The Biological Basis of Hunting

Goal: To convey that hunting, hunting laws and regulations, and harvest management of game species are scientifically based on principles of population dynamics

Objectives: After this block of instruction the participant will be able to:

1. Describe what species and populations are hunted on a national or other basis and why most birds and mammals are not game.
2. Explain the ecological, behavioral, and numerical attributes shared by most game species, with emphasis on population dynamics, mortality factors, reproductive rates, carrying capacity, and density relationships.
3. Describe the complexities of hunting as a wildlife management tool.
4. Explain the relationship between game species and the quality and abundance of habitat.
5. Explain the biological basis of hunting regulations, such as bag limits, timing and length of hunting days and seasons, sex and age restrictions, and limitations on hunting equipment/methods.
6. Explain the biological impacts of hunting.
7. Explain that "social" carrying capacities are often reached prior to biological carrying capacities creating human/wildlife conflicts, some of which can be handled through hunting.

This Is Important for a Natural Resources Professional

Understanding the biological basis for hunting will allow professionals to structure projects and programs that allow for optimum utilization of various wildlife resources. Different species have different reproductive and survival rates, habitat requirements, and environmental stressors that require different management and harvest strategies. Preventing environmental damage and population control is not the only valid reason to allow harvest of wildlife. Utilization of these wild resources gives them value far greater than the meat or fur they produce. These multi-faceted values are the basis for many modern conservation initiatives. Understanding the biological basis for harvesting wildlife will also allow professionals to provide input on new rules, regulations, and laws. However, not all laws and regulations are based on the biology of the animal hunted. Local and regional culture and social traditions often play a role in the formulation of laws and regulations. The creation of laws and regulations is a political process that takes biological information in account but is not bound by its findings.

Additional Resources:

Adaptive Harvest Management, USFWS

The adaptive harvest management program is admired internationally as one of the best models for applying biological data to set socially and ecologically viable regulations annually. Extensive data sets are assembled by the U.S. Fish and Wildlife Service (USFWS), the Canadian Wildlife Service, state and provincial agencies, and private institutes and organizations on the status of waterfowl in North America and then used in the preparation of this report and the subsequent development of regulations. The report is prepared and released annually by the USFWS and available for download from their website.

Harvest Management chapter in recent volumes of Techniques for Wildlife Investigation and Management published by The Wildlife Society

Anderson, D. R., and K. P. Burnham. 1976. Population ecology of the mallard: VI. The effect of exploitation on survival. United States Fish and Wildlife Service Resource Publication 128.

- Provides a thorough review of the basic theory of additive and compensatory mortality and its considerations in management of harvest of mallards in North America.

Bischof, R., A. Mysterud, and J.E. Swenson. 2008. Should hunting mortality mimic the patterns of natural mortality?. Biology Letters 4(3): 307-310

Brown, T.L., D.J. Decker, S.J. Riley, J.W. Enck, T.B. Lauber, P.D. Curtis, and G.F. Mattfeld. 2000. The future of hunting as a mechanism to control white-tailed deer populations. Wildlife Society Bulletin 28(4): 797-807.

Gilbert, F.F.. 2000. Considerations in managing wildlife populations for sport. Wildlife Society Bulletin 28(2): 459-463.