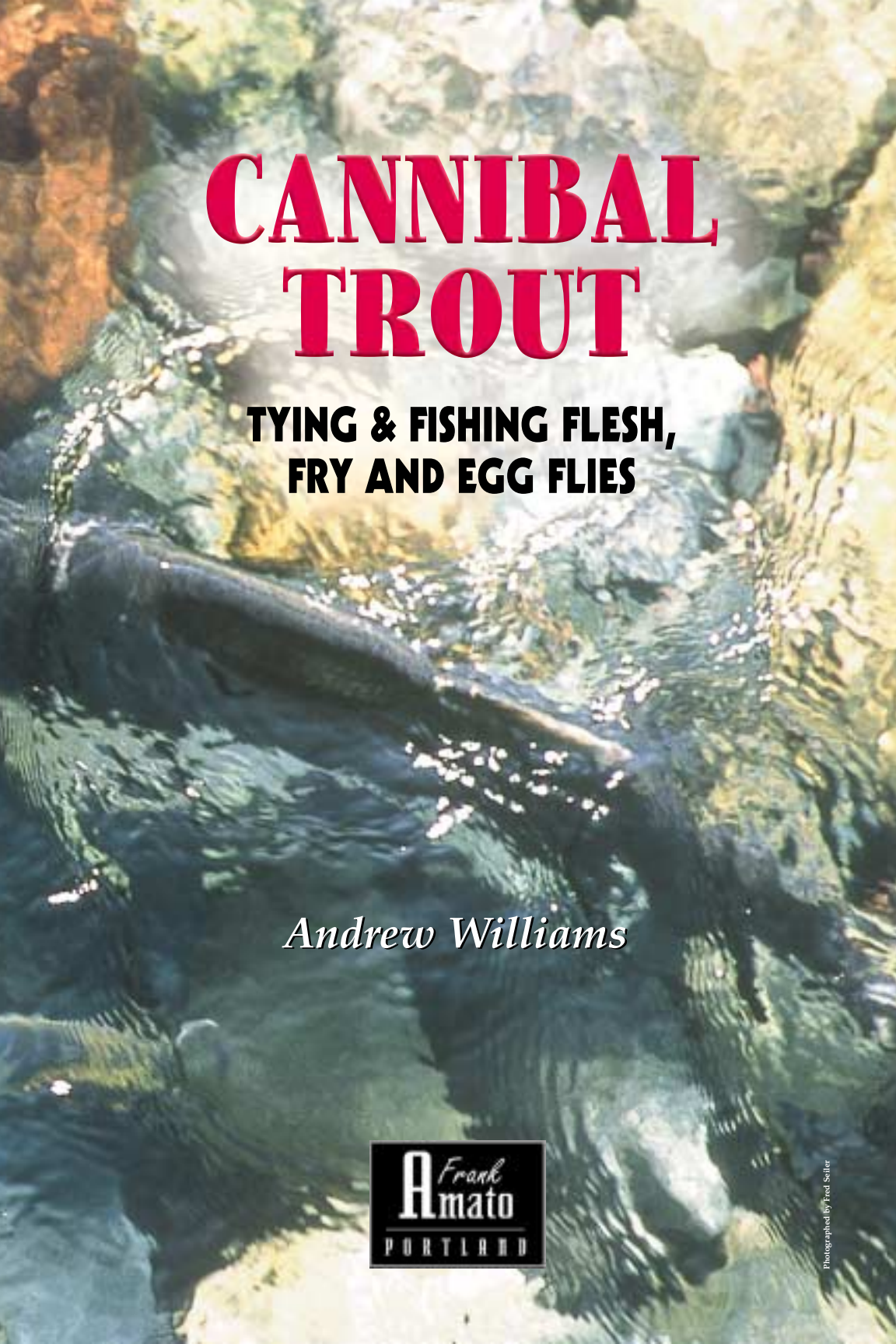
CANNIBAL TROUT

TYING & FISHING FLESH, FRY AND EGG FLIES

Andrew Williams



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Andrew Williams

Frank Amato PORTLAND

Photographed by Fred Seiler

DEDICATION

"For Rhian and Janine:
thanks for all your patience while dad fished."

ANDREW WILLIAMS

Although he was born in England near the famous Itchen and Test rivers, Andrew Williams didn't take up fly-fishing until the day he pulled a fly rod and reel out of the Ausable River in upper New York State. The passion that was born that day led him to being the founding president of the Ottawa Fly Fishers in Ontario, and to fly-fish in the United Kingdom, eastern Canada and New England.

In 1989, he moved to the banks of the Kispiox River in northern British Columbia and found a new addiction—steelhead. He worked with the Steelhead Society of BC on the Wild Steelhead Campaign to reduce the impact of commercial salmon fishing on the Skeena River's precious steelhead. Since then, he has lived in the north, fishing, teaching and writing for various American and Canadian fly-fishing magazines. He is chairman of Friends of Wild Salmon, a group dedicated to protecting the wild salmon and steelhead of the Pacific Northwest.

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Born to Spawn

Every year, adult pink, sockeye, chum, coho, and chinook salmon battle upstream in coastal rivers from California to Alaska, often travelling hundreds of miles to complete their mating rituals on the gravel beds where they were born. Unlike their Atlantic cousins, not one of the millions of Pacific salmon that spawn in these rivers will survive to return to the ocean. Even before they have dug their redds and laid their eggs, their bodies are disfigured by the marks of death: ragged fins and patches of white bacteria. Soon, they will weaken and, unable to fight the currents any longer, begin to drift weakly downstream to die. Finally, their pale, rotting carcases will carpet the river bottoms and wave like pennants from the sunken branches that have snagged them.

Photographed by Fred Seiler

Spawning chum salmon.

When I first moved west to live on the Kispiox River, I marvelled at the bounty of nature as a seemingly endless stream of salmon, especially pinks, flowed past in late summer. Nowhere back East had I ever seen so many large fish in a river. It was easy to appreciate how the rich culture of the aboriginal peoples of the Northwest had been made possible by this abundant and reliable source of food which swam up to their villages every year. Later, however, as I witnessed the slow deterioration and final death of these hordes, the life cycle of the Pacific salmons seemed to me to be brutally ephemeral and even wasteful. Finally, the marvel of abundance was forgotten in the fall as I prayed for the rains to come and wash away the tens of thousands of carcases that filled the air with the smell of decay.

Photographed by Fred Seiler

Grizzly bear eating salmon.

But appearances are deceiving, and later I came to realize that what had seemed at first to be a tragic waste is in fact a noble sacrifice. The return of the salmon to their home rivers to spawn and die has been for thousands of years the foundation of the health of the entire Pacific Northwest ecosystem. By tracking the concentrations of marine-derived isotopes, nitrogen-15 and carbon-13, in plants and animals in the river valleys, fisheries biologists have found that the nutrients from salmon carcases enrich what would otherwise be a mineral-poor, unproductive environment. In the rivers and lakes where salmon transport these nutrients, the growth and abundance of everything from algae and aquatic insects to juvenile salmon is enhanced. From the valley bottoms to the mountain tops, the great rainforests of the Northwest and the creatures that live there depend on the return of the salmon.

For example, researchers Charlie Robbins and Grant Hildebrand studied museum specimens of grizzly bears from the Columbia River area, a population that has been extinct since 1931, and discovered that up to 90 per cent of the carbon and nitrogen in the bones and hair of these long-dead bears had come from salmon. They concluded that every Columbia River grizzly they had tested had fed on salmon, including bears that had lived 700-800 miles inland. Other researchers have found the same pattern of isotopes existing in human bones in the Interior of British Columbia, indicating that native peoples far from the ocean also relied on the bounty of the salmon runs, which in many cases are now a trickle of their former size.

Skunk cabbage in the spring.

Studies reveal that the bears themselves are a major agent in transporting the salmon nutrients from the river waters to the forests. Their feces and the decomposing fish carcases that they and other predators drag up to 150 metres (492 feet) into the woods provide nitrogen, carbon and phosphorus to the birds, insects, animals and plant life of the rainforest. This nutrient pump provides up to 40% of the annual fertilization of some riverine ecosystems. University of Victoria biologists found that the amount of salmon left on the forest floor was equal to 4,000 kg. /ha (3,500 pounds per acre) of commercial fertilizer, accounting for the massive size of streamside trees.

The authors of a recent article in Fisheries (Vol. 25, No. 1, January 2000) estimate the historic biomass of salmon returning to west coast streams was from 160 to 226 million kg. (176,370 to 286,600 tons). Sadly, overfishing by commercial fleets, damming, urbanization, and deforestation have severely reduced the number of adult salmon making it to the spawning beds to contribute their marine-derived nutrients to the freshwater ecosystems. The reduction now to 11.8 to 13.7 million kg. (13,228 to 15,432 tons) or 6-7 percent of the historic nutrient input, has contributed to the downward spiral of salmonid abundance and diversity, and added to the difficulties of rebuilding salmon and steelhead populations to self-sustaining levels. The ironic result is that salmon fry populations in these waters and the predators that feed on them have declined because there are not enough adults to make the noble sacrifice for their offspring.

The authors say, "Fisheries management has historically ignored such ecological implications of salmon spawning escapements. Harvests were regulated to provide the minimum number of spawners needed to seed the habitat. The contribution of 'surplus' salmon carcases to the growth and survival of juvenile salmon was not considered when harvest and escapement targets were set."

A sad example of the problems this has caused is the catastrophic decline in steelhead populations in Vancouver Island rivers. The eastern shore of the island in particular has suffered from habitat destruction from urbanization and logging, and the problems this causes have been exacerbated by poor ocean survival in recent years. Because steelhead usually live in fresh water for two years, they are particularly affected by the reduction in nutrients that has resulted from the declining salmon runs. Attempts have been made elsewhere to fertilize some lakes and streams with artificial sources of phosphorus and nitrogen, and in places such as Washington State with spawned-out hatchery salmon. Similar plans are being discussed for 15 Vancouver Island rivers. Ultimately, the only viable method of rebuilding depleted salmon and steelhead stocks is to let more adult salmon return, to recycle their minerals and protein, thus supporting their own offspring.

We are slow to appreciate that nature knows best. In British Columbia, commercial fishermen and fisheries biologists talk about the ESSR fishery—the excess to salmon spawning requirements fishery. They refer to the "minimum spawning requirements" of salmon runs, as though

every salmon in excess of these requirements that is not caught in the nets is a wasted salmon, or even worse, as though these salmon are "over spawning" and destroying the redds of others. This is like a logger or forester talking about "decadent old-growth forests," and saying that a tree has no value until it is cut down. These statements reflect the narrow view of nature as being valuable only if it contributes to human economic activity. They ignore the contribution that the nutrients of the salmon carcases make to the fertility of river bottom life and that even a fallen tree makes to the ecosystem by rotting and making soil, amongst other things. Both attitudes reveal our ignorance of the complexity of nature's inter-connected cycles. Slowly, however, we are coming to understand that salmon are truly forest creatures and that the forests themselves are the products of the salmon runs.

Sport fishermen, on the other hand, have long known that freshwater fish, such as cutthroat and rainbow trout, Dolly Varden, bull trout, and whitefish, rely on all stages of the salmon's life cycle for a major part of their diet. In the summer and fall, they stack up behind spawning salmon and gorge on the eggs. After the adults have died, trout will feed on the rotting flesh, sometimes tearing at a carcass like a pack of wolves. In the spring, as the newly hatched alevin emerge and turn into fry, trout and other fish go on a feeding frenzy until their bellies are so distended with the baby salmon an angler might wonder why they are even remotely interested in his fly. Even the smolts descending the rivers on their way to the sea must run a gauntlet of hungry trout.

Whereas the East coast angler has to imitate the various insect hatches in his home waters, to be successful, the trout fly-fisher of the Pacific Northwest must also learn the timings of each stage of the salmon hatches on the rivers he fishes and know how to match the eggs, fry, and flesh of the salmon that are present. Not only effective imitations of these food sources are the keys to success, but so too are a range of strategies and fishing techniques to present them where, when and how the trout expect to see them.

Fly-fishing in the coastal streams of the West is a relatively new phenomenon, perhaps a hundred years old at best. But even during its early stages, trout fishermen were realizing the importance of salmon as a source of food for their quarry. Shiny, silver streamers were fished in the spring as simple imitations of salmon fry and red chenille-bodied wet flies in the fall to represent eggs. White-winged streamers in the fall took hungry trout feeding on salmon flesh. Many of those simple flies from yesteryear will still catch fish, but anglers have developed more and more realistic patterns for all stages of the salmon hatch. Just as flies have advanced, so have equipment and fishing techniques. A successful angler knows that trying new patterns will increase his success, and that while the traditional wet-fly swing still has its place, varying the way he presents his fly to the trout will make it more likely he will find the combination that works. I hope this book will encourage you to experiment with new patterns and techniques when you try to match the salmon.

CHAPTER ONE

The Life Cycles

of the Pacific Salmon

Illustration by Andrew Williams

The Pacific salmon are members of the family of salmonids which probably traces its ancestry to the era of the dinosaurs, 150 million years ago. The earliest know fossil salmonid, Esalmodriftwoodensis, which was 55 million years old and was in all likelihood the progenitor of modern trout and salmon, was found in Eocene lake sediments just north of the Bulkley River in northern British Columbia. Today the trout, steelhead and Pacific salmon which are its modern ancestors swim in nearby rivers and lakes.

By the end of the Miocene era (24-5 million years ago) all the major branches of the subfamily Salmonidae were established, including the

Cutthroat trout with fry pattern.

grayling *Thymallus*; the char *Salvelinus*; brown trout and Atlantic salmon *Salmo*; and the Pacific trout, steelhead and salmon *Oncorhynchus*.

Cutthroat trout *O. clarki* and steelhead *O. mykiss* are considered by some fisheries biologists to be the most primitive of the Pacific salmon family because they both have forms which live their entire lives in fresh water, have limited migration patterns and may live to spawn more than once. The sea-run cutthroat trout tend to stay close to estuaries and coastlines and will enter fresh water to feed several times in the year. In spring, they feed on the emerging salmon fry and in the fall they often follow the adult salmon upriver to feed on their eggs. The timing of the different runs of steelhead varies tremendously, with some entering the rivers in the summer and fall and staying over the winter in the rivers, and others entering in spring for a few weeks only. Steelhead feed very little in fresh water. Steelhead lead extremely variable life cycles: staying in fresh water for up to three years before going to sea and returning from one to four years later. In short, coastal rivers, steelhead will return to fresh water in the spring, spawn and leave after a few weeks. In larger, inland rivers they will return in the summer and fall, over winter in fresh water, and

spawn in the spring before migrating back to salt water. Some rivers even have populations that show both patterns of behaviour. The river-resident form of the steelhead is the rainbow trout which is taxonomically identical. Like their cousins the brown trout, cutthroat and rainbow trout, and steelhead are spring spawners. The record cutthroat is 40 pounds, but anything over 10 pounds today is pretty special. Steelhead over 40 pounds have been caught in commercial nets, although the average size is probably more like 13 pounds.

Coho or silvers *O. kisutch* and chinook or kings *O. tshawytscha* are considered the next most advanced after the Asian amago and cherry *O. masu* salmon because they have a long freshwater residency as smolts—one to two years. There are a few coho populations, such as those in Cultus Lake in southern B.C., that do not migrate to the ocean at all, reach sizes of only two feet or less. Some chinook do not wander far from their home rivers and return as small, immature "jacks," predominantly precocious males. Coho will spend from six months to two years in the ocean, average ten pounds at maturity, and spawn from September to December. Chinook spend up to seven years in salt water which accounts for their larger size—up to 100 pounds. They enter rivers from April to August and spawn in the late summer and early fall. Some biologists consider the most developed species of the Pacific salmon to be the chum *O. keta*, sockeye *O. nerka* and pinks *O. gorbuscha*. They have the simplest and most specialized lifestyles, rely the least on fresh water and are the most numerous of the salmon. While chum and pink fry migrate to salt water almost immediately upon emerging from the streambeds, sockeye have adapted to using the lake environment for spawning and rearing the juvenile stages. Sockeye smolts spend one to three years in fresh water lakes feeding on zooplankton before heading downstream to the ocean. The sockeye salmon has a non-anadromous form called the kokanee which lives its entire life in fresh water, reaches only one to two pounds average weight and spawns at the same time, and often in the same waters, as the sea-going form.

Chum salmon (also called dog, because of the large teeth they develop in fresh water or calico, because of their pink and green spawning colors) spend three to four years at sea and while they average about seven pounds, grow as large as 40 pounds. They are fall spawners. Sockeye spend one to four years in salt water, return to the rivers in the summer when they average about seven pounds and spawn in the early fall. Their rich, red flesh makes them highly desirable and they are the economic mainstay of the commercial salmon fleet.

Pinks (also known as humpbacks or humpies because of the distinctive dorsal hump the spawning males develop) are the smallest and most numerous of the salmons, weighing three to four pounds at maturity. They make up more than half of the number of fish caught by the commercial salmon fleet. They arrive in July and August after about eighteen months at sea, and spawn in late summer and early fall, so all adults are two year olds. Pinks normally have a two-year

cyclic pattern of abundance, with even and odd year stocks being genetically distinct. Some rivers have only an odd- or even-year run, and others have both, but one is usually dominant. Pink salmon adults spawn in fast-flowing, shallow riffles in substantial groups and their huge numbers represent a major source of nutrients to the riverine ecology.

All members of the Pacific salmon family are anadromous, meaning that they spend different lengths of time in fresh water, descend to the oceans to feed, and then return to fresh water to spawn. They all die after spawning with the exception of cutthroat trout, steelhead and its resident form, the rainbow trout. It was not until the 1970s that it became universally accepted that the salmon are able to identify through their sense of smell not only their natal rivers but also the very same gravel beds that gave them life. Salmon whose nostrils were plugged or nasal nerves were cut swam past their home waters, while those who were left in their natural state unerringly found their way home. How they can migrate thousands of miles out to the open ocean and return en masse to the same river is still a matter of speculation, however.

All Pacific salmon return to the rivers in large schools with each species returning to spawn together in specific areas of the watershed and at different times. Through this strategy, nature has reduced the likelihood of hybridization, the competition between the adults of the different

Photographed by Fred Seiler

Spawning pink salmon.

A school of pink salmon adults.

species for suitable spawning areas and the competition between the juveniles for food. At the same time, this pattern of behaviour ensures that the marine environment's nutrients will be transported throughout the entire river system, from the estuary to the headwaters.

It really pays for a trout angler to learn about the habits of the salmon in the rivers he fishes. Knowing when and where each species lays its eggs makes it easier to find the trout and char that wait behind the spawning salmon for the eggs that drift downstream. I have stood on the bank of a small Alaskan stream watching spawning chum salmon and have seen dozens of large Dolly Varden right in amongst them, waiting for a free meal. Under conditions such as these, trout can become quite selective to eggs, requiring imitations which match the natural in size, color and buoyancy.

Where the eggs are laid in fall, the fry will emerge in the spring. In the gravel beds below a lake near where I live, first the pinks, then the coho spawn in fall. In the spring, steelhead spawn in the same areas. Chinook and chum spawn in deeper waters downstream in late summer, and the sockeye spawn in the river above the lake in the early fall. I expect to see the fry appear in the same order and in the same places, so I know which imitations to be fishing when. Recognizing the different fry in the water also helps to ensure that I am using the correct fly, because trout, especially the larger ones, do become selective.

Finally, knowing where drifting salmon flesh is likely to wind up makes it more productive to fish flesh flies in the late-autumn months after the salmon have spawned and died. Each region and each watershed has its unique seasons of the salmon and nothing beats taking the time to become familiar with the special characteristics of the rivers you plan to fish.

CHAPTER TWO

Spring Time

The Features of Salmon Alevin, Fry and Smolts and Tying Flies to Imitate Them

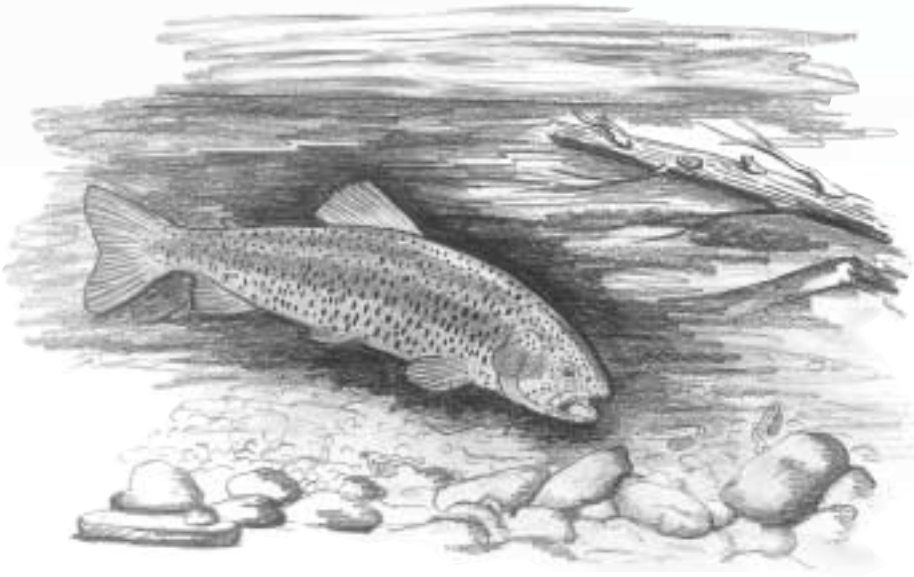


Illustration by Andrew Williams

For several weeks I had been visiting my favourite Skeena tributary, trekking through the shrinking snowdrifts that hung on in the forests that border the river. The days were becoming longer and warmer, and the buds on the trees promised that spring was imminent. I knew steelhead would be found in the riffles, some the dark fish that had arrived in the fall and wintered in the pools and nearby lake; others, far fewer, the bright fish of spring that had recently entered the river from the ocean. I enjoyed the thrill of the take as my bright fly was stopped in mid-drift and a strong steelhead rolled at the surface; I was satisfied to bring the fish into shore and to release it to fulfill its biological drive. But what I was really waiting for were the little

Photographed by Fred Seiler

Salmon fry in hands.

darting, twinkling movements in the shallows and back eddies that announced the arrival of the true harbingers of spring—the newly emerged salmon fry.

Even in the cold, blustery days of late March, a few hardy fry could be found along the edges of shallow riffles, absorbing the warmth of the strengthening sun, but their numbers were not sufficient to draw the trout out of the nearby lake. Then one day, when the swallows dipped over the stream, feeding on the clouds of midges, and the trees fuzzed green with leaves, there they were, schools of darting coho fry in every slough and backwater. It is a truly magical phenomenon to witness: the silvery fry seem to bubble and boil out of the very gravel like an alchemist's dream of turning stone into precious metal. I have reached down and lifted up a handful of wet pebbles and watched fascinated as it came alive with twisting little fry that dropped through my fingers into the stream. Suddenly, where there was barren water, now there is life.

Within days, the river is full of trout, char, whitefish and squawfish, ravenous from a long winter, that have dropped down from the lake to feast on nature's bounty. This is the time the trout fisherman has been waiting for. For a few weeks in spring, the river holds more and larger fish than at any other time of the year, and when conditions are right it is the best chance an expert angler has of landing the fish of a lifetime. Large trout gorge themselves on the fry of the salmon: pinks, sockeye,

coho, chum and chinook. It is among the best times to introduce a neophyte to the joys of fly-fishing because, at least during the early stages of the fry hatch, any clumsily cast silvery fly will take trout. It is truly "Duffer's Week."

But as the fry season progresses and the high, turbid waters of spring give way to lower, clearer flows, the trout, especially the larger ones, become warier and harder to fool. No longer will just any streamer take trout consistently. To be productive, the fly-fisher has to match the size, coloration and behaviour of the particular salmon juveniles which the trout are feeding on that day. A little careful observation and knowledge will pay off handsomely, if you can identify the juvenile salmonids and fish a close imitation.

Salmon and Steelhead Alevin, Fry and Smolt Features

The eggs of the various salmon species which were laid in the redds in late summer and early fall during cooling water temperatures, incubated in their gravel beds during the winter, and developed into alevin with the warming temperatures of spring. The young salmonids are referred to as alevin while they retain their yolk sacs, the remnant of the egg upon which they feed initially, and as fry after they have absorbed the sac. The time the eggs take to develop into alevins varies according to the temperature range they experience during incubation, but by roughly 5-8 months after spawning, most salmon eggs have hatched. Even under optimum natural conditions

Salmon fry bubbling out of the gravel.

only 10-20 percent of the eggs successfully develop into alevin, and the ratio can be as low as one percent.

The newly hatched alevin can move fairly extensively through the gravel and often stay under its surface until their yolk sac is almost completely absorbed. While in the gravel, the eggs and alevins are eaten by various predators such as sculpins, leeches and invertebrates. Many eggs do not hatch and many alevins do not successfully emerge from the gravel, so there is plenty of food for these predators to scavenge. They ultimately have a beneficial effect on the streambed ecology by removing the dead eggs and alevins, which by decomposing would have competed with next year's eggs for oxygen.

Water temperature and light conditions are the key factors in the timing of when fry emerge from the gravel. Referring to sockeye salmon, R.A. Bams said that "in nature, the daily light and temperature cycles cause fry migrants to accumulate just below the surface of gravel beds towards dusk when the water temperature is high. Upon nightfall the inhibitory action of the light is removed, and the migrants enter the open water. In a matter of hours, most of the accumulated fish have emerged, the daily run is past its peak, and the numbers drop off to a low level. These latter fish are those that have only just reached the surface of the gravel. Towards dawn the water temperature is low, fish activity drops, and light will again inhibit any further emergence."

Biologists speculate that this phototropic (light-avoiding) behaviour is an adaptation to reduce the predation of trout and other fishes on the newly emerged fry. It certainly goes a long way to explaining why the peak of trout activity frequently occurs during the hour or so just before and after dark in the evening and just after sunrise in the morning.

The timing of this predator/prey relationship is evident on many rivers where salmon fry are part of the spring feast for trout. Each spring for the last nine years, I have made the trip to Rainbow Alley, the short section of the Babine River which connects the west arm of Babine Lake to Nilkitkwa Lake, really just a widening of the river itself. Large rainbow trout and char enter the river to feed on the millions of sockeye fry and smolts that migrate up and down the river in the late spring. The lake is 3000 feet up in the mountains, so even during a normal year spring comes two to three weeks later than in the valley. When spring has been late and water temperatures have been cooler than normal, we have arrived too early for the peak of the sockeye fry hatch on the Babine, even though the fry have come and gone in the rivers in the valleys below.

Several studies of Babine Lake sockeye over the years have estimated that of the 3200 average number of eggs a typical female lays, 80% are lost during spawning, incubation, emergence and migration to the lake, resulting in 640 fry. During their lake residency, 90% of these fry are lost to predators, resulting in 64 smolts that head downriver to live in the ocean. Again, 90% of these are lost, which leaves two adults to return to spawn, maintaining a stable population. (Johnson, quoted in Levy and Hall) Other studies have put the total mortality rate between

Rainbow Alley.

63% and 87%, but no matter what the correct rate is, it's obvious that the juvenile salmon are a major source of food for predators in fresh water.

Although it is possible to catch fish all day long when the fry are drifting through downriver, especially on overcast and dark days, the river really seems to come alive in the early morning and late evening. By early June at this latitude the nights are very short, so we're talking about getting up at four in the morning to fish and staying up to eleven or later in the evening. The only way to survive this brutal regime is to take a long, mid-afternoon siesta!

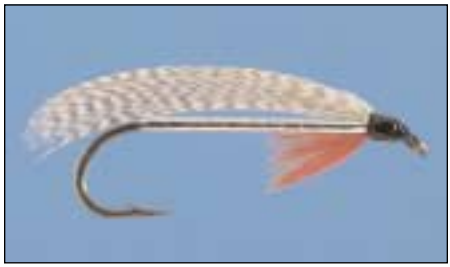
At the alevin stage, all salmon juveniles look very similar regardless of species, so there is little point in tying anything but a general imitation. Their bodies are long, thin and translucent with a darker lateral line. The eye is relatively large and dominant and the egg sac, which constitutes about 60% of the body weight, hangs, red-orange and translucent, from their bellies. There is considerable variation in the amount of yolk material which remains unused at the time the fry emerge from the gravel and the reasons for this are not clear. Biologists speculate, for example, that sockeye fry which have to travel greater distances to the nursery lakes retain a greater portion of their yolk sacs to provide energy for this journey. This is a characteristic of the sockeye fry on the Babine River, for instance, since many of them have a large sac for several days after emergence and show a red stripe in the belly for awhile longer.

Modern alevin patterns.

Traditional Alevin Patterns

One of the most successful traditional patterns for imitating the newly emerged alevin struggling along the gravel bottom of the stream is the venerable Egg 'n' I, Alevin or Yolk Sac. British Columbia angler, Tommy Brayshaw, developed it in 1939 to imitate the sockeye fry of the Little and Adams rivers. The original was basically a variation of the old standard English sea-trout fly, the Mallard and Silver, with a silver tinsel body, a light mallard flank wing and a throat "hackle" of red Indian crow feather. Although over the years, Brayshaw also used white polar bear hair for the wing, the Egg 'n' I which is tied today is very similar to the original except that red wool or polypropylene are substituted for Indian crow. The Egg 'n' I is easy to tie and should be in every trout fisherman's fly box for those times when salmon fry have just popped out of the gravel.

Egg 'N' I



Egg 'n' I and Rolled Muddler.

Egg 'N' I

HOOK: Traditionally, a #6 or #8 low-water salmon hook, but usually now a #10 or #12 3X long streamer hook such as the Mustad 9671

THREAD: Black 6/0

BODY: Flat silver tinsel

THROAT: Red-orange wool or polypropylene fibers

WING: Strips or rolled light mallard flank, sometimes tied down at tail

Whereas the Egg 'n' I was developed in the interior of British Columbia to imitate specifically newly emerged sockeye fry, another pattern developed for a completely different purpose has proven also to be a very effective imitation of salmon fry, especially when they are in the surface film of streams and rivers. The Rolled Muddler with its wing and tail of rolled light mallard flank fibers, which gave it its name, was originated in the 1970s by Tom Murray as an imitation of sticklebacks for sea-run cutthroats; a purpose for which it proved most effective. Once other anglers learned of Murray's version of the original Muddler Minnow, they began using it throughout the province and today you would be hard pressed to find a trout fisherman who does not use the Rolled Muddler as one of his mainstays during the spring salmon hatch. I think the red thread which is tied to show at the throat and head of the fly is suggestive of the remains of the egg sac which persists as a red stripe on sockeye fry for several days or weeks after the egg sac has been

absorbed. There are several popular variations of Murray's silver-bodied original. A common one uses gold tinsel and tan-dyed mallard fibers for a duller pattern to use in low-water, bright light conditions. Others use dark green, olive-brown or dark-brown dyed mallard for more accurate imitations of the various salmon fry.

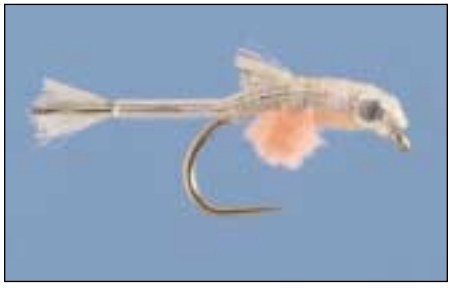
Rolled Muddler

HOOK: #10 or #12 3X long-streamer such as Mustad 9671
THREAD: Red 6/0
TRAIL: Light mallard flank fibers about as long as the body
BODY: Medium flat silver tinsel, ribbed with medium oval silver tinsel, wound in reverse
WING: Rolled strips of light mallard flank fibers or other dyed mallard it is very common to include a few strands of pearlescent or silver Crystal Hair under the mallard wing.)
HEAD: Light deer hair spun on as a mallard head with a few strands of deer hair over the body. (Do not tie a large, tightly packed head as you would for most Muddler Minnows, because you want the Rolled Muddler to fish in the surface film.)
THROAT: Tie red thread so that some shows at the throat of the fly to suggest the remnants of the egg sac.
Darker Variation

As above, but with tan-colored (wood duck) dyed mallard flank fibers for tail and wing, gold tinsel for the body, and tan-colored deer hair for the head.

Three Modern Alevin Patterns

Hugh Storey's Albino Alevin



This unique pattern is based on Hugh Storey's observations at the local fish hatchery in Kitimat, British Columbia, where he lives. Some years the hatchery produces large numbers of albino chinook salmon fry and they stand out noticeably among their darker siblings.

"An albino fry can't hide so he's going to get eaten right away in the

wild," Storey said. A self-taught fly-tier, he decided to create a pattern that would stand out just like the albino naturals he saw in the hatchery. The result was his Albino Alevin.

"I use it in the spring for trout and on coastal rivers for steelhead. It really produces on the Stellako River, and when it does, I hardly bother with anything else."

HOOK:	#6 or #8 Tiemco 2457 scud or caddis hook
THREAD:	Clear monofilament
TAIL:	Fine, silver Flashabou
BODY:	A plastic tube-fly liner
EGG SAC:	Red-orange yarn tied underneath
EYES:	Pearlescent 2 mm stick-on eyes covered in head cement

TYING INSTRUCTIONS

Step 1: Tie a base of clear monofilament thread onto the hook.

Step 2: Weight with around fifteen wraps of fine lead wire.

Step 3: Cut the tube-fly liner into 3/4" section.

Step 4: Grab about 8-10 strands of fine, silver Flashabou and one strand of peacock herl (to imitate the lateral line) and thread them into the tube with a line threader.

Step 5: Pull them out the end of the tube. Trim off to make a tail and fill the tube, leaving Flashabou long in front of the tube.

Step 6: Take tube to the end of the lead and tie in, first the strands of Flashabou and

Spring on a Skeena tributary.

then the plastic tube body, leaving half of the tube for the body.

Step 7: Fold the Flashabou back along the top of the hook and tie back to the end of the lead to make a dorsal fin.

Step 8: Flip the hook over and tie in an egg sac underneath the body, using bright red-orange yarn or pale pink chenille.

Step 9: Stick on a pair of pearlescent, sticky 2mm eyes and cover head with a light coating of cement or epoxy.

Blane Chocklett's "Gummy Minnow" Alevin

The first time I saw Blane Chocklett's alevin pattern I was stunned by how life-like it was. The soft, flexible body material made it look and feel as if I were holding a fresh, wet juvenile salmon in my hands. The transparent, pearly body and orange egg sac glowed in the light and I half-expected the darn thing to move!

The secret to the realism of Chocklett's imitation is a new material he and friend Harrison R. Steeves developed called Sili-Skin, a sheet of silicone rubber with a colored foil underlay and adhesive back. The owner of Blue Ridge Fly-fishers in Virginia, Chocklett first used the material to make a saltwater baitfish imitation he called the Gummy Minnow and which has proven itself as a really productive fly for false albacore. Then he began experimenting with everything from squid to sand-eel imitations. Finally, he tried his hand at the salmon alevin and the result wound up in my hand on that memorable day. Umpqua Feather Merchants is carrying Chocklett's Gummy Minnow.

Preparing the Material for the Gummy Minnow Alevin

Sili-Skin comes in 2" x 6" sheets and is a tricky material to work with because of its adhesive backing, so be careful when handling it not to let the sticky side touch itself. Likewise, avoid stretching the material when applying it to the hook because if one side is stretched more than the other, when they are joined together, the body will curl in that direction.

TYING INSTRUCTIONS

Step 1: Begin by cutting the belly color (mother of pearl for the alevin) from the sheet of Sili-Skin in a 2" x 1" strip.

Step 2: Next, cut the strip lengthwise in the middle, leaving a small section the length of the hook shank uncut.

Step 3: Now, prepare a thin section of Sili-Skin in the back color (Road Slick) about 1/8 inch thick and 2 inches long.

Step 4: Lastly, prepare another strip of mother of pearl Sili-Skin about 2" x 2" for the final covering.

TYING INSTRUCTIONS

Step 1: Wrap a short-shank straight-eyed hook with a base of white thread and tie off. Then wrap the shank with fine silver wire to hold a short section of thick fluorescent red thread in place. Pull the thread out of the way and hold in place with a clip on the vise.

Step 2: Take the mother of pearl strip you partially cut and peel the backing off. Be careful not to let the sticky sides touch. Position the piece so that the split end is facing towards the rear of the hook. Pull the two split tails apart slightly and bring the uncut portion up to the bottom of the hook. Pull the red thread down below the hook shank before folding the two sections of Sili-Skin together. Be careful not to stretch either one.

Step 3: Next cut the top portion at an angle from the hook eye to the tail.

Step 4: Then cut from the back corner to the bend of the hook at a downward angle to complete the shape of the alevin.

Step 5: Take the 1/8 " x 2" strip of Road Slick Sili-Skin and pull the backing off. Center and lay the strip over the back and fold down evenly on each side. Then trim the outline of the belly.

Step 6: Place sticky 2mm pearlescent eyes on each side of the head.

Step 7: Tie in the thread at the hook eye. Run a fluorescent red bead on the red thread and tie off at the head so that the bead is snug against the hook shank.

Step 8: Take the larger piece of mother of pearl skin and pull the backing off. Center and lay the strip over the back and fold down evenly over each side, making sure to encase the bead. Trim the outline of the belly to include the bead egg sac.

Step 9: Reattach the thread and tied down the Sili-Skin with strong wraps. Tear off and trim any excess protruding past the hook eye and whip finish.

David Sloan's American Alevin *(Pink and Orange)*

David Sloan is an innovative fly tier working for the American Fly-fishing Company in Sacramento, California, and his experiments have led to a

unique alevin pattern which Umpqua will be selling too. Sloan makes use of the crochet weave technique to produce a durable and effective fly. It is a little complicated to tie, but the result is worth the effort. The parr marks show through the clear vinyl rib and the wing of fine fibers adds movement and life to the imitation.

HOOK: TMC 2302, size 8 and 10
THREAD: White or gray 6/0
TAIL: Pearl Wing 'N' Flash (or substitute like Angel Hair)
BODY: Clear small vinyl rib using the crochet weave
BELLY: Pearl Wing 'N' Flash (or substitute like Angel Hair)
EGG SAC: Fluorescent Hot Pink or Orange Diamond Braid
UNDER WING: Pearl Wing 'N' Flash (or substitute like Angel Hair)
OVER WING: Gray Kinkyfiber
EYES: 5/32-inch 3-D molded eyes
HEAD: Epoxied

TYING INSTRUCTIONS

Step 1: Tie in a base of white thread from the eye of the hook back to about the width of the gap of the hook.

Step 2: Take about 30 fibers of Pearl Wing 'N' Flash and tie them in, facing backwards, where the thread was stopped. Continue wrapping the thread over the fibers to the bend of the hook, keeping the fibers on top of the hook. Advance the thread to the eye of the hook. The tail should be about 1 1/2 times the length of the body and have a ragged edge, rather than an abrupt one.

Step 3: Tie one piece of clear vinyl rib on top of the hook and one underneath, both facing towards the tail.

Step 4: Form an even underbody with the white thread and advance the thread to the original tie-in point.

Step 5: Using the gray thread, form three distinct, evenly-spaced parr marks about 1/16 inch wide. Begin the first parr mark about 1/16 inch from the tail end of the body. Whip finish. Repeat 1/2 way towards the head and at a point equal to the distance between the other two.

Step 6: Rotate the hook sideways and weave the vinyl rib forwards using the crochet weave technique described on pages 202 and 203 in *The Fly Tier's Benchside Reference* by Ted Leeson and Jim Schollmeyer. Continue weaving the body to a point about a hook gap away from the eye of the hook. Reattach the white thread and tie off the vinyl rib, keeping the tag end of the top part on top of the hook and the tag end of the bottom part on the bottom of the hook.

Step 7: Tie in a small amount of Pearl Wing 'N' Flash (or substitute like Angel Hair) on the bottom of the hook where the vinyl rib was tied off. It should extend about 1/8" beyond the tail. Trim with scissors to create a tapered belly.

Step 8: Tie in a loop of fluorescent hot pink or orange Diamond Braid on the bottom of the hook where the Pearl Wing 'N' Flash was tied in. The egg sac should be slightly smaller than the head.

Step 9: Tie in another small amount of Pearl Wing 'N' Flash on top of the hook and repeat process #7.

Step 10: Tie in 5-8 fibers of Kinkyfiber on top of the hook, about 1/8 inch longer than the tail and taper it too.

Step 11: Build a tapered head with the thread and whip finish.

Step 12: Place a 5/32-inch 3-D molded eye on each side of the head.

Step 13: Using epoxy cement, form a tapered head that covers the entire head of the fly.

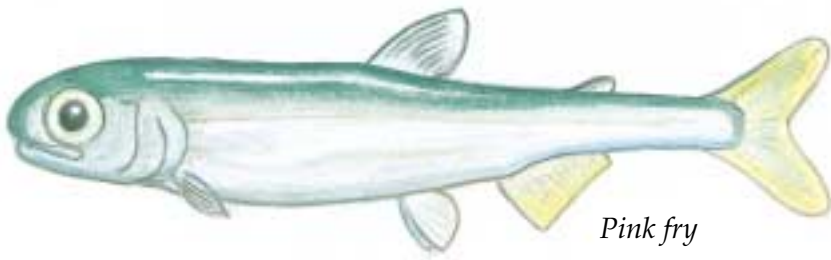
The Characteristics of the Various Salmon Fry and Smolts

Photographed by Fred Seiler

Pink and chum fry.

Once they have lost their egg sacs, salmon juveniles are called fry. In the case of pink and chum salmon, these fry migrate downstream immediately to the ocean and are thus available to trout for several weeks only. Sockeye fry first drift downstream individually, usually under the cover of darkness, and then frequently migrate upstream in schools to the nursery lake, mostly during daylight hours. For example, sockeye fry in the Babine system will drift down Rainbow Alley into Nilkitkwa Lake and then turn around later and ascend the river back into Babine Lake where they will stay for one to two years. Combined with the downstream migration of sockeye smolts which occurs at the same time, these movements provide a major feeding opportunity for trout in the river. The length of time that chinook fry rear in fresh water is variable, with some southern populations staying for three months or less, and northern populations staying up to a year. The majority of coho fry that emerge remain in the stream for one to two years and are the most commonly seen fry along the margins of streams and rivers. As a result, they are subject to heavy predation by trout, char, other fishes and birds. The fry of the anadromous form of *Oncorhynchus mykiss*, the steelhead, rear in fresh water for up to three years, and can be found spread throughout a river system, even into the lakes. For the angler, being familiar with the behaviour and appearances of the various salmon fry is the key to finding and using fly patterns that will be accepted by the trout.

Pink and Chum Salmon Fry



Pink fry

In late March, my friend, Fred Seiler, a fishing guide and ecotourism operator in the Skeena area, was exploring a tributary when he noticed a kingfisher sitting on a gravel bar, apparently digging a hole. Seiler said, "I don't know how the kingfisher knew there were fry in the hole, but when I went over, I saw that it was filled with fry."

Pink and chum fry were stacked up with their heads popping out of the gravel and their gills barely in the little water that was in the hole. Seiler lifted several rocks and under each he found dozens more fry in the same vertical position. "I realized that the whole gravel bed we were walking on must have been alive with salmon fry," he said. He spent the next half hour filling his hat with fry and transporting them to the river.