



Forest Stewardship

Information Exchange

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Northeastern Area
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Stewardship News

We have enclosed a customer service reply card in this issue. Please help us assess the effectiveness of this communication by filling out the card and returning it (postage paid). We would greatly appreciate hearing from you!

The Massachusetts Forest Stewardship Program

Trustees of Reservation Project

The Massachusetts Forest Stewardship Program (MFSP) and the Trustees of Reservations, the oldest land trust in America, are working to create four Stewardship Demonstration Forests in Massachusetts. The demonstration areas, on tracts owned and managed by the Trustees, are being developed with USDA Forest Service, State and Private Forestry funding.

The objectives of the project are:

1. Expose the growing population of landowners in Massachusetts to a quality resource education experience
2. Inspire more land trusts to join the Forest Stewardship Program
3. Provide an example to municipalities who apply to the MFSP for small grants to develop stewardship plans and demonstration forests
4. Increase the public's awareness of the role forest management plays in the production and protection of pure water.

Each demonstration area has been named and will focus on a different theme:

Turkey Hill—Hingham, Massachusetts, south of Boston (creation of early successional habitats)
Long Hill—Essex, Massachusetts, north of Boston (control of invasive plants)
Notchview—Berkshires in western Massachusetts (forest recreation)
Swift River—North-central Massachusetts (multiple forest objectives, including timber stand improvement, maintenance of rare plant communities and species, and protection of historical resources).

Stewardship Implementation Practices

Like other Northeastern Area states, Massachusetts is struggling with the loss of Federal cost-share funds to support forest stewardship implementation practices (SIP). The MFSP has been looking for additional funds from other sources to counter the loss of Federal funds. They recently signed a new 3-year contract with the Massachusetts Division of Fisheries and Wildlife that provides for up to \$50,000 per year for several wildlife habitat improvement practices, including SIP 805 (biannual mowing), SIP 803a (abandoned field reclamation), SIP 806 (abandoned orchard release), and a new practice, SIP 806a (invasive exotic plant control). The actual amount of money MFSP receives per year will depend on what the state legislature allocates to the Division of Fish and Wildlife's Biodiversity Initiative.

New Hampshire Fish and Game Small Grants Program for Private Habitat Conservation

The New Hampshire Fish and Game Department has a small grants program to fund all or part of small-scale habitat restoration and enhancement projects on privately owned lands. This program is not currently funded. The New Hampshire organizations, and communities. Funding is limited to be granted to a single landowner over a 10-year period. from the Wildlife Habitat Account, funded by New hunting and other nonmotorized public activities is Regional Offices in Durham, Keene, New Hampton,



program is welcome news since the Forest Service's Stewardship Incentive program is limited to properties larger than 25 acres owned by individuals, no more than \$2,000 per property per year, and no more than \$6,000 will Up to \$50,000 per year will be committed to the Small Grants Program Hampshire hunting license fees. Only land that remains open to public eligible. Program contacts are the wildlife biologists at Fish and Game and Lancaster.

Acceptable practices and reimbursement rates are as follows:

Release of wild apple trees	\$10 per tree
Release of fruiting shrubs	\$100 per acre
Mast tree release	\$10 per acre
Softwood release in historic deer yards	\$200 per acre
Regeneration or restoration of alder of aspen/birch	
1. Using hand tools	\$150 per acre
2. Using brush hog	\$60 per acre
3. Using "Brontosaurus"/chipper	\$300 per acre
Brush clearing/sapling removal to maintain old fields and shrub lands	
1. Using hand tools	\$150 per acre
2. Using brush hog	\$60 per acre
3. Using "Brontosaurus"/chipper	\$300 per acre
Mowing to maintain grasslands and shrub lands	\$45 per acre
Creation of permanent woodland openings	
Stumped and leveled in condition to maintain by mowing	
1. Seed, lime, and fertilizer	up to \$400 per acre
2. Site prep, stump, level, spread material	up to \$450 per acre
Maintenance of woodland openings, log landings, and wood roads and edges	
Not to include initial clean-up and closing after a timber harvest	
1. Seeding, liming, and fertilizing	up to \$400 per acre
2. Mow	\$45 per acre or ½ mile of road
3. Brush hog	\$60 per acre or ½ mile of road
Grassland restoration: establishing cool season grasses and clovers	
1. Initial seeding and site preparation	\$300 per acre
2. Soil amendments (lime and fertilizer)	actual cost up to \$350 per acre
Grassland restoration: establishing warm season grasses	
1. Seeding and site preparation	\$600 per acre
2. Soil amendments (lime and fertilizer)	actual cost up to \$150 per acre
Wetland restoration and maintenance	
Beaver pipe construction and installation	\$100 per pipe
Fencing to avoid beaver plugging and damage	\$1.50 per lineal foot
Wood duck nest box construction	\$10 per box
Nest box installation: metal posts and hardware	\$25 per box
Tile busting in drained fields	\$200 each
Ditch plugging in drained fields and wetlands	\$250 each
Removing old fill from wetland	up to \$5.25 per cubic yard

The New Hampshire Fish and Game Department has standards and guidelines for these practices. For more information, contact any Fish and Game Regional Office or Charles Bridges, Habitat and Diversity Program Administrator, at 603-271-2461.

Rare and Endangered Species in Northeastern Forests

The **Indiana bat** (*Myotis sodalis*) is an endangered species whose range includes most of the eastern half of the United States. It inhabits caves in New York State (estimated 18,000 individuals) and one cave in Vermont (4 documented individuals). There have been 1-2 sightings in each of the other New England states.

Most large hibernating populations in the United States are found in Indiana, Missouri, and Kentucky, with some caves supporting more than 80,000 bats.



The Indiana bat (photo by U.S. Fish and Wildlife Service, Region 2)

Optimal winter roost sites have a low risk of freezing and have a mid-winter temperature range of 39–46 °F. Apparently, very few caves meet these standards. During summer, males roost singly or in small groups, while females may roost in groups of up to 100 bats.

Bats use a variety of locations for summer roosting, including riparian forested sites, forested floodplains, and upland forest sites. Preferred sites are in dead and dying trees and under the shaggy bark of living hickories and large white oaks.

The **Canada lynx** (*Lynx canadensis*) was officially designated a Federally threatened species by the U.S. Fish & Wildlife Service on March 24, 2000. In summer 1999, wildlife biologists found two Canada lynx kittens in northern Maine, providing strong evidence that Maine supports reproducing lynx populations, currently known to exist in only a few of the lower 48 states. Maine is the only New England state currently known to have Canada lynx populations. The lynx, a relative of the

bobcat, has tufted ears, long legs, and wide paws that enhance its ability to hunt in deep snow. Its major prey is the snowshoe hare, which frequents immature spruce-fir forests.

Should you be concerned with these and other species in planning management activities on your woodlot? A USDA Forest Service publication entitled *Threatened & Endangered Species and the Private Landowner* (NA-PR-03-97) by wildlife biologist Toni McLellan addresses this and other questions pertaining to endangered species. To obtain a copy, contact the Forest Service, Northeastern Area, PO Box 640, Durham, NH 03824-0640; phone 603-868-7692.

Both animals and plants are protected under the Endangered Species Act (ESA). The Federal ESA prohibits “taking” of an endangered or threatened animal. You cannot “harm, harass, pursue, hunt, shoot, wound, kill, trap, capture, or collect any threatened or endangered species.” Taking also refers to habitat alteration resulting in harm to the species. Whether on private or Federal land, whether intentional or unintentional, the taking of a listed animal is illegal. Additional protection may be afforded through your state’s Endangered Species Act.

Under the Federal ESA, plants are protected if Federal lands, funds, or permits are involved in the action. Individual states may provide additional protection. In many states, listed plants cannot be collected without permission from the landowner. This protection is usually afforded by the State Endangered Species Act. The Southern New England Forest Consortium, a nonprofit forest conservation organization, recently produced a helpful field guide for landowners. The *Threatened & Endangered Plant Species Field Guide in Southern New*

England is available for \$6.00 by contacting the Southern New England Forest Consortium, Inc., P.O. Box 760,

Chepachet, RI 02814; phone 401-568-1610.

Another publication of interest is *Threatened and Endangered Species in Forests of Maine: A Guide to Assist with Forestry Activities*, compiled by Brian D. Carlson of the Maine Department of Conservation and edited by Dr. James M. Sweeney of Champion International Corporation. This publication is available from University of Maine Cooperative Extension, State Communications Office, 5741 Libby Hall, Orono, ME 04469-5741; phone 1-800-287-8957.

Ongoing Research at the Durham Lab



Alison Dibble and John Brissette of the Forest Service’s Northeastern Research Station and Malcolm Hunter of the University of Maine-Orono recently published “Putting Community Data to Work: Some Understory Plants Indicate Red Spruce Regeneration Habitat” in *Forest Ecology and Management* (1999. 114: 275–291). The authors stated, “there is the potential that understory species can be recognized as a characteristic of understory habitat in which a dominant tree is likely to regenerate successfully. Such indicators would be useful in predicting the likelihood of regenerating red spruce given stand structure and the harvest treatment proposed. Sustainability in Maine red spruce-balsam fir flats requires sufficient natural regeneration because the alternative, planting, is expensive.” The authors proposed a suite of common, widespread herbs and a liverwort as potential indicators, but recognized that parent trees probably influence red spruce seedling density more than ground flora composition.

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Ongoing Research at the Durham Lab

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The authors concluded, “Our proposal of potential indicators of red spruce regeneration habitat includes no species that are diagnostic for ideal regeneration conditions or are limited to red spruce-balsam fir flats or mature seral stages. However, we suggest that where cone-bearing red spruce trees are present in the overstory, the following understory characteristics, separately or in combination, may indicate habitat conducive to red spruce regeneration: (1) abundant ground cover in bryophytes, especially the liverwort *Bazzania trilobata* [three-lobed bazzania], (2) a high proportion of insect- versus wind-pollinated understory plant species, and (3) presence of one or more of the following vascular plant species—*Linnaea borealis* [twinline], *Trientalis borealis* [maystar], *Trillium undulatum* [painted trillium], and *Gaultheria hispidula* [creeping snowberry]. Other species that are common in red spruce stands but appear to have lower potential as indicators of red spruce regeneration habitat because of their wide niches include *Clintonia borealis* [bead-lily], *Cornus canadensis* [bunchberry], *Dryopteris* spp. [wood-fern], *Oxalis montana* [oxalis], and *Coptis trifolia* spp. [goldthread]. Early successional plants that fill forest openings, such as *Rubus idaeus* [red raspberry], *Epilobium angustifolium* [fireweed], *Aralia hispida* [bristly sarsaparilla], and *Anaphalis margaritacea* [pearly everlasting], can be considered indicators of poor quality habitat for red spruce in the short term, but in most cases, if a seed source is nearby, we think that red spruce is likely to recolonize the stand eventually.”

USDA Forest Service
Web Site
<http://www.fs.fed.us>

BANTIC



Neil Lamson, a silviculturist with USDA Forest Service, Northeastern Area, and Brooks Mills, a member of the Small Woodland Owners Association of Maine (SWOAM), have developed a software program called BANTIC (Brooks and Neil Tree Investment Chart). The program helps landowners estimate the potential value of trees in their woodlot by using a Microsoft Excel spreadsheet to compute the volume, value, and annual rate of return of standing trees. The user enters current log prices and grade (2, 3, and 4 clear faces). The spreadsheet automatically computes volume, value, and annual rate of return for trees from 10 to 30 inches diameter breast height having logs with 2, 3, and 4 clear faces. The user can create a separate spreadsheet for any number of species by using the COPY SHEET feature in Excel.

The software has two important applications: determining financial maturity and evaluating cultural treatments. In the April 2000 SWOAM newsletter, Brooks Mills said, “The rate of return calculations can be used to determine when to cut trees that are financially mature. The user simply compares the rate of return found in BANTIC to an alternative rate of return. Those trees that are making less than the alternative rate of return are financially eligible to be cut. For example, using an alternative rate of return of 6 percent, a user could determine that a tree that is growing 2 inches in diameter every 7 years will be increasing in value by 6 percent until it reaches 20 inches in diameter. At that point the return decreases to 3 percent making the tree eligible to be harvested at 20 inches in diameter.”

BANTIC is also used to evaluate cultural treatments. Suppose removing low value trees from a sawlog-sized hardwood stand would increase the tree growth rate from 2 inches in 10 years to

2 inches in 5 years. Contrast this situation to an untreated stand. The 10-year value increase of 16-inch trees to 18-inch trees would be greater in the treated stand compared to the untreated stand. BANTIC would indicate the potential increase in value, allowing the landowner to determine if the cost of treatment will produce a profit. In summary, BANTIC applies values to individual trees, projects future values, and calculates rates of return based on measurements of the growth rates of these trees. BANTIC requires annual diameter measurements of trees over at least two growing seasons to record growth rates.

For a copy of the software, contact Roger Monthey at 603-868-7699 or the SWOAM office at 1-877-467-9626.

Biodiversity



Fish Habitat Enhancement

Perhaps you have a brook trout stream on your property and you want to improve fish habitat and aquatic ecosystem diversity. Research has shown that large woody debris and boulders in streams benefit ecological processes that result in diverse aquatic habitats. The forest plan for the White Mountain National Forest in New Hampshire and Maine calls for assessing the health and productivity of the brook trout population as a management indicator for the quality of instream habitats on the forest. Forest plan standards for brook trout require at least 20 percent pool area, maximum stream temperatures less than 72 °F, and at least 20 percent of the total stream area providing cover.

How do you know whether your stream could benefit from some habitat enhancement? First, look at the condition of brook trout to see how your

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Fish Habitat Enhancement

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stream fits into that overall picture. Consult with the local state fisheries biologist, or a USDA Forest Service biologist if you live near Forest Service-administered lands. Is your stream valuable enough for trout to make it worth managing? The present and potential capacity of the stream to support natural reproduction and growth of trout should be considered in addition to the instream characteristics described above (White and Brynildson 1967). For example, the fertility of the water is a major consideration. Lack of nutrients will limit trout populations even if you decide to invest in habitat improvement. Consult with a fisheries biologist to help answer these questions.

If it turns out that enhancement of your stream would help brook trout in your watershed, do an inventory to assess the condition of habitat in your stream. You can do an inventory yourself or by working with agency or consulting biologists. A classification system for habitats in small streams has been developed on the West Coast and is very useful for this type of work (Bisson and others 1981). To assess the percent of pool area, put on your hip boots and measure the length of your stream, noting the percent of the total length in pool habitat. Alternating pools and riffles are present in practically all perennially flowing channels that have bed material larger than coarse sand. Measure maximum stream temperatures using a thermometer purchased from a scientific equipment catalog. The percent of stream cover can be estimated visually. If you do these measurements yourself, you should share your results with a professional fisheries biologist and ask his/her opinion.

Before starting work on a fish enhancement project, you will need a permit. Assistance from a resource professional is advisable. Each state has somewhat different permit requirements.

The State of New Hampshire has produced an Environmental Fact Sheet, "Guidelines for the Standard Application Process for Wetlands Impacts," to explain the process in general terms. For example, you must file a Standard Dredge and Fill Application with the NH Department of Environmental Services (DES), Wetlands Bureau. For information, contact the DES Wetlands Bureau, 6 Hazen Drive, PO Box 95, Concord, NH 03302-0095; phone 603-271-2147.

The U.S. Army Corps of Engineers also regulates activities that are located in or affect navigable waters of the United States. In New Hampshire, the Corps has an agreement with the state to minimize duplication between New Hampshire's regulatory program covering coastal and inland waters and wetlands, and the Corps regulatory program. The general permit eliminates the need to apply for separate approval from the Corps for most minor, noncontroversial work in New Hampshire when the work is authorized by the NH Wetlands Bureau. Projects with impacts up to 3 acres may be considered under the general permit. For further details, contact the NH DES Wetlands Bureau.

References

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- Bisson, P.A.; Nielson, J.L.; Palmason, R.A.; Grove, L.E. 1982. A system for mapping habitat types in small streams, with examples of habitat utilization by salmonids during low stream flow. In: Armantrout, Neil B., ed. Acquisition and utilization of aquatic habitat inventory information: Proceedings of the symposium; 1981 October 28–30; Portland, OR. American Fisheries Society, Western Division: 62–73.
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American Ginseng—A Special Forest Product

Bob Beyfuss of Cornell Cooperative Extension has written an excellent article about the production and sale of American ginseng (*Panax quinquefolium*) entitled "American Ginseng Production in Woodlots." To obtain a copy, contact the USDA National Agroforestry Center, East Campus-UNL, Lincoln, NE 68583-0822; phone 402-437-5178, fax 402-437-5712. For landowners who are struggling to pay property taxes, alternative forms of income can make a difference. American ginseng and other marketable special forest products can help generate some income. The following details on American ginseng are taken from the Beyfuss article.

Ginseng roots have been exported to China from the United States and Canada since the mid 1700's. American ginseng is important to traditional Chinese medicine and is used as an "adaptogen" that allows the body to adjust to stress. It is used not as a specific cure or remedy but as a component of many medicinal herbal combinations that practitioners believe help people deal with aging and related disorders.

American ginseng is a native American herb whose range extends from southern Quebec to northern Georgia and from the East Coast to the Midwest. It grows as an understory plant in the dense shade of hardwood trees. In the Northeast it is most often found growing under sugar maple and white ash. Stands where these two species comprise more than 50 percent of the mature trees are best, especially when the average circumference of these species exceeds 60 inches. Mixed stands of beech, black cherry, red maple, white ash, red oak, ironwood, basswood, and some hemlock and white pine are less suitable, but are better than stands dominated by red or white oak,

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American Ginseng

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ironwood, birch, or hickory, or pure softwood stands. Sites with few stones (75 percent tillable) or moderate small stones (50–75 percent tillable) and calcium-rich soils with organic matter are best. In parts of the Northeast, north or northeast slopes and 5–20 percent grades provide optimum orientation and facilitate air and water drainage. In the far north, such as in Vermont, Maine, and Quebec, south or southwest-facing slopes are preferred. American ginseng requires at least 1,000 hours below 50 °F during the dormant season; therefore it cannot be grown in the extreme southern United States.

Wild American ginseng is an internationally protected species and its collection is either prohibited or strictly regulated in states where it occurs. In New York, for example, state law requires that American ginseng be picked only from September 1 through November 30.

American ginseng is grown for production in field cultivated, woods cultivated, and wild simulated situations.

Field cultivated—grown in raised beds in fields under artificial shade for a period of 3–4 years (approximately 8,000 acres in production in North America in 1998)

Woods cultivated—grown in forested environment in tilled beds under natural shade for 6–9 years

Wild simulated—grown in untilled soil in forests for 9–12 years

Detailed information on seed dormancy requirements, site preparation, planting, maintenance, harvesting, and drying are provided in the Beyfuss article.

Freshly dug roots are washed, never scrubbed, and are dried slowly in a well-ventilated attic or commercial



American ginseng seeds

dryer no warmer than 100 °F. The roots cannot touch each other during drying, which may take several weeks.

According to Beyfuss, growing American ginseng is not a “get rich quick” scheme, as it takes a minimum of 5–8 years of growth before harvest. Recently the world market price for field cultivated ginseng has dropped to near the actual cost of production; however, woods cultivated and wild simulated ginseng can be extremely profitable. Growers should start small, with perhaps a few ounces of seed plus a hundred rootlets. Expand only if preliminary results are successful. The price for 2 ounces of seed is currently about \$8 plus shipping (recent quote from HSUS Enterprises Inc., Wausau, WI 54402-0509). Plant in sites with at least 70 percent shade.

An interesting note about American ginseng is that the roots, if old enough, may resemble an anatomically correct human. The more it resembles a human figure the more it is worth in Asian markets. Wild ginseng is worth up to 30 times as much as field cultivated ginseng, which makes up 90 percent or more of the world market. Cultivated ginseng was recently selling for \$10–15 per pound.

References on American Ginseng

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Naturalist's Corner



Woodlot owners and other forest enthusiasts in New England and New York are becoming more interested in special forest products. This was quite evident at a recent Agroforestry Conference in Portland, Maine. One of the many topics covered was edible wild mushrooms, discussed by Rani Cross, a Maine herbalist. Cross' talk highlighted the use of certain wild conks that grow on trees to make hot or cold teas that serve as tonics. Tonics are agents that are believed to restore or increase body tone and have invigorating, refreshing, or restorative influences. Simply boil pieces of the conks in water and simmer until the desired concentration is achieved.

The question “Is this mushroom okay to eat?” is often raised by both novice and experienced mushroom hunters, and rightly so. There is an old adage: “There are old mushroom hunters and bold mushroom hunters, but there are no old, bold mushroom hunters.” The bottom line is to be absolutely sure you know what you are picking.

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Naturalist's Corner

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Five mushrooms with possible tonic effects that occur in woodlots in this region are listed below. Descriptions are from *Mushrooms of Northeastern North America* by Alan E. Bessette, Arleen R. Bessette, and David W. Fischer.

Chaga (*Inonotus obliquus*): Cap is 2 to 4 3/8 inches wide, resembling charred wood or canker-like growth. Outer part of cap is black, dark brown, or reddish brown; inner part of cap is bright yellow brown to rusty brown. Cap is hard, brittle, and deeply cracked. Grows primarily on wounds and branch stubs on birches, but sometimes on ironwood, elm, alder, or beech.

Birch Polypore (*Piptoporus betulinus*): Cap is 1 1/8 to 10 inches wide, shell to kidney shaped. Cap surface is smooth when young, breaking into scales or patches with age. Cap is pale brown with darker brown streaks and an inrolled margin. Pore surface is white and smooth when young, becoming brownish with age. Pores are circular to angular in shape; tubes and pores become torn and tooth-like or jagged with age. Spore print is white. Stalk is lateral, white to brownish, and up to about 2 3/8 inches long. Grows on birches, singly or in groups.

Artist's Conk (*Ganoderma applanatum*): Cap ranges from 2 to 26 inches wide, shelflike to hoof shaped, stalkless, and woody. Surface is hard, thick, and crusty, gray to grayish black or brown. Pore surface is white, staining brown. Brown spore color. Gets its name from the fact that the pore surface can be "drawn" upon; any etching on its surface turns dark brown. Artists often use the conks as a medium, finishing them with several coats of lacquer to preserve their work. Grows singly or in clusters on hardwoods, especially maples.

Hemlock Varnish Shelf (*Ganoderma tsugae*): Cap is 2 3/8 to 12 inches wide, fan to kidney shaped. Surface of cap is wrinkled and can range from shiny (appearing varnished) to dull and powdery. Cap surface is brownish red to mahogany near center or overall, brownish orange to reddish orange outward, and bright whitish on the margin. Pore surface is white to creamy white, becoming brownish with age or when bruised. Pores are circular to angular in shape. Stalk is typically lateral, shiny, appearing varnished, and is brownish red to mahogany or blackish brown. Spore print is brown. According to Hobbs (1995), *Ganoderma tsugae* may have similar medicinal uses as *Ganoderma lucidum*, the Reishi mushroom, used in Asia for centuries. Grows singly or in groups on decaying conifer stumps, especially eastern hemlock.

Tinder Polypore (*Fomes fomentarius*): Hoof-shaped, stalkless, and woody. Flesh is thick, fibrous tough to woody, and yellowish brown. Spore print is white. Grows singly or in groups on decaying hardwoods.

Turkey Tail (*Trametes versicolor*): Cap is 3/8 to 2 inches wide, fan to kidney shaped. Cap surface is velvety to silky, with conspicuous concentric zones. Zones are of various colors, usually with shades of brown, blue, gray, orange, and green. Spore print is white. Grows singly or in clusters, rows, or rosettes on decaying wood.

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Biodiversity Websites

<http://plants.usda.gov>—This website has an abundance of information on plants including plant fact sheets, links to other plant sites, global plant checklist, state plant checklists accessible by clicking on states from a United States map, USDA Forest Service plant lists, and flora of North America with taxonomic keys and sketches of plants.

<http://plantfacts.ohio-state.edu>—Another plant website that features plant fact sheets from university extension offices throughout the United States.

