

In Reply Refer To:
FWS/R4/ES

Memorandum

To: All ES Project Leaders and Fisheries Project Leaders, Southeast Region

From: Assistant Regional Director, Southeast Region

Subject: Use of Historic Documents and Archaeological Data for Biological Research

Because little is known about the historic distributions of many endangered species and studies of extant populations may not be possible, it is important that biologists look for data in sources not traditionally considered in biological investigations. Recently Service biologists found that archaeological and historic data were useful in reconstructing lifeways of several species. These studies may serve as models for similar studies which may be used by biologists who have a lack of historic data for the species which they wish to list, restore, or protect. Information concerning past environmental conditions and animal distributions has often been recorded during scientific investigations or as an incidental activity by historic writers. This information may be readily available. For instance, many plant and animal remains are associated with archaeological sites and when these sites are excavated archaeologists store huge amounts of information about past environments and species, but this information has rarely been utilized by biologists. In the following examples, Service personnel were able to use historic documents and archaeological data to gather important information about past populations. In the near future you will be receiving an emailed document identical to this hard copy. Within this emailed document you will find highlighted links to a web page. Double clicking the cursor on the highlighted words will take you to the actual articles referenced below. If you want to access the page immediately it is available on the Service intranet at <http://sii.fws.gov/r4es/arch.htm>. The web page will be periodically updated with pertinent bibliographic references and, when available electronically, articles that discuss paleoenvironmental reconstructions as well as zooarchaeological and paleoethnobotanical investigations in the Southeast and adjoining regions.

Case Studies

In 2001, the Service contracted the University of North Carolina (UNC) at Chapel Hill to conduct a study of fish remains recovered from nine prehistoric archaeological sites along the Roanoke River in Virginia and North Carolina. One of the questions the faunal analysis sought to address was whether the distribution of the shortnosed sturgeon was historically larger than at present in the Roanoke River Basin. The Service believed that the construction of dams on the tributaries of the Roanoke had a major impact on the spacial distribution of the species and that the

archaeological faunal material would document that the historic species distribution included areas above the present-day dams. The data used in the analysis was analyzed from sites excavated between 1955 and 1998, and whose archaeological assemblages were curated at UNC-Chapel Hill. Vanderwarker's (2001) report identifies a number of vertebrates exploited by Late Woodland peoples in the Roanoke River watershed. Her research scientifically proved that, in late prehistoric and early historic periods, the home range of the shortnosed sturgeon and other historic populations of fishes (largemouth bass, walleye, and channel catfish) in the Roanoke River Basin, was larger and had been altered as a result of past damming.

Hightower et. al. (1996) focused on historic records to study the population dynamics of American shad and river herring in Albemarle Sound, North Carolina. Modern populations of the species are well below those historically documented in the sound and the authors use the historic catch records to explore the possibility of reestablishment of the two species, commercial use of the species, and potential for a determination of sustainable yields. The researchers located historic fishing records that were kept from the period well before the Civil War until the early twentieth century which made it possible to index many variables affecting the species such as historic damming, changes in fishing methods, and historic stocking of the fishery. This information allowed the isolation of the effects of specific activities on historic population dynamics.

The article by Finch et. al. (1998) explains why biologists cannot understand habitat reconstruction without understanding the relationship between past humans and the environment. In this case study pollen studies were used to recreate paleoenvironmental conditions, to determine the species present and to document human induced change to the environment. The author establishes past ecosystems as human-influenced and dynamic rather than static and "pristine." Particular attention is given to fire and agriculture as primary forces of change in past ecosystems.

Many species of flora and fauna not currently considered edible in modern times, were exploited opportunistically by Native Americans and are represented as minor components of archaeological assemblages. In fact, many prehistoric sites have an abundance of species represented that are not associated with the primary activity at the site. For instance, in the Vanderwarker's (2001) report notice the large number of species other than fish being exploited at the Stockton Site (p.15) and the Dallas Hylton Site (p.18-19) even though the fish are the primary focus of the study.

If significant populations of threatened/endangered species are not available for study, review of archaeological or historical data may provide the most sound source of scientific information available for the species which you are protecting. If you have an interest in pursuing archaeological or historical information on a species the most effective way to start is to contact the Regional Historic Preservation Officer, Rick Kanaski at (912) 652-4415 ext. 113, or Brant Loflin, Staff Archaeologist (404) 471-9917. These staff members have experience in both historical and archaeological research and will know where some of the most likely sources of information can be found.

REFERENCES

Finch, D.M., J.C. Whitney, J.F. Kelly and S.R. Loftin 1999. Rio Grande Ecosystems: Linking Land, Water, and People. Toward a Sustainable Future for the Middle Rio Grande Basin. USDA Forest Service Proceedings RMRS-P-7.

Hightower, J.E. , A.M. Wicker and K.M. Endres 1996. Historical Trends in Abundance of American Shad and River Herring in Albemarle Sound, North Carolina. North American Journal of Fisheries Management. 16:257-271.

VanDerwarker, A. 2001. An Archaeological Assessment of Pre-Columbian Fauna in the Roanoke River Basin. Research Report No. 21 Research Laboratories of Archaeology, University of North Carolina Chapel Hill, NC. 43 pp.

OTHER GENERAL REFERENCES

Egan, Dave, and Evelyn A. Howell (Editors) 2001. The Historical Ecology Handbook: A Restorationist's Guide to Reference Ecosystems. Island Press, Washington, D.C.

This volume represents a series of papers presented at the 1999 Society for Ecological Restoration annual meeting in San Francisco. It is divided into three sections - Cultural Evidence, Biological Evidence, and Synthesis: Case Studies Using Reference Conditions. Authors include Michael J. O'Brien (Archaeology, Paleoecosystems, and Ecological Restoration), M. Kat Anderson (The Contribution of Ethnobiology to the Reconstruction and Restoration of Historic Ecosystems), Owen K. Davis (Palynology: An Important Tool for Discovering Historic Ecosystems), David Rhode (Packrat Middens as a Tool for Reconstructing Historic Ecosystems), Stanley W. Trimble (Geomorphology, Hydrology, and Soils), and Peter W. Dunwiddie (Using Historical Data in Ecological Restoration: A Case Study from Nantucket).

Faunmap Working Group 1994. Faunmap: A Database Documenting Late Quaternary Distributions of Mammal Species in the United States. Scientific Papers, Vol. XXV, Nos. 1 & 2. Illinois State Museum, Springfield.

Whitney, Gordon G. 1994. From Coastal Wilderness to Fruited Plain: A History of Environmental Change in Temperate North America from 1500 to the Present. Cambridge University Press, New York, New York.

This volume focuses on the Midwestern and northeastern landscapes and their evolution or changes due to human interaction over the past 500 years. Whitney draws upon land survey records and early travelers' accounts to reconstruct the virgin forests and grasslands and to identify those human actions that impacted these landscapes.