

IX. A TECHNIQUE FOR COLLECTING BOTANICAL SPECIMENS  
IN RAIN FOREST

I. Introduction — The need for a simple method of collecting botanical material from rain-forest trees became evident during the construction of a field key to the rain-forest trees of North Queensland. Many collecting techniques have been developed, e.g. throwing sticks and stones, severing branches with rifles and shotguns, felling trees with axes and saws, breaking branches with hand thrown lines and using monkeys to climb and pick twig samples. However, the collection of botanical material from rain-forest trees is a difficult and time-consuming task. The problem is not as great in forests consisting of a small number of tree species. In such forests it is generally possible to visually group the trees into species assemblages without knowing the identity of each species. When a low branched individual of a particular species is sighted, botanical material can be collected. This approach does not work satisfactorily in rain forest because of the large number of tree species and the long slender trunks on most trees. Although these trees may reach 60 m in height they usually have at least part of their crown within 20-30 m of the ground.

II. Technique — The basic aim is to loop a strong nylon cord over a branch in the crown of the tree and to break a branch by pulling on the cord. There are two steps:

1. A lead sinker weighing 50-70 g, attached to a monofilament nylon fishing line with a breaking strain of 7 to 9 kg is propelled over a branch with the aid of a catapult and allowed to fall to the ground after passing over the desired branch.
2. The sinker is removed and the end of the nylon cord is attached to the monofilament line and hauled up and over the branch and back down to the operator. One or more operators pull on both ends of the heavy cord until the branch breaks.

The nylon cord must be quite strong and tightly woven. A cord with a breaking strain of 200 kg and a diameter of 4 mm is easy to use and is reasonably durable and resistant to abrasive wear.

The monofilament line is wound onto a plastic casting reel with a diameter of 15 to 20 cm. The casting reel is placed on a polythene bag on the ground so that the line does not become entangled with any twigs or vines. About 2 m of line is unwound and the lead sinker placed in the pouch of the catapult. The catapult is aimed slightly above the selected branch and discharged in the normal way.

When hauling the heavy cord into the crown of the tree, snagging is minimized if the sinker has been removed from the fishing line. This is an operation which is performed many times each day, and, although a variety of quick release swivels were tried, a system of two interlocking loops has been found to be more effective. One loop is permanently attached to the sinker and the other loop is tied into the end of the fishing line on the reel: the loop on the end of the fishing line must be large enough for the sinker to pass through.

III. Discussion — The method had proved to be generally effective, and specimens can be procured from nearly all trees; on most trees it is possible to collect from particularly desirable branches. The success of the technique depends on the catapult and the monofilament line which permit the technique to be used in the rather confined spaces on the floor of the rain-forest and result in a good range and a high degree of accuracy. The overall efficiency of the technique improves markedly when the operator gains experience and learns which branches will yield an adequate specimen and which will break easily.

Safety helmets should be worn at all times, as the operator may be injured by falling branches or by the lead sinker. Pulling from vertically beneath the branch should be avoided, but all too frequently the nature of the vegetation leaves no alternative. This position is particularly dangerous if the operator is caught off balance when the branch snaps suddenly.

If the lead sinker becomes entangled in the crown of the tree, it can only be freed by pulling the monofilament line until it breaks or the sinker comes free. If the line breaks, the sinker either stays in the crown of the tree or falls to the ground at some unpredictable point. If the sinker comes free and is still attached to the monofilament line, then, because of the elasticity of the line, the sinker returns with frightening velocity to the operator. Sinker-freeing operations are best done from the shelter of a large tree or rock.

Some branched are very tough, particularly the long attenuated horizontal branches, which act like gigantic fishing rods and can be bent into semi-circles without breaking. Figs (*Ficus* spp.) are the most difficult to break and some Sapotaceae and Sterculiaceae are almost as tough.

The greatest height attained to date was in excess of 40 m. Suggestions to increase the range of the technique have included the use of spear-guns, crossbows and naval line-throwing guns. Such weapons could be of value when

dealing with very tall trees, but the cheapness, versatility and portability of the catapult places it well ahead in overall efficiency in dealing with the general run of the rain-forest trees.

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