



THE OSPREY

A Journal Published by the Steelhead Committee
Federation of Fly Fishers



Dedicated to the Preservation of Wild Steelhead • Issue No. 67 • SEPTEMBER 2010

Nottawasaga River Steelhead A Great Lakes lesson in local adaptation and naturalization

by Brian P. Morrison, Fred Dobbs and Chris Atkinson

— Ganaraska Region Conservation Authority, Nottawasaga Valley Conservation Authority, Nottawasaga Steelheaders —

Fisheries biologist Brian Morrison of the Ganaraska Region Conservation Authority, Fred Dobbs, stewardship services manager for the Nottawasaga Valley Conservation Authority and Chris Atkinson of the Nottawasaga Steelheaders outline the establishment of a naturalized steelhead population in the Lake Huron Basin, Ontario, Canada and how it might provide insight for re-introducing extirpated steelhead populations in other regions.

accidentally released into the Pine River, a Nottawasaga River tribu-

steelhead in the Canadian waters of the Great Lakes proper. Shortly thereafter, steelhead were making seasonal migrations between the Nottawasaga River and Georgian Bay/Lake Huron; with these fish likely resulting from the accidental release of steelhead into the Pine River.

The life history characteristics of the naturalized steelhead populations in the Great Lakes resemble those of anadromous forms native to Pacific coastal drainages, although local populations display varying life history traits.

*As early as 1903,
adult steelhead were
documented in
tributaries of the
Nottawasaga River.*

Migratory rainbow trout (*Oncorhynchus mykiss*), also known as steelhead, were introduced into Lake Huron in 1876 when the AuSable River in Michigan was stocked with rainbow trout from the Northville Hatchery, MI. Steelhead were

accidentally released into the Pine River, a Nottawasaga River tributary (Figure 1) by 1900, likely offspring of fish spawned from the McLeod River, California. As early as 1903 adult steelhead were documented in tributaries of the Nottawasaga River, and it has been suggested as one of the first documented occurrence of wild adult

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FROM THE PERCH — EDITOR'S MESSAGE

The Adaptable Wild Steelhead

by Jim Yuskavitch

Long-time readers of *The Osprey* will note that from time to time we publish articles on steelhead issues from the Great Lakes region of the U.S. and Canada, despite the fact that these fish are not native to the region. Because of this fact, the subject of running stories on Great Lakes steelhead always stimulates discussion among members of *The Osprey's* editorial board on whether or not it is an appropriate subject for us.

Introduced runs of steelhead (and salmon) provide an important and popular sport fishery and, in the case of steelhead, which have been in the Great Lakes and their U.S. and Canadian tributaries since the mid-1870s, have become part of the natural flora. Since those first Nineteenth Century introductions, some steelhead have developed wild populations that adapted genetically and behaviorly to a life history keyed to the ecological conditions they encountered in this place that evolution did not initially intend them to be.

That demonstration of adaptability is of particular interest here at *The Osprey*, where we are not only concerned about preserving currently existing wild populations of steelhead and salmon, but also promoting the restoration and reintroduction of wild fish to former habitats as they are restored or made once again available after dams or other limiting factors have been removed.

That's what intrigued us when Canadian fish biologist Brian Morrison contacted us about an article on the naturalized, wild steelhead of the Nottawasaga River in the Lake Huron basin and the possibility that such an article might provide a useful example of how steelhead could eventually re-populate restored habitat in its natural range. You'll find that the lead story for this issue of *The Osprey*.

You'll also find another upper Midwest region story in these pages covering the potential dire impacts of Asian carp on populations of salmon, steelhead and other aquatic life if these fish establish themselves in the Great Lakes, by Gerry Worden of the Great Lakes Council of the Federation of Fly Fishers, a group of dedicated steelheaders who are working to conserve their unique and valuable fisheries just as FFF councils are doing throughout America whether or not they live in steelhead country.



The lower Nottawasaga River, Lake Huron basin, Ontario, Canada. Photo by Brian Morrison

THE OSPREY



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The Federation of Fly Fishers is a unique non-profit organization concerned with sport fishing and fisheries

The Federation of Fly Fishers (FFF) supports conservation of all fish in all waters.

FFF has a long standing commitment to solving fisheries problems at the grass roots. By charter and inclination, FFF is organized from the bottom up; each of its 360+ clubs, all over North America and the world, is a unique and self-directed group. The grass roots focus reflects the reality that most fisheries solutions must come at that local level.



Will Good Science Finally Influence Salmon Policy on the Columbia and Snake Rivers?

by Will Atlas

— Co-Chair, Steelhead Committee —

In the long running battle over the Columbia River's water, hydro system, fish and wildlife, conservationists have, for the most part, been forced to rely on court decisions to advance management practices that benefit wild salmonids. Beginning in 1994 when the first contested Columbia River Biological Opinion was issued by the Clinton Administration, the federal government has shown almost no desire to upset the status quo on the Columbia. Under the Bush Administration, the federal government proved equally disinterested in the recovery of wild salmonids on the Columbia and Snake, and some government scientists complained of political interference in their work. With the election of Barack Obama and his promise to "restore science to its rightful place", many in the conservation community were hopeful that the feds would make an about face on the Columbia. Two years and one failed BiOp later, it seems as though little has changed.


Then last month, the National Marine Fisheries Service (NMFS) released its most recent Draft Environmental Impact Statement (DEIS) for its efforts to reform the hatchery system on the Columbia. While the DEIS has its flaws, and is yet to be adopted officially, if implemented, it will be a major step forward for hatchery reform on the Columbia. The DEIS includes ambitious goals and a number of critically important management actions to reduce the level of hatchery influence in

imperiled Columbia River wild stocks. Among the recommended actions in the DEIS are reductions in the number of hatchery fish released in many systems, the construction of weirs to sort hatchery

President Obama's promise to "restore science and its rightful place" gave wild fish advocates hope.

fish out of spawning populations, and changes in the management goals for hatchery programs funded by federal Mitchell Act dollars.

The Columbia system is home to 178 hatchery programs, many of which are supported by funds from the Mitchell Act, originally designated as mitigation for the 15 mainstem dams on the Columbia and Snake Rivers which have largely destroyed wild runs. Unfortunately, huge hatchery programs have come with the unintended consequence of dramatically reducing the genetic integrity and productivity of many ESA listed wild stocks.

Now for the first time it appears that good science has been allowed to influence policy, and Columbia and Snake salmon and steelhead should benefit greatly. The court case and attendant controversy around the Obama BioOp remain. Let's hope this is a sign of things to come for the Columbia. 



The Columbia and Snake river system produced an estimated 12 million salmon annually before the federal hydro dams were constructed. Photo by Jim Yuskavitch

Nottawasaga River steelhead

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Spawning takes place in the spring, though mature fish may enter their home tributary as early as August of the previous year. Mature fish migrating in the summer/fall will generally travel greater distances than their spring cohorts. They are usually first to spawn in the winter/spring and appear necessary to maximize recruitment in headwater areas. Fall migrants are thought to have an advantage over spring migrants due to warmer water temperatures and more stable discharge regimes, which allow for a greater opportunity to navigate obstacles such as rapids, waterfalls, and dams/fishways. The life history strategy of fall migration may have developed from summer run steelhead transplanted from their native range. Spring migrations, which are a continuum from fall migrants, generally begin in March through to June. Spawning activity generally commences in February through June, but spawning may begin as early as December.

All wild Great Lakes steelhead populations, including Lake Huron/Georgian Bay rainbow trout, have the ability to spawn multiple times, a characteristic that appears to be a prerequisite for optimal recruitment. Most healthy populations have repeat spawning levels between 50 and 70 percent for both sexes. Males tend to have higher natural mortality and therefore lower repeat spawning, probably due to multiple spawning events within one season and the protracted period of time spent in spawning streams. Males are capable of spawning three or four times in successive years while females commonly have four to six spawning migrations in healthy populations, a trait also exhibited in healthy steelhead populations in Kamchatka, Alaska, and introduced populations in

Argentina (e.g. Rio Santa Cruz). The Nottawasaga River drains an area of 3,000 km² (1,158 sq. mi.), with a mainstem length of 120 km (74.6 mi.). It flows north draining into Nottawasaga Bay, Georgian Bay. There are three major headwater areas originating in the Niagara Escarpment, Oak Ridge Moraine and the Oro Moraine. Steelhead naturally reproduce in many Nottawasaga River tributaries including the Pine River, Upper Nottawasaga River, Boyne River, Mad River, Noisy River, Sheldon Creek and several other smaller streams (Figure 1) due to a lack of dams and other barriers. Steelhead in the Nottawasaga River can access hundreds of kilometers of prime spawning and nursery stream habitat, more than

in any other watershed in the Province of Ontario. The Boyne River is the fifth largest tributary within the Nottawasaga River watershed, draining 230 km². The Boyne River originates on top of the Niagara Escarpment and has a mainstem length of 45 km. The Earl Rowe Fishway, where most of the adult population data is obtained, is about 7 km upstream from the confluence with the Nottawasaga River and is about 80 km from Georgian Bay. The majority of the Boyne River sub-watershed is above the Earl Rowe Fishway (210 km²). It is believed that the Boyne River is one of the better producers of rainbow trout, along with the upper Nottawasaga

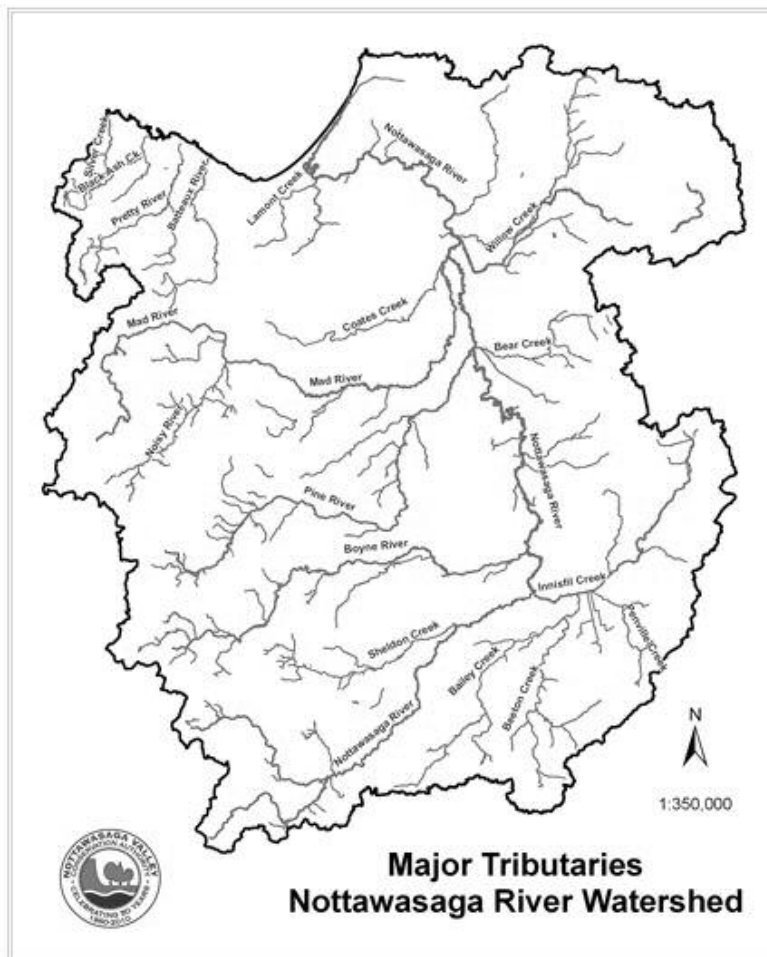


Figure 1. Nottawasaga River watershed



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River and the Pine River. The Boyne River is the only Niagara Escarpment tributary within the Nottawasaga River that allows access to the extreme headwaters above any natural barriers. Fishways are present on the Boyne River (Earl Rowe Fishway) and the upper Nottawasaga River (Nicolston Fishway), which provide the only estimates of population size and adult life history characteristics. The Nottawasaga River has been known as a big fish river, where the average size of fish handled in fishways has been greater (average size at age is 15% larger) than any other Lake Huron/Georgian Bay population. The past Ontario record was captured out of the Nottawasaga River, weighing 29.13 lbs (13.2 kg). Introduced in the 1960s, the Nottawasaga River also contains one of the largest naturalized Chinook salmon populations in the Great Lakes, which is thought to currently support the sport fishery within Georgian Bay and part of Lake Huron. In addition, the Nottawasaga River contains one of the earliest running populations (July) of Chinook salmon, as well as spring run and spring spawning (April) in the Boyne River, but spring spawning success is unknown.

The Nottawasaga River did not support a popular sport fishery for steelhead until the 1940s. It is believed that early maturing adults dominated the spawning populations from the 1940s until the early 1960s. Fishway construction starting in the 1960s allowed access to previously inaccessible habitat. During the late 1960s, a large steelhead sport fishery was established. During this time, the Ontario Ministry of Natural Resources (OMNR) opened up seasons to increase opportunities for anglers to fish and harvest steelhead year-round. In 1987, the

OMNR created a year round open season from the mouth of the Boyne River to Georgian Bay (70kms of angling access) on the Nottawasaga River, allowing a daily possession of five steelhead. Angling effort increased proportionally as longer seasons and increased harvest opportunities were created. It was believed that a large proportion of the Boyne River and upper Nottawasaga populations overwintered in deep pools on the mainstem Nottawasaga below the mouth of

The Nottawasaga River did not support a popular sport fishery for steelhead until the 1940s.

the Boyne River, and became vulnerable to harvest after this new regulation. By the early 1990s, a decline was observed in upper Nottawasaga and Boyne River populations and decline in repeat spawning rate.

In 2008, a catch and release only zone for steelhead was established, through the work of the Nottawasaga Steelheaders organization, from the mouth of the Boyne River to the Pine River to protect overwintering Boyne River and upper Nottawasaga populations. Unfortunately, a lack of monitoring has not been able to provide data on whether the new regulation is achieving the desired recovery in population size and proportion of repeat spawners.

A study of the genetic stock structure of wild Nottawasaga steelhead was undertaken to determine the genetic diversity within

the Nottawasaga River and neighboring watersheds. A total of 121 juvenile steelhead were collected from 6 Nottawasaga River tributaries. A total of 18 different strains (genotypes) were identified. This is the highest documented number of steelhead strains found in any river system on the Ontario side of the Great Lakes. Four of the strains were newly identified as being specific to only the Nottawasaga River and neighboring Bighead River steelhead populations. Of special interest was the fact that the entire Nottawasaga River was genetically different when compared to those steelhead populations from other tributary systems in the Province of Ontario. Within the Nottawasaga River, local population structure was evident. For example, the Pine River steelhead population was genetically different from the Sheldon Creek, which was different than the upper Nottawasaga River. This means that strains of steelhead present in one tributary system are different than those of another neighboring tributary system. The upper Nottawasaga River steelhead showed the highest genetic variability and is the greatest recorded in the Great Lakes basin when compared to other naturalized or hatchery populations (e.g. Ganaraska River, ON; Salmon River, NY). Fishway data indicate that hatchery origin (clipped) steelhead have never comprised a significant proportion of the total population (<1%) at both Earl Rowe and Nicholson fishways across all years of monitoring, and supported through anecdotal angling evidence.

The typical age of smolting in major spawning tributaries (e.g. Boyne River) is age-2. This differs from the upper Nottawasaga drainage, which has a high proportion of stream age-3 smolts. Most

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smolts leave the river during late April and May, but some begin the smolting process earlier, and move downstream in September and October. Nottawasaga steelhead typically spend one to three years in Georgian Bay prior to their first spawning migration, with three years being dominant. Males are known to mature earlier than females, often maturing after only one year in the lake. The Nottawasaga drainage is known to contain a unique life history of rainbow trout known as the 'half-pounder', which has been described in northern California, southern Oregon, and Kamchatka tributaries. Half-pounders typically spend only 2-4 months in the estuary or nearshore lake environment, enter the river on a foraging foray and often overwinter within the river environment before returning to the lake the following spring. The precocious males are usually larger than fish with the half-pounder life history, where the threshold between the two is approximately 42cm (16.5 in). Based on evidence from other Great Lakes wild steelhead populations, approximately 33% of the population exhibits a half-pounder life history trait.

These fish will then rear in the lake for 1-2 years before returning to spawn. This behavioral strategy makes these individuals susceptible to angling mortality within the river and near-shore lake environment before they become sexually mature.

Repeat spawning rates have ranged from a high of 58% repeat spawners to a low of 23%, with an average of 43%. A minimum of 55% is considered necessary to

maintain a healthy population with the assumption that there is approximately 30% natural mortality and 15% angler mortality. Repeat spawning rates have declined with population size following increased angling pressure and longer open seasons for anglers. An exception occurred in 2005, when a large year class inflated the proportion of repeat spawners, with the population having very few multiple (greater

and behavioral traits and co-adapted gene complexes (genetic structure) has been developed by allowing volitional access to high quality habitat throughout the watershed, by not stocking, by controlling harvest, and by letting the fish do what they wish. This has been seen in other wild steelhead populations within the Great Lakes (cf. Superior Steelhead, *The Osprey* No. 39). The naturalized steelhead in the Nottawasaga River provide



Although not native to the region, the wild steelhead population of the Nottawasaga River system have adapted through genetics and life history to the local environment over the past 110 years. Photo by Brian Morrison

than two spawning events) repeat spawning individuals.

The wild steelhead inhabiting the Nottawasaga have had approximately 110 years of natural selection to develop genetic and life history diversity, maximize local abundance and productivity and behaviors to optimize population size based on the local environmental templates (e.g. hydrology, geomorphologic characteristics). The creation of local life history

hope for restoring wild steelhead to parts of their historic range where loss of access, habitat destruction, over-harvest and hatchery stocking have plagued wild steelhead. This case study highlights that local adaptation and population recovery are possible when wild fish are given a chance to recover.





Asian Carp, a Threat to Great Lakes Steelhead and Salmon

By Gerry Worden

— Great Lakes Council Federation of Fly Fishers —

Author Gerry Worden is on the Board of Directors of the Great Lakes Council of the Federation of Fly Fishers.

Big headed carp and the silver carp (collectively referred to as Asian carp) are threatening the steelhead and Pacific and Atlantic salmon of the Great Lakes. Recently, a mature Asian carp was found in Lake Calumet, 6 miles from Lake Michigan. Whether or not the Asian carp have breached an electronic barrier designed to keep them out of the Great Lakes is a subject of wide speculation. Some sources think that the Lake Calumet carp got into the lake by being used for bait by errant fishermen. A test called eDNA was conducted this spring and showed that Asian carp DNA was present above the electronic barrier. A debate as to the validity of such tests between competing shipping and fishing interests erupted after the positive eDNA test. Officials then decided to poison a 2.5-mile stretch of the man-made Calumet-SAG Channel, which connects the Mississippi River with Lake Michigan, to determine if they could confirm the presence of the Asian carp and the results of the eDNA test. After killing more than 100,000 fish comprised of 40 different species, no Asian carp were found.

Why Are the Asian Carp a Threat to the Great Lakes Fishery?

Asian carp are voracious feeders

consuming up to their body weight in algae every day. They breed at a prolific rate and can double their population annually. The Asian carp could easily disrupt the Great Lakes food chain by consuming the algae and plankton needed by Great Lakes trout and salmon forage fish. The fish can grow up to 100 pounds in weight and 4 feet in

Asian carp breed at a prolific rate and can double their population annually while disrupting the Great Lakes food chain.

length. Asian carp were imported from China in the 1970s by aquaculturists to keep fishponds clear of algae. They escaped the fishponds during floods and made their way into the Mississippi River. In many areas on the Mississippi, they have become the dominant species.

Asian Carp and Competing Interests

The Great Lakes states (with the exception of Illinois) want the T.J. O'Brien Locks on the Calumet-SAG Channel Waterway shut down to keep Asian carp from entering the lakes. At issue for the Great Lakes states is their annual \$7 billion annual sport fishing industry. Charter boats operate in all of the Great Lakes, where they troll for

Chinook and coho salmon, steelhead and lake trout. Fly fishers fish for steelhead and salmon in the lakes' tributaries on a nearly year-round basis.

The state of Illinois wants the T.J. O'Brien Locks to remain open for shipping. The shipping industry moves hundreds of millions of dollars of goods annually. The T.J. O'Brien Locks on the Calumet-SAG Channel connect the Mississippi River with Lake Michigan via the Illinois River. According to Illinois officials, without the canal the only way to move goods currently transported by ship would be by truck. The increasing truck traffic would likely overwhelm the interstate road system and dramatically increase shipping costs.

Short Term Fixes and Long Term Solutions

In the short term, most of the solutions have been lawsuits. Currently, "attorneys from five of the six [sic] Great Lakes States (Michigan, Minnesota, Ohio, Indiana, and New York) are asking Judge Herbert Dow to block off the Chicago Area Waterway System to prevent Asian carp from moving from waters connected to the Mississippi River into waters connected to Lake Michigan (Jim Harger, *The Grand Rapids Press*, 8/22/10) Previously, the Great Lakes states and the province of Ontario sought two injunctions from the U.S. Supreme Court to close the waterway, which were denied.

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In an effort to find a solution that would prevent the Asian carp from entering the Great Lakes without closing T.J. O'Brien Locks, the Obama Administration provided \$78.5 million to the stakeholders. Most of the immediate solutions involve improving the electronic barrier system that is currently in place. These solutions call for adding additional electronic barriers or creating bubble streams to block the fish from entering the Great Lakes.

In the long term, stakeholders propose a massive and costly berm be built that would permanently separate the Great Lakes from the Mississippi River. Experts have pointed out that all it would take for the Asian carp to enter the Great Lakes is a flood of the Des Plaines River, which would mix the waters of the canal and the Des Plaines. It is estimated that building the berm would take 10 years and cost millions of dollars.

Hope for the Future?

Other than closing the T. J. O'Brien Locks on the Calumet-SAG Channel or building a costly berm, no decision has been made on how to keep Asian carp from infesting the Great Lakes. The problem of Asian carp entering the Great Lakes has been compared to a ticking time bomb that could destroy this fishery as we know it.

Proposed solutions to this menace are either temporary, hold dire economic consequences or will take a decade and millions of dollars to build. The fate of Great Lakes steelhead and Pacific and Atlantic salmon may now hang in the balance, awaiting an uncertain future.

Protection for California Steelhead Upheld

By Norm Ploss, compiled from news reports

— *Steelhead Committee* —

Flowing into the San Francisco Bay Delta and ending its journey through the heart of California's Central Valley, the San Joaquin River is not currently a likely passage way for steelhead, but it is home of a most important legal ruling for these fish!

In August, the Ninth Circuit Court of Appeals, San Francisco, rejected an attempt by six California irrigation districts to strip protected status from wild steelhead trout in the San Joaquin River watershed. The irrigators had argued that ocean-going Central Valley steelhead populations should be removed from the endangered species list based on their opinion that freshwater rainbow trout – which never go to sea – might someday replace extinct steelhead. The court carefully supported the government's contention that steelhead are a "Distinct Population Segment (DPS)" and that application of this refined policy is appropriate.

The Court agreed with the National Marine Fisheries Service (NMFS) and the conservation and fishing groups that NMFS may protect steelhead without including all freshwater resident rainbow trout in the protected population. The Court concluded that "under the ESA (Endangered Species Act), interbreeding is not alone determinative of whether organisms must be classified alike where, as here, they develop and behave differently."

The six conservation and fishing groups included the Federation of Fly Fishers — led by the Steelhead Committee — and the Northern

California Council of the FFF who have been part of the interested interveners in the case since it was first heard in Fresno District Court several years ago. The bottom line: wild steelhead are protected separately as anadromous fish.

This Endangered Species Act (ESA) case was a challenge to the decision of the National Marine Fisheries Service (NMFS) to list the steelhead as a threatened species in California's Central Valley. In listing the steelhead, NMFS defined it as a distinct species under the ESA, separate from rainbow trout that breeds with and looks like the steelhead. The separate listing was a departure from the prior NMFS policy of classifying interbreeding Pacific salmon as a single species.

The case centered on the distinctions between the steelhead and rainbow trout.

The irrigators contended that under a proper interpretation of the ESA, the steelhead and rainbow should be classified in the same DPS because, to some extent, they interbreed. They also said that the policy change for *O. mykiss* from the ESU (Evolutionary Significant Unit) Policy to the DPS Policy was not adequately explained or justified and hence was arbitrary and capricious.

San Joaquin River drainage system fish have lost 95% of their historic habitat, and they continue to face threats from unchecked water use, blockage by dams, urban sprawl, and polluted rivers. The Court's ruling represents the latest rejection of attempts by big agricultural interests to take more water out of the San Francisco Bay-Delta ecosystem.





A River can be Saved

The Smith River, California's Crown Jewel

By Ben Taylor
— Kenwood, California —

Author Ben Taylor has been fishing the Smith River for over 35 years and his great-grandfather built a fishing lodge on the south fork in the early 1900s. Through Taylor's long connection with the river, he has grown to love it, and has become acquainted and involved with many of the organizations and "stakeholders" who have an interest in preserving the river and its resources for future generations to enjoy.

He would like to give special thanks to Chuck Bucaria (NCCFFF), Zack Larson and Jim Waldvogel (SRAC), Tom Weseloh (CalTrout), and Patt Wardlaw (PCF) for their assistance and valuable input in writing this article, and for their tireless efforts to protect the Smith River.

Rivers can be saved by the collective efforts of individuals and organizations! California's Smith River is an outstanding example of one anadromous watershed whose returning salmonids have survived during a time when steelhead and salmon populations in other West Coast streams have become threatened, endangered, or even extinct. The following rich history and background of the effort to protect the Smith and its resources brings credit to the many organizations and individuals who have been involved. We will introduce you to some of them, and address some of the important issues facing the Smith today, and what protective

action is anticipated going forward.

California's Crown Jewel

The Smith River Basin encompasses 719 square miles of northwestern California and southern Oregon. 632 square miles (87%) of this are managed by government agencies – 91 square miles by the Siskiyou National Forest in Oregon, 65 square miles by the Redwood National and State Parks, and 476 square miles by the U.S.

The Smith is the only river system in California that flows freely and naturally, without a single dam for its entire length.

Forest Service. Approximately 87 square miles of the watershed (13%) are still in private ownership, including land surrounding the estuary.

The Smith River is one of the crown jewels of the National Wild and Scenic River System, which affords protection for rivers across the country. Ronald Reagan also gave state *Wild and Scenic* status to the Smith with the California Wild and Scenic Rivers Act, signed in 1972. Over 300 miles of the Smith are designated "wild and

scenic," more than any other in the country. The emerald-green river flows freely and naturally, without a single dam for its entire length – the only river system in California to do so. When winter rains arrive, the Smith – its three forks and countless creeks – drains a rugged terrain of mountains and canyons.

At the urging of CalTrout and the Smith River Alliance (SRA), Congress created the Smith River National Recreational Area (NRA) in 1990 to protect the area's special scenic value. Located in the northwest corner of California, the NRA encompasses a watershed of approximately 476 square miles (305,000 acres) – mostly dense forests, remote wilderness, and rocky canyons, with 325 miles of river. The Smith River is within the Six Rivers National Forest, which is managed by the U.S. Forest Service.

The Smith River Fishery

The Smith River supports four principal species of anadromous fish – fall-run Chinook salmon, coho salmon, winter-run steelhead trout, and coastal cutthroat trout. While well over \$100 million has been spent in the Smith River basin on land acquisition, habitat maintenance, and restoration, we do not really know if the anadromous fish population has responded. We have had creel surveys, punch cards, redd surveys, carcass counts, hatchery returns, and even fisheries population monitoring at Mill Creek, but, all of that informa-

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tion put together gives us only a glimpse of the numbers of anadromous fish returning to the Smith River each year. While most believe the Smith River is comparatively “healthy,” what we need is a comprehensive monitoring program with accurate population estimates for the basin, so that the California Department of Fish & Game (DFG) can effectively manage the Smith River fishery.

Stakeholders

In addition to the resource management offered by the U.S. Forest Service, there are many other organizations, departments, individuals, and volunteers who share an interest in preserving and protecting the Smith River. These “stakeholders” include the California Fish & Game Commission (FGC), the California Department of Fish & Game (DFG biologists and wardens), Del Norte County and its local Fish & Game Advisory Commission, Del Norte County Conservation District, Rural Human Resources, City of Crescent City, the Smith River Advisory Council (SRAC), the Northern California Council of the Federation of Fly Fishers (NCCFFF), CalTrout, Trout Unlimited (TU), the Pacific Coast Flyrodders (PCF), the Smith River Alliance (SRA), California Conservation Corps, AmeriCorps, Friends of Del Norte, the Wild Salmon Center (WSC), the North American Salmon Stronghold Partnership (NASSP), Smith River Rancheria, fishing guides, Reservation Ranch, dairy farmers, gravel extractors, timber companies, park rangers, the local Rowdy Creek Fish Hatchery, National Marine Fisheries Service (NMFS), the U.S. Forest Service, U.S. Fish and Wildlife Service, Redwood National and State Parks,

Humboldt State University Fisheries Department, and anglers who come from far and wide.

Smith River Advisory Council (SRAC)

While NCCFFF and CalTrout, are among the two largest fishery-focused conservation organizations in the state (see their websites for further information), the nucleus of the overall effort to protect the Smith is the Smith River Advisory Council (SRAC). Established in 1990 in Crescent City, SRAC consists of stakeholders mentioned above, and is under the current leadership of Chairman, Jim Waldvogel. Zack Larson, has served as Smith River Watershed Coordinator and has been Waldvogel’s right hand man for nine years. Unfortunately, this position is no longer being funded by DFG.

The purpose of SRAC is to actively promote forums (through monthly meetings) that address issues and solve problems concerning the Smith River fishery, and support a system-wide approach towards watershed management in the basin. Goals of the SRAC include coordinating and integrating fishery research and restoration efforts in the Smith River basin; seeking funding sources for research and restoration efforts; helping to educate the public about Smith River fishery/watershed issues; and developing a Smith River management plan to benefit the biological, social, and economic aspects of the Smith River basin and Del Norte County. This would include influencing favorable legislation and/or regulatory agencies.

The 2002 Smith River Anadromous Fish Action Plan (Action Plan)

Authored by SRAC Chairman, Jim Waldvogel, and Fisheries

Consultant, Hans Voight, a 78-page Action Plan was developed for the Smith River. This has served as a valuable blueprint for maintaining and enhancing anadromous fish populations in the Smith River. According to Zack Larson, the Action Plan focuses on working with about a dozen landowners in the lower part of the river who own at least 40 or more acres each. Tributary issues and habitat needs are addressed, so that monitoring, assessment and restoration projects can be identified, and priority recommendations can be formulated. The Action Plan is posted on the Smith River Alliance website: www.smithriveralliance.org/Resources/Library.

Pacific Coast Flyrodders (PCF), and The Smith River Alliance (SRA)

While NCCFFF and CalTrout, the two largest fishery-focused organizations in northern California, are committed to protecting the Smith, two other organizations have played important roles and should be mentioned.

Founded in 1975 by its President, Patt Wardlaw, PCF was formed to address Smith River access issues between anglers and local landowners. Since then, other projects have promoted river etiquette and conservation – most notably: working with DFG on low-flow closure issues on the Smith; working closely with NCCFFF to discourage gillnetting in the Smith; working with NCCFFF, SRAC, and DFG to discourage snagging during low-water conditions; and supporting the new sport fishing regulations. Members of PCF now number over 60.

Another important organization committed to preserving the Smith River, and a member of the SRAC, is the Smith River Alliance (SRA), under the leadership of Executive

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Director, Grant Werschull. Incorporated in 1980, with some financial help from CalTrout, SRA identifies and seeks funding for priority habitat restoration projects. See the SRA website for more information: smithriveralliance.org.

Land Acquisition

Creating and maintaining a 719 square mile watershed in pristine condition doesn't just happen – it takes years of hard work, with both government and private entities working together towards a common goal. Central to the effort is to acquire land within the watershed.

In 2001, the Save-the-Redwoods League played a leadership role in acquiring the Mill Creek watershed for \$60 million – 24,753 acres surrounding this most important spawning tributary of The Smith River. In 2003, the Smith River Alliance (SRA), Western Rivers Conservancy (WRC) and CalTrout led an effort to acquire and conserve the 9,400-acre Goose Creek watershed, the principal tributary of the south fork of the Smith. Currently underway is the \$4.5 million acquisition of the 5,400-acre, Hurdygurdy Creek watershed, one of the best salmon spawning and rearing streams in the system. Upon completion of this acquisition, these watersheds will become a protected part of the Smith River National Recreation Area (NRA), and represent the last large tracts of land available for acquisition in the NRA.

Smith River Habitat Restoration Projects

Long before the NRA was established in 1990, habitat restoration was well underway in the Smith River watershed. A DFG report published in 2007 summarizes

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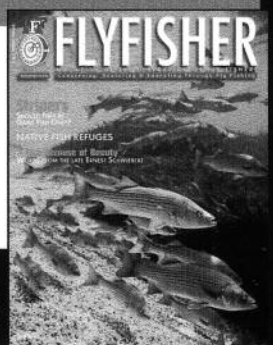
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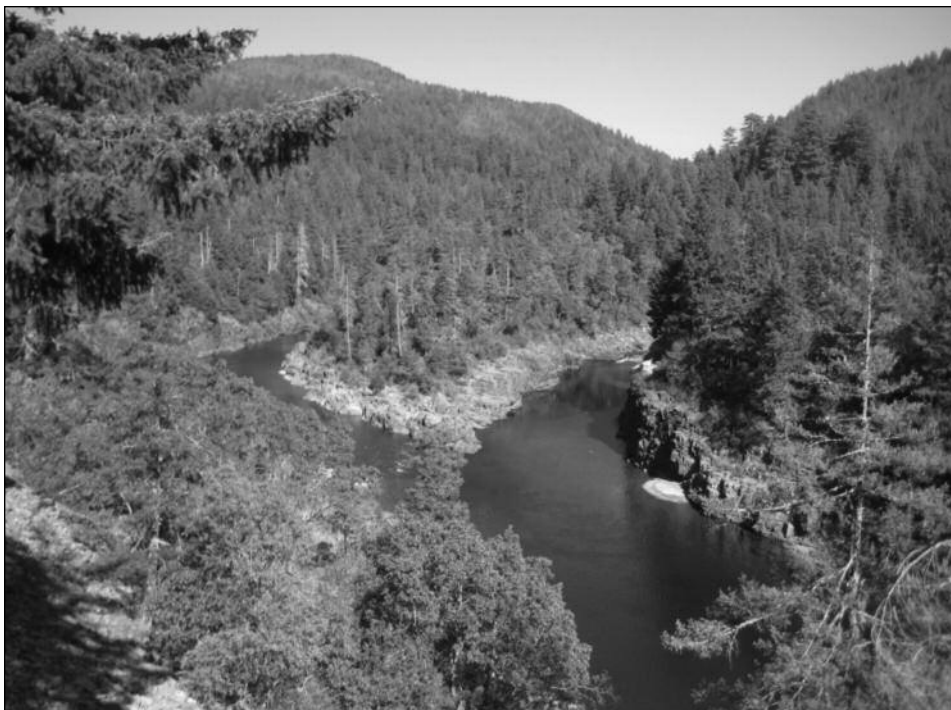
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restoration projects completed in the Smith River Basin during the years 1984 to 2006. These projects include funding for a watershed coordinator, watershed acquisitions, building in-stream habitat structures, Rowdy Creek Hatchery enhancement for salmon and steelhead, decommissioning of many miles of old lumber roads, enhancing cover structure for juvenile salmonids, improving spawning and rearing habitat, removal of barriers to provide spawning access, tree planting to restore riparian canopy, promotion of public conservation education, developing landowner involvement in anadromous fish enhancement projects, and construction of large woody debris, root-wads, and log and boulder structures at dozens of sites.

The Role of the California Fish & Game Department (DFG) and the California F&G Commission (FGC) Regarding the Smith River

DFG has long considered the Smith to be a “five-star” healthy river. As a result, with its serious budget constraints, DFG has been spending most of its available resources on “one-star” rivers – those with two or three endangered species – the Smith having only one: the coho salmon. This “benign neglect” became alarming as in 2008 and 2009 DFG ceased to fund a number of critical Smith River conservation programs.

In response to this adverse development, representatives from SRAC, NCCFFF, CalTrout, and PCF began to plead the Smith’s case before the California Fish & Game Commission (FGC) – the organization which sets policy for the California Fish & Game Department. A significant turning point occurred at the July 12, 2007 Commission meeting in Bridgeport. DFG Deputy Director,



The Smith River is among the very best of California’s wild steelhead and salmon streams. Photo by Zack Larson.

Sonke Mastrup, was explaining to the five Commissioners why funds for the “five-star” Smith were not available. At that point, Commissioner Mike Sutton posed a philosophical question: “Mr. Mastrup . . . proponents of the Smith River want to know where we [DFG and the Commission] should put the most effort – fixing what’s wrong or saving what’s left?” Commissioner Sutton was finally giving recognition to the fact that it is far less expensive to protect a healthy river, than to restore a sick one.

Subsequently, in an official memorandum dated Sept. 25, 2007, then Acting Director of DFG, John McCamman, summarized the new direction as follows: “The Department [DFG] has a long history of cooperation with the SRAC and the Northern Council Federation of Fly Fishers [NCCFFF]. . . [and] the Department has committed to collaborating on development of a comprehensive fisheries monitoring plan for the Smith River in cooperation with

SRAC and NCCFFF.” Mr. McCamman became Director of DFG late in 2009.

The Wild Salmon Center, Salmon Strongholds, and the Pacific Salmon Stronghold Conservation Act

In Sacramento today the momentum has clearly changed in favor of further protecting this magnificent river. While all of the five F&G Commissioners have been extremely supportive of efforts to protect the Smith, it is important to note that one of the Commissioners, Mike Sutton, also Chairs the Oregon-based Wild Salmon Center (WSC), an international organization working to protect wild Pacific salmon throughout the Pacific Rim. The Wild Salmon Center in turn sits on the 18-member steering committee of the North American Salmon Stronghold Partnership (NASSP). The NASSP identifies strong populations of Pacific salmon, with the

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mission of protecting the best wild salmon ecosystems of the Pacific Rim. Of nine Stronghold basins identified in the five-state Pacific Northwest, the Smith was the only one initially designated as a Salmon Stronghold in California.

NASSP also supports favorable salmon conservation legislation in Washington, D.C., such as the Pacific Salmon Stronghold Conservation Act of 2009. This was finally passed in 2010. While past salmon conservation programs focus on the most endangered spawning streams, “Stronghold” bills in the House (H.R. 2055) and Senate (S.817) would direct federal, state, local and private stakeholders to develop conservation plans that make new investments in the healthiest runs – a new, proactive U.S. policy to protect fish populations *before* they decline, and protect ecosystems before they are degraded. It will also create a grants program to support conservation efforts in healthy wild salmon ecosystems across Washington, Oregon, Idaho, and California. Tom Weseloh, North Coast Manager for CalTrout, has testified in support of this legislation; and Weseloh, Larson, and Waldvogel serve as NASSP Smith River “basin liaisons.”

DIDSON (Dual-frequency Identification SONar)

Three years after the 2007 Commission meeting in Bridgeport, in March 2010, DFG finally approved \$434,500 to fund a sonar fish-counting station in the lower Smith River, and to implement a two-year pilot study to address questions about the usefulness and reliability of DIDSON. On January 15, 2008, a Smith River demonstration of the DIDSON system was arranged by Zack Larson of SRAC, and funded by the DFG Steelhead Fishing Report –

Restoration Card. DFG later proclaimed, “We consider no other option tenable for abundance estimation.” (2008 Issue Paper: DFG biologist, Philip Bairrington). If successful, the DIDSON system will give DFG a most important and critical fisheries management tool, not only for the Smith, but for other California rivers as well.

The first DIDSON unit is scheduled to be functioning in the Smith River in time to begin counting fish electronically when the fall Chinook begin entering the river in October 2010.

“Stronghold” bills will help agencies and stakeholders protect wild fish and habitat on the Smith before they are degraded.

Sport Fishing Regulations

Since accurate fish population numbers are not available for the Smith, the FGC took steps during the recent three-year regulatory cycle to protect existing Smith River fish with more restrictive sport fishing regulations as follows: 1) Reduce the seasonal bag limit for wild steelhead to zero, 2) Increase the bag limit for hatchery, fin-clipped steelhead to two, with four in possession (statewide), 3) Extend the Klamath-Trinity salmon report card to include the Smith, and set a five wild salmon season limit, 4) Return to mandatory use of barbless hooks.

Enacting effective sport fishing regulations is a delicate balancing act – one which attempts to both protect the resource while being

fair to anglers who may wish to take home some fish for the table. Therefore, during the latest regulatory cycle, a special effort was made to gather input from, and inform as many stakeholders as possible before presenting final recommendations to the Fish & Game Commission. The Del Norte Fish & Game Advisory Commission and SRAC held several community meetings designed to reach general consensus on proposed regulation changes.

However, even with the well-vetted proposals, not everyone is happy. For instance, Jimmy Csutoras lives on the Smith, and has been fishing the river since 1964. He fishes mostly for steelhead, is an excellent angler, and remembers days in the 60s and 70s when hooking ten steelhead a day was average, and over twenty always possible. Into the 80s, the daily bag limit was three wild steelhead, which in time was gradually reduced to two, and then to one in 1998, with an annual bag limit of five. Being actively involved with river conservation in those days, Jimmy was instrumental in bringing about those changes. However, he feels strongly that going to a zero limit for wild steelhead is a step too far, and quite unnecessary. And he is not alone. Another excellent angler from southern California, Mike Martines, makes an annual pilgrimage to the Smith and fishes for steelhead two weeks a season. He was absolutely furious to learn that he could no longer take any wild fish home. He feels that private anglers, taking a few wild steelhead a year, will do no harm to a run of fish that he considers quite healthy and abundant.

The River Guides

There are approximately 60 guides operating in the Smith

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River vicinity. They fish the Smith and other nearby rivers during the fall and winter fishing seasons. Among those guides, Val and Gary Early are two of the best. Having fished the Smith since the 70s, the Earlys are well-aware of how fragile Smith River resources can be. Regarding the new regulations, they believe the guides have mixed feelings – torn between personal preferences and the business they love. Opinions will also differ depending on clients' preferences, and whether they are fishing for salmon or steelhead. In general, guiding will not be impacted by either the wild salmon report card (and five fish limit), or going to barbless hooks. However, while the "catch and release" concept is growing in popularity, many clients still want to keep a wild fish.

Another issue should also be considered: Smith River steelhead are unusually large, and anglers, hoping for a trophy over 20 pounds, will usually take home the largest fish – the ones most important for preserving the *gene pool*. The state record steelhead – 27 pounds, 4 ounces – is from the Smith River.

Summing up reactions to the new regulations, both sides of the debate have valid points, but none can be argued scientifically simply because the number of anadromous fish returning to the Smith each year is unknown. Furthermore, an abundance of returning adult fish in a given year is no guarantee of a healthy return at the other end of the spawning cycle – there are simply too many variables, rendering forecasting an abstract art rather than a perfect science. Until science is available, DFG will have no choice but to continue protecting the Smith with sport fishing regulations based on conservation and common sense.

Enforcement

It is one thing to enact and publish protective sport fishing regulations, but entirely another to enforce them. A severe state budget crisis has affected staffing of game wardens – and not just for the Smith River. In spite of this, the Law Enforcement Division of DFG, under Chief of Enforcement, Nancy Foley, has made an extra effort to put "uniforms" on the Smith during early-season, low-water conditions, when Chinook are most vulnerable. We now have a full-time DFG biologist assigned to the Smith, and three game wardens – one assigned to the Smith River area, and the other two with marine-related responsibilities, but who can spend time on the Smith during the critical early season.

Rowdy Creek Fish Hatchery

The tremendous floods of 1964 greatly impacted much of the spawning population of the Smith River and seriously altered spawning grounds, leading to a rapid decline in runs of fish. In 1968 the Smith River Kiwanis Club sponsored construction and operation of a hatchery on a tributary of the Smith River. In 1970 the state passed legislation granting a permit to build and operate the Rowdy Creek Fish Hatchery. It was built entirely with donated funds, labor and material. The hatchery is currently under the able management of Andrew Van Scoyk, with CDFG providing technical support. It operates 365 days a year, and 100% of both steelhead and Chinook released in the river have been fin-clipped to identify them as hatchery fish.

As with most hatcheries, and Rowdy Creek is no exception, there is always a debate as to whether a hatchery is good for the wild fish in a river or not.

However, according to Manager

Van Scoyk, there is a major difference between mating practices at Rowdy Creek and other hatcheries: "We never mate two hatchery fish. Whenever possible, we always prefer to mate two wild fish. We also mate different sizes and ages of fish to keep the gene pool mixed up. Our hatchery fish make up only 30% of steelhead in the Smith River, so there is a higher chance of wild fish spawning with hatchery fish."

The Future of the Smith River

Action to protect and preserve the Smith River has been on-going for decades. However, as more people come to enjoy the river's resources, the task becomes increasingly urgent. While the state population has grown from under 20 million to over 38 million in the last 30 years, and as other rivers are in decline, angling pressure on the Smith, both legal and illegal, is on the rise. So where do we go from here?

As mentioned previously, we do not know how many anadromous fish return to spawn in the Smith each year. We are therefore hoping that the data to be collected by the DIDSON sonar system will give DFG an important tool to help manage this important fishery. Going forward, it is the goal of ardent advocates of this magnificent river that a full-fledged Strategic and Fisheries Management Plan for the Smith River be developed and implemented, thus assuring that its fisheries survive for the benefit of many generations to come.





Atlantic Salmon Feedlots

Secrecy at all costs

By Alexandra Morton

— Raincoast Research Society —

Alexandra Morton is executive director of the Raincoast Research Society located in Simoom Sound, British Columbia. She has conducted significant research on the impacts of Atlantic salmon farming on wild Pacific salmon and is a long-time critic of that industry. For more information about the Raincoast Research Society, see the website at: www.raincoastresearch.org

Ocean feedlots arrived in British Columbia in the early 1980s. They spread rapidly, displacing local fishermen as they dropped their anchors in prime prawn, rock cod and wild salmon habitat in an atmosphere charged with controversy, secrecy and building public opposition. What started as a Canadian industry, is now 92% Norwegian-owned by three international companies — Cermaq, Marine Harvest and Grieg, with a distant fourth, Creative Salmon, which is Japanese and Canadian-owned.

The concept of rearing salmon in ocean net pens is simple enough and at first glance appears a good idea. Why not raise salmon in pens and allow the wild fish to thrive without commercial fishing pressure? As a biologist living in a remote area of the coast of British Columbia I learned the answer to this question the hard way.

As a young woman of 26, I moved to a remote archipelago called the Broughton Archipelago, on the west coast of Canada with my filmmaker husband and our baby son

to study whales. When I was widowed a few years later my few neighbors helped me learn how to survive — cut firewood, fish, fix an outboard, read the weather — and I stayed. Very little was known about whales in the winter and my research was productive. When the first set of salmon pens appeared in tow behind a small tugboat they looked benign. They looked like an

If we want wild salmon we have to respect their biology, honed to perfection over 10,000 years.

idea that would bring jobs and a few more families to a community where you have to make your own electricity, where there are no roads and every person counts.

I am now 53 and I wish I knew then what I know now. If we want wild salmon we have to respect their biology, which has been honed to perfection over the past 10,000 years. There is no way around this. Salmon “farms” are feedlots growing the maximum number of animals in as small a space as possible as quickly as possible, on a highly unnatural diet that includes wild fish, grain, blood flour, and their flesh is dyed pink. The science of epidemiology is very clear about feedlots. They are hothouses for disease, triggering epidemics that cannot happen in the natural world for the simple

reason that feedlots crowd animals, making it easier for pathogens to jump from host to host, and they eliminate predators that remove contagious animals from the population. Feedlots break fundamental natural laws, tipping the balance into chaos, and must be held in quarantine from wild populations. But these marine feedlots not only break the natural laws, they also exist outside the Constitution of Canada.

The first step set our course to disaster

Salmon feedlots should never have happened to Canada because our Constitution prohibits privatization of ocean spaces. For reasons we are left to guess, government overlooked this and today we have a patchwork of poorly considered legislation that is not working to protect wild salmon and is damaging feedlot salmon’s market stature.

In 1984, the federal government sought a legal opinion on the constitutional challenges posed by rearing salmon in ocean pens. Bruce Wildsmith, prominent Canadian public law attorney, recommended a new federal statute, but warned this might be “politically difficult to initiate.”

Rejecting this legal but difficult course of action in 1989, federal Minister of Fisheries, Tom Sidden, and Provincial Minister of Agriculture and Fisheries, John Savage, signed an unlawful Memorandum of Understanding

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(MOU) transferring salmon feedlot management to the provincial government. This attempt to take an industry that ultimately harvests fish from the ocean and manipulates them into “farms,” left a few outstanding irregularities. A farmer doesn’t need a hunting license to recapture a stray cow, pig or chicken, but a salmon “farmer” needs a federal fishing license to recapture his livestock. If they need a fishing license, they are not farms they are fisheries and should be under the federal *Fisheries Act*.

The Pacific Fishery Regulations 1993 tried to patch this up by exempting provincially licensed aquaculture from all the fishing regulations in the *Fisheries Act*. This allowed the industry to drift further from Canada’s stated intent to protect wild fish. The Federal Fisheries and Oceans Canada (DFO) was effectively forced to stand down by giving them the impossible dual mandate to protect wild fish and promote (not just tolerate) salmon feedlots. What I have observed over 20 years is that when conflicts arise, the more organized feedlot lobby has won every time. There is currently no public agency free to protect wild fish.

In 2009, the BC Supreme Court struck down this unlawful 20-year-old MOU and instructed the federal government to resume control of salmon feedlots. Immediately, inter-government negotiations began with reports that the federal government would task the province to continue as the lead agency. But within days of the August 2009 announcement that the Fraser sockeye salmon run had crashed, Province officials quietly phoned the industry and told them they had decided to withdraw from their regulatory role.

Government cover-up and the Fraser sockeye

Infectious haematopoietic necrosis (IHN) is a virus deadly to sockeye, steelhead, Chinook and her- ring. IHN epidemics began in salmon feedlots in July 1992 in Okisollo Channel, the narrowest migration passage used by Fraser sockeye, and spread in waves until there were more infected Atlantic salmon than Fraser sockeye in these channels. It would be dishonest to suggest this had no affect on the wild fish. 1992 is the year Fraser River sockeye productivity began declining.

Government e-mails detail a heated conversation between the Ministry of Agriculture, Fish and Food (MAFF, now called MAL), to which the MOU had tasked salmon feedlot regulation, along with the Ministry of Environment, Lands and Parks (MELP). MAFF refused to report the outbreak to MELP. When MELP found out two months later, they expressed strong concern about the wild salmon and steelhead in the area. But DFO did not wield their power to cull the diseased salmon. Incredibly they let the virus spread to 13 feedlots in a 20 km radius over 4 years (St-Hilaire et al. 2002).

Eight months into this epidemic, DFO scientists published a paper that demonstrated that IHN could spread from Atlantic salmon to sockeye and they advised “*infected fish to netpens should be avoided*” (Traxler et al. 1993).

These findings were a red flag, a neon sign flashing ‘WARNING.’ A government interested in protecting either the wild or feedlot salmon would have imposed mandatory IHN reporting, inspection and culling of infected livestock. Instead the provincial and federal governments of Canada did nothing and allowed generation after generation of sockeye to swim through a pathogen stew,

sweeping the epidemic with them as they passed through Rivers Inlet and Skeena stocks.

There have been “four waves” of IHN outbreaks according to the Canadian Food Inspection Agency right into the Central Coast. “*Farming practices themselves contributed significantly to the spread between farms,*” (Saksida 2006). While MAFF and DFO did not acknowledge the threat to wild salmon, the BC Supreme Court did, issuing an injunction preventing vessels carrying the IHN-infected feedlot salmon from entering the Fraser River. Why could lawyers and a judge see more clearly than the responsible government agencies?

The pattern of the Fraser sockeye decline is stark. Only the Fraser stocks known to migrate past salmon feedlots are in decline. The Fraser Harrison sockeye [*Editor’s Note: sockeye that ascend the Harrison River, a tributary of the Fraser*] are not found among the feedlots and they are thriving. If we want to know why Fraser sockeye are flashing on and off in unpredictable patterns, we have to know what disease challenges they are facing in two of their most sensitive life-stages – leaving and entering the river.

Salmon feedlot disease records are essential to understanding why the Fraser sockeye are in free-fall.

Disease reporting, not at all what we asked for

In 1997 the government Salmon Aquaculture Review called for leg- islated disease surveillance with “First Nations, industry, communi- ty fishers and wild fishery organi- zations.” This has been ignored.

In 2000, Canada’s Auditor General confirmed DFO’s conflict of interest to promote aquaculture and protect wild salmon. This has been ignored.

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In 2001 the federal Standing Committee on Fisheries and Oceans recommended “early detection and mandatory reporting of diseases for farmed aquatic animals.” This has been ignored.

The 2007 provincial Special Committee on Sustainable Aquaculture (SCSA) called for a public “watchman” program and moving the industry to closed tanks in 5 years. This was ignored.

In 2009, the Pacific Salmon Forum recommended lice infestation of wild salmon outside the feedlots should be the measure to regulate the feedlot lice. This, too, has been ignored.

Governments were clearly told that salmon feedlot disease has to be public. But imagine if the public had been aware that IHN was raging in millions of Atlantic salmon in the migratory corridors of the collapsing Fraser sockeye? Perhaps some did. In 2001, Bud Graham (MAFF) and the BC Salmon Farmers Association signed a non-binding “Letter of Understanding” to create an unlegislated, voluntary disease-reporting scheme, stored in a database so top-secret that government inspectors are not allowed to access it, and the information cannot leave the provincial fish health office in Courtenay, BC. This is not what the public asked for. Moreover, we provided \$70,000 to create a database that we are not allowed to access.

The Freedom of Information fracas

This extraordinary situation was challenged by the T. Buck Suzuki Foundation (not David Suzuki Foundation) when they filed a Freedom of Information (FOI) request for salmon feedlot disease records. The FOI was ignored for 6 years. The three big Norwegian companies and Creative Salmon all

stated that if their disease records were released they would never inform government of their disease status again. On March 1, 2010, the FOI Commissioner ruled the disease data had to be released. On April 1 all four companies refused access to the government inspectors to test their fish for disease.

While the province has the ability to overrule this, they have meekly stood down. What other feedlot is getting away with this? Who would eat a steak from a feedlot that refused government disease testing?

The Canadian Food Inspection Agency takes a swing at this

The Canadian Food Inspection Agency (CFIA) reports that Canada has not fully met any of the fish disease reporting requirements set out by the World Health Organization for Animal Health (OIE), to which Canada is a signatory. They report this has sidelined Canada into a lesser market.

In December 2009 the CFIA stepped on to this battlefield and listed 23 aquatic pathogens as “Immediately Notifiable Diseases,” including IHN. <http://www.gazette.gc.ca/rp-pr/p1/2009/2009-12-19/html/reg1-eng.html> (CFIA regulatory analysis).

Is this happening? The province refuses to answer if IHN is now reportable or not.

This can't be about fish

If all these shenanigans were about fish, someone would have tried to benefit either the wild or the feedlot salmon, protecting the fish and their markets, but this



The Atlantic salmon farming industry protects its secrets with help from the Canadian government. Photo by Alexandra Morton

mess is harming everyone and the communities caught in the middle. This is a mistake with no exit strategy. No one did a full risk analysis when we took that first step off the tracks in 1989. The government is serving no one.

This industry is an insignificant emperor parading naked, demanding we all step aside and risk one of Canada's greatest resources. But what does it offer? The industry reportedly creates 6,000 jobs in a few towns, but there are 40,000 wilderness tourism jobs that depend on wild salmon. The industry earns \$500 million, paying it out in shares, while wilderness tourism is an economic powerhouse worth \$1.6 billion, spread throughout BC.

While feedlots attempt to claim the noble ability to feed the world, raising salmon will never feed the

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world because massive quantities of fish are taken from southern oceans as ingredients for salmon food, shipped the length of the globe and thrown back into the feedlots to produce fewer pounds of Atlantic salmon than it takes to grow them. This regime starves one ocean to pollute another and rob people of fish protein.

Continuing viral outbreaks and alarming sea lice populations now resistant to all but the most toxic drugs in Norway have caused the Norwegian Food Safety Authority to weigh in on its own industry. As of August 2010 they state the onus is on the industry to prove they are not polluting and have their lice under control.

The solution

The salmon feedlots are in a Catch-22; either they release their disease information and take their place among sustainable seafoods but risk being found responsible for the sockeye collapse, or they can try and defy all and be content with lower prices. The answer is simple — close the barn door:

Order all fish feedlots out of the ocean, no more ill-conceived “fixes”

Encourage wise development of Canadian land-based aquaculture to replace the jobs lost from closing ocean feedlots.

Allow us to use what we know about wild salmon to restore them to the benefit of BC and Canada.

Canada’s mismanagement of the salmon feedlot industry is a building scandal on the world stage.



Dam Re-licensing on Tuolumne River Offers Hope for Wild Salmon

By Patrick Koepele
— Tuolumne River Trust —

Patrick Koepele is deputy executive director of the Tuolumne River Trust. For more information about this organization visit their website at: www.tuolumne.org.

On a cool autumn morning last November, a group of canoeists from the Tuolumne River Trust assembled along the banks of the Tuolumne River near La Grange, California, about 30 miles east of Modesto, as they have done every year for the past ten years. The air was cool and dew glistened on the grass while the sun shined with the clear, pale light of late autumn. The paddlers had come to witness one of

nature’s greatest dramas – the annual migration of fall-run Chinook salmon to their spawning beds in the Tuolumne River.

We’ve all heard the stories of days of yore, told by a few old-timers who claim to have witnessed it themselves, of “salmon so thick, you could walk clear across the river on their backs and barely get your feet wet.” Over 100,000 fish annually are estimated to have spawned in the Tuolumne before the age of dams. But in recent years, numbers have dwindled to such low levels — 200-300 fish — that many biologists and conservationists fear the fish may disappear from the Tuolumne altogether.

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Members of the Tuolumne River Trust enjoy their annual late autumn Paddle to the Sea. Photo courtesy Tuolumne River Trust



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er. Indeed, last November, a federal judge concluded that Chinook salmon are at risk of extirpation from the Tuolumne. Meanwhile, the Central Valley steelhead is listed as threatened, as the fish struggle to find cool water in Central Valley streams.

A Desperate Situation

Both of these fish have been subjected to a battery of harmful factors over the past 160 years, from gold and gravel mining, to water pollution, to dams and diversions, all of which continue to damage the fish and their habitat. One factor that continually proves problematic for these fish is the significantly reduced water flows released from the dams. In the Central Valley overall, it is estimated that as much as 70% of historic salmon spawning habitat has been lost due to dam construction or dewatering of rivers. The Tuolumne River has lost about 85% of its historic spawning habitat. Meanwhile, in an average year, only about 16% of the Tuolumne's annual natural runoff is dedicated to fish; the rest is diverted to urban and agricultural uses, is stored in reservoirs, evaporates, or seeps into the ground.

Hope for Improvements

One of the best opportunities to improve flow conditions for fish comes around once in a lifetime. The license for Don Pedro Dam on the Tuolumne River includes rules for operating the facility, including minimum flow releases from the dam, and is granted by the Federal Energy Regulatory Commission (FERC) for a 50-year period. The dam owners, in this case the Turlock and Modesto Irrigation Districts, must go through an intensive 5-year relicensing process. Through this process conservationists have the opportunity

to secure additional flows, habitat restoration, and other commitments to improve conditions for fish. The Don Pedro relicensing begins in early 2011, and many conservation groups, including the Northern California Federation of Fly Fishers and the Tuolumne River Trust, are getting involved early to improve the health of this iconic stream. To learn more about the FERC relicensing process and how you can get involved, please contact Jessie Raeder at jessie@tuolumne.org or (415) 882-7252.



Tuolumne River. Photo courtesy Tuolumne River Trust



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