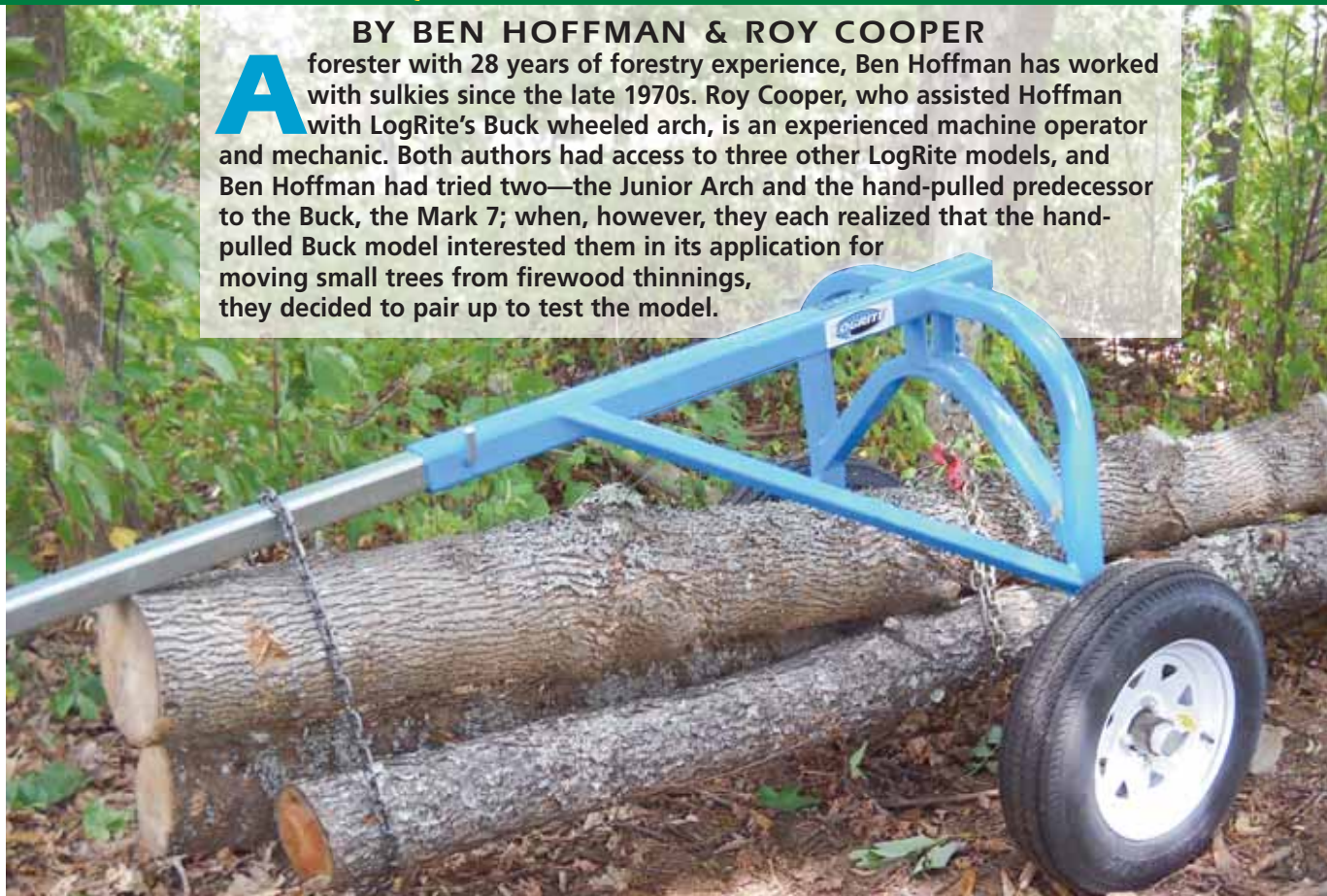


EQUIPMENT REVIEW

BY BEN HOFFMAN & ROY COOPER

A forester with 28 years of forestry experience, Ben Hoffman has worked with sulkies since the late 1970s. Roy Cooper, who assisted Hoffman with LogRite's Buck wheeled arch, is an experienced machine operator and mechanic. Both authors had access to three other LogRite models, and Ben Hoffman had tried two—the Junior Arch and the hand-pulled predecessor to the Buck, the Mark 7; when, however, they each realized that the hand-pulled Buck model interested them in its application for moving small trees from firewood thinnings, they decided to pair up to test the model.



LogRite Buck Arch

Most manufacturers of small, wheeled arches, including LogRite, call their products “arches,” but, technically, the correct term is a sully. Beginning about 1880, wheeled arches, called sulkies, were used in logging, pulled by horses, and later by crawler tractors up to about D-4 size. As larger crawlers came into use, wheels could not adequately support their loads and tracked arches, offering greater flotation, came into being. The tracked versions were called arches.

Although LogRite's new Buck wheeled arch is a relatively simple implement—and might, therefore, not be taken as seriously as it should be—it's important to note from the start that it's a very productive tool. In time studies of the Canadian Port-a-Log skidding sully in the early '80s, production

rates of 4 to 5 cords per 8-hour day were measured. The Port-a-Log was available in both wheeled and ski-equipped versions, as are the LogRite models. A University of Maine study using a Honda 3-wheeled Big Red averaged 5.25 cords per day over a skidding distance of 742 feet. A similar study of the ski version by Laval University averaged slightly more than 4 cords per day over 623 feet.

Two Configurations

The Buck comes with two possible configurations. The basic arch and wheels can be fitted with a hand use package (right) with tongs and a handle for manual towing, or a tow package (page 6) with a drop tongue, winch, and trailer hitch. It is ergonomically well-designed and well-manufactured; the welding and powder coat finish are excel-

lent, as are wheels, tires, and winch. The Buck is rugged, extremely versatile and would be an ideal tool for an arborist to move heavy bole sections from stump to roadside, or to move logs in a mill yard. In the woods, depending on ground conditions and slope, the hand (manual) version could be maneuvered by one or two people.

The tow version is especially



LogRite's hand use package.

LogRite Buck Arch

Log capacity	22 in. diameter
Length capacity	16 ft. fully suspended when using by hand
Length capacity	10 ft. fully suspended when towing
Weight capacity	1,800 lbs.
Tire size	50/30 x 12 outside diameter
Tongs25 in.
Arch width	40 in.
Arch length	42 in.
Arch height	40 in.
Arch weight (towing arch)	170 lbs.
(hand arch)	140 lbs.

Manufacturer:

LogRite Tools, 77 Industrial Park Road, Vernon, CT 06066
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 www.logrite.com ■ info@logrite.com

Manufacturer's Comment:

The Buck Arch was not designed for working in the woods, but was designed for portable sawmill owners to move logs around the mill yard.

log size and length. Since we were skidding thinnings—mostly small trees with a few 12-inch stems—we needed to use chokers. A big improvement over other LogRite arches is that the tongs can be removed and a short chain at the top of the arch allowed us to use chokers to load multiple small stems. Our working area was relatively smooth, but slightly uphill, probably about 2%, so it took both of us to pull the sulky. The hand version is capable of moving an 1,800 pound load, equivalent to a 16-foot, 22-inch (top dib) red oak log. Under ground conditions found in the woods, a maximum load for one person would be 1,000 pounds or less.

versatile. With a properly balanced load, the arch could be towed to roadside with a small tractor or ATV, and then disconnected and hitched to a motor vehicle to transport the load to its destination. One *Sawmill & Woodlot* magazine reader in Iowa uses a portable winch on a home-built sulky to log large trees. He winches the log to the arch,


tows it to the roadside with a tractor, and then hitches the arch to his truck and drives over the highway to his mill.

First we tried the Buck in manual operation with both tongs and chokers. Tongs are fine for large stem sections 8 inches or more in diameter, and can be adjusted in height and position depending on

The Tow Package

Deciding to work smart, not hard, we replaced the manual reach and tongs with the tow package (trailer hitch and hand winch) and pulled it with a small farm tractor. This enabled us to easily handle much

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larger loads and multiple stems, but the arch width limited load size. The hand winch is excellent and can lift a heavy load, and we even used it to winch a problem log into the trail. The winch would be a good option on all sulkies as it offers the choice of handling either large, single logs, or several small logs. When used manually, the winch is far easier for loading than the tongs.

We were very pleased with the Buck's performance when towed with a tractor, and it would work



The tow package.

tequally well, and faster, behind a four-wheeler. However, we both considered it too heavy for one-person use in the woods. Considering the lighter loads moved on uneven ground and over small obstacles under forest conditions, a lighter sulky would improve manual productivity.

Suggestions for Improvement

The Buck was designed to handle loads up to 1,800 pounds, but such loads are unlikely in the manual mode in the woods. Because of the shorter reach on the tow version, the maximum log size log would be 12 feet long, about 24 inches on the butt and up to 23 inches at the top, about 285 board feet. A red oak log this size would weight about 1,500 pounds. This load could easily be moved manually on level ground in a mill yard or suburban lawn, but not in the uneven ground conditions of a woodlot. Such a load would be no problem

for a machine.

We recommend a number of improvements for working in the woods.

- 1) Widen the arch to improve stability on side hills and permit loading more stems.
- 2) Place handles on the back of the arch (as on the Mark 7) to facilitate lifting and shifting it laterally.
- 3) Modify both manual and towed reaches to be adjustable in length by placing one or two more holes in their hafts so they could slide deeper into the arch frame.



The narrow arch limited the load size when towing with a machine.



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for different log lengths.

5) Long loads often dragged on the ground. The heel (suggested above) would hold logs parallel to the reach and prevent them from dragging.

6) Add a small



Placing a small log on the ground before bunching the logs makes it easier to choke the load.

Both the hand and tow shafts slide inside the reach and lock in place. By adding more holes, the length could be adjusted and a sliding heel could be pinned to the shafts to lower and stabilize the front of the load. Long loads drag on the ground, which is especially difficult for manual use.

fairlead to the winch to keep the cable from slipping off the spool.

Technique

Before testing the Buck, all wood was pre-bunched trailside with a Junior Arch. When pre-bunching small wood, be sure it is elevated so you can easily slide a choker under it (above right). Failing this, lay a small log across the trail and roll the wood onto it to facilitate choking. With tongs, larger logs can be picked up easily. To lift the entire load into the arch, logs should be no longer than 16 feet in the manual mode because the tail end would be heavier than the

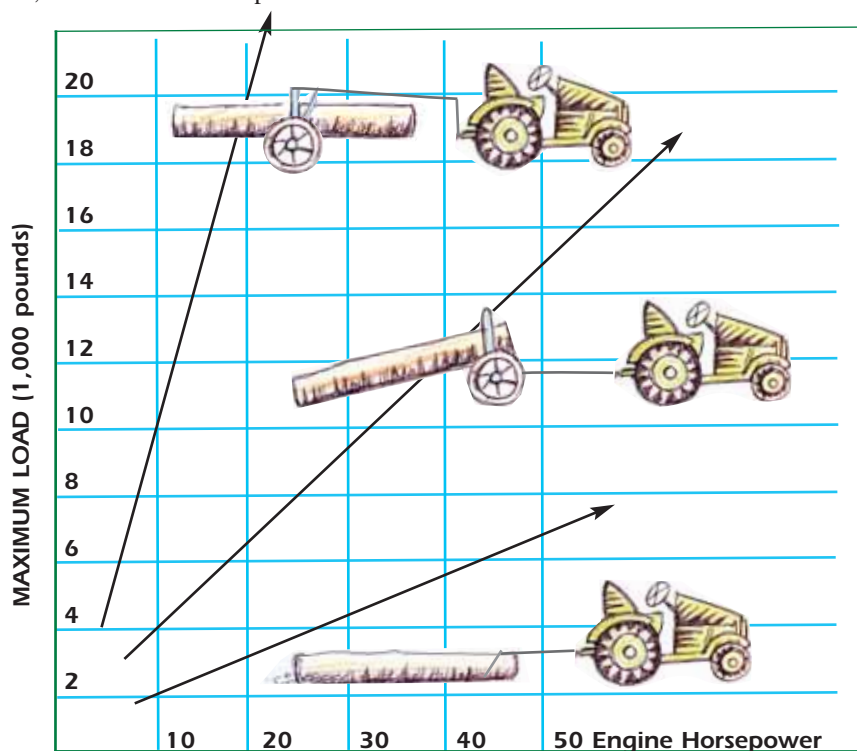
Lengthening the haft of the tow version would permit longer loads.

4) When loads were not perfectly balanced in the arch, the front ends of logs often swung to the side. To prevent this, a curved bracket (heel) under the reach would prevent their swinging. A sliding heel, pinned to holes in the haft, could be used to position it

head, making it difficult to hold down the sulky handle. Twelve-foot lengths work best with the tow package. Longer loads are possible, but might lighten weight on the rear wheels of a four-wheeler and reduce traction. It was no problem with our tractor.

The graphic (this page) shows the tremendous advantage of raising loads in an arch to reduce skidding resistance. Alexson used a load cell with a standard load to measure the effort required to ground skid, drag the load with one end elevated in an arch, and forward with the entire load raised off the ground. This comparison shows the value of getting a load on wheels, especially when the terrain permits lifting the entire load off the ground. On level ground or uphill pulls, it is safe to raise the entire load off the ground to reduce skidding resistance, but when skidding downhill, it may be desirable to drag the end of the load to keep it from pushing the tractor or ATV. This is imperative when skidding manually!

The Buck is an excellent tool for improving the load capacity of a small tractor or four-wheeler, even a small farm tractor with a winch. Research studies have shown that a small tractor with winch can skid about 1/100 cord per horsepower; a 25-hp tractor could handle about 1/4 cord. A wheeled arch greatly increases this capacity. By using a second arch to lift the rear of the load, longer, heavier lengths can be moved. ■



Comparison of load resistance for ground skidding, arch skidding, and forwarding.

Literature cited: Alexson, Andrew T. "The effect of sulkies on skidding production of small farm tractors." MS Thesis, University of Maine (1985).



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