## The Evolution of Patuxent as a Research Refuge and a Wildlife Research Center

# MATTHEW C. PERRY Patuxent Wildlife Research Center Laurel, Maryland 20708

### INTRODUCTION

The recent administrative separation of Patuxent Research Refuge (PRR) from Patuxent Wildlife Research Center (PWRC) have created increased opportunities and challenges for this renowned research institution, the largest wildlife research facility in the world. Over the years the area and the research programs have been considered as one and the name Patuxent has been used interchangeably by staff and public to refer to both land and research. Increased responsibilities, especially in environmental education and public recreation, however, coming at a time of restrictive budgets, have forced administrators and researchers to reassess their programs. Some persons question whether Patuxent can continue to conduct broad refuge and research programs without major increases in funding.

The recent consolidation of all biological research into one agency within the Department of the Interior is a major change in policy and organizational structure. The change comes at a time when Patuxent has been grappling with its future role in wildlife research, management, and education. The possibility exists that Patuxent, with proper planning, leadership, and partnerships, could increase its influence in all three areas. As we move closer to a new century, it is appropriate to review the history and mission of Patuxent so that the wildlife and environmental communities fully understand the implications and potential results of the present management strategies at this historic and prestigious facility. When the present mission is more fully understood, internally and externally, there may be increased support and funding for these important programs.

The following is a discussion of the evolution of Patuxent over 60 years and is divided into three major periods in this paper, (1) Wildlife Conservation, (2) Environmental Movement, and (3) Public Outreach. The formation of Patuxent took place essentially during the birth of wildlife conservation in the United States. The original mission, to assist in the restoration of wildlife, led administrators and researchers to focus on land management research during the 1940s and 1950s. During the 1960-70s, Patuxent was influenced by the nationwide environmental movement and became renowned through studies to evaluate the effects of pesticides on birds and research on endangered species of wildlife. The 1980-90s saw a shift in emphasis from research studies to increasing activities with public use, environmental education, and refuge management. Highlights of this evolution are discussed in this paper.

## WILDLIFE CONSERVATION PERIOD

Although several conservation activities took place in the early 1900s, it was not until the 1930s that scientific wildlife management, and research to support it, were initiated. The formation of Patuxent was one of many wildlife conservation activities taking place in the mid-1930s. On December 16, 1936, President Franklin D. Roosevelt signed Executive Order 7514, which transferred 2670 acres of land, that had been acquired (or would be acquired) by the United States, to the Department of Agriculture (USDA) as a wildlife experiment and research refuge. The area delineated in the Order was located in Anne Arundel and Prince George's Counties, Maryland, and was created "to effectuate further the purposes of the Migratory Bird Conservation Act". By order of the President the area was to be known as "the Patuxent Research Refuge".

The Refuge was dedicated on June 3, 1939 by Secretary of Agriculture Henry A. Wallace, who stated that "the chief purpose of this refuge is to assist in the restoration of wildlife - one of our greatest natural resources". Secretary Wallace recognized "the vision and foresight of Dr. Ira N. Gabrielson, Chief of the Biological Survey", and "the leadership of Dr. L. C. Morley, superintendent of the refuge". He further stated that the nation's first wildlife research station was "the manifestation of a national determination and a national ability to conserve and administer wisely the organic resources and products of the soil - a priceless heritage to the generations of Americans yet to come". Although Mr. Jay N. "Ding" Darling, former Chief of the Bureau of Biological Survey, was not mentioned in Secretary Wallace's address, many persons also credit his interest and support for the formation of the Patuxent Research Refuge.

The location of the Patuxent Research Refuge adjacent to the National Agriculture Research Center at Beltsville, Maryland, made it an appropriate area, according to Wallace, upon which to conduct "long-time studies on the interrelationships of wildlife with agriculture and forestry". Secretary Wallace and Dr. Gabrielson envisioned an area where wildlife could be studied in relation to the production of agricultural crops, and where lands poorly suited for agriculture could be turned back into forests, fields, and meadows, thus again becoming productive for wildlife.

An interesting change in the relationship of humans and wildlife, however, had taken place during the 1930s. Past emphasis of wildlife investigations in the USDA had focused on the impact of wildlife on activities of humans. However, the long drought of the 1930s, coupled with decades of wetland drainage by humans, devastated North America's waterfowl populations. Thus, Americans were becoming more aware of the negative impact their activities were having on wildlife. It was appropriate, therefore, that in 1939 the Bureau of Biological Survey was transferred from the Department of Agriculture to the Department of the Interior. In 1940, the Bureau of Biological Survey was replaced with the Fish and Wildlife Service. It was not until 1956 that Congress redesignated this agency as the U. S. Fish and Wildlife Service (USFWS).

Dr. Leland C. Morley was Superintendent of Refuge during the embryonic years of 1938-48. He was responsible for the construction and development of the facilities to be used for wildlife research. Under his administration, three major buildings (Merriam, Henshaw, and Nelson Laboratories), named for the first three Chiefs of the Bureau of Biological Survey, were constructed in 1939-41 through the efforts of the Works Progress Administration and the Public Works Administration headquartered in Washington, D.C. Some of the early Patuxent biologists traveled between Patuxent and their homes in Washington in trucks used to transport construction workers. On-site quarters were constructed for some biologists in the early 1940s to allow researchers to remain closer to their work. The first wetland area, Cash Lake, was built by the Civilian Conservation Corps (CCC) and flooded in 1939 as a recreational area for fishing. The CCC was also responsible for transplanting many trees from the woods to landscape the new buildings.

With the outbreak of World War II, many of the Patuxent men were called for military service. Older staff members and women continued the wildlife conservation work and, beginning in 1943, were assisted by the Public Service Program, which established at Patuxent a group of conscientious objectors to the War. These men were credited with constructing Snowden Pond and several roads, and conducting surveys of wildlife and plants.

Dr. Morley supervised construction at Patuxent during the late 1930s and early 1940s. Research, however, was directed by administrators in Washington through their assistants who were working at Patuxent. Dr. Alexander C. Martin was in charge of food habits research, which was located in Merriam Laboratory. Wildlife disease research, headed initially by Dr. J. E. Shillinger, and later by Dr. Donald Coburn, was located in Henshaw Laboratory. All bird banding studies were administered in Nelson Laboratory and conducted at field locations throughout the country.

During 1942-48, Arnold L. Nelson supervised all research at Patuxent, and in 1948-59 he served as Patuxent's first official Director. His responsibilities included both land management and research. The farm game research, which compared the diversity and numbers of wildlife under various farming practices, began under Mr. Nelson. Long-term studies of certain forest wildlife species, including box turtles, black rat snakes, and red shouldered hawks, also were initiated. Mr. Nelson was instrumental in continuing the development of the refuge for wildlife, while promoting research that would document habitat management techniques most beneficial for wildlife. Patuxent's first field station was established in Alabama to evaluate the interrelationships between quail populations and habitat manipulations. Most of the waterfowl impoundments that exist today at Patuxent were developed during Mr. Nelson's tenure, and studies also were begun to determine how best to manage those areas for wildlife. Techniques developed at Patuxent to help farm game and wetland species were widely adopted throughout the country.

The editorial office for the <u>Wildlife Review</u> was transferred from Chicago to Patuxent in 1948 following the retirement of Waldo McAtee, the editor since its inception in 1935. Neil Hotchkiss became the editor at Patuxent. Major additions of books and periodicals to the library occurred in conjunction with the <u>Wildlife Review</u> activities, making the Patuxent library one of the most extensive libraries for wildlife literature in the world.

In 1956, the Patuxent Research Refuge was renamed the Patuxent Wildlife Research Center to standardize the name with the adjacent Agriculture Research Center and with another Service facility in Denver, Colorado. The name change was done by administrative memorandum and did not supersede the original Executive Order designation as a Research Refuge.

## ENVIRONMENTAL MOVEMENT

Dr. John L. Buckley became the Director of Patuxent in 1959 and served until 1963. Under his leadership the pesticide research program, begun in the 1940s, was broadened to include other chemicals and became known as the Environmental Contaminants Research Program. An increased emphasis on experimental design and statistically controlled studies developed during the period. There was an increasing belief at Patuxent that field studies should receive less emphasis, because of the difficulty in controlling environmental and habitat variables compared to standardized pen studies. Observations in the field could now be tested under "laboratory" conditions.

A new building for the environmental contaminants program was dedicated in 1963 by Secretary of the Interior Stewart Udall. The building was originally named the Biochemistry and Wildlife Pathology Laboratory. Throughout his dedication speech, Mr. Udall referred to the work of Rachel Carson and her famous book <u>Silent Spring</u>, published in 1962. Ms. Carson never worked at Patuxent, but based much of her book on research done there. In 1989, the building was renamed Stickel Laboratory, for Lucille and William Stickel who had devoted a combined total of 78 years to research at Patuxent.

The bird damage control research program, which had been initiated by Mr. Nelson, was expanded during Dr. Buckley's tenure to the Section of Animal Damage Control Studies. Waterfowl habitat management research was conducted by the Wetland Ecology Section of Patuxent with major activities dealing with water level manipulation and artificial nesting structures taking place on the Patuxent grounds. Extensive studies of lead poisoning in waterfowl caused by the ingestion of spent lead shot pellets began at this time and continued through the 1960s. In 1961, other migratory bird research and management programs, including the Bird Banding Laboratory, were consolidated in a newly established Migratory Bird Populations Station at Patuxent, headed by Walter F. Crissey.

Dr. Eugene H. Dustman served as Patuxent Director from 1963-72. During his tenure Coburn Laboratory, the Service Building, and Gabrielson Laboratory were constructed. The Endangered Species Research program began in 1965, headed by Dr. Ray C. Erickson, who also served as the first Assistant Director of Patuxent. The first bald eagle and whooping crane arrived at Patuxent in 1965 and 1966, respectively, as the genesis of the captive propagation program that attained international prominence. An additional 750 acres of land was purchased from the Shaefer family in 1970 as a buffer for the Endangered Species area, and several small support buildings, including a Veterinary Hospital, were constructed. A major endangered species laboratory was planned, but was never funded.

Environmental contaminant research expanded during the 1960s. A major breakthrough in DDT research occurred in 1969 when Patuxent researchers published results of research linking eggshell thinning with DDT in the food of birds. Consequently, Patuxent researchers played influential roles by testifying during Congressional hearings on pesticides that eventually led to the 1972 nationwide ban of DDT and other organochlorine pesticides. Research was expanded on the very controversial subject of lead poisoning in waterfowl, and extensive tests were conducted comparing the killing efficiencies of lead and steel shot with ducks.

Significant wetland management research was conducted during Dr. Dustman's era on approximately 300 acres of water impoundments that had been created at Patuxent. Improved nest boxes were designed for wood ducks, mallards, and black ducks, which greatly aided the nesting success of these species. Drawdown techniques for impoundments were perfected to optimize moist-soil management for waterfowl. These techniques were then employed in many states.

Patuxent's Wetland Ecology Section and part of the Migratory Bird Populations Station (MBPS) were combined in 1972 into a new group called the Migratory Bird and Habitat Research Laboratory (MBHRL) under the direction of Dr. Robert I. Smith and later Dr. Fant Martin. The "population" activities of the MBPS involving surveys, regulations, and bird banding, became the Office of Migratory Bird Management. These organizations and staffs were co-located at Patuxent and shared administrative relationships. All research and management activities with the wetlands of Patuxent were curtailed because of new National priorities. This was a major turning point in research and management of the lands of Patuxent. Some activities with nest boxes and water level control of impoundments were continued by biologists on their own time, but, in general, little on-site habitat research or management was conducted during the 1970s at Patuxent. Extensive research, however, was conducted by MBHRL personnel on species of concern in specific geographic areas including woodcock and black ducks in Maine, canvasbacks in Chesapeake Bay, and mourning doves in South Carolina.

Dr. Lucille F. Stickel became the Director of Patuxent in 1973 and served in that capacity until her retirement in 1981. Under her leadership, environmental contaminants research expanded and attained national prominence. The expansion of this program is demonstrated by the average number of publications on contaminants per year which increased from 4 in the 1950s, to 7 in the 1960s, to 30 in 1970s.

Migratory bird research continued by MBHRL during the 1970s, and was fairly evenly divided between off-site field studies and on-site analyses of banding and other wildlife population data. Extensive banding data for the mallard was the basis for a series of reports which discussed the role of additive and compensatory mortality with waterfowl. The expertise to analyze population data during this period gained international prominence and with increased computer modeling capabilities continues to the present time. Ecological studies on the Patuxent lands were done mostly by researchers not in the Service, while Patuxent researchers emphasized studies of penned birds. In 1975, 1250 acres of surplus land were transferred from USDA to Patuxent, giving greater protection to Patuxent wetlands by ensuring control of most of the watershed.

Three major Patuxent programs were transferred to other locations in 1975. The Section of Disease and Parasite Studies was transferred to the new National Wildlife Health (formerly "Disease") Research Center in Madison, Wisconsin, the Section of Animal Damage Control Studies was transferred to the Denver Wildlife Research Center in Denver, Colorado, and the <u>Wildlife</u> <u>Review</u> and editorial office were transferred to Fort Collins, Colorado. At the same time, the environmental contaminants program of the Denver Wildlife Research Center was transferred to Patuxent. Several western field stations transferred to Patuxent remained active and new field stations were established for research on migratory birds, contaminants, and endangered species.

The Migratory Bird and Habitat Research Laboratory was

disbanded in 1981 and migratory bird research was returned to Patuxent. Much of the migratory bird research continued to be species-oriented (especially with ducks) and little habitat research was conducted on lands at Patuxent during the 1980s, although habitat research was conducted at other areas. Extensive research was conducted on waterfowl in the Chesapeake Bay ecosystem. Patuxent lands were used for studies on forest fragmentation and population modeling, which along with statistical methodology development, were major migratory birds research thrusts in the 1980s.

Patuxent's first master plan was prepared in 1980. The research mission statement was: "The professional staff is engaged in research and management activities that are directed at accomplishing the principal missions of the Center: evaluation of the effects of environmental contaminants on wildlife and the environment; endangered species research and propagation; and migratory bird research (including urban wildlife) and management." The Master Plan was written by a private consulting firm (Sasaki Associates, Inc.).

## TRANSITION TO PUBLIC OUTREACH

In 1982-83, Patuxent was managed by two acting directors, Drs. Russell J. Hall and John G. Rogers Jr., who had been serving as Assistant Directors at the time of Dr. Stickel's retirement. During this period of time, the Reagan administration was searching for federal land that could be sold as surplus to government needs. Agencies were asked to identify land that could be considered surplus and Patuxent complied by offering about 50 acres. However, because Patuxent was officially part of the National Wildlife Refuge System and because of help from the Honorable Steny Hoyer, Congressman from Maryland, loss of Patuxent land was forestalled. This threat to the land and pressures from an increasing human population around the land, (including housing development, road construction, and siting of a landfill), made administrators reassess how the lands at Patuxent were being used.

Dr. David L. Trauger was appointed Patuxent director in 1983, following a four year stint as Chief, Division of Wildlife Research in Washington, D.C. Several research activities at field stations were consolidated and support activities (information transfer, technical assistance) were expanded. The major challenge at this time was to consolidate the disparate organizations (endangered species, environmental contaminants, and migratory birds) into a functional Center. Prior to this time, they had been managed separately. The "Center" concept was fostered and the "Branch" management structure was established. Center-wide procedures were initiated for developing study plans, preparing Annual Work Plans, reviewing manuscripts, documenting standard operating procedures, and the compliance with the Animal Welfare Act and Good Laboratory Practices. In 1984, planning began on a visitor center at Patuxent, which had been discussed initially in the 1960s. In 1985, the Patuxent Analytical Control Facility was established at Patuxent to provide chemical analyses of environmental contaminants for the Service. The Section of Buildings and Grounds began a major reorganization to accommodate increased planning and land management responsibilities and the first facility manager was hired in 1986.

In August 1987, Mr. Harold J. O'Connor became Director of Patuxent. Mr. O'Connor was the first Director of Patuxent with experience in the management of National wildlife refuges and was also a member of the Senior Executive Service. One of Mr. O'Connor's first efforts was to obtain funding for the Visitor Center, which was being planned by his predecessor. Fifteen million dollars were obtained from Congress for this project, which evolved into a National Wildlife Visitor Center covering all wildlife research of the U. S. Fish and Wildlife Service. The building was officially dedicated and opened to the public in October 1994 and has extensive exhibits depicting wildlife research of the USFWS throughout the world. Many of these research activities are still being conducted by researchers within and out of the Service. Several support groups have been established to help in fund raising and volunteer staffing of the Visitor Center.

In 1988, a second Master Plan was prepared by Patuxent staff. The new plan stated that the mission of Patuxent "has remained unchanged since the submission of the original Master Plan report. It is essentially the same as for the overall U.S. Fish and Wildlife Service." However, a later mission statement for Patuxent prepared in 1992 specifically included education and public use as important activities. This statement was a major change in the mission of Patuxent, but was responsive to directives of the Service "Vision" document and other outreach directives from Washington.

Several major rehabilitation projects involving impoundment control structures were undertaken under Mr. O'Connor's direction. New experimental pens and ponds were constructed and the appearance of the grounds around the buildings was improved. A major celebration of Patuxent's 50th anniversary on June 3, 1989 was attended by many dignitaries, including U.S. Senator Paul Sarbanes and U.S. Representative Steny Hoyer.

During the tenure of Mr. O'Connor, Patuxent increased its involvement with research with foreign countries especially with Russia (formerly USSR). Several major joint US/USSR oceanic cruises were conducted to the South Pacific and Bering Sea. To accommodate the increased involvement with foreign scientists, several Patuxent residences were converted to furnished quarters for visiting scientists. The quarters were also used by

### volunteers and interns.

Management of the wetlands and meadows became a formal activity with the implementation of impoundment and meadow management plans in 1989. A public fishing program in Cash Lake from June to October each year was initiated in 1991. A refuge biologist was hired to oversee all resource management activities and the facility manager was reclassified in 1992 as a refuge manager. These activities reflected the increased emphasis being placed on refuge management functions.

In 1991, a special 26-member blue-ribbon panel was assembled to review the research program at Patuxent. The Chairman of this panel was Dr. Laurence R. Jahn, President of the Wildlife Management Institute. After extensive discussions with research staff members, the panel concluded that funding for overhead to support custodial maintenance, administration, and operations was a major concern of Patuxent researchers. Many of the overhead issues were controlled by administrators in Washington, D. C., but Patuxent did make attempts to respond to many other issues in the report including communications with staff. However, the overhead funding remained a contentious issue between researchers and administrators at Patuxent.

In 1991, Patuxent implemented the concepts of Total Quality Management into the management philosophy and operating procedures. The Quality Council, consisting of the Director, Deputy Director and Branch Chiefs, was established and several Quality Improvement Teams were formed. A Strategic Planning process was initiated.

In 1991, 7600 acres of land in Anne Arundel County that was previously part of Fort George G. Meade, immediately adjacent to Patuxent to the north, was transferred to Patuxent as a result of the Military Construction Appropriations Act (U.S. Public Law 101-519). The land had been declared excess by the U.S. Army under the Base Closure and Realignment Act (U.S. Public Law 100-526). The transfer was based on the recommendations of a broadbased Fort Meade Coordination Council that had extensively studied the options and voted unanimously for the transfer. The transfer document specified that the intended uses of the property, now called North Tract, in priority order established by law, were preservation of the land, wildlife research, and compatible public use. An additional 500 acres, including three baseball fields, were transferred to Patuxent in 1992.

The acquisition of these lands added the responsibilities of a major deer hunting program (bow, gun, and muzzle loader) and increased public use and education. Other existing natural resource programs including fishing, trapping for furs, and small game hunting were continued. Approximately half of the existing firing ranges continue to be used by defense and law enforcement personnel for training under a special-use permit with the National Security Agency. A trap and skeet range is also used by sport shooters under a special-use permit with a Goddard Space Flight Center shooting club. A large, modern, stable is run by a horse riding club under a permit issued by Patuxent to the U.S. Army. A visitor contact station was constructed on the new land to control public use activities. This building was funded in part by the Prince George's County Parks and Recreation Foundation. The station is staffed by volunteers and one fulltime employee.

In 1990, when the major land transfer from Fort Meade was imminent, the Regional Director of Research and Development stated that no research funds would be used for management of the newly acquired lands. Administrators at Patuxent were therefore required to seek alternative funding for these activities. The extensive hunting program conducted at the North Tract of Patuxent was initially conducted through the Department of Defense, but in 1995 PRR assumed responsibility of the program. Hunter control of the program, however, continues to be managed by a sporting organization, which assesses a permit fee upon all hunters. Hunter fees are used to pay two employees who manage daily hunting from the Hunting Check Station, and to pay for their Workmen's Compensation Insurance. Remaining funds have thus far been put back into the Patuxent North Tract to purchase seeds and fertilizer for erosion control and wildlife management projects. Expenses borne by Patuxent for the hunting program are mainly for part-time salaries of three law enforcement personnel during the hunting season. The original directive from the Regional Director was subsequently changed and Patuxent was authorized to spend \$75,000 of research funding in fiscal year 1992 and 1993 for operation of the North Tract.

The increased activities concerning the Visitor Center and new lands for public use in the early 1990s exacerbated staffing problems at Patuxent and increased overhead expenses. Funding for all research, management, and education programs conducted at Patuxent came from the research and development administrative group, located in Washington, D.C. that coordinated all USFWS research and administered funding through the federal budget process. Although Patuxent is located in one of the USFWS's geographic regions (Region 5) it never received funding through the refuge program as did other refuges. However, minor funding for volunteer programs and the Youth Conservation Corps came from the USFWS's Washington office.

Because of the increasing land management and education activities conducted at Patuxent, a decision was made by the Service Director in early 1992 to transfer the new Fort Meade lands (North Tract) (8100 acres) and the Visitor Center lands (South Tract) (2000 acres) from Region 8 to Region 5 in October 1993. Patuxent would maintain control of the Central Tract (2700 acres), where traditionally the researchers have been located and most of the on-site research has been conducted. Patuxent would still be responsible for management and public use on Central Tract lands. This decision received mixed reaction from Patuxent employees, because there was no indication that increased funding was forthcoming.

In March 1993, however, the Department of the Interior headed by Secretary Bruce Babbitt, announced plans to form a new National Biological Survey (NBS) that would combine all biological research and monitoring within Interior into one bureau separate from existing management bureaus. Preliminary discussions were divided on whether lands associated with Patuxent would be staying with the USFWS and being managed by the Division of Refuges or be transferred to NBS.

In November 1993, the staff of Patuxent Wildlife Research Center and several sections of the Office of Migratory Bird Management were transferred to NBS. The NBS organization also resulted in the transfer to Patuxent of one research unit of the National Park Service and all USFWS staff assigned to the Smithsonian Museum of Natural History. Although Patuxent administered 10 field stations in late 1993, realignment in NBS reduced field stations to 4 in late 1994.

All lands and buildings of Patuxent continued to be officially controlled by the USFWS and within the Region 5 refuge organization. The actual maintenance of the buildings and management of the lands, remained under the control of the Director of Patuxent and his staff. This arrangement, in principle, provided protection of the land under all regulations and policies of the U.S. Refuge System, but gave maximum flexibility for use of the land for research purposes. This arrangement between the service and the Survey was approved by Undersecretary of Interior George Frampton, Jr. and is commonly called the Frampton Agreement.

On October 5, 1993, the Patuxent Director announced a new strategic plan which was to guide Patuxent's activities in the National Biological Survey. The plan was the beginning of the process to align Patuxent's organization more closely with the structure of NBS, which included major initiatives in survey and monitoring of habitats and populations and in the transfer of information and technology.

The primary mission of Patuxent as stated in the Strategic Plan was "to conduct biological studies in response to programs and priorities of the National Biological Survey (NBS) to support land and resource managers within the Department of the Interior. The center will operate a National Biological Research area as an outdoor laboratory and operate the NBS National Wildlife Visitors Center for the advancement of environmental education and biological science". A major change in the new mission of Patuxent in the NBS was a reduced geographic responsibility to only the Eastern Ecoregion and a shift away from National and International initiatives. In May 1994, the name of Patuxent Wildlife Research Center was changed to Patuxent Environmental Science Center. In late 1994, the name of the National Biological Survey was changed to the National Biological Service to accommodate concerns that new research was not supporting historic "customers".

In March 1995, Patuxent Mr. O'Connor retired from federal service after 35 years. Dr. James A. Kushlan became Director in late 1995 and because of numerous problems within the federal government, Patuxent went through a very disheartening period when budgets were cut and 26 personnel were officially relieved of their services (reduction in force). The Branch concept was abandoned and all research was placed under the control of a Chief Scientist. In the spring of 1996, the name of Patuxent Wildlife Research Center was restored. In October 1996, the National Biological Service was terminated and all staff became part of the Biological Resources Division of the U. S. Geological Survey.

### CONCLUDING THOUGHTS

At present, a close relationship exists between personnel of Patuxent Research Refuge and Patuxent Wildlife Research Center. All lands associated with Patuxent Research Refuge are managed with close coordination between the refuge and research staffs so that priority remains on research activities. Patuxent lands could receive additional protection and priority for research if USFWS designated the area as the first in a system of "National Biological Research Areas". These lands could be used for increased research to test best techniques to survey and manage biological populations. The large size (12,800 acres) of this area located in the mid-Atlantic area provides an outstanding land base to continue the tradition at Patuxent of using lands for research purposes. Probably no other large area exists in the East where long-term surveys and research have been conducted on the flora and fauna of the land. These surveys and research should be continued.

It is further suggested that environmental education and public use at the Visitor Center and at the Contact Station have increased involvement with research information transfer at Patuxent with special funding from the USFWS and USGS in a united effort of the Department of the Interior. The role of the Visitor Center should be expanded to include information transfer of all biological research activities of the Department and as a place to conduct major biological symposia. The very successful intern and volunteer programs that presently exist at the Visitor Center could be used to disseminate research reports and manage the computer storage and transmission of research information. Land management should be directed towards activities that have a priority to habitat management research and conducted by refuge and research staff in a collaborative manner to test land management techniques. Hunting, trapping, and fishing programs should be conducted to optimize data collection in support of habitat research. Much of the data collected on these outreach programs should be conducted by volunteers.

The broadening of the mission at Patuxent during the last few years, at a time of increasing demands and reduced budgets, warrants further discussion of the present path that Patuxent, and therefore the USGS, USFWS, and Interior, are taking in regard to biological research. The Department of the Interior has an outstanding opportunity to increase its exposure in a very positive manner in the areas of public use and education. Interior, however, cannot risk the possibility that research by the world's most prestigious wildlife research facility is operating in a less than exemplary fashion, nor can it risk managing 12,800 acres of refuge land near the Nation's capital with less than optimum stewardship.

Keeping the land activities closely associated with research reflects the original goal and historic use of the lands at Patuxent--to determine land-wildlife interrelationships through research. Patuxent Research Refuge was established as a unique area where habitat research could be conducted both for the betterment of wildlife populations as well as for the humans who benefit from these populations. For Patuxent to retain its leadership role in the field of wildlife research, this goal must be kept foremost in the planning, budgeting, staffing, and management of this facility.

This will be possible only if Interior helps fund an expanded land management research program. Such a program could help answer many of the problems and questions raised by land managers on all Interior lands throughout the country concerning land management for wildlife. Patuxent had a role like this during the 1940-60s when upland and wetland management research was transferred and applied throughout the National Wildlife Refuge System and to many state natural resource departments. New approaches to land management research that need large blocks of land, such as habitat restoration, predator-prey relationships, biodiversity, impacts of hunting, cowbird parasitism, wetland creation, and habitat enhancement, could be conducted at Patuxent.

It would be particularly appropriate for the present Administration which has signaled major policy reviews and realignments, to give special consideration to Patuxent. Given the administration's strong environmental interests, the future mission and management structure of Patuxent are a logical and timely point of concern and attention for Interior leadership. Patuxent also provides unique opportunities in the National Capital Region to showcase biological research and ecosystem management. With proper planning and discussion, a strategy can be forthcoming that will optimize the research of Interior while assuring optimum stewardship and use of this unique site and its rich heritage.