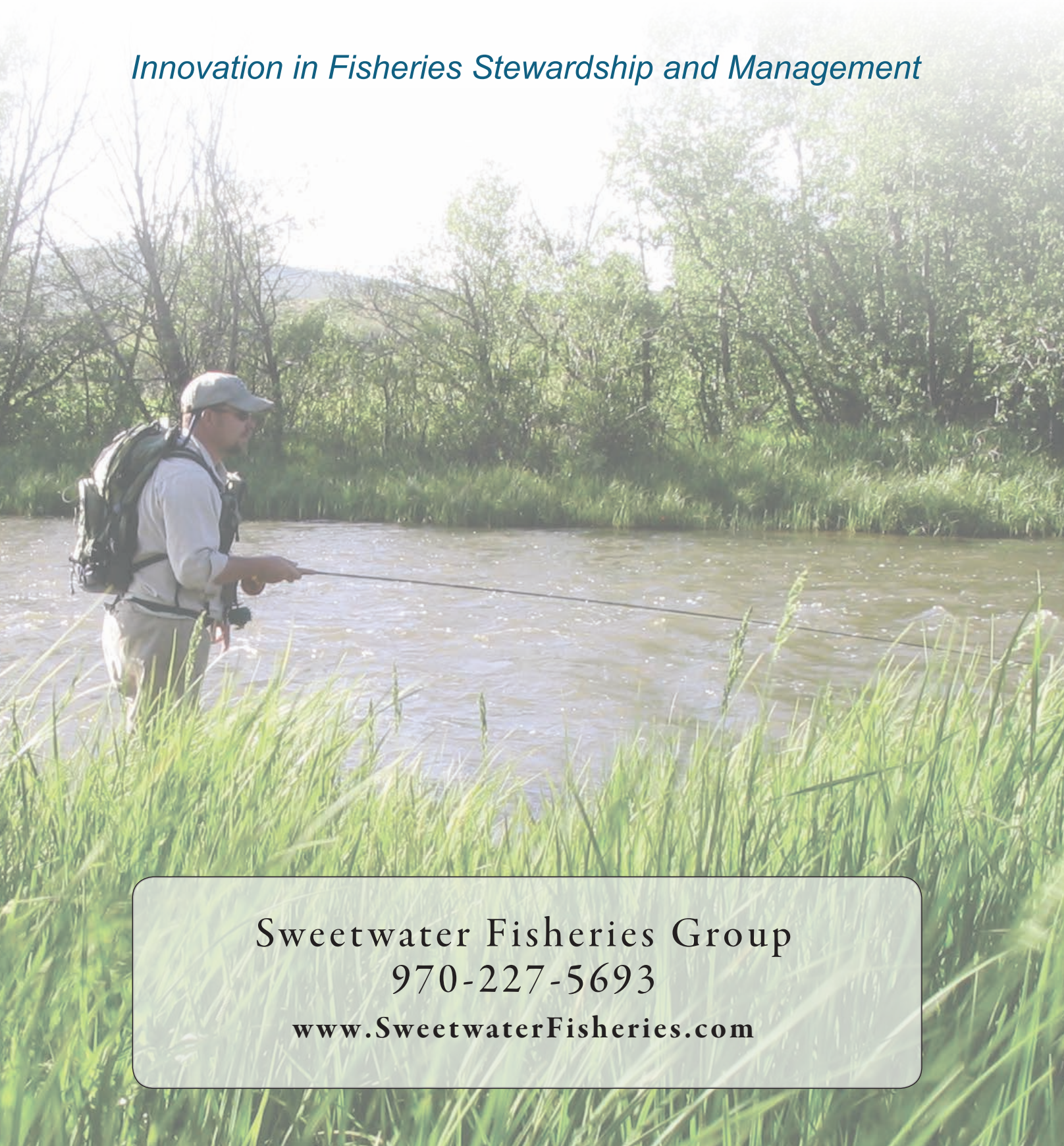
SWEETWATER
FISHERIES GROUP

Innovation in Fisheries Stewardship and Management



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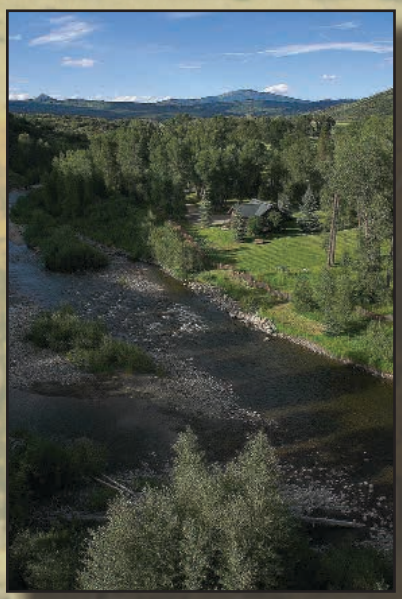
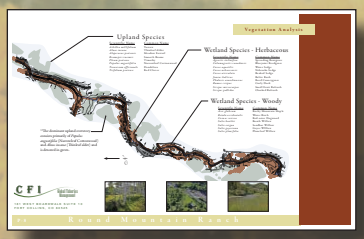
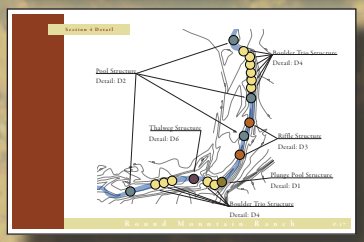
Recent News & Notes

An exciting restoration took place on this incredible property just north of Steamboat Springs. What began as a simple irrigation ditch required a tremendous effort and extensive design to convert this piece into a world class fishery.



Great care was taken on this project to protect the extensive wetlands surrounding the project site. Working directly with the US Army Corps of Engineers, SFG was not only able to protect the existing wetlands but actually increase the total wetland community by over 30 percent! Within this stream development there is close to a mile of new fishery and a large fly-casting pond ensuring that there are ample habitats to serve not only anglers, but to keep the extensive rainbow and brown trout populations put.





Also added to this project were a multitude of spawning substrates, bed-form habitats, riparian plantings and the installation of a forage base producing a mature, uncultivated biological ecosystem.

2008

Another project worthy of highlight is the stream restoration near DeBeque. This very unique fishery is quite literally an oasis in the desert. Home to a native Colorado River Cutthroat population (at only 6500' elevation!) sequestered above a natural barrier, this project was a two mile endeavour to give these extraordinary fish a little more room. Working in conjunction with the Colorado DOW, U.S. Army Corps and the U.S. Fish and Wildlife Service, SFG was able to secure commitments to reintroduce pure strain CRC's into the rehabilitated portion and give them an entire watershed to themselves. An additional barrier was introduced to exclude all fish in connected watersheds and ensure that these prized CRCs are able to flourish without competition and crossbreeding from other species.

SFG biologist Toby Stuart with a CRC sampled from the project

Wildlife conservation author Anne Griffin met with SFG President Shannon Skelton following the completion of a recent river restoration project. Her goal was to gain insight into the success of SFG's innovative approach to fisheries restoration.

— The Land Report is a national publication dedicated to providing informative and relevant content to educate todays prominent landowners nationwide.

The LandReport
THE MAGAZINE OF THE AMERICAN LANDOWNER June 2007

Water Writes

A New Approach to Fisheries Restoration - BY ANNE GRIFFIN

In a specialized industry that is catering to a certain clientele there is still an opportunity to stand out, in principle and in project success. CFI – Global Fisheries Management, a Fort Collins, Colorado based company, is carving a niche into a path less traveled.

As a fisheries consulting, stewardship and management firm, with projects around the globe, their results are commanding attention.

At the helm of CFI is Shannon Skelton, senior fisheries and aquatic biologist. Shannon and his staff of industry professionals have made a commitment to true restoration. This begs the question, "What is true restoration?" Restoration is a return to nature's blueprint. The marking and implementation of these blueprints are CFI's specialties. Human and agricultural practices have led to the degradation of many of our nation's fisheries. Skelton, and his company are committed to reversing this trend. With preservation in mind, and a solid, thorough plan they are returning these precious resources to thriving fisheries.

"Our approach is simple", says Skelton, " we take the cues from nature and create the environment that inhabitants want to live in." They use no need for artificial or contrived structures in this enhancement because there is nothing artificial in nature. There is a great deal of variety. Skelton adds, "When a landowner enlists our services, we take the time to research the true cause of the problem, before we embark on a solution. We can only understand how to appropriately restore when we let the river itself tell us what is wrong." This begins the courtship of scientific studies and practical applications. By using advanced data gathering methods and standard setting techniques, CFI is pioneering the restoration landscape.

The staff consultants at CFI are well aware that there are several approaches to the restoration of a stretch of river. However, they are uncompromising in the solution to naturally and lastingly restore, taking all ecology into account. "What was a common practice in the past," Skelton says, "has been usurped by better technology and better understanding. We build on what we have learned, but the future points to a better way."

One, often employed, but final approach to restoration involves creating a series of plunge pool structures. These structures are a template overlay that provides a head-aid to a broken leg. The landowner's resources are reinvested to ones he believes will improve and enhance the fishery. This is not a job to be taken lightly. The quick fix may save time, in the beginning, but will only cost in the end without the habitat to sustain it.

Skelton was a professional fly fishing guide for many years. His love for the outdoor life and passion to preserve our national fisheries has led him to his vision he is now. His wholehearted belief and contagious enthusiasm are evident. "It's not enough just to create a structure, we want to create a legacy, a fisheries paradise that will thrive on its own after we are gone." What better way to do this, than to put things back the way they were before the changes. "We are not interested in creating an artificial environment that will go against the natural course of the water nor do we believe we have truly restored if we are leaving the landowner with the dubious proposition of continual pellet feeding and seasonal fish stocking."

The ideas and methods espoused by CFI may be encouraging openness, but the productivity is worth the trip. "We have seen scales of river, completely replicated, the banks toppling into the stream. In such places the riparian vegetation seems non-existent. We've even fixed shoulder cuts littering the landscape and piles of concrete clogging a stream", adds Skelton. "Through research and careful planning we have been able to enhance the environment to naturally bring back indigenous aquatic habitat and promote stunning recovery to these places."

There is a bigger picture in mind here. The philosophy of stewardship implies that we don't own it, but it is ours to care for, and to leave it better than we found it.

Name
Shannon L Skelton

Vocation
Fisheries & Aquatic Biologist

Home Base
Fort Collins, Colorado

Known For
Pioneering new methods in stream restoration

He says
"If you do what you've always done, you'll get what you've always got."

A LOOK AT SFG SERVICES:

River Restoration:

- Full-scale scientific data collection and CAD based stream design
- Army Corps and DOW permitting
- Fish and macroinvertebrate habitat improvement
- Structural implementation and construction

Fisheries Science:

- Electrofishing population surveys and reporting
- Benthic Macroinvertebrate studies and forage base analysis
- Fishery management and consulting

Stream Corridor Analysis:

- Riparian plant species inventory
- Riparian identification & classification
- Riparian condition assessment
- Wetland delineation

Stillwater Development:

- Pond engineering and design
- Construction and lining (natural & synthetic)
- Aquatic habitat management
- Custom aeration design & installation

Fishery Stocking Services:

- Trophy Trout
  - Brown Trout
  - Brook Trout
  - Rainbow Trout (Multiple Species)
  - Cutthroat Trout
- Forage base stockings
  - Freshwater Shrimp (*Gammarus lacustris*)
  - Fathead Minnows (*Pimephales promelas*)

Phases of a Fisherman's Fly

- By SFG biologist Toby Stuart

In the world of fly-fishing the mayfly is the most commonly imitated aquatic invertebrate. Most of our fly boxes are littered with mayfly patterns representing different genera and life stages of this trout delicacy. Because approximately 85% of a trout's diet is consumed beneath the water's surface, anglers armed with knowledge regarding the underwater behavior of our most common aquatic insects always have the advantage when pursuing finicky trout. It is SFG's hope to increase angler's catch rates by shedding more light on a few of the lesser known characteristics mayflies possess.

Western Green Drake *(Drunella grandis)*

A mayfly has four life cycles that should concern fly fishers. The egg (ovum) stage consists of 1-4 days of the mayfly's life cycle. The nymph stage then lasts from 11-24 months, during this nymphal stage, mayflies will undergo between 20-30 molts. The emerger/dun takes approximately 1-4 days, with the spinner, (adult) stage usually lasting about 1 day. It is this very short period of the mayfly's life cycle that their taxonomic order Ephemeroptera derives it's name. The definition of the Latin term ephemera means "to live but a day". Because the majority of a trout's diet is consumed sub-surface, it is the nymphal and emergent stages that provide the greatest opportunities for anglers.

Green Drake #14

The onset of the emergent stage, commonly referred to as the "hatch" by anglers, entertains two theories. The biological explanation is that during the last few weeks of the mature nymph's life stage, gasses will form between the exoskeleton (outer shell) and the immature mayfly. Over time, the positive pressure created by the gas will greatly affect the insect's ability to remain below surface and propel the insect to the water's surface. The environmental theory suggests that when an area of water reaches a temperature of approximately 50 degrees F, and remains near that temperature range for 3-4 consecutive days, the consistent water temperatures provide the stimulus needed to start the emergence.

Light Cahill Var. (*Stenacron spp.*)

In North America the taxonomic order Ephemeroptera contains 16 families representing 47 genus, all totaling over 500 different individuals species. These 16 families are generally classified by taxonomists into four categories that describe their nymphal behavior. These simplified categories are; free-swimming, burrowing, clinging and crawling.

Crawling mayflies are the most diverse of our four nymphal categories. These crawling mayfly nymphs reside in moderate to fast riffles that have a gravel or medium-sized cobble bottom. Migration generally occurs with growth during the nymph or larval stage. Emergence will take place downstream from the riffles from where they originate. Next time you find yourself in one of these

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habitats turn over a large piece of cobble or a small boulder. Assuming water quality is favorable, chances are good you may find a crawler inhabiting the substrate selected.

The burrowing mayfly can be identified by the mandibular tusks protruding from the head of the nymph. The tusks allow these specialized nymphs to burrow in streambed substrates. Most burrowers avoid sunlight, therefore only exposing themselves during low-light or darkness. Most nymphs range from 12-32 mm in length. Overall, the biomass associated with these mayflies keep them at the top of list of "go to" patterns. The infamous Green Drake fly pattern can represent the genus Hexagenia. The "Hex" is a major contributor to the annual "blanket hatches" that many anglers eagerly await on our finer western waters.

Often referred to as flathead mayflies, clingers are a very important mayfly group. The family Heptageniidae is widespread across North America containing more than 100 species. Nymphs of this family can be found in a variety of lotic (live-water) environments from rapids to moderately fast riffle communities. Generally, they are found on small boulders, cobble or debris of fast to moderately flowing streams or rivers. It is the strong claws and legs along with disc-shaped gills that allow Heptageniidae members the ability to cling to substrate in their turbulent and challenging environment. Clingers are less mobile than crawlers and have even been found in the littoral (shallower) regions of lakes. Anglers can thank this specialized group of mayfly for our more commonly used dry fly patterns. For example, the family Heptageniidae can be best imitated by March Browns, Cahills or Quill Gordons. Like the Green Drake, the contrasting nature and size of this pattern against a lighted background (i.e. the sky) provide an irresistible silhouette for surface-feeding trout.

The free swimming category of mayflies is typically represented by the family Baetidae. This group of nymphs can swim minnow-like when not at rest on aquatic plants or streambed substrates. Most of the prevalent species range from 7 to 12mm in body length, while those of the genus Baetis, which prefer riffles and faster water, average between 5 and 8mm. Slightly smaller in size, the genus Callibaetis will more likely be found emerging in the calmer waters of eddies and pools. The most common imitation of the Baetis in adult stage would be the Blue-Winged-Olive (BWO) pattern. An excellent representative pattern for the nymph stage of the Baetidae would be a small (#16-#20) light colored Hare's Ear. Our BWO hatches are relatively easy to match, however the smallest detail in our fly selection can be the difference maker in a trout filled afternoon.