

# A CUTTER FOR SAMPLING CONE SEED QUALITY

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When cones are collected or purchased in the Pacific Northwest, cutting a sample of these cones is standard practice to get an estimate of the number of full seed they contain and therefore the amount of seed likely to be extracted from them as a guide to their worth for collecting or buying.

Cones can be cut by many methods. Sometimes a knife or an axe is used, sometimes sharpened files or saw blades mounted on a base and having a chopping action. A good cutter for field use on Douglas-fir and smaller cones is the Osborne cone cutter described by Hopkins <sup>1</sup> and by Syverson.<sup>2</sup> This cutter is adequate for limited field use, but for cone buying, when 5 to 10 cones are sampled from every sack, a more efficient and less tiring tool is required.

The type of cone cutter presently used by the State of Washington, Department of Natural Resources, was designed similarly to those used for many years by the Manning Seed Co.

This cone cutter (fig. 1) is ideally suited for Douglas-fir, the species of cones most commonly collected. But it has been used to cut cones of practically every species in this region, including ponderosa pine, the true firs, and western hemlock. Cones too big to be cut in one motion, such as noble fir, are cut in two or three.

Although easily portable, the cutter can be fastened to a table or a bench for work in one location. The wide handle provides a broad, comfortable grip for the operator, and is high enough so that he does not rap his knuckles each time he makes a cut. The pivot hole is about 2 inches higher than the blade edge, and, as pointed out by Winjum and Johnson,<sup>3</sup> this arrangement

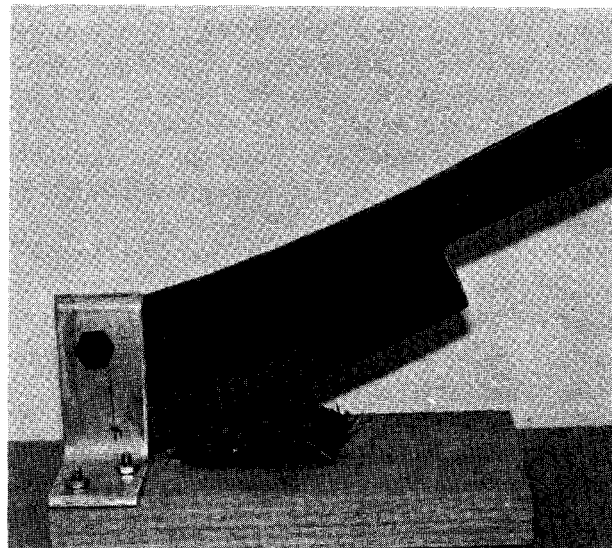


Figure 1.—Cone cutter with a Douglas-fir cone in position to be cut.

gives a forward and slicing movement to the cutting edge rather than a chopping action. This provides a much smoother cut and makes the full seeds easier to see and count.

The cone cutter (see diagram, fig. 2) is constructed of the following materials:

1. *The blade.* The blade of the cone cutter is a small meat cleaver and is about 7 inches long and 2 1/2 inches high. The overall length is 12 inches. The cleavers are manufactured in different sizes. For this reason, the exact location is not shown, and the dimensions of the pivot hole are not given.

2. *The base.* To withstand the repeated cutting action of the blade, the base must be of a very tough material. For this base, oak was used. Although another hardwood could be substituted, softwood lumber or plywood would likely splinter in a short time.

3. *Blade supports.* Two pieces of angle aluminum provide brackets to pivot the cleaver. Each piece is held to the base by two flathead countersunk stove bolts 1 1/8 inches long and 3/16 inch in

<sup>1</sup> Hopkins, Donald R. The Osborne Tree Cone Cutting Knife. *J. Forest.* 54: 534. 1956.

<sup>2</sup> Syverson, Martin L. Cone Cutter. *Tree Planters' Notes* 42. 1960.

<sup>3</sup> Winjum, J. K., and Johnson, N. E. A modified-knife cone cutter for Douglas-fir seed studies. *J. Forest.* 58: 487-488. 1960.

diameter. The diameter of the bolt holding the cleaver must be matched to the cleaver hole size. The aluminum angle is used because it is lighter than angle iron and does not rust. All screws and

bolts are plated to prevent rusting. Although not absolutely necessary, a nylon or polyethylene washer between each side of the blade and the aluminum bracket will provide smoother action.

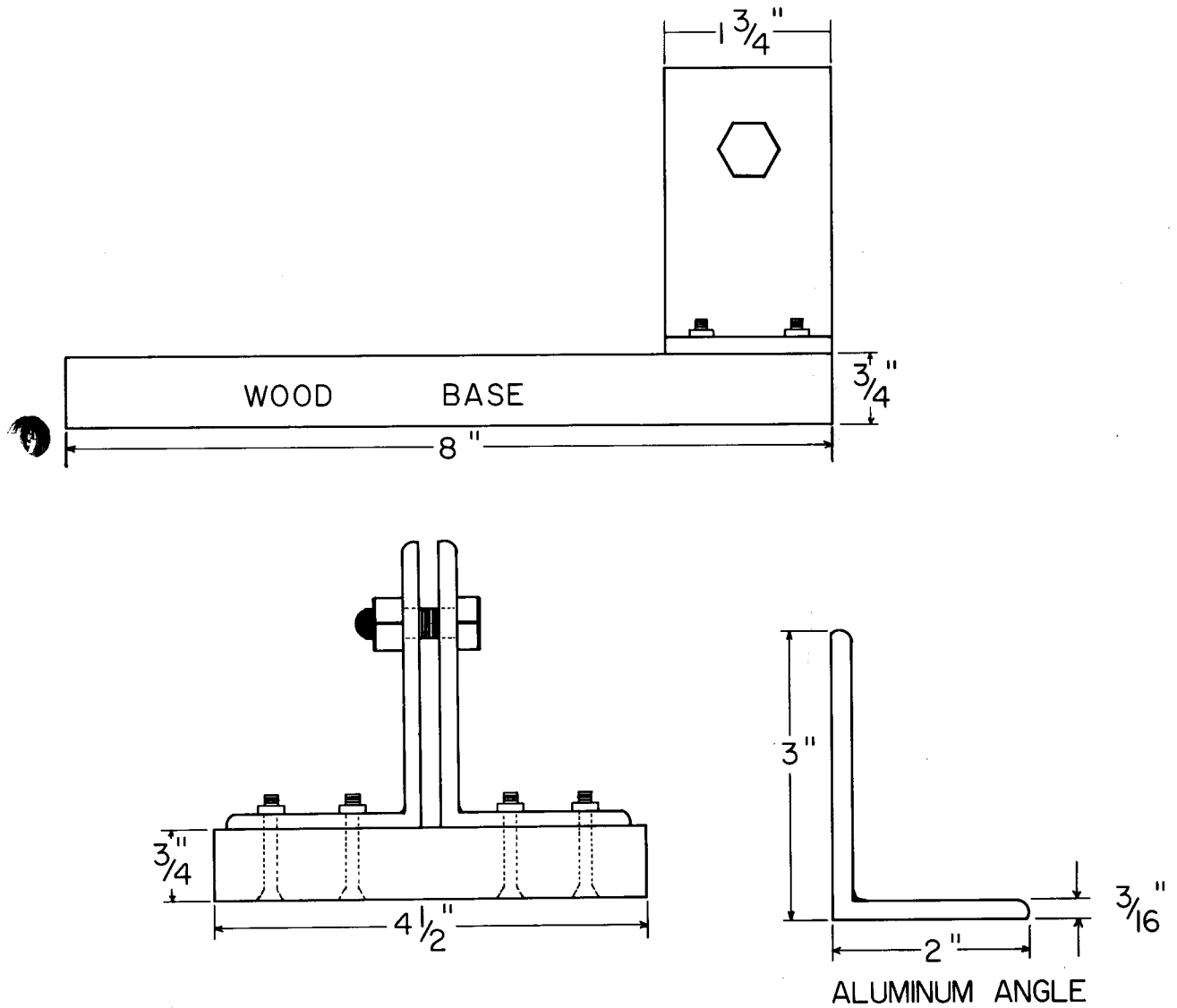


Figure 2.—Diagram of cone cutter base and blade supports.