

with the employment of an increasing number of conservation enforcement officers this complex and rapidly changing society of our places a demand upon them that is greater than their training.

The only solution is education and only a joint effort of the several states can meet this pressing need.

RESEARCH NEEDS OF LAW ENFORCEMENT- SOME SUGGESTIONS

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Gentlemen, I am pleased to have been invited by Chief Tucker Brown to address this group of professionals who comprise an important part of the state game and fish agencies of the several southeastern states. Since I choose to present this paper subjectively, rather than in the traditional form of the scientific paper, perhaps I should offer some credentials. At present, I am a university professor of biology. Most of my time is spent supervising graduate studies relating to fisheries and game biology. I have also earned my living as a research game biologist and as a research fishery biologist in different southern states, and have had game and fish law enforcement duties. An important part of my formal education in wildlife conservation was received at a mid-western university. My chief interest has been and continues to be the preservation of public hunting and fishing, in part for the selfish reason that hunting and fishing has been a way of life for me for over 45 years. Therefore, what I have to say to you will be from the viewpoint of an outdoorsman; a hunter and fisherman who is professionally educated in the technology of animal population dynamics and who has been afield in the southern states often enough to be aware of some of the problems of conservation law enforcement.

The term, "research" has many connotations, and implies different things to different people. In its more sophisticated form, it implies a series of accurate measurements made on some variable in a system while the other variables are held constant. Inferences are then drawn, based upon the logic of mathematics, and some conclusion is reached. Research is often conducted to attempt to find facts that can be used to solve problems. Before research can be properly conducted, the problem must be defined as accurately as is possible, and this can be extremely difficult. One thing that scientific research absolutely demands is that bias, whether human or instrumental, be either measured or eliminated. Since wildlife conservation generally, and its law enforcement in particular, is largely influenced by a myriad of unmeasurable human biases, I think that a more realistic term to apply to the needs of law enforcement is "re-evaluation".

Before continuing, I wish to offer my definition of the major function of a state game and fish agency. That function is to provide certain species of animals (mammals, birds, fish, etc.) for the opportunity of periodic harvest by the licensed public, and that this harvest should be distributed among the licensees in an equitably practical manner. This definition implies general opportunity to harvest only, not assurance of harvest, but opportunity as free of administrative supervision as is biologically sound. This concept should be carefully considered by biologists as well as enforcement personnel. Perhaps my idea of the major function of a state game and fish agency will be viewed with disfavor, particularly with those who are concerned more with the psychological nuances of the public than they are with making game species available for those who wish to hunt and fish.

I now offer for your professional consideration some suggestions that I think will aid game and fish law enforcement in helping other segments of the agency to *produce hunting and fishing for that segment of the public that furnishes the funds to support the agency*. Let me stress that I consider law enforcement to be an integral and necessary part of the agency, and also that I believe that some of the ills blamed upon law enforcement may have been generated from within some other unit of the agency. Many of my suggestions, most of which reflect the thoughts of others, are certainly not new. For those who wish a more technical or extensive appraisal of the subject, there are several recent papers presented by Giles, Kaminsky, and McLaughlin at last year's meeting of this association. My suggestions are listed below by general topic, and pertain essentially to the southern states. The worth of my suggestions will vary with local conditions, primarily depending upon the amount of wildlife habitat available to the general public, the astuteness of administration, and the manner by which an agency is financed. I do not include pressures arising from the news media and from legislatures, since they usually affect the agency as a whole. I ask that you remember that I am dealing with generalities.

LAWS AND LAW ENFORCEMENT

1. I suggest that the "*Quota of Arrests*" system of evaluating law enforcement officers be discontinued, or relegated to special circumstances only. This action may cause consternation at many levels of administration, since this criterion is easily recognized and applied by the administrator. As a matter of survival and promotion for the officer, it may force him to spend time and the public's money seeking infractions that are minor or accidental. An arrest quota generally is of little help in providing wildlife for the sportsman, and a warning for minor infractions may do more good than will an arrest.

2. I suggest that enforcement administrators work closely with biologists to discard laws that are biologically unsound to the extent that they needlessly reduce harvest opportunities by the public. The function of the agency is to provide wildlife for harvest by the public, not to protect game. The name Wildlife Protector applied to game and fish law enforcement officers should be a gross misnomer. Both enforcement administrators and field agents should devote serious thought and attention to the biological evidences concerning the population dynamics of organisms, not necessarily just the dynamics of game populations. They should understand that most of the biological information forming the conventional wisdom of game and fish management today comes from many sources within and without the discipline of wildlife management, and represents findings based upon scientific method. I also ask that enforcement personnel be fully aware that wildlife management is a relatively new science without all of the answers, and that attempts to obtain more accurate information often results in undue criticisms from the public. The officer's help in curbing these criticisms could be beneficial to all. Over the years, individual officers have helped me personally in this respect, even though they properly had reservations about the worth of my investigations. Some are still helping me unstintingly in this respect.

Laws that I consider to be worthy of enforcement *only* when dictated by biological facts include the "bucks only" law and its companion, the "three inch antler" law; season and bag limits on squirrels; bag and season limits on many warm water fishes taken by acceptable means; the law making it illegal to capture bullfrogs using devices that break or pierce their skins; and finally, laws that forbid gigging and shooting fish with bow and arrow.

I wish to comment briefly on the "bucks only" and the "three inch antler laws. You have probably heard it before, perhaps you should hear it again. Enforced as a regular and continuing law, this has probably done more to limit deer herds

and the harvest of this species by the public than any with which I have had to contend. This law has contributed to malnutrition in herds, made inadvertent violators of many, wasted meat and trophies, limited fawn production, and benefitted the poacher. Protection of the female of a game species is an ancient practice, and may have merit at times. But let me ask two questions for your thoughtful analysis. Why does protection of the female apply only to those game species where the sexes can be differentiated easily? Why kill only cock pheasants yet shoot both sexes of grouse?

The "three inch antler" law contains a possible biological trap. In a deer herd that was occupying range that afforded only marginal nutrition because of too many of these animals, a series of either-sex hunts revealed that over 60% of the 1½ year old bucks killed had antlers of less than three inches and would have therefore been illegal under the "bucks only" law.

3. I suggest that all game and fish enforcement administrators and their field officers objectively *analyze these laws that generally have no bearing on the biological welfare of wildlife species*. It will be difficult to discard some of the time-honored laws that exist, but I believe that some of them are nuisance laws and that they contribute little to the task of making wildlife available for public harvest. *I emphasize that valid laws necessary for the personal safety of enforcement officers should be kept!* Those laws made solely to ease the duties of administration, enforcement, management, or research should be examined dispassionately with the idea that those not making a valid contribution to wildlife harvest should probably be discarded. Some of the laws governing such factors as gun caliber or number of shells held by a shotgun are generally useless. Why not allow crossbows to be used for hunting deer? One would judge that agency personnel fear that a deer may be killed.

Let whomever proposes a law stop and think; what is the purpose of the agency? If the answer is primarily game protection beyond the scope of biological needs, then perhaps the person is improperly discharging his duties. Game and fish agencies must make efforts to orient their thinking toward legal game harvest rather than toward game protection.

4. I suggest that state game and fish agencies *stop enforcing trespass laws on private lands*. This is a duty for the sheriff, and not game and fish officers. I believe that programs using public monies on private land should carry some guarantee that the public be allowed to harvest wildlife on those private lands.

5. I suggest that enforcement officers *help to discourage bounty laws*. The bounty system generally has no place in modern wildlife management.

6. I suggest that enforcement administration approach the legislature to examine the feasibility of *enacting a state law that will permit the agency to sue convicted law violators and polluters to recover the cost of wildlife destroyed*. Such laws seem to be successful in some states.

7. I suggest that *laws prohibiting Sunday hunting and fishing* are probably unconstitutional and that their enforcement is not the duty of public game and fish agencies. It is not your official function to be moral arbiters.

8. I suggest that *certain public safety laws are beyond the purview* of game and fish officers. Those laws that protect the public from the individual while they are hunting or fishing on public property should be enforced by the officers. Those laws enacted to protect the individual from himself while hunting or fishing on public or private property should not be the business of state wildlife agencies.

At the risk of being considered completely antisocial, I believe that some of the present hunter safety training programs and laws are not the official business of the agency, nor are certain facets of some boating safety laws.

9. I suggest that law enforcement personnel investigate *the feasibility of establishing mobile squads of officers* that can be sent to where needed upon short notice. Some of the disadvantages to the officers involved are readily apparent, but perhaps volunteers could be used and offered appropriate

extra pay. This is a need that I have heard expressed on occasions among several wildlife agencies.

TECHNICAL TRAINING FOR THE OFFICER CANDIDATES

I suggest that the candidates for law enforcement positions should have technical training in at least three fields; law enforcement, public relations, and some theory and history of game and fish management. I think this would best be conducted in a relatively short but intensive series controlled by the agency. This could be structured along plans similar to academies operated by state highway patrols. I believe that the more experienced officers already employed should have the opportunity to attend, with pay, if they so wished but that their attendance should not be mandatory. In the biological presentations, I would like to see these concepts included and explained from the biologist's point of view: the relationships between animal nutrition, reproduction, carrying capacity, and effects of overpopulation upon the environment; the practical findings resulting from 30 years of small game stocking in the southern states; population dynamics of animals; a historical survey of the evolution of modern wildlife management in the United States.

MISCELLANEOUS DUTIES OF OFFICERS

I suggest that *too many duties not directly applicable to law enforcement or beneficial to wildlife management* have been forced upon state game and fish officers. One of the most useless of these chores has been that of "education". If there was a time when game and fish agencies bore the responsibility of educating the public, that time is past.

There is no need in state game and fish agencies for department given to public education. Junior conservation clubs and summer camps for children have no place in an agency whose major purpose is to manage wildlife for public harvest. Activities of this type are largely useless to the outdoorsman, and have little realistic effect in conserving our natural resources.

I think that the image and efficiency of wildlife law enforcement officers are appreciably damaged by requiring them to serve as formal public relations and news media personnel. Most state wildlife agencies have a professional public relations staff. Let this staff handle these functions. I think far too much time and money is wasted wooing the public. The public as a whole is disinterested in the year-round technical task of managing game and fish populations, and is interested only in harvesting the product. The enforcement officer needs to have some training in public relations to help *himself*, not the public.

Crump has an interesting and informative paper in the 1971 Proceedings of this association, explaining the duties of the enforcement officer in one of the southern states. I am appalled at the number and diversity of the duties assigned to law enforcement officers in his and in other states. In this paper, Crump notes that there has been an increase in game and fish law violations in his state. Other types of crime are increasing throughout this country. Let the officer practice his profession of law enforcement leaving the other professional tasks to others. Dispense with the trivia entirely. Much of it is little but administrative puttering, anyway.

AGENCY INCOME

Game and fish agencies depending entirely upon license monies and other fees supplied by voluntary users of the product are dependent upon the threat of enforcement for the collection of these monies. Human nature being what it is, I believe it to be unrealistic to expect most sportsmen to make voluntarily con-

siderable outlays of money to pay fees for activities that they engage in infrequently. Giles, *et. al.*, in their paper already mentioned, say that law enforcement personnel comprise 31% of the total wildlife agency budget. One must also determine what part of the total budget accrues from the presence of wildlife law enforcement, even in those agencies supported in part from general tax funds. I believe that wildlife enforcement officers who have been relieved of "social" duties and who have to enforce only those laws that have significance in increasing the legal harvest of wildlife will find their job more satisfying. This should decrease the amount of poaching of big game, reduce enforcement costs, permit more wildlife to be harvested, and perhaps generate more gross income for the agency. Giles, *et al.*, cite Morse as finding that nationwide, enforcement officers devote 40% of their time to duties other than enforcement. I think that this is wasted time.

THE FUTURE OF PUBLIC HUNTING AND FISHING

I must confess to being pessimistic about the future of public hunting in particular, and I have some reservations about the future of fishing for the public. What disturbs me is the *decrease of opportunity to enjoy the unhurried privacies* that I associated with hunting. I think that public hunting is becoming a form of lottery, *badly overadvertised* by many organizations, and *regimented beyond the needs of good game management*. I do not blame enforcement for all of this.

I wish to emphasize my belief that, at present, the answers to our most serious game and fish problems lie outside the realm of biological technology. I hope that biologists and enforcement, working together, can hold what we have as long as is possible, for worse may be coming. Economic and political policies of today are destroying and polluting wildlife habitat at a rate not realized by the public. Wildlife management is completely dependent upon the existence of suitable habitat. This habitat is being usurped by groups, private and governmental, for purposes that are profitable for bureaucracies and fatal for wildlife species. Those agencies that were lucky or farsighted enough to have acquired sufficient wildlife habitat may continue to have public harvest of wildlife. The rest will not be so fortunate.

THE POTENTIAL OF COMPUTER ANALYSIS OF ENFORCEMENT EFFORT¹

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By breaking up and assembling enforcement information into useful relationships, we can examine its contents and make logical conclusions. To do this, we need assistance because the human brain is very limited in its capacity to break-up, sort and assemble large amounts of information. The human mind is also influenced by personal opinions and is inclined to become confused by unrelated side issues. Therefore, we need a device to assist us which does not have these human faults. That device is the computer.

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