FUTURE FLIGHTS OF THE OSPREY

Late in March, representatives of the Washington and Oregon Steelhead Committees met in Olympia to discuss the future of The Osprey. It was agreed that The Osprey’s main purpose should continue to be to seek the protection and enhancement of native and wild steelhead. It was also agreed that this can best be accomplished by upgrading the publication and expanding its readership.

The guiding vision behind The Osprey always has been to one day become a publication that could do for steelhead what the Atlantic Salmon Journal has done for Atlantic salmon -- and not be content to remain a homemade newsletter. Although the mailing list for The Osprey has grown steadily since its inception over three years ago and now includes 600 names, the readership is still far from large enough, if the publication is to come anywhere near realizing its expectations and potential.

In the past, about half the funding for The Osprey has come from the Federation of Fly Fishers and half through generous contributions. This has been sufficient to produce and mail the modest publication you have been receiving gratis. About half (300) of the names on the mailing list reside in Washington. The balance includes about 50 each in British Columbia, Oregon, Michigan, and California, 25 in Idaho, and a few in some 30 other states and foreign countries. Based on the expectation that there are about as many steelhead fishers in British Columbia, Oregon, and California as in Washington, it should be possible to increase the mailing list to 1500. Because the popularity of the sport is growing rapidly, this 1500 might be expected to double soon. We want to make The Osprey available to people other than fly fishers who want to protect and enhance native and wild steelhead. So feel free to ask to be put on our mailing list or to invite your friends. At present a subscription is free, but in the future, as The Osprey grows in size and content, we may have to charge for it. We are also pursuing grants from foundations and industry. Our editors and writers are not paid for their contributions; someday we would like to be able to pay our writers a nominal sum. We would like to hear from our readers about how they would like to see The Osprey evolve and whether they would be willing to pay for receiving, say, three or four issues annually. This issue is the first step in upgrading The Osprey. We are proud of our new typeface, Times Roman, and wish to thank John Sager for his many hours smoothing the bugs out of the desktop publishing process. We hope to continue visual improvements in the next issue. And we especially want to thank Bill McMillan, our guest editor. The Editors.
COMMERCIAL INTERCEPTION OF
SKEENA RIVER STEELEHEAD STOCKS

Gary Milltenberger is co-owner of the Steelhead Valhalla
Lodge on British Columbia’s Sustai River. He’s a respected
and informed steelhead angler, known throughout North
America for his dedication to the steelhead of the Skeena
River. Gary has been active in attempts to modify netting
methods and seasons at the mouth of the Skeena to better
accommodate escapement of wild steelhead and salmon. In
this article he addresses the movement to reduce Skeena

The world-renowned stocks of Skeena River summer-run
steelhead are in big trouble, especially the early, or true,
summer-run portion of the stocks. These magnificent fish
have the unfortunate luck of entering the Skeena estuary in
the exact same time-frames as the enhanced Babine sockeye
salmon, and numerous strong stocks of pink salmon. All
are subject to the same hazards of commercial fishing ex-
ploration. The sockeye and pink salmon stocks can with-
stand high levels of exploitation; the steelhead stocks cannot.
The result is overfishing of weaker stocks to the point of
depletion and, if continued, to extinction. Some distinct
stocks of early-run Skeena steelhead and coho (silver) sal-
amon are now only a vestigial run of what they once were.
Each of these stocks took millennia to evolve, and once lost
they will be gone forever.

One way to protect the incidental mixed-stock fishery which
has been advocated is to harvest the enhanced sockeye and
naturally abundant pink salmon during “windows of oppor-
tunity” to allow a higher rate of escapement of the mixed
stocks. While this process is giving a little breathing space
to the problem of over-fishing smaller, non-target stocks, it
is really only delaying the extinction of certain non-target
stocks a bit longer. Continuing the non-selective gillnet
commercial fishery as it is presently conducted will
cause an ever-increasing number of so-called minor stocks
to be eliminated from the fishery. Some of these minor
stocks are the most valuable steelhead stocks in the
world, for they contain specimens that average 15 pounds
in size, some of which run to well over 30 pounds
every season. They are a unique race of the largest
remaining steelhead on earth. (Note: Historical rec-
ords indicate “B-run” sum-
mer steelhead that return to the upper Columbia River
once reached sizes in excess
of 40 pounds prior to dams
and over-fishing, and tribal
nets on the Quinault River
have more than once harves-
ted winter steelhead in ex-
scess of 40 pounds. Editor.)
Thus, no matter how Cana-
da’s federal Department of
Fisheries and Oceans rationalizes the existing commercial
fishery, they are acting in bad faith as managers and stew-
ards of the resource on behalf of the world’s fraternity of
steelhead anglers if they allow even one stock of these
unique steelhead to be fished to extinction.

At the conclusion of the 1988 commercial fishing season,
around 39,000 steelhead were deemed to have escaped into
the Skeena watershed (see table). Commercial exploitation
rates ranged from nil, when the commercial boats were not
operating, to as high as 71 percent during the week of July
17, when 900 gillnetters were plying their trade at the mouth
of the river and in Chatham Sound. While the season’s explo-
ration rate was deemed to be only 32 percent, based on a
total run size of 56,883 steelhead, it is known that
many commercially-caught steelhead in this fishery are not
being reported by commercial fishermen; thus, the true size
of the problem cannot be documented. However, records
kept by ardent anglers for the last three and a half decades
dicate clearly that the long-term trend is a declining stock
of fish. Additionally, with the increased abundance of
sockeye salmon returning at the same time as the early
steelhead runs (owing to the Babine sockeye enhancement
facilities), the run-timing of the steelhead that do make it
through the commercial gauntlet appears to be peaking later
each season.

The commercial fishermen are not to blame. They are
fishing as the Department of Fisheries and Oceans allows
them. The people to blame are the federal bureaucrats and
politicians who do not have the guts to make the very
difficult decisions that have to be made. The obvious
alternative to the present archaic and wasteful non-selective
gillnet fisheries is a stock-selective/species-selective trap
and weir fishery, whereby escapement can be controlled and
precisely determined to insure that only those species tar-
geted for harvest are harvested.

Non-target species could be live-sorted, returned to the
river to spawn, and they would then perpetuate their
magnificent races forever. While such a system of fis-
hing would be very efficient, it would eliminate or
significantly alter the lifestyle of commercial fish-
ermen; thus the unpopularity of the idea. While those
fishermen have every right to fight for their way of li-
fe, it must be realized that
times and values change,
and there is a far greater
right involved here: the ri-
ght of anglers from all over
the world to benefit social-
ly, economically, and spir-
ually from the preservation
of a very special resource.

<p>| SUMMARY OF 1988 SKEENA RIVER |
| STEELEHEAD FISHERY RESULTS |</p>
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<th>Fished</th>
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<td>18149</td>
<td>38734</td>
<td>56883</td>
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HOW YOU CAN SUPPORT THE MOVEMENT TO PROTECT SKEENA RIVER SPORTSFISHING:

The Kleena Watershed Sportfishermen’s Coalition is dedicated to the protection of what remains of the once great Skeena River fish resources. We want to see all species survive for future generations. We are a coalition of grass-roots organizations representing chapters of the Northwest Chapter of the Steelhead Society of B.C., the Northern Region’s Rod and Gun Clubs, the Northwestern Guides, the B.C. Wildlife Federation, fishing resort owners, and individual anglers.

The Coalition relies on contributions from the public to support its lobbying efforts on behalf of the sportmen. We are dependent on your generosity... HELP US KEEP THE PRESSURE ON!!

Make your donation to: Kleena Watershed Sportfishermen’s Coalition
R.R. No. 1, Trout Creek
Smithers, B.C. V0J 2N0

Please make checks payable to B.C. Wildlife Federation—Kleena Fund.

There is also the right of the resource to be maintained and conserved solely for its own merits. Mankind simply should not have the right to eliminate any species, race, or stock of fish (or wildlife) from this earth. Surely in an era when modern technology has developed the capability to put a man on the moon, some efficient and economical method of selectively fishing Pacific salmonids can be found. The very existence of these remarkable steelhead depends on such a system being developed.

WHEN THERE ARE TOO MANY BOATS

Stan Young

Stan Young is Chairman of the Washington Steelhead Committee and a writer on steelhead fly fishing subjects. Stan addresses the ever-growing problems that stem from the interactions of boat and bank fishermen with particular friction occurring on the medium to small-sized rivers where the competing anglers can be in very close proximity.

Washington’s Sauk River in March and April is the destination of a splendid race of late winter native steelhead, including fish of 30 pounds or more. The race has thrived because the river has been managed those two months on a catch-and-release basis for quite a few years. As well as abundant, large fish, the Sauk has just the right flow, color, temperature, and variety of water, all in a near-wilderness setting. Few rivers anywhere that time of year can match it for sheer fishability.

Except, there is a problem. The quality of sport is rapidly deteriorating. Word about the river has spread and each year more and more fishermen show up, many with drift boats or rafts. It has now reached the point that there is an almost unending procession of boats from dawn to dusk, day after day. A few anglers use boats only to get to where they wish to fish on foot. Most, however, use them as platforms from which to pull plugs, toss corkies, or fling a fly.

If the Sauk were a much larger river, or if there were only the occasional boat, the quality of fishing would not be so adversely affected. Now, however, the water takes a continual pounding and fish that aren't actually caught and sore-mouthed by plugs are either put down or driven into the deepest and most inaccessible holes by all the activity. With so many anglers competing for the limited amount of water, bad feelings, tension, and frustration are the inevitable result. Quality fishing is becoming a thing of the past.

One solution for those two months of selective fishery, catch-and-release waters might be to continue to permit the use of boats, but disallow fishing from them. Where this has been tried on other rivers it has resulted in markedly reducing the amount of boat traffic, while significantly upgrading the quality of sport.

A similar solution might also be applied on larger rivers where the use of power boats has become a problem. Washington’s Skagit River is plagued with a fleet of jet sleds, especially during the month of April when it is catch-and-release and a quality experience is supposed to prevail. Fishing from power boats presently is permitted only when the motors are off, but that doesn’t stop the occupants from repeatedly floating down and gunning back up over the best water. The effect is to ruin the experience for all the others who turned out expecting peace and quiet, only to find just the opposite. If fishing from boats with motors were disallowed, far fewer such craft would be in use to spoil it for all the rest.

Carrying this idea a step farther, along certain rivers, or during certain times of the year, it may be necessary to rule out boats entirely. They are out of place any time along heavily fished small streams, where passage of a boat can’t avoid disrupting the efforts of other fishermen and spoiling fish. They also are out of place along popular larger streams after waters have cleared and dropped to late summer and autumn flows. Any boat, then, can only frustrate the efforts of other anglers. One such stream is Washington’s Snoqualmie. Winter, spring, and part of the summer it has an abundant flow and some color
and the use of boats is not inappropriate. However, beginning usually in August and extending into November, it drops and clears and in effect becomes a small stream. Then a boat is disruptive and out of place.

Any time boats are used occupants should make a point in being courteous to other anglers. They are able to reach much more water than someone not in a boat, and so they should never dispute another’s right to a piece of water or disrupt his fishing when he is there first. Instead, they should wait until he is through or, if possible, maneuver around where he is fishing in such a way as not to disturb the water. They might ask the other angler when it is okay to proceed and the route he would prefer they take around him.

Of course, when boat anglers reach a piece of water first, others should honor this fact and wait until they are finished before beginning to fish.

Admittedly, there is no more effective way than to use a boat when fishing for steelhead. So much more water is opened up, and often it is possible to escape the press of too many other anglers. Inherent in such use, however, is the risk of disturbing other fishermen, especially in quality fishing situations. Wildlife departments responsible for managing steelhead waters and looking after the rights of all fishermen, should carefully consider the various effects of boat use on the sport and, where necessary, impose limitations. The decision to do so should be based on what’s best for the quality of the sport, not on the demands of vocal minorities.

MISUSE OF STREAM STRUCTURES
BY THE FOREST SERVICE

Richard Nawa

Rich Nawa is with the Oak Creek Laboratory of Biology at Oregon State University in Corvallis, Oregon. Rich used to be my favorite example of the very real fact that some of the most dedicated wild fish advocates are not necessarily fly fishermen. But over the past couple of years Rich has “spoiled” all of that by increasingly catching his steelhead on the fly. However, it remains that Rich still enjoys fishing with spoons and hotshots (from the bank), and no matter whether he fishes with the fly or other tackle, Rich releases his wild steelhead and dedicates countless hours as a champion of wild fish and old forests. He has become increasingly recognized on forestfish interactions, and this is the subject of his most recent contribution to The Osprey. Bill McMillan.

“If it ain’t broke, don’t fix it.” Like most sweeping generalizations it has to be tempered with knowledge of the specific situation. My philosophy towards streams, especially in our National Forests in the Northwest, is to assume they are not broke. Presently there is ample proof for this assumption. Take me anywhere in the Northwest and I will be able to find outstanding fish habitat on United States Forest Service lands. This agency is the recognized leader in stream protection and is to be commended for its record.

Recently, however, without consulting interested publics or other fish-managing agencies, the Forest Service has changed its policy direction from stream protection to fish production. Fish are now viewed as a commodity, right along with board feet. I believe that in the Forest Service’s zeal to produce more fish, to make habitat better, our pristine streams actually have suffered needless and expensive experimentation with stream structures. (Stream structures are logs, boulders, and rock-filled wire baskets called gabions, placed in stream channels to improve habitat.) The Forest Service is not alone in the current fad to promote stream structures; national and local conservation groups have been eager to try this politically appealing shortcut to cure our ailing streams. I’ve chosen to critique the Forest Service because they have the biggest stream structure budget and because potential losses in terms of wild fish production are great.

The Forest Service has seriously compromised the effectiveness of its legally mandated stream-protection policy by asserting that technology can make stream habitat better. Essentially, the basis for stream protection has been undermined. The new policy can subtly begin to question the need for protection. Why protect watersheds if the stream channel can be repaired later? As unlikely as it might sound, funding for structures actually provides incentive for habitat degradation.

Besides drawing attention away from protecting watersheds, the new program guarantees jobs and dollars for the Forest Service. It is backed by a multi-million dollar program employing hundreds of biologists and technicians. These new employees no longer see their role as protecting streams but simply as a stream-channel-repair workforce, with an endless task of repair work before them.

The Forest Service has invented a new fisheries science to promote stream structure technology. Simplistic assumptions are made about fish production, e.g. pools create fish. Structures are supposed to make pools and therefore produce more fish. Implicit with this reasoning is the idea that there is something wrong with our streams: they don’t have enough pools. Sounds reasonable, but haven’t we heard other promises that technology can improve on what is natural?

Fish hatchery proponents use the same kind of argument. We were told that it was wasteful to allow wild fish to spawn in streams because of the high mortality rates they experience. The claim was made that artificial “supplementation” would “enhance” wild stocks and result in more fish. Many of our once-strong wild stocks are now in depleted condition owing to the “make-it-better” argument. hatcheries and stream structures have the same fundamental flaws: They treat the symptoms rather than the cause. Once public funding is available stream structures are used everywhere, whether needed or not. Their use is rationalized on the basis of products (e.g., more pools, more fish) without a thorough understanding of the physical and biological processes involved. Justification for structures is made on scanty inventory
data implying a "pool shortage." Knowledge -- the kind
needed to understand how the stream works -- is deemed
unnecessary and, besides, it may jeopardize the project. The
well-informed observer soon realizes that the real benefactor
of these projects is not the fish nor the public but the regulat-
ing agency.

Implicit in hatcheries is the politically important effect hatchery
fish have in masking the decrease of native runs owing to
habitat degradation. Stream structures, like hatcheries, are
another subsidy for the timber industry. Old-growth forests are
being logged at ever-increasing rates on steeper slopes. The
easy-to-harvest timber on flat ground is about gone. Our
political "leaders" and high-ranking bureaucrats have given the
go-ahead in Forest Plans and in the budgeting process to
jeopardize watershed protection while quelling fisheries
interests with ample funding for stream structure work. Those
whose interests are natural rivers and wild fish have been left
the proverbial "bone."

In fact, the primary input determining fishery values in Forest
Plans is the amount of money spent on stream structures,
rather than stream and water quality protection. The equation
goes something like this:

\[
\text{more} + \text{logging} + \text{more} + \text{sediment} + \text{structures} + \text{money} + \text{more} = \text{fish}
\]

Somehow, the "sediment" factor gets cancelled -- apparently
because of the "structures" factor. The Forest Plans do not
explain this mysterious disappearance of sediment impacts, but
the Forest Service's FORPLAN computer program predicts fish
increases in every Forest Plan alternative resulting from stream
structures. Risks to fish habitat from logging have been
conveniently minimized.

The Forest Service calls this habitat enhancement; I call it
mitigation. This distinction is not trivial because it has
important political implications. The timber industry is
counting on the Forest Service to make good on its tech-
nologic cover-up of sediment impacts, sediment impacts that
could halt logging in the courts, as occurred in the Mapleton
District of the Siuslaw National Forest. Industry and the
Forest Service hope stream structures will divert public
attention from sediment impacts and keep them out of court.
Two of the parties see this as a win-win situation. Industry
gets the logs and the Forest Service gets funding for project
work. The losers, as usual, are the fish -- they get the
sediment -- and the public.

Just as hatcheries have cost us dearly in terms of decreased
natural production, so too will logging decrease the natural
productivity of our watersheds. Trees and fish are renewable
resources, but our watersheds are not. When the trees are
harvested off steep, unstable slopes (and much of the hillside
have slid into the stream channel), we will be painfully aware
of irreversible stream processes. Channel widening, loss of
riparian trees, temperature increases, chronic turbidity, and
shifting streams unsuitable for spawning are not cured with
any dose of stream structures. With abused watersheds there
is no second chance.

The hatchery "con" was and still is politically successful
because social costs to satisfy the vocal few who benefit from
catching a fish can be passed on to the many who don't fish.
Angler greed for more fish provides widespread political
support. Each angler naively believes he will catch more fish
if more fish are provided through enhancement programs. The
same kind of tactics are being used to promote stream
structures. True costs of reduced stream protection, structure
maintenance, and continued stream deterioration are hidden or
diffused. The predicted tangible benefits of more fish are
made explicit in Forest Plans and cost/benefit ratios. The
unsuspecting public is also exposed to a media campaign
legitimitizing the use of heavy equipment to "fix" our streams.
Anglers are quick to support stream structures and hatcheries
because all information sources indicate benefits without any
costs to them. Despite these public relations campaigns,
experience teaches us that hatcheries are not without high and
long-lasting costs, both economic and ecological. The same
is true for stream structures.

The technical question of whether structures work is hotly
debated among biologists. Naturally, those whose jobs require
instream structure work are strong supporters. Others are more
skeptical or even critical of politically driven enhancement
projects. The Forest Service predicts that each structure
produces a certain amount of fish habitat which, under the
right conditions, will produce more fish. Implicit is the idea of
unlimited potential for improvement. Streams are viewed
as receptacles for any number of structures and the effect will
always be positive. In order to meet their Regional Office
targets, biologists often cram too many structures into too
small a space. When a major storm hits and the stream floods
and destroys the structures, there are often adverse impacts
from blow-outs and log weirs to freshly deposited salmonid
eggs. Forest Service researchers have learned that construction
of boulder berms to improve spawning habitat for steelhead
actually reduced the far more important rock crevices needed
by overwintering juveniles. This is one of the few cases
where effective monitoring of structures has occurred.

Besides unintended adverse impacts, the economic benefits for
structures are grossly exaggerated or are fabricated to generate
positive cost/benefit ratios. The entire concept of structures
producing fish is seriously flawed. The Forest Service would
like us to believe that structures are little mini-hatcheries
turning out smolts. This simply is not true. Structures don't
make fish; streams do.

Salmon and steelhead use a multitude of habitats throughout their
life cycles and these life cycles occur over great distances.
Thus, salmonids are sometimes called fugitive resources
because their movements in river systems and oceans prevent
them from being "owned," as trees or resident trout might be.
In a similar sense, no single public agency can claim to have
produced a wild fish. Forest Service claims of increasing fish
production through structures are therefore fraudulent. The
only legitimate and legal mandate the Forest Service has is to
the protection of habitat. Extensive logging followed by stream
repair can hardly be called protection.

Stream structures, like hatcheries, have their place. The
biologists who initially experimented with stream structures in
the Northwest never intended their widespread use. In light of previously described biological and physical uncertainties, a conservative approach seems prudent and responsible. Limited use, with intensive scientific monitoring, is needed to build trust in this largely unproven technology.

As more attention is paid to stream structures, less emphasis is being made to protecting natural habitats and learning how they work to produce fish. The new fishery biologist, like his hatchery counterpart, is not asked to do more than technicians' work. His understanding of how ecosystems work and ought to be managed is not being sought. The highly valued natural beauty of our streams is being bio-engineered according to optimum pool-to-riffle ratios. This requires the use of heavy equipment and machines in stream channels. They do not belong there. What has happened to our values that instinetively tell us that backhoes and cats should not be used to rearrange a river bed? This is not just a technical matter but an ethical one. Streams, like the fish they produce, are inherently wild. They are to be nurtured, not encumbered by anchored logs, cables, protruding rebar, epoxy, and dynamited boulders. Yet this is the torn and patched legacy the Forest Service and others are leaving for the next generation. It is what they will know of us and judge us by.

(Note: The editors have invited the Forest Service to respond in a future issue.)

B.C. RIVERS CLASSIFICATION: PLANNING AND CONTROVERSY

Bill McMillan is a writer, activist, and lecturer on steelhead and the sport of steelhead fly fishing. For 30 years he has fished throughout the Northwest and British Columbia. In this article he analyses a recently-developing controversy which should be of concern to anyone who is interested in B.C.'s outstanding steelhead fishery. Editors.

British Columbia's Recreational Fisheries Branch is presently designing a steelhead river classification system from which to plan the intensity and composition of angling effort over the coming years. As so often, B.C.'s Fisheries Branch is taking the lead toward solving a difficult fishery problem that other North American game fish managing agencies have chosen to ignore. There are large implications in this planning, and as might be expected, considerable controversy. The B.C. Fisheries Branch is fielding heavy public input (much of it from the United States), but I suspect the Branch will not compromise the issue. The following represents a few of many American reactions and assessments. B. McM.

As many of you know by now, in December of 1988 the B.C. Recreational Fisheries Branch issued a discussion paper entitled "A New Approach To Angling Guide Management." Some Americans and many Canadians have known this was coming for some time, but many Americans appear to have been thunderstruck by it. To some the very title of the paper is misleading because of a focus on the parts of the plan that refer to "non-Canadian," "unguided," and "non-residents" as undesirables who are self-contained, stay a long time on certain rivers, contribute comparatively little to the B.C. economy, take up lots of river space, and sore-mouth a lot of steelhead that the outnumbered Canadians could better benefit from. While slightly over-stated, this is certainly the gist of what can be read into the paper.

Initially, I too was patriotically angry at being singled out for simply being a "non-Canadian, unguided, non-resident." But then I thought back to my visits to Canadian rivers and to my many Canadian friends who have perpetually opened their homes, their boats, their tents, their campfires, their bottles of scotch, their lodges, their rivers and even the very secrets to their favorite pools. And try as I may not to abuse their friendship and their trust, I do abuse it simply by being there as one more American trying to escape unsolved fishery problems at home by frequenting the waters of a foreign nation where the anglers and their managing agency have had the integrity and the determination to solve many fishery problems that we Americans have not.

The truth often stings, and the reaction to that sting is often misguided anger. This essentially has been the reaction of many American anglers to the B.C. planning paper designed to solve a very real angling problem that we Americans have not yet even begun to consider on most of our rivers -- overcrowding and the resulting degradation of the angling experience from one of solitude and solace to that of competition and confrontation. I say blame the government agency that has the philosophical depth to manage for something so delicate and so complex as the spiritual experience of angling. But there are some who question that this is the real emphasis of the planning effort, and therein comes the controversy.

Into the planning paper can also be read considerable emphasis on catering to angling affluence and the eventual justification for a sport fishery's quality or values being dependent upon the monetary benefits that can be squeezed from it -- not spiritual or aesthetic values at all. For instance, in the paper a quality steelhead fishery is defined as "... one that is held in high esteem by B.C. residents, attracts non-Canadians, and can support commercial enterprises." Following that definition is a further emphasis on commercialism: "The purpose of the proposed guide policy is to develop these fisheries in a way that best benefits B.C. residents." And by B.C. residents it is not meant strictly (or perhaps even primarily) B.C. anglers, but rather the B.C. citizenry complex who may directly or indirectly benefit from a maximized flow of sportfishing dollars into the province.

There is considerable concern that the Guide Management paper is merely an economic prescription for encouraging an expanded development of guide and lodge operations throughout the province's steelhead fisheries while gradually making costs so high for non-guided, non-Canadian, non-resident anglers that they will no longer be capable of affording to participate in B.C. steelhead fisheries. The perceived effect of this would be to limit B.C.'s non-resident, non-Canadian...
angling opportunity for steelhead to guided, affluent anglers of the U.S., Japan, Europe, etc., and essentially direct steelhead angling away from western North American traditions toward those of European Atlantic salmon fisheries -- exclusive by class and monetary right.

I, too, am pessimist enough to see that the B.C. Recreational Fisheries Branch is treading a very thin line in this discussion paper that could dramatically alter the course of B.C. steelhead angling toward a very exclusionary sport. But at the same time, B.C. has made so many sound steelhead fishery decisions over the past 15 years that I’m inclined to focus on the more optimistic considerations.

Guide and lodge operations are important to the B.C. economy, and it’s a good clean employment for isolated corners of the province that have generally had to rely on employment opportunities that can cause greater environmental/resource concerns such as logging, mining, heavy industry, commercial fishing, or even agriculture. And, in fact, guiding/lodge operations provide the most direct economic argument for restraining other economic activities that so often threaten steelhead rivers, the steelhead resource, and the sport of steelhead fishing.

One can also read into the paper the potential for considerable control over guide and lodge operations with what seems a sincere effort to recognize the values of certain streams and their steelhead fisheries that guiding activities would only detract from. For instance, under Class 2 rivers the point is made: “It is not necessary for all river systems in the province to have guides, just because they have commercial potential. The Class 2 designation could be used to establish some No Guiding rivers as part of an overall plan for the region or province.” And even on those Class 1 and 2 rivers where guiding may be emphasized, there is a prescription for an Angling Use Plan that would establish a river capacity from which a desirable level of commercial use will be determined to be allocated among the angling guides.

Part of the confusion that the discussion paper stirs stems from the lack of specific mention of rivers that will fit into the Class 1 and 2 categories that will require special license fees. In answer to American letters B.C. Fisheries Branch Director David Narver sent a letter to Brad O’Connor of The Seattle Times explaining that Class 1 rivers are presently limited to the Dean River, with the Babine River proposed. While Class 2 rivers would include some of the best known rivers in the province, Narver indicated that most steelhead rivers in B.C. would be unrestricted. While still somewhat vague, the letter is not evasive and it is evident that specific river choices are still very much in discussion. This likely reflects the excessive public input: Narver indicated more than 100 letters.

Clearly stated and leaving little to interpretation, non-Canadian, non-residents may be paying as much as $150 per 7-day license to fish Class 1 streams and $75 per 7-day license to fish Class 2 streams, in addition to other standard non-resident license fees required to fish steelhead in the province.

The easy way to decrease angling traffic on a specific river is to raise the angling fees to the point that many individuals can no longer afford to participate in the fishery. Angling usually loses in the end if the sport is structured to affluence rather than using a more equitable selection of limitations and restraints as the way to determine angler participation; and I suspect there are other effective means beyond high license fees for reducing non-resident angling traffic.

With the planned reduction in the non-resident anglers participating in the Class 1 and 2 fisheries, and without a significant increase in license costs, there might be a significant reduction of monies returning to the B.C. Recreational Fisheries Branch. Increased license costs on those fisheries is likely perceived as a necessary equalizer.

Much of the non-guided, non-Canadian, non-resident angling that congests the more famed B.C. steelhead rivers (particularly on the Skeena system) stems from Americans who spend anywhere from 30 to 90 days in convenient, self-contained basecamps from which they daily fish any of several top rivers within a 50-80 mile radius of that basecamp. The rather innovative solution to this problem is the 7-day license system for the Class 1 and 2 rivers in which the 7-day permit is only good for one specific river, and only four such rivers can be fished annually. This requires four 7-day permits and their cumulative costs. Even without excessive license fees this system could seemingly be fine-tuned to allow the same number of visiting American anglers to experience the Class 1 and 2 fisheries, but their rotation would be increased with fewer non-resident anglers on a given stream at one time. This rotation could be enhanced by limiting non-residents to two 7-day licenses on these rivers annually.

This system is not unlike the European “beat” system on the privately owned land of the Atlantic salmon rivers, excepting the “beat” in this instance is a Class 1 or 2 river. It’s a sound concept for controlling the quantity of angler usage per “beat” and thus preserving a relatively non-competitive angling experience for each participant. If the popularity of some B.C. steelhead rivers continues to increase, particularly on specific sections of a Class 1 or 2 river, I can envision these rivers even being partitioned into 5 - 10 mile (or less) “beats” in order to effectively disperse non-resident anglers.

The great threat in this concept is that it can easily degenerate into an attempt to squeeze the highest possible cost that the angler will pay to fish a “beat.” This is what has occurred in Europe, and only a very exclusive element of the European angling population can ever hope to have the wealth to experience the better Atlantic salmon rivers. The suggested costs per 7-day license to fish B.C.’s Class 1 and 2 rivers are a definite step toward reserving “quality” steelhead rivers for the wealthy. With careful planning it doesn’t have to be that way. Increased angler rotation and modest license increases can probably accomplish the desired effect of fewer non-resident anglers per river just as effectively as a more conservative angler rotation combined with higher license fees.

There’s considerable risk involved regarding the future of the sport of steelhead fishing through this proposed B.C. planning effort, but it is planning that eventually is going to be necessary throughout North America regarding streams and wild areas that are being “loved to death” by too many people trying to experience them at the same time. As has been the case in the recent past, the B.C. Fisheries Branch is not going
WASHINGTON CHAPTER OF B.C. STEELHEAD SOCIETY

Pete Soverel

On 29 April 1989 anglers interested in protecting the steelhead resource in B.C. formed a Washington Chapter of the BC Steelhead Society. Among the goals adopted by the Chapter are:

- conservation of steelhead and protection of their habitat;
- to formulate and promote regulations designed to provide the maximum sustained yield of steelhead;
- preservation and improvement of access to rivers;
- to promote recognition of steelhead as a trophy sports fish;
- to encourage angler participation in conservation;
- to restrict any form of commercial fishing for steelhead;
- to promote sportmanlike conduct upstream;
- to eliminate marine and estuarine interception of steelhead.

The Chapter will provide:

- an avenue of information concerning issues affecting B.C. steelhead conservation and angling;
- a vehicle for presentation of our perspective on these issues to appropriate Canadian officials/bodies;
- a means for us to contribute to and protect the B.C. steelhead resource which means so much to many of us.

Members of the Chapter include several luminaries and pioneers of our sport: Harry Lemire, Bob Strobel, Bob Arnold, Trey Combs, and Sean Gallagher, to mention a few. Chapter members must belong to the parent organization, The B.C. Steelhead Society ($20.00 annual dues). Membership applications and additional information are available from:

Pete Soverel
16430 - 72nd West
Edmonds, WA 98020
543-0170 (bus.)
742-4751 (home)

Sean Gallagher
42905 - 236th S.E.
Enumclaw, WA 98022
825-1923 (home)

There's no arguing that message. Unfortunately, there is so much affluence in America (and elsewhere in the world) that there will be all too many anglers willing to pay any price in order to continue to ignore the intended conservation responsibility implicit to the message. And in the end it will be those who long ago learned the intended conservation message by heart who will be least likely to afford participation in high-priced fisheries. And as so often, the "cream" of the capitalist society, those who hold the very purse strings that deny global conservation/environmental responsibility, will be rewarded with participation in a fishery that has been custom-tailored to their liking. Perhaps, try as we may, there is no escaping that rights that are merely wealth -- a "black plague" that has stalked us, Canadian and American, ever since we fled the sewers of Europe. It will take aware and focused planning to prove that pessimism wrong.

GOOD NEIGHBORLINESS

Stan Young

As Bill McMillan explains, the B.C. rivers classification plan would sharply restrict non-Canadian use of its best steelhead rivers, rivers such as the Dean, Kispiox, Morice, and Babine. If adopted, the new regulations would confine non-Canadian use annually to four of these rivers, seven days per river, at a cost of up to $150 each. The plan is due to come up before the B.C. parliament in 1989 and possibly be implemented within a year or two.

One reason for the plan has been the bad behavior of some American anglers. This has included an overly aggressive, to-hell-with-everyone-else attitude. It also has included rampant illegal guiding. The bad behavior has become increasingly intolerable in recent years as more and more anglers have been attracted to the rivers and fishing pressure has increased.

B.C. anglers were willing to overlook this sort of boorishness up to a point, but that point has been reached and exceeded. Now it appears likely that all non-Canadians (mostly Americans) stand to suffer in part because of the poor sportsmanship, irresponsibility, and/or greed of a relative few.
If you are one of the Americans who has been overly aggressive in the way you fish for B.C.'s marvelous steelhead, it's time you begin to mend your ways. Don't always try to be first on the water. Don't hog the best stretches. Don't catch inordinately large numbers of steelhead merely because it sometimes is possible to do so. And of course show others you meet along a river the same respect and courtesy that you would like to be shown yourself.

DEER CREEK NEWS

Alec Jackson, a longtime FFER and avid steelhead flyfisher, manages the Federation's Deer Creek Restoration Project.

The 1988 fire season was the worst experienced in several years. This, coupled with early fall rains, prevented work on the projects planned by the FFF. Additionally, visibility during the spawning season was such that surveys planned by the Department of Wildlife of fish that had returned in 1987 were not possible. Juvenile counts by electroshocking in September showed a modest increase in zero-age fish, but the numbers were still disappointingly low when considered in light of the numbers of adult fish which entered Deer Creek in 1987. The only conclusion possible is that spawning and rearing habitat is the limiting factor. This points out how important rehabilitation projects are. Projects started in 1987 on Little Deer Creek are showing signs of success and steelhead are increasingly using these reaches. It is imperative that projects not accomplished last year be completed this year. However, 1988 was a success as far as fund raising was concerned. Flyfishers donated adequate funds to pay for the 1988 rehabilitation program and these funds are on hand for 1989.

In addition to efforts of FFF members, other participants in the Deer Creek Group donated time and money to the Deer Creek effort. The U.S. Forest Service was able to obtain $60,500 in Challenge Cost Share and Watershed Funds for 1989 for Stream Reach 5 on Little Deer Creek and 15 Mile Point on Deer Creek, both sites of earlier rehabilitation projects in which the FFF participated. Snow currently persists at higher elevations, so it won't be until late June or early July before work can start. We have the money to pay our share of these projects, but we need help with the labor. Anyone interested in helping, please contact me at (206) 488-9806, or Box 386, Kenmore, WA 98028.

DRAWING PARALLELS WITH ANGLING AND BIOLOGICAL/GENETIC EVIDENCE

Bill McMillan

Bob Clay, a British Columbia guide, had the month of November to himself after a long season on the Skeena system. Bob was experimenting with surface flies one day while accompanied by his young son, and despite the 36 degree water, he had several rises and landed one 16-pound steelhead. Bob stuck with variations on the Bomber pattern each fishable day of the month and rose fish every day in water temperatures as low as 34 degrees. He concentrated on extremely shallow water (about 2.5 feet deep) where the surface fishing seemed particularly effective.

B.C. biologist Bob Hooton solicited local volunteers to catch steelhead on the Skeena system in late November of 1988 for a radio telemetry study. On the first day the water was 34 degrees and the volunteers landed 50 steelhead, half on the fly. Fourteen of those on the fly were landed in one run on surface flies!

On November 18th I fished the Wenatchee River for the first time. The river was high, and it was a cold morning with hoarfrost. The water temperature was 40.5 degrees in the morning and 42 degrees in late afternoon. I had the advantage of Bill Barnett's company and, of course, his many years of angling experience, and Bill insisted I fish each run first with my Bomber pattern variations. I managed four full rises in the morning and three more in the afternoon, and while I landed no fish I was perhaps the high point of the season regarding its lessons. All of these rises came out of water estimated at eight to ten feet in depth.

I list these examples to draw a pattern. Together with most surface steelhead anglers I have been able to query, I have seldom found coastal stocks of steelhead, those found south of the Skeena River and inland to the Cascade Range, susceptible to surface fishing methods at water temperatures much below 43 - 44 degrees. But by contrast, inland and northern stocks of steelhead, east of the Cascade Range and from the Skeena system northward, seem responsive at much colder water temperatures than coastal stocks. (My own northern experience is limited to the Skeena system.) This responsiveness likely stems from necessary selective adaptations to severe weather conditions that occur annually on inland and northern rivers including winter freeze-up and spring ice-out and the need to retain active feeding traits in all but the very coldest conditions during their juvenil rearing years. Fish that do not have these inherited traits may be incapable of reaching timely smolt size under the extreme winter conditions characteristic to these climatic/geographic regions.

In this respect, angling has proven to be a likely indicator of a specific genetic trait that fisheries science has just begun to explore over the past 10 -12 years through examination of genetic variation of proteins. For instance, protein variation studies (by McNeil and Himsworth in 1980) have indicated
that there are only two major steelhead/rainbow population
groups: Coastal (from Kodiak Island to California's Mad
River), and Inland (Upper Fraser, Upper Columbia, and Snake
River drainages). However, there remain many, many potential
Genetic traits that protein variation studies fail to identify, and
at this early stage in our understanding of fish genetics it may
be that a fly rod and a thermometer are sometimes more
sensitive tools for genetic determinations than those generally
accepted by fishery scientists. One day it may be found by
more accepted scientific tools that there is a third population
of rainbow/steelhead from the Skeena River northward which
may have overlapping traits with both the Inland and Coastal
populations that are now recognized.

While it remains mere angling observation, certainly there
seem to be water temperature/surface receptivity traits that are
distinctly different regarding Grand Ronde, Wenaachine,
Thompson, and Skeena River steelhead which will rise to the
surface from 34 - 43 degree water as compared to Umpqua,
Kalam, Washougal, Stillaguamish, and Campbell River
steelhead which very seldom will. And whether more
scientific tools confirm the fly rod or not, these remain anglers
observations worth remembering.

TRIALOG ON LEE WULFF

Bob Arnold writes extensively about steelhead fly fishing and
is co-editor of The Osprey. He is founder and past chairman of
the FFF's Northwest Regional and Washington Steelhead
Committees. Here he takes issue with Rory Glennie's criticism of
Lee Wulff's efforts to catch steelhead on very small flies.

In the February 1989 newsletter of the Steelhead Society of
B.C., president Rory Glennie took exception to Lee Wulff’s
article (The Osprey, January 1989) recounting his catching a
summer-run steelhead in a Canadian river on a #8 dry fly.
Glennie writes, "In my humble opinion, this personal triumph of
man over fish is a dubious accomplishment at best. Might I
remind Mr. Wulff, and others too, that most of the wild runs
of steelhead in this province are in such a precarious position -
- survival wise — that any truly competent angler would
recognize the need to forego attainment such a personal goal in
favor of increasing the steelheads’ chances of survival after
release. By using tackle capable of subduing a steelhead in
reasonable length of time, the concerned angler can be
certain that a lively fish is returned to the water, not a dead or
dying one." Glennie goes on to refer to Wulff's feat as "a
tainted victory" and likens it to the neighborhood dog chasing
a deer into the sea and waiting for it to succumb through
hypothenia before moving in for the feast." He also refers to
Wulff's other fish that experienced hook failures as
"suffering from varying degrees of terminal exhaustion."
Glennie quotes Wulff's hope to get a 20-pounder or better on
such a small fly and urges him to restrict his fishing to the
Great Lakes area, where such fish are purported to be found.
In other words, he should stay out of B.C., if he intends to
fish this way.

Lee Wulff's feat really needs no defense; Wulff is simply one
of the world’s great flyfishers, and many of our environmental-
ly sound practices today have their roots in his accomplish-
ments. What is this flyfishing business all about if it is not to
1) protect the resource for the sake of the future, 2) have
fun, and 3) set personal goals that are difficult to attain but,
once accomplished, have their sights raised again? The use of
the small rod to lilk big fish quickly and to release them
while strong and healthy is among Wulff’s accomplishments.

Glennie makes only one point: The fish must have been
exhausted and near death. This simply isn’t so. Wulff says
he played the fish for about 18 minutes and it was “quite
active” and put on the “usual gymnastic steelhead display.”

Wulff admits this took a little more time than with stronger
tackle. I submit that it didn’t take very long at all. It is
about average time for a good fish hooked on conventional
gear.

Once I tested a new digital watch with a lapsed time indicator
on some fresh fish in June’s heavy water. I used a nine-foot
rod, eight-pound test leader, and large wet flies. I was lucky
that night, my timing in intercepting the run superb. Three
of the fish took me about 17 minutes each to tick. The fourth
took only seven minutes, and it was a good fish that happened
to fight hard on a short line. I mention this only because I
timed each fish. I think it was an average performance by me
and the fish. Whenever I try to land a fish really fast, I break
the tippet and leave the fly in the fish, trailing leader. I want
to avoid this, so I play my fish into the shallows, where I can
stram them. Most anglers I know do this, too, except with
very small fish. Generally, the fish swim away immediately;
a few require a moment’s recovery. There is no doubt that
the fish are stressed, however. The best information I have is
that steelhead quickly recover and there is very low mortality
- - under three percent. If Glennie wants to give the fish one-
hundred percent protection, he ought to ask for the end of all
catch-and-release fishing. This would allow nobody very much
sport in B.C., or elsewhere, because of threatened wild stocks.

Wulff, I suspect, would have licked my fish in about half the
time. He would be able to do this simply because he is better
at it than I. He is the master. I would have enjoyed watching
him fish the tiny dry. I will have to settle for reading the
upcoming issue of Trout, in which Editor Tom Pero chronicles
the event with his Nikon. Tom (to whom I offered this rebuttal
and who declined) says the pictures will speak for themselves.
Let’s see.

Guest Editor’s Note: I hope that the preceding debate does not
fuel a Canadian vs. U.S. steelhead schism. While The Osprey
is a format for just such debate, it is also a format for em-
phasizing the need for a COASTAL emphasis on maximizing the
best available understanding and research into an applied
management for the betterment of wild steelhead. All too often
the best energies of fish users get diverted into battles with
each other rather than focusing at the real core of fishery
problems which are generally controled by much larger forces.

What we Americans must remember is that the Canadians have
in many instances rather effectively restored depleted wild
steelhead returns primarily through an increased understanding of the very limited nature of the wild steelhead resource (many smaller streams on Vancouver Island in particular carry runs of only 100 - 150 steelhead), and through a careful cultivation of the delicate balance provided by an angling ethic that this wild resource is ultimately dependent upon. When a stream carries only 100 - 150 steelhead, angling can only be rationalized with the maximized survival of EVERY steelhead that Canadians have been well-educated to release.

While Rory has made his case against small hooks very vigorously, I strongly suspect that B.C.'s managing steelhead agency is perfectly supportive of that. All available literature indicates that survival of released fish is maximized by quick and careful handling which logically includes reduced playing time.

Now, I doubt that anyone will debate that Lee Wulff has progressed many notches above most of us in his ability to play large fish on small hooks, and that ability was acquired through what were likely thousands of hours of practice. Thanks to that practice Lee was able to land a 9 - 10 - pound steelhead in about 20 minutes on a #28 hook. In the cold water of northern B.C. that is likely no problem regarding that fish's survival. I also rather suspect that Lee could land even larger steelhead with no realistic problem the fish's survival -- BUT could most other anglers?

I begin to seriously question my own personal rationales on angling for steelhead when water temperatures are above the mid-60's, and when I use a fly tied on anything smaller than a 10 - 12 hook, although I have used flies as small as 14 - 16 -- RARELY. I know that above the mid - 60's steelhead are beginning to experience water temperature discomfort that can complicate their survival if I insist on playing and landing the fish. My own personal hook size limitation reflects my own inadequate practice with small hooks on large fish, and although I have been a steelhead fly fisherman for 30 years, I know that my fish-playing skill levels are not adequate to efficiently land an average or better steelhead on hooks smaller than about a #12.

I know that I'm not alone in this. Martin Schmiderer who accompanied Lee Wulff on the day of the #28 hook catch also decided to try the feat. However, Martin's outcome was very different, and after chasing the fish three pools downstream he finally gave it up. Similarly, Paul MacEacher reported to me that he landed a 12-pound Skeena system steelhead on a #20 hook a couple of years ago . . . BUT, that he felt he may have cost the fish its survival because he had to play it so long. He said he would not try it again. And just this past fall, my friend Steve Pettit landed a 16-pound-range steelhead on a #16 Humpy, but again the landing of the fish took so long that Steve couldn't justify the "sport" of it.

Despite these examples, I would agree with Bob Arnold's point that Lee Wulff is perfectly capable of landing steelhead (how large I'm not so sure) on very small hooks with little risk of damage to the fish. Bob too has had considerable experience using small flies and taking steelhead efficiently on the Stikine system. However, what proportion of the fly fishermen on steelhead rivers have those skills, and more importantly, is it correct to advocate that these anglers practice retaining these skills on wild steelhead rivers which may carry only 100 - 150 fish (endangered/threatened numbers from the standpoint of maintained genetic diversity)? If Lee Wulff is merely describing his feat, I have no argument with the display of his remarkable skills. However, if he is advocating the use of #28 hooks on what are often endangered/threatened wild steelhead stocks by any but a tiny elite of anglers -- then Rory is perfectly correct in raising the red flag of warning. Bill McMillan.

SMOLTIFICATION

In spring of what is ordinarily their second year, steelhead juveniles undergo a remarkable transformation. They "smoltify." Smoltification is the technical name for this -- an ugly word, a noun (smolt), made into a verb (smoltify), made back into a noun that describes a process (and in that process gets longer, uglier). Young steelhead and salmon are called, respectively, fry and parr by the Department of Fisheries, and zero year and one (year) plus juveniles by the Department of Wildlife, but they are the same fish. They are young steelhead still enjoying their years of river life, and soon they will head for sea, where they will attain the growth demanded by their maturation and need to return to the river to spawn.

Trey Combs, in his 1971 book The Steelhead Trout (recently reissued in paperback) describes the Waddell Creek study that identifies smoltification by year class: The up-to-one-year-old juveniles comprise 19 percent of a given year's migration and go to sea in June and the following months, later in the season than older fish; the one plus fish comprise 24 percent and leave in May, which is normally the month of greatest migration; the two plus fish comprise 53 percent and leave in April; the three plus represent only four percent and leave in March; and the four plus are only a tiny fraction and little is known about them. When I asked Curt Kraemer, Area Fish Biologist for Region IV, about these percentages, he said that the age of migration of juveniles is related to altitude, and the farther north the parent river, the older the juveniles are before they smoltify. The fish have to be grown to the six-to-nine inch length before they are biologically ready to undergo this sea change.

Flyfishers encounter smolts only during spring and usually have a small percentage of the fish that bang on their hooks as a wet fly completes its swing or, more often, when it is being stripped back in. About half of the hooked fish will come off as they are being brought in for quick release. A few, however, are impaled and have to be handled to get the big bend out of their small mouths. This gives one an opportunity to become briefly acquainted. They are pretty little fish, as bright and shiny as they can be. The scales are loose and will come off in your hand, so it is best not to handle the smolts. They will shake off a barbless hook, but there is some loss from the spearing effect.

In yesteryear with minimum size of six inches on many streams, trout fishermen pursued these fish and returned home
with big bags of shiny "trout." So regulations were changed to protect the steelhead smolt migrations. Streams were closed to all fishing at the end of March. This also protected spawning adult steelhead from human predation. Today the common wisdom is that spawning steelhead are reluctant takers and those that are fairly hooked represent a small percentage of such fish in the river; even they can be safely hooked and released. The smolts, if hooked on large hooks and the 12- to 14-inch minimum keep size is regulated, are sufficiently protected. They descend in huge numbers and all their lives have been undergoing reduction by various kinds of predation and natural causes. About a tenth of the fish resulting from successfully hatched eggs will live to smolt size, and less than a tenth of those will return after two or more years in the Pacific.

The smolting process is a complex biological one and is necessary for the small fish, which have spent about two years of its life in a fresh-water environment, to successfully transition to salt water. It is thought that enzymes are triggered by growth and external factors to bring this reaction about. Increase length of daylight (especially UV), food abundance in both the river and waiting for them in the sea, a rise in river levels from spring rain or snow melt -- all these events help bring about the transformation. Oddly, mass movements of smolts are hinged to the dark of the moon, biologists think. Just before the new moon rising finds thick cloths of smolts descending their natal rivers. (This year, 1989, those who were fishing the Skagit were met by lots of smolts battering their flies in the week of April 26, which fits this theory.) However, the May sees the greatest migrations.

In spring the smolts are in transition from one environment to an entirely different one, and it is important for them to preserve their blood salts. They have not had much, if any, food during the long winter and are ravenous. Like adult kelts, they will eat just about anything. They are not fair game and fishermen respect and release them. When the fish reach the estuary, they will find in abundance a wide range of forage food unfamiliar to them. There their body salts are easily replenished and they have to reverse the salt-retention process. Their scales firm up and their new, bright coloration has a protective effect. Gone are the parr marks -- those dark oval bands that vertically mark their flanks -- that made them hard to see by predators (including man) against an algae-coated river bottom. Later, when they return as adults to spawn, they will darken again, making them harder for predators to find but easier for them to sort themselves out from other salmonids pairing and spawning.

One of the joys of being on a stream in the spring of the year is to recognize the vast renewal process that is taking place. As the smolts move down to the sea, the wild winter adults are introducing into the gravels the next generation, plus one. Caddis larvae are getting their starts on the clean stones (they get a later start and are smaller to the North) and the green algae is coming on. Fresh redds are easily observable where there is algae or a thin layer of silt. In a few weeks, the redds will be disguised and the stones will be incubating the eyed eggs. And the smolts will have safely cleaned the river and be on their way on the long journey, we know now, the farthest Westward reach of the Pacific.