UNIVERSITY OF COPENHAGEN

Climbing into the Crown Directly - 4

A light-weight catapult for use in connection with the advanced line system

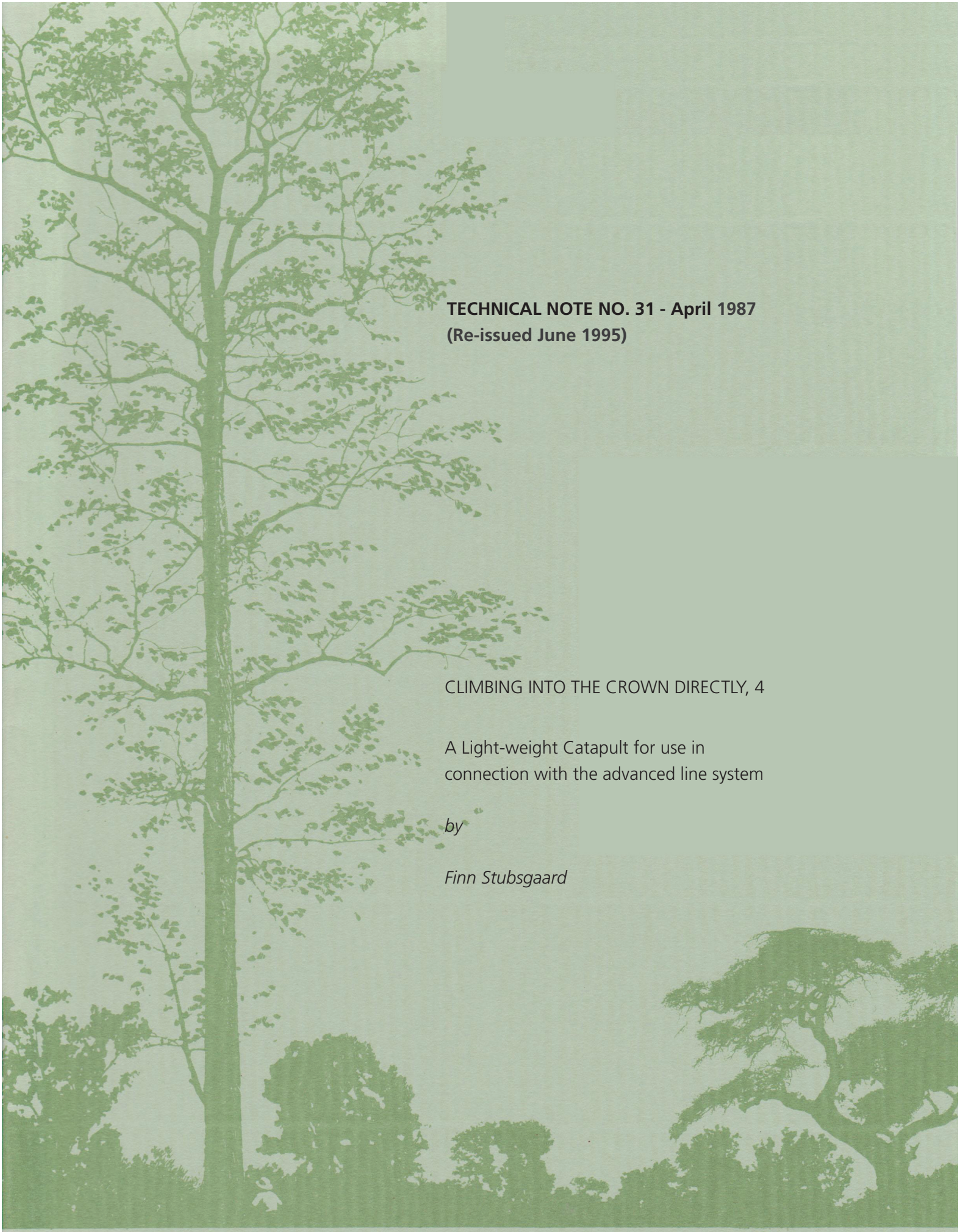
Stubsgaard, Finn

Publication date:
1987

Document version
Early version, also known as pre-print

Citation for published version (APA):
Stubsgaard, F. (1987). *Climbing into the Crown Directly - 4: A light-weight catapult for use in connection with the advanced line system*. Danida Forest Seed Centre. Technical Note no. 31

Download date: 25. apr.. 2024



TECHNICAL NOTE NO. 31 - April 1987
(Re-issued June 1995)

CLIMBING INTO THE CROWN DIRECTLY, 4

A Light-weight Catapult for use in connection with the advanced line system

by

Finn Stubsgaard

DANIDA FOREST SEED CENTRE

Titel
Climbing into the Crown Directly, 4.

Author
Finn Stubsgaard

Publisher
Danida Forest Seed Centre

Series - title and no.
Technical Note no. 31

ISSN:
0902-3224

DTP
Melita Jørgensen

Citation
Stubsgaard, F. 1987 (Re-issued 1995) Climbing into the Crown Directly, 4. Technical Note no.31, Danida Forest Seed Centre, Denmark

Citation allowed with clear source indication
Written permission is required if you wish to use Forest & Landscape's name and/or any part of this report for sales and advertising purposes.

The report is available free of charge
SL-International@life.ku.dk

Electronic Version
www.SL.life.ku.dk

1. INTRODUCTION

The advanced line system is a method of gaining access into the canopy of trees without the use of spurs and ladders.

The system was described in Technical Note nos. 7 and 23.

It is based on the technique of shooting a light nylon line over the branches in the crown of a tree. The line is used to place a thicker intermediate cord, which is finally used to position a working rope.

The present Technical Note describes a light-weight catapult used for shooting the nylon line over the branches. The catapult, or slingshot, was designed as a substitute for the compressed air rifle used in Denmark previously. The catapult can shoot a 0.40 mm (diameter) nylon line over a branch at a height of 40m.

2. DESCRIPTION

The catapult has been designed to meet the demands of being light to carry and easy to operate.

The catapult consists of a handle, propulsion unit, line holder, line and projectile.

Handle

The handle is made of 1.5 m shafting steel 8 mm in diameter (ø). The steel rod is bent cold into a Y-fork with brace.

Note that it should be bent to fit the arm of either a left- or righthanded person, see. fig. 1.

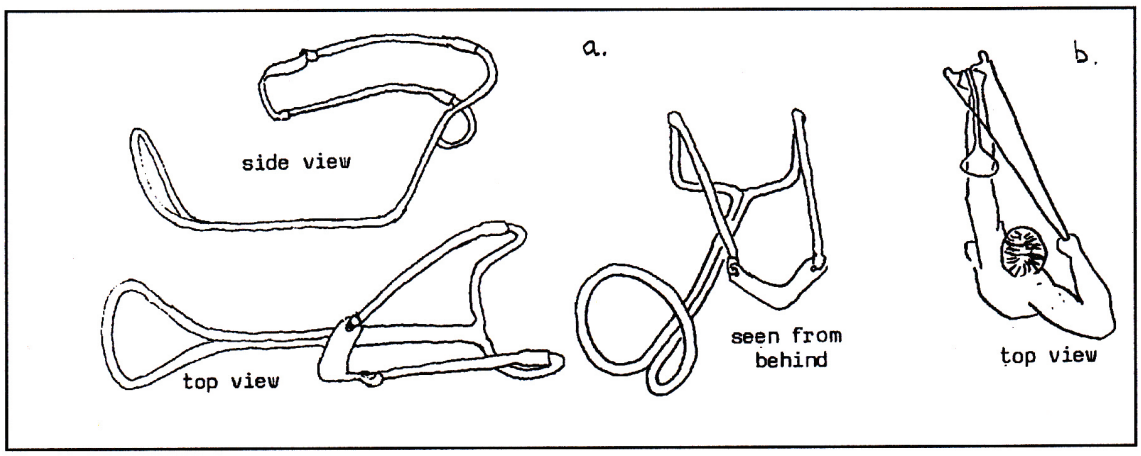


Figure 1

The two ends of the rod are welded together where they touch each other in the handle (the lower end of the Y-fork). The welding is brought up into the cleavage of the Y-legs to prevent the line from getting caught there.

The brace should be as long as possible without reaching the elbow. The Y-fork should be bent so that it lies steady in the hand during tension, and the two ends of the Y-legs should point at the right hand, see Fig. 1b.

Propulsion Unit

Two pieces of surgical latex tube, 23 cm long, 4.5 mm inside ø and 8.5 mm external ø. The load used to stretch one piece of approx. 20 cm tube to 1 m should be at least 6 kg.

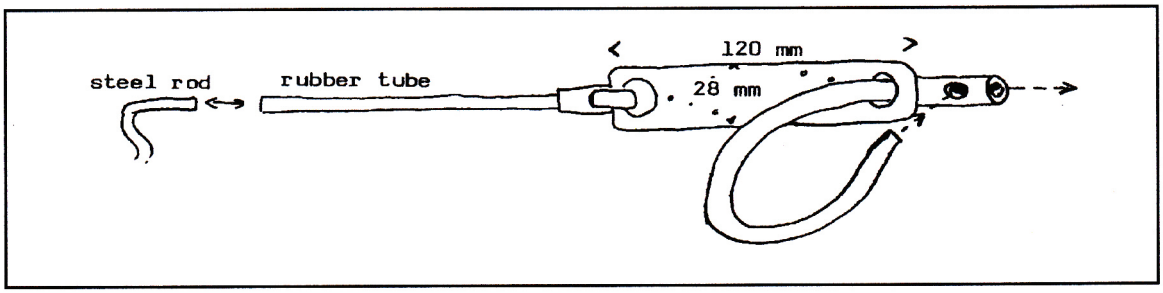


Figure 2

The two pieces of tube are connected to the two legs of the Y-fork and to leather pouch as shown in Fig. 2.

The latex tube should be slipped over 2.5 cm of the 8 mm steel rod after being fastened to the pouch. The fittings to the steel rod will fasten upon use.

Line Holder

A fixed-spool spinning reel for fishing is used as a line holder. The spool should have the largest possible diameter to facilitate the coiling off. An external diameter of 60 mm works fine, when the spool is fully loaded.

The spool should have a line capacity of at least 200 m of 0.40 mm ø line. The spinning reel is fastened with clamps under the brace of the handle.

Line and Projectile

Good quality 0.40 mm ø monofilament fishing line has an ultimate strength (tested breaking force) of l-0 kg, ordinary quality 0.40 mm ø line has an ultimate strength of approx. 7 kg. The ultimate strength should be at least 8-9 kg, otherwise 0.45 mm ø line should be used, although this will decrease shooting range.

The first 20-30 m of the line will wear in use and should be changed when you start losing projectiles. The inner part of the 200 m line on the spool may be of a poorer quality as it is never used. It would be an advantage to have some spare spools wound up and ready.

The projectiles should be 30-40 g lead weights, either cast in a mould or bought in the same place as the spinning reel, see Fig. 3.

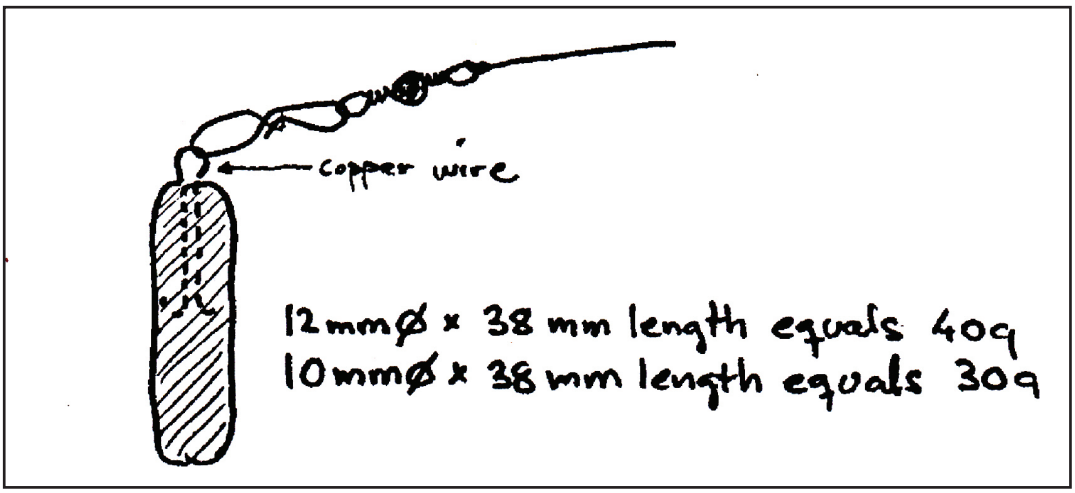


Figure 3

As an intermediate cord is used a 2 mm plaided nylon line with an ultimate strength of more than 100 kg. The cord is wound on a drum or reel.

3. DIRECTIONS FOR USE

Warning: A person can die if he is hit by a shot from the catapult.

Practise shooting and aiming with the catapult with small round stones or better still marbles of burned clay.

Later practise shooting the monofilament line on an open plain and over branches free from twigs and leaves in the following way:

1. Clamp the spinning reel to the handle and fasten a lead weight to the line.
2. Set the drag system of the spinning reel so that you can pull out the line easily when tensioning the rubber tubes.
3. Fold down the locking device (bail) on the reel and place the lead weight in the leather pouch.
4. Stretch the rubber tubes and take aim. NB! before you shoot, make sure that the line will run out freely without getting entangled or jammed in your fingers, the Y-fork or the spinning reel. If it does, you will either lose a finger or the lead weight will come flying back at you!
5. After shooting, use your fingers as a brake on the edge of the spool when the lead weight has passed the branch.
6. When not in use, remove the latex tube from the Y-fork and store it in a dry, cool and dark place.

For further instruction in methods of gaining access to the crown of trees using the advanced line technique see DFSC Technical Note no.7 and no.23.

In principle, a working rope is pulled over the branch by the intermediate cord. The working rope is then used to position a rope ladder or a block and tackle. The rope can also be used to position a flexible saw or for shaking a branch.

4. SUPPLIER

The catapult described here is now commercially available through (updated 2014) the following link:

http://www.sherrilltree.com/BIGshot#!BIGshot

Sherrilltree.com provide the following description:

Despite updating its design over 5 years ago, we have continually received requests for the classic, big-head style BIGSHOT. Not wanting to disappoint our customers, we had a run of the classic heads produced, and will be offering the BIGSHOT Classic kit for a limited time. Comes with the classic big-head, adapter and two 4' poles.
Along with the old style, is the old price. Pick up the BIGSHOT Classic for the same price it was 5 years ago.

Read more: http://www.sherrilltree.com/Big-Shot-Classic-Kit-with-2-Four-Poles#ixzz2uEgmPNur