On a crisp November morning, the sun is just beginning to rise on the horizon. A translucent fog clings to the river surface and at times veils the small gathering of ducks floating in the nearby river bend. As the sun lifts higher, a pale pink envelops the sky and the last remaining fog retreats into nothing. The sun’s warmth permeates the chill of the air, and one by one, the ducks take flight. A small aluminum boat sways slightly as a young girl pivots in her seat, presses the binoculars to her eyes and follows the ducks intently until they are well out of sight. Her dad lowers his gun, grins at his daughter, and says, “What a beautiful morning.” As he starts up the motor, he takes careful note of the surroundings, which include the “blue goose” signs that proudly declare this stretch of river part of the National Wildlife Refuge System. He smiles and remarks, “We’ll have to try this spot again tomorrow.”

Although my first hunting trip didn’t take place on a National Wildlife Refuge, I have fond memories of enjoying the outdoors with my dad. I was only seven when he took me hunting for the first time on a four day trip. The five hour drive to Maine felt like an eternity as I nervously anticipated meeting the “other dads and their kids.” I still remember the bumpy road to the cabin, the warmth of the wood stove and the smell of the venison stew. That first hunting trip turned into an annual tradition for my dad and I that lasted 15 years. It was during these trips that I asked questions incessantly and learned how to use a compass, saw my first deer rubs, mastered the art of silent observation, and discovered the wonder of nature and the desire to conserve it. This is what motivated me to build a career working on the special lands of the National Wildlife Refuge System.
National Wildlife Refuges in Massachusetts offer a multitude of outdoor recreational opportunities ranging from bird watching to canoeing to hiking. While hunting may seem contradictory to the very idea of a refuge, it in fact supports their funding, and just as importantly, allows the management of wildlife resources that could diminish species diversity.

by Stephanie Koch

If you’ve seen the “blue goose” signs, chances are you’ve already taken pleasure in what a national wildlife refuge has to offer. If you aren’t familiar with the signs, keep reading to find out what you’ve been missing! National wildlife refuges are federally designated lands that are managed by the U.S. Fish and Wildlife Service, which is part of the Department of the Interior. The National Wildlife Refuge System is over 100 years old and is the largest collection of lands anywhere in the world set aside specifically for wildlife conservation. The origins of the Refuge System take us back to Pelican Island, Florida, in 1903. Theodore Roosevelt — former President, legendary outdoorsman and avid hunter — established Pelican Island as the first federal bird reservation (later called national wildlife refuges) to protect breeding migratory birds such as brown pelicans that were then being indiscriminately and unsustainably harvested for the millinery trade market.

This was just the beginning of a long legacy of wildlife conservation nationwide. Today, the National Wildlife Refuge System includes 545 refuges and encompasses over 95 million acres of land, an area larger than the state of Montana! Refuges provide valuable habitat for over 200 species of mammals, 250 species of reptiles and amphibians, 700 species of birds, 1,000 species of fish, and countless species of plants and invertebrates. Although the primary purpose of these refuges is to provide habitat for wildlife, they also provide readily available recreational opportunities for people who love the out-
Beaver flowages are common to many national wildlife refuges in Massachusetts, most of which encompass and protect large amounts of wetland habitat.

doors. And, with at least one national wildlife refuge in every state, a refuge may be closer to you than you think.

With a population density of 818 people/square mile, Massachusetts earns the distinction of being the third most densely populated state, surpassed only

Congress has defined six priority public uses on National Wildlife Refuges: hunting, fishing, wildlife observation, photography, environmental education and interpretation. These uses are considered on every refuge, and each use is given equal consideration, but not every use is allowed on every refuge.

by Rhode Island and New Jersey (U.S. Census Bureau, 2004). Nearly a million and a half people reside in Middlesex County alone, in a landscape called suburbia. If you are one of the many people residing in suburbia, you might think enjoying a beautiful sunrise on the river involves a lengthy drive or an overnight campout in a tent. But the truth is, eastern Massachusetts is home to some of the most picturesque, biologically rich areas in the Commonwealth.

Since some of these areas are protected forever from development as national wildlife refuges, they are there in every season for you to enjoy the natural beauty of the outdoors. If you seek the slow meandering drift of your canoe on the river, or the melodic dawn chorus of territorial birds in spring, you should check out one of the national wildlife refuges in eastern Massachusetts.

There are 11 national wildlife refuges here in Massachusetts, eight of which are managed cooperatively through the Eastern Massachusetts National Wildlife Refuge Complex. Although the administrative office for these eight refuges is located in Sudbury, the 16,000 acres of land are distributed from Billerica to Shirley to Cape Cod and the Islands. These eight refuges are extremely diverse and the habitats they encompass support an incredibly complex assortment of wildlife and plants for you to enjoy.

Management of each refuge varies depending on the purpose for which it was established and the resources that it provides for fish and wildlife. Despite differences in management, however,
there are a number of congressional mandates that apply to every single refuge with respect to protection of fish and wildlife and public recreation and enjoyment. Through Executive Order 12996 and the National Wildlife Refuge System Improvement Act of 1997, Congress defines six priority public uses: hunting, fishing, wildlife observation, photography, environmental education and interpretation. These uses are considered on every refuge, and each use is given equal consideration. Not every use is allowed on every refuge, but when it’s determined that the use is not going to interfere with or detract from the mission of the Refuge System or the purposes for which the refuge was established, every effort is made to allow that use. This is great news for you if you love the outdoors, but to maximize your enjoyment of a refuge, be sure to familiarize yourself with the specific regulations of the refuge you are visiting, especially since recreational opportunities sometimes change through the years.

Last October, for example, the onset of multihued canopies signified more than a change in seasons. It also marked a significant change in management of three national wildlife refuges in eastern Massachusetts as we initiated new and expanded public hunting programs on the Assabet River, Oxbow, and Great Meadows National Wildlife Refuges. Now I know some of you probably just gasped at the thought of hunting on a national wildlife refuge. If you aren’t a hunter, you might be mystified by the apparent contradiction of hunting and conservation.

But, did you know that hunting has been allowed on many national wildlife refuges for decades? Hunting is a time honored tradition which is practiced by millions of Americans, and while, to some, it may seem out of place in eastern Massachusetts, a closer look reveals that hunting is not only appropriate, but essential in maintaining biodiversity in some refuges adjacent to suburban environments.

The Hunters’ Contribution

Being close to nature is a common bond among most refuge visitors. Massachusetts residents may hold diverse values, but many share a love for the outdoors and support wildlife and habitat conservation. While some Massachusetts residents may oppose hunting for various reasons, there are 70,000 hunting licenses issued annually in the Commonwealth reminding us that hunting continues to be a very popular form of recreation pursued by many. A growing cultural stigma with respect to hunting may be unfairly condemning hunters as killers of wildlife. Hunting is a form of sustenance combined with recreation that dates back hundreds of years however, and for most hunters, the sport isn’t just about shooting a duck or a deer; it is about the experience of being a direct participant in the natural world. Hunters often recall smelling the moisture in the air, hearing the twigs breaking under foot, observing the subtle changes of a progressing season, or teaching a son or daughter to recognize tracks in the mud or snow.

A flock of Canada geese forage at Great Meadows NWR in a section of the refuge located in Concord. This refuge encompasses parts of six other towns as well.
Your National Wildlife Refuges in Massachusetts

Here in Massachusetts there are 11 National Wildlife Refuges, eight of which are managed cooperatively through the Eastern Massachusetts National Wildlife Refuge Complex. For information on all of these refuges and refuges nationwide, visit www.fws.gov/refuges. In addition to protecting important habitat, the Assabet River, Great Meadows and Oxbow Refuges provide numerous wildlife-dependent recreational opportunities.
The Assabet River National Wildlife Refuge consists of 2,230 acres of protected wildlife habitat in the towns of Hudson, Maynard, Stow and Sudbury. This land had been protected by the Army for almost 60 years before recently being incorporated into the National Wildlife Refuge System. About 75% of the refuge is upland habitat consisting largely of hardwood species. In addition to providing habitat for numerous species considered threatened or endangered by the Commonwealth of Massachusetts, the refuge also includes several rare wetland types.

The Great Meadows National Wildlife Refuge is located in east-central Massachusetts, approximately 20 miles west of Boston in the historic towns of Bedford, Billerica, Carlisle, Concord, Lincoln, Sudbury and Wayland. This refuge contains 3,863 acres and stretches 12 miles from Route 4 in Billerica to the Framingham/Wayland Town line. The biological resources of the refuge are valuable to both resident and migrant wildlife. Much of the refuge consists of river (Sudbury and Concord) and river floodplain habitat, and provides valuable breeding, feeding, and resting sites for secretive marsh-birds (such as rails), ducks and songbirds. A variety of fish, reptiles and amphibians also make use of the variety of wetlands found throughout the refuge.

Oxbow National Wildlife Refuge contains 1,677 acres in the towns of Ayer, Harvard, Lancaster, and Shirley. It is located within the southern edge of the northern hardwoods forest region and is primarily a riparian community consisting of forested wetlands, shrub swamps and oxbow ponds associated with the Nashua River. This refuge provides habitat for a diverse assortment of species including rare birds, reptiles, amphibians, and plants.

For more information about the biological resources and recreational opportunities these National Wildlife Refuges have to offer, please visit www.fws.gov/northeast/easternmanwrcomplex

While our National Wildlife Refuges encompass hundreds of acres of upland as well as lowland habitats, the three featured here (especially Great Meadows and Oxbow) are especially important for their roles in preserving riparian (river) habitats. Visitors can always expect to see common species such as this Belted Kingfisher, but these areas also support many secretive marsh birds, songbirds, raptors, mammals, reptiles, amphibians, fish, insects and other invertebrates.

Hunters not only appreciate the nature that surrounds them, they may do more to protect it than you realize. Hunters have long been in the front lines fighting for habitat and wildlife conservation, and since the 19th century have made countless contributions to conserving the nation’s wildlife resources. After formally designating protection of what would become the first ever national wildlife refuge, former President Theodore Roosevelt went on to establish a total of 55 bird preservation and national game preserves.

Hunters have also figured prominently in funding the purchase of National Wildlife Refuges. Fees generated from Federal Duck Stamp purchases (required for all migratory waterfowl hunters since 1934) have generated more than $671 million dollars (98 cents of every stamp dollar!) that have gone towards the purchase wetland habitat, and over 5 million acres of that habitat have been incorporated into the National Wildlife Refuge System. Although generated from hunters, money from these sources benefits more than ducks, as these funds support large scale habitat protection benefiting all species utilizing the habitat. Did you know that the Great Meadows, Monomoy and Parker River National Wildlife Refuges were all funded in part by Federal Duck Stamp money?
The Great Meadows NWR contains sections of two rivers (the Sudbury and Concord) and offers exceptional fall color to canoers in the autumn.

Similarly, a federal excise tax on firearms and ammunition, dating back to passage of the Pittman-Robertson Act in 1937, still generates millions of dollars annually for conservation programs that benefit wildlife across the United States. State wildlife conservation programs are partially funded from the sale of hunting licenses, tags and stamps. In Massachusetts, 90-95 percent of the Division of Fisheries and Wildlife's funding is derived from license sales and the federal excise taxes on hunting and fishing gear. Unlike other state agencies, it receives no funding from the state's taxpayer-generated General Fund.

A Management Role

On a national level, the number of hunters is declining, and some wildlife species that were traditionally hunted are now increasing. Increasing populations of wildlife aren't always a good thing. For example, states such as New Jersey and Pennsylvania are facing the challenge of managing too many deer on too little land. An excessively high deer density causes a loss of habitat that is important to other wildlife species, as well as to the health of the overall deer population. An uncontrolled deer population will eat everything it can reach, resulting in a total absence of green vegetation from the ground to as high as a deer can stretch (commonly referred to as the "browse line").

Too many deer can literally prevent forest regeneration, totally eliminate rare plant species, and cause drastic declines in biodiversity. Maintaining the deer population at a level commensurate with available land and suitable habitat will preserve the health of the population and the habitats it shares with other wildlife populations, including nesting birds and rare plants. In Massachusetts, habitat loss and fragmentation (due to suburban sprawl) threaten to create this same scenario, but the Massachusetts Division of Fisheries and Wildlife has been working diligently to stay ahead of a potentially explosive deer population. The last four or five years has brought significant changes to statewide regulations with respect to hunting, including longer seasons, larger bag limits and increased allocations of antlerless deer permits in areas with increasing deer populations and decreasing habitat.
Hunting on Your National Wildlife Refuges

Today, with more than 545 wildlife refuges nationwide, hunters have many opportunities to enjoy hunting. These special places offer hunters the best of the American outdoors. For a comprehensive list of refuges that welcome hunters, visit www.fws.gov/hunting or call 1-800-344-WILD.

What has been the result of this structured deer management program in Massachusetts? MassWildlife has been able to decrease deer populations in areas of the state where the numbers threatened other native species and habitat, but has also been able to increase deer populations in areas of the state that can support larger numbers. However, limitations on hunter access – particularly in regards to large blocks of protected land where hunting is not allowed – remain an obstacle to effective deer management across Massachusetts. These large “no hunting” areas are providing refuge for deer and may be undermining the carefully managed public hunting program.

We cannot overlook the importance of hunting (in some situations) as an effective wildlife management tool. While there are other alternatives (birth control or contracted large scale culling programs are typical suggestions by those opposed to hunting), a well managed public hunting program is the most efficient method of deer management, and additionally allows harvested animals to be consumed as a public resource.

Hunting on national wildlife refuges makes sense both as a form of wildlife-dependent recreation and a form of wildlife management. Here in Massachusetts, opening these additional lands to deer hunters will provide additional opportunities for hunters to participate in this healthy outdoor activity while simultaneously helping the state achieve its management goals. Increased hunting will help minimize negative interactions between the public and wildlife (for example, deer collisions and incidents of Lyme disease, both of which are a significant threat to public health and safety) and provide a healthy diversity of habitats for other species to utilize!

We received applications from approximately 450 people who were interested in participating in the new and expanded hunting programs on the Assabet River, Great Meadows and Oxbow National Wildlife Refuges in 2005. We expect to receive more applications for the 2006 season as more people learn about these hunting opportunities. We are committed to providing a safe, quality hunting experience, as well as providing for the safety of the non-hunting refuge visitors. Despite significant initial concern from refuge visitors and neighbors, we have had very few complaints since implementation of these programs. Our hunt programs are being managed in accordance with Massachusetts state laws and regulations to ensure consistency and the safety of all participants, and in some areas we have implemented stricter regulations. For example, in some areas of the refuge, hunting is not allowed; in others, only archery hunting is permitted. We also require all hunters to obtain a refuge permit to scout and hunt, and we limit the number of permits issued for the most popular hunting seasons.

As we begin to plan for the year ahead, we would appreciate feedback from all refuge visitors regarding recreational opportunities and wildlife management. If you’d like to be on our mailing list to receive updates about the 2006 hunting program, including open permit application timeframes, please email Michael_Dixon@fws.gov. If you’d like to learn about other recreational opportunities or wildlife management on the refuges, please visit our website at www.fws.gov/northeast/easternmanwrcomplex or just call us at 978-443-4661.

We will continue to embrace the complexity and challenges associated with managing multiple public uses on our national wildlife refuges and hope to see you on the refuges soon!

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