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## THE SENEY BULRUSH PICKER

The bulrushes, hardstem, softstem, and three-square (*Scirpus acutus*, *S. validus*, and *S. americanus*), are valuable plants in marsh restoration work. They provide seed as food and stems as nesting material for waterfowl, and are useful in reducing dyke erosion. The interlacing rootstocks bind the soil and the stems lessen the destructive action of waves. In addition, muskrats relish eating the root-

designed by the writer. In one season on the Seney National Wildlife Refuge in Upper Michigan its usefulness has been proved as it collects ripe seed heads about five times as fast as by hand.

The picker can be constructed easily by a mechanic or metal worker from materials found in any garage or metal shop.

The steps in construction are as follows:

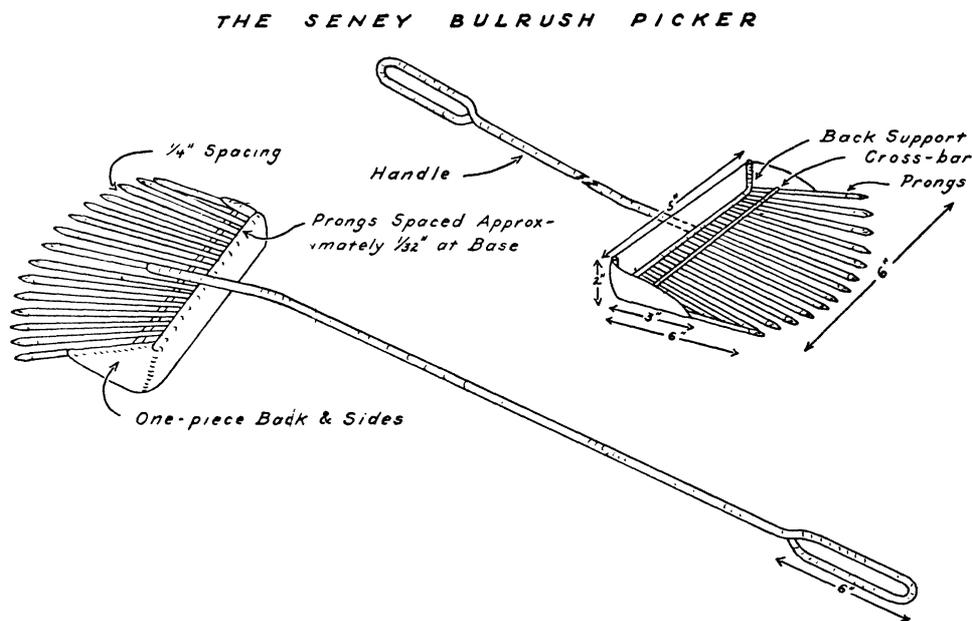


Fig. 1. Seney bulrush picker. Overall length, 24 inches; contains 30 prongs, but only 15 shown. Materials: back and sides, 28 gauge galvanized sheet metal; other parts of hi-test steel welding rod as follows: back support,  $\frac{3}{16}$  inch; prongs and cross bar  $\frac{3}{8}$  inch; handle,  $\frac{1}{2}$  inch.

stocks, and deer and geese have been known to browse freely on the succulent young culms.

Bulrush stands are best established by planting seed. Seeding in itself is fast and successful, but the collection of seed is difficult. Most situations where seed is collected are too wet, stony, or inaccessible, or too small in size for successful harvesting with farm machinery. Stripping the ripe heads by hand is the most common method, but is costly and time consuming. To expedite hand collecting, a picker (Fig. 1) was

Cut prongs, cross-bar, back support, handle and galvanized back to size; sharpen prongs on an emery wheel; space prongs properly on a flat metal surface; weld prongs lightly to cross-bar; weld back support to prongs; add galvanized metal back; attach handle. For sturdiness, spot weld all contact points.

Collecting is aided materially by shaping the prongs into an arc and bending the handle slightly, as shown. The picker is held in the hands and pushed through the bulrush stems. Since the culms are slender near the fruiting panicles, they are easily engaged by

the prongs and an upward thrust removes the fruiting heads. By repeated thrusts, the accumulated heads are wedged or held loosely in the picker and then scraped by hand into a receptacle. Some loss of seed occurs when fruiting heads are bursting with ripe seed,

but this is negligible if harvested early in the collecting season. Careful examination of the fruiting heads will indicate the best time to collect mature seed.—JOHN L. SYPULSKI, *Seney National Wildlife Refuge, U. S. Fish and Wildlife Service, Germfask, Michigan.*

#### OCTOBER FOODS OF RUFFED GROUSE IN MAINE<sup>1</sup>

This study is based on the contents of 34 crops and gizzards with food of the ruffed grouse (*Bonasa umbellus*) collected in Maine during October, from 1936 to 1939. Material was analyzed by the volumetric method of the U. S. Biological Survey (1938). The foods were dried to a moisture content approximating that when eaten, the volume of large seeds and fruits was measured by their displacement of corn meal, and smaller items were firmly packed into a graduated tube reading to 0.1 cc.

Plant foods were grouped as buds, leaves, or fruits. Items other than grit that comprised one per cent or more of the total food were given percentage values. Grit was computed as a percentage of the total contents of the digestive tract.

Frequency of occurrence is a valuable index of the importance of foods in connection with volumetric data, but numerical ratings could not be given because the contents of nine crops had been combined by the collectors which precluded separating the items in each.

The 108 foods identified represented 79 species or larger taxonomic groups, and of these, 63 formed one per cent or more of the total food (Table 1). The predominance and wide variety of plant material (98.2%) over animal (1.8%) in general substantiate the findings of Kelso (1935), Gross (1937), Nelson, Clarke, and Bailey (1938), and Kuhn (1940) as to the diet of the ruffed grouse.

<sup>1</sup> Contribution from Maine Cooperative Wildlife Research Unit, Orono, Maine. Maine Department of Inland Fisheries and Game, University of Maine, American Wildlife Institute, and U. S. Fish and Wildlife Service, cooperating. The Departments of Botany and Entomology, University of Maine and the U. S. Fish and Wildlife Service gave helpful aid in identifying food materials.

Fruits, leaves, and buds comprised 41.7, 36.9, and 13.9 per cent, respectively. Leaves were not dry when eaten, but fruits often were and would have been of greater significance had all the analyses been made with equally dry material. Woody buds are of lesser volume, but made up an important part of the October food.

The importance of availability in the taking of food is well shown with clovers. These predominantly herbaceous plants remain green until late fall, often after snowfall, and the leaves are high in the October diet in Maine (13.4%). Kelso (1935) found them relatively unimportant from December through March in New York; Gross (1937) reported about 2 per cent of clover leaves among fall foods in New England; and Nelson, Clarke, and Bailey (1938) found less than one per cent during late fall in Virginia, as did Kuhn (1940) in Pennsylvania.

Leaves and buds of aspens comprised about one-eighth of the food. Buds of big-tooth aspen (3.7%) predominated, whereas more leaves of quaking aspen (7.6%) had been eaten. *Populus* also proved important in New York (Kelso, 1935) and Pennsylvania (Kuhn, 1940), rating 12.5 and 6.4 per cent, respectively.

Pomes and nutlets of hawthorn were taken in a proportion similar to that found in New England by Gross (1937), but in larger percentage than in studies in Pennsylvania, Virginia, and New York. Hosley (1939) suggests that the nutlets are often retained in the gizzards for a considerable period, thus giving them undue importance in analyses. As most of the fruit in this series was taken from crops the volume is fairly representative.

Yellow birch buds are of considerable importance as winter food, but it was note-