LAND CLEARING

The term land clearing as used in this paper means clearing wetland sites of woody growths either before or after they are flooded. It does not include breaking or plowing to make the land tillable. This is covered under the section on Wetland Farming.

Land clearing is principally accomplished by 3 methods: (1) mechanically, through the use of hand tools and heavy equipment; (2) chemically, through the use of herbicides; and (3) through the use of fire. The use of fire and chemicals have been covered in the sections on Controlled Burning and Vegetation Control.

Land clearing may be practiced for a number of reasons, but the main reasons given by the managers are:

1. To remove woody growths from impoundment sites before they are flooded to prevent the formation of organic stains.

2. To remove woody growths from impoundment edges and provide grassy cover for waterfowl nesting.

3. To create a better dispersion of open water and cover so that the area is more accessible for waterfowl use and also to provide better hunter access.

4. To provide edge-type habitat for all game.

5. To enlarge goose management areas and open up waterfowl flight lanes to tall trees.

6. To clear refuge boundaries and to improve the view across the marsh.

Some of the more efficient operations have utilized combinations of these various types of removal. This survey indicated that clearing has been accomplished more often by means of power saws and other hand tools than it has through the use of heavy equipment. This has probably been a matter of expediency and not a matter of choice since heavy equipment is not always available. Some managers took advantage of public work programs to obtain less expensive labor to keep their costs down when a large amount of manual labor was involved in the operation.

So many variables enter into these operations that it is difficult to make good comparisons. Available cost figures do not always indicate the reason for unusually high or unusually low costs. If the operation is performed in the winter, snow depth, ice thickness and subzero temperatures can make a considerable difference in the efficiency of the operation since they affect the mobility of the crew and equipment. If the operation is carried on during the summer, water levels will be of importance for this same reason. Because there has been no standard method of categorizing the density and composition of the cover being removed there is no way of making accurate comparisons between individual operations. For these reasons available cost figures have been grouped
under two major types of operations and will be given as average figures for these types. The cost figures supplied by the various game managers showed that there was a significant difference between the efficiency of the operations carried on entirely by the use of power saws and hand tools and the operations involving the use of heavy equipment. The average cost of clearing woody vegetation by hand was $96 per acre, while the average cost for using heavy equipment was only $31 per acre.

**Use of Heavy Equipment**

**Buena Vista Marsh (Portage County Grouse Management Area)**

On this area a combination of methods was used. Brush up to 2 inches in diameter was moved with a McCormick 25 rotary cutter mounted on a farm tractor. Cost for this type of operation was $3.00 per acre for moving willows. Aspen is somewhat more difficult and costs would be somewhat higher. This appears to be the most efficient means of clearing brush on areas where it is possible to operate a farm tractor. Larger trees were knocked down with a D-8 bulldozer at a cost of from $5 to $15 per acre, depending on the operating conditions and the size, density and species of trees. It is important to minimize turn-around time for the dozer and to try to keep it continually moving at a fast walking pace. It was more efficient to cut trees larger than 8 inches with a chain saw than to use dozer time on them.

Front view (left) and rear view (right) of tractor-mounted rotary cutter in operation on the Buena Vista Prairie Chicken Area.
When cutting brush with the rotary brush cutter it is important to keep the cutting blade about 6 inches above the ground to avoid the heavy bases of the brush clumps which would damage the equipment. This keeps breakdown time to a minimum. These attachments are relatively low priced and they eliminate a considerable amount of clean-up labor since they chop the brush in small pieces.

Slash was removed by burning and the following summer sprout growth was treated with herbicides. The use of herbicides for this operation has already been discussed under the section on herbicides.

A similar type operation was utilized on Meadow Valley Wildlife Area but on a much smaller scale.

**Crex Meadows Wildlife Area**

On this area a somewhat different technique was used. A D-7 bull-dozer was used to shear off and knock down trees and a rookrake attachment uprooted stumps and brush. The rookrake was also used to gather the debris in piles for burning. Woody growths ranged upward from brush to 18-inch oaks and 9-inch aspen. This was a winter operation. Costs ranged from $21 per acre on areas which had been burned over first, to $51 per acre for areas which were unburned.

There is one difficulty with using the rookrake. When operating in brush the rake may become plugged with brush stems and as a result, large amounts of dirt are collected and deposited on the piles along with the brush and makes them hard to burn. However, despite this drawback, costs for the operation seem to compare very favorably. Removal of stumps eliminates sprout growth which otherwise requires herbicide treatment.

**Hand Labor**

Hand labor seems to run considerably higher than operations involving the use of equipment. One exception to this was on the Totogatic Lake Wildlife Area where the flowage basin was cleared of swamp conifers and lowland brush 2 to 12 inches in diameter using only a chain saw and hand tools. It took 4 men 31 man-days to clear 110 acres. However, the slash was left and no clean-up was attempted. In another operation on the same area 5 men in 38-1/2 man-days were able to clear cut 178 acres at a cost of only $3.70 per acre. Again no attempt was made at clean-up. If the clean-up of debris after cutting is of no importance, then this type of operation can cut costs considerably. All work was done on the ice in the winter. The flowage had been drawn down so that the stems could be cut as close to the soil as possible. Working conditions were such that it was possible to drive trucks into the area being cleared. However, no estimate was made of the density of the stands which were cut and this could be a very important factor in the efficiency of the operation.
The cost of hand-clearing operations ranged from a low of $3.70 to $178. In the latter operation a chain saw with a brushcutter attachment and 5 men with hand tools were used for 56 man-days. A flowage edge was cleared of 6- to 8-inch birch, aspen, alder and willow. Brush and slash were removed and piled above the water line.

Complete clean-up operations are apparently more efficiently carried out by the use of heavy equipment unless hand labor is extremely cheap or the area to be cleaned is small. At Kirby Lake (Barron County Forest) 20 boys belonging to the FFA (Future Farmers of America) volunteered free labor on a clearing project. Forty boy-days of labor were obtained to clean up a flowage basin of dead brush. While no cost figures are available we can probably assume that this was a very reasonable operation requiring mostly supervision.

All cutting operations which are not followed by flooding should receive herbicide treatment after resprouting occurs. Herbicides should be applied the summer following brush and tree removal. Herbicide recommendation will be found in the section covering the use of herbicides.

References

McLain, P.D.

Swindale, D., and L.R. Jahn
1956. Results of sampling the submerged vegetation in some central and northern Wisconsin flowages, with notes on environment. Wis. Wildl. Research XV(3):25-43.

Uhler, F.M.

Wilson, K.A.

Yeager, L.E.