

# Throwline Installation: A Survey of Techniques

Pierce Wasmund

climbpines@hotmail.com

## About the presenter

Pierce Wasmund is an ISA Certified Arborist and ISA Certified Treeworker Climber Specialist. He has a BS in Urban Forestry from the University of Minnesota. A production arborist for Northern Arborists in Lake Elmo, Minnesota, the current Past President of the Minnesota Chapter of the ISA, and a past Minnesota tree climbing champion, Pierce enjoys opportunities to participate in workshops and outreach.

## Extended abstract

Accessing the canopy of trees can be accomplished in different ways. Ladders, bucket trucks, and ropes are common for the tree care industry. When we use ropes to climb into trees, many times we use a smaller throwline to set the access lines. Often, setting throwlines requires special techniques and manipulations or combinations of techniques. Three arborists from Minnesota created a survey to record data about techniques used in setting throwlines. The data of 254 installations was recorded into a spreadsheet to manage and analyze.

Date	Tree Species	Height	Placement	Tie in	Time	ZTL	DE	Mid Knot	Strum	Jump up	Walk Down	Flip/Loop	TL Saw	Bot	Bull	Comments	Time (sec)
1	7/27/2011 red maple	38	a	srt	7:14	x											434
2	7/27/2011 honey locust	14	c	srt	1:02												62
3	7/27/2011 linden	25	a	srt	2:28											broke first throwline	148
4	7/29/2011 norway maple	40	a	srt	2:33	x											153
5	7/29/2011 sugar maple	22	b	srt	0:18										x		18
6	8/2/2011 black walnut	38	a	srt	3:24												204
7	8/8/2011 green ash	43	b	srt	2:21	x											141
8	8/8/2011 red maple	28	b	srt	1:36												96
9	8/10/2011 blue spruce	23	c	srt	0:52												52
10	8/10/2011 sugar maple	27	b	srt	1:42			x							x	got stuck	102
11	8/11/2011 green ash	54	a	Ddrt	3:17	x									x	throwline broke	197
12	8/16/2011 american elm	44	a	Ddrt	1:55		x										115

The date of installation is the first data recorded. As the database grows the dates can be referenced to see if weather or leaf on/leaf off can affect throwline installation. Tree species is the second column in the database, followed by height. Height is the height of the throwline installation in feet. The survey showed an overall average height of 43.6 feet. Placement is the next column. Placement is the placement (A,B,C) of the installation. A: is the top third of total tree height, B: is the middle third of total tree height, C: is the lower third of total tree height. The survey showed (n=174) that A placement had an average height of 48.1 ft, an average time of 3:03, and 60% of installations. The B placement had an average height of 39.1ft, an average

time of 2:22, and 38% of installations. Installations in the C placement averaged 19.6 ft in height, an average time of 0:57, and happened 2% of the time. Tie in was also recorded. The tie in was either SRT or Ddrt. SRT is Single Rope Technique. This is when a single leg of line is used in a static system to access the canopy. DdRT is Doubled Rope Technique. Doubled Rope is when a climber accesses the canopy using a rope doubled over a branch and used in a dynamic or static system. The three climbers in Minnesota found they most commonly accessed the canopy with SRT systems 88%, and averaged 43.8 ft and 2:37. The DdRT access took up the remaining 12% and averaged 42.3 ft and 2:45. Time, the next column in the survey was recorded in minutes and seconds (0:00). The time starts when the throwline is removed from the throwline cube or picked up off the ground. The time stops when the throwline is in an acceptable position to tie on the access line. Some installations require manipulation of the access line to set it into a desired position. Manipulation of the access line, such as flipstick or mid-line knot, does not count additional time. The overall average time is 2:38.

The next columns in the database represent special techniques and manipulations used to set throwline and access lines: 2TL, DE, Mid-Knot, Strum, Jump up, Walk down, Flip/Loop, TL Saw, Bot, and Bull. 2TL is double throwline, using one throwline to set another. This technique was used 14% of the time and averaged 47.7 ft and 5:01. DE is double ended technique, pulling the non-thrown end of the line over branches to set in desired position. The DE averaged 45.1 ft, 3:56 and was used 7% of the time. Midline knot is represented by Mid-Knot. It is a technique when a mid-line knot such as an alpine butterfly is used to slide a rope down into a desired position. Picking and plucking a line to move a sticky throwline is called strumming and is represented by Strum. This manipulation is used 6% of the time, averages 3:34, and 50.6 ft. Jumping a throwline into a crotch above is represented by Jump up. This averages 40.8 ft and 2:44, and is used 5% of the time. Moving a throwline down to a branch or crotch below is called walking down and it appears as Walk Down in the spreadsheet. The average height for this is 43.6 ft, and the average time is 2:43. Walking down was found to be used 12% of overall use. Sending a loop of rope to move a line in or out on a branch can be done in two ways, with a stick or by hand. When using a stick it is called flip stick, and when using your hand it is called sending a loop. These techniques are on the spreadsheet as Flip/Loop. They average 42.8 ft in height and 0:56 in time. These techniques were used 8% of the time. The next two columns are for the throwline saw and the bottle techniques. Neither of these techniques was used in the survey but they are included in the database because other arborists have mentioned using them. The TL Saw is the throwline saw and the technique is attaching two throwlines together at the throwbags. The throwbags can then be used to walk the lines in or out on a branch. Bot is the representation of the bottle technique. This involves tying a bottle or stick mid-line on the throwline to be used to manipulate the throwline in or out on the branch. Bull is the shortened version of bullseye, an installation that is made in a suitable branch or crotch on the first throw.

A bullseye can still have manipulations to set the line in desired set up. The survey shows that bullseyes averaged 42.5 ft and 0:48, and happened 15% of the time.

The survey put together by the Minnesota arborists is focuses on special techniques and manipulations. When no techniques are used to set the line the survey shows an average of 42.9 ft in height, 2:19 in time, and 41% of overall use. The survey also showed, in the comments column, that knotted and tangled lines can take up to 20:44 to untangle. Broke lines happened 2% of the time, stuck lines 4% of the time, knotted/tangled lines 4% of the time. Knotted and tangled lines averaged 9:12.

The survey conducted helped paint a picture of what is happening for these arborists, concerning throwline installation. The database was created to expand knowledge and help with analysis of techniques. The project is open to anyone interested in participating and expanding the database.