



2019-20  
RESEARCH &  
MANAGEMENT  
REPORT

Regional Wildlife Management

---

Download additional reports at  
[mefishwildlife.com/wildlifereport](https://mefishwildlife.com/wildlifereport)



## 2019-20 RESEARCH & MANAGEMENT REPORT

Maine Department of Inland Fisheries and Wildlife protects and manages Maine's fish and wildlife and their habitats, promotes Maine's outdoor heritage, and safely connects people with nature through responsible recreation, sport, and science.

### Regional Wildlife Management

Introduction .....	1
Region A: Gray .....	3
Region B: Sidney.....	4
Region C: Jonesboro.....	6
Region D: Strong.....	7
Region E: Greenville.....	12
Region F: Enfield.....	13
Region G: Ashland .....	14
Biologist Assigned to Bureau of Parks & Lands .....	15
Lands Management Program.....	17

Download additional sections at  
[mefishwildlife.com/wildlifereport](http://mefishwildlife.com/wildlifereport)

- » Game Mammals Conservation & Management
- » Habitat Conservation & Management
- » Endangered and Threatened Species Conservation & Management
- » Non-Game Mammals Conservation & Management
- » Beginning with Habitat Updates
- » Bird Conservation & Management
- » Reptile, Amphibian, and Invertebrate Conservation & Management

---

Compiled and edited by Diana Harper  
and Lauren McPherson

#### Maine Department of Inland Fisheries & Wildlife

284 State Street  
41 State House Station  
Augusta, ME 04333-0041  
207-287-5202

#### Project Funding

These studies are financed in part through Federal Aid in Wildlife Restoration Funds under Projects 88D and 87R and through State Wildlife Grants.

The Department of Inland Fisheries and Wildlife receives Federal funds from the U.S. Department of the Interior.

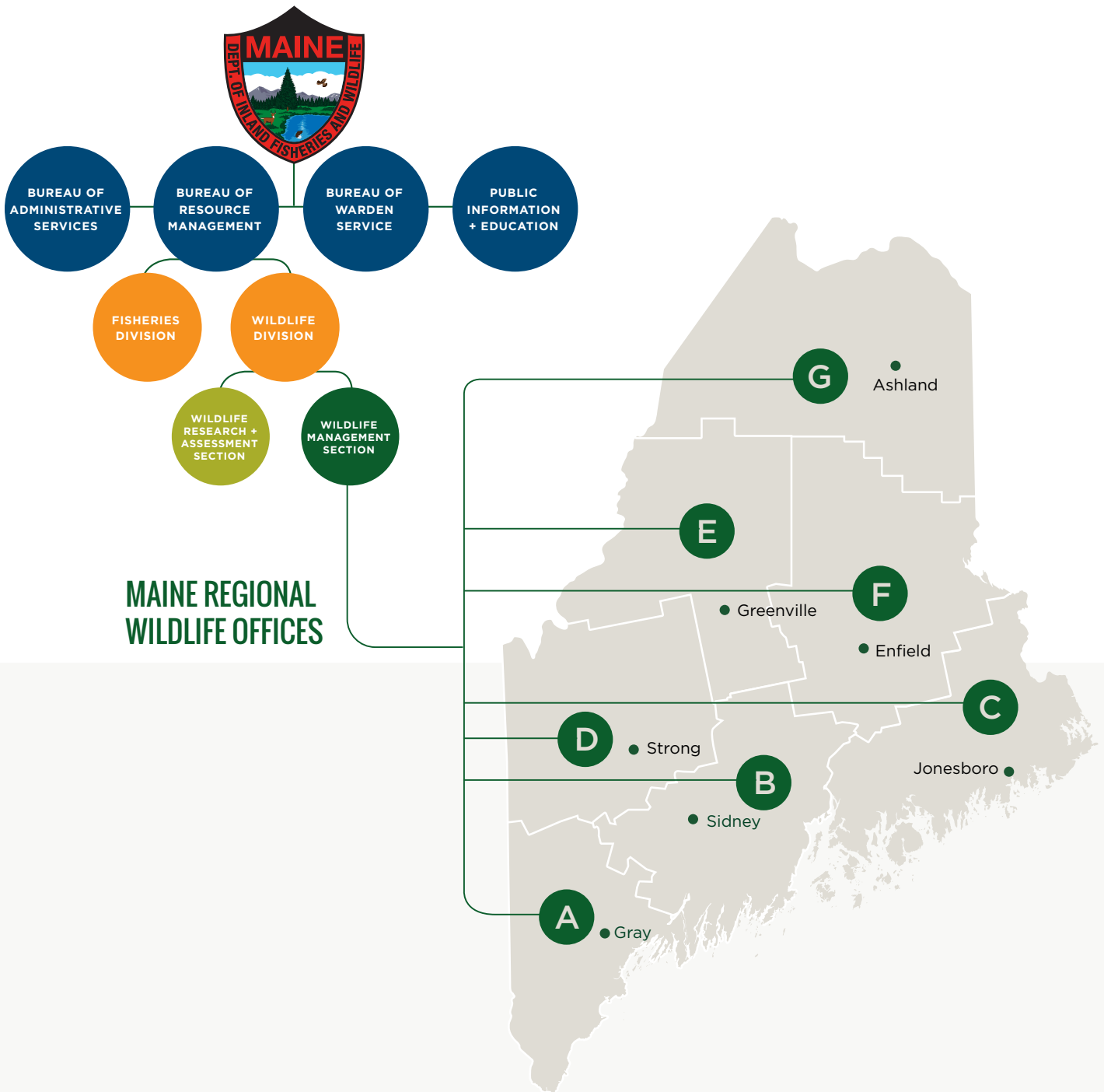
Accordingly, all Department programs and activities must be operated free from discrimination in regard to race, color, national origin, age or handicap. Any person who believes that he or she has been discriminated against should write to The Office of Equal Opportunity, U.S.



# WILDLIFE MANAGEMENT

Ryan Robicheau

The Wildlife Management Section is MDIFW’s on-the-ground wildlife management work program. It is organized into seven regional geographic districts throughout the state, with regional offices in Gray, Sidney, Jonesboro, Strong, Greenville, Enfield and Ashland. Each office is set up to allow for interactions with the public and to facilitate administrative oversight within the respective region.





In addition to Regional Wildlife Biologists, the Wildlife Management Section also contains the Lands Management Program, which is focused on habitat management throughout the state, primarily on Wildlife Management Areas (WMAs), and we also employ a wildlife biologist assigned to the Maine Department of Agriculture, Conservation and Forestry.

The work program encompasses biological data collection for species management purposes, planning and implementation of wildlife habitat management on state and private lands, environmental review of development projects, development of statewide regulatory recommendations, administration of the Animal Damage Control Program, working with wildlife rehabilitators, and providing technical assistance and public outreach.

Truly comprehensive in its scope, the Wildlife Management Section touches on all aspects of the Department's approach to wildlife management. For the public, regional wildlife biologists are the main points of contact for wildlife issues in the state, and they serve as important conduits for information coming in and out of the Department.

This report includes articles written by Wildlife Management Section staff, focused on work developed and implemented under one of the Wildlife and Sportfish Restoration (WSFR) grants received by the Department from the United States Fish and Wildlife Service. This funding is administered by the Department under the Federal Aid in Wildlife Restoration act of 1937 (commonly referred to as the Pittman-Robertson Act). The Act created a federal tax on firearms, ammunition, and other sporting goods to be used for the conservation and

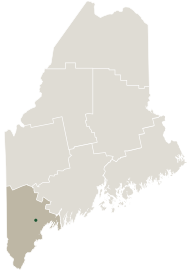
management of bird and mammal species in the United States. Funding from this legislation has proven essential for state fish and wildlife agencies to research, develop, and manage scientifically based programs that conserve birds, mammals, and their habitats.

The articles that follow highlight some of the work we have done, often with the help of our conservation partners, both on state-owned WMAs and on private land. We greatly appreciate the landowners who partner with us to manage their land for healthy fish and wildlife, and who give the people of Maine incredible opportunities to hunt, fish, trap, and more.

MDIFW currently owns and manages just over 108,800 acres of State WMAs and utilizes a WSFR grant to fund wildlife habitat management and public access improvements on those properties. Work activities covered under the grant include:

- Construction, improvement, and maintenance of roads, bridges, and parking areas
- Vegetation control (i.e., mowing of field and shrub habitats)
- Timber management
- Prescribed fire
- Waterfowl and other nest structures and platforms
- Wetland enhancement/water level control
- Plantings
- Herbaceous seedings

Developed and implemented by highly dedicated staff, and guided by management plans, these activities help the Department meet its objectives of maintaining high-quality wildlife habitat and recreational opportunities in Maine. I encourage the reader to explore these Wildlife Management Areas, or to contact us to learn more about them.



## REGION A GRAY

15 Game Farm Road  
Gray, ME 04039  
(207) 287-2345

**Scott Lindsay**  
*Regional Wildlife Biologist*

**Cory Stearns**  
*Assistant Regional Wildlife Biologist*

**Brad Zitske**  
*Assistant Regional Wildlife Biologist*

# Kennebunk Plains Wildlife Management Area: Maintaining Rare Habitats Through Active Management

Scott Lindsay

Region A spans nearly 30,000 acres from the foothills of the White Mountains to the coastal plain, and features the state's widest range of habitat types and highest levels of plant and wildlife biodiversity.

The nine Wildlife Management Areas (WMAs) in Region A all offer recreational opportunities and large blocks of valuable wildlife habitat. But some — such as Kennebunk Plains WMA in Kennebunk — were acquired specifically to conserve a rare habitat type and the species that depend on it.

Kennebunk Plains is home to perhaps the largest stand of the showy Northern Blazing Star (*Liatris scariosa*) in the world — a rare plant that puts on a show in late summer when it flowers throughout the plains. The site also hosts populations of the state-endangered Grasshopper Sparrow (*Ammodramus savaanarrum*), the state-endangered Northern Black Racer Snake (*Coluber constrictor*) and the state-threatened Upland Sandpiper (*Bartramia longicauda*).

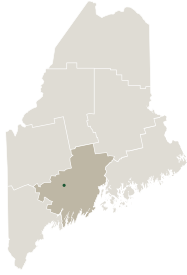
The 1,800-acre WMA contains 600 acres of sandplain grassland, initially a gift from the glaciers as they receded from Maine about 12,000 years ago. The sandplain persisted due to natural (and later man-made) fire, some lumbering, and development as a commercial blueberry farm. The sandplain is the best of its type in Maine, and is surrounded by two rare forest communities: pitch pine — heath barrens and pitch pine — scrub oak barrens. These three habitat types are exceedingly well-drained, and the plants found within them are adapted to dry, nutrient-poor conditions.

If left alone, the sandplain would mature into forest, which is happening to a certain extent today; and the surrounding rare forests would mature into a common pine-oak forest. If this were to happen, the species specially adapted to these habitats would decline and eventually lose viability at this site, becoming another casualty of habitat loss on a developing landscape.

Since acquiring this fire-dependent sandplain grassland habitat, MDIFW biologists from Bangor and Gray, along with our partners at The Nature Conservancy, have managed the habitat through prescribed fires in the spring and fall.

We managed the surrounding forest communities to a much lesser extent until 2016 and 2017 when, with biologists' input and under the supervision of MDIFW Lands Program foresters, we harvested three sites totaling about 140 acres. Our goals were to thin out the stands, open the canopy, and promote more regeneration of the critical shrub layer, all while maintaining the habitat connectivity needed to manage viable wildlife populations.

This work will return the stand to a more open pitch pine — oak woodland and favor regeneration of desired pitch pine instead of more shade-tolerant hardwoods. This will benefit wildlife species that use this habitat, most notably the Black Racer snake — a subject of many years of research and monitoring by MDIFW's Herptile and Invertebrate Group biologists. With these forested blocks now managed through timber harvest, they will soon be ready for management with prescribed burning — a worthy effort by MDIFW and TNC staff to preserve the gem of ecological diversity that is the Kennebunk Plains WMA.



## REGION B SIDNEY

270 Lyons Road  
Sidney, ME 04330  
(207) 287-5300

**G. Keel Kemper**  
*Regional Wildlife Biologist*

**Kendall Marden**  
*Assistant Regional Wildlife Biologist*

**John Pratte**  
*Assistant Regional Wildlife Biologist*

### Merrymeeting Bay Wildlife Management Area: Green Point Unit

G. Keel Kemper

The Wildlife Management Areas (WMAs) owned and managed by MDIFW throughout the state contain the full suite of wildlife habitats from prime uplands to rare wetlands. Some are remote, obscure areas that the public rarely visits; but occasionally we acquire a property so unique that, once the word gets out, it becomes a public favorite and gets considerable use almost every day. The Green Point unit of the Merrymeeting Bay Wildlife Management Area, located in Dresden, is just such a property... and you should check it out!

The Green Point unit is part of the Eastern River compartment of the much larger Merrymeeting Bay Wildlife Management Area. Located at the confluence of the Eastern and Kennebec Rivers and accessed via Rte. 128, the property consists of 483 acres, 81 of which are considered prime agricultural lands, plus over 12,000 feet of shoreline along both rivers and Merrymeeting Bay.



This area, formerly known as the Green Point Farm, was actively farmed by Steve Powell and his nephew Robert Gleason for many years. The property contains superior agricultural soils, is surrounded by several multi-generational family farms, and has long been a part of Dresden's rich agricultural history. Since acquiring the property in 2000, MDIFW has leased Green Point's farmlands annually to neighboring farm families, enabling them to more effectively manage their own lands and rotate the use of their fields for peak productivity. The income from these agricultural leases is covered under a grant agreement with the U.S. Fish and Wildlife Service, wherein all monies received are placed in a dedicated account and must be used within a specified focus area. Examples of approved expenditures include legal fees for land acquisition, wildlife management activities, and maintenance of facilities on MDIFW properties.





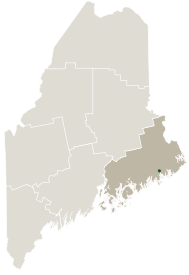
The Green Point unit has two unique habitat components: a very large apple orchard and several very large maintained fields.

Following acquisition, several efforts were made to prune, release, and improve the existing apple orchard. The upper orchard is well-maintained, bees are kept there to increase soft mast production, and annual mowing allows for easy public access. The lower orchard has been left unmanaged to provide dense cover for wildlife and exceptional hunting opportunity. A seasonal gate limits vehicular access, but pedestrian access is encouraged. A half-mile walk from the gate along the improved road leads to the “Green Point” and its expansive views of Merrymeeting Bay.

The northern end of the Green Point unit contains two very large open fields, which are mowed at least once a year to maintain early successional habitat. These fields are ideal for “field trials” and as such are utilized by several of the local dog clubs. Volunteers from the North American Versatile Hunting Dog Association have given back to the property through a variety of projects and also volunteer their time to mow the fields, saving the Department a considerable expense.

MDIFW provides a different experience on lands we manage, rooted in our commitment to open access and our encouragement of hunting, trapping, fishing, and other types of natural resource appreciation. Not all conserved lands within the Merrymeeting Bay area have the same management philosophy. This provides a strong argument for MDIFW to continue to acquire and manage its own lands for the benefit of Maine’s wildlife and its people.

Green Point is a very special place. Put it on your bucket list of properties to visit, as it will not disappoint.



## REGION C JONESBORO

317 Whitneyville Road  
Jonesboro, ME 04648  
(207) 434-5927

**Steve Dunham**  
*Regional Wildlife Biologist*

**Carl Tugend**  
*Assistant Regional Wildlife Biologist*

**Joshua Matijas**  
*Assistant Regional Wildlife Biologist*

### Cobscook Bay Wildlife Management Area: the Crown Jewel of the Downeast Coastline

Steve Dunham

Considered by many to be the crown jewel of the Downeast coastline, Cobscook Bay's iconic shores, powerful tides, and expansive mudflats are big attractions for people and wildlife alike.

Cobscook, the Maliseet-Passamaquoddy tribal word for "boiling tides," appropriately describes the area's unusually large tides, which rise and fall 24 feet. The Cobscook Bay area encompasses the tidal waters of Denny's Bay, Whiting Bay, Straight Bay, Pennamaquan River, and East Bay, as well as the adjacent shoreline.

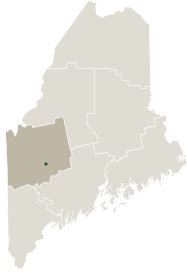
Cobscook Bay is a hydrologically and geologically complex estuary, with nutrient-rich Gulf of Maine waters and relatively low levels of human disturbance or development enabling high levels of biodiversity and productivity. Thousands of shorebirds forage and roost here on their annual migrations, attracted by the abundant seaweeds and phytoplankton in waters and the diverse intertidal invertebrates in the mudflats.

During the winter, the bay provides wintering habitat for waterfowl and, during certain periods, may contain up to 25% of Maine's black duck population. Cobscook Bay also played a key role in the restoration of bald eagles to the northeast and still contains the highest density of nesting bald eagles in the region.

The Cobscook Bay Wildlife Management Area is a network of 10 units comprising over 2,000 acres of land in a mix of tidal shoreline, freshwater wetlands, and upland habitats with numerous apple trees dotting the landscape. The area was historically farmland, and MDIFW continues to mow a series of small fields each year to maintain "old field" habitat conditions. We also mow many of the old woods roads each year for recreational and management access. A network of trails, part of the larger Cobscook Trails complex, are maintained on several of the units for additional recreational opportunities.

Last year, MDIFW Region C staff cleared and maintained about five miles of trail, and a permit was issued to Cobscook Shores to clear and maintain a new trail on the Race Point unit. With all of this new access, birders looking to see a diverse suite of species or upland bird hunters looking for woodcock, ruffed grouse, or turkey should definitely plan a trip to Cobscook Bay WMA.





## REGION D STRONG

689 Farmington Road  
Strong, ME 04983  
(207) 778-3324

**Chuck Hulsey**  
*Regional Wildlife Biologist*

**Sarah Boyden**  
*Assistant Regional Wildlife Biologist*

### Strong Wildlife Management Area: Habitat for Wildlife and More

Chuck Hulsey

The highest priority for uplands and wetlands designated as Wildlife Management Areas (WMAs) is the management of wildlife and their habitats. In the 1950s and 1960s, MDIFW primarily acquired WMAs for waterfowl production, with the purchases often funded by the Pittman-Robertson Federal Aid to Wildlife Restoration Act. This landmark legislation, enacted in 1937, may be the most important piece of legislation ever passed to restore and actively manage for wildlife.

Today, WMAs serve many purposes beyond waterfowl production. With input from various stakeholders, regional wildlife biologists write and follow management plans that address the needs of many different species. If a species is rare, or protected as Threatened or Endangered, then biologists might use intensive habitat management measures for their benefit, such as the prescribed burning that maintains dense, shrubby New England cottontail habitat in some southern Maine WMAs. More broadly, WMAs give the public access to natural landscapes for wildlife viewing, photography, canoe/kayak, hunting, trapping, and more.

The origin of the Strong WMA is unique: MDIFW purchased the 93-acre property in 1969 to relocate five regional biologists from a rental in Farmington to a department-owned modular home on the property. The headquarters and land span both sides of U.S. Route 4, four miles east of the village of Strong. While the property technically does not have frontage on the Sandy River, it does have “river-bottom” land with older red oaks and maples growing on a significant backwater connected to the Sandy River — a favored habitat for deer, gray squirrels, and wood ducks.

Locally known as the Hunter Farm, all the forested upland on the property was harvested heavily prior to being sold, and the nine acres of field were mowed by a neighbor for hay until the late 1980s when the neighbors sold their livestock. The WMA’s first wildlife habitat management practice was allowing the neighbor to keep the cut hay. This prevented natural plant succession of the fields, which otherwise would revert to shrubs and then trees. When that opportunity was lost, Region D wildlife staff took over the mowing by borrowing a tractor and bush hog from another region. Since then, we have mowed the fields every other year to provide ground cover for small wildlife. This schedule extends the flowering period to benefit pollinators and maintains milkweed utilized by butterflies and moths. Being an old farm site, one field has a large patch of mature blackberries. In a mowing year, we mow paths within the patch to rejuvenate growth and create better access for berry picking — a popular activity among the locals.



*One of the four fields at the Strong WMA with two seasons of growth to maintain ground cover but remain as a field. Plants with yellow leaves are milkweed. Photo by Chuck Hulsey*



The flowers of milkweed are highly attractive to pollinators, as are the maturing pods.

In July 1981, biologists at the U.S. Fish and Wildlife Service Moosehorn National Wildlife Refuge in Calais published *A Landowner's Guide to Woodcock Management in the Northeast*, which describes their research results and gives landowners step-by-step instructions to improve their lands for woodcock. In 1985, Assistant Regional Wildlife Biologist Tom Schaeffer saw an opportunity to adopt these practices at the Strong WMA and hired a recent biology graduate from the University of Maine at Farmington to begin cutting small patches in the alder and young second-growth hardwood stands surrounding the fields.

## Management Moving Forward

The greatest return from this WMA is the ability it gives us to demonstrate and promote management practices that other landowners can use to benefit wildlife species, especially those with greater conservation need. It also gives us a chance to manage habitats that are less common in the region.

The four components of habitat are food, water, cover, and space. When any of the four are absent or lacking (in quality or abundance), they are known as **Limiting Factors**. Wildlife habitat management is all about creating, sustaining, or increasing lacking habitat components. Simple, right? Not so fast. Here's why:

First, *no two species will occupy the exact same role (niche) in an ecosystem*. This affords greater species diversity because they are not competing for the same resources. In human terms, not everybody in your town can be a plumber and still have enough work. So, *all species have habitat needs that are specific to them*. Bluebirds utilize fields and chickadees the forest. Okay, that's easy, right? Not so fast, it is more interesting than that.



Within a species, *habitat needs often differ based on time of year, age, and sex*. At the Strong WMA, we prioritize management activities based on the species we can reasonably expect to be in the area and the ability of the land to provide at least one of its required habitat components. It is okay if the habitat can only meet one or two of those needs.

## Four Areas of Focus at the Strong WMA

### 1. American woodcock

This small and popular upland game bird is highly dependent on fields and younger forests. The steady loss of fields to development and natural plant succession have led to critical woodcock habitat loss throughout its eastern North American range. At the Strong WMA, we are able to manage the land for woodcock roosting, courtship, nesting, foraging, and cover.

#### MANAGING FOR ROOSTING AND COURTSHIP

Woodcock use fields and open areas for roosting at night, and males use such areas for their springtime courtship display.

Maintaining roosting and courtship habitat is straightforward: we keep fields as fields through periodic mowing. Short grass like a lawn is not desirable, nor is a field overtaken by shrubs. Why are shrubs a negative? Because woodcock have large eyes positioned on the sides of their head. This is to see danger if it comes near. *Eyes in front, born to hunt, eyes on the side, better hide*. Shrubs impede their ability to watch for danger.

Mowing every other year (or every third year) allows grasses, but not trees or shrubs, to develop. You can also create similar habitat with small clearcuts distributed over space and time, or with log landings, especially if you seed the area with a mix of grasses and legumes once the log landing is no longer needed.

### MANAGING FOR NESTING, FORAGING, AND COVER

For nesting, female woodcock prefer young, second-growth (not mature) stands of deciduous trees and alders, ideally near fields or large forest openings. Here, they build nests on the ground and the leaf litter helps them to blend with their surroundings.

This habitat also offers both sexes daytime shelter and the chance to use their long, pointed bills to probe for their favorite food: earthworms. Hardwoods, which demand better soil quality than conifers, and alders, which as legumes fix atmospheric nitrogen in the soil, create conditions where earthworms thrive.

The right habitat can also help the woodcock to escape predation. Woodcock are cryptically colored (hard to spot), so their first choice is to sit tight and blend in with the ground litter.

When hiding doesn't work, they can also explode off the ground into a weaving and dodging flight. Built somewhat like a fighter jet with a compact body and short, rounded wings, they are capable of a quick take-off, speed, and great maneuverability in tight places.

To take advantage of both options, they desire diurnal (daytime) cover with a high density of young, vigorously growing hardwood or alder stems, but not so much ground vegetation as to hinder an escape flight.

This is achieved and sustained with frequent patch clearcuts, distributed over space and time. Clearcutting stimulates sprout growth and produces multiple stems originating from a single tree stump. Stands created by clearcuts become good cover at 10 years and can last another 20-30 years. Around age 40, alders become over-mature and start to decline. When that happens, other vegetation takes over and the site becomes less attractive to woodcock.



High-density aspen stems from a clearcut like this provide ideal daytime cover. Photo by Chuck Hulseley

At the Strong WMA, the 10 acres of alder stands as well as the low-lying hardwood stands are designated for frequent, small patch clearcuts. We conducted some cuttings in the 1980s and 1990s, and will be cutting more areas in the immediate future. The objective is to rotate the cuttings so there are always some tree/alder stands at the ideal age of 10-20 years old.

### 2. Passerines (Songbirds) and Pollinators (Insects)

The WMA has four fields totaling nine acres which we mow every other year. The habitat that this creates has been beneficial to many species.

Unfortunately, it is not very common in Maine for two reasons: First, Maine is 90% forested; and second, most fields are managed for agricultural crops, including hay. Hay is usually cut twice a season, which does not afford for the development of much cover for nesting birds or flowers beneficial to pollinators.

Looking ahead, we plan to further optimize the land for pollinators — a management action supported by several factors:

- **The ripple effect** - Managing for pollinators benefits many wildlife species, including passerine birds.
- **Promotional value** - Promoting this practice could draw interest from landowners new to wildlife habitat management.
- **Cost/benefit** - The cost is lower than managing for food plots because treatments to the soils and vegetation are good for several years and need not be done annually.
- **Safety** - U.S. Route 4 bisects the two largest fields. Planting to attract large-bodied wildlife could result in an increase in collisions with vehicles.

To promote more beneficial pollinator habitat on the WMA, we scheduled an assessment of the fields for this spring with a forestry/wildlife consultant who specializes in managing fields for pollinators, including soil testing, tilling, application of lime for proper pH, fertilizing, and seeding with a variety of plants attractive to these species.

He has done this work for other MDIFW regional wildlife biologists, and we were looking forward to working closely with him but unfortunately, due to Covid-19, he was unable to come to Maine and quarantine properly. This put our new management action for the fields temporarily on hold, although we will still mow them in fall 2020.

### 3. Forest Interior Wildlife

Many wildlife species benefit from what is termed the *edge effect* — the highly-desirable and diverse conditions that exist at the spot where two or more habitat types meet.

Some wildlife species, however, don't occupy the edges. In forested habitats, species that avoid them are called *forest interior species*. This relates back to the beginning of this piece and how no two species will compete for the same resource. For example, the fields provide foraging habitat for the kestrel (a small, colorful falcon). But another raptor, the goshawk, does not benefit. Instead, they nest and hunt within the interior of mid-age to mature forest stands.

Upland forests make up 65 acres of the Strong WMA. They are composed mostly of northern hardwood species such as red and sugar maple, yellow birch, white ash, red oak, and American beech. Because 50 years have passed since the last heavy harvest, the forests have reached a stage where a light commercial harvest can be done.

The forest on the WMA provides an opportunity to manage under an *uneven-age* silviculture system.

Most Maine forests are established and grow in *even-age* stands (see image below), which are stands with one age class (or two if there is a distinct overstory and understory). Maine forests tend to naturally grow that way, and timber harvesting as practiced usually favors this system.

Forest stands with three or more age classes are termed *uneven-age*.



*This is a classic two-age or even-age stand of white pine. At some point, the landowner will harvest all the overstory trees and it will go back to having a single age. Photo by Chuck Hulsey.*

Tree species that are long-lived and windfirm, occur on deep soils, and have shade tolerance (ability to regenerate and grow in shade) can be managed within uneven-aged stands. Most northern hardwoods have all of these characteristics.

To develop and sustain the second and third age classes that define uneven-aged stands, we use timely, light cuts

and the **Selection Method**. Under this method, we mark trees to be harvested — either individually or in small, scattered groups. Criteria for removal include species priority, form, physical damage, insects, disease, or diameter. Within distinct stands of even age, smaller diameter trees are usually the same age as larger diameter trees, making them a priority for removal. A normal volume to remove on each stand entry is 20 to 30%, though in our case it is closer to 20%.

Under uneven-aged management, the time between harvests, also known as the **cutting interval** or **cutting cycle**, is usually 10 to 20 years. At the Strong WMA it will likely be 15 years. Because most of our hardwood trees have shade tolerance, harvests will stimulate regeneration. After two cutting intervals, there will be two new age classes added to the residual (original) stand, transforming it to an uneven-age forest. Barring major fire, insect, or disease, we will be able to continue this management method indefinitely.

This method of forest management benefits landowners and wildlife alike. For the landowner it provides a steady stream of product or income; and for wildlife it creates a habitat with *vertical diversity*. When most people think of habitat diversity, they envision varying vegetation types across the land; but vertical diversity provides structure from the ground all the way to the top of the forest canopy. Most wildlife occupies either the ground, mid-canopy, or upper canopy, but not all three, making uneven-age management a great way to meet the habitat needs of diverse species. The selection method also makes it easy to retain dead or dying trees, which some wildlife use for their habitat. This is not as easy with even-age regeneration methods such as clearcutting or shelterwood because there is no surrounding cover.



*This uneven-age stand has three age classes and shows vertical habitat diversity. White pine in the foreground is the youngest. Second oldest are the sugar maples on the upper right and left. The large diameter trees in the center are the oldest. This provides a diverse habitat from the ground to the top of the oldest trees and is an example of the uneven-age management objective for the Strong WMA upland forest. Photo by Chuck Hulsey.*

Foresters in the Department’s land program will mark and oversee the first harvest, prioritizing red oak and American beech for retention given how they meet the criteria for uneven-age management, plus they have high wildlife value. These species produce large hard mast (mast is the seed, nut, or berry of a tree or shrub) that benefit a large range of wildlife from gray squirrels to black bears. Sugar maple and yellow birch are next in the step-down priority for retention due to their high commercial value. However, form and vigor will sometimes drive the decision when two trees are too close and one should be cut.

#### 4. Apple Trees and Cavities

Once a farm, this property has apple trees scattered among the alder runs between the fields. Many of these trees have been released during previous cutting of alder blocks, or opportunistically at the edges of fields or along access trails. In future clearcutting of alder blocks, all apple trees will be retained.

All trees with cavities will also be retained. We practice two methods at the WMA to provide habitat for cavity nesters:

placement and maintenance of bluebird nest boxes at the edges of all the fields and maintenance of dead trees.

We retain standing dead trees where they are not a hazard, and other times we will create them by girdling with three cuts completely around the trunk.

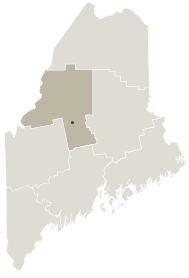
This will kill most trees while keeping them standing, as long as the cut goes through the inner bark and into the sapwood. Sapwood is made up of live wood cells that transport water, sugars, and minerals. Upon the tree’s death, woodpeckers will excavate for insects, often creating cavities that other wildlife will use. But if a cavity isn’t created, many species will still use the standing dead trunk to forage, hide, or perch.

For this, we try to select a tree of little or no commercial value, especially if it is competing for sunlight with a more desirable tree.

Three cavity trees per acre is adequate; but because dead trees are far less windfirm, some level of management is needed to maintain a presence of standing dead trees. Dead trees don’t have a long life.



Standing dead trees (left) and live trees (right) are valuable for both foraging and shelter. Large, rectangular holes are the signature of the pileated woodpecker. Photos by Chuck Hulsey.



## REGION E GREENVILLE

18 Village Street  
Greenville, ME 04441  
(207) 695-3756

**Doug Kane**  
*Regional Wildlife Biologist*

**Scott McLellan**  
*Assistant Regional Wildlife Biologist*

### Deer Wintering Area Management

Doug Kane

In northern Maine, white-tailed deer are near the northern limit of their natural range. In the winter (December-April), severe weather conditions cause deer in the state's northernmost areas to migrate away from more open, deciduous forests to areas where they can access important conifer shelter and where snow depths are considerably lower.

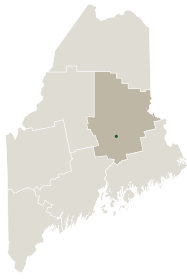
Without this adaptive behavior in this part of their range, the energetic demands on deer would be too great for them to survive. These special micro-habitats where deer congregate during winter are known as deer yards, or deer wintering areas (DWAs).

Our Department has long known the importance of DWAs to deer survival. In fact, we have records of DWA surveys conducted by Department staff in our northern regions dating back to the 1950s. We usually conduct these winter surveys from the air via fixed-wing aircraft and on the ground on snowshoes. Through the years, we've learned that deer fidelity to the DWAs is significant, with our records indicating that some of these areas have been used for multiple decades.

Most DWAs in the Moosehead Lake Region and in other areas of the state are located on private land. Therefore, for our Department to have input toward the management of these important habitats we must work cooperatively with the landowner or land manager.

In 1996, our Department signed landmark agreements with the largest landowner in the state for the management of three very large DWAs (11,000, 9,000, and 6,500 acres) just north of Moosehead Lake. Management plans for each of these areas included forest stand-specific maps and details of when and how each stand would be treated in terms of a possible timber harvest during the 15-year life of the plan.

These plans proved to be critical over time and were honored by the subsequent landowners after the land was sold. Today, two and a half decades later, these three areas still contain some of the largest blocks of quality winter deer shelter in the Moosehead Lake Region.



## REGION F ENFIELD

16 Cobb Road  
Enfield, ME 04493  
(207) 732-4132

**Mark Caron**  
*Regional Wildlife Biologist*

**Allen Starr**  
*Assistant Regional Wildlife Biologist*

### Habitat Management at Page Farm

Mark A. Caron

The Mattawamkeag River System WMA encompasses over 10,000 acres and is located in Webster Plt., Drew Plt., Kingman, and Prentiss Twp. (Delorme Atlas Map 44 C-5). The WMA is composed of three units including Page Farm which encompasses over 1,200 acres. As the name implies, much of this unit was once active farmland but has since largely reverted to early-successional and mature forest habitat.

The unit also includes 20 acres of field, much of which was slowly reverting to early-successional forest. Early-successional forest includes a richly diverse habitat with vigorously growing grasses, forbs, shrubs, and trees which provide food and cover for a wide variety of wildlife species. However, disturbance (management) is needed to perpetuate this habitat over time. If not managed, it will continue to grow into mature forest.

Beginning in 2009, we reclaimed two fields that were reverting to early-successional habitat and planted them with a conservation mix. In 2013, we reclaimed and planted a third field; and we've maintained all of the other fields with annual mowing. We accomplished much of this work in partnership with the Natural Resource Conservation Service (NRCS) and the National Wild Turkey Federation (NWTF), and it ultimately has benefited a wide variety of game and non-game species whose habitat needs include open fields.

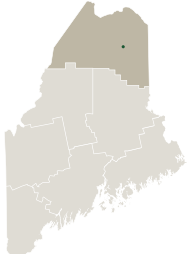


In 2010, Region F partnered with the Wildlife Management Institute (WMI) on early-successional forest management operations that focused on ruffed grouse and woodcock. The grouse habitat management centered on 70+ acres of intolerant hardwood and balsam fir. By managing it in five-acre clearcut blocks over a 40-year rotation, we have been able to provide all the life requisite habitat (breeding, nesting, brood rearing, winter roosting) for grouse.

Our woodcock management efforts consist of a network of 16 strips 100 feet wide (of varying lengths) managed in a 25-year rotation. These strips are adjacent to managed open field, and the combined habitats provide for all the life requisites for woodcock (nesting, brood rearing, feeding, courtship, and night roosting).

Additional Page Farm habitat work has included planting of soft and hard mast shrubs and trees and pruning/releasing several hundred apple trees. In two locations, we accomplished a 'feathering of edges,' which is a practice that creates structural diversity between field and forest, adding more nesting cover primarily for game and non-game birds.





## REGION G ASHLAND

63 Station Hill  
Ashland, ME 04732  
(207) 435-3231

**Shawn Haskell**  
*Regional Wildlife Biologist*

**Amanda DeMusz**  
*Assistant Regional Wildlife Biologist*

### Lt. Gordon Manuel Wildlife Management Area (LGMWMA)

Shawn Haskell

The LGMWMA is a bit over 6,500 acres in the southern Aroostook County towns of Hodgdon, Linneus, Cary Plantation, and the northeastern tip of TAR2 Wels. The area has been actively managed for wetland and upland fish and wildlife habitats and public recreation, although overnight camping is not allowed, and there are no bathroom facilities.

The primary flowage behind the Hodgdon dam winds south for about three miles before turning into a small stream and crossing under the Oliver Road to the west. It is a popular spot for waterfowling, and we maintain a couple dozen nest boxes for ducks on this stretch.

We occasionally stock the primary flowage with brown trout, but it is largely a warm water fishery. There is a small boat launch next to the dam and summer snack bar, a primitive boat launch around the bend off Horseback Road, and another small, well-maintained boat launch about 1.5 miles down the flowage off Horseback Road, just past the gravel pit. On a recent early-summer trip to this site, the abundance of dragonflies and damselflies (Odonates) was remarkable, and it seemed that the mosquitoes paid the price.

The gravel pit helps us to maintain roads for forest operations, and the roads can also be used by ATVs and snowmobiles when there is no trucking activity. We work with the local clubs to move recreational traffic around active forest operations. Our lands help connect the trail systems of Cary, Hodgdon, and Linneus, and some of our winter logging roads now double as walking trails, seeded into an herbaceous conservation mix for wildlife.

We release apple trees and conserve all oak trees that we find, and thick regeneration of aspens and maples provide food for deer, moose, and hare. There are also 122 acres

of field on LGMWMA, most of which are leased out for active agriculture with grassland buffers. We mechanically maintain a field off Townline Road, whereas on other WMAs in Region G we also use fire.

Some of our work includes surveying for breeding birds, waterfowl broods, and bats. Breeding birds range from hummingbirds inland to loons on Hunter Pond. Waterfowl broods include resident geese, black ducks, ring-necks, goldeneye, mergansers, and woodies. The only known location of the Federally-threatened and State-endangered Northern Long-eared Bat in the past few years in northern Maine is on LGMWMA, immediately adjacent to the Hodgdon flowage and a hardwood stand by the gravel pit that we have been working to thin and regenerate.

In recent years, the Department has conducted management activities to benefit the upland habitats found in LGMWMA, operating in several management compartments. We have continued a long-standing management approach focused on improving grouse and woodcock habitats by management of young forest conditions.

In the middle of LGMWMA is another flowage that is part of the south branch of the Meduxnekeag Stream, maintained by a smaller dam about six feet high. Beyond that, by our boundary off Townline Road, is a third wetland flowage, the level of which has been negotiated recently with the resident beavers. The beavers have blocked our culvert and flooded the flowage's value for nesting wetland birds, so we have installed a water passage device from under the water level, through the beaver blockage, and into the culvert. Nuisance beaver issues are common for landowners in Aroostook County, and there are options for resolving them. Your regional wildlife office can help, so don't hesitate to reach out.





# BIOLOGIST ASSIGNED TO BUREAU OF PARKS & LANDS

650 State Street  
Bangor ME 04401  
(207) 941-4452

**Sarah Spencer**  
*Wildlife Biologist*

## Wildlife Biologists and Foresters Working Together for Maine's Wildlife

Sarah Spencer

MDIFW has a long history of working with partners across the state, including other state agencies. Since 1983, a MDIFW wildlife biologist has worked within Maine's Department of Agriculture, Conservation & Forestry's Bureau of Parks and Lands (BPL) to maintain healthy fish and wildlife on the Bureau's 700,000 acres of land. BPL's ownership is managed for multiple resource values, including recreation, cultural and historic preservation, wildlife, and timber. The biologist serves as a wildlife specialist liaison to BPL, helping them achieve their mission.

One of the responsibilities of the wildlife specialist is to review BPL foresters' timber harvest plans to ensure they address wildlife considerations. At a minimum, these reviews ensure that appropriate riparian buffers, seasonality of harvest, and biodiversity components are all incorporated into the plan. Some more in-depth assessments require multiple site visits, review of historical records, communication with biologists and foresters, and review and development geospatial data.

In the winter of 2019/2020, a harvest in a deer wintering area on Public Lands marked the culmination of several years of work by foresters from BPL's Northern Region Public Reserve Lands, biologists from MDIFW Region F, and the wildlife specialist. This area has hosted approximately 75 deer, in what appear to be two distinct herds (though the number of deer using the area change over time), and this harvest followed several decades of BPL and MDIFW efforts to manage the forest to produce high quality winter shelter for deer.

A harvest prescription was developed several years prior, and the forester and wildlife specialist incorporated deer wintering area habitat guidelines into the prescription at that time. The three objectives of the harvest were to establish softwood regeneration, to release existing advanced regeneration, and to promote healthy and vigorous stands of softwood to shelter wintering deer. Additional considerations were given to aesthetics of the harvest adjacent to roads, campsites, a seasonal snowmobile trail used primarily for ice fishing access, and an active MDIFW project involving deer capture in the region.



After biologists and foresters approve a final draft of the agreement, BPL works closely with a timber harvesting contractor to implement it. It's not unusual for biologists and foresters to reconvene on-site at least once during the harvest, often more, to ensure the plan is being implemented as expected and to discuss any challenges or unexpected situations that may arise. In addition to making the harvest plan available to the contractor in a GPS-enabled tablet, biologists and foresters flagged all deer trails prior to the 2019/2020 harvest so that special treatment would be applied adjacent to these important corridors.

Field assessments indicated total shelter made up well over the 50% target of primary and secondary shelter combined; however, the majority fell in the category of secondary shelter, being under the target of 25% primary shelter. By harvesting in specific areas to promote vigorous growth and crown closure in winter 2019/20, this harvest should improve the primary shelter ratio over time.

Perhaps the best-kept secret of managing deer wintering areas for shelter is that we're managing them for much more than just the deer. While deer are the species we focus on, more than 70 other Maine species prefer at least one of the stand types in a managed deer wintering area at some point during their life cycle. From the familiar bobcat, snowshoe hare, and black bear, to the less-commonly noted black-backed woodpecker, merlin, and American marten, deer wintering areas provide habitat components for a wide range of species.

The process of actively managing deer wintering areas is never complete. It's a constant effort of assessment and treatment as the forest grows and changes over time. It requires communication, boots on the ground, data development, planning, implementation, and attention to detail by foresters, biologists, and logging contractors who all care about healthy fish and wildlife.

Because the harvest area overlapped with an area zoned by Maine's Land Use Planning Commission (LUPC) as a Deer Wintering Area, a plan agreement was required to be submitted prior to harvest. This agreement documents the planned activity for each stand or group of similar stands or treatments, the silvicultural prescription to be used, how the trees will be selected for harvest, where roads and landings will be located, and in what season(s) the harvest will occur. In developing an agreement, the wildlife specialist and regional wildlife biologist work with the forester(s) to understand how and if each stand will be treated. While the BPL forester has often spent many days afield examining the stands prior to developing the harvest plan, the plan agreement offers an opportunity for BPL and MDIFW to look at the stands together, verify shelter value, and discuss proposed treatment for the upcoming harvest and future entries.

We conducted these site visits in summer 2019, visiting representative stands of each type and silvicultural prescription combination in the harvest plan. We also visited stands that weren't going to be harvested, to assess their shelter value. A biologist rarely returns from the field with data on a single species, and site visits to deer wintering areas are no different. From singing birds during the summer months to mammal tracks in the snow, we gathered plenty of additional information as part of the assessment. Back in the office, we compiled the GPS data and notes and used them to develop summaries of existing shelter and our expectations for shelter over the next 15 to 30 years.



# LANDS MANAGEMENT PROGRAM

270 Lyons Road  
Sidney, ME 04330  
(207) 287-5300

**Eric Hoar**  
*Lands Management Biologist*

**Daniel Hill**  
*Resource Manager, WMI Contractor*

**Jack Chappen**  
*Resource Manager, WMI Contractor*

## Habitat Management at Frye Mountain Wildlife Management Area: Compartment J

The MDIFW Lands Program Team

Operating within MDIFW's Wildlife Management Section, the Lands Program supports the work of wildlife biologists by planning and implementing habitat enhancement and maintenance projects on State-owned Wildlife Management Areas (WMAs).

In the winter of 2020, we began conducting habitat work at the Frye Mountain WMA, Compartment J, clearing two of the three roads' rights-of-way with a whole tree operation. Compartment J, in the town of Knox, totals 643 acres on the southeastern side of the 5,238-acre WMA. Heading South on Frye Mountain Rd. from State Rte. 137, the entrance to Sunnyside Cemetery Road, which runs through the WMA, is approximately .25 miles on the left.

The new road construction for this project totals roughly 1.5 miles, and we also plan to improve 1.25 miles of the Sunnyside Cemetery Road. We expect to complete the harvest in roughly two years. This timeframe will allow us to treat certain areas in the summer and others in the winter, depending on ground conditions and habitat goals.

Road construction is slated to begin in mid to late summer and harvest operations will start this winter (2020-2021). Last winter (2019-2020), to prepare for the harvest, Lands Program staff began marking individual trees and designing a layout that would create, maintain, and enhance wildlife habitat on the site. This work continued throughout the spring and summer.

In 2018, MDIFW developed a Forest & Wildlife Management Operations Report, also known as a harvest prescription, for Compartment J. The Lands Program staff

have cruised and inventoried the entire compartment and have set wildlife habitat management goals and objectives based on current forest types, soils, and habitat features. These goals and objectives were developed in coordination with wildlife biologists from MDIFW and Maine Natural Areas Program (MNAP) during the planning process. The proposed operations in their report are subject to competitive bidding through the Division of Procurement Services to ensure equal work opportunities for qualified businesses.

Compartment J features a variety of forest types including oak-beech and oak-pine uplands, northern hardwoods, hemlock, and spruce-fir. It also has several maintained fields, as well as open water, scrub-shrub, and forested wetland habitats. This wide range of habitats presents numerous opportunities for enhancement through silvicultural harvest.

Much of the compartment's forested area was previously cleared for agriculture, and it offers little habitat diversity in terms of age class (all trees are about 80-100 years old) or vertical/horizontal structure. To remedy this, we plan to regenerate portions of the compartment to a younger age class through single tree selection, group selection, and patch cut treatments. In doing so, we will remove the short-lived, pioneer tree species such as paper birch, aspen, and balsam fir which are generally in overall decline. This will establish a new generation of trees, increase structural habitat diversity, and benefit numerous wildlife species.



The upland areas will be managed for hard mast (nut) production. Northern red oak will be prioritized for its acorns' value as a wildlife food source, but some portions will be specifically managed for American beech. This will benefit the early hairstreak butterfly, a rare, state special concern lepidoptera species that requires mature beech and beech nuts for its lifecycle, as well as numerous other wildlife species that will forage on the tree's hard mast during beech mast years. Still other upland areas will be managed for red oak and eastern white pine, which together provide a mix of acorns and pine softwood cover that eastern wild turkeys love.

The mid-slope areas, composed of northern hardwoods, will generally be managed with single-tree and small-group selection methods to promote long-lived, shade-tolerant northern hardwoods species like sugar maple, as well as intermediately-tolerant species like yellow birch, white ash, American basswood, and red oak. This will eventually create an uneven aged forest with a varied structure suited to a wide variety of wildlife. All at once, it will include newly regenerating areas with woody browse and herbaceous plants, mature trees for cover, trees with cavities, and trees bearing nuts, seeds, and catkins for food.

Other treatments include thinning, which will allow healthy trees to grow larger, and patch cuts, which will allow shade-intolerant species like aspen and paper birch to regenerate. We will also use treatments to link up existing habitats, creating additional wildlife value. For example, in one area we will place a two-acre patch cut in maturing aspen between two alder-dominated lowlands. This will create a dense, sapling-sized stand ideal for ruffed grouse, American woodcock, and snowshoe hare, while providing hardwood browse for deer and potential nesting/brood-rearing habitat for songbirds and other shrubland-dependent wildlife species.

In the lowlands, we will generally manage for mixed-wood and softwood stands. The plan is to remove dying balsam fir and intolerant hardwoods, release and retain eastern hemlock and red spruce, and regenerate softwoods. We are also targeting some red maple for removal to improve deer wintering areas, provide a source of winter browse

for deer, and create suitable habitat for ruffed grouse, snowshoe hare, and songbirds. Throughout the compartment, we also plan to promote soft mast by retaining and releasing the area's many vigorous apple and cherry trees.

There is one mapped Significant Vernal Pool in the compartment, as well as several other smaller, unmapped vernal pools that we identified during forest inventory. Vernal pools support several species of special concern in Maine, including wood frog, spotted salamander, blue-spotted salamander, four-toed salamander, ribbon snake, wood turtle, spotted turtle, and Blanding's turtle. We plan to protect and manage all vernal pools, mapped or unmapped, per recommendations in the publication *Forestry Habitat Management Guidelines for Vernal Pool Wildlife*, which was created in collaboration between the University of Maine, Maine Audubon, Wildlife Conservation Society, MDIFW, and Maine Department of Agriculture, Conservation and Forestry (formerly Maine Department of Conservation).

Management operations may also include the cutting, felling, and on-the-ground retention of three to six low-quality pulpwood trees per acre. This will add coarse and fine woody debris (CWD) to the forest floor, enhancing the habitat for invertebrates, amphibians, and reptiles. Additionally, when marking individual trees, we will retain standing cavity trees, current snag trees, and some snag tree candidates that we might use in the future for forest-floor CWD.

An invasive plant is defined as a plant that is not native to a particular ecosystem, whose introduction causes, or is likely to cause, harm to the economy, environment, or human health. A handful of invasive plant species, including Japanese shrubby honeysuckle, multiflora rose, Japanese barberry, and Asiatic bittersweet, have been found in abundance on the Frye Mountain WMA. As we plan and implement habitat management across the Compartment J, we will also need to manage invasive species so that desirable native species and herbaceous plant communities can establish themselves, develop, and regenerate. In collaboration with MNAP, we have implemented a multi-faceted plan to survey and treat these species on the compartment, both pre- and post-harvest.

