

STROBOSCOPIC Fly Casting Study

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Casters, anglers and casting educators have worked for years to uncover the secrets of the loop and the stroke in order to improve casting and teaching techniques. Several individuals, working with educational and private labs, have performed motion-capture (or Mo-cap) video studies to freeze elements and relationships of the cast which are too fast or too complex to see in real time. In addition, modern computer software can be used to analyze and express physics data for scientific interpretation.

Other investigators, including myself, have taken a different approach, which uses still photography to capture the stroke,

rod-bend, and tip-position in relation to loop formation for graphical analysis. Photographing the cast or individual details in the dark with a stroboscopic flash produces sequential photos during the exposure.

Paraphrasing Ed Moser and William W. Buchman from their 1980 article in *Flyfisher* magazine, *The Dynamics of a Flycast*, there is a relationship between the space or distance and speed of the photographed rod-tip positions and other elements when the strobe is fired at a constant rate. This is a simple but revealing way to track the events and relationships in a cast.

Stroboscopic Fly Casting Study *continued ...*



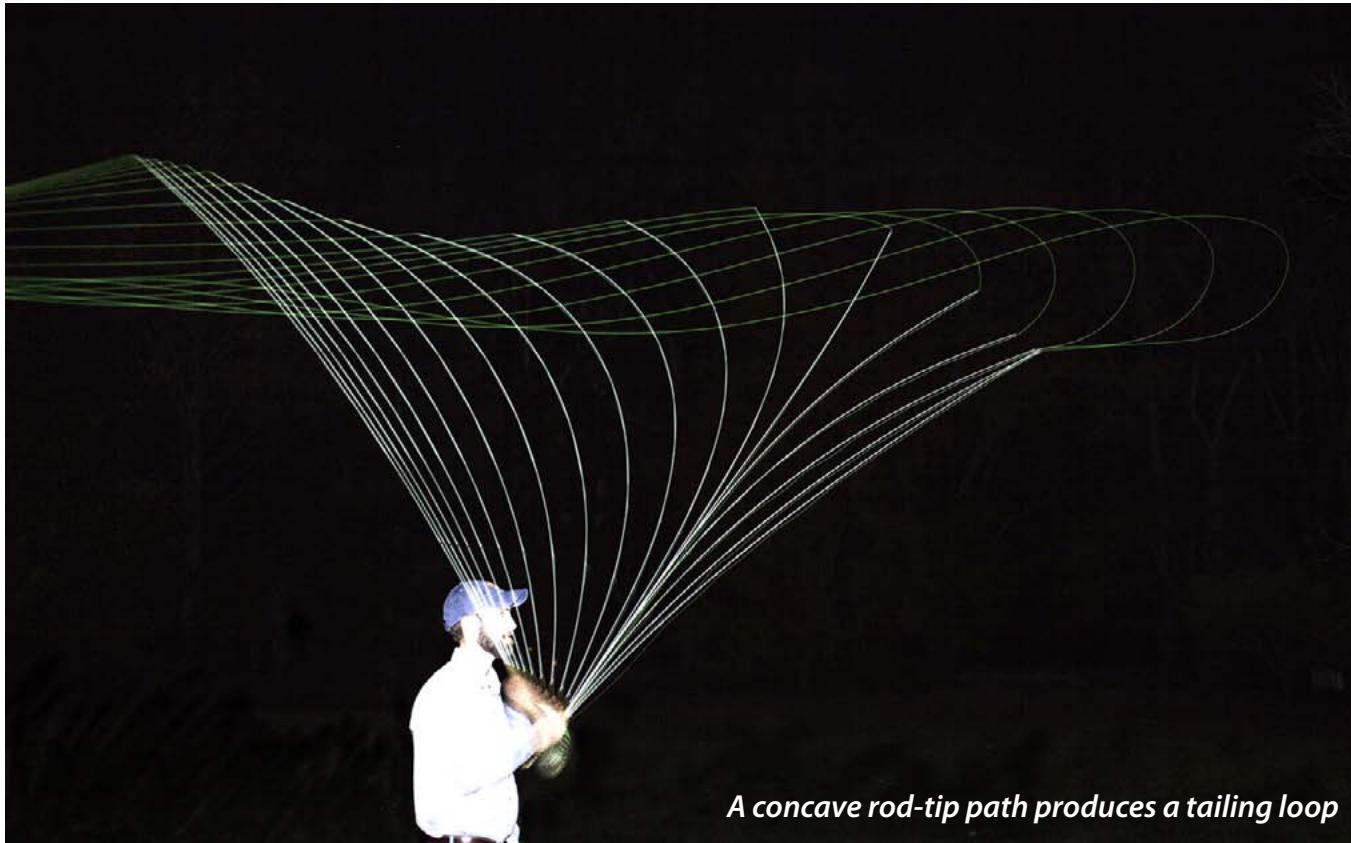
A straight rod tip path produces a tight loop

I performed an examination of casts using a multi-flash and digital camera for my book, *Fly-Casting Finesse*, published in 2015 by Skyhorse Publishing. In tests, I found a nine-foot rod too long to show the action close enough, so I chose a favorite rod under seven feet that Steve Rajeff gave me. I wrapped the rod with nearly weightless white Teflon tape, to preserve its finish instead of painting it. This white rod and Optic Green Scientific Anglers line showed up pretty well on camera.

The object was to capture a tight loop, a wide loop, and a tailing-loop cast with no hauling. I set up my equipment and asked my friend and CI Kevney Moses to perform the casts and trigger the camera with a release in his line hand. Though difficult, we captured sequences from the very beginning of the forward cast, through the rod-straight position when the loop forms, until the end of rebound.

I set the flash at different frequencies to produce a different number of flashes over different spans of time. In testing we also captured sequences of singular parts of the cast. The one I used in the book of the moment of loop formation was revealing. We spent four cold fall nights experimenting. The resulting images helped reinforce my earlier concepts of the cast, plus offered some new insights.

The shape of a tight-loop delivery cast is created by the combination of a straight rod-tip path, the timing and duration of the stop sequence and line release, and their relation to the oncoming line. Bill Gammel's foundational book, *The Essentials of Fly Casting*, is one of the truest and most enduring casting manuals. It taught us to make the rod tip travel in a "straight line" path to form an efficient loop. This concept can help in rudimentary learning, but we know it is not absolutely accurate.

Stroboscopic Fly Casting Study *continued...*

When making a tight-loop cast, the tip path is almost straight until the caster decelerates the rod and the rod-tip bends downward out of the way of the oncoming line. (See Fig. 1) If the path were straight throughout, the line would likely collide with itself and the rod tip. The cast is made above the rod tip and gravity pulls its flight earthward. The loop legs shown are almost parallel and the resulting loop is about sixteen inches in width.

Tailing Loop Fault (Fig. 2)

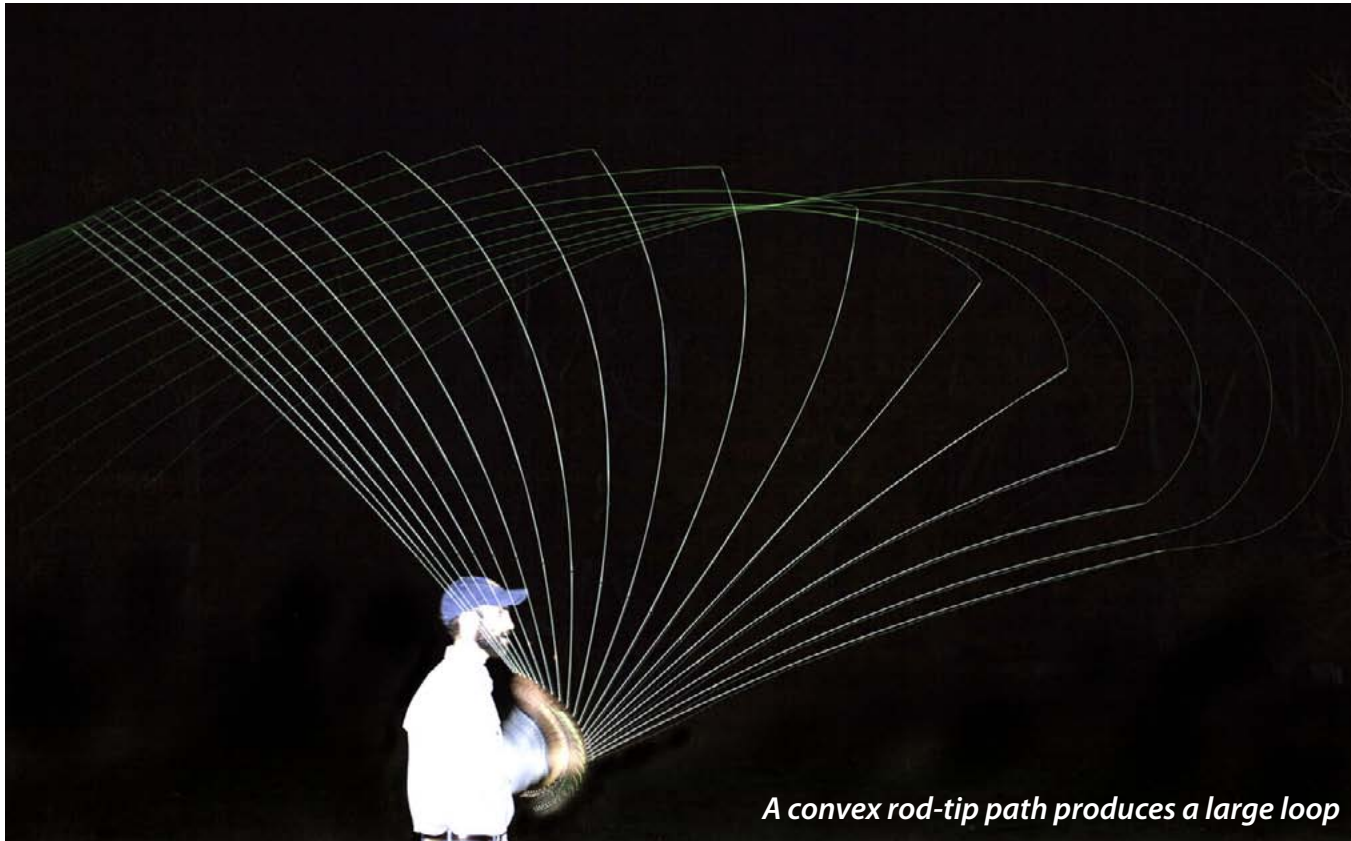
In my description of a tailing loop, the loop is closed and has an upward curve in the end of the fly leg and leader. The three most common ways to cast a tailing loop, when everything else is right, is (one) accelerating and loading the rod abruptly at the beginning of the stroke. Two, the cast is made a cast with insufficient rod arc. This occurs when the casting stroke is too short. The third cause is "creep."

This shortens the effective stroke length and leaves insufficient arc for a good cast. In the accompanying photo (Fig.2) of a cast with a concave rod-tip path, Kevney made an abrupt acceleration at the beginning of the cast with an adequate rod arc. It produced a concave rod-tip path. The line is immediately out of alignment with the direction of the cast, which makes a loop with parallel

legs impossible and a tailing loop inevitable. I didn't expect to see the downward trailing slope of the line before loop formation, which is a precursor of the tail.

Wide Loop Fault (Fig. 3)

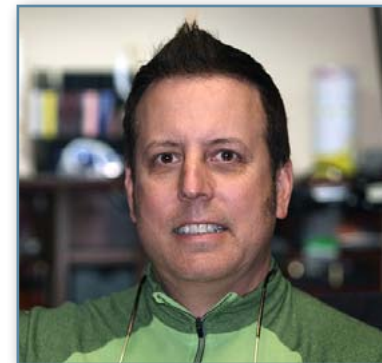
There are three ways to cast a wide loop when making a forward cast and a back cast.

Stroboscopic Fly Casting Study *continued...*

The first is to cast with a convex rod tip path on both casts by using too much rod arc. The second is to use too much rod arc on one of the casts, either the back cast or forward cast. In this cast, Kevney intentionally used too much arc in his forward stroke. The loop is so big you could ride a bicycle through it. The cast appears to lack line speed since the stop is so late and the directional energy is being wasted as centrifugal force. The last way to cast a wide loop is to cast

a soft rod with excessive speed from the beginning to end.

Most wide loop faults are in the back cast. This is probably the most common casting fault, period. These are easy to make, since anglers are usually watching in front, not behind. In the words of Norman MacLean in his book, *A River Runs through It* (1976) p.4, "Well, until man is redeemed he will always take a fly rod too far back. . ."



*About the Author: **John Field** is an IFFF MCI, a past-president of the New York City Chapter of Trout Unlimited and the American Casting Association. His writing has been featured in Fly Fisherman Magazine and others. John's first book is titled, **Fly-Casting Finesse - A Complete Guide to Improving All Aspects of Your Casting**, Skyhorse Publishing, 2015. He is currently writing, **ACA's Beginner's Guide to Fly Casting**. Visit his website - fieldflyfishing.com.*