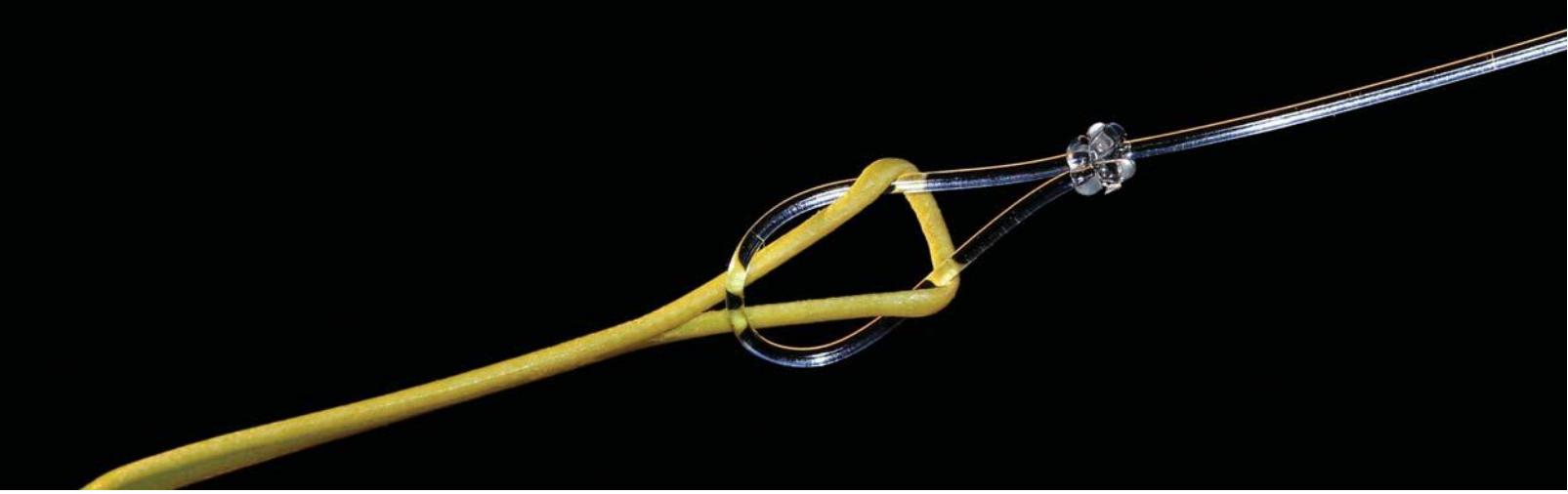
Trout Leader Basics

By Bill Forward



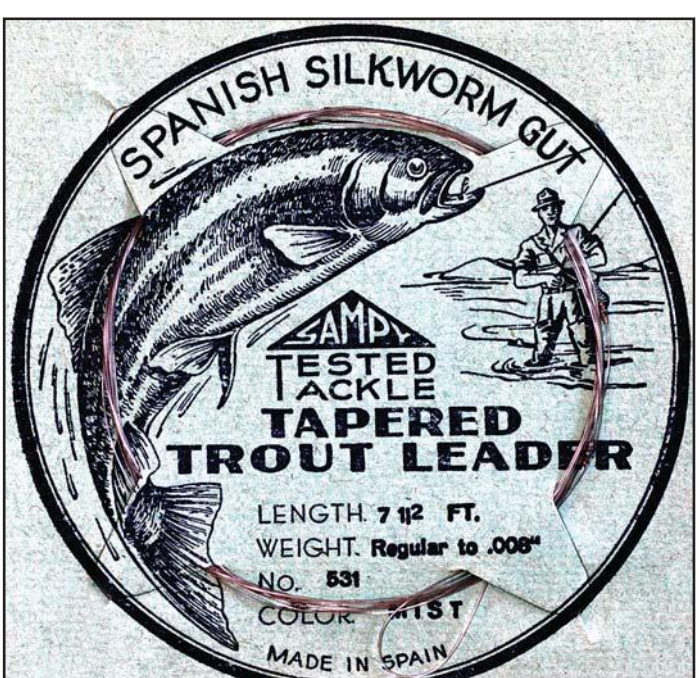
After a long hard day of fly fishing, a four foot section of 3X monofilament goes into a local tavern, climbs onto a barstool and orders a beer. The bartender, pointing to a sign posted on the wall, refuses service, saying that the establishment has a "policy against serving alcohol to tippet material". Humiliated and dejected, the monofilament leaves the bar. Once outside a thought occurs to him. Raveling, coiling, and binding one of his ends, as tippet material is known to do, the monofilament goes back into the bar, hops up onto a barstool and demands a beer. The bartender, looking the monofilament up and down, says "Aren't you the 'tippet' that was in here a couple of minutes ago?!" "No", asserted the monofilament, "I am a frayed knot!"

The days have shortened, we have had our first snow, and it occurs to me that in a distant past, this was the time of year that I would not only be replenishing my fly boxes and attending to postponed equipment needs, but also tying leaders. Regarding the latter, I believe having to research, tie and use leaders of my own construction provided a fundamental understanding of how they function.

Many who have come to fly fishing in the past 15 to 20 years have never built a leader. And that's unfortunate, because just as an understanding of the relationship between shutter speed, aperture and ASA (ISO) provides insight into using a digital camera, understanding the reasoning behind length, taper and materials arms a fly fisher with the ability to analyze needs and purchase an appropriate leader.

Leader Function

Fly fishing is about energy transfer and presenting a fly to its target. The energy put into a cast should travel efficiently from the rod to the line, to the leader, to added tippet to deliver the fly. That is the primary role of tapered leaders… energy transfer. Ideally, that energy should transfer in a straight line. Leaders are also thinner and very transparent compared to the fly lines, two other valued characteristics. Nevertheless, they are also the weakest link between trout and you!



7 ½ FT (??)X (Read on, you'll figure it out.)

A Little History

I am not advocating returning to the past and making one's own leaders, especially after considering the following excerpt discovered on MidCurrent's website. It is from H. P. Well's *Fly-Rods and Fly-Tackle* (1885) and describes how silk glands were harvested in the early 1800's to make the esteemed Spanish "Silkworm Gut" leaders.

"Their first step is to free the gut from such portions of the ruptured envelope as may adhere to it. Formerly this was done by drawing the gut between the teeth, and thus stripping off this refuse, but chemical processes are said now largely to have superseded this. The eyewitness, to whom I am indebted for this information, describes the old method as a most disgusting spectacle. The rows of women and girls drawing the entrails of this caterpillar through their teeth, their mouths smeared with blood from the cuts inflicted by the thin gut, mingled with the offal scraped from it by their teeth — spitting and drawing, and spitting again — must indeed be far from a pleasant sight."

Though not at its original $.60 price, the excerpt inspired me to seek out and purchase a circa 1940 Spanish silkworm gut leader. However, as with all silkworm gut leaders, it would be too brittle to cast without an hour of pre-soaking in my "new" leader tin between felt pads.

My "new" leader tin

I later discovered that Wells' next paragraph was, *"I would much rather go a-fishing."* I whole heartedly concur… I too would much rather 'go a-fishing'! All the same, this classic is available online at Google eBooks and will provide you with an very interesting winter read.

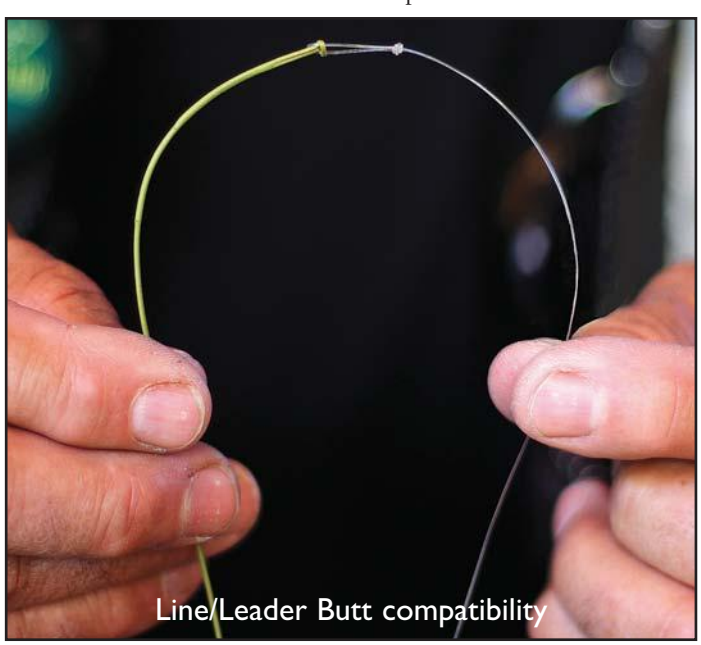
LEADER STRUCTURE

After WW II, Nylon replaced silkworm gut as the materials of choice for making leaders, and in the late forty's, though probably better known for his hotels, fly fishing author Charles Ritz published his 60-20-20 leader formula. Ritz proposed that leaders should be composed of a 60% thick-level butt section, 20% of a rapidly tapering mid section and 20% of a fine tip section… generic, but workable to this day.

The Butt

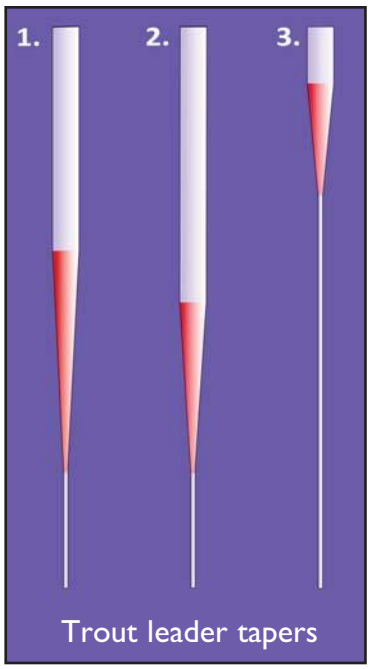
Ideally, the stiffness of the butt section of a leader should be similar to the stiffness of the end of the fly line. When asked about the consequences of a mismatch, John Harder of Rio Products said, "Trout fly lines are suppler than saltwater lines. Subsequently, trout leaders are made with a suppler material than saltwater leaders. If the stiffness of the leader butt and the line are radically different, the energy does not flow evenly from the line to the leader and can cause the leader to hinge where it is attached to the line, or the leader tip to fail to turn over."

That answer prompted the question: Do butt diameters differ between commercially available 1X leaders and 6X leaders? "Yes," John replied, "the butt diameter varies 0.003" to 0.005" through the range. The reason for doing so is the industry makes the assumption that anglers will be using a heavier weight line with a 0X leader than with a 6X leader so butt diameters are decreased to better match the diameter of the line tip."


Line/Leader Butt compatibility

The compatibility of a line/leader combination is easily tested by holding up the end of the fly line in one hand and the butt section of the attached leader in the other. Hold them in such a way that equal lengths of line and leader form an arch. Good line/leader compatibility results in a relatively balanced and equal curve. Assess all your lines. Secondly, if need be, don't hesitate to take a line or two into a fly shop and compare various brands of leaders. Tell them I sent you… seriously!

The above analysis may also shed light on your leader to line connections. Lines now have welded loops, and because of that the majority of anglers now use loop to loop attachments. Nevertheless, whether by a nail knot or Zap-A-Gap super glue, there is still a significant number of fly anglers who prefer attaching a ten inch butt section (e.g. 30 lb red Amnesia, depending on line wt.) to their fly lines and blood knotting leaders to it.



Trout leader tapers

The Taper

Leader tapers can be designed and situated to turnover a small fly subtly, a big fly aggressively, or a group of flies in a straight line, and manufacturers offer a litany of trout leaders to that aim. Note the position and length of taper in the following scenario/leader examples.

1. A very delicate presentation is needed for dries, nymphs and emergers. Consider a leader of a soft material with a subtle taper, 40% Butt, 40% Taper, 20% Tip.
2. An all-around freshwater leader is needed for dries, nymphs and streamers. Consider a leader of medium-stiffness material and a semi-aggressive taper, 50% Butt, 30% Taper, 20% Tip.
3. When indicator fishing a specialty leader may make the turn-over a lot smoother. Consider a leader of a soft material and specialty taper, 10% Butt, 20% Taper, 70% Tip.

The Tip End

As you know, knotless tapered leaders are marketed in specific lengths and an X factor designation of the tip end, e.g. 9 ft. 4X. What you may not know is that the X designation is a remnant from when the silkworm entrails described previously were woven and drawn through sizing holes, with each successive draw reducing their diameter .001 inches. That is why the higher the X numbers the thinner the tippet. A 3X tippet had been drawn three times, and a 5X tippet had been drawn two more times, subsequently making 5X the thinner of the two. (The letter X was, and is, the mathematical symbol for times.)

The **Rule of Eleven** states that subtracting the X factor number from 11 will provide the diameter of tippet in thousandths of an inch, e.g. 1X has a diameter of .010", 2X has a diameter of .009", etc. Obviously, 11 minus 0 equals 11, so initially silkworm innards were apparently woven to .011"… a 0X tippet. Assuming you don't have the intestinal fortitude to stomach much more silkworm gut nostalgia, I'll stop here.

Between and within manufactures, tippet material varies in strength for identical X factors. However, 3X tippet should have a diameter of .008" no matter what company produces it. That is important knowledge for adding additional tippet to a purchased leader, which we generally do to make our comparatively expensive leaders last longer. Alas, many anglers that transition from spin fishing to fly fishing tend to think and talk in terms of "lbs. test", an aspect of which fly anglers are aware, but don't brood over.

Understanding that there is inconsistency in strengths within X designations and materials used to make tippets also sheds light on why it is considered wise to match the brand leader with the brand of added tippet. Of course, attaching Fluorocarbon to traditional monofilament may call that point into question.

LEADER SELECTION

Often clients ask, "What leaders should I bring?" That question can be answered for any fly fishing situation by considering the following factors in the sequence they are presented; these are the steps to follow in selecting an appropriate leader.

Selecting a leader

1. **Length** Choosing the length is the first step. Consider the following:

6 foot Sinking lines (Type 3 thru high speed lines); lakes and small streams; nymphs and streamers.

7 ½ foot Sinking Lines, Intermediates, Sink tips; lakes and streams; nymphs and streamers.

9 foot Floating and Sinking lines; large streams and lakes; dry flies, nymphs, and streamers.

12 foot Floating and Sinking lines; lakes and very clear rivers; small dries, and small nymphs.

There are situations when an angler can get away with using level material, "Po'Boy" leaders as Harder calls them. When using sinking and sinking tip fly lines it is sometimes recommended that the leader be no more than 5 ft long so the fly is presented at the same depth as the tip of the line, e.g. 5 ft. of 1X Rio Powerflex. When using lighter tippets, the angler can make a 2 piece leader, e.g. 2 ft of 3X and 2 ft of 5X of Rio Powerflex.

2. **X Factor** This is very dependent on size of fly and size of trout pursued. Rule of 4 for fatter, heavier flies… dividing the fly size by 4 provides a tippet X factor starting point. Rule of 3 for thinner, lighter flies… dividing the fly size by 3 provides a tippet X factor starting point.

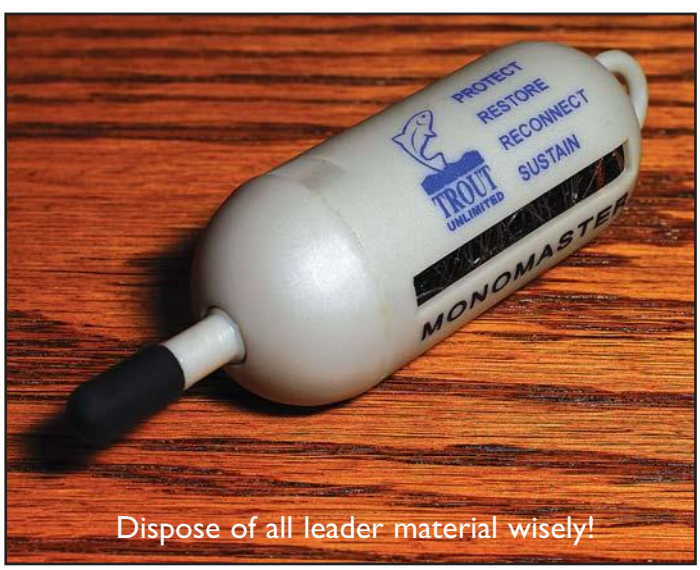
3. **Taper** Select an aggressive taper for heavier loads, and subtle taper for lighter flies and gentle presentations.

4. **Special Purpose** Leaders may be available for your specific need, e.g. indicator leaders.

5. **Material** This is the elephant in the room. It comes down to Nylon monofilament v. Fluorocarbon . Understand the following before committing.

Abrasion Resistance: Fluorocarbon seems to have more abrasion resistance that Nylon mono and that may be one its greatest virtues.

Refractive Index: When light travels from one medium to another it bends. The extent of the bend is called the Refractive Index (RI). For an object to be invisible in water it would have to have the same RI as water, 1.33. Neither Fluorocarbon (RI: 1.42) or Nylon mono (RI: 1.55) do, and therefore are both visible in water. Nevertheless, Fluorocarbon's RI is closer to that of water, and therefore may be somewhat less visible to a trout.



Dispose of all leader material wisely!

Environmental Impact: It is estimated that Nylon mono takes 600 years to biodegrade and Fluorocarbon will take 4,000 years to break down. I believe this is the single best argument for not using Fluorocarbon. Nevertheless, even 600 years is too long. Properly dispose of tippet material.

Specific Gravity: Fluorocarbon has a higher specific gravity than Nylon mono. Therefore, Fluorocarbon will sink faster if the diameters are equal… good for streamers, nymphs and chironomids.

Ultraviolet Degradation: Nylon mono degrades when exposed to UV light, as much as 20% in the first 100 hours. Tippet spools carelessly left in the sun or on lanyards will easily receive that amount of exposure. Fluorocarbon is unaffected by UV light, nevertheless the tensile of both are effected by heat!

Cost: Nylon mono costs up to $5.95 for a 33 yd. spool of tippet material, with Fluorocarbon costing up to $15.99 for the same amount.


Tippet ring (3X Tippet)

Lastly, I purchase leaders knowing I am going to add tippet, and I rarely skip over more than one X factor doing so. Regarding the attachment, I use blood knots for adding tippet material larger than 2X and a triple overhand knot for everything smaller. Yes, there are times when I have used small tippet rings. Tippet rings and swivels are great for saving the center pegs on releasing indicators (or attaching Nylon to Fluorocarbon , for those that worry about such things). Unfortunately, trout do strike them.

PARTING THOUGHTS

- If a kinked leader just won't straighten… Change it, and don't store it so tightly on your reel next time.
- If your dry fly and tippet fall back on your leader, and an application of more power would only spook fish… Shorten your tippet by a foot or increase tippet diameter by one X factor.
- If a drag free drift is challenging… Increase you tippet's length, and/or use a reach cast or pile cast.
- If your fly "dumps" or turns over too aggressively (a symptom most often seen when an angler ties on a new tippet to the leader), the problem may be that the diameter of the leader's tip is too large compared to the tippet's diameter. Add an 8" to 10" piece of intermediate tippet to the leader's tip to better balance the system.

I want to thank John Harder of Rio Products for the time he took to answer my questions, and I want to reinforce with you how crucial selecting a reliable leader truly is. Character, consistency, and dependability are essential. Always choose a leader wisely by doing your own research, not allowing another's bias to sway you. You deserve a leader that will be steadfast and true, whether for several months, or four more years.