Mast Production Areas

Description
Mast is the fruit and seeds of shrubs and trees that are eaten by wildlife. Hard mast refers to nuts (especially those of beech and oak trees), whereas soft mast refers to berries and fruits of a number of species (such as black cherry, raspberry, blackberry, and apple). While most forested areas contain at least a few mast producing trees and shrubs, forests producing significant concentrations of mast are much less common. In general, hard mast production areas of beech and oak that are used by wildlife represent a small fraction of the landscape.

A beech or oak Mast Production Area representing important wildlife habitat exhibits bear scarring on at least 15-25 tree trunks (most readily identifiable on beech) and/or show some evidence of use by bears (e.g., bear nests in crown of tree). These Mast Production Areas are disproportionately important to myriad wildlife species and crucial to the survival of Vermont’s black bear population. For example, red and gray squirrels rely on beech nuts and acorns for their survival and reproductive success. And since these animals are prey for fisher, coyote, fox, owls, hawks, and other predators, the influence of Mast Production Areas can be seen throughout the food chain.

Ecological Importance
Significant mast production areas are generally recognized as a very important wildlife food source, both because of the concentrated nature of the available food in these areas and because of the high energy content of the food, especially for beech nuts and acorns. Mast production areas are used by at least 170 species of wildlife in Vermont, including deer, black bear, turkey, blue jays, and cedar waxwings. Hard mast production areas of beech and oak are absolutely essential for the survival and reproduction of black bear in Vermont. Studies have documented that the availability of hard mast in the fall affects the minimum reproductive age of bears, productivity rates, and cub survival, and that female bears may “skip” reproduction after poor mast years. (Elowe and Rogers 1989)

Mast Production Areas Conservation Goal
To conserve high quality, functioning mast production areas across Vermont, representing the variety of forest types and regions of the state. Effective conservation should strive to maintain mast production areas in unfragmented forest habitat where development and other human activities are least likely to adversely affect wildlife use and would provide a network of connected lands, waters, and riparian areas to allow movement of wildlife species between mast production areas and other necessary habitats and to allow for ecological exchange between unfragmented habitat blocks.

Component Mapping Goal
To map documented hard mast production areas using the best data currently available.
Source Data and Selection Criteria

Mast Production Areas database, Vermont Fish and Wildlife Department

Description

Hard mast production areas mapped by Vermont Fish and Wildlife Department includes 277 mast production areas as of May 2012. Mast production areas are mapped as points, but the size of the habitat is included in the attribute data for 193 of the 277 mapped stands. The average size of these 193 areas is 65 acres and for consistency all 277 mast production areas are mapped in BioFinder as circles with area of 65 acres.

Selection Criteria

All mast production areas in the database

Component Strengths

Hard mast production areas are known to be very important food sources for many species of wildlife. The mast stand data provides some information on associated forest type and species providing hard mast (primarily beech).

Component Limitations

There has not been a statewide inventory of functioning mast production areas, so the data represents a subset of actual mast production areas. The attribute data includes estimates of acreage for about 70 percent of the mapped mast production areas but these areas are mapped as points not delineations of the functioning mast production areas. The current condition and wildlife use of mapped mast production areas is not known as they are not periodically monitored.

Component Priority & Justification

Mast production areas were ranked priority. This is a critical habitat condition for many species of wildlife, but care must be taken in using this data given the inaccuracies in the spatial locations.

For this version of BioFinder, most Species and Natural Community Scale elements were lumped into either Highest Priority or Priority in their entirety based on what the Steering Committee felt was their relative ecological importance given only the two options. Agency of Natural Resources staff are currently re-examining each of these elements and identifying areas within each component that are highest priority and priority. This further prioritization will reclassify these data in coming years and will do much to increase our understanding of places with the highest contribution to biological diversity.

For more information

A complete report on BioFinder development, methods and findings, including all 21 component abstracts can be found at www.BioFinder.vt.us. For more information specific to this component, contact John Austin, Vermont Fish & Wildlife Department, 802-476-0197, john.austin@vermont.gov