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CFI

Global Fisheries  
 Management

*Innovation in Fisheries Stewardship and Enhancement*

# Reeling In The New Year

Once again it's trout fever in the Rocky Mountains. The winter of 06-07 was a solid year for snow, keeping most of us inside next to the fire. Soon the snow and ice will give way to the longer days and warm temperatures so many of us look forward to. Helping to build the excitement for the upcoming season are the projections that indicate much of the region should have an excellent water year, which of course translates into high demand for the recreational opportunities that this incredible area has to offer. At CFI we too feel the excitement of another season in the streams, helping to make your year a success.

## Fisheries Enhancement News

CFI is proud to announce that we completed over nine miles of fisheries enhancement and restoration work on 11 properties nationwide in 2006. Not to mention 36 acres of trophy still-water fisheries have been added to the mountain and foothill regions of the Rocky Mountain West.

In addition we are also excited for resident trout to utilize 800 feet of spawning habitat recently created on a majestic natural lake located near Kremmling, CO. Our efforts to incorporate the biological elements of the existing stream with the resident population's spawning ability not only increases the viability of the system, but also adds tremendous value to the land.



CFI has also recently been contracted by the Calloway Corporation to design and implement over 1 mile of re-circulating trout habitat for an exclusive, low density

lifestyle community located in the foothills of Douglas County. The design will incorporate 6 surface acres of stillwater with a fishy and very productive trout stream cascading throughout the property. This one will be a beauty.

Baseline data collection and design is underway for a stretch of western slope water that is home to the fragile Colorado River Cutthroat Trout. CFI has been contracted to restore habitat in this stretch of the CRC's native range in an effort to protect this troubled fish. Historical land practices and mining on this property have greatly diminished stocks of this isolated population of native cutthroat. Fortunately, this land is under new

ownership, with conservation being the focus and strategy. Project construction is set for this fall and upon completion, this creek will be home to a thriving population of genetically pure Colorado River Cutthroat!



## Fish

As always, CFI has been working hard through the winter months to replenish our stock of 10 different strains of trout. These line-pulling, hard charging prized fish can humble the



most experienced angler. Because our fish reside in earthen ponds foraging on the Gammarus Lacustris (freshwater scud) they are able to achieve their maximum growth rate while exhibiting

colorations like no other purchasable fish. Production is limited! Don't be caught with your fins out of water, call now for availability and pricing.

## Other News of Note

For the second year in a row CFI president Shannon Skelton has been nominated for the American Fisheries Society's Carl S. Sullivan Conservation Award for his company's outstanding contributions and pioneering methods to the enhancement and preservation of fisheries resources nationwide. Way to go team!

## Seeing the World Through Trout Colored Glasses

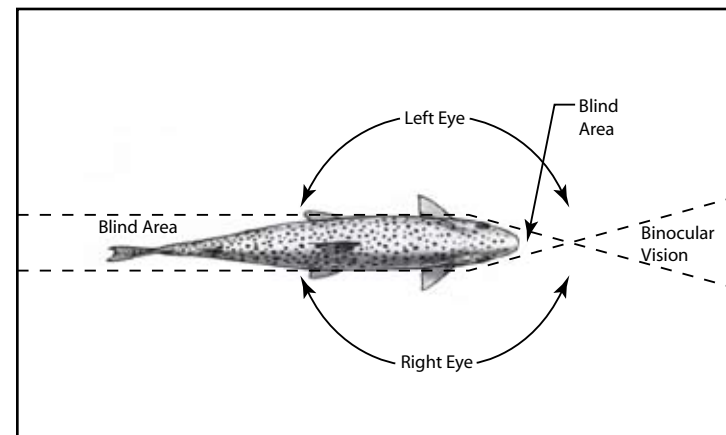
- by CFI Fisheries Biologist Toby Stuart

One commonly overlooked concept in flyfishing is the appearance of your fly underwater. Most anglers assume that their pattern of choice looks the same to the fish underwater as it does to the naked eye in open air. A few variables such as lighting conditions, water color and line of sight should be considered when forecasting your fly's appearance underwater.

Many anglers assume that the trout eye can see everything the human eye can. They have both photoreceptive rods and cones similar to humans, however, the processing by these rods and cones is where things get fuzzy. A trout's biggest challenge is the resolution of images. Rods only detect monochrome (hue) differences and are very sensitive, whereas cones detect color. A trout's sharpest focal point is 2-3 inches off of its nose where images still appear blurry to the fish.



Trout can see all the same colors we can. One key difference is that the human eye is more sensitive to the green area of the spectrum, where a trout is better able to discriminate in the blue area of the spectrum of visible light. It is also known that trout have the ability to see much further into the red portion of the visible light spectrum (up to 700 nm). Trout are also capable of seeing in the infrared spectrum. Many studies are ongoing to determine the trout's use of the IR spectrum. Is it used simply for foraging or is there a predator-prey relationship



at work? This is definitely a topic for later conversation.

The functioning of the rods and cones can give us great insight into what trout process optically in different lighting situations. During daylight hours their rods are withdrawn below the surface of the retina and shielded from bright light by dark pigments, while cones move to the upper surfaces of the retina providing greatest color detection. It is during these times when color is most important when selecting fly patterns or tackle. At night when light levels are at a minimum the reverse

is true, rods are exposed and cones are withdrawn. It is important to note that due to monochrome detection by the rods, even during the brightest moonlight conditions fish will not be able to see color, only shades of gray. Shape, shades and sound should be your primary considerations when trying to evoke a response from a finned friend in low light conditions.

On the contrary, there are two distinct areas where trout vision excels. The first is contrast; anything that stands out against the underwater background (water, stream

bottom, etc.) is easily seen. The same is true for stripes, bars, and especially circles and spots against the aquatic background. The second area is movement. Interesting enough the smallest rapid movements can trigger an instantaneous response in a trout's brain. Proving just how important a good presentation can improve catch rates.

Another interesting tidbit is that juvenile trout possess specialized cones that detect UV light. Early in life a trout's diet consists of zooplankton and other very small creatures. These happen to reflect UV light. These specialized cones help trout locate forage in these early life stages. As the trout begins to grow their diet changes. Studies show that these UV cones are replaced by either rods or cones, helping the trout's vision adjust to the changing diet. These highly specialized cones are usually found in trout younger than 2 years.

A better understanding of optical processing by trout, can only further educate us as anglers upon trout behavior associated with lighting conditions and the aquatic environment. Not only will we be able to tailor fit our presentations to our lighting scenarios, we will be rewarded with many more fish to hand.

If trout have the ability to see further into the UV an IR

spectrums than humans can, is it possible that there are colors and materials unnoticeable to us that trout might prefer? It is known that many feathers reflect different colors of light unseen to the human eye. Have you ever wondered why flies that appear to be the same have different affects on feeding trout? Perhaps they are tied with similar but not identical materials, emitting many different colors underwater.

-Food For Thought-

## Benefits of Aquatic Plant Communities

Summertime fishing can be both rewarding and frustrating. The reward comes in the form of large healthy trout. Frustration sets in when waters become less productive due to increasing algal blooms and changing water quality. Increased levels of nitrogen in surface water, groundwater and drinking water can be related to modern land practices involving nitrate-based fertilizers. Outside of the obvious increased contaminant, high concentrations of nitrates in our nations fisheries is becoming more and more of a problem. Traditional methods of combating nitrogen concentrations were primarily chemically based. However, recent studies show that aquatic plants and a few upland grasses can greatly reduce nitrogen concentrations in our fisheries.



Nitrogen N<sub>2</sub>, is taken up, or "fixed" by few kinds of microorganisms, whose enzymes then convert it to ammonium. Plants then convert ammonium to organic N, initially in the form of amino acids, which are then turned into beneficial proteins for the plants consumption. With a healthy aquatic plant community comes increased substrate (surface area) for the colonization of beneficial microbes. Specifically, nitrifying bacteria such as Nitrosomas and Nitrobacters which are extremely important cogs of the nitrogen conversion cycle. One very noticeable example of increased nitrogen concentrations is the prevalence of algal blooms on our lakes and rivers. Blooms usually occur in the summer months into early fall when nitrogen rich water begins to warm. The warming of the water and increased sunlight create a situation that overworked and unavailable bacteria can't keep up with the colonization of

algae. These blooms often make our fisheries less productive or not even fishable.

As aforementioned, the increased surface area of our plant community allows for greater colonization of beneficial microbes as well as assist in the conversion of organic nitrogen.

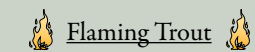
In addition to helping reduce the amount of available nitrogen in our waters, the plants create great refuge for our macroinvertebrates (bugs). We all know without a healthy population of bugs we can't have a quality fishery. Not to mention our baitfish can escape ambush from our more piscivorous (fish eating) inhabitants.

CFI has always advocated the use of organic components in our fisheries when addressing problems. The use of chemicals can often lead to the "killer chemical cycle" described as the use of additional and different chemicals further degrading water quality leading to sterilization. Though this sounds very intimidating, the introduction of plants as bio-filtrating organics can be aesthetically pleasing along with providing beneficial long-term affects.

Give us a call for more information on boosting the productivity and success of your fishery.



## The End Of The Rainbow



Serves: 4

Ingredients: 4 Trout fillets (1/2 lb each)

Lemon-onion baste:  
 1/2 cup lemon juice  
 1/4 teaspoon salt  
 1/4 cup salad oil  
 1/4 teaspoon sugar  
 1/8 cup green onions  
 dash of pepper  
 2-3 ounces rum (or cognac)  
 assorted herbs:  
 rosemary, fennel, dill, parsley, thyme, sage

Directions:

Combine the ingredients of the lemon-onion baste and mix thoroughly. Grill fillets over a medium heat basting twice on each side with the Lemon-onion baste.

Cook 5-8 minutes on each side, turning once. Cover a hot platter with the Herbs and place on it the fillets from the grill. Sprinkle herbs on top of the fillets.

Pour rum over the fillets and ignite. (Try this out-of-doors once before you spring it on guests) The herbs will give the fish a subtle irresistible flavor.

Can be served with a wild rice mix and a plate of cut raw vegetables.