

# Patuxent's Research Program in an Era of Transitions

James A. Kushlan

## Introduction

It was a telephone call to me, not totally unlike that received 9 months earlier by Ron Pulliam (Director of the National Biological Survey [NBS]) from Bruce Babbitt (Secretary of the Interior), which has since entered the lore of United States wildlife conservation history (Pulliam, 1998). The call, in the summer of 1994, bore an offer I never would have imagined being given to me, nor being accepted by me. It differed from Pulliam's job offer experience in that I had indeed applied for the position, albeit solely at the behest of long-time colleagues at the Patuxent Wildlife Research Center (Patuxent) in Laurel, MD. They had been promised an open search for a new director of Patuxent. I had applied to test whether the promise was true.

The NBS director requested on my behalf, and I received, an unprecedented 3-year leave of absence from the University of Mississippi, where I was then chairman of the biology department. Previous appointees to Federal agency positions had received only their allocated 2 years. I was honored to have the offer to lead what in my early professional career was viewed by all as the most important research facility in all of wildlife biology. I wanted to help scientists publish science that was, in fact and in appearance, credible and nonadvocative. This concept had gained traction in recent years (National Academy of Sciences, 1992), and helping to see it through was appealing to me.

I did revel in the possibilities of facilitating expansion of the biological knowledge base available to the Department of Interior (DOI) land-management agencies, especially for migratory birds and even more especially for waterbirds. Therefore, I agreed to undertake what was to be a 3-year tour of duty helping Patuxent during its transition and assisting my colleagues in the process. To be sure, I knew at the time that it would be a difficult, although fascinating, task, and I could proceed boldly dealing with management of a research facility.

Of course, grand plans rarely work out as anticipated. It turned out that the Patuxent at which I arrived in the fall of 1995 had been shorn of its field stations and renamed Patuxent Environmental Science Center (Perry, 2004). Its budget was to be cut \$1.5 million and, to accommodate this reduction in funding, one option was to reduce the staff by about two dozen people and eliminate functionality. In October 1996,

Patuxent's remaining functions were transferred to the U.S. Geological Survey (USGS). This chapter describes the story of that transitional period at Patuxent: transitions in form, function, structure, aspirations; transitions in the trajectory of many professional careers; and transitions in agencies, including the U.S. Fish and Wildlife Service (USFWS), NBS, National Biological Service, and USGS, and their differing perspectives. It also is the beginning of the story of the future of biological science in the DOI, a tale that as of this writing more than two decades later (2016) has yet to completely unfold.

## A History of Agency Roulette

It is generally acknowledged that wildlife studies came into the Federal government in 1885 with the establishment of a Section of Economic Ornithology within the Division of Entomology at the Department of Agriculture (USDA) (Allen, 1954). Its early focus, as that organizational hierarchy indicates, was on the negative and positive relations between birds and agriculture. What birds were there, where, when, and what did they eat? In 1896, the group became the Biological Survey and, under President Theodore Roosevelt's patronage, the Bureau of Biological Survey (Bureau) in 1905. President Roosevelt was one of the great naturalists of his era, an observant amateur ornithologist, and a widely accepted scientific mammalogist (Kushlan, 2011). Roosevelt admired the USGS and he wanted a biological equivalent. Under Roosevelt's direct influence, the Bureau added mammals to its emphasis, along with the new natural history museums and zoos (Matthiessen, 1959). The Bureau also delved into bird and mammal taxonomy and distribution, and their status and trends. The enforcement of the 1900 Lacey Act, which prohibited the interstate transfer of birds killed in violation of State laws, also became their responsibility. The identity, name, and function of the Bureau had lasted a long time—35 years—when a merger with the Bureau of Fisheries of the Department of Commerce produced the USFWS, all in the DOI. It was during this period, in part to address the habitat destruction that characterized the Dustbowl Era, that scientific wildlife management began in earnest, focusing first on waterfowl and fishery stocks (Matthiessen, 1959).

The wildlife research function known as Patuxent took life on December 16, 1936, when President Franklin D.

Roosevelt signed Executive Order 7514, transferring land along the Patuxent River in Maryland to the USDA and authorizing it to be used as a research refuge, essentially a wildlife experiment station equivalent to the nearby agricultural experiment station, in support of the Migratory Bird and Conservation Act (Perry, 2016). The Patuxent Research Refuge was officially dedicated on June 3, 1939, and moved from the USDA to DOI with the USFWS. As habitat was the principal research question of the time, much of the work over the next decades centered on the land base of the experiment station, including its fields, woodlots, and constructed wetlands. From the time the first director, Arnold Nelson, was appointed, the research and the land were under common management.

With the reorganization of the USFWS in 1956, the Patuxent Research Refuge was administratively renamed the Patuxent Wildlife Research Center. Over the decades, Federal wildlife research needs broadened gradually from habitat to such issues as harvest management, and then further to population dynamics, pesticides, endangered and declining species, and nongame birds. With this expansion of need, Patuxent grew in mission, staffing, physical plant, and geographic reach, becoming the largest and arguably the most famous wildlife research laboratory in the world (Perry, 2016).

By the early 1980s, an increasingly complex array of research activities derived from multiple sources was administratively reorganized into disciplines within a centralized structure made to conform to modern management principles. In the late 1980s and early 1990s, Patuxent management explicitly chose to add roles of public use and outreach to its science core (Ballard, 1989) as the Laurel (MD) campus was expanded by incremental increases of land from adjacent Federal agencies and by the building of the National Wildlife Visitor Center, which was funded to highlight the USFWS research history. These role expansions and facility transactions altered both the function and the funding of Patuxent in fundamental ways. Patuxent had always been run on funds appropriated to the USFWS for the research region (Region 8 in Washington, D.C.), and had always been managed solely as a research facility (Perry, 2004).

With increased public use and new facilities and lands to manage, these core funds by necessity were increasingly used to pay for nonresearch matters. Finally, in 1992, additional funds were appropriated to the USFWS Northeast regional office for Patuxent, a refuge manager was appointed to serve under the director, and plans were underway to divide responsibilities between the refuge managers of the region and Patuxent, with Patuxent retaining management control of the historical core of the land and the refuge system taking over the rest (Perry, 2004). This plan did not materialize. At its peak, Patuxent was an institutional juggernaut. It comprised more than 200, mostly scientific staff members; 11 field stations; a \$20 million budget; and 12,800 acres of land and facilities (Perry, 2004).

On Earth Day, April, 21, 1993, President Clinton announced his intention to undertake a biological survey of the

Nation. This announcement, a single sentence in his speech (<http://www.presidency.ucsb.edu/ws/?pid=46460>, accessed July 30, 2015), articulated the vision of his Secretary of the Interior, Bruce Babbitt, who, like Roosevelt, was an admirer of the USGS in his youth, wanted a biological equivalent of the USGS, wanted an agency where science was independent of the land-management bureaus, and wanted enhanced capacity to provide the inventories and scientific studies the agencies needed. His rationale was to get ahead of oncoming environmental crises (Stone, 1993).

The new bureau was to be formed by extracting the research functions and staff from the other DOI agencies. It was organized within the 1994 budget process accompanied by the passage of authorizing legislation in the House of Representatives, but not in the Senate, leaving the agency as administratively and budgetarily authorized, but not organically established. But, carrying the vision on, Secretary Babbitt signed an order (Secretarial Order 3165) on May 17, 1993, announcing his intention to create the new bureau and setting that process in motion. On August 20, 1993, letters were mailed transferring personnel with their functions as of passage and signing of the fiscal year (FY) 1994 budget beginning October 1993.

Among other science functions transferred to the NBS were other DOI research centers (some historically spawned by Patuxent), Cooperative Research units at land-grant universities, and research scientists from the National Park Service (NPS) and other bureaus. Also among functions and personnel transferred to the NBS were several from the USFWS Migratory Bird Management Office such as the Bird Banding Laboratory, Breeding Bird Survey, and other inventory activities; the NPS's Center for Urban Ecology; the USFWS Biological Survey Group housed at the National Museum of Natural History; NPS Cooperative Parks Studies Units at universities; and park-based research scientists.

In June 1994, University of Georgia professor Ronald Pulliam became director of the NBS and took over forming his agency. It was to be academic, scientific, independent, unbiased, peer reviewed, and agency responsive, and to address more than wildlife. It would additionally be about ecosystems and technology and tend to big questions of ecology and resource management (Stone, 1993). On January 5, 1995, Secretary Babbitt (Secretarial Order 3185) changed the agency's name to National Biological Service and clarified that its primary role was to meet the biological research needs of the DOI. The agency was short-lived.

A new Congress elected under House of Representatives Speaker Newt Gingrich's leadership took office in January 1995. His "Contract with America" had formally promised to abolish the NBS (Pulliam, 1998a). In 1996, the functions and employees of the NBS became part of the Biological Resources Division of the USGS (Pulliam, 1998b). Additional transitions were in store for everyone. Patuxent's identity, form, and functions underwent substantial changes during this period (Perry, 2004).

## Identity

Name changes quickly became an issue. What had been for decades Patuxent Wildlife Research Center was renamed, as of May 10, 1994, Patuxent Environmental Science Center. By the time of my arrival in 1995, the decision had long since been made to change Patuxent's name (Perry, 2004). Among my first assignments was to call on Maryland Senator Paul Sarbanes, who wanted Patuxent's original name reinstated (Perry, 2004). The order came out a few days later, and at Patuxent we had a celebration to enjoy our name restitution. A name change did not change anything fundamentally, but was psychologically uplifting.

With a new logo featuring the bald eagle (*Haliaeetus leucocephalus*), the identity of Patuxent had returned to its roots. When moved to the USGS, it officially became "USGS Patuxent Wildlife Research Center," but it always remained for most just "Patuxent." Of course, outside the wildlife community, "Patuxent" is a Naval air station, a prison, or a Maryland river. Within the wildlife community, it remained one of the centers of its science.

## Form

The form I found at Patuxent in 1995 was in my view entirely logical in that its three main disciplinary functions, each with its independent history, were divided among three branches for migratory birds, contaminants, and endangered species. Each had a mid-level manager, who controlled the branch budget and supervision, and each had an administrative staff. Scientists were further divided into groups, each with a supervisor. The form of Patuxent consisted of a centralized command structure, based on the concept of Total Quality Management (TQM) ([https://en.wikipedia.org/wiki/Total\\_quality\\_management](https://en.wikipedia.org/wiki/Total_quality_management), accessed July 30, 2015) enacted by a Quality Council that met long and regularly. When I first entered Patuxent's conference room, on the wall was a sign assuring the staff that TQM meant that whatever was said in this room by the Quality Team members of TQM stayed in this room and that employees could express their opinions without fear of retribution.

The potential imposition on creativity of TQM in a research environment worried me, and after a couple of months of consideration, I terminated TQM and the three-branch structure. Instead, all the research scientists were to report to one chief scientist and were encouraged to self-organize into recognized, but nonsupervisory, teams around projects, themes, or fields of work as they chose. This was an academic department model. It also eliminated the overhead costs of two layers of management. Finally, the concept of base funding branches was ended in favor of funding on a project basis supported by peer-reviewed proposals that competed for available base funds.

Scientists found freedom to do the work they chose, staying within the overall mission of servicing DOI, so long as they could competitively or by partnership acquire funds for their work and publish it in peer-reviewed journals. USGS headquarters was behaving somewhat similarly, offering funds derived from proposal-driven competition within the agency, and Patuxent scientists did well in this competition. Therefore, all Patuxent research became derived from internal or external peer-reviewed proposals.

## Function

The NBS on its creation immediately became regionalized, with Patuxent reporting not to DOI headquarters in Washington, D.C., as it had for 60 years, but to a regional office in West Virginia. Implicit in this regionalization was that Patuxent was no longer to be a national laboratory, but a regional one. Patuxent was stripped of its far-flung field stations, and now consisted of the Laurel campus, including the National Wildlife Visitor Center; staff in Maine; the research and curatorial staff assigned to the U.S. National Museum (taken from the Denver Research Center); and the Center for Urban Ecology (taken from the NPS). The Smithsonian-based scientists were the taxonomic, curatorial, and distributional experts from the USFWS. These acquisitions brought taxonomists, mammalogists, herpetologists, botanists, urban ecologists, and wetland scientists to Patuxent.

The new agency's initial functional areas and budget categories were to be species biology, population dynamics, ecosystems, inventory and monitoring, and technology development and transfer (Stone, 1993). Species biology, population dynamics, and monitoring were within Patuxent's capabilities; ecosystems were not, even though this was clearly to be a principal focus for the new agency. Clearly in the new agency's organization, the initial intention was for Patuxent to have an eastern focus (Perry, 2004). Patuxent did wildlife research on a national, and sometimes international, scope for the entirety of the USFWS. Hal O'Connor and Dave Trauger (respectively, Director and Deputy Director of Patuxent) had gone through a strategic planning process, finished in October 1993, to attempt to align Patuxent more closely with the mandates of its new bureau and to face up to its new realities (Patuxent Wildlife Research Center Quality Council, 1993).

Within the NBS mission elements of species and population dynamics research, Patuxent was able to see the disciplines that had made it famous. National programs continued with contaminants and endangered species. Migratory birds research was clearly to be as much in the future of Patuxent as it was in the past. In the transition, the NBS failed to accumulate all of the USFWS migratory bird science capability, and Patuxent had received no new migratory bird personnel and even lost some from its former field stations to other regions; still, this was Patuxent's strength and a logical growth area.

Given that developing geographic information system capabilities and ecosystem- and landscape-scale biological conservation was a fast-moving field for wildlife research, thinness of staff was indeed worrisome. Something needed to be done there. It is worthwhile, therefore, to examine Patuxent's science capabilities at the beginning of NBS.

## Endangered Species

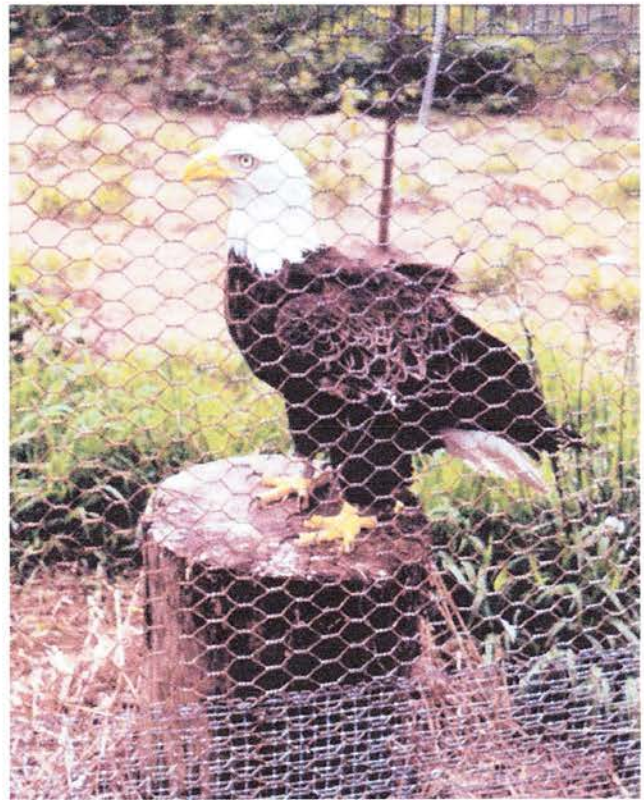
Patuxent was long the national leader in terrestrial vertebrate endangered species research, starting in 1965. It was a leader after the passage of the first Endangered Species Act, ready to support the new Federal role in biodiversity conservation, under the leadership of Dr. Ray Erickson (see the "Endangered Species" section of this report). It did the seminal species, reintroduction, and contaminant research on the bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), brown pelican (*Pelecanus occidentalis*), California condor (*Gymnogyps californianus*), masked bobwhite (*Colinus virginianus ridgwayi*), Puerto Rican parrot (*Amazona vittata*), whooping crane (*Grus americana*), Mississippi sandhill crane

(*Grus canadensis*), gray wolf (*Canis lupus*), and black-footed ferret (*Mustela nigripes*). By 1995, much of this reintroduction work had passed operationally to management agencies. Patuxent's one remaining program in the endangered species branch was on cranes.

The crane program had persisted, and the issue of cranes was front and center in the National Biological Service continuing in the Biological Resources Division of the USGS. I impaneled a peer-review team (Scott and Sparrowe, 1999), which agreed that the program should be confined to research; defined the research needed as being studies on reintroduction, not husbandry; and called for maintaining the captive stock needed for this research. An implementation plan for a reintroduction program was developed on the basis of peer-reviewed proposals and, to support this work, no birds were moved. Thus, the whooping crane propagation at Patuxent survived unabated. Patuxent itself had neither the money nor the mandate to lead the reintroduction program, but encouraged partners to do so. In addition to the crane program, Dave Mech's long-term wolf study for a time was returned to Patuxent, and Jeff Spindelaw in the migratory bird program studied roseate terns (*Sterna dougallii*).



CANUS (for Canada and the United States), the first whooping crane of many in the captive colony at the Patuxent Wildlife Research Center, Laurel, MD, 1991. Photo by Matthew C. Perry, U.S. Fish and Wildlife Service.



Captive bald eagle at Patuxent Wildlife Research Center, Laurel, MD, 1979. Photo by Matthew C. Perry, U.S. Fish and Wildlife Service.



Immature roseate tern (*Sterna dougalli*) color banded for monitoring, Chatham, MA, 2011. Photo by David Monticelli, Marine and Environmental Sciences Centre, Universidade de Coimbra, Portugal.

## Contaminants

Patuxent was once the national leader in wildlife contaminant research, which had started in the mid-1940s. Under Director Lucille Stickel's leadership, Patuxent was able to benefit from attention to pesticides after Rachel Carson published "Silent Spring" in 1962 (Carson, 1962) to build a program that soon had continent-wide implications. By 1995, the program was still producing a substantial number of publications on contaminant effects on wildlife. Much of this work dealt with detailing the questions; summarizing and synthesizing the data; and attempting to address the then-current, but technically difficult, issue of secondary and generational effects by using Patuxent's remaining captive colonies of American kestrels (*Falco sparverius*) and Eastern screech owls (*Megascops asio*).

In the transition to the NBS, the Analytical Control Facility established in 1985 and housed at Patuxent (Perry, 2004) remained with the USFWS, with the rationale that this facility was a scientific service, not research. One functional result was that Patuxent lost its research chemists. Nonetheless, in 1995 Patuxent housed a cadre of contaminant biologists. As demand for their expertise decreased, they documented the continuing progress of environmental regulation. This work continued in the 1990s and thereafter, with special attention to Chesapeake Bay.

## Migratory Birds

Patuxent in its largest sense (that is, including entities at the Laurel site not necessarily administered by Patuxent) in 1995 was still one of the world leaders in migratory bird studies. The bureaucratic history is convoluted, as several Federal

migratory bird science entities over the previous decades had been established, merged, disestablished, or remerged (Erwin and Blohm, 2016). But over the years prior to the agency transition, migratory bird functions had been rearranged a couple of times, with some eventually becoming part of Patuxent and some remaining in the offices dealing with migratory bird management and habitat. Upon the emergence of the NBS, some of these functions, including the Bird Banding Laboratory (BBL), Breeding Bird Survey (BBS), and similar functions, were transferred, but were managed by headquarters, leaving part of the migratory bird capabilities in the USFWS, part in Patuxent, and part reporting to NBS headquarters, but nearly all colocated at the Laurel site. Thus, the core of the former and present USFWS migratory bird research and migratory bird management functions still resided physically at Laurel by 1995.

After the transition, it became clear to me that Patuxent could seek out this role to amalgamate all the former USFWS migratory bird science functions within the NBS. So a campaign was launched by others and me to secure transfer of at least the BBL and BBS from headquarters to Patuxent. I believed it to be a scientifically and logistically feasible proposition. This proposal was agreed to, with much credit going to USGS Chief Biologist Sue Haseltine, and these programs, along with personnel from the Office of Inventory and Monitoring, were transferred to Patuxent management. Patuxent then sheltered the most important of DOI's long-term bird monitoring programs, which were always considered to have been part of Patuxent in any case (Robbins, 2016; Tautin, 2016). The BBS, started by Chandler Robbins, had always physically resided at Patuxent. The BBL and the Electronic Data Processing center had resided at the Laurel site since 1942. These national responsibilities for bird monitoring were accommodated at Patuxent by erecting for the Monitoring Program a second supervisory section coequal with Research.

It was apparent to nearly all that the functionalities of the BBL were seriously out of date, relying on paper data forms; proprietary and idiosyncratic computer programs; severe and sometimes unfathomable restrictions on awarding banding permits; tight, centralized, person-mediated quality control of data input; and limited and highly controlled data availability. The BBL had long focused on waterfowl harvest, but, clearly, the BBL was a critical adjunct to ornithological research and many levels of resource management. Innovative programs for monitoring bird demography, color banding, and satellite telemetry were being initiated. To address these changes in the scientific community and to settle the BBL in its new bureaucratic home, a peer-review panel was commissioned prior to my arrival, although its report was not published until 1998 (Buckley and others, 1998). Upon its completion, I impaneled an implementation committee that included personnel from the USFWS, conservation organizations, and academia. Under the leadership of John Tautin, slowly but surely, the BBL was "reengineered" and brought into the electronic and communication age (Tautin, 2008, 2016). The process led to developments such as having Federal prisoners make bands,

encouraging recoveries by telephone, and attempting to make programs more user friendly. Eventually, the data-processing unit was, for efficiency, merged with Patuxent's other information functions and the BBL became essentially all electronic, relying on the World Wide Web for its functionality.

Similarly, I impaneled a review team led by Raymond O'Connor (University of Maine, Orono) to review the operation of the BBS (O'Connor and others, 2000). Its conclusions were the well-accepted consensus opinions about what might be done better. The BBS was designed in the days of paper field notebooks, and wildlife biologist Bruce Peterjohn had already led it into the electronic era, long before the BBL was able to do so. An implementation plan that followed up on the recommendations was put into action as funding allowed.

## Monitoring

Given my emphasis on research independence and eliminating middle management, the observant reader might ask why there was a Monitoring Division separate from the Research Division. The reason for the internal organization within Patuxent was twofold. The activities of the Monitoring Division, although scientific, were not necessarily research functions, and the biologists were not research scientists, but focused on customer service. The new Monitoring Division arrangement soon expanded to encompass colonial waterbird, amphibians, and pollinator monitoring programs, with Patuxent serving as the operational and data hub.

A "downside" of the separation of function was that a recognizable research/nonresearch divide came to exist within the science of Patuxent between publishing research scientists and database-managing scientists. The migratory bird data-managing scientists became increasingly separated,



Patuxent Wildlife Research Center biologist Sam Droege monitoring bees with a sampling net, 2005. Photo by U.S. Geological Survey.

organizationally and intellectually, from the migratory bird research scientists. The migratory bird programs were eventually successfully coalesced by my successor, Dr. Judd A. Howell, under a single supervisory unit. After many years, Federal migratory bird science had achieved a unified home.

## Reexpansion

With the loss of its distant field stations, scientific personnel, and geographic scope in the mid-1990s, Patuxent had contracted in multiple ways. Accumulation of monitoring programs increased personnel, expanded the program, and reestablished a national scope of work. But Patuxent could have benefited from employing additional scientists, especially because it initially lacked expertise in subject areas important to the National Biological Service, and later to the USGS—especially ecosystems; landscape ecology; climate change; and similar big-question, nonbird issues. Some of this expertise could be gathered as positions became available, and a plan to guide future disciplinary hires was created.

A campaign was launched by Patuxent management staff to recruit these scientists to Patuxent, whose history, administrative expertise, and prestige were positive arguments. In the end, Patuxent accumulated, in addition to the National Museum scientists and its Maine bird-focused field station, the NPS research units at the Universities of Rhode Island, Boston, and Syracuse, incorporating a wide range of park science positions including coastal geology and entomology; the NPS-derived visitor impact research program at Virginia Polytechnic Institute and State University; the world-famous wolf research program located in Minnesota; the contaminant and bird, and, later, freshwater researchers at the University of Georgia (Director Pulliam's home institution); and the bird research station with the multiagency partnership of the Lower Mississippi Joint Venture in Mississippi. As job openings and opportunities became available, positions were filled in the areas of migratory birds, monitoring, bird conservation planning, urban ecology, landscape ecology, and population dynamics, and in the reamalgamation of a wetland ecology/landscape/climate-change group that originally had coalesced at the wetlands center in Lafayette, LA, under the leadership of Dr. Robert Stewart.

In tight economic times, the perceived need and willingness for partnerships can increase. Patuxent had retained its solid relations with national wildlife refuges in the mid-Atlantic and Northeast and, owing to the addition of the Rhode Island unit, gained new connections with national parks in the Northeast. Buoyed by the long-term cooperation among refuges and parks, studies continued in these areas. Patuxent had multifaceted and positive relations with the migratory bird leadership and scientists in the USFWS, especially under the leadership of Paul Schmidt, Dave Smith, and Jon Anderson in Washington, D.C. Combined programs, joint committees, the North American Waterbird Conservation Initiative,

cooperative policy setting for the BBL and BBS, parallel migratory bird science directions, and administrative issues were all collectively managed.

Patuxent continued and expanded its involvement with Chesapeake Bay by establishing relations with the leadership of the U.S. Environmental Protection Agency-managed Chesapeake Bay Program, the USFWS Chesapeake field office, the University of Maryland research campuses on the Eastern Shore and Solomon Island, the Smithsonian Environmental Research Center, and the Eastern Shore wildlife refuges. Scientists were engaged in species, restoration, wetland, and contaminant research over much of Chesapeake Bay and its watershed. Patuxent had acquired the science component of the Lower Mississippi Joint Venture, which was then under the leadership of Charles Baxter. It also engaged with the Atlantic Joint Venture, offering space for its science staff. It brought to Patuxent science staff of the USDA Natural Resources Conservation Service, with which I had worked in Mississippi. Patuxent had alumni in Cooperative Research Units at several universities, so these collaborations continued. The USGS State Water Science Centers were seen as potential collaborators, and several staff colocations occurred. Following the NPS example, Patuxent began to establish its scientists at various research universities, as it was clear that Patuxent-university partnerships were to be extremely valuable by increasing productivity.

Partnerships overall were generally beneficial, as they multiplied resources and encouraged scientific interchange. Partnerships can be difficult in practice, however, as institutions are sometimes in competition. In my opinion, partnerships worked best when they were forged by the scientists themselves; however, the partnership effort at the leadership level proved useful during the early period of reintroduction and trust building among entities, as it appeared to reduce impediments for scientists when they chose their collaborations.

Staff and functional acquisitions, targeted hiring, outplacements, and partnerships allowed Patuxent to reexpand. Eventually, staff was located at the Smithsonian Institution and seven universities as well as water-resource and environmental service offices in addition to the Laurel facility. By 2001, Patuxent encompassed 150 positions at 13 locations from Maine to Georgia, with a substantially broadened disciplinary scope. Patuxent's science purview had been reestablished, with both regional strengths and national programs.

## Bird Conservation

Given its history, prior reputation, staff expertise, accumulation of well-respected bird biologists throughout the East, and responsibility for national bird databases, Patuxent was in a position to participate in and affect the bird conservation movement, and participated in conservation planning and other wildlife organizational structures with all of these

nongovernmental organizations. Patuxent had for decades been an active participant in the Black Duck Joint Venture. It sponsored the organizational meeting for a Sea Duck Joint Venture. It had a field station in the "hot spot" of migratory bird land management thought and practice in Mississippi. After the alternatives had been analyzed, the BBS, established by Chan Robbins, turned out in my opinion to be the best way of estimating status and trends of North American migrant birds. The BBS bird point-count data have been digitized and archived (Robbins, 2016); Chan also undertook to digitize the Audubon Breeding Bird Censuses (Robbins, 1977). Patuxent recreated the colonial waterbird colony database (Erwin and Blohm, 2016), which it had first set in motion in the 1970s. Complementing and working with Partners in Flight and the U.S. Shorebird Plan, Patuxent took the lead in developing the North American Waterbird Conservation Plan (Kushlan and others, 2002). As these planning efforts came to fruition, Patuxent found itself a key player in the development of a continent-wide approach to bird conservation, crystallized in the public-private partnership of the North American Bird Conservation Alliance (Yaich and others, 2000). Patuxent scientists were active participants in the important scientific discussions about the North American Bird Conservation Initiative (NABCI), especially population status and trends and monitoring, and eventually in the state of the bird reports.

## Funding

The story of any Federal entity is tied to the story of its funding. Patuxent's funding during the period discussed in this chapter is shown in figure 1.

The reduction in funding from FY 1995 to FY 1996 included the loss of more than half of Patuxent's base funding. Instructions for dealing with this reduction were threefold: The Center for Urban Ecology was to be closed, half of the facilities funding was withdrawn, and employees needed to be terminated (which was called a reduction in force). With this decision, much of the urban planning and park science capabilities used by the NPS that had recently accrued to Patuxent was lost.

The loss of facilities support can be understood from the immediate prior history of Patuxent, when its management emphasis had shifted from pure research to, in addition, accumulating lands, building a Visitor Center, public use, and outreach. Apart from directed appropriations for construction, which indeed covered most of the costs, funding for management of the Visitor Center and of the lands of Patuxent came from the USFWS research budget, which was arguably viewed by some as decreasing the money available for research.

The rest of the decision making was left to Patuxent. Because the funds available for salary were insufficient to support the existing staff, I had to let some employees go. I made the decision to protect the research at all costs; therefore, no cuts and no reduction in force occurred for research and

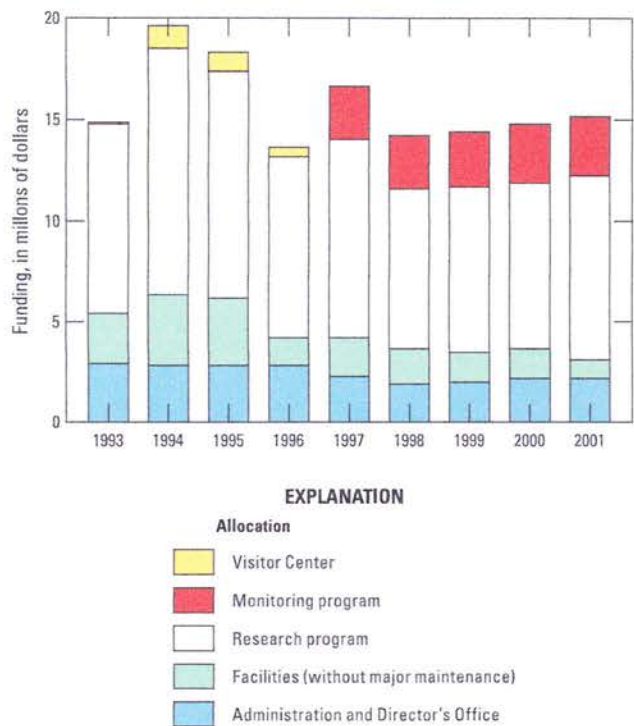
immediate research support positions (other than the Center for Urban Ecology). The rest of Patuxent took a substantial functional blow as facility, administrative, and other support staff positions were eliminated. Managing the force reduction required all of my available personal and professional skills. The result was that 26 people were fired, and, overall, 35 positions were vacated. These actions inevitably had adverse consequences for both morale and functionality at Patuxent. In any organization, recovery from such a mass firing can require a professional generation. The reduction in force was perhaps especially devastating for a Federal workforce for whom job loss was not in their history.

The FY 1996 and 1997 budgets reflect the Visitor Center's move to the USFWS (see the disappearance of the yellow part of the bar in figure 1). Although it initially came to the NBS, it was transferred back because it did not have a science function. This facility was funded to highlight the history of USFWS science throughout the United States, including Patuxent. Instead it became a highlight of the Patuxent Research Refuge. The FY 1997 budget shows the accretion of funds to support the monitoring program (shown in red in figure 1), including the BBL, the BBS, and other monitoring functions transferred to Patuxent. There was a steady increase in funding available for research beginning in FY 1998, peaking at more than \$9 million in FY 2001 (shown in white in figure 1). Monitoring funds also increased, to a little less than \$3 million in FY 2001. By FY 2001, research funding at Patuxent had returned to the level seen in FY 1993, before implementation of the NBS, which was able to support its return to national and international engagement.

## Facilities and the Land

Unexpectedly, facilities issues as well as science drove much of the transition at Patuxent's Laurel, MD, campus. Historically, as noted above, Patuxent and the land on which it stood were indistinguishable. The director of Patuxent was responsible for the research and for the land, which was used entirely for research, and facilities were built and converted to support it. From this trust of land and facilities came many of the internationally known fundamental management protocols for wetlands, refuge impoundments, game-bird enhancement, endangered species conservation propagation, bird banding, migratory bird conservation, contaminant studies, and the long list of other wildlife management advances. Patuxent and the lands were one. This relation became more complicated when additional lands, to be known as the South Tract and the North Tract, were accreted to the historic Central Tract from other Federal entities in the early 1990s. These lands were not intrinsically useful for research, but did add public use and even consumptive uses to the mix of management needs. Research and public use are generally not really compatible activities.

Facilities money in support of research at Patuxent disappeared in four steps. Many of the research facilities and



**Figure 1.** History of Patuxent Wildlife Research Center funding allocations, 1993–2001. (Graph modified from an unpublished presentation made by J.A. Kushlan at a meeting of Patuxent Wildlife Research Center staff, Laurel, MD, January 23, 2001.)

buildings at Patuxent were old, some historically so. It was certainly the case that in adding lands and the Visitor Center, funds that used to support these research facilities on the Central Tract were now used for broader purposes, resulting in an acceleration of degradation of the research facilities. Second, when deep budget cuts hit the NBS in FY 1994–95 and, because of the past history of Patuxent management accreting nonresearch responsibilities, Patuxent lost half of its facilities funds (see above). I recall well making a speech to the staff to urge them to think of Patuxent as consisting of people, not land and buildings—good for morale, but the land and the historic buildings were in Patuxent's "blood."

## The Future

This story as of this writing (2016) ended two decades ago; so much of what was then "future" has already passed. There have been three subsequent Patuxent directors and a USFWS refuge manager. Patuxent moved much of its staff to the USDA Beltsville Research Station and collapsed its office presence to one building. The biology discipline is no longer



an organizational unit of USGS. Since 2002, the USGS has divided its science programs and funding streams into the “mission areas” of climate and land-use change, core science systems, ecosystems, energy and minerals, environmental health, natural hazards, and water.

The USFWS and the USGS appeared to have engaged constructively to optimize existing science capabilities (Cohn, 2005). The next generation of managers and scientists will decide how the story of DOI biological science that began in the era of transition will proceed into the middle of the 21st century.

## Acknowledgments

I acknowledge with friendship and gratitude the people of the U.S. Geological Survey (USGS) Patuxent Wildlife Research Center (Patuxent), who are and always were exceptional people in many ways, and those who served as leaders and partners through the years of this story. Although I cannot name all of the hundreds of people who were in this mix, I would like to express my gratitude to some by name. First, thanks to Ron Pulliam and Sue Haseltine, and Dennis Fenn (USGS), who provided input to my historic perspective on Patuxent. I thank my more experienced advisors, especially Marshall Howe, Dick Jachowski, John Tautin, Dave Trauger, and Marilyn Whitehead (USGS). I acknowledge my long-standing and ever full of advice scientific colleagues at the USGS, Patuxent, especially Dick Banks, Paul Buckley, Mike Erwin, Mercedes Foster, Roy McDiarmid, Matt Perry, Barnett Rattner, Chan Robbins, and Melanie Steinkamp. I appreciate help in preparing this chapter from Dick Banks, Harry Coulombe, Matt Perry, Bruce Peterjohn, Bob Reynolds, John Tautin, and Marilyn Whitehead (USGS, Patuxent).

## References Cited

- Allen, D.L., 1954, *Our wildlife legacy*: New York, Funk and Wagnalls, 422 p.
- Ballard, I.H., 1989, *The Patuxent project—Part 1—External report*: Laurel, MD, Patuxent Wildlife Research Center, 152 p.
- Buckley, P.A., Francis, C.M., Blancher, P., De Sante, D.F., Robbins, C.S., Smith, G., and Cannell, P., 1998, *The North American Bird Banding Program—Into the 21st century*: *Journal of Field Ornithology*, v. 68, p. 511–692. [Also available at <https://sora.unm.edu/node/52264>.]
- Carson, R.L., 1962, *Silent spring*: Boston, MA, Houghton Mifflin, 368 p.
- Cohn, J.P., 2005, After the divorce—Improving science at Federal wildlife agencies: *BioScience*, v. 55, no. 1, p. 10–14. [Also available at [http://dx.doi.org/10.1641/0006-3568\(2005\)055\[0010:ATDISA\]2.0.CO;2](http://dx.doi.org/10.1641/0006-3568(2005)055[0010:ATDISA]2.0.CO;2).]
- Erwin, R.M., and Blohm, R.J., 2016, *Migratory Bird Program at the U.S. Geological Survey Patuxent Wildlife Research Center/U.S. Fish and Wildlife Service Patuxent Research Refuge: Transformations in management and research*, in Perry, M.C., ed., *The history of Patuxent—America's wildlife research story*: U.S. Geological Survey Circular 1422, p. 29–44. [Also available at <https://doi.org/10.3133/cir1422>.]
- Kushlan, J.A., 2011, Review—Wilderness warrior—Theodore Roosevelt and the crusade for America: *Auk*, v. 128, no. 3, p. 595–597. [Also available at <http://www.jstor.org/stable/10.1525/auk.2011.128.3.595>.]
- Kushlan, J.A., Steinkamp, M.J., Parsons, K.C., Capp, Jack, Acosta Cruz, Martin, Coulter, Malcolm, Davidson, Ian, Dickson, Loney, Edelson, Naomi, Elliott, Richard, Erwin, R.M., Hatch, Scott, Kress, Stephen, Milko, Robert, Miller, Steve, Mills, Kyra, Paul, Richard, Phillips, Roberto, Saliva, J.E., Syderman, Bill, Trapp, John, Wheeler, Jennifer, and Wohl, Kent, 2002, *Waterbird conservation for the Americas—The North America Waterbird Conservation Plan (ver. 1)*: Washington, D.C., Waterbird Conservation for the Americas, 78 p. [Also available at <http://www.waterbird-conservation.org/nawcp.html>.]
- Matthiessen, Peter, 1959, *Wildlife in America*: New York, Viking Press, 304 p.
- National Academy of Sciences, 1992, *Science and the National Parks*: Washington D.C., National Academy Press, 136 p. [Also available at <http://dx.doi.org/10.17226/2028>.]
- O'Connor, R.J., Dunn, Erica, Johnson, D.J., Jones, S.L., Petit, Daniel, Pollock, Ken, Smith, C.R., Trapp, J.L., and Welling, Erum, 2000, *A programmatic review of the North American Breeding Bird Survey*: Laurel, MD, U.S. Geological Survey Patuxent Wildlife Research Center, 36 p., accessed December 21, 2015, at <http://www.pwrc.usgs.gov/BBS/bbsreview/bbsfinal.pdf>.
- Patuxent Wildlife Research Center Quality Council, 1993, *Strategic plan—Patuxent Wildlife Research Center*, National Biological Survey: Laurel, MD, Patuxent Wildlife Research Center, 139 p.
- Perry, M.C., 2004, *The evolution of Patuxent as a research refuge and a wildlife research center*: Laurel, MD, U.S. Geological Survey, Patuxent Wildlife Research Center, 20 p., accessed September 13, 2011, at [http://www.pwrc.usgs.gov/history/cronhist/patuxenthistory\\_perry.pdf](http://www.pwrc.usgs.gov/history/cronhist/patuxenthistory_perry.pdf).

- Perry, M.C., 2016, Patuxent's development—The people and the projects, *in* Perry, M.C., ed., *The history of Patuxent—America's wildlife research story*: U.S. Geological Survey Circular 1422, p. 1–12. [Also available at <https://doi.org/10.3133/cir1422>.]
- Pulliam, H.R., 1998a, The political education of a biologist, part 1: *Wildlife Society Bulletin*, v. 26, no. 2, p. 199–202. [Also available at <http://www.jstor.org/stable/3784037>.]
- Pulliam, H.R., 1998b, The political education of a biologist, part 2: *Wildlife Society Bulletin*, v. 26, no. 3, p. 499–503. [Also available at <http://www.jstor.org/stable/3783762>.]
- Robbins, C.S., 1977, Data bank of North American breeding bird censuses: *Polish Ecological Studies*, v. 3, no. 4, p. 95–98.
- Robbins, C.S., 2016, Early avian studies at Patuxent, *in* Perry, M.C., ed., *The history of Patuxent—America's wildlife research story*: U.S. Geological Survey Circular 1422, p. 13–24. [Also available at <https://doi.org/10.3133/cir1422>.]
- Scott, J.M., and Sparrowe, R.D., 1999, 1999 review of Patuxent's Whooping Crane Research Program: accessed October 15, 2012, at <http://www.pwrc.usgs.gov/research/cranes/whoop2.htm>.
- Stone, Richard, 1993, Babbitt shakes up science at Interior: *Science*, v. 261, no. 5124, p. 976–978. [Also available at <http://dx.doi.org/10.1126/science.261.5124.976>.]
- Tautin, John, 2008, A history of the Bird Banding Laboratory—1920–2002, *in* Jackson, J.A., Davis, W.E., Jr., and Tautin, John, eds., *Bird banding in North America—The first 100 years*: Cambridge, MA, *Memoirs of the Nuttall Ornithological Club*, no. 15, p. 65–91.
- Tautin, John, 2016, The Bird Banding Laboratory—Support for and collaboration with research at Patuxent, *in* Perry, M.C., ed., *The history of Patuxent—America's wildlife research story*: U.S. Geological Survey Circular 1422, p. 45–52. [Also available at <https://doi.org/10.3133/cir1422>.]
- U.S. NABCI Committee., 2000, *The North American Bird Conservation Initiative in the United States—A vision of American bird conservation*: Washington, D.C., U.S. North American Bird Conservation Initiative Committee, 20 p. [Also available at <http://digitalmedia.fws.gov/cdm/ref/collection/document/id/1443>.]