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A SAFE, FLEXIBLE AND NON-INJURIOUS TECHNIQUE FOR CLIMBING TALL TREES

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ABSTRACT. A technique adapted from the aid-climbing methods practiced by rock climbers is described for climbing tall trees. Equipment lists are provided and the technique is illustrated. The technique provides an alternative to climbing with spikes or shooting or throwing a line from the ground over a limb high above. It is simple and easy to learn and, once practiced, can serve as an efficient and safe method to access the canopy of a large tree. The technique is applicable to trunks up to ~ 1.5 m diameter, or to heavy lianas growing on even larger trunks. This method can be used not only to gain access to nearly any large tree, but also provides one with the ability to move about in that tree with relative ease and safety. With practice, a climber using this method can ascend from ground level to 30 to 40 m up in the forest canopy in one hr or less. The advantages over other tree-climbing methods are discussed.

INTRODUCTION

Most biologists requiring access to the crowns of large trees either climb the trunk of the tree with some form of spikes, or use methods similar to those described by Perry (1978), Nadkarni (1988), Tucker and Powell (1991), or Dial and Tobin (1994). While those methods prove very useful in many applications, they do have their disadvantages. The technique described here, adapted from the aid-climbing methods practiced by rock climbers, provides an alternative to climbing with spikes or having to shoot or throw a line from the ground over a limb high above.

The technique is simple and easy to learn and, once practiced, can serve as an efficient and safe method to access the canopy of a large tree. This method of access was used in the construction of approximately 50 observation platforms at heights of 27–45 m in canopy emergent trees of lowland rainforest at three different sites located in the Department of Madre de Dios in southeastern Peru. It was also used in the construction of the rainforest canopy walkway at the Amazon Center for Environmental Education and Research (ACEER) in the Department of Loreto in northeastern Peru. Additionally the method has been used to climb tall forest trees in Costa Rica, eastern Paraguay, California and Maine. With practice, a climber using this method can ascend from ground level to 30 or 40 m in the forest canopy in one hr or less.

This technique is applicable to trunks up to ~ 1.5 m in diameter, or to heavy lianas growing on even larger trunks. The actual climbing technique is the same no matter what the size of the tree or liana. This method of ascent can be used not only to gain access to nearly any large tree, but also provides one with the ability to move about in that tree with relative ease and safety.

Large diameter trunks, especially those with a heavy growth of epiphytes or vines, can be very difficult to climb using our method. Hence, large lianas on the desired tree or adjacent transfer trees, when present, can be climbed more effectively. Dial and Tobin (1994) discuss the use of such a transfer tree. From above, it is usually possible to move into the desired tree.

MATERIALS AND METHODS

Equipment.—A mixture of rock-climbing and caving equipment is utilized. The necessary equipment includes the following:

1. *Rock-climbing sit-harness*—Most models are suitable and it is a matter of personal comfort and preference. Whichever harness is chosen, it should have loops for holding gear (a gear-racking system).

2. *Rope*—For this kind of work a static rope is preferable to the dynamic rope used by rock-climbers. Our personal preference is for Blue Water II 7/16 inch (11mm). The rope should be a bit longer than double the height of the ascent. For convenience and/or emergencies it is a good idea to also have another single length rope available.

3. *Carabiners*—Approximately ten (minimum 5) screw-gate or locking carabiners and four (minimum three) snap-link or non-locking carabiners are required.

4. *Etrier*—One four-step model is recommended.

5. *Slings*—Nylon slings of tubular webbing are used for the "waist slings" and "tree slings". Webbing of 1 inch width grips the trunk better than 9/16 inch webbing. The slings can be tied from lengths of webbing, but we prefer sewn slings

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for their ease of handling. Two 24 inch slings function well as the two "waist slings". An assortment of slings of 24 and 48 inch lengths is needed for the "tree slings". Six 48 inch slings and 15 to 20 24 inch slings should be adequate for most situations. One or two 6 inch slings are occasionally useful to lengthen the tails on the "tree slings".

6. *Descending device*—We prefer a figure-8, but any descending device is suitable.

7. *Throwing weight*—It is sometimes useful for throwing the rope over nearby limbs, combining elements of the arborist techniques described by Dial and Tobin (1994).

8. *Rope ascenders or Prusik loops*—Rope ascenders are not usually carried in the initial ascent due to their weight. If there is a partner on the ground they can be sent up when needed to ascend short distances.

9. *Climbing partner*—While it is possible to climb solo using this technique, and both of us have frequently done so, it is generally easier and much safer to have a partner on the ground during the initial ascent.

Ascent.—Wearing a rock-climbing sit-harness, the climber ascends the trunk in a series of inchworm-like movements using an etrier in combination with a selection of nylon webbing slings and carabiners. We use the webbing slings, girth-hitched together, to grip the tree and provide support for ourselves. The etrier serves as a step ladder to move us upward. The climber is always attached to the trunk or a major limb of the tree by at least one nylon webbing sling. In this way the climber makes the climb in safety, with a fall virtually impossible.

FIGURES 1–7 illustrate the steps involved in ascending with this technique. Both 24 inch "waist slings" are connected to a screw-gate or locking carabiner on the climber's harness (FIGURE 8). One "tree sling" is girth-hitched to the trunk of the tree 1.5–2 m above the ground at the beginning of the ascent (FIGURE 10). Ideally, the length of the "tree slings" is adjusted so that a tail of not more than 5 to 10 cm hangs down. This allows for maximum upward progress with each move. With the "tree slings" adjusted properly, vertical progress is a bit less than a meter with each move. If the trunk is too wide for the "tree slings" to be easily passed or thrown around it, then both "tree slings" should be passed around the trunk at the start of the ascent. Then the climber ascends, carefully raising each "tree sling" so as not to release its ends.

The snap-link or non-locking carabiner of one of the "waist slings" and the snap link of the etrier are both connected to the screw-gate of the "tree sling" (FIGURE 9). Throughout the climb, at least one of the "waist slings" is always connected to a "tree sling", with their use alternated as the climber ascends. For ease of handling, the etrier's carabiner is positioned closer to the trunk than the carabiner of the "waist sling".

The climbing rope is attached to the gear rack on the climber's harness and is pulled up as he/she climbs. If the need arises for a quick escape, as can happen when a nest of ants, bees or wasps is encountered, then the rope is simply connected to the uppermost "tree sling" for rappelling. It is also ready if the climber plans to move from a transfer tree to the desired tree. It can also be used to throw short distances to speed up the climb. Otherwise, once the final destination is reached, it can be hung for a partner to climb up or for the eventual descent.

As the climber ascends the tree, the length of the "tree slings" is adjusted as the trunk diameter decreases. For this reason, we carry a fairly large selection of slings. It is generally not necessary to adjust the length of the "tree slings" more frequently than once every four or five moves.

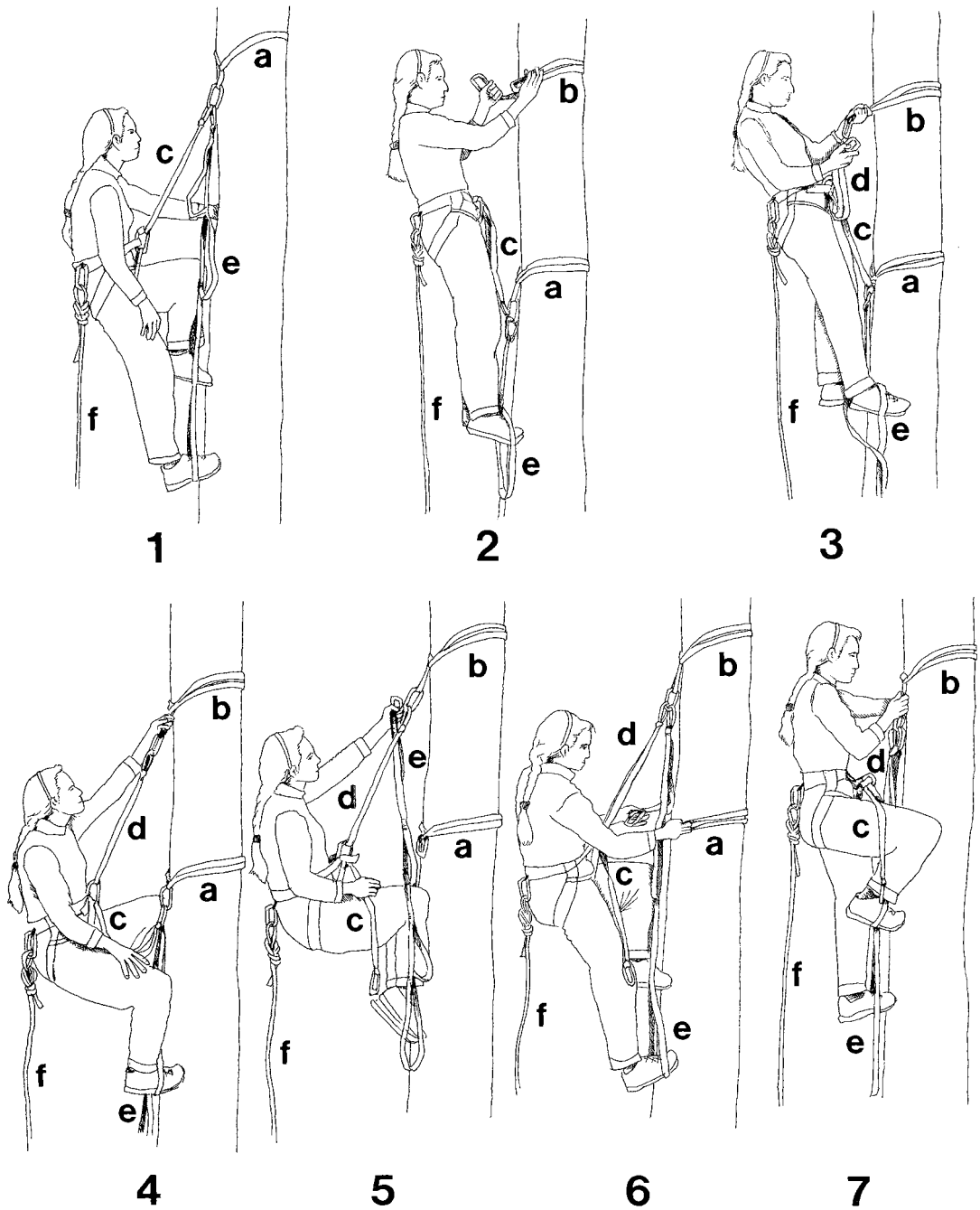
In our work we have found the use of a transfer tree necessary for about a third of the initial ascents. Once a rope has been thrown from the transfer tree over an appropriate limb in the desired tree, that end of the rope is then lowered to a partner on the ground. The partner takes up the slack and affixes the rope to a secure anchor point. The climber then attaches the other end of the rope to his/her sit-harness and swings across to the desired tree. He/she can then proceed up the rope with rope ascenders or Prusik loops to the limb over which the rope is hung, and continue with the original technique.

Discussion

This technique has three advantages over climbing with various kinds of spikes or cleats: trunks of relatively large diameter can be climbed, climbing is relatively easy (requiring no high levels of endurance), and no serious damage is done to the tree. Some trees in the Peruvian rainforest where we have worked can be killed by one climb with spikes (A. Gentry, pers. comm.).

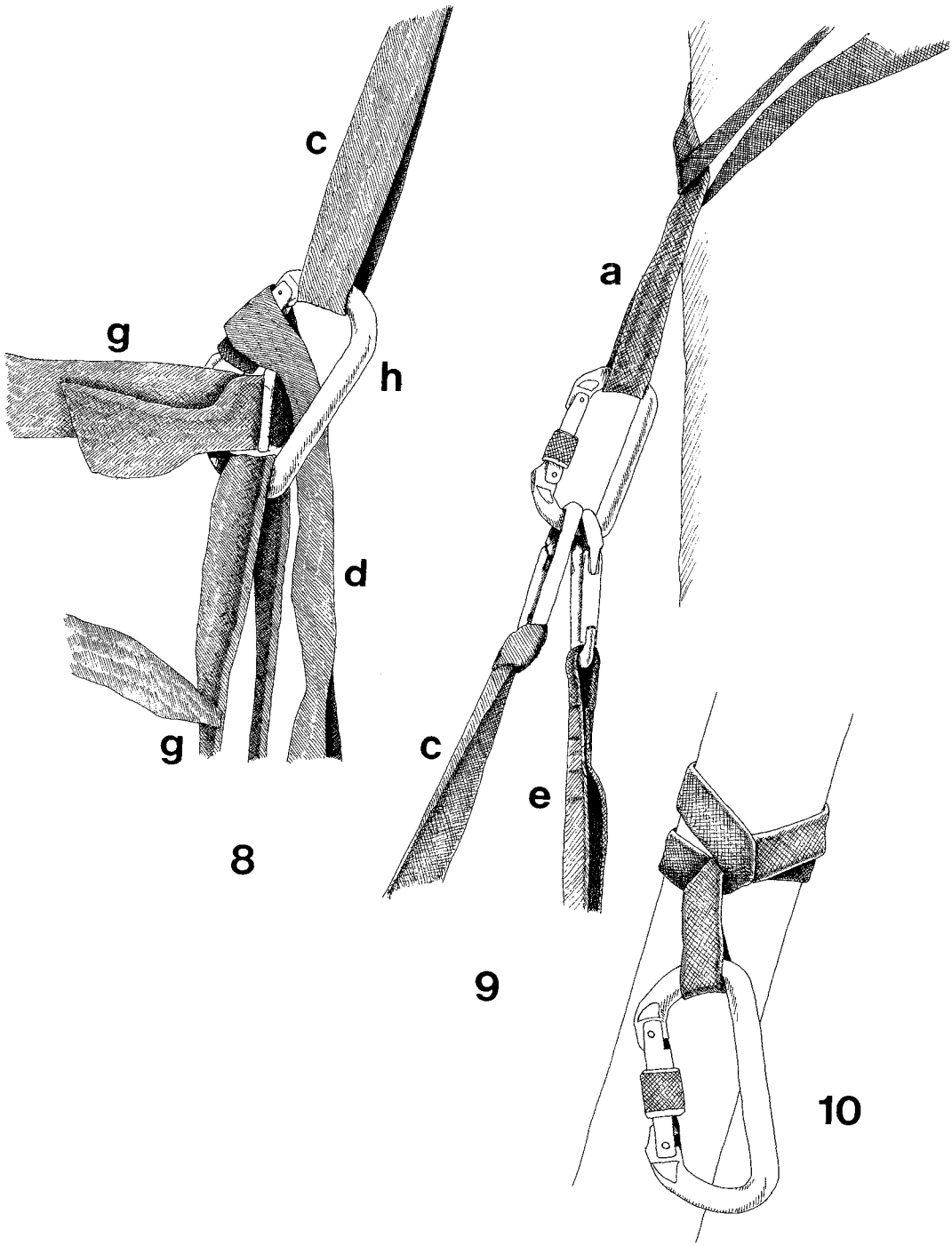
A benefit of this climbing technique over the stanard SRT technique of shooting a line into the canopy is that time is not wasted in attempts to shoot lines over high branches. In dense vegetation, shooting a line from the forest floor can be difficult. Using our method, an experienced climber can ascend 30 or 40 m up into the forest canopy in one hour or less. More importantly, our technique avoids the possibility of securing a climbing rope over an unsafe, rotting limb.

Once in the crown of the tree, the climber can continue to move about on vertical, diagonal and horizontal limbs using the same basic technique.



FIGURES 1–7. Steps involved in climbing with this technique. 1. Climber is connected to "tree sling" A by "waist sling" C. Her feet are in the etrier, ready to climb. "Tree sling" B hangs over her shoulder, ready for next step. 2. After climbing to the top of the of the etrier, climber girth-hitches "tree sling" B around trunk. 3. Still standing in top step of etrier, climber connects "waist sling" D to "tree sling" B (leaving "waist sling" C connected to "tree sling" A). 4. Climber sits back down, connected to "tree sling" B by "waist sling" D. 5. Climber disconnects "waist sling" C from "tree sling" A, then moves the etrier from "tree sling" A up to "tree sling" B. 6. Climber removes the "tree sling" A from around the trunk. 7. Climber steps back up the etrier to repeat the process.

Figure Abbreviations: A, "tree sling"; B, "tree sling; C, "waist sling"; D, "waist sling"; E, etrier; F, climbing rope.



FIGURES 8–10. Closeup views of attachments. 8. Both "waist sling" C and "waist sling" D are connected to a screw-gate or locking carabiner on climber's harness. 9. Snap-link or non-locking carabiner of "waist sling" C and snap-link or non-locking carabiner of etrier are both connected to screw-gate or locking carabiner of "tree sling" A. For ease of handling, the etrier's carabiner is positioned closer to the trunk than carabiner of "waist sling". 10. A short sling is girth-hitched to a limb.

Figure Abbreviations: A, "tree sling"; C, "waist sling"; D, "waist sling"; E, etrier; G, climber's sit-harness; H, carabiner attached to climber's sit harness.

This can be difficult or impossible if one is using spikes, and time-consuming to constantly re-hang a climbing rope. However, our technique may be more difficult than the arborist methods described by Dial and Tobin (1994).

We have used this method of ascent exclusively or in combination with other methods for all our work over the last seven years in hundreds of tropical and temperate trees. The technique has been taught to many biologists and the members of our construction crew from the ACEER Canopy Walkway as well as to numerous recreational climbers. With a little practice, virtually all of them found it relatively easy to ascend trunks and move about in the trees.

We urge users to to keep in mind the health of the trees and their epiphytic communities and to limit one's disturbance as much as possible. This has been a guiding principle in our work and one we advocate for all biologists working in the canopy.

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