

**Guidelines for Practicing
Forest Environmental Enhancement
in Louisiana**

**The Louisiana Natural Heritage Program
The Louisiana Department of Wildlife and Fisheries**

WHAT DOES FOREST ENVIRONMENTAL ENHANCEMENT MEAN?

Ultimately, **environmental enhancement** of a forest, or the practice of **ecological forestry**, means doing what is necessary to maintain or promote the natural integrity of the forest ecosystem that is present or should be present on any piece of ground, considering site factors such as surface geology, soils, topography, hydrology and geographic location.

It means determining what forest community or communities (habitats) were originally present on the site, considering the above factors, and working to maintain the natural integrity of that habitat, if it is still present, or working to promote and restore those natural conditions that have been lost or degraded through past landuse practices.

The natural integrity of an ecosystem is probably best assessed by evaluating the composition, structure, and functions of the current forest on site and comparing these to the composition, structure and functions of the system originally present.

Restoring/maintaining the natural composition, structure and functions of the system is really what forest environmental enhancement is all about.

The Louisiana Natural Heritage Program of the Louisiana Department of Wildlife and Fisheries can provide information to landowners regarding this approach to forest management. Following is a brief outline of some major aspects of this approach to management.

IMPLEMENTING FOREST ENVIRONMENTAL ENHANCEMENT

Some ways to implement environmental enhancement of forest ecosystems are:

- * Maintain/restore historical stand composition and structure.
- * **Do not convert natural forests** (those similar to their indigenous condition in structure and composition) to commercial plantation forests, even if they are third or fourth-growth forests.
- * Favor a full natural balance of species that would be expected at a site given site factors. Do not "push" the forest to be overly stocked with commercially-desirable trees or selected wildlife trees if this upsets the natural balance of species. Do not intentionally eliminate species indigenous to a site.
- * A forest that is out of balance in composition, structure and function, or that has been highly altered from its original condition, can be brought back toward natural balance through a carefully-devised management regimen. Such management often includes environmentally sensitive timber harvest.
- * Where commercial timber production is desired, practice timber removal methods that duplicate as nearly as possible natural disturbance regimes that our forest systems evolved with. The great majority of natural disturbances are small-scale events (e.g., lightning strike mortality, thunderstorm down-bursts, small-scale insect infestations) that operate at scales of less than an acre to only a few acres. An all-aged (uneven-aged) management system such as single-tree/small group selection, appears to best duplicate these events.
- * If a natural forest must be clearcut, retain some components of the original stand, such as, snags and a variety of green trees throughout the harvest area to provide some vertical diversity. Suggest 8 - 15 trees of various ages, sizes, species and vigor retained per acre.
- * If a natural forest must be clearcut, do not perform intensive mechanical/chemical site preparation. These practices favor weedy species and degrade forest ecosystems in many ways. The trade-off for possible reduced tree growth is that natural forest integrity (and perhaps long-term productivity) is favored.
- * Consider surrounding landscape conditions when formulating management plans. Do not try to maximize diversity on every tract of land by closely intermixing different vegetation condition classes. Take a landscape perspective: if this tract supports an indigenous habitat type that is largely missing from the general landscape (for example, shortleaf pine-hardwood forests, longleaf pine forests, or older natural forests of any type), it is important to maintain this condition on as much of the tract as possible.

* In natural stands actively managed for timber production, designate "no-entry zones" of at least an acre in size each, into which no machines are to enter and no trees are to be removed for any reason -- these areas can act as miniature refuges. The number of no-entry zones will depend on size of the stand to be logged and on management in the surrounding stand. One "large" zone may be designated to take the place of several small ones.

* "Edge" is not utopia for all wildlife. While most early successional species prosper when much edge is introduced, plants and animals adapted to forest **interior** conditions usually have problems. It is important to maintain relatively large blocks of mature natural forest for these species. There is currently a super-abundance of "edge" and early successional habitat in the state. Older natural forests are becoming scarce, particularly patches larger than 100 acres.

* Maintain old-growth natural forests where possible.

* Fire is critical in maintaining/restoring many forest types. Use prescribed fire as appropriate for different ecosystems and their inclusions. Some recommended fire intervals are:

 longleaf pine and included communities - once every 1 - 3 years

 shortleaf pine-hardwood forest - once every 5 - 15 years

 mixed hardwood-loblolly forest - once every 20 - 40 years

* Use growing-season fires when possible; our forest ecosystems evolved under a regime of fires started by lightning, mainly in the spring and summer. Apply most fires in the spring, in the interval mid-April to late June. Growing-season fires can be rotated with dormant-season fires.

* Where prescribed fire is to be used, establish **permanent** burn units using "low-intensity" fire breaks (such as disked fire-breaks planted in winter with non-invasive cover, e.g., oats) only where needed. To minimize erosion and soil movement, avoid "high-intensity" plowed fire-breaks created with a v-plow.

* Do not place plowed fire-breaks above streams, branch bottoms, or around other "embedded" habitats; allow the fire to create its own ecotonal patterns on the landscape as it originally did.

* Do not mechanically or chemically disturb unique areas (e.g., bogs, seeps, temporary natural ponds, deep sandy spots, prairies or forests on calcareous clays, glades, shortleaf pine, longleaf pine, etc.) that may be present.

* Do not disturb stream-side zones; do not disturb steep slopes above streams.

* Maintain/restore historical hydrologic patterns, to the extent practicable.

* Practice state-of-the-art prevention/detection/control of southern pine beetle

problems. Be ever vigilant in detection and control of the beetles.

- * Remain alert for rare species and habitats and devise specialized management for any rare species or habitats present. The Louisiana Natural Heritage Program can provide a list of rare species and habitats and the parishes and habitats they are found in. We can also review properties to determine if any rare species or habitats have been observed from the vicinity.

- * Retain snags and low-vigor/damaged trees within the stand. These are natural components of natural forests and are important for various ecological reasons.

- * Likewise, large downed woody material (e.g., rotting logs) are important parts of naturally functioning forests. A tree has fulfilled only a portion of its ecological function in a forest at the time it dies.

- * Avoid disturbance/disruption of the groundcover in longleaf pine forests or other open forest types with substantial non-weedy herbaceous groundcover.

- * Control/remove aggressive non-native plant species that are displacing native vegetation. Some of the worst are Japanese honeysuckle, privet-hedge, Chinese tallow tree, and Japanese climbing fern (bridle-veil fern). Careful use of appropriate herbicides will probably be necessary to accomplish this.

Remember, these are only general guidelines that will require site-by-site interpretation and application by professional forest ecologists/ecological foresters. The Louisiana Natural Heritage Program can provide additional specific management recommendations that promote environmental enhancement for forested tracts anywhere in Louisiana. Our office may be reached at 225-765-2821.