

# WILDLIFE RESEARCH CHALLENGES OF THE 80'S: FOCUS ON THE SOUTHEAST

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*Abstract:* An overview of the wildlife technical papers published in the proceedings of the Southeastern Association of Fish and Wildlife Agencies during the period 1971 through 1980 was presented. Over 64 percent (N=404) of the papers dealt with game animals while only 13 percent considered nonharvested species. In terms of subject matter, 48 percent of the papers dealt with species ecology with greater emphasis on aspects of status, habitat utilization and food habits than on characteristics of populations, physiology or behavior. Factors limiting the productivity, effectiveness, and application of wildlife research to resource management problems, as well as thoughts about the direction of future wildlife research were presented.

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At the 1979 North American Wildlife and Natural Resources Conference (Toronto, Ontario, Canada), a special session on the status and future needs of fish and wildlife research was conducted. That presentation was organized by the National Fish and Wildlife Resources Research Council, an ad hoc body of professionals whose purpose was to promote increased federal funding for fish and wildlife research (Labisky 1979, Gottschalk 1979). The session included 9 major papers, all multiply authored, and represented state-of-the-art presentations on fish and wildlife research in North America. Although the goal was to provide a continental perspective, many of the ideas presented have direct relevance and application to the southeastern United States. Some key points are summarized below.

1. Fish and wildlife research has yielded many important accomplishments, yet its full potential remains unfulfilled (Smith et al. 1979).
2. Fish and wildlife resources have to attain increased value to the public, and the public has to perceive that research is essential to that value (Cringan et al. 1979).
3. Natural resource professionals need to formulate management principles that address conservation and sustained yield (Sanderson et al. 1979).
4. A major shift in wildlife research, from the description of events confounded by uncontrolled variables to a hypothesis-testing approach, was encouraged. This will result in higher quality research, produce a body of condition-specific knowledge, and result in establishment of scientific principles on which to base management programs (Sanderson et al. 1979).
5. A powerful but scarcely tapped approach to wildlife research and management is the development of production functions and trade-off curves. Knowledge of the graphical relations between wildlife abundance (yield) and the provision of vital resources would be invaluable to decision makers (Sanderson et al. 1979).

These points all represent goals worthy of pursuit. Considered collectively, however, they preview the obvious—the science of wildlife resource conservation is a complex topic. First, by definition, “conservation” is a broad term that connotes both wise utilization and maintenance for the future. As related to wildlife (including fish), it means the collection and application of biological information for the purpose of managing the number of animals within species and populations at appropriate levels with respect to

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their habitats. This term embraces the entire scope of activities that constitute a modern scientific natural resource management program and includes, for example, research, census, law enforcement, habitat maintenance and development, and when and where appropriate, the periodic or total protection as well as the regulated taking of wildlife resources (Holt and Talbot 1978). And second, because it is multidisciplinary by nature, it draws upon principles from several different areas including the biological (ecology, physiology, genetics, etc.), physical (biometry, chemistry, electronics, etc.), social (economics, psychology, etc.) and political sciences plus a wide range of applied disciplines such as agronomy and forestry.

Within the framework of this cluster-concept of "wildlife sciences" lie several subsets of challenges confronting the wildlife profession during the upcoming decade. Some are obvious—other obscure, but all are important and must be identified and pursued by innovative approaches. In charting a direction for the future, it is of course helpful to have an understanding of the past. As a point of departure for this presentation, I thought it would be useful to evaluate briefly where we have been in terms of the kinds of wildlife research that has been conducted during the past decade in the southeastern United States. Assuming that the papers published in our annual proceedings provided a reasonable indication of the kinds of research conducted throughout the region, I performed a content analysis (primarily by article title) of the papers published during the period of 1971 through 1980 and categorized them by both taxonomic and disciplinary subject matter.

During that 10-year period a total of 404 papers was published. Over 64 percent (N = 258) of the papers dealt with game animals. By contrast, only 13 percent (N = 54) dealt with nonharvested species. In terms of importance (number of publications) the top 5 species were:

	<u>N</u>	<u>Percent</u>
1. White-tailed Deer ( <i>Odocoileus virginianus</i> )	68	17
2. Wild Turkey ( <i>Meleagris gallopavo</i> )	26	6
3. Bobwhite Quail ( <i>Colinus virginianus</i> )	20	5
4. American Alligator ( <i>Alligator mississippiensis</i> )	19	5
5. Wood Ducks ( <i>Aix sponsa</i> )	14	3

A few game species that were notably low in terms of research activity could be accounted for by their limited range distributions in the Southeast, such as only 2 papers on ruffed grouse (*Bonasa umbellus*). However, there were a number of game species with wide regional distribution for which little research has been published in the Southeastern Proceedings during the last decade. Most notable were some important furbearers such as raccoons (*Procyon lotor*) (N = 7), bobcats (*Lynx rufus*) (N = 4), mustelids (N = 1), foxes (N = 1), and opossums (*Didelphis virginiana*) (N = 0). It is worthy to note that there have been no papers published for several families (and even orders) of nongame birds and mammals that are generally well represented by the presence of multiple species throughout our region. Also, over half of the endangered species papers have dealt with the American alligator (N = 19, 56 percent of total of endangered species papers).

There were no obvious trends over the 10-year period indicative of shifts within or between taxons. There was, however, a noticeable reduction in the number of papers for the 1980 conference. In particular, there was only 1 paper dealing with white-tailed deer and none for wild turkeys or woodcock (*Philohela minor*). This probably reflects the publishing of those kinds of papers in recent regional workshops/symposia proceedings for those species rather than any reduction in research activity.

Table 1 provides a listing of the same papers published during this period categorized by disciplinary subject matter. Almost half of the papers dealt with aspects of the ecology of

Table 1. Categories of wildlife technical papers published in the Proceedings of the Southeastern Association of Fish and Wildlife Agencies during the period 1971 to 1980.

Subject	N	Percent
Species Ecology	193	48
Habitat Analysis/Management	61	15
Techniques	56	14
Harvest (Effects of)	35	9
Environmental Toxicants	16	4
Disease/Parasites	11	3
Animal Damage Control	10	2
Socio-economic	6	1
Environmental Impacts	5	1
Computer Modelling/Simulation	4	1
Other	7	2
<b>Total</b>	<b>404</b>	<b>100</b>

individual species. To be more precise, this subject area was subdivided into the following 7 categories:

Category	N	Percent
Habitat utilization	40	21
Status reports	34	18
Food habitats	31	16
Demography	29	15
Physiology	23	12
Behavior	20	10
Population dynamics	16	8
	<b>193</b>	<b>100</b>

Although the above portrays a reasonable balance in types of research on species ecology, there was disproportionately more towards the status-habitat utilization-food habitats end of the spectrum than the population-physiology-behavior end. Also notable was the virtual absence of papers dealing with multiple-species and/or aspects of community ecology.

Papers that dealt directly with habitat analysis/management (N = 61, 15%) and a variety of techniques (N = 56, 14%) were the next most frequently published. Approximately 10 percent of the papers dealt with effect of harvest on a particular species. As suggested by this list, there has been relatively little regional research published in the Southeastern Proceedings during the past decade in the areas of environmental toxicants, wildlife disease/parasitism, animal damage control, socio-economic/human dimensions of resource management, environmental impacts of alternative land use practices, or computer modelling/simulation. It is, of course, possible that authors have published such papers in other sources.

In the further preparation of this overview of wildlife research in the Southeast, I contacted a number of colleagues seeking their thoughts on 2 fundamental questions:

1. What major factors limit the productivity, effectiveness, and application of wildlife research to resource management problems?
2. What are the wildlife research frontiers for the 80's?

Their comments are summarized as follows:

1. Funding
  - Limited in amount and duration.
  - Resistance among administrators to fund long-term research (i.e., the notion that “research never ends”).
2. Lack of coordination of research and management priorities
  - Within and between state and federal agencies as well as the private sector.
  - Within and between states with similar resource management needs (i.e., repetitious federal aid projects from adjoining states).
3. Too much so-called “wildlife research” is not scientifically based research but haphazard data collection for which there is little or no value to other researchers, managers or decision makers. Basically this represents “answers for which no one has asked the questions.”
  - Need to more critically evaluate why—for what direct purpose—data is being collected rather than collecting data and trying to find a use for it.
  - Need to look at what management decisions have to be made and what information is required by decision makers.
4. Resource concept or “game versus nongame” approach.
  - No need to apologize for the single-species approach—we do the same thing today with endangered species.
  - Increasing demand for accountability for management decisions (i.e., Endangered Species Scientific Authority and restrictions placed on international trade in bobcat pelts) requires a more holistic approach to resource management.
5. Although in the strict sense “ecosystem management” is unrealistic, we must consider major components of ecological systems in developing future management alternatives. The implications for research are that this will require more life history studies and inventory data than before plus the integration of information on multiple-species interactions.
6. There has been a historical failure to apply ecological theory to practical wildlife resource management problems.
  - i.e., Theory of Island Biogeography to forest management practices (size and shape of cuts).
  - Concepts of species diversity to habitat and structural heterogeneity.
7. Urban and park wildlife research needs greater attention in the future. This is particularly true given the prospect of 90 percent of our population living and/or working in cities by the year 2000.
8. Technology (information) transfer must be enhanced. A renewed effort must be made to coordinate and communicate research results to intended users at all levels of the decision-making process.

## CONCLUSIONS

Given the above brief overview, the question still remains, “What should be the direction of southeastern wildlife research in the future?” The answer(s) to this question, of course, must be provided by those wildlife professionals who pursue this area of endeavor in the years ahead. I strongly encourage consideration of the points listed above—both in terms of the realities of today’s problems as well as with a vision of tomorrow’s opportunities. This is essential, for unless we are willing to accept the status

quo or adopt expectations that lack any sense of responsibility or vision, we are obligated as professionals to think critically about what our future research priorities should be. It doesn't take a great deal of imagination to visualize the impacts on wildlife by the continued exploitation of our natural resources to meet increasing demands for energy, agricultural production, living space or by an ever-expanding human population. Nor does it take a Nobel laureate to realize that it is not possible to maximize 2 variables such as agricultural production and maintenance of wildlife habitat simultaneously. What does take creative thinking is how to deal effectively with societal demands on one hand and maintain our natural resources and the quality of our environment on the other.

For example, it is certain that all viable alternatives for sources of energy will be pursued with vigor in the future—be it mining of peat from pocosin habitats in North Carolina, surface mining of coal in West Virginia, or extraction of petroleum from the marshes of Louisiana. And as I see it, our profession has 3 basic alternatives: (a) ignore this fact and proceed as though it is business as usual (the "head in the sand" syndrome), (b) fight energy exploitation activities tooth and nail on every battle front, or (c) recognize the spectrum of societal needs and be certain that natural resources are advanced as fundamental components of quality of life standards in our nation's economic, political, and social marketplaces. I believe our professional responsibilities are consistent with the latter alternative. We must participate actively in the decision-making process (as research and management professionals *and* concerned private citizens) and advocate a rationale (supported by scientific data) for a balanced approach to economic growth and maintenance of environmental integrity. If our profession does not provide responsible leadership or goals worthy of pursuit, then we can be certain that others, perhaps with a different vision, will fill the void.

I am confident that our profession is up to the challenges confronting the resources we are dedicated to conserve. In this paper I have attempted to initiate the process of identification of research and management needs confronting the broad spectrum of wildlife resources throughout our region. I emphasize the word "initiate" because continuous evaluation is fundamental to good scientific research, and good scientific research is the basis for professional resource management. I hope this will provide a convenient point of departure for stimulating further discussions among wildlife professionals.

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