	New Jersey	NA***	Washington	4
Indiana	NA***	New Mexico	3	West Virginia	4
Iowa	NA***	New York	2	Wisconsin	6
Kansas	7	North Carolina	5	Wyoming	6
Kentucky	NA***	North Dakota	3		

Mean no. media (states using routine program only): 4.3
Mean no. media (states using definite program also): 4.9
Range: 1 (Rhode Island) — 10 (Idaho)
Median: 5
Mode: 5

* Based on 35 state wildlife agencies maintaining a routine or definite anti-poaching program.
** Agencies not responding to questionnaire.
*** Not applicable.

Program Effectiveness

Questions five and six were used in determining the agencies which have been able to evaluate the effectiveness of their anti-poaching campaigns (Question #5) and their criteria for evaluation (Question #6).

Wildlife agencies of six (17.1%) states (Connecticut, Idaho, Kansas, New Mexico, Ohio, and Texas) reported they had been able to evaluate the effectiveness of their anti-poaching programs. The frequency and percent use of evaluative criteria used by these agencies in assessing the effectiveness of their campaigns appears in Table 6.

A total of eight criteria for evaluation were listed by the six states. New Mexico and Connecticut reported that their campaigns had been highly ineffective in eliciting desired actions. The remaining four states reported beneficial results.

An increase in the number of complaints of violations was the criterion for evaluation used most often (3 (50.0%) of 6 states). However, it is not known (by me) whether the increase in complaints was calculated by recording the number of complaints received/unit time prior to the campaign and comparing it to the number of complaints received/unit time during or following the campaign or whether the increase was roughly estimated. Two of the three agencies using this evaluative criterion did not know the total number of reports of wildlife violations received by them from citizens of their states in 1974 (Question #9, Table 9). The third agency (Ohio) did know the total number of complaints received. I do not wish to invalidate the findings nor denigrate the evaluators of these agencies but would instead pose a hypothetical situation: was the increase in complaints due, in part, to (1) an increase in violations and/or violators, or (2) an increase in violation-prone game populations stimulating an increase in violations and/or violators, or (3) an increase in accessibility by publics to

Table 6. Frequency and percent use of evaluative criteria used by six wildlife agencies in assessing the effectiveness of their anti-poaching campaigns.

Means of evaluation	*No. agencies using this criterion*	*% agencies using this criterion*
Increase in the number of complaints of violations	3	50.0
Ineffective	2	33.3
Increase in citation of violations	1	16.7
Increase in animal populations	1	16.7
Increased public interest in conservation	1	16.7
Decreased poaching rate	1	16.7
Increase in inquiries by persons wanting to know what they should do if a violation situation is encountered	1	16.7
Some response from violator report forms	1	16.7

violation-prone game areas (i.e.; new roads into an area increasing the probability that a violation will be observed), or (4) an increase in human populations resulting in an increased influx of persons into violation-prone game areas and thereby increasing the probability that any one person would encounter a violation? Many other qualifications could be cited but I think the above will suffice. I think state wildlife agencies are taking a meritable approach in attempting to curtail violations through anti-poaching campaigns but I would like to cite a cautionary statement made by Leopold (1933, p. 116), "It may be the old fallacy of assuming that when two phenomena are associated, they must be cause and effect."

Six other criteria of evaluation, as used by four of the agencies, are listed in Table 6. I believe that most of the criteria of evaluation could be used in determining the effectiveness of anti-poaching campaigns with the provisions that all known causative factors associated with the evaluative technique are constantly monitored and analyzed and that unknown factors will hopefully be discovered.

Barriers

Question seven was designed to determine some of the barriers which prevent persons from reporting wildlife violations. The opinions of state wildlife agency representatives of 44 states on barriers (psychological and physical) that prevent persons from reporting wildlife violations in their respective states appears in Table 7.

Fear of involvement and of being called as a witness was the most frequently (35,79.5%) listed barrier preventing persons from reporting violations. Fear of retaliation or revenge was listed second most frequently (26,59.1%). One Western game and fish department, in cooperation with the National Rifle Association, distributes Cooperative Violation Report Cards to publics of its state. If a violation situation is encountered, the person(s) witnessing the violation is requested to record pertinent violation occurrence data on the Report Card and to *sign* a statement saying that he will agree to appear in court and testify against the game violator. It is possible that *some* forms of violation report cards are a barrier preventing the reporting of wildlife violations. It is also possible that a greater number of violation report forms would be returned if the person witnessing a violation could report the violation without testifying the court. However, the violator apprehension and prosecution success ratios and number would have to be carefully evaluated under both systems (i.e., a greater number of violations might be reported but the apprehension and prosecution success ratios might be much lower).

Apathy, or not caring, was listed by 17 (38.6%) agencies as a barrier preventing the reporting of wildlife violations in their states. Apathy is existent in many subject areas and can be only partially overcome through the use of intensified, advanced, communicative methods.

The remaining barriers that were cited by agency officials appear in Table 7.

Table 7. Opinions of state wildlife agency representatives of 44 states on barriers (psychological and physical) that prevent persons from reporting wildlife violations in their states, assuming they have knowledge as to the occurrence of a violation(s).

Barriers	*No. agencies citing this as a barrier*	*% agencies citing this as a barrier*
Fear of involvement and of being called as a witness	35	79.5
Fear of retaliation or revenge	26	59.1
Apathy — not caring	17	38.6
Friend or relative of violator	6	13.6
Lack of knowledge about the importance of the resource	6	13.6
Not knowing how or where to report a violation	5	11.4
Don't want to be known as an informant	5	11.4
They committed the act at one time and feel quilty about reporting it	3	7.5
Unfavorable past image of enforcement officer	2	4.5
Insufficient knowledge of laws	2	4.5
Don't know how to report and not get involved	1	2.3
Time and location encountered	1	2.3
Lack of 24-hour reporting station	1	2.3
Violations condoned by the public	1	2.3
Lack of faith in the judicial system	1	2.3

Reasons For Reporting Violations

Opinions of state wildlife agency representatives of 43 states on reasons persons of their states report wildlife violations appear in Table 8.

The reason given most frequently (34,79.1%) by agencies for persons reporting wildlife violations was a conservationist attitude (a willingness to "help" wildlife in one way or another). Equal opportunity to harvest a fair share of game was listed by 17 (39.5%) agencies as one of the reasons for reporting wildlife violations.

It appears, from reviewing the 15 reasons cited by agency officials, that persons will report wildlife violations if they are personally affected as a result of the violation (a decreased game supply, a threat of physical harm, trespassing, protecting game on the land hunters lease from them) or if the violation(s) is contrary to their holistic outlook of an orderly society (a direct theft of public property, violation of established laws).

Number of Reports Received

Question nine was used to determine the number of reports of wildlife violations received by state wildlife agencies from citizens of their respective states in 1974 (Table 9).

Eleven (24.5%) of the 35 agencies maintaining routine or definite anti-poaching campaigns recorded the number of reports of violations received by their agency in 1974. The number of violation reports ranged from a low of 30 in New Mexico to a high of 6,511 in West Virginia. The mean number of complaints received/state (for 11 states) was 212.

A multitude of factors would certainly need to be considered in any attempt to explain the variation in numbers of violations reported/state. The number of human inhabitants in a state as well as their distribution in urban and rural areas, the length and type of roads/unit area, the number of persons/unit area, the quantity and seasonal distribution of game species/unit area, the effectiveness of various techniques and media used in anti-poaching campaigns, the past and present image of the

Table 8. Opinions of state wildlife agency representatives of 43 states on reasons persons of their states report wildlife violations, assuming they have knowledge as to the occurrence of a violation(s).

Reasons	*No. agencies citing this reason*	*% agencies citing this reason*
Conservationist attitude	34	79.1
Equal opportunity to harvest fair share of game	17	39.5
Trespassing by violator	14	32.6
Bring violator to justice (i.e; strive for a lawful society)	14	32.6
Revenge or spite	14	32.6
Concern over dwindling wildlife populations	6	14.0
Friends of the agent	5	11.6
Lessen their own penalities by implicating others	3	7.0
Anti-hunters trying to give hunting a bad name by reporting violations	2	4.7
Direct theft of public property	2	4.7
(again related to a lawful society)	2	4.7
Protectionists	2	4.7
Retaliation for once being caught themselves	2	4.7
Public safety aspect	2	4.7
Protecting game on the land that hunters lease from them	1	2.3
Sportsmen reporting violators to improve the image of the hunter (i.e; sportsmen don't condone violations)	1	2.3

wildlife agency and its representatives, the recreational pursuits of various publics, and varying climatic and vegetational characteristics probably comprise only a few of the factors involved.

Violations Reported Most Frequently

The assigned classification of wildlife violations reported most frequently/state to wildlife agencies by persons in 1974 appears in Table 10.

Out-of-season violations were reported by 7 (18.4%) of 35 agencies as being the most frequently reported violation. Headlighting was reported by 7 (18.4%) of the agencies as being the most frequently reported violation, as were deer violations. Hunting from a road was cited by only 1 (2.6%) agency as the most frequently reported violation.

It will be noted from Table 10 that violations involving deer were cited by 18 (47.4%) agencies as being the type (class) of violation reported most frequently. It would by my assumption that many of the other classes of reported violations (out-of-season, headlighting, road hunting, hunting illegally) also include many violations directed against deer. Because of this, I think it would be reasonable to assume that over 50% of the most frequently reported violations in the United States in 1974 were directly concerned with violations involving deer.

Seven (15.6%) of the 45 agencies completing the questionnaire and 4 (11.4%) of the 35 agencies maintaining anti-poaching campaigns did not know the most frequently reported violation in their state in 1974. West Virginia reported receiving 6,511 complaints (reports) in 1974 (Table 9) but did not know the most frequently reported violation.

Table 9. Number of reports of wildlife violations received by state wildlife agencies from citizens of their respective states in 1974.

State	*No. rep.*	*State*	*No. rep.*	*State*	*No. rep.*
Alabama	UNK*	Louisiana	**	Ohio	2,979
Alaska	**	Maine	UNK*	Oklahoma	2,500
Arizona	UNK*	Maryland	2,677	Oregon	UNK*
Arkansas	UNK*	Massachusetts	200	Pennsylvania	UNK*
California	UNK*	Michigan	UNK*	Rhode Island	UNK*
Colorado	UNK*	Minnesota	UNK*	South Carolina	UNK*
Connecticut	UNK*	Mississippi	200	South Dakota	UNK*
Delaware	UNK*	Missouri	UNK*	Tennessee	UNK*
Florida	UNK*	Montana	UNK*	Texas	UNK*
Georgia	UNK*	Nebraska	**	Utah	**
Hawaii	179	Nevada	**	Vermont	5,500-6,000
Idaho	300	New Hampshire	UNK*	Virginia	UNK*
Illinois	UNK*	New Jersey	UNK*	Washington	UNK*
Indiana	UNK*	New Mexico	30	West Virginia	6,511
Iowa	UNK*	New York	2,000	Wisconsin	UNK*
Kansas	UNK*	North Carolina	UNK*	Wyoming	UNK*
Kentucky	UNK*	North Dakota	UNK*		

No. agencies recording violation reports: 11
% of agencies recording violation reports: 24.5
Range of violation reports: 30 (New Mexico — 6,511 (West Virginia)
$\bar{X}$ (11 agencies): 212 reports

* Unknown (agency did not know the number of reports received).
** Agencies not respondingto questionnaire.

Table 10. The assigned classification of wildlife violations reported most frequently/state to 38 state wildlife agencies in 1974.*

Violation reported most frequently	*No. agencies citing this as the most frequently reported vio.*	*% agencies citing this as the most frequently reported vio.*
Out-of-season violation	7	18.4
Headlighting	7	18.4
Deer violation	7	18.4
Deer headlighting	4	10.5
Deer poaching	3	7.9
Hunting illegally	3	7.9
Hunting deer out-of-season	2	5.3
Trespassing	2	5.3
Dogs chasing deer	2	5.3
Road hunting	1	2.6

* Seven of the 45 agencies completing the questionnaire did not know the most frequently reported violation.

Percent of Cases Prosecuted as the Result of Reports

Percentages (rough) of all closed-season cases successfully prosecuted by state wildlife agencies as the result of reports from citizens in 1974 appear in Table 11.

Twenty-four (53.3%) of the 45 agencies calculated (or estimated) the percentage of all closed-season cases successfully prosecuted as the partial result of reports. The percentage ranged from a low of 0.1% in New Mexico to a high of 99% in Virginia. The mean percentage based on 24 agency replies was 46.3% (median 37.5%, mode 10%). Any attempt to explain this variation would need to include factors similar to those required for partially explaining the variation in numbers of reports received/agency.

Number of Arrests

The purpose of question twelve was to compare the number of reports received/agency with the total number of arrests/state for correlational analysis.

The total number of arrests/state (illegal attempted or illegal deer-kills) during the closed season of 1974, based upon 29 (64.4%) of the 45 state agencies calculating the number of arrests, appears in Table 12. The number of arrests/state ranged from a low of 5 in Rhode Island to 10,391 in Texas, with an average of 631 arrests/state for the 29 states calculating the percentage. The figure for Texas seems unusually high. However, more than 350,000 deer were legally harvested in Texas in 1974.

Fines Assessed Violators

The average fine/state assessed persons convicted of illegally attempting to or illegally killing mule deer and/or whitetail deer during the closed season of 1974 appears in Table 13 (based on 33 (73.3%) of the 45 agencies calculating the average fine).

Table 11. Percentages (rough) of all closed-season cases successfully prosecuted by state wildlife agencies as the result of reports from persons in 1974.*

State	*% of cases*	*State*	*% of cases*	*State*	*% of cases*
Alabama	75	Louisiana	***	Ohio	UNK**
Alaska	***	Maine	96	Oklahoma	10
Arizona	10	Maryland	95	Oregon	UNK**
Arkansas	UNK**	Massachusetts	80	Pennsylvania	UNK**
California	UNK**	Michigan	1.88	Rhode Island	5
Colorado	UNK**	Minnesota	UNK**	South Carolina	UNK**
Connecticut	85	Mississippi	15	South Dakota	UNK**
Delaware	10	Missouri	UNK**	Tennessee	UNK**
Florida	UNK**	Montana	25	Texas	40
Georgia	UNK**	Nebraska	UNK**	Utah	***
Hawaii	80	Nevada	***	Vermont	UNK**
Idaho	50	New Hampshire	UNK**	Virginia	99
Illinois	UNK**	New Jersey	3	Washington	25
Indiana	UNK**	New Mexico	0.1	West Virginia	UNK**
Iowa	90	New York	75	Wisconsin	95
Kansas	35	North Carolina	10	Wyoming	UNK**
Kentucky	UNK**	North Dakota	UNK**		

$\bar{X}$: 46%
Range: 0.1% (New Mexico) — 99% (Virginia)
Median: 37.5%
Mode: 10%

* 24 (53.3%) of 45 agencies calculated the percentage.
** Unknown (agency did not know the percentage).
*** Agencies not responding to questionnaire.

Table 12. Total number of arrests/state in which persons were convicted of illegally attempting to or illegally killing mule deer and/or whitetail deer during the closed season of 1974.*

State	No. arr.	State	No. arr.	State	No. arr.
Alabama	600	Louisiana	***	Ohio	539
Alaska	***	Maine	247	Oklahoma	300
Arizona	25	Maryland	247	Oregon	1,007
Arkansas	545	Massachusetts	19	Pennsylvania	UNK**
California	UNK**	Michigan	288	Rhode Island	5
Colorado	UNK**	Minnesota	200	South Carolina	350
Connecticut	78	Mississippi	60	South Dakota	UNK**
Delaware	30	Missouri	UNK**	Tennessee	744
Florida	UNK**	Montana	UNK**	Texas	10,391
Georgia	260	Nebraska	***	Utah	***
Hawaii	260	Nevada	***	Vermont	130
Idaho	53	New Hampshire	28	Virginia	40
Illinois	241	New Jersey	393	Washington	UNK**
Indiana	UNK**	New Mexico	250	West Virginia	UNK**
Iowa	UNK**	New York	262	Wisconsin	937
Kansas	18	North Carolina	UNK**	Wyoming	UNK**
Kentucky	UNK**	North Dakota	UNK**		

$\bar{X}$: 631 arrests
Range: 5 (Rhode Island) — 10,391 (Texas)

* Based upon 29 (64.4%) of 45 agencies that calculated the number of arrests.
** Unknown (agency did not know the number of arrests).
*** Agencies not responding to questionnaire.

Table 13. Mean fine/state assessed persons convicted of illegally attempting to or illegally killing mule deer and/or whitetail deer during the closed season of 1974.*

State	Fine ($)	State	Fine ($)	State	Fine ($)
Alabama	50	Louisiana	***	Ohio	UNK**
Alaska	***	Maine	200	Oklahoma	50
Arizona	145	Maryland	200	Oregon	UNK**
Arkansas	109.73	Massachusetts	100	Pennsylvania	UNK**
California	UNK**	Michigan	82	Rhode Island	50
Colorado	UNK**	Minnesota	175	South Carolina	200
Connecticut	100	Mississippi	100	South Dakota	34.52
Delaware	125	Missouri	UNK**	Tennessee	50
Florida	250+cost	Montana	200	Texas	133.50
Georgia	UNK**	Nebraska	***	Utah	***
Hawaii	N/A	Nevada	***	Vermont	100
Idaho	110	New Hampshire	100	Virginia	UNK**
Illinois	150	New Jersey	100	Washington	250
Indiana	79	New Mexico	47.50	West Virginia	UNK**
Iowa	100+dam.	New York	300	Wisconsin	75
Kansas	293.61	North Carolina	UNK**	Wyoming	UNK**
Kentucky	100+cost	North Dakota	100		

Range: $34.52 (South Dakota) — $300 (New York)****

* 33 (73.3%) of the 45 agencies calculated the average fine.
** Unknown (agency did not know the average fine).
*** Agencies not responding to questionnaire.
**** An average (mean) fine for all 33 agencies could not be calculated because some agencies add damage and cost values to fines.

Dahlen (1957) suggested that an increase in fines assessed violators may offer an effective deterrent to wildlife violations. I would agree that this might be true for some violators (e.g. those persons who do not plan to harvest over their limit but are overcome by temptation when a situation presents itself). However, the Class III violators (those persons involved in organized, premeditated-action poaching rings) are often in a lucrative "business" and probably realize the probability of being apprehended is minimal (Vilkitis (1968, 1970) found a field detection of violators of 1.1% in Idaho and 1.2% in Maine).

The mean fine/state ranged from a low of $34.52 in South Dakota to a high of a $300.00 in New York (a mean fine for the 35 agencies could not be calculated because some agencies add damage and cost values to fines).

Monetary Expenditures

Question fourteen was designed to determine the average sportsmen dollar expenditure/deer harvested/state in the United States in 1974. However, only 6 (13.3%) of the 45 agencies calculated this figure and the data are insufficient for analysis.

CONCLUSIONS AND RECOMMENDATIONS

I have not attempted to take a pessimistic approach in attempting to describe the status of anti-poaching campaigns as they are used by state wildlife agencies. In truth, I feel that anti-poaching campaigns will prove to be a valuable tool of the wildlife agent and are worthy of investigative endeavors. However, economic support is a major area of concern to agencies wishing to mount a full-scale attack on violators through the channels of communication. Effective anti-poaching campaigns are an expensive proposition and most wildlife agencies are not authorized to expend the "sufficient" financial and manpower requirements for such campaigns. Benefit/cost studies would certainly prove helpful in determining the value of an anti-poaching campaign. Vance (1975) reported that Texas incurs an illegal kill of 150,000 deer annually and Michigan incurs an illegal kill of 25,000-40,000 deer annually. The state-of-the-art is such that a dollar value cannot easily be assigned to a given species or unit of wildlife (with the exception of those species that are commercially harvested). Some persons have attempted to assign wildlife a monetary value (deer for example) by saying: (1) a deer is worth XX dollars by calculating the dollar amount expended by a sportsman in harvesting that deer (fixed and/or variable costs included), or (2) a deer is monetarily valued at the fine assessed a violator illegally harvesting that animal (the cost needed to replace the animal). I personally feel that benefit/cost studies should be concerned with recreational, esthetic, and related benefits, although we incur the problem of determining how to measure derived benefits.

Joel Vance (1975) of the Missouri Department of Conservation recently stated "There is no doubt that an intensive anti-poaching campaign worked in Missouri in 1973". However, the Law Enforcement Division of the Missouri Department of Conservation reported that they had not been able to evaluate the effectiveness of their program in eliciting the cooperation of citizens in reporting wildlife violations. I would intuitively agree with Mr. Vance that Missouri's anti-poaching campaign did work in 1973. The apparent discrepancy might be explained by saying that the anti-poaching campaign might have reduced potential losses and resulted in increased cooperation and fines from the courts but that it was not possible to evaluate the effectiveness of the campaign in eliciting the cooperation of citizens in reporting wildlife violations.

Marshall McLuhan, a well-known communication theorist in his field, recently proposed the theory that "the media is the message". In other words, the media (television, radio) used in transmitting a message from a source to a receiver is much more important than the content of the message. McLuhan feels that we are in the electronic age and are being so constantly "massaged" by the bombardment of a multitude of media that we soon succumb to an "information overload" (our brain can no longer interpret and analyze incoming signals). I think this points to the need to develop innovative techniques when attempting to reach target audiences of an anti-poaching campaign.

We must begin to assimilate the findings and enlist the help of communication theorists, educational psychologists, social scientists, and advertising and marketing specialists if we are to effectively compete with other sources of information. Through research we must begin to resolve some of the apparent discontinuities apparent in the various approaches to anti-poaching campaigns (discrepancies between relative assignments of media frequency and percent use among agencies) if we are to develop effective campaigns. However, these recommendations would require an increase in manpower and funding. Contrary to needed increases in general, the U. S. Office of Manpower and Budget recently reduced the number of agents of the Law Enforcement Division of the Fish and Wildlife Service from 225 to 157 agents, leaving 68 unfilled vacancies (Hanson 1975).

The value of public cooperation and compliance with game laws was shown 42 years ago by Leopold (1933, p. 210) when he stated "It may safely be said that no restriction can be enforced by police officers alone, no matter how much legislation or money is poured into the effort."

Before initiating, organizing, or establishing anti-poaching campaigns, we must clearly establish objectives and goals and evaluate all decisions as they contribute to such goals. We must also resolve the mutually exclusive roles ("educating" and "arresting") of the agent (Giles et al. 1971).

I would like to close with a citation which I believe (ideally) describes the top-priority goal of research concerned with developing effective anti-poaching campaigns: "The task is one of considering all the elements in the communication situation, discovering which communications under which conditions contribute which effects among which people" (Schramm and Roberts 1971, p. 392).

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