THE UNIVERSITY OF TENNESSEE KNOXVILLE

National Quail Symposium Proceedings

Volume 3 Article 22

1993

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Recommended Citation

Robel, Robert J. (1993) "Symposium Wrap-Up: What is Missing?," *National Quail Symposium Proceedings*: Vol. 3 , Article 22.
https://doi.org/10.7290/nqsp03tas2
Available at: https://trace.tennessee.edu/nqsp/vol3/iss1/22

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SYMPOSIUM WRAP-UP: WHAT IS MISSING?

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Abstract: The program committee requested that I provide a symposium wrap-up. Generally such presentations provide 1 individual the opportunity to summarize and integrate the information presented during the meeting. That overview is often helpful, if there are several concurrent sessions or if most of the attendees spend their time interacting in the hallways and, thus, miss some of the presentations. Also, the wrap-up speaker can congratulate the organizers of the meeting for a job well done. I intend to neither summarize the information presented nor thank the organizers for doing a good job. Neither of these is necessary, because you all attended the majority of presentations and can summarize and integrate the data in your own head; the fact that the sessions were so well attended attests to an extremely good job done by the organizing committee. So, rather than doing what is not necessary, I intend to discuss what was missing in this symposium, the problems that were not addressed in the papers, and the data gaps that must be filled if we are to successfully manage quail populations in North America. From my perspective, these fall into 6 categories.

Citation: Robel, R. J. 1993. Symposium wrap-up: what is missing? Pages 156-158 *in* K. E. Church and T. V. Dailey, eds. Quail III: national quail symposium. Kansas Dep. Wildl. and Parks, Pratt.

Predation and Hunting

When most of us attended college to receive our professional training, we were taught that predators fed on the sick, the old, and the weak. In fact, we were taught that predators were beneficial to wildlife populations, because they removed the less fit individuals. Certainly, we were never taught that predators were harmful to the well-being of wildlife populations, i.e., predators merely removed excess individuals from the population, those that would most likely die anyway. We were also taught that humans acted similarly to predators and removed surplus game when they hunted during legal seasons. Hunting mortality was compensatory mortality, "Hunters kill those animals that would have died naturally; therefore, hunting does not adversely affect wildlife populations." Research conducted during the past 2 decades does not entirely support these concepts. Predators can severely impact wildlife populations, especially ground-nesting birds. And, legal hunting mortality can eat into the breeding stock of wildlife populations by being additive rather than compensatory. These deleterious impacts are normally more likely to occur as quality habitat decreases and habitat fragmentation becomes more widespread. In today's setting, what are the effects of predation and hunting on North American quail populations?

Diseases and Parasites

We also were taught that diseases and parasites, like predation and hunting, seldom were problems for wildlife populations in good habitats. That may have been the case 30 years ago; however, wildlife populations are no longer in unaltered high quality habitats. We are restricting wildlife populations to isolated habitats; contaminating their habitats with agricultural chemicals and industrial pollutants; invading their pristine ranges with homes, roads, and other bits of civilization; upsetting their gene pools by introducing exotic species and transplanting game animals; and forcing wildlife to mingle with domestic livestock as we expand our use of the remaining habitat. How do these events alter the effects of pathogenic organisms on wildlife? How does the stress of human intervention alter the immunosuppression systems of game species? Specifically, what are the effects of the above alterations on susceptibility and vulnerability of quail to diseases and parasites, and how do these factors alter the reproductive responsiveness of North American quail?

Habitat Loss

We are all aware of the loss and alterations of habitat for quail in North America. Farm sizes are increasing, urban expansion is widespread, agricultural practices are changing, vegetative composition in agricultural and forest areas has been altered by herbicide applications, and insect populations have been drastically reduced and/or changed in composition by insecticide use. Long-term studies have not been conducted to determine effects of these events on wildlife populations at the local level, much less at the national level. What are the effects of habitat alteration and fragmentation on quail populations in North America?

We must also address the large picture. How do farm and forestry policies affect quail populations, and how can these policies be modified or formulated to benefit quail populations in North America? What are the economic values (local and nationwide) of quail populations and how can those values be melded into state and federal programs to foster healthier populations? How can interest groups help develop these policies and assure that the necessary legislative guidelines be adopted and programs initiated? Biopolitics must become an integral tool of the wildlife manager; it is a necessary means to a desired end. What is the most effective way to develop policies and programs to benefit quail populations in North America?

Long-term Data Sets

Wildlife journals and agency files are replete with 1- to 5-year data sets. Where are the 20- and 30- year data sets? When we try to assess long-term changes in quail populations in North America, we discover the absence of long-term sets of reliable data. Few wildlife agencies collect population data today; rather, they rely on harvest trend data that are unproven indices to populations. The long-term quail data sets that were being accumulated in Wisconsin, Illinois, and Kansas have been terminated. Even where states have collected population data on quail for several years, the usefulness of the data is limited by a lack of uniformity in collection techniques and noncompatibility of state-to-state data. Efforts must be devoted to developing meaningful population survey techniques for North American quail, then standardizing and adopting those techniques nationally. Without solid data, how can we monitor trends? How can we determine impacts of agricultural policies on quail populations? How can we determine if any of our efforts are beneficial to quail populations?

Changing Social Values

During the last 50 years, the demographics of the human population in the United States have changed. In 1910, 53% of our population lived in rural areas; in 1992, only 23% of the population was classed as rural. Additionally, in 1910 35% of the population was actively involved in farming, whereas, in 1992 only 2% actively farmed. This change in demographics has resulted in fewer citizens having close contact with wildlife and the workings of nature. A vocal minority of the U.S. population objected to hunting in the 1940's and 1950's. This minority grew in the 1960's and 1970's and was joined in the 1980's by those who objected to any use of animals by humans. These 2 groups, commonly referred to as antihunters and animal rights activists, are amassing enormous strength in North America. At least 400 separate groups are active in the antihunting and animal rights movements and their combined annual budgets exceed $250 million. Many of them are idealistic zealots who believe the ends they seek to achieve justify any means. Some of the extremists in their ranks use terroristic acts to further their cause. They are actively infiltrating the educational system with their philosophies and, if allowed to continue, will likely be successful in eliminating legal hunting in many prime areas of quail range in North America. Most of the funds for game management and research originate from sales of hunting licenses and taxes on hunting equipment. What will be the economic impact of decreased sales of hunting licenses and equipment on the management of North American quail populations? How will passage of biodiversity legislation affect our efforts to manage habitat for specific species of quail?

Basic Biology

Strange as it seems, we know little about the basic biology of quail. We extrapolate nutrient requirements from poultry to quail with little regard to their validity. Even though the northern bobwhite (*Colinus virginianus*) has been studied extensively, little work has been done to understand the basic biology of the bird and even less is known about the biology of the western North American quail. We do not even know the essential amino acid requirements of most quail species. How can we really determine the quality of quail habitats when we do not understand the macro- and micronutrient needs of quail? What do quail chicks require to provide them a speedy start in life, and which insect species will provide those requirements? Just how do agricultural chemicals and industrial pollution alter the many metabolic and enzymatic pathways in North American quail? The internal workings of a complex computer is far less complicated than the biochemical system of a quail, yet much more time has been invested in developing computer programs to simulate quail management schemes than has been spent to understand the internal workings of a quail—any quail.

WHAT NEEDS TO BE DONE?

Each of the preceding areas needs to be addressed before we can knowledgeably manage the quail populations of North America. I believe we all agree that some North American quail populations are declining and, unless efforts are made to reverse those trends, viable quail populations that can withstand moderate hunting mortality will not be widespread. We can liken some quail populations to a patient in declining health. The symptoms of declining health in our quail populations are declines in numbers and reduced ability to quickly recover from low population levels. Releasing pen-reared birds into the environment is treating the symptoms, not curing the patient. We must fully understand the cause of the problem, then correct it. Essentially we must cure the patient of the disease not merely bandage the injury. However, to do so requires that we address each of the 6 issues that we did not address in this symposium. It will not be an easy task, nor can we expect to accomplish the job in 2 or 3 years. Some quail populations have been on the decline for more than 2 decades; it will require at least that amount of time to understand the causes of those declines and institute corrective measures to reverse the trends. There is so much to do, and so little time. If we do not begin now, the huntable quail populations of North America will be only memories or historical anecdotes by the early part of the 21st Century. Each of us has a role to play in the battle to preserve viable quail populations in North America. State and federal agencies, private organizations, biologists, and sportsmen and sportswomen must coordinate their efforts in this important task. To do otherwise is to abrogate our responsibility.