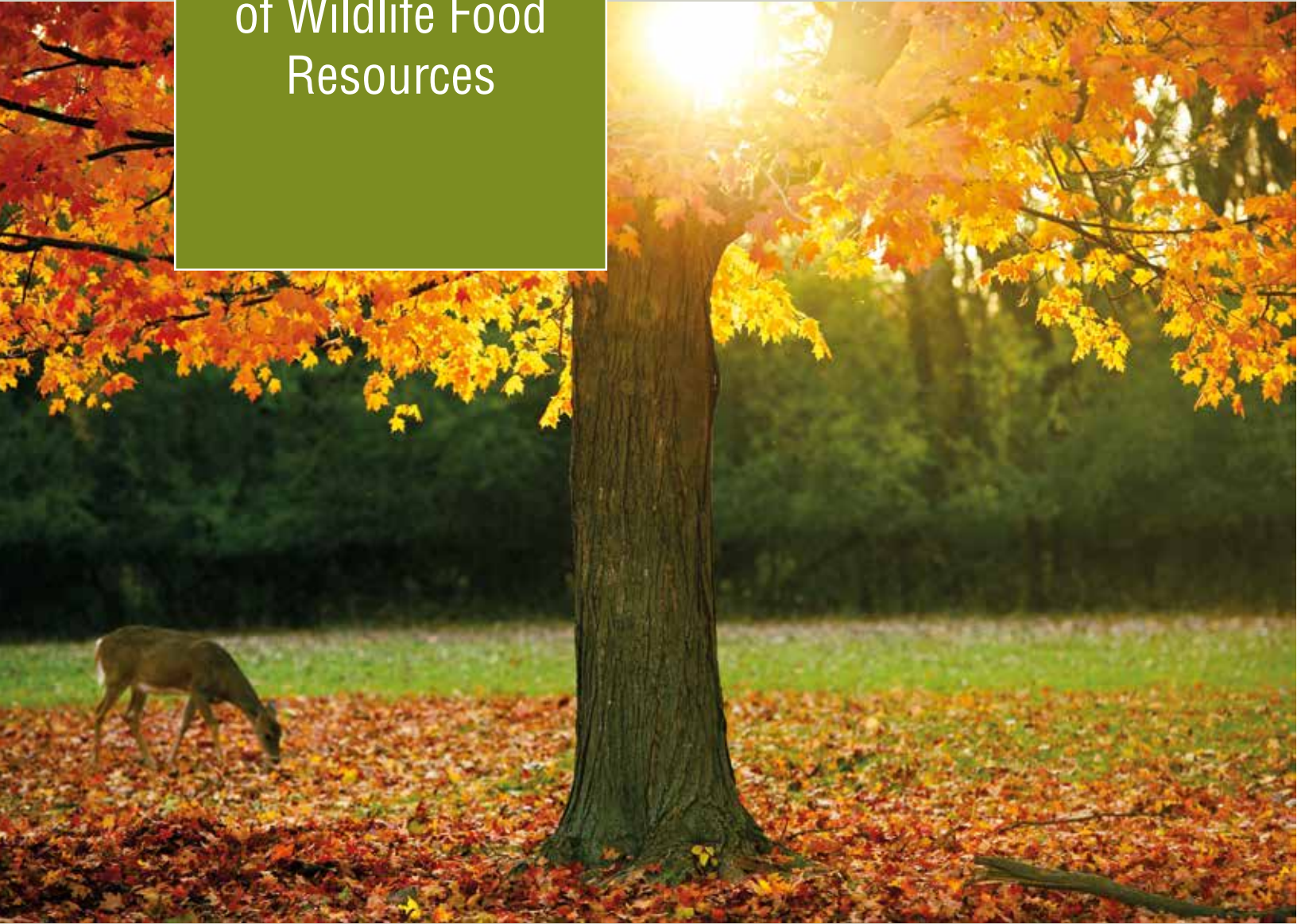


**PART THREE:**  
Managing for  
Production  
of Wildlife Food  
Resources



## 9. BEECH MAST PRODUCTION MANAGEMENT

In a mast production area the most mast is produced by dominant and co-dominant American beech trees, and some trees are much more prolific than others. Evidence of feeding by bears (claw scars on the bark, clusters of broken limbs pulled into a feeding “nest” in the fall) indicates the most prolific, consistent mast producers. Mast production begins when beech trees are about 10 inches in diameter at breast height (DBH). Forest management decisions aimed at maintaining or increasing mast production will focus on larger beech, as well as beech 6- to 10-inch DBH because of their potential for mast production or resistance or tolerance to Beech Bark Disease (BBD). Beech stand management decisions should be made in the summer, as crown condition is an excellent indicator of tree vigor and capacity to produce beech nuts. When greater than 10 percent of the crown of beech trees stressed by BBD turns yellow by midsummer, the tree has an elevated risk for mortality. When more than 50 percent of the crown is yellow and/or has died, the tree has more than a 50 percent chance of dying within a few years. Bark condition is an indicator of the tree’s level of resistance or tolerance of BBD infection.



**Figure 9.1**  
Beech trees are essential mast producers.

### VERMONT AGENCY OF NATURAL RESOURCES GUIDELINES TO ENHANCE BEECHNUT PRODUCTION



Beechnuts (“mast”) are a significant staple for many wild animals, ranging from small mammals to black bears, deer, turkeys, ruffed grouse and other birds. Unfortunately, many beech trees are in poor health due to beech bark disease. Vermont Agency of Natural Resources (ANR) has developed guidelines for identifying *beech mast production areas* with high potential for improvement, and recommendations for management to mitigate the impacts of beech bark disease and maintain beech mast as a significant resource on a landowner’s property. The guidelines were developed for ANR lands, but are helpful for managing any land with significant beech mast production. Designed specifically for beech mast production areas, they are not silvicultural guidelines for timber production.

Based upon a synthesis of current literature and knowledge of experts in forest pathology, silviculture, forestry, and habitat management, the recommendations have yet to be field tested and proven effective as a management

system. Although the individual components of the recommendations are based upon proven research (for example, mature mast trees do respond to crown release), the guidelines as prescribed have not yet been proven to produce the desired outcome. ANR will implement the guidelines at a few test sites on state lands, but as with many forestry practices it will be years before the effectiveness can be determined.

The guidelines offer a science based approach to active management of “bear-scarred” American beech stands for forest managers wishing to try an alternative to “doing nothing” in bear-scarred beech. Worse than “doing nothing” would be harvest of beech or other trees within or near bear feeding stands without the benefit of the latest research on disease resistance and mast production. The document is available for download on the Vermont Fish and Wildlife Department website, [www.vtfishandwildlife.com](http://www.vtfishandwildlife.com) under the title *VT ANR Beech MPA Guideline*.





## SELECTING CROP TREES TO RETAIN AND ENHANCE

When making decisions on which trees to retain and enhance, consider the following factors (in order of priority):

1. *Resistant to BBD, good mast producer*: Large crown  $\geq 10$ " DBH; smooth bark without any evidence of beech bark disease defects, scale, or Nectria; < 10 percent of branches are yellow or recently dead. Bear claw scarring indicates the great value of these "super beech" as mast producers.
2. *Tolerant to scale/BBD, good mast producer*: DBH  $\geq 10$ ", some smooth bark, raised lesions and/or blocky bark show evidence of repeatedly walling off and coping with BBD. There may be signs of beech scale. Less than 20 percent of circumference is affected by injuries affecting cambium; <10 percent of branches yellow or recently dead. Evidence of bear clawing indicates importance of these trees as mast producers.
3. *Resistant to scale, poor mast producer*: DBH  $\geq 10$ " with smooth bark not showing evidence of BBD, scale or Nectria, <10 percent of branches yellow or recently dead. These ultra-smooth barked trees, about two to five percent of the beech population, are desirable to maintain for their contribution to resistance in the population via sexual reproduction.
4. *Resistance to scale and mast both unknown*: Smooth bark, 6 to 10" DBH with broad crown, <10 percent of branches yellow or recently dead. Trees are potentially resistant or tolerant, represent future crop trees, and are desirable to retain for contribution to resistance in the population via sexual reproduction. To address this and other forest health issues, you should contact your local county forester.

## SELECTING TREES TO REMOVE

The objective is to release the crowns of crop trees from competition by thinning on three sides (W-N-E) and retaining trees of any species to shade and prevent sun scald on beech on the south side. When considering which trees to remove consider the following factors:

- Beech trees BBD susceptible (i.e., sunken lesions) or >50 percent yellow or recently dead crown.
- Beech trees BBD tolerant but poor mast producers, with no bear scarring.
- Any beech trees  $\geq 6$ " DBH with poor crown development or severe wind snap defect.
- Any other tree species  $\geq 6$ " DBH which will release crop trees on W-N-E sides.

## HARVESTING GUIDELINES

As beech reproduce prolifically from root suckering, harvest operations should be conducted in winter conditions (frozen ground or greater than 12 inches of snow) to minimize injury to beech roots and trunks. Timber harvests are best conducted using tracked equipment if possible to minimize root damage. Tree species other than beech can be girdled, and not felled, to avoid damage to crop trees or regeneration. However, beech trees are not to be girdled as the tree will regenerate by sprouting before it dies, creating a dense thicket of disease prone saplings.

These recommendations are excerpted from Vermont Agency of Natural Resources (ANR) guidelines developed for identifying *beech mast production areas* with high potential for improvement, and for implementing active management to mitigate the impacts of beech bark disease and maintain beech mast as a significant resource on a landowner's property. The guidelines were developed for ANR lands, but they should help you manage any lands where beech mast production is the objective. The recommendations offer a science-based approach to active management of "bear-scarred" American beech stands for forest managers wishing to try an alternative to "doing nothing" in bear-scarred beech. Worse than "doing nothing" would be harvesting beech or other trees within or near bear feeding areas without the benefit of the latest research on disease resistance and mast production. Specifically intended for beech mast production areas, these recommendations are not silvicultural guidelines for managing beech where the primary objective is timber production, or for managing other tree species for timber where beech is destined to be unacceptable growing stock. You can find this document on and download it from the Vermont Fish and Wildlife Department website, [www.vtfishandwildlife.com](http://www.vtfishandwildlife.com) or see the link in **Resources**.



## RESOURCES

U.S. Department of Agriculture. Natural Resources Conservation Service. "What is Forest Stand Improvement?" [http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb1081110.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1081110.pdf)

Vermont Fish and Wildlife Department. "VT ANR Management Guidelines for Optimizing Mast Yields in Beech Mast Production Areas." [http://www.vtfishandwildlife.com/library/Reports\\_and\\_Documents/Fish\\_and\\_Wildlife/VT%20ANR%20Beech%20MPA%20Guideline%203-22-2011.pdf](http://www.vtfishandwildlife.com/library/Reports_and_Documents/Fish_and_Wildlife/VT%20ANR%20Beech%20MPA%20Guideline%203-22-2011.pdf)

Vermont Department of Forests, Parks and Recreation. "Voluntary Guidelines for Forest Management." <http://www.vtfpr.org/Harvestguidelines.cfm>