

## A PORTABLE TENT-CAGE FOR ENTOMOLOGICAL FIELD STUDIES<sup>1</sup>

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The requirements for cages in entomological field work vary widely in accordance with the insect and host material under study. This paper describes the construction, advantages, and disadvantages of a lightweight, portable tent-cage developed during recent investigations of the Douglas-fir beetle, *Dendroctonus pseudotsugae* Hopk. It was designed to facilitate the study of the bark beetle and associated insects with known populations in logs under field conditions.

The tent cages shown in the accompanying illustrations are six feet long with sides and floor four feet wide, thus forming in cross section, an equilateral triangle with a height of approximately three and one half feet. The floor is of 10-ounce canvas with four corner loops of the same material and a plastic-screen drain to prevent the accumulation of water. The walls are of 22-mesh netting with  $\frac{1}{4}$  inch rope running beneath cotton tape along the apex and extending as ties beyond each end. Nylon netting was found to be more durable than cotton mesh and has less tendency to stretch when damp. However, it deteriorates upon long exposure to sunlight, but this condition is seldom encountered in the shade of the forest.

A simple sleeve formed by three-foot extensions of the nylon mesh from the walls and floor, closed by gathering and tying with cord proved satisfactory as a door (Fig. 1). This system worked better than a design in which flaps from the walls and floor were rolled on dowels to effect closure (Fig. 2). Further improvement might be made in the method of closing by employing inexpensive plastic zippers to fasten the free sides of a flap-type door.

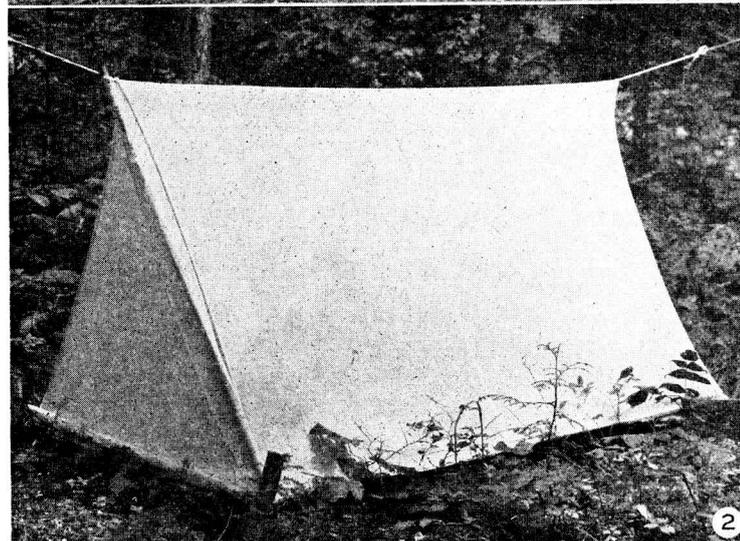
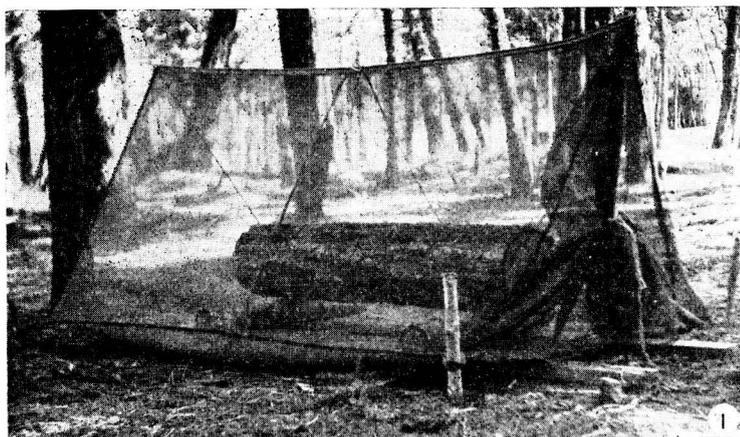
The cages are set up by staking the

tarpaulin floor with pegs through the loops to a level area of ground between two trees and fastening the ties, adding light rope if necessary, to the trees at or above breast height, depending on the distance between the trees. Two pieces of 2" x 4" lumber placed under the tarpaulin floor prevent the contents of the cage from pressing the canvas to the ground where it may rot. Short rollers about three inches in diameter help to ease the logs into the cages. The rollers, supported by the 2" x 4" wood beneath the floor, are then blocked in place with wooden wedges, holding the log off the floor and permitting complete air circulation around it.

These tent cages have one disadvantage when used in the Cariboo region of British Columbia. Rabbits and mice cause considerable damage to the material gathered together where the cages are closed. However, small tears can be repaired easily with patches of muslin applied on both sides of the netting with a rubber base cement between.

These cages have been used successfully for three years of Douglas-fir beetle brood and population studies. Although they could not be used during winter where snow may damage them, they have a number of advantages. Since they weigh only four pounds and can be folded tightly (12" x 14" x 3"), several can be carried by one man into areas inaccessible by road. The accessories, such as pegs, rollers and floor supports, can be made readily from material available in the forest. Two men can erect a cage in five minutes. A cage will accommodate a log five feet long and eighteen inches in diameter with sufficient room available for one to enter and examine the experimental material (Fig. 3). Manufactured cost per unit is about sixteen dollars on the West Coast.

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**Fig. 1.** Nylon-mesh tent-cage showing continuous apex ties and front opening closed by gathering of 3-foot sleeve tied with cord.

**Fig. 2.** Cotton-mesh tent-cage showing front opening closed by rolling flaps on dowels.

**Fig. 3.** Nylon-mesh tent-cage showing ease with which contents can be examined.