United States Department of Agriculture
NRCS Natural Resources Conservation Service

Fish and Wildlife Structure – *Wildlife Brush Piles*

Conservation Practice 734- Job Sheet November, 2009

WHAT IS A BRUSH PILE?

Mark Bennett, IDNR Division of Fish & Wildlife

The term "brush pile" describes a mound of woody vegetative material constructed to furnish additional wildlife cover. Brush piles can be fashioned in many different ways to meet various cover needs for targeted wildlife species where natural ground cover is limited or difficult to establish.

Loosely formed brush piles can provide nesting habitat, resting areas, concealment, and protection from some predators for birds, rabbits, and other small mammals. Brush piles that are relatively open at ground level, but tightly compacted above, can provide good protective cover against harsh weather conditions. Densely packed piles of logs, rocks, or boulders can provide den sites for additional species of wildlife such as reptiles, where they occur.

Brush piles are typically considered a temporary measure to provide cover until natural cover can become established. Landowners should determine their focus wildlife species, assess what cover types are needed, and specifically design brush piles to meet those needs.

BRUSH PILES AS NESTING, RESTING AND ESCAPE COVER

Predators such as owls, hawks, foxes, coyotes, and domestic pets, can significantly impact wildlife populations including grouse and hares when thick, brushy cover is lacking or not well distributed. The well-planned creation and placement of brush piles can often supplement naturally occurring escape cover for these and other wildlife species.

A loosely formed brush pile will encourage plant growth by allowing sunlight penetration. The tangled network of dead branches will eventually be intertwined by a thin to moderately dense stand of grasses and forbs. The end result is excellent resting and escape cover. These types of brush piles may eventually be used as nesting sites by small ground-nesting birds where they feel adequately sheltered and protected..

The key to forming this type of habitat is to lightly pile branches in such a fashion so that plenty of sunlight reaches the ground and the plants. The branches can be sparingly piled in a teepee-type fashion or laid against an elevated object, such as a tree stump or fallen log.

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Discarded Christmas trees (without the tinsel) or spruce can be used in a similar manner. The resulting combination of overhead woody cover mixed with a grass and forb ground cover provides a secure hiding and resting site.

Another alternative is to elevate a wooden pallet approximately 8 - 12 inches above ground and lightly pile branches on pallet. Sunlight penetrating through the slats will allow grasses and forbs to grow and provide additional cover.

Seeding or regeneration of desirable plants in and around these types of brush piles will also help enhance their value for wildlife.

BRUSH PILES FOR HARSH WEATHER COVER

Brush piles can help ground dwelling wildlife escape the effects of harsh weather (cold or hot temperatures), snow, and ice. A well-constructed, properly maintained, brush pile can supplement natural cover for up to 5-10 years.

Piles can be of any size depending on species to be sheltered. Piles of this type should range between 5'-10' or 20'-30' feet in diameter, and 5' – 8' in height. Large irregular curvilinear piles, 20' in width and 50' long provide usability and access at multiple locations. The most common design is built using logs (arranged in a tic-tac-toe pattern) for the foundation and covered with brush. Start with the largest material on the bottom to provide hiding space under the pile. Shallow depressions can also be dug before beginning the brush pile to provide more space.

Foundation

Use the largest available materials when constructing the foundation. Logs 6 - 10 inches in diameter and 10 - 15 feet in length are recommended when available. The larger materials at the bottom keep the smaller limbs off the ground, helping to prevent decay.

Start construction by laying logs parallel and 6 - 12 inches apart. Next, place a second layer of logs on top of, and perpendicular to, the first layer (again about 6 - 12 inches apart - see Figure 1). Large, flat rocks can be substituted for the second layer of logs. Repeat this process one or two more times to complete the final tiers. Another configuration option could include mid-height pile tunnels for vertical diversity access. The intent is to make a pyramid-type structure that has a hollow core. Note that old and discarded fence posts can also serve this purpose.

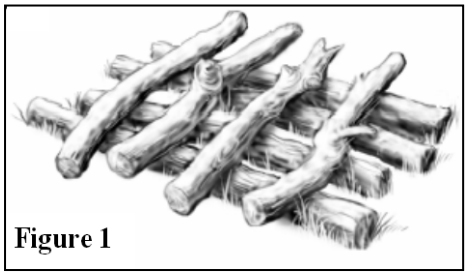
Figure 1

Many other options for building brush pile foundations are possible depending upon the materials available:

A tree stump that is still in place can create an adequate foundation (see Figure 2). Place several logs (6 - 10 inches in diameter and 5 - 6 feet long) on top of the stump so that the logs are radiating out from the center.

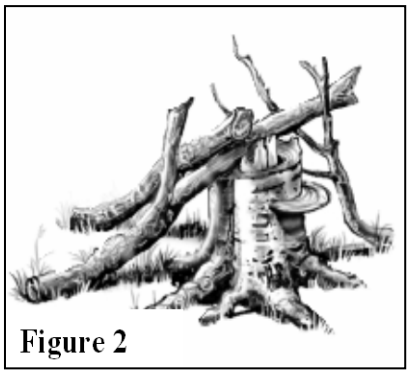
Figure 2

Discarded wooden pallets can also make a suitable base. Pallets should be arranged in 4 - 6 layers (and elevated from the ground using concrete blocks, stones, etc., if available) to form the foundation. Consider utilizing 6 - 8 inch diameter old clay drain tiles to create small wildlife tunnels within the foundation.

Small rock piles can be substituted as foundation material. Create rock piles approximately 12 inches apart with each pile about 10 inches high and 12 inches across. Stagger the piles so that they are capable of supporting the next layer of limbs (see Figure 3).

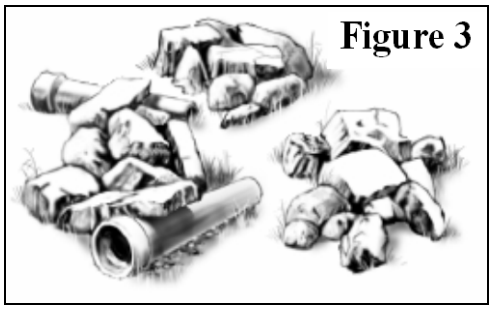
Figure 3

Living Brush Pile

Living piles are constructed most efficiently by using existing materials at the site when possible. The process of "half-cutting" or "cut-and-bend", selects individual or groups of trees and/or shrubs, where one or more cuts 1/3 to 2/3 of the woody material diameter is sawed through leaving as much uncut remaining bark as the flexibility of the stem allows. The tops are then anchored if necessary producing a bow/ bough of living limbs and branches to continue producing foliage and potential food sources closer to the ground.

Brush Covering

Once completed, cover the foundation with larger branches and limbs, placing the smallest stock on top. The cover can consist of small limbs, saplings, old Christmas trees, stumps, or loose brush. Use leaves or spruce boughs as a cap if available.

Ideally, the foundation should be covered with 2 - 4 feet of brush. Larger brush piles provide more security for wildlife and will receive more use than smaller piles. Leave 6 - 12 inch openings in the sides at several places for easy wildlife access. Add to the brush pile as new brushy material is available. The older brush will settle as it decays, and new cover must be added as time passes.

When properly constructed, harsh weather brush piles will contain an easily accessible labyrinth of tunnels and cavities at ground level and at the same time provide good overhead shelter from harsh weather.

OTHER CONSTRUCTION OPTIONS

A simple pile of logs, wood slabs, large rocks or boulders can be very attractive to amphibians, reptiles and small mammals, especially when located near or within wetland and/or woodland habitats. Piles of rotting logs or wood slabs not only provide shelter and produce an abundance of food items, but also maintain the moist conditions required by woodland amphibians.

PLACEMENT

Wildlife rarely strays far from good protective cover. This often limits the use of large open spaces that might otherwise serve as important nesting, feeding, or watering areas. By placing brush piles along the edge or strategically throughout large open areas, animals are more likely to utilize all available habitats.

Locate and orient piles to take advantage of existing natural topography or features such as slope breaks, root wads, den tree's, stream course, ground holes, or deadfall.

General Recommendations

- Good locations to place brush piles include:
  - Adjacent to edges of riparian areas, woodlands, and pasture, hay, or cropland
  - Within shrub thickets, fencerows or shelterbelts
  - In field corners or other odd areas
  - On forest floors that are lacking sufficient natural ground cover
  - As constructed drumming logs for strutting
- For edge habitats, such as along field borders, fence rows, or riparian areas, one brush pile every 200 - 300 feet will provide adequate cover and travel lanes between food sources for most species.
- In abandoned fields, harvested or thinned forests, and other early successional habitat where shrub recovery is expected, create 2 piles per acre.
- In intensive agricultural settings with little natural cover, create 3 - 4 brush piles per acre.
- Avoid the bottoms of drainage ways and low spots where standing water or flooding will reduce the usefulness of brush pile for upland wildlife species.

PLANNING CONSIDERATIONS

- Conduct a habitat assessment to determine if cover is a limiting factor for the species of interest. If natural ground cover is insufficient, brush piles may be appropriate as a short-term solution.
- Whenever possible, brush piles should be a by-product of other land treatments, such as, forest stand improvement, brush management, or agricultural land clearing, rather than a specific practice.
- Consider planning additional practices, such as, Tree & Shrub Establishment (612), Forest Stand Improvement (666), and Riparian Forest Buffer (391) to accompany brush pile establishment to provide more valuable cover and food resources in the long-term.
- Brush piles are usually most effective when located in habitat edges, such as, along forest roads and edges, agricultural field borders and corners, and along riparian areas.
- Brush piles situated in close proximity to other habitat elements required by the focus species will be more beneficial.
- Several strategically placed medium-size piles (roughly 15' in diameter and 6' high) can be better

than one large one. However, larger piles of 30'-75' in length can provide a wider variety of habitat features and access, especially when developed in conjunction with the edges of newly or re-cleared land (s).

- For living piles, construct cut-and-bend piles after sap rise and between 30%-60% leaf-out. For large tree's, cut when resilient but not too full of sap. Adjust bottom-most cut to fit diameter and flexibility of tree/ shrub and desired effect.
- Where wildfire is a concern in woodlands, smaller brush piles should be used (roughly 2-3' high x 6' in diameter). Consider strategically placing piles along natural openings, leeward side of fire threat, rock outcrops, edge of landings, etc., so they do not increase wildfire hazard.
- Brush piles can house smaller predators, such as, mink, marten, and weasels which may have detrimental impacts on other ground dwelling species, so carefully examine the effects of adding this habitat component to the landscape.
- Avoid placing brush piles in grasslands since the addition of vertical structure in these settings can be detrimental to many native grassland birds.
- Keep brush piles away from houses and lawns to avoid problems with nuisance wildlife.
- Brush piles are flammable. Keep them away from buildings.
- Do not use materials that contain toxic substances (i.e. pressure treated lumber/posts, creosote railroad ties, lead painted surfaces, tires, etc.). These substances can cause wildlife mortality either through contact, consumption, or inhalation.

OPERATION AND MAINTENANCE

Brush piles are not permanent structures. Rot and decay are a normal process of brush piles. As brush piles rot, more insects are attracted, providing additional food for birds and other wildlife. The piles should be inspected yearly to see if the state of decay is such that additional brush is needed, or if a new brush pile should be constructed.

Noxious weeds that grow up through brush piles should be controlled by hand-pulling or careful spot-spraying of selective herbicide.

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Client:		**Date:**	
Location (GPS):		**Dist. to Cover:**	
Contract #:		**Land Category:**	
Tract/Field:		**Planner:**	

Focus Species:	
Purpose of Brush Piles:	
Number, Size, and Spacing of Piles:	
Materials:	
Operation and Maintenance:	
Comments:	

DESIGN APPROVAL:

Practice Code NO.	PRACTICE	LEAD DISCIPLINE	CONTROLLING FACTOR	UNITS	JOB CLASS				
					I	II	III	IV	V
734	Fish and Wildlife Structure	Bio	Area	Acres	10	40	160	400	All
This practice is classified as Job Class (check one):					☐	☐	☐	☐	☐

Design Approved by:/s/_____ Job title:_____ Date:_____

CLIENT'S ACKNOWLEDGEMENT STATEMENT:

The Client acknowledges that:

a. They have received a copy of the specification and understand the contents and requirements.
b. It shall be the responsibility of the client to obtain all necessary permits and/or rights, and to comply with all ordinances and laws pertaining to the application of this practice.

Accepted by:/s/_____ Date:_____

CERTIFICATION:

I have completed a review of the information provided by the client or have conducted a site visit and certify this practice has been applied according to NRCS standards and specifications.

Fish and Wildlife Structure – *Wildlife Brush Piles*

Certification by:/s/_____ Date:_____

Job title: _____ Construction JAA:_____

Design Concept, Site Map, Photo, Sketch