

Apr. 15, 02

Dear John,

Have you seen the enclosed letter to ed. from fellow who thought he might be confused with you. In contrast to your critique of dry flies, to him a dry fly, is a dry fly, is a dry fly, and that's that! I wrote on a similar theme in my book, trying not to offend people like Mr. Hewitt (a fitting name for an opinionated person). I discussed an evolution in learning and experience in regards to changing attitudes from > trout is a trout, to distinguishing values between wild and hatchery trout, to ultimately, fully, appreciating wild, native trout in their native habitat.

Can't excuse the authors of the Argentina steelhead paper for their ignorance re. "all hatchery rainbows came from McCloud", because of their native language, and familiarity, or lack of, to the literature. Of the six authors, two are Argentinians, and four are Americans. My comment will be published in next issue (no. 3, May) of the Transactions.

The 26 lb. rainbow from Santa Ana Lakes, should be Calif. record, but there should be a separate category for such fish. I suspect it is a sterile fish and all of its weight was put on it hatchery. May have even weighed 27 lbs. or so when stocked.

It's possible steelhead runs could be established in N.Z. rivers with a life history of remaining near shore and not making long distance excursions in the open ocean. I believe this is why N.Z. has the only anadromous chinooks of all foreign introductions - from 1875, for several years, Chinook from McCloud

I have completed writing the book - so now am catching up on correspondence and planting gardens.

were shipped. Early 1900s, Battle Crk. hatchery sent eggs - All sources were of Sacramento Chinook. Sac. Chinook do not roam far in open ocean. The migrations are typically not far offshore from northern CA southwards to around Monterey Bay. Also there are four major run times in Sac. - Spring, summer, fall, winter. Likely more than one race, ^{perhaps several} were shipped. This ocean life history and likely heterozygosity in life histories, most probably explains why chinook return to N. Z. rivers and have already evolved local differences.

Sea-run brown trout can more easily be transplanted because most have life history of feeding in bays, estuaries, not far offshore. The Baltic Sea has longest sea trout of which I'm aware. Two forms of sea trout are recognized: one is typical of S. trutta populations by staying near mouths of home rivers. Other called "widely ranging", roam the open sea for longer periods and attain larger size.

Problem is, they are exploited heavily in offshore salmon fishery before they attain their large size. I recall a letter from someone from France, commenting on my brown trout column, claiming I was wrong to say some sea trout roam open seas for more than one year (like steelhead). He said this life history is unknown. - It does occur, but I've yet to document just where. — Bob

much better. Before I left, the radiation doctor was worried about continuing. My blood counts started to go astray -- typical symptoms of chronic lymphocyte leukemia appeared. Looked better after return from fishing trip and I hope to complete radiation (about 3 wks. to go), then monitor blood, and if indicated, start treatment for the leukemia. Overall, however, I feel pretty good. Went up to fish our first greenback cutthroat restoration stream in Rocky Mtn. Natl. Park. last Fri. Now re-infested with brook trout. I caught and released one nice, beautiful greenback and took home many brook trout.

Regards,
Bob

OFFICE MEMO

TO:

II

Date

FROM:

SUBJECT:

REMARKS:

— So, perhaps in few years, we'll see a new
Prosek book with 100 or more paintings.

Enclosed is page from Jordan & Evermann's
1902 book, Am. Food & Game Fishes. Note how
myths and folklore, once published in authoritative
source, will eventually become historical fact.

About half through my radiation treatment,
I took week off with my wife for fishing
near Crested Butte, CO. I had been invited
to private club (Texans who dabble in fly fishing)
to give talk. Had wonderful time and felt

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Aug. 12, 96

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Dear John:

Thanks for Roseburg's citation. If I ever write article where more detailed factual information is needed on venereal disease, this book would be an excellent source.

Allen Greenwood sent me color xerox prints of young rainbow trout from Troy Crk. and Pine Valley Crk. These are derived from trout Greenwood and friends planted in 1970s. Surprisingly, the parr marks--narrow elliptical, supplemental rows, and coloration--well-marked light colored edging on dorsal fin and bronze-light yellow ventral colors, plus relatively sparse spotting, suggest redband form of rainbow. He said they originated from Whitney hatchery. I've never examined the old Whitney rainbow but have seen meristic data (such as low vertebral counts) which indicate they retained the original McCloud rainbow genotype used more than 100 yrs. ago to start hatchery brood stocks. Mr. Greenwood seems to be a somewhat eccentric fellow who got obsessed with documenting everything known about southern Calif. trout. Evidently, his

obsession was triggered a few years ago
when US Forest Service biologists (one or more?)
wanted to poison trout from 75 streams
and "restore" native trout. Since most of
these streams had been regularly stocked
(21) fish were lost in most streams during
extended drought) by Greenwood and friends, and
he has a long history of stocking, he wanted
to document that the streams on USFS
lands don't have "true" native trout and the
USFS should back off from their "restoration
of pure native trout" plans. Once he got
started, he can't stop. Now he's into the
Bojz trout of Rio Santo Domingo and finding
all sorts of interesting historical items and
folklore. He told him he should synthesize
the highlights and publish them in a journal
such as So. Cal. Acad. Sci. or San Diego Nat. Hist.
Soc. -- but hinted he should have competent
ichthyologist as coauthor.

James Prosek sent me letter and trout
photos of European trout. He made trip to Europe
to gather material for his senior thesis at Yale
on Izaak Walton. I suggested he visit a Johannes
Schöfmann in Austria if he planned a book on
salmon and trout of the world. Schöfmann owns
bakeries, but has great love of rare and exotic
trout, and he is a very talented amateur
ichthyologist who has traveled all over to
collect and study rare trout. Prosek was
introduced to truly native brown trout and the
marble trout of Adriatic tributaries (which Schöfmann
is now raising in Austria).

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Oct. 22, 97

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Dear John:

I recently completed my article for Nick Lyons. Enclosed is copy. I wrote it in a hurry as I was way past their Aug. 1 request and was busy with other things. Lyons son called and I asked if they wanted me to expand, modify, etc. He said it was fine as is. Now I'll have to sign 800 copies, or ~~or~~ sheets for signature pages for special editions (one of 50 one of 750)... that will be much more laborious than writing the article.

I also sent copy to a fellow who lives in Lur Gstar. He fishes at a friend's ranch in northern Calif. The ranch contains gravel pit ponds in part of Scott R. drainage (Klamath basin). Rainbow trout are "native", probably from juvenile steelhead trapped when drainage patterns disrupted by gravel mining many years ago. He said some trout are > 20 lbs., but his friend is worried about 'inbreeding depression' due to relatively small population size and planned to purchase some 'steel rainbow' (domesticated hatchery fish) to stock and "genetically invigorate" his giant trout. I told him that 'outbreeding depression' is much more debilitating than inbreeding (which is a laboratory phenomenon, removed from natural selection). Thus, my highlighting of outbreeding depression consequences in my article, often, a little bit of learning can be dangerous.

Re. questions raised in your letter of Oct. 4: The sea trout form of S. trutta has more variation than steelhead. Besides the typical steelhead ocean life history (18-24 mo. at sea), they, evidently (I'm no authority on sea trout), have forms

that spend lesser times at sea or in estuaries, more typical of coastal cutthroat (supposedly, some steelhead populations in Kamchatka also do this). I still am learning about cutthroat trout. Just received the symp. proceedings of the 1995 coast (sea-run) cutthroat conference. Article in proc., based on offshore fish sampling, frequently sampled coastal cutthroat 30 mi and more offshore (mainly in Col. R. plume) from May - Aug. All previous literature agrees that sea-run cutts stay near shore in shallow water. Coastal cutts are example of high dependence on freshwater limiting abundance of sea-run populations. But, in high precipitation zones, each square mi. of watershed could have a stream producing sea-run cutts, thus thousands of such small streams once produced lots of sea-run cutts. These small watersheds are devastated by clear-cutting. Smolt density is regulated by smolt size, thus per unit area, pink salmon (go to sea or newly hatched foy) can be enormously more dense than 7-8" steelhead or cutthroat smolt. Somewhat strange that At. Ocean never evolved a species of salmonid with high smolt density (go to sea in first year).

with high smolt density (go to water).
Smolt age, within a species, is related to water temp.
Farther north, typically longer time to smolt. In most northern
pt. & solar populations, 6 yr. smolts are not uncommon.
Also in very cold streams of eastern Cascades, steelhead
smolts of 6 yrs. have been recorded.

Re. L. Ontario s. salar, I found that L. Ontario salmon were stocked in Newfound L., New Hampshire, about 125 yrs. ago. There was natural reproduction and fish to 18 lbs. were caught. I suggested there might be some of original gene left after >100 yrs. of hatchery mixing, and this could be a source for trying in L. Ontario. N.Y.S. isn't too keen on rearing salar. They are difficult to raise and take up so much time, labor, and space, they can stock 100 chinooks for each salar (and party boat, chamber commerce lobby fear salar restoration is plot to put them out of business).

Sorry to hear about your daughter's tumor. Hopefully, all cancer was removed this time. I'd like to know what

course of action taken. I suspect radiation to the tumor area would be suggested to destroy any lingering cells. It always hangs over you, not knowing if and when it shows up again. I had third PSA test last week. I called this morning to get results. Girl asked me to wait till she looked it up. Seemed like an hour, while I anticipated bad news. Then she returned with cheery voice, congratulating me with good news. Do it again next April.

You should go ahead and write your book, even if only for ~~therapeutic~~^{The} value. Anything that keeps you busy and interested in something.

We enjoyed an extended Indian summer. First frost come two weeks ago, about 3 weeks later than normal and no snow yet. This resulted in overproduction of vegetables in our garden--what to do with them all? Being brought up during the depression, we never wasted food. My mother would be busy canning, making jams, chili sauce, etc. each fall. Not many do this anymore, but we've filled freezer and made sun-dried tomatoes (cheated by using desiccator).

Last Tuesday, it was such beautiful day and I didn't have any classes or meetings, so my wife and me drove up the mountains west of town to enjoy scenery. We took bottle of champagne and my fishing rod. We had picnic aside a beaver pond. When I went to fish, I slipped and grabbed out for willow branch to catch my fall. Must have been a sharp spike-like projection as I ripped my right hand open between thumb and forefinger. I wrapped it in towel, drank the champagne and drove back to town to get it stitched.

This is about the last of fishing for 97, unless warm weather comes back and I'll be tempted again.

Regards,

Bob

Dec. 7, 81

Dear John,

I'm Tardy on correspondence, but editor is constantly pushing to get text completed by Feb. - but they send me maps and text to review, correct, and add to. Evidently, being a commercial outfit, they will milk the book for extra \$ - A calendar is planned that I'm constantly reviewing and correcting - difficult when these people have no familiarity with subject matter. For ex., - distribution map of brown trout in N. Am. -- A precisely accurate map is impossible because brown trout, especially on West Coast occur sporadically, often very locally, not in whole drainage basin, such as Sacramento and Lahontan basins.

From practical point of view, RBCxCOT hybridization needs no experimental quantification because once it begins, it typically spreads through a population within a few generations producing a hybrid swarm - eventually, virtually all traces of cutthroat ancestry are lost. This couldn't happen if any significant incompatibility existed. The biological species concept of two closely-related forms maintaining reproductive isolation in sympatry, recognized pre mating and post mating mechanisms to maintain reproductive isolation. Pre mating would be spatial (or temporal) differences - or behavior, (phenomenes, coloration, etc.) that kept two "species" apart during reproduction. Post mating = sterility barrier. No species concept is satisfactory for all forms of plants and animals, so I try to be eclectic. Evidently, fishes, in general, can produce hybrids from more distantly related parents than can birds and mammals - they seem to be much more tolerant

of mismatched chromosomes, Chinook and pink salmon $2N = 74 \& 52$ can be hybridized with some fertility of hybrids. In L. Superior natural hybrids and F_{2r} -or backcrosses between Chinook and pink salmon with large differences in chromosome no. have been documented.

The 'secret' at C7 & G is that, for many years, golden trout, hybridized w/ rainbows, from Cottonwood Lks., continued to be stocked - that's how hybrids got into Golden Trout Crk.

Enclosed is page from British Salmon & Trout Ass. newsletter re PETA campaign.

Did you see "my" letter in last issue of Fly Rod & Reel? I think I wrote before that Ted Williams wanted me to write the letter and that was what we agreed on. I note your

letter in Fish & Fly (received yesterday). Any fly might be in the eye of the beholder.

fly might be in the eye of the beholder.

No doubt, big deer hair mousies are the "fly" of choice for timber and tenok. I still have one stuck on my fishing vest - about

2/0 or 4/0 hook. Better is a large mouse plug - that is used for $\geq M$ bass. Just toss it out over tenok or timber and they will smash it without even moving.

The June 10 we became grandparents for first time last Fri. - our son's wife gave birth to 9 lb. 3 oz. boy ($20\frac{1}{2}$ ") - Our daughter is about $\frac{1}{2}$ through her first pregnancy. — Regards. — Rob

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IV : 16 : 97

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Dear John:

Thought you'd be interested in the San Diego Trout web site. Full of errors but I told them that I doubted website readers would be sufficiently knowledgeable to find the errors unless they were familiar with what I wrote in my monogr. Know anything about Agua Tibia Crk.? They're so enthusiastic, I hate to dampen their spirits.

Glad to hear your hearts in good shape.
Stress is difficult to deal with when cause is pervasive and consistent. Perhaps a new adjustment level can be attained, like getting a second wind on a long run.

I was in Nevada again last week surveying Lahontan cutthroat streams trib. to Humboldt R. (possible impacts from gold mining). I had collected trout from these streams in 1961 and was thrilled to find them still there (they are there because no other form of trout could persist under such harsh conditions). The classic example is Willow Crk and Willow Crk. Reservoir (mentioned on p. 34 of my monogr.). I still find it hard to believe that the native cutthroat still occurs in the reservoir. We

Talked to angler and his son who had camped out on reservoir to fish for crappie. Day before son caught 19" cutt on lure and a few 12-14" on worms while crappie fishing. The reservoir is extremely murky from colloidal suspension (silt runoff from Willow Crk.--overgrazed watershed) and blue-green algae bloom (hand can't be seen 2 foot below surface). I can't imagine how the cutts are reproducing. Two tiny tributaries, several miles upstream of reservoir still have native pop.--probably a few hundred fish. Could surplus reproduction from these streams find their way to reservoir and survive? Willow Crk. itself becomes intermittent (warm, algae filled pools) later in season. I'll go back and check, but it's difficult to believe that Willow Crk. can support reproduction, and juvenile rearing of cutthroat trout. Truly an amazing fish. The gold mines are likely to have benefits for the native trout. They have purchased the ranches that grazed these watersheds. They are attempting to create a showcase where grazing, mining, endangered species, and all sorts of environmental values coexist in blissful harmony. Grazing management has been revised and willows and aspen (now two active beaver workings--beaver had been essentially eliminated 50 yrs. ago) are coming back in places. Anything would be improvement over the degradation accumulated by 100 yrs. of overgrazing--yet the native trout has persisted in several tiny streams in very marginal habitat.

I'll be in Penn. next week to give talk at a TU Youth Camp.

Regards,
Bob

SPORTS AFIELD

re. audience of San Diego Trout web site.

April 7, 1997

if they read S.A., T.S., & O.L., no
problem with authenticity.

Dr. Robert Behnke
Dept. of Fishery & Wildlife Biology
Colorado State University
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Dear Dr. Behnke:

Thank you for taking the time to look over the captions for *Sports Afield's upcoming Trout Fisher's Almanac* forwarded to you by Pete Rafle. We've input your changes and, as a sign of our gratitude, will be sending you a copy of the book, which we expect to receive mid-May.

I hope all is well with you, and thank you again for your time and assistance.

Sincerely,



Christina Wynn
Assistant to Editor in Chief & Publisher

A typical hook and bullet type publication. I tried to correct numerous errors--the most gross, ^{at least,} such as "like trout distribution" from Arctic circle to San Salvador". They are supposed to send me a copy.

Also talked with someone from Outdoor Life who was doing story on rare and endangered Trout-- I don't know where they got their taxonomy, but it was something like I've never heard before.

Actually, they ~~know~~ ^{think} their audience and authenticity and accuracy in regards to biology, taxonomy, etc. is not an important matter. — Nick Lyons contacted me re. an "authentic" chapter for book on wild trout.



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Mr. John Hewitson
1033 San Abella Dr.
Encinitas, CA 92024-3949

They seem to be on a
bridge of some kind-ego, playing
on their computers

bizarre

bizarre

bizzare

I am offended by the
Click here, click there format of
W.W. Web. I'm not part of that
mindset as I have no P.C. in my
home. I never was caught up in the
computer fever that is such a
big part of peoples lives.

Unrealistic or am I being too cynical

Pollution

Self congratulatory self promoting

Some one who is into this could probably
do a good "flaming" on this.

assertiveness

envy

anorexia

self defeating

Knowledgeable

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VII : 29 : 97

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Dear John:

Enclosed are copies of letters to bring you up to date on the 'motherlode' So. Calif. trout and new Ph.D. study. As you can see, the 'corrected' web-site is, essentially, the same. After this letter Pottorf wrote back claiming some exaggeration is justified because a spokesperson for water developer is using argument that since the So. Calif. "motherlode" trout is a rainbow trout, and you can buy rainbow trout in supermarket -- therefore nothing special. I pointed out that most people differentiate among taste qualities of different wines, although all are made from same sp. of grape (an example of intraspecific variation, easily understood). Then I received another letter from Pottorf yesterday asking if transplanted rainbows can change spawning times. Upper Cottonwood Crk. is blocked by dam and had no trout. Try of hatchery stock (Mt. Whitney x Komloop hybrid) were stocked. If they spawned in Mar.-April, it would be too late (flow drastically drops). "Baby" trout were found in Feb. (as. Dec. spawning). He's an enthusiastic fellow, but he should read my monograph for answers.

The latest issue of Transactions Am. Fish. Soc. published Jennifer Nielsen et al. paper referred to in letter to C.F.G. rep't. (with additional info).

For genetic analysis they included data from three taxidermy specimens of Ventura R. steelhead caught by Ed Henke's father 50-60 yrs. ago. For mitochondrial DNA, DNA patterns can be obtained from Taxidermy fish (a tiny bit of fin). Nothing really new in the TAIS paper-- south. Calif. rainbows & Steelhead have some mtDNA base pairs differentiating them from northern and hatchery rainbows. Steelhead and resident rainbows of same drainage are more closely related to each other than to steelhead or rainbows from other drainages, etc. Nothing about "most primitive", "motherlode" or the like.

I believe Ed Henke plans to put all his historical research together in a book, or a book-like publication.

The names of authors proposed for Nick Lyons' planned book, "The magic of wild trout", besides me, are: McGuane, Engler, Gensch, Leeson, Hughes (no Ernie Schwiebert). Which reminds me that I have to start putting something together and write my piece. Any ideas?

Regards,

Bob

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Dear Mr. Pottorf:

There is still a major problem with validity concerning such statements as: "...no originally gene in any rainbow trout...not found in San Diego trout"; and "motherlode of all steelhead". What is meant by "original"? What is meant by "gene"? What is meant by "motherlode"? I assume your statements are based on Jennifer Nielsen's work. "Gene 13" ~~represents~~ what? I'm looking at a report by Jennifer and two other authors - 1986 submitted to C.F.G. Table 4 lists mitochondrial DNA types, numbered 1-19. These "types" are not "genes". The entire mitochondrial DNA acts as a single gene. Jennifer examined 188 base pairs of DNA in a small section of the mitochondria (Including DNA in nucleus, trout have a total amount of DNA [making up "genes"] of about two billion base pairs -- drawing sweeping conclusions on "all original genes" or "motherlodes" on such a tiny bit of data is not warranted.)

In Table 4 mtDNA "type 13" is reported in 8 of about 100+ trout representing southern Calif.,

The table shows haplotype (mtDNA type) no. 16 is shared by Eagle L. trout and S. Fk. Kern golden trout. This DNA type called 16 in report I have may be the 13 you refer to from an earlier report.

In any event, certain branches from a "protorainbow" such as Gila trout, Apache trout, Mexican golden trout, are more primitive (retaining more ancestral traits shared with cutthroat) than Southern Calif.-Bojz trout. Rainbow trout native to southern Calif. are not "The oldest rainbow trout in the world". And, no such conclusion is justified based on the available genetic data.

A recent (1997) Ph.D. dissertation on genetics of Calif. rainbow trout was completed at U.C. Davis. The author used different techniques, sampled different parts of the mitochondrion and comes up with different results than did Nielsen. If you use this dissertation as a basis, you would come to different conclusions.

Trying to comprehend rainbow trout "genetics" in total, based on the tiny fragments of DNA examined is like trying to assess total variation in all plant species by listing all species found in a one acre plot and then extrapolating to whole world. Obviously, much would be overlooked.

Sincerely,
Bob Behnke

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letter to Eric Gerstung
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WII : 9 : 97

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Dear Eric:

Many thanks for copy of Bagley's dissertation. Of interest is the use (first time on trout) of single copy nuclear DNA, compared with terminal sections of D-loop (mt DNA), and for Kern basin trout, also allozymes.

I probably don't have to tell you this, but the dissertation presents you with a confusing array of data that contributes more confusion than clarification of Calif. rainbow trout, especially the treatment of Kern basin trout.

This is largely due to obsession with methods and ignorance of the subject matter in general. It is like trying to write a new book on the Civil war while knowing nothing of the historical issues leading up to it.

Let me give you an example concerning the golden trout (Volcano-Golden Trout Crk.) genotype showing up in headwater tributaries of main Kern River (K20: Rock Crk.; K23: Whitney Crk.; K25: Wallace Crk.) that group within V1, V2, V3 (three samples from Volcano-Golden Trout Crk.). These and other Kern samples (representing hybrids) mesh "guadensis" with "gilberti" without a clear

demarcations. Same occurs between whitei and gilberti for some reason (hybrid influence) -

The fact is that Rock, Whitney, and Wallace creeks all have barrier dams and were in glaciated areas so had no native trout to begin with. If Bagley had read Carl Schreck's M.S. thesis, he would have found the necessary historical background and the morphological-menistic data to show that what was sampled (> above falls) in Rock, Whitney, and Wallace creeks were transplanted golden trout from Volcano Crk. These Penn R. tributaries were stocked with trout from Volcano Crk. in 1900 (Rock Crk.), 1908 (Whitney), 1910 (Rock again + Wallace Crk.); in addition, S. F. K. Penn equesbonita were stocked in Rock Crk. in 1930s. Carl's thesis (table 1) contains eight pages of stocking records. It's a shame Bagley had no knowledge of this. In comparisons of menistic data, Carl found the scale counts (> above lateral line and lateral series), vertebrae counts, and pyloric caeca counts to be similar among samples from Rock, ~~Whitney, Wallace~~ (all > above falls) and Volcano Crk. Below the falls, samples from Rock, ~~Whitney~~, and Wallace (evidently, Carl did not have a Wallace Crk. sample from above the falls) represented hybrids (scale counts ca. 5 fewer above l.st. line, 20-25 fewer in l.st. sen., vertebrae about two higher and caeca about 10 higher).

It's inconceivable how someone could collect trout from above falls in Whitney, Rock, and Wallace creeks and not recognize them as typical golden trout, aguabonita. Evidently, Bagley did no field work and probably only tissue samples were sent to him. Again, it's like writing a book on the civil war without ever visiting a battlefield or historical site. 1910. Fresno Republican newspaper had article on history of stocking--"design was to plant renoensis, whitei, and aguabonita into streams entering the Kern R. from the east and gilberti into brooks tributary to the Kern from the west." Yet Bagley couldn't conclude that any of his Kern samples were influenced by hybridization! He also believed the myth^{that} hatchery rainbow trout originated from the McCloud R. (citing a 1964 publ.). He cites my monogr. but evidently didn't read my section on history of rainbow propagation, nor Leitritz' C.F.G. bull. listing 169 parental sources used in C.F.G. hatcheries.

Another mystery is Goose L. redband trout. The Goose L. samples include G7 (12 mile Crk., Nev.) and G8 (Rock Crk., Nev.). The map on p. 107 depicts a spot representing G7 and G8 in extreme NE Nevada. This would be "Long Valley", part of Great Basin - and with speckled dace as only native fish. No trout are native to Alkali Lks. or Long Valley, the desiccating basins east of Goose L. basin. Not

A word is mentioned in dissertation on how "Goose Lake" redband trout got into Rock Creek and 12 mile Creek, Nev., in a desiccating basin that has no native trout. Do you know anything about these trout?

Also, Bogley didn't see the Nielsen et al. 1996 report that covers many of the same trout at some geographical region, using a different part of mt DNA and microsatellites. Why the lack of communications in Calif. trout molecular genetics? Anyway, if you send copies of Bogley's dissertation to other C7&G officers (I am especially thinking of John Dienstadt and the Calif. Heritage trout program), it should definitely carry a warning label re. hazardous conclusions.

Pg. 48 of the dissertation is missing from the copy sent to me, but I doubt this would change my interpretation of the work if I had it.

Regards,

Bob

now. By WWI, coast artillery became an outmoded defense system, but the base was used by Army for another 40 yrs. or so. It was considered as a choice assignment for officers. Probably less so for enlisted men. No real military duties to perform so they were kept busy collecting drift wood to fuel fireplaces and catering to officers. I recalled being at Fort Lewis on Puget Sound in 1952 waiting to be shipped to Japan. Fort Lewis had been a CCC camp and was quite desolated-- nothing like Fort Worden across the sound.

The best option to fly me from Cleveland to make the Orange Co. event, turned out to be LAX. I received email from George Sutherland of son Clemente that he would meet me. The fellow meeting me at Seattle airport for steelhead conf. had never met me (nor I him) - I told him to meet me at baggage claim and bring cell phone. When I got there I called his no. - he turned up - about 30 ft. away, saving time of wandering around looking for each other.

I noted in the old angling classic, "Salmonia", by Sir Humphrey Davy, first published in 1828, a discourse on the ethics and morality of angling - do fish feel pain? Conclusion was, not much, if any, and anglers should feel no guilt. Also, a private club he fished practiced catch-and-release. This was before clubs had hatcheries to replace the trout caught -- thus, the traditions of ^{some} British angling clubs, requiring the killing of the catch, was established later in 19th century.

Regards,
Bob

Mar, 16, 04

Dear John,

My deepest sympathy and condolences on the loss of your dear wife. For one who had endured such suffering, at last it's over, but for you, after 48 yrs. of being together, the void in your life can never be filled, but, mitigated through time, hopefully. My wife and I have been married 40 yrs., but our lives have become so integrated, the mutual dependency that has developed, would be thoroughly devastating to lose.

The latest issue of Fly Fisherman (May) contains letter I wrote to editor John Randolph after they published an article on special regulations based on a 1992 paper that erroneously concluded that barbless hooks kill fewer trout than barbed hooks - yet neglected a 1997 paper that thoroughly refuted the earlier paper. I conclude that to kill or not to kill (and est) trout and barbed vs. barbless hooks are trivial matters in the big picture of trout conservation. I know, however, that hardcore purist ideology considers these issues as fundamental to their litany of no-kill regulations, and I expect they will express their outrage.

I participated in a steelhead conf. last week at Port Townsend on Olympic Pen. A good conf. and nice site for meeting. Originally, Fort Worden was established as coast artillery post to protect Puget Sound. It became a Wash. ST. Park, and the original stately structures have been maintained. Our group was put up in the houses on officers

travel - Denver - Cleveland - Orange Co. - Denver that allows me to make my commitments - it will be tight, and I expect I'll be exhausted by time it's over.

During past few weeks I've been very busy writing. Last year, I agreed to contribute a comprehensive article on Northern Great Basin redband trout for a proceedings. I still have problem understanding that time goes by at even increasing rate with age. Before I knew it, Jan. was here and I hadn't written my paper. Consumed by guilt, I put in many days of assembling my source material and writing. During this time, I get email from Trout's new editor, reminding me that spring column is due. I learned I'm no longer capable of what is now called "multitasking", trying to do two or more projects at same time. I get confused and forgetful -- I misplace and lose notes and literature. I got everything completed, but I'm awaiting editor's critique of my column draft. I entitled it "Best Science", about how both sides in polarized controversy claim to have the best science or to use the doubt strategy. I introduce the subject with the global warming debate and lead into PETA's claim that fish feel pain. With her background with Nature Conservancy and avoiding controversy, she might have difficult time with my latest column. You can see how my original draft of winter column was "torn down" for publication. I'm thinking of doing another wild trout-hatchery trout type of column with the sad story of Derisley Hobbs to demonstrate that the naive faith in hatcheries is not solely an American phenomenon - and that the 'best science' can be trumped by tradition, ideology, ignorance, and politics -- recall Calif. legislature bill introduced last year to exempt 45% of license fees to hatcheries.

Jan. 27, '84

Dear John,

After hearing of the terrible catastrophe of your wife's broken leg, I am hoping the situation has, at least, stabilized and, perhaps, improved. Most people going from their familiar surroundings to a nursing home will feel depressed, but what are the alternatives? My mother lived to 93. She had several small strokes, severe arthritis, and hobbled around on a walker, but she adamantly refused to go to a nursing home. She remained fully cognizant and would use dial-a-ride to attend two or three senior citizen type meetings each week. She live alone for past 30 yrs. in same house for 70 yrs. (I was born in this house in 1929). Fortunately, my sister lived nearby and would check with her daily. I was probably influenced by my mother's attitude for old age--keep busy and keep going. I recall the doctor who came to our house for my birth charged \$30. Our son's wife had baby girl (big baby: 9 lb. 11 oz.) Jan. 7. The total bill came to about \$6000 - has inflation and medical expenses increased by 200X in 75 yrs.?

I was at cancer clinic last week and was pleasantly surprised to learn my lupron shot are still working after 20 months and that they have new drugs, without side effects, to treat leukemia if I need it. In June, I'll have another skeletal scan and bone density test. Goal is to maintain the body's framework and avoid osteoporosis. I'm feeling well, sometimes, perhaps, too well for my own good. You recall I agreed to make presentation to Orange Co. in Apr. I also agreed for engagement at banquet in Cleveland. I learned the Cleveland date is Apr. 22 and Orange Co. is Apr. 22. A fellow in Orange Co. is trying to arrange a lowest cost

from L. Ohrid about 1970. They propagated them at federal hatchery Manchester, Iowa. USFWS offered "free eggs" to states - Colo. took some and stocked them in Big Horn, > popular angling site near Ft. Collins. Wyo. stocked some in a N. Platte reservoir. Tenn. also stocked some in reservoir. Int. Game Fish Ass. recognizes the world record L. letnica as 14½ lbs, from Wyo. & Tenn. (2 tie).

I expect letnica is long gone and none, to my knowledge, were ever stocked in Big Horn.

Lev Berg developed a theory of evolution he called "nomogenesis" -- similar to orthogenesis - evolution directed along a 'track' to end of track, and extinction. Evidently his evolutionary theory didn't cause alarm among Lysenko "scientists", who were in charge of Soviet biology.

The anadromous Far Eastern cyprinid Berg referred to are classified in the genus Tribolodon (3 sp.).

Most top Russian biologists knew that Lysenko's crazy ideas were not based on good science, but an ideology that Stalin liked. Graduate students were questioned by a committee before a degree was granted. The standard question was how their research validated the "facts" (not theory) established by comrade Lysenko? A perceptive student would be ready with some ^{concocted} story, with their fingers crossed behind their backs.

George Nikolsky, however, was a very competent biologist and espoused the Lysenko line, compatible with his "unity of the environment and the organism" theme he frequently published on -- also tirades against exploitative fisheries of capitalist countries, while Soviet fisheries were no less exploitative. My friends at the Academy in St. Petersburg considered

Nikolsky an "opportunist". The Moscow Univ.

group (that was long led by Nikolsky), including

his students, although condemning Lysenkoism, admired Nikolsky as a highly competent scientist.

Take your pick. Bob

II

I've been following a current controversy concerning the native range of coho salmon. Petition to list and restore coho salmon to streams south of S.F. Bay has raised a storm of controversy. The forest products lobby claims that coho were never native south of SFB, citing D.S. Jordan (J&E 1898 and other statements where Jordan said coho do not occur south of SFB). I must admit they've done their homework and exposed all of the claims of coho being native southward to San Lorenzo R. as without any credible basis. The first hatchery propagation on the San Lorenzo R. in 1906, from eggs imported from Baker L., Wash., was hailed in newspaper of that time as introducing a "new species" to the area. They made a good case that all documentation of coho south of SFB occurred after stocking of hatchery coho. They make a very good case against coho being native on their website. All looked good for them until 7 material "witnesses" turned up. Collections made by Stanford people in 1895 in several coastal streams include 7 juvenile coho (56-75mm) from 3 streams. Originally, the collectors identified the coho as chum salmon (Jordan had said coho don't occur south of SFB). A wonderful example of why fish collections can be highly significant evidence of the past. I would agree that coho were not abundant south of SFB, but they were there.

Re. points, questions, etc. from your last letter:
The "special breed" of brown trout from Europe the guide told you wyo. Sixty were stocking in Big Horn R. in 1987, probably had some basis in fact that was greatly twisted around by 2nd 3rd hand accounts. The USFWS obtained eggs of S. letrica

knees, etc. I can walk O.K. for hrs on so, but legs perform suboptimally. Some of problems might be from osteoporosis - I don't have bone density test until I've completed one yr. of Anides' treatment. Otherwise, I feel pretty good. Gastric bowel is problem for traveling - takes about 2 hrs after I get up in morning before I feel I can leave home. I'm scheduled to give talk at Casper (WY) Community College on Apr. 18. A float trip on Grey Reef area of N. Platte R. is planned for Sun. (Apr. 17). I told them we should plan for 16 day trip starting about noon, so I didn't have to leave home before 8-9AM and court disaster.

I was in Cleveland for the opening of the Theodorus Gonlick exhibition at the Cleveland Mus. of N.H., Mar. 12 - also a fund-raising banquet at the museum for the Trout Club of Cleveland Museum.

One of Gonlick's photos of a large ravine was found in collection of historical society. This was part of exhibition with photo of a large ravine taken recently - text read that this ravine was the site of Gonlick's hatchery and resting ponds.

I visited the present ravine, which is on northern boundary of Ackley's property. From old maps, the present ravine is where Mongans Run once flowed. I doubt this is the spring-fed ravine described by Gonlick -- flood flows would have washed out any hatchery and ponds. The hatchery ravine must have connected to Mongans Run, but I could find no trace where it was on present landscape.

Anyways, most people are satisfied that "the" ravine where first propagation occurred has been found.

I doubt it, but won't nit-pick on precise site -- close enough for most people, but I'd still like to know -

Regards, Bob

→ I learned that a branch of Chagrin R. just east of Cleveland, still has native brook trout. Chagrin is only river in Ohio known to have native trout - 150 yrs. ago Gonlick predicted they would soon be gone. Fortunately the land is on a native prairie.

Mar. 29, '85

Dear John,

Enclosed clippings I found humorous - (1) is letter to Field & Stream from Safoni Club spokesperson reflecting typical hook-and-bullet paranoia. F&S has become more moderate, even reasonable in regards to "sportsmen's interests". (2) is latest lone to catch record bass in southern CA - its length ($10\frac{1}{2}$ ") and wt. ($3\frac{1}{4}$ lb.) is close approximation of a catchable rainbow - sells for \$16.

We were in Calif., Mar 16-23, baby sitting our almost 3 granddaughter. Our daughter had commitment to play in Santa Rosa symphony and her husband was in Norway that week playing in a musical production. After first hot day, weather turned to rain every day - not much, but intermittent throughout day which limited walks around town and parks and such. Our daughter is due for birth of son in about a week - all tests have been favorable.

I used prescription suppositories for 3 wks. (40 suppositories). I believe the sudden urgencies have diminished, but no dramatic improvement yet.

The precipitation pattern is peculiar. I noted San Francisco was a bit below their annual average, while Southern CA has had record rainfall - much in papers about Death Valley - whole valley is blooming with wild flowers after 6" of rain this year (vs. ann x of 2"). Colo. is mostly above average in snowpack but large differences in areas not far apart. To north of Colo., esp. Mont., drought conditions continue.

Good to hear you made it to Poudre Crk. I would have problems myself for such a trip. Typical aging problems - poor sense of balance - arthritis in

Jan. 25, '06

Dear John,

IT rained every day we were in CA - max. temp, ca. 58°F - and we see in paper that it's warm (62°) and sunny in Denver that week. A bit of disappointment because we had coldest spell of winter the week before we left and were looking forward to warming up in CA. - but, we had enjoyable time. We came back with severe colds, most likely picked up from grandchildren or from being packed into plane with >100 people for trip home, I felt so weak I feared I had bacterial pneumonia again. Dr. said it was only a cold that was exacerbated by impaired immune system. Fortunately, I didn't come down with any health impairments in Mongolia except for couple days of diarrhea, but I did take it easy and avoided more active fishing that might result in stumbles and falls, or getting over-tired. Better to make such trips when 25 rather than 75 if one could afford them but better late than never. I became fascinated with "throat singing". I learned that blind American blues singer, Paul Pena, was obsessed with throat singing and went to the Tura Province of Russia (just north of where we were in Mongolia) to learn it first hand. A documentary film was made of his pilgrimage - "Ehengis Blues" on DVP. A renowned Turan throat singer then came to America and performed

with the Belz Fleck group (the Flecktones). Our son-in-law was part of this group (playing jazz bassoon) and we have DVD of this weird musical performance.

The Pechora R. is the easternmost distribution of S. salar, except for sporadic reports to Kara R. - but not in Ob. S. trutta didn't make it to Pechora, but in White Sea drongers just to west. The distribution of Salmo and Huchen is essentially mutually exclusive in Arctic basins - some overlap possible in Pechora. Huchen and trutta are in Danube basin, but the huchen are mainly segregated by habitat - large main river channels vs. tributaries and headwaters. There is really no basis for recognition of even subspp. - H. h. huchen and H. h. taimen - Taimen got into Black-Caspian basins in late glacial-post glacial times from transfer from Pechora - Persisted in Danube and also Kama R. of Volga basin - .

Enclosed is item about Doane Crk. from Ed Henke. With such a wet winter all through southern CA, there should be ample opportunity for steelhead to make it up the creeks this year.

Regards,

Bob

Mr. Bob Wilson, Wilson & Scribner
The Wilson Bldg. Building
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Sacramento, CA 95814

(2 copies)

①

Dear Mr. Wilson:

In regards to AB 1098 and other matters concerning the management of trout fisheries, it should be clearly understood that my views and statements are strictly my own; they do not represent, nor am I a spokesman for, any organization. I do seek promote the professionalism in fisheries biology and I do promote wild trout management.

I believe my position favoring the "flexibility" offered by AB 1098 is consistent with my record. If a strict ^{annual} requirement on the quantity of "catch-and-release" waters is maintained, I foresee that these regulations will be hastily applied on the wrong waters creating a backlash in public opinion. I would have to disagree with your "by and large" assessment of anglers as "knowledgeable and far sighted people". My assessment of the "by and large" angling public is based on ^{my review of} an ^{2nd profile} economic survey ^{current!} of anglers, being conducted by a C.S.U. graduate student.

I can tell you that the bulk of license holders ~~as a~~ cannot accurately be characterized as ^{This silent majority} knowledgeable for sighted or enlightened. They can be easily swayed to one position or

(V) another by favorable or unfavorable publicity. A backlash against catch-and-release regulations could be readily stimulated, if favorable results are not obtained from waters ^{where} ~~with~~ these regulations have been applied.

Enclosed is a copy of a letter I wrote to Gary Widman pointing out that I believe a compromise solution for AB1098 ^{can} be easily attained if personalities ^{animosities} and organizations ^{1-belts} can be temporarily ignored. I believe your 1979 SB 192 was needed legislation, as was the bill prohibiting the stocking of non-native steelhead. The California Department of Fish and Game, similar to any large bureaucracy, can become fixed on the status quo and resist progressive management trends. In such situations, management by legislative fiat becomes justified. I believe, however, that we should now give the personnel in the department an opportunity to demonstrate their professionalism and good faith in carrying out the spirit of the law with the flexibility allowed for in AB1098. A compromise solution should include a written commitment of intent on the department's behalf which could include specific goals and time schedules that could be annually evaluated. What does John Dienstadt, C.F.G., say "catch-and-release"

(4) position on AB 1098 because I believe it is based on evidence, understanding and good judgement.

I will enclose a copy of a letter I wrote to George Griffith (founder of TU) last summer. It relates to my testimony against an ill-founded position of a powerful group of fly fishers who influenced ~~the~~ Michigan Natural Resource Commissioners to ignore and ~~overrule~~ the factual evidence developed over many years of study by their ^{staff} professional biologists. To me, the situation was analogous to a hospital board of directors overruling the advice of ^{their} medical ~~past~~ doctors on the treatment of disease. My testimony (which ~~the~~ resulted in an injunction against a no-kill regulation) caused considerable animosity towards me, but I would not hesitate to do it again.

Finally, I would agree that the section of AB 1098 requiring DFG to use "its own initiatives" ^{and} not "duplicately" off the initiatives of others, is curious. This statement needs clarification. I would like to know why it was inserted?

Thank you for taking the time to explain your point of view. I look forward to an amicable resolution ^{for} AB 1098.

Sincerely,

(B)
biologist have to say on the matter? Does he request additional manpower and financial assistance? Does he have suggestions for a compromise solution?

I have more than a cursory interest and understanding of special regulations and of their use and misuse in fisheries management. Currently, I am supervising a graduate student, who is also a Colorado Division of Wildlife biologist, working on a research project to develop a state-of-the-art computer model to better predict what waters (what trout populations) would maximally benefit from reduced angler kill and to fine-tune regulations already in place.

I am now reviewing the two semiannual reports from this research project. I can assure you that special regulations fisheries, if done right, is not a simple matter.

During the past several years I have supplied California Trout with technical documents when they've been requested for developing a position on a subject such as AB 1078. I have found that Cal Trout is the only organization with people who read, understand and effectively use the information I supply. Thus, I admit based on performance I am prejudiced to favor the Cal Trout.

BOB WILSON, ESQ.*
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July 9, 1987

Professor Robert J. Behnke
Department of Fishery and Wildlife Biology
COLORADO STATE UNIVERSITY
Fort Collins, Colorado 80523

Dear Professor Behnke:

Thank you for your letter of June 24th. I hope that you will objectively analyze this letter and hopefully reevaluate your position in support of AB 1098.

The crux of the problem is that the Department of Fish & Game has failed to assign the personnel necessary to carry out the Legislative mandate that it identify 25 miles per year of reduced limit trout streams. California has approximately 20,000 miles of trout streams, of which only 168 miles are in a reduced limit status (two fish or less pursuant to my SB 192). I believe, and I am sure you agree, that many miles of the remaining approximately 19,800 miles of trout streams would benefit biologically by reducing the number of trout killed.

The problem, as I see it, is finding those streams or stream segments to satisfy the 25 miles requirement of my bill. It is clear that these streams cannot be found if only one or two biologists, which is now the case, are assigned by the Department of Fish and Game to work on the program. Now Fish and Game, because they do not desire to assign the biologists necessary to make sound recommendations, seeks to cut the 25 mile requirement completely out of the current law through the mechanism of AB 1098, in essence, giving the Department complete discretion.

In support of AB 1098, you state in your letter to me of July 2, 1987, that you are fearful "that these regulations will be hastily applied on the wrong waters creating a backlash in public opinion". This statement may be true if Fish and Game only assigns one or two biologists the responsibility of coming up with 25 miles of catch-and-release waters. Your statement would not be

Professor Robert J. Behnke
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July 9, 1987

true if Fish and Game decided to assign the necessary manpower to implement SB 192. In other words, Fish and Game's noncompliance with the Legislature's mandate has in essence dictated your position in favor of AB 1098.

I believe that good judgment and logic dictate that all conservation groups and biologists band together and make a concerted effort to persuade Fish and Game to assign the necessary biologists in order to comply with SB 192. It would be most helpful and appreciated if you and other good people would join us in a united front in following through on our earlier commitment as expressed by SB 192.

Another area that concerns me is your apparent bias against Trout Unlimited. Your letter of July 2, 1987, to me certainly has an anti Trout Unlimited tone, especially your comment, and I quote, "I have found that Cal Trout is the only organization with people who read, understand and effectively use the information I supply". The obvious implication is that Trout Unlimited is an organization with people who do not read and understand scientific information. Your anti Trout Unlimited bias is ironic in that Trout Unlimited, not Cal Trout, publishes your articles in every issue of Trout Magazine.

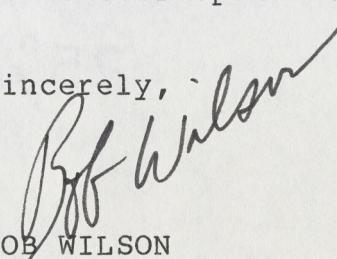
Again, in your letter of April 20, 1987, addressed to Dick May, you imply that Trout Unlimited did not use reflective thought and evaluation coming to its position in opposition to AB 1098. I quote from your letter, "Cal Trout's position on this matter is based on critical and reflective judgment (perhaps influenced to some extent by my publications and correspondence). Unfortunately, I do not believe Trout Unlimited's backing of reauthorization of the present law is based on a similar degree of thought and evaluation".

As a National Director of Trout Unlimited, I resent your anti Trout Unlimited bias as expressed in your letters of April 20th and July 2, 1987. Further, I question if you objectively evaluated the question when you supported AB 1098. Perhaps your own correspondence answers this question best when you state in your letter to me of July 2, 1987, "Thus, I admit, based on past performance, that I am prejudiced to favor the Cal Trout position on AB 1098 because I believe it is based on evidence, understanding and good judgment". The whole essence of being a scientist is to view matters objectively and not come to a conclusion based on prejudice.

Professor Robert J. Behnke
Page 3
July 9, 1987

Finally, Professor, my tone in this letter is contrary to how I normally address matters. However, my tone responds to your manner of dressing down Trout Unlimited displayed in your recent correspondence.

Sincerely,


BOB WILSON

BW:jt

Enclosures: Letter of April 20, 1987 from Professor Behnke to Dick May
Letter of July 2, 1987 from Professor Behnke to Bob Wilson
Letter of June 24, 1987 from Bob Wilson to Professor Behnke

cc: Mr. Robert Herbst, Executive Director, Trout Unlimited
Mr. Urbie Nash, Director, Trout Unlimited
Mr. Allen Pienkowski, Director, Trout Unlimited
Mr. Gary Widman, Director, Trout Unlimited

Department of Fishery and
Wildlife Biology
Fort Collins, Colorado 80523

July 2, 1987

Mr. Bob Wilson, Wilson & Scribner
The Wilson Building
1725 Capitol Avenue
Sacramento, CA 95814

Dear Mr. Wilson:

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Enclosed is a copy of a letter I wrote to Gary Widman pointing out that I believe a compromise solution for AB 1098 can be easily attained if personalities and organizational labels can be temporarily ignored. I believe your 1979 SB 192 was needed legislation, as was the bill prohibiting the stocking of non-native steelhead. The California Department of Fish and Game, similar to any large bureaucracy, can become fixed on the status quo and resist progressive management trends. In such situations, management by legislative fiat becomes justified. I believe, however, that we should now give the personnel in the department an opportunity to demonstrate their professionalism and good faith in carrying out the spirit of the law with the flexibility allowed for in AB 1098. A compromise solution should include a written commitment of intent on the department's behalf which could include specific goals and time schedules that could be annually evaluated. What does John Dienstadt, CF&G's only "catch-and-release" biologist, have to say on the matter? Does he request additional manpower and financial assistance? Does he have suggestions for a compromise solution?

Mr. Bob Wilson
July 2, 1987
Page 2

I have more than a cursory interest and understanding of special regulations and of their use and misuse in fisheries management. Currently, I am supervising a graduate student, who is also a Colorado Division of Wildlife biologist, working on a research project to develop a state-of-the-art computer model to better predict what waters (what trout populations) would maximally benefit from reduced angler kill and to fine-tune regulations already in place. I am now reviewing two semiannual reports from this research project. I can assure you that a special regulations fisheries, if done right, is not a simple matter.

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Finally, I would agree that the section of AB 1098 requiring DFG to use "its own initiatives" and not duplicate the initiatives of others, is curious. This statement needs clarification. I would like to know why it was inserted?

Thank you for taking the time to explain your point of view. I look forward to an amicable for AB 1098.

(resolution)

Sincerely,

R. Behnke

Robert J. Behnke
Professor, Fishery Biology

RJB/gm

enclosures

Colorado
State
University

Department of Fishery and
Wildlife Biology
Fort Collins, Colorado 80523

20 April 1987

Mr. Richard May
California Trout
870 Market St. #859
San Francisco, CA 94102-2903

APR 28 1987

Dear Dick:

You may consider this letter as my official endorsement of Cal Trout's backing of AB1098, a bill that will moderate and place special regulation fisheries in California on a more practical and defensible basis. My support of your position is based on my long-held belief that special regulations are basic to wild trout management, but they must be applied selectively. Special regulations should have the broadest based support possible. In this respect, they should only be applied to waters where they are most likely to achieve a goal of maintaining significantly greater numbers of larger, older trout in a population. To do this, data on species, fishing pressure, growth rate and age structure is necessary. Such necessary data are not likely to be available when a predetermined amount of waters are designated for special regulations on an annual basis. In such a situation, special regulations will be applied on the wrong waters and this will create a backlash among the bulk of California anglers. This will be especially likely if there is dissatisfaction with the law among personnel of the California Department of Fish and Game. They can hasten the demise of the law by seeing to it that the law will be perceived as unpopular and wrong, simply by applying special regulations to the wrong waters.

Cal Trout's position on this matter is based on critical and reflective judgment (perhaps influenced to some extent by my publications and correspondence). Unfortunately, I do not believe Trout Unlimited's backing of reauthorization of the present law is based on a similar degree of thought and evaluation. As a Scientific Advisor to Trout Unlimited, it disturbed me when I had to take a stance against T. U. backing of a no-kill regulation on Michigan's Au Sable River (where the biological data showed that no-kill regulations clearly would not work). I recalled the words of T. U.'s first president, who wrote in the first issue of "Trout" (1959),: "One of the most important objectives is to develop programs and recommendations based on the very best information and thinking available. In all matters of trout management we want to know that we are substantially correct, both morally and biologically." The question that should be posed to California T. U. members, is: what did they do to seek the "very best information and thinking" before arriving at their current position.

Sincerely,

Bob

Robert J. Behnke
Professor, Fishery Biology

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June 24, 1987

Professor Robert J. Behnke
COLORADO STATE UNIVERSITY
Department of Fishery & Wildlife Biology
Fort Collins, Colorado 80523

Dear Professor Behnke:

I hope you will seriously consider this letter and change your position from one in support of AB 1098 to one of opposing AB 1098.

As you may know, I served in the California Senate and was the author in 1979 of SB 192 - the Trout and Steelhead Conservation and Management Planning Act of 1979 (hereinafter referred to as the Act).

When SB 192 was passed, it was hailed in the national fishing press as a model that other states should follow. Why your organization should now go back to the Legislature and ask it to undo the good work that I did for fish and fishing in 1979 is not clear to me.

AB 1098 would gut SB 192 and make it meaningless! Let me explain by first examining the legal requirements of the Act, next by answering some of the criticism of the Act, and finally, by pointing out how AB 1098 would be a giant step backward.

Although the Act is often called a "catch and release" law, that label is too narrow. The Act can be satisfied by Department of Fish and Game (DFG) proposing catch-and-release, or one or two trout per day rules. (See Sec. 1727.) It is therefore more accurately described as a "restricted catch" or "limited catch" law.

It is sometimes called a "trout law". It is that and more, since it covers steelhead as well as trout. (Sec. 1728.)

Professor Robert J. Behnke

Page 2

June 24, 1987

It is sometimes characterized as a law designed to protect the "elite" trout streams of the state. But it was primarily designed to be a tool for restoring abused streams and over-fished fisheries. The Act's first listed priority is those streams and lakes "where public use is heaviest" and the fourth is those "where the quality of the fishery is threatened or endangered". (Sec. 1726.4)

The first statutory purpose is to establish and maintain trout stocks "in suitable waters...which are readily accessible to the general public". So much for the "protect the elite" charge.

The Act as it stands, unamended by AB 1098, is well designed to help those overused streams and fisheries most in need of help.

The Act now requires the DFG to propose at least 25 stream miles and one lake each year for restricted catch management. (Section 1717b). If the fish population were to rebound to the point where there were too many fish, the lucky stream could be removed from the restricted catch management regime. (Sec. 1727c).

The law permits minimum and maximum size limits to be used as an additional management tool when needed (Sec. 1727a).

Through the original Act, the Legislature directed the DFG to do the studies necessary to establish these better, more restrictive management regimes for California trout and steelhead. It may be that the DFG does not wish to commit the staffing necessary to meet the SB 192 mandate. If that is true, it could raise questions of enforcement of the Act in the Legislature and in the courts. But I fail to see why fishing or conservation organizations should support that position, which is contrary to the requirement of the Act. We should look at the actions taken by everyone in the chain of command to see that they satisfy their responsibilities under the law. And where necessary, the fishing organizations should take appropriate action, and should encourage our excellent state fishery professionals from the outside.

California, by the turn of the century is expected to have a population in excess of 40 million! Increased population coupled with a shorter work week will put enormous pressure on California's streams. California trout and steelhead desperately need the sanctuary that the addition of 25 miles of reduced limits each year brings. AB 1098 might not "scuttle" the 25 mile requirement, but it would come very close. AB 1098 would completely eliminate the requirement for proposing 25 miles per year and instead require that "a stream" or a "stream segment" with no minimum length be

recommended to the Commission. Further, AB 1098 would change the one lake per year requirement to one lake every two years. The effect of the bill then, would be to return to the pre-Act days, when DFG had the discretion to propose as much or as little stream mileage for restricted catch management as the Department might desire. Of course, DFG had that power even before SB 192 was passed in 1979, and would have that same discretion if AB 1098 were to amend SB 192, or if the Act were repealed and wiped off the books completely. AB 1098 would cut out the Legislature's explicit minimum requirement to give restricted catch management a priority in DFG studies and actions for 25 miles of stream each year. In short, there is no way that AB 1098 can benefit the fish or the fishing in California.

Proponents of AB 1098 say it would give "flexibility" to the DFG. It certainly would do that, including the flexibility to do nothing if the DFG so chose. This is not intended to suggest that the Department would in fact propose no new stream mileage in any given year, but why would the Department ask for it if they really didn't want that much flexibility?

Some have disingenuously suggested that enactment of AB 1098 guarantees continuation of the effort for seven more years. But without that bill, and others like it, the Act could go on, unamended, indefinitely.

It has been suggested that the DFG needs more studies to implement the program established by the Act. But the DFG now assigns only one (and sometimes two) staff to the program each year. But rather than changing the law to accommodate the production of one man, would it not be better to urge DFG to assign many more people, 5, 10 or 15 (out of a department of 1300 people) so that it can responsibly and lawfully carry out its explicit legislative priority and mandate?

For reasons that are unclear (at best), AB 1098 would require DFG to satisfy the Act "from its own initiatives, and shall not duplicate initiatives made by other public agencies, private organizations or individual citizens". Why require that data developed by others and at the expense of others, (such as universities or conservation groups) be banned? Is there something about "initiatives" proposed by someone outside the Department that justifies a prohibition on their use? This is a curious provision and again, it is not one that would benefit the fish, the streams (or the treasury) of the state.

Professor Robert J. Behnke
Page 4
June 24, 1987

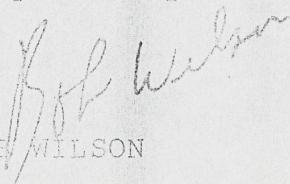
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In short, enactment of AB 1098 would necessarily deprive fish and fishing of protection they would receive under the present law, and would be a giant step backward in California fish management and fish conservation.

I hope that you will reverse your position and oppose AB 1098. We should all be working together to secure more funding to implement my Act rather than supporting efforts to nullify it.

I will be more than happy to discuss this issue with you by telephone. My home number is (916) 456-1974; Fall River number (916) 336-6885; and my Montana number is ((406) 848-7759). I hope to hear from you at your earliest convenience.

Respectfully,


BOB WILSON

BW/jt

BOB WILSON, ESQ.*
JERRY SCRIBNER, ESQ.
BROOKS ELLISON, ESQ.

*A PROFESSIONAL LAW CORPORATION

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FAIRFIELD, CA 94533
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PLEASE DIRECT ALL
CORRESPONDENCE TO
SACRAMENTO OFFICE

June 24, 1987

Professor Robert J. Behnke
COLORADO STATE UNIVERSITY
Department of Fishery & Wildlife Biology
Fort Collins, Colorado 80523

Dear Professor Behnke:

I hope you will seriously consider this letter and change your position from one in support of AB 1098 to one of opposing AB 1098.

As you may know, I served in the California Senate and was the author in 1979 of SB 192 - the Trout and Steelhead Conservation and Management Planning Act of 1979 (hereinafter referred to as the Act).

When SB 192 was passed, it was hailed in the national fishing press as a model that other states should follow. Why your organization should now go back to the Legislature and ask it to undo the good work that I did for fish and fishing in 1979 is not clear to me.

AB 1098 would gut SB 192 and make it meaningless! Let me explain by first examining the legal requirements of the Act, next by answering some of the criticism of the Act, and finally, by pointing out how AB 1098 would be a giant step backward.

Although the Act is often called a "catch and release" law, that label is too narrow. The Act can be satisfied by Department of Fish and Game (DFG) proposing catch-and-release, or one or two trout per day rules. (See Sec. 1727.) It is therefore more accurately described as a "restricted catch" or "limited catch" law.

It is sometimes called a "trout law". It is that and more, since it covers steelhead as well as trout. (Sec. 1728.)

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It is sometimes characterized as a law designed to protect the "elite" trout streams of the state. But it was primarily designed to be a tool for restoring abused streams and over-fished fisheries. The Act's first listed priority is those streams and lakes "where public use is heaviest" and the fourth is those "where the quality of the fishery is threatened or endangered". (Sec. 1726.4)

The first statutory purpose is to establish and maintain trout stocks "in suitable waters...which are readily accessible to the general public". So much for the "protect the elite" charge.

The Act as it stands, unamended by AB 1098, is well designed to help those overused streams and fisheries most in need of help.

The Act now requires the DFG to propose at least 25 stream miles and one lake each year for restricted catch management. (Section 1717b). If the fish population were to rebound to the point where there were too many fish, the lucky stream could be removed from the restricted catch management regime. (Sec. 1727c).

The law permits minimum and maximum size limits to be used as an additional management tool when needed (Sec. 1727a).

Through the original Act, the Legislature directed the DFG to do the studies necessary to establish these better, more restrictive management regimes for California trout and steelhead. It may be that the DFG does not wish to commit the staffing necessary to meet the SB 192 mandate. If that is true, it could raise questions of enforcement of the Act in the Legislature and in the courts. But I fail to see why fishing or conservation organizations should support that position, which is contrary to the requirement of the Act. We should look at the actions taken by everyone in the chain of command to see that they satisfy their responsibilities under the law. And where necessary, the fishing organizations should take appropriate action, and should encourage our excellent state fishery professionals from the outside.

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Professor Robert J. Behnke
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June 24, 1987

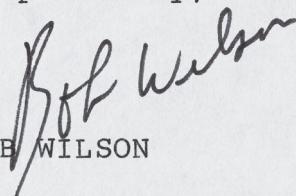
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Respectfully,


BOB WILSON

BW/jt

OFFICE MEMO

TO:

II

Date

FROM: — I was hoping to catch the damsel fly summer phenomenon - when the damsels reach critical density, it triggers feeding frenzy and spectacular fishing. The SUBJECT: damsels, however, only come out in sunny weather, and REMARKS: it was mostly cloudy & rainy. Also the effects of recent heat wave were apparent -- surface temp. 68° after rain - and at > 9000ft. el. So trout were lethargic, I did land one greenback and four rainbows, largest 20".

Hope you have found the right doctor and all goes well with operation. It's an ordeal to contemplate and a relief when it's over and done. There's lots of health problems interfering with enjoying one's old age. Bob Hunt from Wisconsin wrote that his visit to his daughter in Fort Collins (and our day of angling) is delayed so he can have the radioactive implants made in his prostate. Hopefully, he can make it before I go to Nevada (ca. Aug. 10-17) for annual TU meeting in Reno. I'm

Thinking of going to Grand Junction and drive to Nev. with TU member. We would visit some "historical" sites where I found native cutthroat many years ago. I believe that now that I'm officially retired, I can take a week off and enjoy myself -- but I know if I do, I'll be very busy when I return. The Bonnick gold co. put up some money that would cover my expenses. Now I must decide if I fly and be back in 2-3 days, or take a more leisurely 7-8 days.

Regards,
Bob

Just as I was putting this in mailbox I received your connection on your daughter's trip - As you'll note, I raised questions how primary two fisher such as pike and grayling, could cross marine salinity barrier to get to Kodiak Is.

JUL 27 198

Department of Fishery and
Wildlife Biology

Fort Collins, Colorado 80523-1474

(970) 491-5020

FAX: (970) 491-5091

Dear John:

I came across the letter (enclosed) about the two forms of Rainbow Trout in Lake Taupo, New Zealand chinook salmon, introduced about 25 yrs. after the rainbows, have developed into river-specific life history forms with different gene frequencies according to Univ. Wash. geneticist Tom Quinn who has studied them with a New Zealand fellow named Uruwin. Herring allows different populations to evolve under different selection.

The early (1870s) Calif. Fish Comm. reports believed that cutthroat trout from Pyramid went all the way up the Truckee and through Tahoe to spawn, but I doubt there was much mixing between Tahoe and Pyramid fish. I assume the larger Pyramid fish spawned below Tahoe and in tributaries such as the Little Truckee. The largest recorded Tahoe trout was 29 lb. and sent to Gen. Grant when he was president. A 31 pounder was reported but is less well documented. A 1932 issue of Sierra Sportsman has an article on fishing in Pyramid Lake in 1920s. A photo shows two anglers holding up 11 trout, weighing 239 lbs (\bar{x} 22lb.), largest of which is claimed to be 39lb.-- caught in two hours one morning near the Pyramid. Nothing comparable was ever claimed for Tahoe.

Dame Juliana, 1496 Boke of ST, Albany, has advice for you-- don't let contentious people or issuers (such as the world fly fishing championship) get to you-- avoid them, keep busy, but avoid hard labor, keep a merry heart, etc.,-- That's the way I translate her early English. Whit Forsberg, the TU team, seems to be a nice fellow. His father was Peter Forsberg, for many years the editor of the N.Y.-ST. Conservationist magazine. The present genus of LMSM bars

is Micropterus (Huso the older name). The Florida LM is a "good" subsp. in that it occupies a well-defined geographic range and has clear genetic differences from northern subsp., which includes, besides morphological and size differences, a distinct gene locus for an enzyme not found in the northern subsp. They do freely hybridize, so unless pure Florida bass are continuously stocked (in Calif. & Texas lakes), they hybridize and backcross with each generation diluting the growth potential through time. The Al McClane 1968 article on "bass mysteries" typifies the confusion over nature (genetic effects) vs. nurture (environmental effects). In 1930s & 40s several studies showed no, smaller, vent., etc. could be changed by Temp. during incubation. This led to popular belief that differences in such traits as maximum size was not genetically, but environmentally determined (actually, some of both). Alm in Sweden (1945) published paper showing no difference in growth rate between offspring of largest brown trout (Göllspings race of L. Vänern) and those from small parents from small stream when both reared in hatchery under identical conditions -- he wrongly concluded that growth & max. size wasn't under genetic control. The true test would have been to stock both forms into L. Vänern and see what happened. The Göllsping brown is highly predaceous and doesn't spawn for first time until it's 6-7 yrs. old and 15-20+ lbs. Also L. Vänern has more "normal" brown trout that spawn in R. Klar. Landlocked At. salmon in Vänern similar - largest spawn. in Göllsping R., smaller size salmon in Klar R. - Several months ago a Göllsping-salmon stocked in L. Vättern (where ~~Salmon~~ not native) weighing > 40 lbs. was caught. How was your daughter's fishing trip to Kodiak? Pike are not native to Kodiak and I've never heard of them being introduced. Grayling (also restricted to few dispersal) is only native to islands once part of Bering Land Bridge - on direct fw routes. First "el nino" frost kills garden in June, then "global warming" heat wave arrived couple weeks ago (recall 127° in Death Valley), now 'monsoon' season cooled things off somewhat. I went fishing last Thur. at our greenback lake (but mostly rainbows) —

193 FRANKLIN ROAD
FOSTER (SCITUATE), R.I. 02825

25 Aug 1997

Dear Dr. Belnke,

Given my biological background, I have followed your articles in Trout with great interest, including the 1997 summer issue.

Given the homogenization of genetically dissimilar trout populations with various negative effects, I wish to bring to your attention a possible 'good news' situation.

Two friends of mine, Fran Sargent of Rhode Island and John Williamson of New Zealand, have noted the consistent presence of at least 2 morphologically separate rainbow populations in Lake Taupo New Zealand.

Specifically, there are two spawning rivers less than $\frac{1}{2}$ mile apart. One has short, thick, dark fish, the other long thin bright fish.

given the approximately 100 year history of this fishery, it occurred to me that that one of several possible explanations, in this biologically brief period, has been an adaptive genetic natural selection process

If true, in addition to the homogenization issues, this may have implications for the stocking of New England rivers with non-native trout/salmon.

Lastly, I continue to look forward to your articles.

Thanks,

Larry Suppi

Colorado
State
University

II:19:97

Department of Fishery and
Wildlife Biology

Fort Collins, Colorado 80523-1474

(970) 491-5020

FAX: (970) 491-5091

Dear John:

I received a reply from Catherine Carlson. Surprisingly friendly, almost "warm", although she didn't budge from her stand on New England salmon. Enclosed is my letter to her, Abte, based on her nonconfrontational tone, I address her as Catherine. See letter from Bob Kendall (editor for Ann. Fish. Soc.) who characterizes her as "pugnacious". We'll see how she responds to my comments and goonies. I would presume that 'pugnacious', 'pig-headed' people will never admit mistakes. She's dug herself in too deeply for graceful retreat.

Re. predatory birds eating salmonid fishes in Europe, see article about European anglers demonstrating at EU headquarters over laws protecting cormorants. I didn't realize that the European Union passes environmental laws for animal protection that apply to all member countries. Similar to fed. law - marine mammal dep., migratory bird act - that supersedes state control.

Outcries for control of seals, minkers, and cormorants can always be expected when a species is in low abundance, such as A. salmon and sea trout.

presently, Scapegoating is a human tendency.

Reference in my letter to Carlson about trip to Seattle, concerns formalizing scientific study of Kamchatkan trout with Moscow Univ. If sufficient funds raised by selling trips to Kamchatka, I should get to go this year. It would be about a four week trip in Sept. I would have to schedule guest

lecturers for my conservation biology class. It should be a great experience. I'm assuming my health will hold up. Have to make this assumption, otherwise I couldn't plan ahead for such opportunities.

I was at radiation center this morning for 6 mo. post radiation check. Not much to it, a digital rectal exam to check for tumors etc. - All seemed O.K.

Regards,
Bob



January 22, 1996

Dr. Robert J. Behnke
Department of Fishery and Wildlife Biology
Colorado State University
Fort Collins, Colorado 80523

Dear Bob,

Thanks for the copy of your correspondence with Catherine Carlson. She's a pugnacious person who apparently has a self-fulfilling persecution attitude. The positive side is that she's finally (I infer) published some of her rambling dissertation instead of sniping from a distance at everyone she considers to be "poaching" on her field. The negative side is her reliance on me as an authority on molecular clocks. You sidled around that one very nicely, for which I am grateful.

Without knowing more than what little I've read, it makes sense to me both that the trans-Atlantic distribution of Atlantic salmon should have a pre-Wisconsinan origin (maybe very "pre") and that the species' latitudinal distribution should shift with climatic vicissitudes. Carlson is not alone in thinking that European colonists arrived as Atlantic salmon were starting to retreat from a southward penetration induced by the Little Ice Age (though she's not beloved even by people who agree with her). The evidence for Holocene salmon distributions, however, is tantalizing at best. Half the evidence is negative (absence of bones during certain periods, shortage of salmon-related words in aboriginal languages) and half is indirect (palynological climatic reconstructions in relation to the species' supposed thermal requirements).

Industrialization and exploitation surely have decimated Atlantic salmon stocks in North America over the past 250 years. It seems reasonable, though, to examine the possibility that southern New England now is thermally marginal for the species and that the region will become more inhospitable if global warming continues. This issue (thermal tolerance) ought to be amenable to good science, but as far as I know, the relevant science has not been very stellar. Given the huge amount of restoration work needed in this country, it would be a shame to spend hundreds of millions of dollars on a project doomed to failure by uncontrollable forces.

This is an interesting and useful debate. It's a shame Carlson keeps polarizing it.

Best wishes,

A handwritten signature in cursive script, appearing to read 'Bob'.

Robert L. Kendall
Director of Publications
Voice: 301 897-8616, ext 224
E-mail: rkendall@fisheries.org

Colorado State University

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Fort Collins, Colorado 80523-1474
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FAX (970) 491-5091

February 18, 1997

Dr. Catherine Carlson
The University College of the Cariboo
Kamloops, B.C. V2C 5N3
Canada

Dear Catherine:

Thank you for your letter of January 31. Enclosed is a copy of a draft prepared for the Atlantic salmon workshop next month. You can note how, by improper use of extrapolation and induction, an estimate of New England salmon abundance can be made that comes close to that of Rostlund's gross overestimate.

Evidently, questions on cost-benefits of New England salmon restoration have been effectively propagated. Also, enclosed are pages from Fisheries recounting values people are "willing to pay" to save, protect, or restore rare fishes. Surprisingly, Atlantic salmon, the king of fishes, fares no better than ordinary minnows. The reason for this is that this evaluation was based on 1,000 residents of Massachusetts resulting in numerous "zero protest votes" (I wouldn't give a cent to continue to pour down that rathole, might be a typical protest vote). It is surprising that so many of the general public would be informed on such an issue. I suspect your opinions and those of others raising questions on restoration were picked up by the media.

We both agree that an inordinate amount of money has been spent on salmon restoration in relation to the benefits. We would disagree that climatic change alone determines lack of success. Based on Pacific salmon and steelhead studies, it is well-documented that a race native to a certain river has much greater (10 fold or more) survival than fish of the same species, but native to a different river when both are stocked together. See citation to Mayama 1989, in my draft. The point is that New England salmon restoration has been based on non-native races. Wherever eggs could be obtained, they were hatched and stocked. Numerous salmon from Iceland were stocked in the Connecticut River, where I doubt they would have much chance to survive and return as adults. The fact is, my comments on page 6 concerning the significance of hereditary-based adaptations,^{etc} was not understood or appreciated by the people involved in New England salmon restoration. Although I am not personally familiar with the administrative structure of New England salmon restoration, I believe it would be a good bet that any program representing a diversity of state and federal agencies, each pursuing autonomy or doing their own thing, is a recipe for failure. In addition, most of the rivers of New England and their watersheds have been unalterably changed.

Did you present estimates on prehistoric or historic changes in water temperatures in freshwaters and marine waters in your dissertation? A point you may not be aware of is that the Atlantic salmon is one of the most thermally tolerant salmonid species (see enclosed pages from fisheries text). They are much more tolerant of high temperatures than brook trout yet brook trout persisted throughout New England. In regards to sea temperatures, the St. John's River enters the Gulf of Maine (same latitude as Maine rivers) and has consistently supported large runs of salmon in the nineteenth and twentieth centuries. In the late nineteenth century, Atlantic salmon were stocked in the Delaware River and adult returns were documented.

I should have pointed out that Kendall's early references to dams on New England rivers were based largely on reports of C. G. Atkins and E. M. Stilwell. The primary source is the first report of the U.S. Fish Commission for 1872-73. The earliest dam blocking salmon is given as 1680. By 1870, virtually every salmon river had dams; many runs were completely eliminated by then.

My comments on the durability of otoliths is based on sediment cores, both marine and from lakes, where otoliths are retrieved to study fish species composition (and sometimes growth rate) over different time periods.

Many thanks for reprint documenting salmon in Kamloops Lake 18,000 years ago, several thousand years earlier than believed possible by contemporary thinking on glacial dating. According to my references, the period from 18,000 to 23,000 years BP was the coldest of the cold. This information is important for dating dispersal of rainbow and cutthroat trout. I note Mark Wilson has a paper in the same volume on Eocene fishes. Anything new on Eosalmo?

Your letter arrived on February 11, just after my return from Seattle. I was meeting and signing agreements with people from Moscow University in regards to studies on Kamchatkan trout (to be funded by anglers allowed to fish for steelhead on Kamchatka). I was at the Seattle Sportsman's show (we had a booth on Kamchatka), Saturday, February 8. If I had known, I would have looked up your brother and introduced myself.

One last question. It is clear from Dunfield's work (also Kendall) that Native Americans actively sought salmon in New England, typically using special spears from canoes in the seventeenth and eighteenth centuries (also on tributaries to Lake Ontario). Have you or anyone else examined historical sites where salmon were known to be harvested to look for salmon remains?

Sincerely,

Robert Behnke
Professor of Fishery Biology

①

New England salmon controversy.

Pardon the problem at pagination
continuity-- her letter begins on p. 6 - I'm
technically disadvantaged when at xerox machine.

I don't know how much, if any, will come out
in Trout's letters column, but you can read
our 'dialogue' in entirety - do I come across
as helpful and friendly?

Colorado
State
University

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Wildlife Biology
Fort Collins, Colorado 80523
(970) 491-5020
FAX (970) 491-5091

December 23, 1996

Dr. Catherine Carlson
Department of Social and Environmental Studies
University College of the Cariboo
Kamloops, British Columbia V2C 5N3
CANADA

Dear Dr. Carlson:

I received a copy of your reply to my New England salmon article and was asked to respond. Let us consider my response as dialogue, opening lines of communication to better delineate differences of opinion.

First, I endorse the generation of controversy in such issues as the historical (and prehistorical) abundance of New England salmon regardless of the motives of the provoker. New ideas, new paradigms, and progressive change cannot come about unless conventional wisdom and the status quo are vigorously challenged.

I will avoid the terms science or scientific. The only "scientific" tests of your hypotheses concerns your hypothesis that salmon did not occur in New England before about 1500 A. D. (which would be refuted by documenting archaeological or fossil remains of Salmo salar before this time) and your hypothesis that climatic warming commencing in the late eighteenth century is the cause of New England salmon extinction, not dams and pollution (there are historical records that refute this hypothesis).

When salmon first came to North America and what was their historical abundance are questions for which only indirect evidence can be used and this requires interpretation and professional judgement.

In your paper, "The (in) significance of Atlantic salmon," you state that you analyzed "30,000 fish bones" from prehistoric sites of aboriginal people (and no salmon bones were found). Did you make a concerted effort to find scales and

(9) genetic evidence for stock divergence, "As far as I know, no genetic clock has been properly calibrated for fishes, and all estimates of time since the divergence of populations are speculation."

I have never felt that it is my role (or expertise), as an archaeologist, to evaluate public policy on salmon restoration; but as a citizen of the United States, I can legitimately ask about the way in which public tax dollars are spent to "protect" and "enhance" salmon, including the building of research facilities named after prominent politicians at the expense of other, possibly more real, environmental problems in archaeological and fisheries science. My inter-disciplinary research suggests that salmon restoration is an expensive experiment with little hope of returns in the post-Little Ice Age climate. In attempting to understand why it is that salmon restoration continues in its rut of failed attempts since 1870, I have come to understand the social role of sportsfishing and the status of the "aristocratic salmon". That class and aristocratic sportsfishing still has everything to do with it is evident in Mr. Behnke's final comment that states that, "For a connoisseur of the arts [read 'noble sportsfishermen'], such comparison valuation [between wild and hatchery reared salmon] would be simple: an original Van Gogh compared to a mass-produced facsimile. Others, such as a commercial fisherman [read 'the working class'], however, might have a very different value system." Don't get me wrong, however - I'm not against sportsfishing. My grandparents were avid salmon sportsfishers; I learned to tie flies at the age of twelve; and my brother, one of the best steelhead fishermen in B.C., runs a sports salmon fishing business where I too have experienced the sing of the reel. It's the reinvention of Nature that I find problematic.

Catherine Carlson, Ph.D.
Archaeology Program Director,
Dept. of Social and Environmental Studies,
University College of the Cariboo,
Kamloops, British Columbia V2C 5N3

Tel: 604-828-5376 Fax: 604-371-5510 email: ccarlson@cariboo.bc.ca

(2)

Dr. Catherine Carlson

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otoliths? Typically, otoliths are the most durable bones in a fish, often the only remnants left after thousands of years. Sifting for otoliths with fine mesh screening is time consuming and often ignored in archaeological studies. I assume you have read a 1993 paper by Peteet, et al. published in Quaternary Science Reviews, vol. 12, pp. 597-612, that mentions fossil scales from New Jersey that match the scales of S. salar. This paper does not illustrate these reputed salmon scales, but I received further information and a photograph (enclosed is xerox of photo). One scale was taken from a deposit dated to 11,500 years ago. The other is dated at 9,000 years. These dates approximate the retreat of the glacier front from this area (the edge of a southern or Atlantic glacial refugium for fishes). The scale is far from perfect and as an archaeologist with a specialty in fish remains, I assume you are more knowledgeable in scale identification than I am; but, do you know of any family of North American freshwater fishes except Salmonidae that lack radii or any form of sculpturing on their scales? If these fossil scales from New Jersey are from a salmonid fish, the only possible species would be brook trout or Atlantic salmon. The scale in the photo is definitely not from a brook trout.

Concerning your hypothesis that climatic change doomed New England salmon to extinction with or without dams and pollution, we can assume from your line of reasoning that during the period from about 1800 to about 1900, New England salmon were rapidly declining toward extinction in all rivers with and without dams. You cited 29 references in your paper but you omitted the best documented historical account of New England salmon, that by W. C. Kendall published in 1935 in the Memoirs of the Boston Society of Natural History, vol. 9, no. 1.

Commercial fishing for salmon in the Connecticut River apparently began about 1700. Catches were not recorded, but Kendall cites a price of a penny a pound in Hartford (a glut on the market?). Connecticut River salmon were sold in New York City (local markets saturated?) until dams eliminated all salmon by 1797. Samuel Mitchill (1816, Fishes of New York) mentioned that in former years the New York City market was supplied by Connecticut River salmon, but now they are shipped in on ice from the Kennebec River (Maine).

Kendall cited the Kennebec River as the second most productive New England river (after Penobscot). The Kennebec lost its salmon in 1872 when a dam was constructed at Augusta. The Androscoggin River, Maine, probably the third most productive New England River, also lost its salmon to blockage by a dam about the same time. In 1888, the total commercial salmon catch in Maine was 205,149 pounds. Most of this (75-80%) must have been Penobscot salmon because it and

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several small rivers were the only rivers still maintaining salmon. The Penobscot, by this time, was badly impaired by dams and toxic pollution from pulp mills--it was operating at a much reduced capacity. Amazingly, in 1930, when the Penobscot reached the stage of advanced, almost terminal degradation as a salmon river, it produced a commercial catch of 88,295 pounds.

A reading of Kendalls' history of the loss of salmon in New England rivers after dam construction does not allow for a reasonable conclusion that climate not dams caused the demise of New England salmon. For detailed documentation of the demise of salmon in the Merrimack River associated with dams and pollution, see Stolte (1981) "The Forgotten Salmon of the Merrimack," U.S. Dept. of Interior.

Although I agree with you that New England salmon were never as abundant as implied in folklore, they were probably much more abundant than you seem to believe. Their abundance under pristine conditions based on my very gross estimate is that about 90% of the time (9 years out of 10) total numbers of salmon on spawning runs to the 30 or so New England rivers would have ranged between 100,000 (poor years) to 500,000 (good years). This is a conservative estimate based on area available for egg to smolt production compared to European Rivers where data are available. I would also point out that in 1930, the Miramichi River, Canada, which has a watershed area less than the Penobscot (about 30% smaller and only about half the area of the Connecticut River basin) had a run of about 250,000 salmon. If one examines the latitude of the Miramichi (ca. 47° N. Lat.) with Maine rivers, it will be seen there is not a great difference (ca. 1°). Thus, any inexorable climatic shift operating since the late eighteenth century to doom New England salmon certainly should have been apparent on the Miramichi by 1930. If the Miramichi with only about 10% of the watershed area of all New England salmon rivers could have runs of this magnitude, a maximum run size of 500,000 for all New England rivers before dams, pollution, and watershed degradation, is conservative.

Concerning the timing of the arrival of Atlantic salmon in North America, before or after the last glacial epoch, in lieu of definitive archaeological or fossil evidence, I use indirect evidence of genetic divergence. I cited a consistent difference in chromosome numbers between North American and European salmon to argue for a preglacial timing. You cite a 1989 paper by Davidson, et al. and personal communication with Dr. Davidson that the genetic evidence does not preclude your premise that salmon first came to North America (that is, separated from European salmon) only about 1,000 to 10,000 years ago.

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I would cite a paper by Taggart, et al., 1995, Canadian Journal of Fisheries and Aquatic Sciences, vol. 52, pp. 2305-2311, concerning DNA markers. In this study, 2847 salmon from Spain, France, Ireland, Great Britain, Sweden, Norway, and Iceland were compared with 247 salmon from Maine, Nova Scotia, New Brunswick, and Newfoundland. Virtually complete separation was found between European and North American salmon. "North American" markers (in 96.5% of North American salmon) were not found in any European salmon. The dominant European marker (in 99.9% of European salmon) was found in 3.6% of North American salmon. This degree of separation strongly argues for preglacial separation of European and North American salmon (the "European" marker in North America could be interpreted to indicate some continuing postglacial movement from Europe to North America). It seems logical to assume that the salmon of Norway and Iceland have not mixed with the salmon of Spain for 10,000 years or more, yet they share the identical "European" DNA marker. You should have this paper critically analyzed by salmon genetics experts and see if they would not now agree that the genetic evidence overwhelmingly supports an hypothesis that European and North American salmon have been separated since at least the beginning of the last glacial epoch (that is Atlantic salmon were in North America prior to the last glaciation and they persisted in one or more refuge sites during glaciation).

Note that the DNA marker study does not rely on a "molecular clock" to support preglacial separation of European and North American salmon. It is based on common sense and professional judgement assuming that the separation of ancestral salmon stocks into North American and European groups occurred before the evolution of the diagnostic North American and European DNA markers, and these present markers evolved into distinct differences in Europe and in North America after the separation of the two groups. The consistency of identity among all European salmon from Spain to Norway and Iceland strongly indicates ancient (preglacial) separation of North American and European salmon.

Of course you are correct that total abundance of Atlantic salmon, considering their entire range of distribution, in the best of times, pales in comparison to Pacific salmon (especially pink, chum, and sockeye salmon). In 1995, commercial harvest of Pacific salmon in Alaska alone was 217 million fish. If the average weight were only five pounds, this would be more than a billion pounds of salmon caught only in Alaska. The 1996 returns were even greater, canneries reached capacity, prices for pink and chum salmon dropped to five cents per pound, salmon were given away free on the streets of Anchorage and carcasses kept piling up in spawning rivers.

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I will co-chair a session at an Atlantic salmon workshop in Scotland in March. My session addresses the topic, "why aren't (or weren't) there more Atlantic salmon?" My estimates for the greatest total commercial catch of Atlantic salmon in the best years barely exceed 50 million pounds. The limitations imposed by their freshwater life history and differences between the North Atlantic and North Pacific as salmon foraging grounds, determines that total abundance of Atlantic salmon can only be a tiny fraction of that of Pacific salmon. This relative rareness along with elegance of form and sporting quality embodies the tradition associated with aristocracy and elitism.

Cage-cultured Atlantic salmon because of their artificiality and commonness, lack the mystique and therefore the aura of aristocracy associated with wild salmon-- my analogy of an original masterpiece and a mass produced replication.

I suggest that you rethink your comments indicating a divisive dichotomy between the aristocracy ("noble sports fishermen") and the peasantry ("the working class") related to Atlantic salmon as implied in your letter (some poor commercial ~~salmon~~ fisherman lose income so that more wealthy anglers can catch more salmon). The latest figures I have for total production of cage-cultured Atlantic salmon indicate a 1995 world output of about one billion pounds (Idaho Aquaculture News, 1996 no. 2). Such production makes Atlantic salmon one of the more moderately priced fish in the market, now quite available and affordable to the working class.

I'm sure you are aware of economic studies on the relative values of salmon (Atlantic, coho, chinook and steelhead) in commercial and sport fisheries. Much more income and many more jobs are created for the working class by angler-caught fish compared to the same number of fish taken in a commercial fishery. You say that your brother is an expert steelhead angler and runs a business dependent on anglers fishing for salmon and steelhead. Ask his opinion on the consequences of diverting most of the fish on which his business is based into a commercial fishery.

I hope you take my comments as intended, in a helpful, not agonistic manner. I would much enjoy going steelhead fishing with you and your brother sometime.

Sincerely,

Robert J. Behnke
Professor of Fishery Biology

(6)

ATLANTIC SALMON, AGAIN: REPLY TO BEHNKE

(Revised shortened version Dec. 1996)

Catherine Carlson

University College of the Cariboo

noobs@salmonids.org

B. eggs

It was more than a little irritating to find Mr. Behnke implying that my motivations are not to advance scholarship, but to "get attention" by proposing "outrageously wrongheaded" explanations for the demise of Atlantic salmon in New England. I have given seminars over the years to salmon restoration biologists, sent them reprints of my dissertation and articles, have had telephone calls from heads of state and federal agencies concerned with salmon restoration, and have been interviewed by the media; -- but always there are attempts to ignore my research because of the political implications, the monies and careers at stake, and the inability of applied science to administer skepticism or self-criticism. I know that I am as popular as a "skunk at a tea party" in salmon restoration circles, as one retired biologist recently wrote to me in support of my research. I welcome new ideas that would support or refute my science, but unfortunately Mr. Behnke does not do that.

Mr. Behnke's primary criticism of my research is that my explanation for the lack of salmon bones in Indian middens ignores the soil conditions in New England that are too acidic to preserve salmon bones. He quotes Dennis Stanford, an archaeologist who works with mammoth and bison bone sites on the Great Plains that, "it is possible that bone remains once existed in New England but have since disintegrated." My 1992 Ph.D. dissertation from the University of Massachusetts at Amherst addresses this question, and it is absolutely true that in acidic soils you don't get good bone preservation. However, as any archaeological textbook attests, one of the best types of archaeological site for bone preservation is shell middens with alkaline soils caused from the leaching of calcium carbonate. The excellent preservation of fish bones in New England is demonstrated by the fact that from the 75 sites in New England that I analyzed (most of which are shell middens), the bones of over 40 species of fish were identified, although not salmon. Shad bones have far more delicate skeletons than salmon, so if these fish's bones managed to survive in these sites, then there is no reason to suspect that the salmon's shouldn't have also. There is also a misconception that because fish bones are small, they're not durable. My grandmother prepared home-canned salmon in a pressure cooker under far greater heat than an aboriginal stew or smoke fire. One of the reasons that I

(6A)

III : 31:96

Dear John:

I'll use blank sheet for letter.

I got more good news yesterday. Blood exam showed leukemia back to more 'normal' stable characteristics with immune system functioning normally. Evidently, the radiation stirred things up. About every 5-6 yrs. I follow doctor's advice and have the sigmoidoscopy (?) exam. I agree, the pretreatment punging is terrible. The exam itself is anticlimactic.

I haven't heard of impacts on grayling from whirling disease in MT, but, being a salmonid fish, they are likely susceptible. Meadow Crk. (trib.

Ennis L.) used to be site for grayling egg-taking in early 1900s. Grayling still occur in the creek, but I haven't heard of any impact from whirling disease.

Has it stopped raining or snowing yet in Calif.? I talked to our daughter on Christmas (lives in Berkeley, had too many musical engagements to get home), she said she saw on T.V., a river where dam broke in flood and fisheries workers were trying to get salmon (probably steelhead) above broken dam -- but she forgot name of river. We've had spring-like weather. Amazingly warm, dry autumn. Last major snow event I recall was Sept. 20 -- not much since then.

Till keep you informed of my response to response from Dr. Carlson. Someone warned me never to argue with women, so I tried to avoid argumentative style, but she sounds like a woman with a large chip on her shoulder.

Regards,
Bob

(S) 8 combined species salmon run in the Fraser River in British Columbia, where even in a situation of declining stocks, there were approximately 20 million fish for this single river system.

However, even if salmon were not as abundant as the secondary historical accounts suggest, salmon were, nonetheless, present historically, and this is a quantitative leap over the prehistoric record. Since the historical presence of salmon indicates that environmental conditions must have provided favorable salmon habitat, I investigated climate records of the historic period and discovered that the Colonial period corresponded with a temporary climatic cooling called the Little Ice Age (AD 1450 - 1800). I proposed that because salmon are a cold water species, the conditions during the Little Ice Age would have created favorable salmon habitat, causing a southern expansion of their range into the rivers of New England where they had not been prehistorically. This neatly explains why there were no salmon bones in archaeological sites (because conditions were too warm prior to the Little Ice Age), but also why we see them referenced in the historical accounts. During the warming trend that ended the Little Ice Age (in the late 1700s), conditions became again unfavorable, and significantly, the extinction of the salmon corresponds in time to the termination of the Little Ice Age. This suggests that it was climate change and not dam construction (which happened historically after the fact of salmon decline), that was the cause of salmon extinction. The salmon restoration program has failed to recognize that the salmon situation today is due to a complex set of climatological variables, and less so with the effects of industrialization (dams and pollution).

Despite the fact that the paleontological record of fishes from the Pleistocene also shows negative evidence for salmon, Mr. Behnke argues that this can be over-ruled because the genetic evidence supports its presence before this last prehistoric glacial period. Since I had also proposed mechanisms for the colonization of North American rivers by stocks originating in Europe, and the potential for glacial refugia, I also reviewed genetic evidence of stock divergence. I discussed this with Dr. William Davidson at Memorial University, who at the time (1991) told me that the genetic evidence on salmon stock divergence is ambiguous; however, he agreed that there was nothing to rule out the possibility of a very recent origin (migration), within the last 1,000 years, of salmon to North America. More recently, in a letter to me (1995), Dr. Robert Kendall (American Fisheries Society) noted that in regards to the

pg. 9 on back of pg. 1

(7) disliked eating salmon sandwiches made from my grandmother's salmon was because she left the salmon vertebrae in the meat, so I was constantly having to spit out those hard little (pressure cooked) bones.

In the Pacific Northwest, large quantities of salmon were traditionally fished by aboriginal peoples as they schooled along the ocean shore before entering the rivers to spawn, and the coastal shell middens contain large quantities of salmon bones; but not so in New England. Also on the Pacific Coast, aboriginal peoples harvested salmon once they entered the estuaries and rivers, and the archaeological sites reflect this; but not so in New England. Even in some sites in New England where dense middens of shell are absent (for example, the Turners Falls site on the Connecticut River, the Eddy site at Amoskeag Falls on the Merrimack River, and the Eddington Bend site on the Penobscot River), fish are preserved, probably because of the saturation of the soils with organics and fish oil at these excellent shad fishing locations.

One conclusion of my research is that salmon were not present in prehistoric times. However, I also noted that the historical accounts tell a different story, i.e., that salmon were present during the Colonial period. Mr. Behnke quotes Steve Brooke as stating that, "We know they [salmon] existed in large numbers during historic times," (emphasis mine) but I have argued that we don't know that at all. Whereas salmon are noted in the historical accounts of fish, their numbers are open to interpretation because the accounts are not quantitative. In addition, there is the fact that the predictions of vast salmon runs of the past were based on later 19th century historical accounts of a secondary nature (i.e., rewritten regurgitations of original 16th and 17th century primary documents), and that their numbers may have been embellished because salmon was a high status fish to the English and the early colonial "promotors" of the region. Furthermore, there's additional potential for "salmon inflation" in the accounts because before Linnean classification, unfamiliar species were described in European terms, such as the shad as "white salmon."

"Large" is also highly subjective and relative. By Mr. Behnke's estimates there were 500,000 salmon in the combined runs of New England during optimum time (although how he arrives at this figure is unclear if the maximums of the three largest rivers was only 170,000). But even if 500,000 is reasonable, the amount is tiny compared with last year's (1995)



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Comments on Strategic Plan

About three years ago, a draft environmental assessment report was prepared on CFG hatcheries. I was asked to comment on the report at that time. Enclosed is copy of my review. Note my final comment about critical analysis, moving CFG and its hatcheries into next century and the need to address the right questions. The "right question" concerns the most proper role of catchable trout in the overall fishery program. I was hopeful that the strategic plan would address the "right questions", but this didn't occur. Same old body dressed in new verbiage.

Bottom p. 11 re. future hatchery demands, invokes the simplistic "Fish Pro" report of 1994--"angler demand will require a 300 percent increase of catchable trout by the year 2010" (300 percent quadruples, not triples the "current amount").

Who are the people who wrote the strategic plan? What is their range and depth of knowledge? Do they disagree with my assessment that catchable trout costs are more than 30% of the total inland fisheries budget while providing less than 10% of the angler days (and low value angler days), and that there is no correlation between numbers of catchable trout stocked and license sales? If so, please provide any facts and figures for refutation.

Also enclosed is a recent article discussing the need for new ways of thinking to address old problems, using catchable trout as an example. Do you have copies of the Trout Unlimited reports mentioned? Have they been studied by people preparing the strategic plan? They demonstrate that in Colorado, as in California, there is no correlation between license sales and numbers of catchables stocked and that anglers fishing for catchable trout are not willing to pay what a catchable trout costs.

How can "new thinking" be effected in the strategic plan? As an outside reviewer, I have no influence to effect change, my input can simply be ignored. Will there be an appendix with reviewers comments to at least provide a record of comments?

The last column accompanying my trout magazine article is a continuation of an article by Ralph Cutter, discussing the Little Truckee River fishery below Stampede Reservoir (CFG is mistaken to be Nevada F and G because of typo, to be corrected in next issue). I assume this is a wild trout fishery supplemented with catchable trout. When someone like Mr. Cutter raises an issue such as this (he claims to have "dialogue" for 15 years on management of Little Truckee), how is it responded to? Are there facts, figures, and data in support of present regulations? How does the strategic plan apply to this particular situation?

I note that California still requires barbless hooks for special regulation fisheries. Also enclosed is title page that thoroughly and convincingly demonstrates no difference in mortality between fish caught and released on barbed hooks vs. barbless hooks. In Idaho and Oregon a barbless hook regulation resulted in the most frequent violation of fisheries law--and virtually all of the violations were accidental. Otherwise, law-abiding anglers forgot to pinch down barb when changing flies. Last year Oregon did away with barbless hook regulation, but "strongly recommend" they be used (much less trauma in hooking and releasing humans). What is the "scientific" basis for California's barbless hook regulation? Should it be addressed in strategic plan?

On p.2 it is stated that: "Steelhead are genetically identical to resident rainbow trout". If true, the two life history forms are completely interchangeable. There could be no basis for listing certain steelhead populations for protection under the Endangered Species Act (Steelhead are also "identical" to catchable rainbow trout by this line of reasoning). They are genetically similar; resident rainbows and steelhead of same river are more closely related to each other than to comparable life history forms of another river, but they are "genetically identical" only by genetic analysis of the products of 10-20 gene loci or 100-200 base pairs of DNA. The rainbow trout genome contains about two billion base pairs of DNA, enough for about 100,000 genes. Somewhere in the unsampled genome lies codes for migratory behavior and site-specific adaptions evolved over thousand of years. It is important to have an in-depth understanding on such matters for any strategic plan that is to "chart a course for the future".

Sincerely,

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Professor

Colorado
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May 8, 98

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Dear John:

Thanks for sending Streamkeeper's Log with 1946 photo of Ed Henke. He must have been a teenager then, but a very robust teenager. He sent me some items last week. He's preparing a proposal to remove the Matilija Dam on the Ventura R.

On p.10 of the Log, the CFSG "strategic plan" is discussed, which reminded me to send you my comments on the plan. As you can see, I was not impressed--full of cliches, feed good, sound good generalities, nothing is likely to change without external pressure. I had sent you my critique of the CFSG hatchery assessment, mentioned, where I pointed out the great disparity of devoting 30% of total budget for catchable trout that only supply about 8% of angler use--thus, there's virtually no funds left for wild trout, native trout, etc. Catchables, in the strategic plan, are mentioned (--need to increase by 300%!), but from reading plan, one would surmise they are only a minor part of CFSG's overall program--when in fact, they dominate it.

In the past, I would have sent my critique to Dick May and he would have effectively applied external pressure for reform. I see Dick is on Bd. of Governors, perhaps he could be coaxed out of retirement. TU had applied pressure 2-3 years ago, forcing CFSG to come up with the hatchery assessment--at least a draft assessment that I critiqued. Then the attorney, Barrett McInerny had falling out (originally, this

"Assessment" was initiated by CAL TROUT, but McInerny and May had falling out and McInerny continued on under TU).

Since then nothing happened, and there's certainly no indication, ^{in strategic plan}, that a hatchery "assessment" was ever done.

TU just hired a conservation coordinator for its Cal. office and I have encouraged TU people to use my critiques of C&G hatcheries and do something.

Also is column from Denver Post I sent to Ted Williams. Evidently, Colo. Dow didn't send rebuttal to Fly Rod & Reel, but compiled some data for local media--that I question. Ted Williams, the conservation writer, is about 25 yrs. younger than Williams the ballplayer (who is student angler, especially for At. Salmon). He began career as I&E person for Mass. F.A.C. Dept., branching out into freelance work. I would rank him above average in range and depth of knowledge of what he writes about, but still exhibits more style than substance--superficiality that's deeper than comparable outdoor writers.

The Great Lakes steelhead are interesting in their origins. From around 1890-early 1900s, when most rainbow trout were being shipped around country in great numbers, steelhead of northern Calif.--Redwood Crk., Klamath,--Southern Ore.-Rogue R. etc. were main source of U.S. Fish Comm. eggs. They mixed, "evolved", and established themselves as self-reproducing populations, especially in L. Mich., Superior, & Huron over past 100 yrs. Now states like Ohio, Penn., N.Y. use Great Lks. stocks with names such as "Manistee" (from L. Mich.). Recent years, summer-run Skamania steelhead have been stocked, especially in L. Mich. The time of runs is under hereditary control, so summer-run comes in from lake in July-Aug (very few tributaries have suitable flows & temp. then). Fall runs are Oct-Nov. winter Jan-Mar, but there's been

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II

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genetic mixing of parent stocks and some adaptations
so it's difficult to precisely designate many runs
with specific timings. The southern stocks of steelhead
(N. Calif.-S. Ore.) mainly spend one winter in the ocean,
returning 18-20 mo. after smolt migration. This is
the typical 6-8 lb. fish. Big steelhead (15-20 lb. +)
spend 2 (or more) winters in oceans. I saw photo of
20+ lb. Ohio steelhead and was within touching
distance of large (ca. 12-15 lb.) one in Elk R. As
you mention about steelhead becoming resident fish
in New Zealand, the hereditary basis between
andromony and residency is slight and both genetic
and environmental factors play a role. Ed Henke
sent me clipping from Ore. paper. In their steelhead
hatcheries, with rapid growth (and suspicion that the
ground fish concourses used for food supply testosterone)
many males are precocious, sexually maturing at
one year of age, before they smolt. The article
mentions that 23,000 precocious male steelhead
were stocked in lakes, like catchable rainbows.

It has long been known that At. salmon
populations have sexually mature male parr. Females
almost never mature precociously, but if and when
one or two did, you can readily see how
an andromalous population can give rise to a resident
pop.

I don't know if a steinfe diet affects reproduction

In rainbows, coho, or chinook salmon of Great Lakes, but I've seen articles on At. salmon in Baltic Sea and in L. Ontario and Cayuga L. (N.Y.) that fed almost entirely on alewives (in U.S.) or herring in Baltic. Evidently, herrings & alewives have an enzyme that blocks a certain enzyme required for At. salmon eggs to hatch and there is great mortality of eggs.

Northern Ohio, especially area around Cold Crk.

has interesting aquifer. Numerous large springs erupt. Water quality and temp. ideal for salmonids.

Cold Crk. would have flow-temp. conditions suited for steelhead or salmon reproduction. I don't know how successful they are because it's an agricultural area and I suspect sediment loads are high. Any

steelhead getting on club's grounds, would find areas of gravel in the artificial channel, but there are so many stocked trout, I believe

any fry emerging from gravel would be consumed.

I did see some stocked rainbows in spawning behavior on these gravel beds. Peter Krems, the fellow who arranged my Cleveland Trip, was

here last weekend with his wife to visit their son - a freshman at C.S.U. On Sunday, I took them all up to private pond -- my student is part

owner -- I've mentioned to you about running greenback cutthroat there. The large (16-20") rainbow males were in

spawning behavior, going round and round over gravel patches and chasing each other. They weren't feeding but they would take flies if you could get it near them. Foul hooked some who struck at fly and got

couple very ripe females. -- Your pessimism is reflection of evolutionary reality. Humans, or all organisms, have strong self-interest (=survival), self-interests group into special interests -

with \$, gain political power. Dam building is classic example -

Regards, Bob

Aug. 12 '02

Dear John,

As you can see, I received an advanced copy of the book. I'm told I won't receive my additional copies until the main shipment comes in from Singapore - I don't expect to get them until Oct. If you can wait, I'll send one. Amazon.com is advertising it for sale Sept. 24 - They give author as McGuane - cover credits McGuane for introduction. In reality, McGuane wrote 2 ps. foreword - but his name might sell more books. The publisher expects the first printing ~~with~~ 30,000 will be all sold to dealers by time it is released. A reprinting allows for a few corrections of minor errors I find. The little nitpicking errors won't be noticed by readers or reviewers, but they bother me. For ex., an editor checked for "most correct" German of Meerforelle (the sea-run brown trout). They decided it's the genitive case (a trout of the sea) and spelled it Meeresforelle. I checked ^(two) German books, and it's Meerforelle, but At. salmon is a Meeresleben (sea-living in the sea) species. Common names don't always follow rules of grammar. Read rave review ~~over~~ of reviewer who failed to note the genera Salmo and Salvelinus in the book, but still thought it's a great book. Obviously, my standard of perfection in all details has little to do with how the book is perceived - but I'm still driven to weed out all errors.

You are correct, I often oversimplify in my Trout Column. You could see how Christina, the editor, who should have knowledge above that of the average

Robert Behnke

From: "George Scott" <gscott@chanticleer.net>
To: "joe tomelleri" <joe@americanfishes.com>; "Robert Behnke" <rjsjbehnke@earthlink.net>
Sent: Friday, August 02, 2002 11:54 AM
Subject: PW Review

Here's a starred review we've received from Publishers Weekly. It's the most influential magazine of the book trade. It's a shame they got so much of the taxonomy wrong, but, I suppose it's understandable.

Reviewers must scan many books each week, they obviously don't read them for comprehension.

Congrats, again.

Trout and Salmon of North America

Robert J. Behnke, Illus. by Joseph R. Tomelleri, Foreword by Thomas McGuane. Free Press \$40 (384 p) ISBN 0-7432-2220-2

In ichthyology, the genus Oncorhynchus includes the world's 10 species of trout and salmon. To the everlasting thankfulness of America's 35 million anglers, North America is home to nine species of these elusive and delicious fish (five salmon and four trout). Behnke (Native Trout of Western North America), professor emeritus of fishery and wildlife biology at Colorado State University, has brought his more than 50 years of studying, and fishing for salmon and trout, to wonderful effect. He provides readers with an authoritative compendium of the evolution, biology, ecology, habitats, and behaviors of these prized game fish. A capsule legend that includes scientific names, other common names, habitat, size, life span, and diet accompanies each entry, amazingly illustrated by Tomelleri (Fishes of the Central United States), whose fish seem to shimmer on the pages. Habitat maps, which include coastal waters, rivers, streams and lakes, are detailed and specific enough to be taken on fishing excursions. The book includes a good deal of fishing lore, as in the notations that describe the best flies, bait and lures for specific types of fish and locales. Behnke also ponders some of the more philosophical aspects of ecology and human responsibility for the environment. Along with full and clearly written scientific explanations, statistics and analysis, the author provides anecdotal and historical details that make this not just a field guide, but a fascinating read for those interested in the natural world. For the last word on trout and salmon, look no further than this guide. (Oct.)

* ?

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readers couldn't grasp that if fish goes to sea and doesn't return to spawn, its genes are lost to population. Thus I avoid reasoned explanations for my opinions - only further confuses the audience. I don't know the pattern of ocean migration of Sacramento steelhead, but Chinook from S.C. aren't believed to roam for large distances offshore. There are 4 major races in S.C., depending on run time. Likely, eggs from more than one race went to N.Z. between 1875 and early 1900s. First eggs came from McCloud, later from Battle Crk. hatchery. The greater the diversity of introduced Chinook, the greater the chance for natural selection to work and establish self-sustaining populations.

I'm still trying to learn more about life histories of sea trout (Merluccius) - Most pop. are more comparable to coastal cutthroat, but some do spend 2-3 yrs. in marine waters before spawning, but do not roam in open ocean. When I wrote column on brown trout in 1986, someone from a French angling society wrote to "correct" me - claiming that S. trutta never spends whole year at sea. Largest sea trout - c. 20+ lbs. appear to be in Baltic and North Seas. What is general max. size of N.Z. sea-run browns. They were founded on diverse ancestry of pacific populations.

I have to move my ^{campus} office again this week - I've been in a small room in Engineering bldg. that's scheduled for reconstruction. Fortunately,

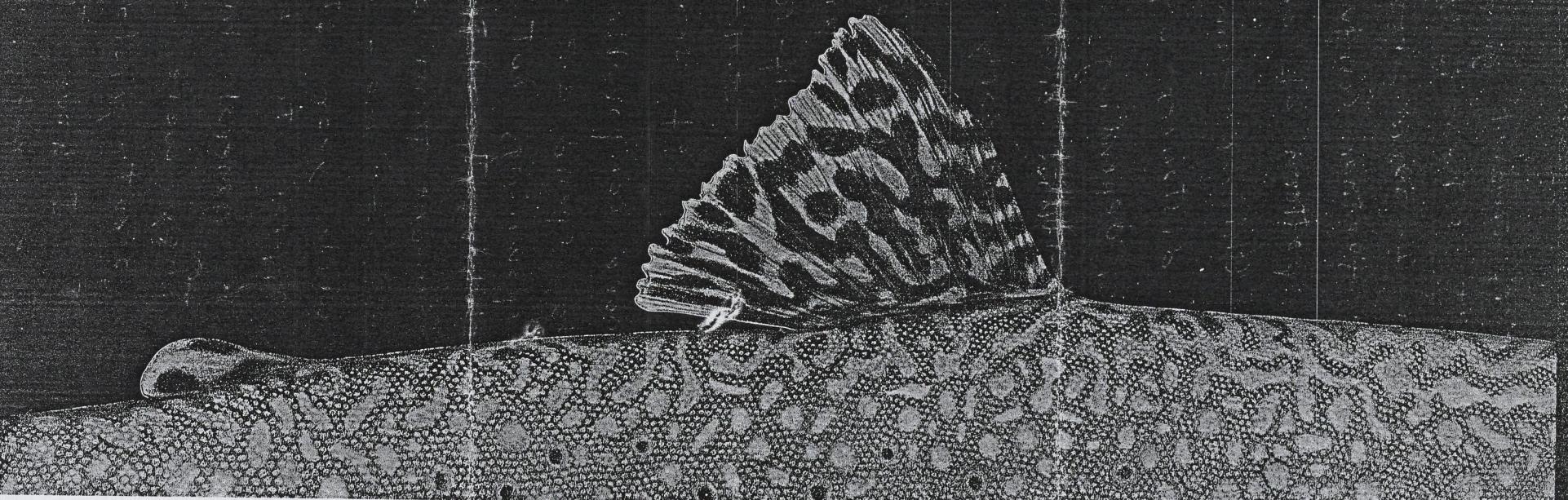
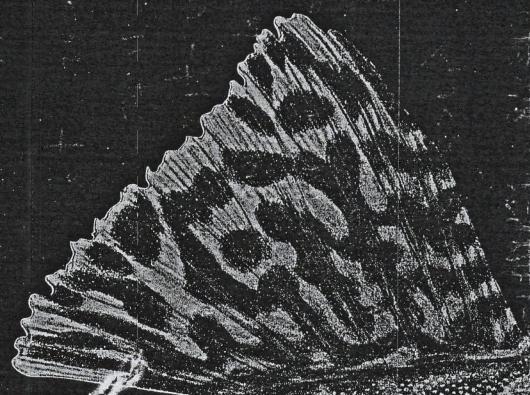
ROBERT J. BEHNKE

TROUT AND SALMON

OF NORTH AMERICA

Illustrated by JOSEPH R. TOMELELLERI

INTRODUCTION BY THOMAS McGUANE



(3)

the space is so small, I couldn't unpack most of the boxes of books and literature, so it isn't too great an effort to ship it all to the other side of campus. New office is larger and I expect to be able to unpack and find many things that were "lost" for past year.

The 'monsoon' season (July-Aug) that causes the greatest flood events in Colo., has missed us. Past 6 wks = $\frac{1}{2}$ " of rain in Ft. Collins - now about 50% of normal. The hot, sunny days - Typically in 90s, and 10-20% humidity exacerbates the drought.

I'll go to Urology center today for anti-testosterone shot (to last 3 months). Very simple procedure, done by technician - they make > \$50 profit when they bill Medicare. (probably more on the 3 mo. shot).

Regards,

Bob

Tel. 212-358-7025

"Robert Behnke has given the trout and salmon of North America a plurality of remarkable voices; Joseph Tomelleri has enabled us, astoundingly, to see them."

—FROM THE FOREWORD BY THOMAS MCGUANE,
AUTHOR OF *The Longest Silence*

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"In this beautiful new book, Robert Behnke has proved once again to be the primary source of information for all those who care about preserving our native trout and salmon. One cannot praise enough the great work he has done in the more than 60 years since he caught his first brookie in a small Connecticut stream and fell in love."

—JAMES PROSEK, AUTHOR AND
ILLUSTRATOR OF *Trout*

"A long overdue—and remarkable—book! This crowning achievement of our greatest trout biologist is wonderfully authoritative, clear, complete, and the illustrations are exactly right. No trout or salmon fisherman should miss this treasure."

—NICK LYONS, AUTHOR OF *Full Creel*

NATURE



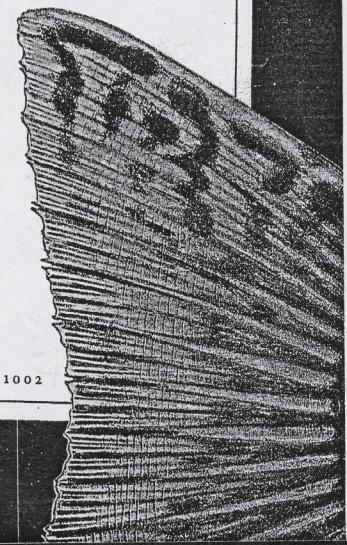
ISBN 0-7432-2220-2

"I can't think of a better author or illustrator for this beautiful and informative book. Dr. Behnke is arguably the country's top authority on trout and salmon and, better yet, he writes about them with thoroughness and clarity. And Joseph Tomelleri's illustrations just have to be seen to be believed. These two have done for trout and salmon what Roger Tory Peterson did for birds."

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"A definitive text by Behnke and stunning, detailed portraits by Tomelleri combine to create a book that is both beautiful and authoritative. There are few works that inspire browsing and daydreaming about the natural world, and this is just such a book."

—DAVID ALLEN SIBLEY,
AUTHOR AND ILLUSTRATOR
OF *The Sibley Guide to Birds*



The Nature and Nurture of Trout Behavior

Bob - Please send back
clarifications back to me. Thanks.
Christie 1/3/68

My last column, "What Makes Trout and Salmon Run?", concerned hereditary (the nature) and environmental (the nurture) factors that determine migratory behavior and how failure to understand the complexities of this phenomenon resulted in mismanagement of anadromous salmon and steelhead. The root of the problem can be attributed to how the human mind is conditioned to think. In general, we attempt to simplify things. When contemplating a problem or a question with many possible solutions, or answers, we tend to seek the simplest solution or answer. In coping with the activities and events of everyday life, seeking simplicity is generally a good strategy. When dealing with questions concerning the complexities of nature, however, the simplest answer is usually the wrong answer.

Last February I participated on a panel at a whirling disease conference in Denver. The highlight of the conference was the announcement that a German hatchery strain of rainbow trout (the Hofer strain) has a high resistance to whirling disease, comparable to that of the brown trout. In a discussion period it was pointed out that the Hofer rainbow trout has long been subjected to artificial selection in a hatchery (its "nature" or genetics have changed) and thus it would be ill-adapted to survive in the wild, subjected to natural selection such as competition and predation from established brown trout populations.

Rainbow trout were first sent to Germany in 1882; to Herr von Behr, who then sent brown trout to America the following year. From 1882 through the early 1900s, rainbow trout from diverse parental sources, including steelhead, were shipped to Germany and other European countries. The genetic diversity contained in the early shipments of rainbow trout to Europe provided a broad base on which natural and artificial selection could operate. Wild, self-reproducing populations of rainbow trout coexisting with brown trout and whirling disease have long been established in several rivers of Germany. In our panel discussion I attempted to make the point that if a hatchery strain of whirling disease resistant rainbow trout is desired, the Hofer strain should be fine, but for a rainbow trout with whirling disease resistance and the capability to maintain thriving, self-sustaining populations with coexisting brown trout, the wild rainbow trout, long subjected to natural selection as self-sustaining populations in European waters should be the predominant focus of "further research."

In all the reports from the whirling disease conference that I have read, none picked up on the implications between artificial and natural selection for finding a rainbow trout capable of repopulating American rainbow trout fisheries devastated by whirling disease. This is not surprising considering that fisheries management has long been handicapped by a failure to understand the nature and nurture of desirable traits and how to capitalize on them in management programs.

Insight for better understanding the hereditary basis of certain traits and their potential application can be had from a review of introductions of trout and salmon outside of their natural range. New Zealand, as with all countries of the southern hemisphere, has no native species of the family *Salmonidae*. Brown trout were first successfully imported from England in 1864 to Tasmania. Many more shipments were made to New Zealand in following years, which included "sea trout" or anadromous brown trout. Several sea-run populations of brown trout became established in New Zealand. The early literature claimed that resident brown trout (the "brook trout" of Europe) became sea trout after their introduction into new environments. That is, "nurture," the exposure to new environmental conditions, caused a change in life history and behavior. Critical examination of the records of introductions concluded that the New Zealand sea trout are derived from sea trout stocks imported from England—the hereditary basis for migration behavior was retained in the introduced populations.

On the other hand, according to the best evidence, all New Zealand rainbow trout can trace their origin to an 1883 importation of steelhead from Sonoma Creek, a tributary to San Francisco Bay. No steelhead runs

The brown trout is the original "brook trout". It was the only species of trout known to Europeans when they came to America and when they encountered *Salvelinus fontinalis* in streams, they called it brook trout, as it was the only trout known (brown trout) that lived in streams.

*should be many - might use
human "multifaceted"*

ever developed; all New Zealand rainbow trout live their entire lives in freshwater. Is this an example of "nurture" in a new environment, without genetic change? Probably not, but New Zealand rainbow trout do illustrate the complexities of attempting to unravel the many aspects of the nature vs. nurture controversy. After hatchery propagation developed, rainbow trout were widely stocked in New Zealand. In many rivers the introduced rainbow smolted, went to sea, and were never seen again. In other rivers, particularly North Island rivers tributary to large lakes, rainbow trout flourished and attained a large size—comparable to the establishment of "fresh water" steelhead in the Great Lakes.

something missing — Rivers that flow into lakes are tributary to the lake something missing can say reconnected

It is also likely that natural selection rapidly occurred. Any New Zealand rainbow trout migrating to sea never returned and their genes for migration to marine waters were eliminated from populations.

Hereditary changes in life history have occurred in Chinook salmon introduced in New Zealand in less than 100 years. From 1875 through the early 1900s several introductions of Chinook salmon were made. Anadromous runs became established in several rivers on the South Island. These runs in different rivers evolved different life histories, such as timing of runs and times of spawning, under natural selection, adapting each population to specific environments.

New Zealand Chinook salmon are the only known example of long-term persistence of an anadromous salmon introduced outside of their native range. Why? All New Zealand Chinook came from the Sacramento River basin. Sacramento River Chinook differ from most other races of the species in the extent of their marine migration. Unlike other races of Chinook that roam thousands of miles in the open ocean, the marine migration of Sacramento Chinook covers only hundreds of miles along the California and southern Oregon coasts. The eggs of Sacramento River Chinook shipped to New Zealand contained the hereditary basis determining the extent of marine migration that "pre-adapted" them for establishing self-sustaining populations on the other side of the world.

Brown trout exhibit the greatest diversity of anadromous life histories of any species of trout or salmon. Most populations of European sea trout are more similar to sea-run coastal cutthroat trout. They feed in bays and estuaries for only a few months of the year before returning to fresh water. Particularly in the northern parts of their range, such as the Baltic Sea (and Caspian Sea), there are anadromous brown trout populations that spend two or three years foraging in marine waters before returning to spawn (some races of Caspian trout spend four or five years of feeding in the sea—they were once the world's largest brown trout). In this respect, these northern European sea trout are similar to steelhead except that they do not roam for thousands of miles in the open sea but forage in more inshore areas. This is why brown trout made it to Iceland but not to North America until they were transported by ship.

Have any of these brown trout with the hereditary basis for extended periods of marine feeding become established in North or South America? The Avalon Peninsula of Newfoundland and the Rio Grande of Tierra del Fuego, Chile and Argentina, are noted for exceptionally large (25 to 30 pounds) sea-run brown trout. The first importation of brown trout to Newfoundland occurred in 1884 from Loch Leven, Scotland. In 1892 a shipment of unknown origin was received from Germany. Among the earliest importation of brown trout to South America was a 1905 shipment to Chile from Germany. These were designated as "Meerforelle" (sea-trout). It is unlikely that a direct connection can be proven between the giant sea-run brown trout of the Avalon Peninsula and Rio Grande to European ancestors with the hereditary basis for extended periods of marine feeding. The simplest explanation is that the Avalon and Rio Grande trout are only "ordinary" brown trout that drastically changed their ancestral life histories when stocked into new environments (nurture not nature). As previously mentioned, however, when seeking to simplify nature's complexities, the simplest explanation is usually the wrong explanation.

My thinking on the influences of nature and nurture on life history traits of trout and salmon was greatly

influenced by the writings of the late W.E. Ricker, widely regarded as the most influential fisheries scientist of the 20th century. In 1958 Ricker circulated a manuscript on the hereditary and environmental factors affecting salmonid populations (updated and published in 1972). I was greatly impressed with the evidence and analysis presented by Ricker. This instilled a strong desire to learn more on the subject. I particularly recall Ricker's concluding remarks summarizing what was known on the hereditary and environmental factors affecting life histories... "My strong opinion is that we should avoid any appeal to simplicity or conservatism in such questions. Time and again it has been discovered that nature is more complex than anyone dreamed possible."

Dr. Bob Behnke is Emeritus Professor of Fishery and Wildlife Biology at Colorado State University. His book, Trout and Salmon of North America, will be published this fall (Simon & Schuster).

July 8, 82

Dear John,

Enclosed is copy of my autumn column. You may be interested in my comments on New Zealand. One would get impression that Christine (Trout editor) is not too bright. It lets me know, however, that the even less bright average reader, might not understand what I'm trying to say.

Thanks for article on problems with At. salmon culture in B.C. I'm cautious when using info from publications such as Mother Jones that selectively slant facts and figures to conform to a point of view or ideology. It appears about right, however, compared to other sources. The problem of escapees can be handled if they use sterile salmon (triploids - like the Alpers trout).

Drought and fires continue, with some relief from limited rain. The lower elevation areas -- along Front Range - Pueblo, Colo. Springs, Denver, Ft. Collins -- where 90% population lives, is about 60-70% of normal precipitation - real problem is the extremely low snow pack in mountains, that reservoir storage depends on. As I mentioned, the snow was virtually gone by mid May - when peak runoff should have started. Our Poudre R. has its lowest runoff this year since records began in 1874. The river flows ^{now} depends

on reservoir releases and three transmountain diversions - one from headwaters of the Colo. R. and two from N. Platte
drinker-like robbing Peter to pay Paul.

Simon and Shuster is supposed to release my book for sale in Oct. I am supposed to receive an advanced copy. I'll keep you informed.

I was at the cancer clinic for leukemia monitoring (all normal) and discussed potential treatments for the reactivated prostate cancer. Injection with a testosterone blocker is expected to keep it under control for some time -- 1-2-3 yrs.? After that, the latest treatment is with "anti-clonal antibodies". It's new - tried to look it up on internet but found only experiments with rats. It's not available in Colo. now. Hopefully, it will be when I need it. I note much research and experimental treatments for Parkinsons. Do any offer some hope for your wife?

I don't use citations in my columns, but Dan Scott had sent me his reprints many years ago on the sea trout introductions and his careful analysis.

Regards,

Bob

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Jan. 12, 80

Dear John,

You could see from the data of genetically connecting Sonoma Crk trout caught 100 years after the 1883 shipment - why this was never published or become widely known. No conclusion can be made. Besides the problem of taking a sample from a population to start a new population - and then many new ones, it would not be likely their would be a strict continuity of precise allele frequencies from parent to all descendants. Then, as you pointed out, how much has stocking hatchery rainbow trout in the Sonoma Crk. drainage influenced what is found today?

I don't know how the term "Tasmanian" rainbows got to be used for New Zealand rainbows that were brought back to the U.S. and into the federal hatchery (1st set) system about 1967. A letter from Roy Simon (USFWS geneticist) said he believed the rainbows sent to the U.S. (about 1967) were from the Lake Taupo stock. Unless others were also sent to the

U.S., I would assume that the fish presently called "Tahmuzian" rainbows come from L. Telpo after several transplants of original Sawtooth crk. trout. You mentioned evidence of Lake Almanor rainbows obtained by a private fish culturist. ^{The late} Leo Shapovastov, C.F.C. biologist thought this shipment may have taken place but there was no documentation. If so, and if the Almanor trout were sold to other hatcheries and to clubs, they may have been widely stocked. Unsolved mysteries capture one's imagination.

I had my doubts about my scheduled trip to Chile. After some e-mails, I finally got my tickets yesterday. I'm scheduled to leave Mon, Jan. 15 -- 7:00 AM Denver → Los Angeles → Santiago → Balneario (11:00 AM. Tue.) — Long trip. The storm battering Calif. is forecast to be here Sat.-Sun as a snowstorm. We've had rather pleasant weather but I expected it wouldn't last until I left. There could be problems getting from Ft. Collins → Denver (I plan to take bus at 4 AM) and, if much snow, for getting flights out of Denver. Could be stressful before I get there and on a river. Be back Feb. 1. Regards,
Bob

Feb. 24, 86

Dear John,

Did the rains finally come to S. CA? Enough for steelhead to get up into the small creeks? From Ed Henke's history, it appeared that S. CA runs would enter SW in winter (Dec.-Jan) so they may have moved on looking for other opportunities. Last year should have produced steelhead spawning flows. Any juveniles from last year's spawn should be about 6" by now and visible in the creeks.

How long do sea-run browns spend in marine waters and how far do they roam? I've never found good information on extent of migrations, but brown trout are not native to Greenland or N. Am. as are S. solar and S. alpinus; this would indicate they don't move too far offshore. When I wrote column on brown trout in 1986, I pointed out that some sea trout in northern part of range spend 2 or more years in sea before return for spawning. This is well known for northern populations - Baltic Sea, North Sea, etc. - This elicited a letter from France - typical opinionated authority - that trout only spend few months along coast in bays - estuaries - similar to sea-run cutthroat. The largest sea trout are those that spend 2-3 yrs in sea and repeat spawners - 33 lb, sea trout caught from River Elbe of Baltic Sea. There are two areas where transplanted trout have produced very large sea trout - the Rio Grande at Tierra del Fuego and Avalon Peninsula of Labrador. In 2003, a 32 $\frac{3}{4}$ lb. sea trout was caught in Labrador - about max. size of Rio Grande. Finer trout in S. Am. - sea trout eggs from northern Germany to Chile

in 1905. About same time, shipment made to Labrador.
Circumstantial evidence is that the giant sea trout
of Rio Grande and Labrador came from parents with
2-3 yrs spent in sea as part of life cycle. Falkland
Is. has relatively large sea trout (co. 5-10 lbs.?) - but
nothing like Rio Grande and I assume they come
from different parental stock.

I read, obituaries for Ernie Schwiebert and
Andre Puyense. Recall the old Roman saying about
Ernie mentioned that there are some good historical
works on fly fishing, such as Paul Schollery's book - but
when he wanted "the flavor" of history he would
read Ernie. I guess "flavor" is good euphemism
for B.S. I recall Andre was organizer for

TU in Bay areas in early 1960s. It soon
developed into one of longest TU chapters and
disagreement arose over how much # Bay areas
TU should send to national TU headquarters and
how much they should keep for Calif. projects. This
resulted in formation of Calif. Trout. I don't
know if Andre cast his lot with Calif. Trout
or remained loyal to TU. I recall Dick
Mazy once telling me that although Andre was
a great guy, he didn't distinguish between fact
and fiction. Last week I was 'summarizer'
for conference on Yellowstone & Snake R. cutthroat in
Idaho Falls. Cold and snow followed me home, last
Thun, got about 6" of snow and 10° below zero - then
13° below Fri. morning. It's been gradually warming since.

Bob

endangered species, biodiversity advocates, etc. "Sportermen" would be against all of those perceived threats to their freedom to hunt and fish anyway they want.

A sobering fact is that Potlatch life + f.s. have $\approx 2.10X$ the circulation of Trout and all of the magazines devoted to fly fishing.

Interesting question you posed re. how "maladapted" are hatchery rainbows? - Depends on how long the brood stocks have been selected for domestication. The popular rainbow trout fisheries in West, where rainbows are not native, were established before turn-of-century by, essentially, sources of wild rainbow before domestication occurred. For ex., rainbows first introduced into Gunnison R., CO in 1883. Within 10 years, native cutts were about gone (hybridization, introducing cutthroat genes into rainbows would increase heterozygosity and broaden base for natural selection). Rainbows stocked in headwaters of Colo. R. soon after when they still maintain wild population (but decimated by whirling disease).

In section of Rio Grande R. where brown trout was only "wild" trout and regular stocking of hatchery catchables were made for public fishing-- the hatchery rainbows, if not caught, did not survive to reproduce-- they left no offspring. When offspring of wild Colo. R. rainbows were stocked in some areas, they survived, reproduced & established a "wild" population - An example of adaptiveness or maladaptiveness of hatchery rainbows - depending on how many generations removed from wild.

I recall trying to put together a "degree of syndromy in salmonid species" -- degree of genetic or hereditary control on syndromy (or at least migration such as pink salmon in Great Lakes) - from "facultative" - labile, flexible (as in Salvelinus and coastal cutts - I call "semi-syndromous"), to "obligatory" - "fixed" as in pink and chum salmon. Rainbows are about "in-between". Freshwater pop. if not most of steelhead as in N.Z. - ~~and much~~ were steelheads. Those that did go to ocean way back - but evidently didn't find resident ancestry of introduced stocks did establish S. Am. "rainbows" that go to sea some for few months, some much longer as true steelhead. I assume S. Am. steelhead have life history where they remain along coasts, not venture into open ocean, but this remains to be documented.

went to Fisher Council Tucson last week for Desert meeting - saw many old friends, nice climate, around hotel. Generally mild here still, only trace of snow and temp. rarely dropping lower than 20°F - often in 60s by afternoon. Precipitation $>17"$, about 3" above normal to date. This morning, my wife went out at 6:30 AM to get reservations for flu shots (we got \$23, 24 for about 600 available shots) - we went back at 8 AM and received shots. I had doubts we would get them this year.

Regards, Bob

Nov. 19, 04

Dear John,

I was disappointed, but not surprised, by election results. All sorts of sophisms come to mind -- tell a lie often enough, people begin to believe it... "folks some people all of time, some people some of time -- but not all people all of the time" (4 more years should do it)... "no one's even gone broke by underestimating intelligence of American public" -- etc. Obvious strategy is to target the "committed ignorant" vote on single issues - the fundamentalist moral vote (an oxymoron) and gun nuts (with NRA lobby) could be expected to give a strong 20-25% allegiance to Republicans no matter who they ran for president - no matter what the big issue and most significant issues are. I'm thinking of doing column on Conservative and conservationist - two words from same root, but with now divergent meanings and implications. Are "sportsmen" "conservationists" or "environmentalists"? If so, why would Bush get the "Sportsmen's" vote? Trying to get a better understanding of the mentality of "Sportsmen for Bush" people, I read the hook-and-bullet media such as Outdoor Life & Field & Stream - both of which ran pre-election profiles and statements from both candidates. Kerry's statement that he didn't believe automatic assault weapons were necessary for hunting, was a tip-off to the gun nuts that his true agenda was to take away your guns and do away with all hunting. The letters to editor that were published are revealing -- some (one or two) were reasonable-national, emphasizing that voters should think about

all of the big issues, not commit to a single narrow issue - but most are reverting for diagnosis of the pathological mentality of a vitriolic hatred of "liberals", "environmentalists", etc. who would take away guns, do away with hunting and fishing, etc.

Some excerpts: "I don't care where Kerry stands on some issues or whether or not he is better than Bush. Kerry is a gun owner's worst nightmare."

"... no matter Kerry's views on conservation, if he limits methods by which game can be taken there will be no hunting" -- "John Kerry is a Traitor

lizan, liberal, anti-gun scum" ^{if some were} Some outraged that F&S allowed Kerry a platform to give his views -

"What happened to your rag.. Treating Bush and Kerry as equals - liberal, leftist Extremists must have gotten to you" -- "Outraged that you allowed Kerry to say he supports second amendment - you were duped - great disservice to outdoormen"

"Senator Kerry is record virtually 100% anti-gun, and he has chosen the side of environmentalist over sportsmen every time the two were in opposition"

— You get the idea of what I have to work with in clarifying the dichotomy between

Our world is fragile with evident
need for restrictions passenger airplane, salmon, Bison,
both animal and persona

conservative (sportsmen) and conservationist (environmentalist) liberals. If I try this for a column I will have to be circumspect as to not offend or tip my hand that TU is an environmental organization - therefore "liberal". If you have any ideas on the subject, let me know. An obvious political strategy is to "lump and label" in appeal to the simplistically stupid vote. "Environmentalists" label would include elitist, liberal, no-kill fly fishers, animal rights organizations, wilderness advocates,

Dec. 22, 84

Dear John,

I expect you'll see your daughters and grandchildren to brighten the holidays for you. On Christmas eve our son & family go to his wife's relatives and then come up here on Christmas. Our 3 yr old grandson, Bryson, is joy, but he has such energy, wants to play constantly, do this, do that, and I get worn down.

As with you, I'm continually amazed at how the brain must work in people who develop a terminal sense of prejudice (stupidity) -- an ideology that causes them to vote against their own self-interest. Their focus is so limited and inflexible, they can't comprehend a bigger perspective. Political strategists understand this and pander to single issue ideologues -- sanctity of life, or guns -- if you can get 10% of this hardcore vote, you win the election.

I was reading about a meeting of the Outdoor Writers of America. A spokesperson for the NRA unleashed vitriol against the Sierra Club, because the Sierra Club had "endorsed" hunting as compatible (and often necessary) with conservation -- they didn't want to be aligned with animal rights groups.

According to the NRA, this was a clever ploy, a Trojan horse, that, somehow, really was anti-gun. The writers were turned off and objected to such twisted logic, but many of the faithful will undoubtedly swallow such twisted logic and applaud the NRA's vigilance to protect guns. Such a mentality is real, but difficult for me to comprehend. About every issue of Fly Rod & Reel has an angry letter cancelling a subscription because

Ted Williams is a liberal environmentalist. Ted often expresses his wonder ~~why~~ "sportsmen" are not environmentalists. I recently sent Ted some items that reveal how "environmentalists" get a bad rap because of few extremists. At public hearing of New Mexico Game Commission, "extremist-chemophobes" raised such a fuss over using "poison" to restore native cutthroat trout, that the restoration program has been suspended. Also Lahontan Water Qual. Bd. in Calif., similarly blocked Paiute trout restoration. A small group of ^(animal rights) environmentalists and chemophobes can indeed beat city hall and block the only method to restore native fishes that have been eliminated by non-native spp. These are the types of environmental extremists that threaten the values of the "sportsmen" and for simplistic political purposes, taints anyone or any group advocating environmental protection and conservation as the enemy of 'sportsmen'.

A few weeks ago I watched football game from San Diego on TV. Temp. was 53°F and it rained steadily. This is unusual weather you're having. San Diego's annual rainfall is about that of Fort Collins, I believe (c. 7-8") - we get about equal amount of water in snowfall. So far our snowfall is below average -- one big storm of 12" 3 wks. ago -- but rainfall was well above average so by late Dec, we're about 20% above normal (average). Annual precipitation ~ c. 18" vs. 15". Great swings in Temp. -- one day we're in 60°, sunny and in short sleeve shirts on our walk -- else on two later it's below zero with max. temp. in 20s.

Happy New Year,

Bob



Associated Press / Steve Yeater

Anglers troll for trout at California's Lake Davis, where northern pike are again posing a problem.

Town angles for help in fish fracas

Many fear repeat of lake poisoning will kill tourism

By John Howard
The Associated Press

PORTOLA, Calif. — The screen-saver on one City Hall worker's computer says it all: "Northern Pike 36. Fish and Game: 0."

A joy to Midwest anglers, the northern pike is the misery of Portola, a Sierra Nevada town that has come to view the rapacious, sharp-toothed predator as a nemesis and to fear efforts to control it.

"The people here are scared to death that some magical number is going to be crunched and the state will decide to chemically treat Lake Davis again," said Fran Roudebush, a supervisor in rugged Plumas County, 250 miles east of San Francisco.

Residents fear that magical number may have been reached last week, when state Fish and Game Department agents using electric fish-stunning probes pulled 22 pike from the lake in three hours. That makes 36 caught since May.

Non-native predator

So California now faces the same dilemma it confronted two years ago: how to protect the state's vast fisheries from the fierce and fertile northern pike, a non-native predator that gobble trout and salmon, sometimes whole.

In October 1997, after a bitter court fight, the state poured 60,000 pounds of poison powder and 16,000 gallons of liquid chemicals into the 7-mile-long lake to eradicate the pike, which state investigators believe were planted by anglers who prize the pike for its

fighting qualities.

The azure water turned an odd shade of green and the fish died, the pike as well as the trout. The local tourist-based economy faltered, the water remained tainted for months and residents were outraged. State authorities said the action was supported by the best available science, and was necessary to prevent northern pike from spreading into California's rivers.

Pike experts in other states generally agreed.

California later approved a \$10 million settlement to resolve scores of local claims. The lake's water now is perfectly safe to drink, state scientists say, but skeptical residents prefer newly dug municipal wells.

After the lake was restocked with a million trout, tourists returned.

Government not trusted

But now, the pike are back — game officials don't know how — and the 2,300 residents of nearby Portola are not pleased.

And with all the trout stocked in the lake, some fishermen also are leery of any threat to poison the lake again.

"I'd hate to see the pike get into the Feather River system, but I used to come up here and get two to three fish at most. On rare days, I'd get the limit. Now, I catch more, big 'planters' (stocked trout)," said Bryant Martin of Applegate as he displayed his catch.

At a closed-door meeting, state and local experts considered options that included electric nets and using ultraviolet light to zap the fish, which one official described as "a kind of killer sun tan." A public meeting is planned Thursday.

It's the possibility that poison will be used again that worries residents most.

"They don't trust government. I am government, and I don't trust government," said Roudebush, the county supervisor.

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5-19

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Pike make
national news

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LETTER TO EDITOR

Robert Behnke's "About Trout" column in the Summer '99 issue was a little upsetting to me ("Limit Your Kill"). It seemed like the last half of the article was devoted to trying to distance fishing as far as possible from hunting, as Dr. Behnke seems to believe it should not be considered a "blood sport." Seeing as this is exactly what the animal rights people want us to do, I would suggest that Dr. Behnke reconsider.

Dr. Behnke may be an expert in fisheries biology, but I suggest he contact someone from the history department to ask about the success ratio of compromising with fanatics. While he is there, maybe he can also ask about the old Roman tactic of "divide and conquer." The animal rights people have a very simple agenda-no hunting, no fishing. The best way to get to where they want to go is to get us fighting among ourselves. Hunters vs. trappers, catch-and-keep vs. catch-and release, fly fish vs. live bait, etc. As we debate who has the most "sporting" or "moral" way to hunt or fish, they help us legislate our way out of our sports. Fishing spring steelhead in our Great Lakes tributaries combines some elements of the hunt-you have to move slowly, stay in the shadows, and stalk up on the fish. Also, every hunt does not end in "blood." Several times I have drawn down on a deer with my bow and let down on the string. Had I released the arrow, I'm quite sure I would have harvested the animal.

Christine Arena, 09:36 AM 7/29/99 , letter - Summer About Trout

Time spent in the woods is every bit as spiritual as time spent on the trout stream. Don't buy the slick propaganda churned out by the animal rights people. Throwing those of us who hunt or choose to keep a few fish to the wolves will not appease the animal rights people anymore than selling out Czechoslovakia to Hitler saved the world from another war. Stand up to these pervasive meddlers; they contribute nothing toward fish or game habitat.

Ron Stresing
South Milwaukee, Wisconsin
end

I had 2 couple of complementary letters on my column. Here's one with opposite point of view. This fellow rambles all over the place, going off on many tangents. Difficult to reply precisely, but I tried.

Christine Arena, Re: letter - Summer About Trou

To: Christine Arena <carena@tu.org>
From: Dept of Fishery and Wildlife Biology <fwb@cnr.colostate.edu>
Subject: Re: letter - Summer About Trout
Cc:
Bcc:
Attached:

*Please check.
Thanks,
Judy*

To: Christine

Mr. Stresing contends that if we admit any philosophical-ethical difference between hunting and fishing, any unified front against animal rights organizations would collapse. I fail to grasp the logic of, or see, any evidence in support of this contention.

The main point I tried to make is that, by European tradition, hunting and fishing as "blood sports," are "justified" by the killing of the animal. By this tradition, catching and releasing a fish "trivializes" angling into a "game" rather than a "sport." For example Hugh Falkus, the English authority on sea trout, wrote an impassioned plea urging anglers to kill every trout and salmon they catch to preserve the integrity of the sport of angling.

In the U.S., the demand for high quality trout fishing on public waters greatly exceeds the supply of large trout. The only feasible way to maintain an acceptable catch rate of larger, older, wild trout in heavily fished waters is by recycling all or most of the catch. Philosophy, ethics, and morality have nothing to do with it. It's simply a practical method of fisheries management. Catch-and-release angling is not a "blood sport" in the European tradition.

Catch-and-release angling has caused a dilemma for some serious anglers influenced by the European philosophy of blood sports. Ted Kerasote, a noted apologist for hunting, has a chapter entitled "Catch-and-deny" in his book, Heart of Home, in which this dilemma is discussed.

Another aspect of catch-and-release angling (or any catching of fish) concerns cruelty to animals. Are humans inflicting terrible pain and suffering by hooking and playing a fish? Some anglers with a deep love of nature are bothered by this question. I contend that fish do not feel pain comparable to that of higher vertebrates. My line of evidence is given in the above-mentioned book by Ted Kerasote, but I'll cite an example probably familiar to many anglers. While fishing for cutthroat trout in a lake, I hooked a nice fish on an elk hair caddis. The fish got around a tree limb and broke the tippet. Ten minutes later my friend caught this same fish bearing my fly and tippet and caught it on the same elk hair pattern. This fish obviously was not much distracted or impaired by pain.

At 09:36 AM 7/29/99 -0400, you wrote:

>Dear Bob-

>

>I'm planning on publishing the following letter in the Autumn TROUT. If
>you'd like to prepare a response, you're more than welcome to do so.
>However, it must not exceed 350 words, and I must have it by August 13 in
>order to meet publication deadlines. Please send it to me by e-mail.

Nov. 11, 87

Dear John,

Enclosed are two items on S. Calif. trout. I surmise it's Allen Greenwood who supplies info to the media. We were in Berkeley last month and steelhead restoration in East Bay streams is a hot topic, gaining much attention and funding. The creek in our daughter's neighborhood, Cordenices Crk., is typical of these small streams. Most of headwaters were buried in culverts long ago. Across the street, a Jewish synagogue was expanding and wanted to extend a parking lot by burying more of the creek in culverts. A community action committee sprang up to "Save Cordenices Crk.", with posters and bumper stickers. The creek was not buried beneath structures creating pools^{occurred.} too bad there are no fish there to benefit from all this effort. I believe if some fingerling rainbows were planted a few might stay around for people to see. It's great to see such enthusiasm to restore "steelhead" in East Bay streams, but if the capital investment was calculated to the cost of any returning steelhead, they would be million dollar fish. But, it's a feel-good type of enterprise that creates environmental awareness of what pristine conditions would have been and it beautifies eyesores. This year, we had beautiful weather (last yrs. trip in Dec. had cold rain every day). My wife attended the 50th reunion of Berkeley H.S. graduates and also a grammer school reunion with many of the same people. I'm not enthusiastic about such events, but she wanted me to come. Traffic is horrendous--we went to San Francisco, but didn't want to drive so we took the BART subway. First problem was BART parking lot was filled, and all streets

II (Addendum)
OFFICE MEMO

TO:

Date

FROM: I checked www.sandiegotrust.org to see if there
SUBJECT: is mention of Sweetwater trout. The website
REMARKS: contains several topics, mainly on plans for
San Mateo Crk. restoration. One topic is a list
of streams that have records of stocking (1881-1997)-
Sweetwater Crk, and several tributaries are included
in "known stockings." Knowing this, why would
Greenwood think Sweetwater trout were native? Also, as
you recognize and is made apparent in the NMFS
rept., such streams with watersheds in poor condition
so they have not maintained perennial flows over
long periods of time, especially in past 100 yrs. would
not be expected to maintain native populations
that have persisted for 1000s of yrs. Greenwood is

not someone I would cite as a knowledgeable authority. The website does have illustration of a Rainbow Trout. You might have some fun if you check it out.

too much below long-term x of 15,0^{1/2}" Most of snow is still on the ground because temp. has rarely been above freezing.

I met Alton Greenwood several years ago at a conf. He would make a good used-car salesman. His role in S.CA steelhead conservation is that of a chamber of commerce drum beater to attract media attention, without regards to a factual basis of his pronouncements. Re. the genetic background of the seven trout from the Sweetwater R. collected in 1997 (as potential "broodstock" to restore the native trout of the area), Ed Henke sent me a Nat. Marine Fish. Serv. report on steelhead population characteristics of South-Central & Southern CA steelhead. It has Oct. 2006 date, but includes a rept. on genetic analysis with "final revision, Nov. 2006".

In going through the text I noted that "seven" specimens from the "Sweetwater River" are included. Geneticists (as opposed to Taxonomists) are negligent in providing precise data on location, date, etc. of samples they discuss - thus, I can't say where these seven specimens are from, but I suspect that they are the same ones touted by Greenwood. The conclusion is that these Sweetwater fish are: "primarily of hatchery origin."

I doubt you'll see a story in local papers that the Sweetwater trout are primarily derived from hatchery stocking. If you do see anything on this, let me know. With the genetic analysis, I doubt there will be any more effort or publicity about using these fish to "restore" native trout. - Yes the Nov. elections were a most pleasant surprise - Pombo defeated! He thought he was secure - a very happy event.

Regards, Bob

Jan. 3, 87

Dear John,

I was about to write you when I received your letter of Dec. 24 -- mail was delayed by a blizzard. I had thought it must be time to write, but I wasn't sure -- I was distracted for awhile (mid Nov. to week before Christmas) & I went to a dermatology clinic re. a lump on my arm. It took 2 wks. and a special lab analysis to get the diagnosis. It turned out to be a very rare form of skin cancer called Melanoma, a fast-growing and "bad" cancer. I was on my way to Desert Fishes meeting in Death Valley when I called my wife and received the diagnosis and arranged to see a surgeon as soon as I returned on Mon., Nov. 20. Then it took almost 3 wks to schedule operation and have pre-op tests done. About 2 weeks before Christmas I got the good news that no cancer was found in lymph nodes and assume it had not spread before it was removed. This made for a wonderful Christmas dinner and visit of our son's family (with our two grandchildren). A major burden had been lifted. I haven't seen the total charges to Medicare and my supplemental insurance yet, but, no doubt, they are substantial, and one of the benefits of old age and Medicare.

We had 2 ft. of snow in one blizzard and about 20" in other storms before and after. Typically, Dec. (and Jan.) are the driest months, but when a blizzard does hit near Christmas, the impacts on getting in or out of Denver airport are enormous, as you probably saw on TV. This brought the annual (liquid) precipitation to > 11" (from 8" before storms), not

2-May '99 Hello from Japan.

It is still very cold & snow
covered here in Hokkaido but I
have managed to catch some
small & colorful S. malva on
the Shiretoko peninsula. John and
I are planning a trip to
Kyoto for St. Valentine's
Day. I hope all is well
in Colorado and I look forward to
seeing you and maybe some fish.

To : Robert Behnke
Colorado State University
Dept Wildlife Biology
FORT COLLINS, CO 80523

U.S.A.

Jones Posch

POST CARD



Aug. 22

Dear John,

Ed Henke contacted Ore. historian, Bruce Gilinsky (who wrote historical sketch of Army outpost on Guano Crk.) and gave me phone no. I talked with Mr. Gilinsky and he gave me first-hand info. He remembered that he and his grandfather camped on headwaters of Guano Crk. right after WWII (ca. 1946-47) when he was a boy. They caught lots of trout. This places trout in Guano Crk. 10 yrs. before first stocking began by Ore. F & G. in 1957. No doubt the Guano trout are derived from a form of Lahontan cutthroat, which leaves two possibilities. 1. They are native from a headwater transfer from Lahontan basin, or 2. They were transplanted by humans - in which case Trout Crk. of Alvord basin is nearest source -- agreeing with testimony Carl Hubbs obtained in 1934. In 1928, rainbows were stocked into Trout Crk. and by 1933, half the specimens Hubbs collected were hybrids. Gilinsky did not find any reference to crooks fishing in Guano Crk. (he was busy making a new camp about 50 mi. away in Warner L. basin), but said that crook much enjoyed having fresh trout for dinner. Crook was cautious, especially after encountering the well-organized and clever ambush by Crazy Horse on the Rosebud. He and army retreated to trib. of Tongue R. (Goose Crk.) SW of Sheridan, Wy and found a spontaneous paradise. They caught ca. 1500+ trout, which is the first documentation that the Tongue R. was downstream limit of Yellowstone cuttr. It had such an enjoyable time on Goose Crk., they weren't aware of Custer's debacle on Little Bighorn (50 mi. to west) until it was too late. You, perhaps, have seen book "On the Border with Crook" by his side, Capt. Bourke. Many hunting & fishing episodes,

including catching "yellowish" Trout (Apache Trout) in White Mts. of AZ. during Apache campaign of 1880s.

Hope the polyp removal went well. Last week I again joined some of the old Ute & P. folks for retreat at Fred Eisenman's cabin near South Pass, Wyo (Fred was chief of fisheries for many years in Wyo.) We all have a good time enjoying the wilderness setting and historical tours in areas, but when several old geezers are shuffling about with canes and suffering the infirmities and aches and pains of old age, it must resemble old folks at a nursing home. We've had extreme heat for most of summer, but virtually no rain here (total precip. Jan 1 - mid Aug., slightly $> 4"$ vs. $11^{\frac{1}{2}}$ " long term \bar{x}). Highly unusual weather pattern; day after day rain hits south, $\frac{1}{2}$ Denver and to south, 2-3" comes down in hour, the paths of storms swings to NE, toward CO-NB border - lots of flooding, tornadoes, etc., but misses our areas. Our backyard pond dropped so low, pump stopped working - never happened before in 40 yrs. Trying to keep going with hose from house, but it's no long-term solution considering size of property. The private lake, west of Boulder, where I often fish dropped about 3 ft. and many large Trout died. I suspect the low water, intense photosynth. in abundant vegetation caused spike in pH, releasing toxic levels of ammonia in localized areas. My friend, Bob Hunt, from Wisconsin is in town this week looking forward to day at the lake. Since the "low point", there were some intense rain and hail at lake which raised level a bit and fish die-off ceased. My wife's brother visited last week and we made trip to lake to have a look. I only fished for about an hour, but the carcasses of large Trout I observed had been dead for about 2 wks. I caught a beautiful rainbow, in excellent condition on a 18' parachute leader (very unusual for large Trout to feed on small organisms - they focus on damsel flies). It had great stamina, and with tiny fly and trout

Colorado
State
University

Aug. 21, 98

Department of Fishery and
Wildlife Biology

Fort Collins, Colorado 80523-1474

(970) 491-5020

FAX: (970) 491-5091

Dear John:

Recently, funds became available for me to make the trip to Kamchatka. I'll leave Mon., Aug. 24, and should be back by Sept. 12. It's been hectic trying to arrange and reschedule schedules. The semester begins Aug. 24. I'll get class started and leave immediately after to get plane to Seattle. Next day to Petropavlovsk (Chukchi). Just found out today, Russian consulate lost our visa applications (in Seattle)-We're expressing new applications to travel agent who told us they will have visas on Mon. when we arrive. I'll fill you in on this adventure in about four weeks--assuming we get visas.

Returned Mon. from 10 day trip through Nevada. Couldn't resist revisiting some areas. Went to Jarbridge (near Idaho border) where big hullabaloo was in progress over listing of bull trout of Jarbridge R for End. Sp. Act protection. Public meeting was held for public input. Hours before meeting, County Commissioners had bulldozer go into a closed area and channelized stream. This resulted in emergency listing of bull trout and led to great protests by commissioners and their redneck followers. ~~We~~ were told not to wear anything associating us with Trout Unlimited.

Some "record" rainbows have been caught this year in reservoir formed by Chief Joseph dam on Col. R. Few years ago sterile rainbows were stocked. This year 25-26 lb. fish were caught

You mentioned freshwater fishes (such as pike) in brackish water. Depends on the salinity. The "salinity" or osmolality of fish blood is around 7-8 parts per thousand (seawater is 35). So up to

7-8 ppt salinity (sodium chloride salinity or other ions that are non toxic), primary freshwater fishes can exist without losing water. The Baltic Sea and Caspian Sea in bays etc., with rivers have low salinities (ca. 2-5 ppt) and typically have primary few fishes. Once on Chesapeake Bay I reined pike, bluegills, and flounder, all together in "brackish" water that was only 2 ppt. salinity. Some marine fishes such as flounder and gobies can move into freshwater without great problems. Evidently they have good kidneys that can pump out excess water and maintain homeostasis. Also, water temp. influences how well fish osmoregulate. Warmwater fishes, such as L.M. bass, much more likely to live in brackish water in south (ca. south of Chesapeake Bay), whereas brook trout and Arctic char are anadromous only in northern parts of range where ocean temp. are lower.

Interesting article in latest Trans. Am. Fish. Soc. about New Zealand sockeye salmon. Ancestors come from Shuswap L. (Fraser R.) and were sockeye, not kokanee, but they are "kokanee" in N.Z. - Stocked in 1901 in L. Ohau. Now two life history forms exist - one remains in Ohau, the other migrates to lake below (L. Benmore) - differ in size, growth, life histories. — Hope the worst of your ordeal is over and you're feeling better. — Bob

Fort Collins last year. She got a particularly virulent form that mimics infantile paralysis. So far, we've had much lower incidence at West Nile around here than last year, when our county led the nation in cases and deaths, but enough ^{and} magpies are now very rare. There are no authentic records of coho salmon south of S.F. Bay before stocking at hatchery began in 1906 - except for the 7 juveniles from 3 creeks collected by Stanford people in 1895. Jordan was convinced their range did not extend south of SFB -- probably not in large abundance, but they were there. The San Lorenzo was first river stocked south of SFB, and I believe coho are still stocked there.

We've had cooler and wetter summer this year. To date, precipitation is above normal (ca. 13" vs. 12") for first time in 3-4 yrs. With only the two of us, we grow much more than we can normally use, but hot weather crops such as cucumbers, peppers, and tomatoes are slowed down. If we have another month of sunny, frost-free weather we should reap a bonanza - then worry how not to waste the surplus. We make gazpacho - tomatoes, peppers, onions, cucumbers pureed in blender. A nice tasting, healthy soup. My wife recently inherited part of her uncle's estate - he had no children. He lived to 97 or 98 and his wife for few more years so it took a while to distribute the estate. She used some of the money to have an automatic irrigation system installed. Pumps water from pond to 14 stations that cover most of property. Now I'll have to have pond dredged to increase volume during drought.

hatchery fish are not equivalent to wild fish in fitness and the intent of ESA is to protect wild, native populations from extinction. The NOAA politically appointed administrator excised the recommendation of the scientific advisors as "inappropriate" (without addressing the legal requirement of using the "best science" or explaining why the science was "inappropriate"). The scientists were properly outraged and exposed the government's policy to manipulate and ignore science in a March 2004 issue of the journal Science.

NOAA set about to update the status of the 27 ESUs of Pacific salmon and steelhead with inclusion of hatchery fish and resident rainbow trout in the ESUs. The findings were published in the June 14, 2004 Federal Register. Up front is the statement that ESA "requires NMFS to make listing determinations based solely on the best scientific and commercial data available". NOAA determined that hatchery fish and resident fish would be included in the same ESU with wild fish if "only moderate genetic differences" could be detected. The biologists writing the NOAA document that appeared in the Federal Register did imply that "moderate genetic differences" might be important. For steelhead, the fear was expressed that the anadromous (steelhead) component of an ESU might become extinct if not given ESA protection. That is, doubts were expressed that the resident rainbow trout component of the ESU could produce steelhead. They admitted that there was a genetic basis for determining anadromous and resident behavior. The NOAA biologists concluded that protection for all 27 ESUs should be continued and denied the first spate of petitions to delist 15 of them. This is laudable, but the politically directed policy of including hatchery fish and resident populations with wild fish for determining the status of an ESU is ominous in light of the court decision the ESUs cannot be subdivided.

In my opinion, the obvious fallacy of including hatchery and resident fish with wild fish in ESUs can be demonstrated and documented by two issues if the ESA requirement of using the best available science is enforced. The first concerns the term "moderate genetic difference" as the basis to include hatchery and resident fish with wild fish. This is an egregious example of "genetic reductionism", an erroneous belief that all significant differences in life history, morphology, and ecology can be accurately evaluated from the degree of genetic differentiation detected by genetic analysis (realizing that only a tiny fraction of an organisms DNA is sampled). For a better understanding of this subject, I would cite a recent book by Jonathan Marks: What it means to be 98% chimpanzee. The 2% difference in DNA between humans and chimpanzees could be called "moderate", but this moderate difference results in very large and important differences between us and chimps. In contrast, *Galaxias maculatus* is a small salmoniform fish found in Australia, New Zealand, and the Patagonian region of South America. The South American populations have been isolated from Australian-New Zealand populations for about 30 million years or more. Because this fish species continued to fill the same niche throughout its range, it has not morphologically diverged and is classified as a single species even though the genetic differentiation between South American and Australian-New Zealand populations is about twice greater than between humans and chimpanzees. At the other extreme, the cichlid fishes of Lake Victoria Africa, have evolved into about 300 species representing different sizes, shapes, and colors, each occupying a different niche. This rapid speciation has come about in about 12,000 years. The amount of genetic differentiation among the most diverse species is

As you can see, my column for winter 2005
Trout is on reverse side. The theme of winter
issue concerns this topic and I wrote it to
support any legal action to not allow hatchery
fish and ~~rainbow~~ trout to be counted for abundance
of ESA protected salmon and steelhead. I
requested editor not excise or tone down my
comments, but here you have my original
draft. It will come out after election,
but I didn't mention Bush or Republicans
(at least directly).

Tomorrow, I'll go to old gotters gathering
of retired F&W biologists at a cabin in Wyo.
Hope the weather is good. On Sept. 19
I'll go to Yellowstone for wild trout conf.
After meeting, I'll give dinner talk in
Bozeman at whirling disease meeting.

Regards,

Bob

Political Science

My column in the spring 2004 Trout was titled: The Best Science. It concerned how an ideologically based belief system can distort and selectively use "science" to support a predetermined, but erroneous, conclusion that fish experience pain. One aspect of a pro development political ideology, emanating from the highest levels of government has been a strategy to weaken the Endangered Species Act (ESA) by delisting most or all of the 27 groupings of ESA protected Pacific salmon and steelhead. The strategy is designed to include hatchery fish with wild fish and resident rainbow trout with steelhead for assessing abundance of the ESA protected groups. If this is accomplished, most of the 27 protected salmon and steelhead groups, called evolutionarily significant units (ESU), would be found to be so abundant that there would be no need for ESA protection. If the best science is used to critically examine the basic question, if hatchery fish are equivalent to wild fish in "fitness" (survival to returning adults) and if resident rainbow trout are equivalent to steelhead (rainbow trout populations produce steelhead similar to steelhead populations), the answer is obvious; hatchery fish are not the equivalent of wild fish and rainbow trout are not the equivalent of steelhead. If science is ignored, distorted, or manipulated by "political science", any predetermined conclusion is possible. The predominance of political science in this matter was assured by appointing anti ESA lobbyists to administrative positions to set policy and make decisions for federal agencies dealing with environmental matters such as ESA policy. The National Oceanic and Atmospheric Administration (NOAA) is in the Department of Commerce. The fisheries division of NOAA, formerly known as the National Marine Fisheries Service (NMFS), now designated as NOAA-Fisheries, has ESA jurisdiction for anadromous fishes such as salmon and steelhead. The U.S. Fish and Wildlife Service (USFWS) in the Department of Interior has ESA jurisdiction for resident freshwater fishes such as rainbow trout. Several anti ESA lobbies representing special interests such as timber, grazing, agriculture, water diversion, private property rights, etc. have petitioned and brought legal actions to delist most of the 27 salmon and steelhead ESUs. A problem began when NMFS included hatchery fish with wild fish in the same ESU but treated them as separate categories. ESA protection was granted for wild fish but not hatchery fish. This opened the door for a law suit to delist the Oregon coastal coho salmon ESU in 2002. The argument was that because hatchery coho in the same ESU were not considered in assessing abundance of the Oregon coastal coho ESU, NMFS was in violation of ESA. The District court ruled in favor of the plaintiffs by determining that NMFS can not subdivide an ESU into separate categories. The door was now open to a flood of similar law suits to include hatchery fish with wild fish and resident rainbow trout with steelhead to estimate total abundance of ESUs. This conformed to the policy of the administration and the NMFS did not appeal the courts decision. Before NMFS could come up with new regulations that would redefine ESUs to protect only wild fish, which was the original intent, appointed legal and policy advisors instructed NMFS to include hatchery fish with wild fish and resident rainbow trout with steelhead in a revision of ESUs. A blue ribbon panel of respected biologists and ecologists had been acting as scientific advisors to NMFS, which under ESA is required to use "the best available scientific data" in making ESA determination. These scientists strongly argued that hatchery fish should not be included with wild fish in the same ESU because, clearly,

Sept. 7, 04

Dear John,

Recovery from pneumonia was slow, but by Aug. 16, I felt about normal and went to West Yellowstone to receive Aldo Leopold award at 77th Conclave - my name was spelled wrong on plaque, but it's been corrected. Then to Salt Lake City ^{and} where I met up with my wife. We rented car and went to the UCB Sojourn reunion. Quite an event. Saw people I hadn't seen in 40-45 years. Still recognized them despite the gray hair and wrinkles. Then we drove to Berkeley to visit with our daughter & family. The drive down I-80 was nerve-wracking for me. I'm not used to such traffic congestion, the Fairfield area west of Sacramento has had a population explosion and for 10 miles, the traffic barely creped along. I recall making the run to Sojourn many times each summer over old highway 40 - it was faster drive 40+ yrs. 2go, % the freeway.

The full bladder for radiation treatment is something new. When I had radiation in 1996, nothing was said about having full bladder - perhaps it would have worked better. Have you had problems with bladder control?

For trout, native and wild are commonly used interchangeably. That's why I contributed a chapter to a Nick Lyons book "In praise of wild trout", entitled "Wild trout, Native trout, is there a difference? One of the TU TV shows was on fishing the upper Colo. R. - they caught "native" brown trout - it made me wince.

There was story in S.F. Chronicle about local women who got west Nile disease when she was in

less than occurring within the human species. Should all 300 or so species be treated as a single ESU?

If the criteria of "moderate" genetic difference if consistently applied, the delisting of several endangered species would occur. For example, the endangered pallid sturgeon is "genetically identical" to the shovelnose sturgeon and the endangered humpback chub and bonytail of the Colorado River are "genetically identical" to the roundtail chub as determined by genetic analysis.

I have written several columns on the dangers of genetic reductionism. For example, Genetics: double-edged sword (winter 2004), The nature and nurture of trout behavior (autumn 2002), and What makes salmon and trout run (summer 2002). In 2002 I published a note in the Transactions of the American Fisheries Society commenting on a previous article claiming that throughout their range, rainbow trout and steelhead do not seem to be reproductively isolated. I anticipated the current problem when I wrote that such a statement could be harmful by providing a "scientific" basis for anti ESA rhetoric.

The second issue concerns the definition of an ESU. The ESA defined "species" to include subspecies and distinct population segments (DPS) that "interbreed when mature". The NMFS refined DPS onto ESU by requiring an ESU to be "substantially reproductively isolated" and to be an "important component in the evolutionary legacy of a species". There are numerous publications that document substantial reproductive isolation between rainbow trout and steelhead and between hatchery and wild fish. All testifying to the fact that hatchery fish are not the equivalent of wild fish nor rainbow trout the equivalent of steelhead. Substantial reproductive isolation is self-defining. Do steelhead trout give rise to steelhead trout and rainbow trout to rainbow trout? The answer is yes, they do. Without substantial reproductive isolation the two life history forms would merge into a single hybrid swarm. If the best available scientific data are used, there should be no doubt about the legal basis for ESA protection for ESUs of wild salmon and steelhead.

The closest parallel I find concerning a government sponsored ideology determining biological and environmental policies is the Lysenko era in the old Soviet Union under Josef Stalin. Although federal biologists who try to do the right thing wont be shipped to a gulag, they place their careers in jeopardy.

3429 E. Prospect Rd.
Fort Collins, CO 80525



GENETIC
FROM
Far Far A



John Hewitson
1033 San Abella Dr.
Encinitas, CA 92024

92024+3949 ######

Oct. 15, 84

Dear John,

Appears as though your recovering normally from radiation effects, but you might expect lingering effects on bladder and bowel control, which you get used to. Some years ago, a person your age wouldn't be treated for prostate cancer. The assumption was that the cancer progresses slowly and before it gets out and spreads, the man would die from other causes. Last week I was at cancer clinic for check up and an infusion of drug for osteoporosis. One positive aspect of being 765 is that my drug treatments (lupron and osteoporosis) would "retail" at around \$9000/yr., but since they're performed at clinic, they're "free"- except for what I pay into medicare and supplements. Good news was PSA showed no indication of cancer and leukemia progresses so slowly treatment is not needed- and I feel fine. I'm fortunate as when I was diagnosed with leukemia in spring of 1990, the statistical average life span from diagnosis to death was 8 yrs. Also lupron suppresses advanced prostate cancer, only 1-2 yrs. in most men. Advice is to hang on as long as possible in hopes that experimental treatments prove successful in controlling the cancer when lupron no longer is effective.

Sept. was busy month. I received a "wild trout" award at TU annual meeting and fund raising dinner in Denver. The next morning I left for Yellowstone and wild trout conf. with Bob Hunt, who arranged visit to his daughter's family in Fort Collins at the time Gave a dinner talk at whirling disease conf. in Bozeman, and got in one day of

I brought in most of garden-tomatoes, peppers, cucumbers, now how to use our surplus. Note to write what we grow, but with only 2 of us, it's a challenge.

Rain into Sept. & Oct., now precipitation almost 17", well above normal for first time in years. Bob

fishing in Sixteen Mile Creek, about 50 mi. north of Bozeman, before returning home. I wanted to see 16 mi. creek again because, ^{in 1983} I found beautiful native cutthroat (which appeared to be pure) among rainbow and brown trout. I mentioned this highly unusual phenomenon in my 1992 monogr. (p. 86), but, brook trout have taken over the headwaters (where I assumed cutthroat spawned, temporarily and spatially isolated from rainbows) and we caught no cutthroat, only browns and rainbows - sad.

In contrast to Calif., Montana and Wyoming still have vast expanses of wide open spaces with few people and virtually no traffic on the county roads. Earlier in Sept. I joined the old biologists' get together at cabin in WY on edge of wilderness area, so calm and peaceful, so wonderful to exist. In almost pristine nature, it only for brief time, Drawback of living in such remote places for old folks is the need to go to population centers for medical treatment.

My revised Trout column will appear in autumn issue (Oct. this month) to complement lead article on subject of the blatant attempt to add rainbows with steelhead and hatchery fish with wild fish to determine end-sp. states. Such outrageous policies by Bush administration upset people as you and I, but probably doesn't register with vast majority of voters. Ted Williams had column on same topic in last issue of Fly Rod & Reel - I sent Ted copy of my column for additional support in answering critics. - Had cooler than normal summer, but great Indian summer - mid ~~Oct.~~ no snow or freeze yet.

**Colorado
State**
University

Apr. 10, 98

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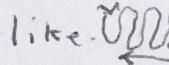
Dear John:

Thanks for all the news items on steelhead ESA listings. Ironic that steelhead thrive in Great Lakes and so rare in native range. Enclosed is copy of article for summer issue of Trout that discusses the 'perils of snobbery'. Continuation of my accent on history, but had request to keep to no more than 1500 words, so had to omit several item such as Clair Engles predictions re. diverting 90% of upper Trinity flow--not one bucketful needed in Trinity and in regards to negative impact on Trinity fishes--"absolute nonsense"--still come out to about 1700 words, so some might be excised before publication.

Did you see Ted Williams Fly Rod & Reel article "Hatchery Narcosis" in last issue? I supplied Ted with ammunition and told him I would help with response to angry letters. Enclosed is Ted's original draft of response. I advised to focus on catchable trout in relation to overall fishery program, not pros vs. anti hatchery--issues of equity, effectiveness, economics. Avoid any implications of morals and ethics and environmental correctness--try focused on the catchable trout issue (are licence buyers getting their money's worth?). Williams' style goes for the throat--Colorado's "choked with disease-ridden rubber trout", inflammatory, but gets attention. You've seen my critiques of Colorado & California's catchable programs (sent to Ted) and you and a few other people might

look at the facts and figures I put together, but when someone like Ted Williams interprets, it gets public exposure (he began career as I&E person for Mass. Fish & Game Dept.). Raises public "awareness" a few notches above what I could do.

The Elk R., the Penn. L. Erie steelhead stream, is the one that runs over a bed of slate. Interesting stream. There are areas with abundant spawning gravels, and the steelhead were on spawning run. I was told that, in summer, water is too low and too warm for any survival from natural reproduction. All fish I saw were from hatchery (deformed dorsal fins), but I suspect the larger, darker fish (10-12+ lb.) were repeat spawners--perhaps in river longer. The smaller (6-8 lb.) fish were silvery. Saw no parr or any signs of successful reproduction. The hatchery substitutes for the FW environment and L. Erie does the rest. Are they "steelhead"? Their ancestors were.

The Rockwell Springs Club, above Castalia Club on Cold Crk. (Ohio), is quite artificial, except for the natural spring supplying a large quantity of ideal trout water. A channel was constructed like  so

about a mile of "stream" courses through a few 100 yds on straight line. Catchable trout purchased from hatchery (they are nice looking fish, no deformities, evidently low density rearing), and swim in the channel everywhere you look. Constant fishing, mostly C&R (trout can be kept and purchased), make for a fair degree of weariness. 'Bonus' steelhead are sometimes available. Run up Cold Crk. from L. Erie, stopped in pool, below a grate on club property. Every day or so, grates lifted, steelhead move into older grounds.

Raymond,
R.D.Y.

rainbow TROUT.

I was able to get all of my trout specimens, including the best Russian salmonid collection in the U.S. (Hucko, Brachynops Tex., peculiar forms at charn) to BYU. They made two trips with a large van and U-Haul trailer. A unique feature is that I gave an oral account re. the significance of each collection that was typed and will go with the collection.

Last week I was in Penn. to give my annual lectures to a T.U. youth conservation camp (near Carlisle on the Yellow Breeches R.). Then I went with a friend to Chesapeake Bay to fish for striped bass. If you remember, 8-10 years ago, the East Coast stripers (most of which originate from Chesapeake Bay) were in dire straits. Populations at all time low.

Monotonium on fishing, great alarm. They have rebounded (or do all cyclical species) and are now abundant - mostly younger year classes. Regulations allow two per day between 18 to 28 inches. We got limits - kept one for dinner at camp we stayed. Stripers are back, but this year the blue crab is in dire straits - all time low - flying them in from Texas to meet demand - \$1.24/lb doz. in Annapolis.

Bob

Part II

I recall an Ernie Schwiebert's slide show on fishing in Argentina - He showed a "McCloud R." rainbow in one slide and a "Lenn A." rainbow (that were never propagated, much less shipped to Argentina) in another. - I once saw a sign at a deep pool in a stream on a private fishing club in Colorado (part of Roaring Fork R.) that prohibited fishing in that particular pool (OK, to fish above and below) because the pool contained the "original McCloud R. rainbow" (according to Schwiebert who had recently fished there).

Rainbow Trout feeding in marine environments are common in Chile. Large "steelhead" are reported from the Straits of Magellan. Frank Amato took scale samples from large rainbows he caught in trib. to Magellan and had them read by experienced scale reader. No doubt some did go to sea, but there was no real pattern evident at FW and marine growth as would be expected of a true steelhead population. - Probably similar to the S. African rainbows that would opportunistically use marine waters. No doubt, however, that steelhead played a major role in the origins of hatchery

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June 11, 78

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Dear John:

Enclosed are pages from L.S. Berg's book on fishers of USSR that provides details on the giant trout of the Kura. Similar to steelhead, different rivers have runs of different mean and maximum size. The Kura had another run of more 'ordinary' size trout. The Volga had runs of large (to 22 kg at least) trout. The Skeena R. has largest steelhead, the Kenai R., AK has largest chinook--2 runs, one peaks in May (slightly smaller), the other in June.

Kootenay L. has two forms rainbows--the highly predatory, large, older age at maturity Gernard form and a more 'ordinary' rainbow. Caspian Sea surface level is 50 ft. below sea level--at least when I was there in 74-75 while in Iran. So many large rivers drain into it (vs. only 2 feeding Aral Sea), it has its ups and downs with climatic cycles, but is apparently stabilized. The open Caspian is about 15 ppt. salinity (vs. 35 for oceans). Near estuaries, such as Volga, lower salinities allow proliferation of freshwater species--many sp. of cyprinids, some adapted to life in Caspian--even a walleye, St. volgensis.

I was looking over the stocking report you sent me. Evidently, catchable stocking produced all those giant LMBs in the So. Calif. reservoirs.

Enclosed is page from IFFA year book with list of people catching 10 lb. bass. That fellow Bob Crupi made a career of it. I believe C.F.G. realized they were maintaining a feeding program for LMB in Castaic and ceased stocking several years ago, so no more 19-20 lb. bass have been caught. He caught a few in L. Minnewau, which is still stocked according to report ("last stocking of season went in last week"), and "fair no. of limits on 2-8 (pound?) trout". Are these big trout holdovers, or old brood fish dumped for put-take fishing? Also note there is good fishing in Salton Sea for tilapia, corvina, and croakers. Mentions "striped bass in Castaic" - they would put a damper on LMB, except stripers don't do well in warm ($\geq 72-75^{\circ}\text{F}$) water.

I saw 'Pleasures of wild Trout' in local Long's Drug store. Not much "substance". Pleasant stories interspersed with poetry.

I've been out fishing few times, nothing much but pleasant experiences. Went to our local reservoir (Horsetooth Res.) with friend who has a boat. Interesting history - artificial environment, all non-native fishes. Thirty years ago, yellow perch dominated (but stunted). Walleye stocked, they did well - so well the perch disappeared. Mysis shrimp got in from other side of Continental Divide - thru 9 mi. of tunnel, 50-60 miles river x 1000 ft. They boomed, virtually eliminated zooplankton. Smelt stocked, they eliminated Mysis, but reached great abundance and walleye flourished again - but smelt, by eliminating zooplankton (after they ate all the Mysis) eliminated recruitment by walleye for 5 yrs. - Then smelt cannibalized each other and crashed. Now reservoir is full of skinny, starving walleyes we caught about 40 one evening on jigs and plugs, but all were emaciated. "Managing with exotics, a game of chance" (title in AFS publ.)

Bob

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Kamloops and "ordinary" rainbow, or the varieties of
Caspian sea brown trout, where 1000's of years of
isolation (by homing instinct) have produced a hereditary
basis for life history differences. Emerald Li, however,
is an example of how such differentiation gets
started (what is now phenotypic differences in growth,
eventually becomes genotypic with differentiation of
life histories). So I didn't pooh-pooh this fellow's
belief that he catches two different types of rainbows
in L. Tsupo, only that I would doubt there is
(yet) a genetic basis for growth difference.

I've always wondered if the hatchery cutthroat
of L. Tahoe and Pyramid L. consisted of more than a
single, homogeneous population. The old literature describes
different forms -- "tommy" and "redfish" of Pyramid and
"black" and "silver" trout of Tahoe C. F. & G. until 1931, when
cutts about disappeared from Tahoe, took separate egg-takers
from "Salmo henshawi" and "S. tshoensis" (silver trout). Most
likely explanation was first spawners vs. repeat spawners
differing in size and run time, similar to grilse
and multi-winter salmon of At. salmon population. There
certainly could have been genotypic population differentiation
of the cutthroat of Tahoe and Pyramid given several
1000 years to do so, but we'll never know.

There certainly is a hereditary basis for large size
in the Florida subsp. of L. M. bass or can be seen after
stocking of this subsp. in Texas and So. Calif. Edith

salmonid fishes, record size, is associated with particular populations, not subsp. nor geographical races, such as Skeena steelhead, Kenai R. chinook, Gerrardel Kamloops, Pyramid L. cutthroat, winter-run Klam R. brown, etc. Perhaps some Florida populations have hereditary basis for larger size than others (similar to salmonids), but I know of no evidence for this. You must be aware of the fellow who claims to have caught 24 lb. LMB in private lake in So. Calif. (written up in Outdoor Life several months ago). Lake full of threadfin shad, Florida LM stocked some years ago. The angler didn't want to kill the fish so he got bathroom scale he stood on with and without the fish - claimed to be 24 lb. difference - then he put it back in lake. Should have kept it in bathtub till officially weighed - makes for good story.

How did the colonoscopy go? Did you find a more compatible, communicative doctor? I was in Penn. to give lectures at T.U. youth camp. I roomed with Bob Hunt, noted habitat biologist from Wisconsin, now retired (his daughter lives in Fort Collins and we go fishing every summer on his visits). Bob had just been diagnosed with prostate cancer. He will be treated with radioactive pellets implanted in prostate - a much simpler technique than radical prostatectomy. Evidently, doctors believe it's just as effective, but only few years of results have been obtained and prostate cancer can be very slow.

Since return from Penn, the last weeks has been very hot (90s), after cold spell (all my tomatoes froze in garden on June 6). Perhaps tomorrow we'll go up to mountains and cool off. I'll bring rod along.

Regards,
Bob

III : 8 : 98

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Dear John:

I just received a postcard from James Prosek from Mongolia. James joined Johann Schöfmann of Austria (they traveled to Bosnia, Greece, Turkey, last year) to search for a form of grayling. A specimen in British Museum is the basis for a genus & species -- Phyllographus alticus, named 1892. Location given is south slopes Altai Mtns. No salmonid fish is known from "south slopes" of Altai-drain towards Gobi Desert, but very few collections from there. I examined specimen in 1866 and found it to have great tooth development, quite unlike Thymallus, but exactly same position of teeth (specimen was preserved in salt which accentuates teeth). It appeared close to Mongolian grayling (T. brevinartris) native to internal basins. In any event, Schöfmann, once I informed him of this peculiar grayling (mentioned in Trout article I wrote on grayling), he started planning trip and invited Prosek.

They haven't found grayling in south slope Altai and were told none exist, but traveling around proved very difficult. They used a Russian jeep and got stranded with flat tires for awhile on edge of Gobi Desert. They caught Arctic grayling and lenok (I assume in Arctic Ocean drainages) and Mongolian grayling (in internal basin), but no south slope graylings which may not exist. Anyway, James should have adventure stories and fish art for another book. The rejuvenation of the L. Tsopo Trout fishery is

interesting -- attributed to volcanic eruption(?)

Back in 1920s the size of rainbow trout declined. In early years (when population numbers were lower) trout to 25 lbs. were caught. A netting operation "thinned" out population to stimulate growth, but a population of 5-10 lbs. max. size trout that is 5-10x more abundant than a pop. attaining 20-25 lbs., provides a much better fishery for many more anglers. Someone wrote me a letter (re: one of my Trout articles) claiming that there were two types of rainbow trout in Taupo - that had different growth rates and spawned in different spawning streams. This could be possible as I have seen a comparable situation in Emerald L. Colo. (a student did M.S. thesis). Emerald L. ^{about 200 acres} is a bit above 10,000 ft. in San Juan Mts. It was barren of fish but stocked with local Colo. R. cutthroat in 1890. Few years later rainbow trout were stocked. They hybridized to produce what is now called the Emerald L. rainbow. Spawning occurs in outlet area and in inlet stream. Outlet area is warmer and spawning and hatching occurs significantly earlier than in inlet stream (ca. 6 weeks). The outlet area produces many more trout than inlet (ca. 75-80% of total pop. in lake). The young trout must remain together after hatching for some time. Thus the trout from outlet area have slower growth due to intraspecific competition, despite an earlier start in life. This growth differential persists in adults, which can be distinguished by no. scale circuli to first annulus (outlet trout have more circuli because they were born about 6 wks. earlier). This situation differs from the two forms of Kamloops trout in Kootenay L. (giant Gennard

Ed Henke
Historical Research
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June 30, 1997

Dr. Robert Behnke
Colorado State University
Department of Fishery and Wildlife Biology
Fort Collins CO 80523-1274

Dr. Dr. Behnke:

Thank you so much for taking the time from your busy day to respond to my recent correspondence to you regarding the "HISTORICAL RESEARCH" project on anadromous salmonids in southern California waters.

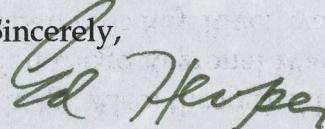
I have been in touch with Allen Greenwood of "SAN DIEGO TROUT" for two years now, but have not communicated with Michael Pottoroff... Thank you for passing along his card. I have been in close contact with Dr. Camm Swift, an author of the scientific publication by the "CALIFORNIA ACADEMY OF SCIENCES" and have an actual copy of the picture illustrating the gentleman with the steelhead caught in the Los Angeles River which was on the cover... Dr. Swift is a fine man who really likes to help. Also, through Allen Greenwood I've been touch with Linda Pardy of the "San Diego Regional Water Quality Control Board." Your input regarding the San Luis Rey River was invaluable to its final outcome. Thank you!

Your recommendations are right-on as far as my various paths of pursuit are concerned. My "RESEARCH" to date has developed quite a voluminous amount of historical documents, pictures, etc. involving Santa Barbara County, Ventura County, and all four of the Los Angeles Basin counties, San Diego County and Baja, Mexico.

Again, your response is much appreciated. I hope to have a chance to meet with you personally some day and prior to the final culmination of my "RESEARCH" efforts.

The very best to you.

Sincerely,



Ed Henke

Ed Henke
HISTORICAL RESEARCH
769 Lisa Lane · Ashland, Oregon 97520 · 541-482-9578

Henke is proprietor of
Chetko Trading and Publishing Co.
in Ashland.

June 12, 1997

played for S.F. 49ers
1949-63

Dr. Robert Behnke
Colorado State University
c/o Dept. of Fish/Wildlife Biol.
Fort Collins CO 80523

Dear Dr. Behnke:

I am in the process of accumulating historical data and documentation regarding a once very viable socio-economic segment of the natural resources that once abounded in the southern California coastal area prior and subsequent to the arrival of non-indigenous peoples. The main thrust of this endeavor is to help recreate in written and pictorial form what these self-perpetuating natural resources consisted of, as well as their environs in the counties of Santa Barbara, Ventura, Los Angeles, Riverside, San Bernardino, Orange, Imperial, and San Diego as well as Baja/Mexico.

The specific resources involved in this undertaking are the "**ANADROMOUS FISHERY RESOURCES, STEELHEAD/TROUT, SALMON**" and their respective waterways and eco-systems.

During the summer of 1935, the E. W. Henke family set up residence at 559 South Evergreen Drive in Ventura. I was the eldest of two sons and grew up in an environment where being an excellent shot, a good hunter, and a good fisherman was a family tradition . . . You could very much say that a big part of it was for subsistence purposes . . . I was called "Mallard Baby" as duck was my first piece of meat, and I did not eat a beefsteak until I was 18 years old.

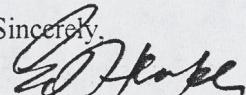
Because my youth was so immersed into the wonders of the great outdoors in this area where I grew up, I have decided to try very hard to give back some of its great generosity by contributing a balance of my remaining years to reconstructing and presenting historical documentation of such resources for the knowledge and response of our present and future citizenry.

To accurately reconstruct this history, I very much need the assistance of many people like you to help search out the various valid documentation needed. Please review the attached request for "HISTORICAL DOCUMENTATION." The completed product will give full credit for all submissions, and all original documents will be returned if so requested . . . Any postage or photocopy expense will be reimbursed immediately.

Thank you very much for your positive response. Your assistance will be invaluable to the success and ultimate completion of this most exciting undertaking.

Best personal regards.

Sincerely,



Ed Henke

**Colorado
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University

7/11: 9:97

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Dear John:

Enclosed are letters from Ed Henke, another person involved with historical research on southern Calif. steelhead. I'm more impressed by Mr. Henke's thoroughness in tackling the problem. I suggested he contact San Diego Trout (Allen Greenwood and Mr. Pottorf). As you see, he's already been in touch with Greenwood, and I should not have mentioned Pottorf. If Mr. Pottorf's competence is exhibited in his proposed web-site on the "motherlode steelhead", he's a liability for anyone doing serious research. Henke appears to be a interesting fellow, a former pro football player.

I did write to Pottorf, suggesting he read certain pages in my monograph to avoid gross errors. I pointed out that "all genes of all steelhead are found in So. Calif." is based on very minute bits of data. A trout (and most vertebrates) have about two billion base pairs of DNA making up their "genes". The "motherlode" assumption is based on examining about 200 base pairs (one part per 10 million). The literature is full of information on "genes" of rainbow trout not found in southern Calif. steelhead. For example, I just received copy of Ph.D. dissertation, 1997,

U.C. Davis, Molecular genetic analysis of rainbow trout populations. I could suggest to Mr. Pottorf that he could read this dissertation before visiting the website, but he would likely conclude something equally outrageous from material he has no understanding of.

The Nevada cowboy mentality is evidenced in small town cafés I visited. They have signs: "Clinton Free Zone" and posters touting the need to protect the right to bear arms (no gun control restrictions). One rancher in state legislature has introduced a bill making it illegal to kill non-native trout to reintroduce the native cutthroat. He doesn't want any endangered species on his ranch.

Yes, time seems to go much faster as one ages. When in Nevada, I visited with former Berkeley fishery student (went to work for Nev. D.F.G. but now with real estate firm). He got out slides from my early collecting trips - 1960, 61. I certainly looked much younger and slimmer then -- but the trout look the same, which made me happy.

Nick Lyons wrote back that he'd be very happy to have me write an original piece on hatchery, wild, & native trout and implications. I had a call from József Prosek who is going to Europe and take trip with Austrian fellow, Johann Schöffmann, I introduced him to. Schöffmann takes trips all over world trying to run down, photograph and study rare trout. Schöffmann owns bakeries but is quite a talented amateur ichthyologist. Prosek just had another book published "Joe and me," about boyhood experiences.

Regards, Bob

(see trout), and "dachs forelle" = salmon trout or lake trout, + others such as Loch leven trout - or more ordinary "lake trout", composed with the large, predaceous lake trout of Alpine lakes.

Thus today, virtually no two populations are identical, and a great range of coloration and spotting can often be observed within a single population. Don Scott wrote papers on the origin of brown trout in New Zealand, pointing out that both brook (fario) and sea (trutta) types were imported.

I've been cleaning out my office and lab. Next month the whole basement where I've been for past 25 yrs. will be torn apart and reconstructed. Last week I got last of my fish collection - at least the important specimens - shipped to B.Y.U. Going through box of old correspondence, I came across a registered letter from you sent Feb. 1978 (the previous letter took 6 months to reach me) - (concerned Puma Creek trout, with slides and N.Z. rainbows - why were N.Z. rainbows called "Tasmanian" when shipped back to U.S. (we still don't know)? My friend Bob Hunt from Wisconsin is here visiting his daughter and grandchildren. We went fishing in the private lake where we go each Apr. - when rainbows are very aggressive when their hormones are raging. Bob said he caught 27 - last year he lost count after 30+, 80lb

Apr. 23, 81

Dear Tom,

Thanks for news item re. San Mateo Crk. steelhead and its protection or listing, at least, under the End. Sp. Act. I wonder how many steelhead, over how many years use San Mateo Crk?

The brown trout story in Fish & Fly magazine was a composite of one I did for Trout magazine (+ some new stuff I added) and one for the Am. Fly Fisher (the Ransbottom story and the 1865 introduction into U.S.). The patching together resulted in some awkward transitions. Also a few errors (Tom Pero did all the patchwork) such as conferring the two Ransbottom brothers—one in Tasmania, the other in N.Y., at one point, and giving the maximum preferred feeding & growth temp. as 75° instead of 65°. I heard from an angling historian in England who is biographer of the Ransbottoms—the said Robt. Ransbottom left N.Y. (I believe in 1866) and returned to England where he helped his father run a fishing tackle business—they specialized in salmon flies.

It would be difficult to trace origins of the pretty brown trout with the large spots. All imports come from Europe (all subspp.—*E. t. trutta*)—but included "bochfonelle" (brook trout); meersfon

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Jan. 25, 99

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Dear John:

Enclosed is copy of Mr. Hopelkins reply of Jan. 11 with my comments on back. After reading, you will question the competency of Mr. Hopelkin and credibility of the "strategic plan"-- and why, in my original critique of the plan, I pointed out that, without critical external review and oversight, the plan will be an exercise in futility. I merely look over their own dots sent to me, yet these full-time employees can't see the obvious, and still can't after I point it out. Could you imagine a high level team at Ford, Chrysler, or Gen. Motors preparing a strategic plan for the future with a comparable level of expertise, knowledge, or simply, common sense?

The editor (or an editor) of Audubon was supposed to send me a copy with Prosek's article. I spent quite a bit of time on the phone modifying and correcting the text, but I haven't received it yet. I also looked over the illustrations and, as you did, found several faults -- especially SalmoThymus, which ^{definitely} ^{has} head and mouth like a grayling. The editor told me it was too late to modify the illustrations, and, Prosek is an "artist", not a scientific illustrator.

Rosek dropped me a card that he was talking a boat to Spain and would do a new book on fly fishing the 42nd parallel (or something like that),

Shöffmann wrote that he plans another trip to Mongolia. The original description of "Phoxinus alticus" gives locality as "South slope Altai Mtns., on Chinese territory". They did check one stream draining to Gobi Desert (That would be my "best guess"), but didn't find grayling. The color photos of "Colo. R. cutthroat" and "greenback cutthroat" in Jim Yorkovich's article in last Trout, are really of Yellowstone cutthroat (by coloration). Evidently, Jim has file of "cutthroat trout" photos, but not broken down by subsp.

Did I send you copy of my column for Spring issue? (40 yr. review of hatchery vs. wild trout). I just sent in connection-- I had some notes that a study in Colo. R. Tailwaters below L. Mead got only 10% return to angler of 10" catchables but doubled to 20% return of 14" catchables (most are eaten by striped bass)--but I couldn't find the original article. I found it yesterday. Actual data -- 10% return of 8" catchables, 2% of 9" (cost of \$30-\$60 per fish caught) and 22% and 47% return of 13" catchables, in two trials. Cost of each 13" caught was given as \$6.02 and \$12.89 - authors concluded this was "cost effective". Regards,
Bob

DEPARTMENT OF FISH AND GAME

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(1)



January 11, 1999

Dr. Robert Behnke
Colorado State University
Department of Fishery and Wildlife Biology
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Dr. Behnke:

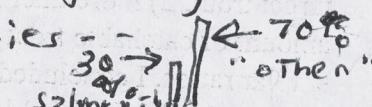
Thank you for your recent reply regarding the role of hatchery trout in California. It seems some of your conclusions are based on data that need clarification.

① The most recent and best data we have indicates that 60 percent of anglers in California prefer to fish for trout ("prefer" means that is the target fish). You base part of your conclusion on information in Lee (1995). Lee's central theme was discussing the contribution of nonnative fish species to recreational angling in California. Figure 2 is somewhat confusing because it implies all salmonids are "native" species. Obviously this is not the case. The graph should depict merely native and nonnative. Note that in his discussion Lee states, "Fletcher and King (1988) indicated that the majority of anglers preferred to fish for trout and salmon . . .". I interpret this as supporting the 60 percent figure. Please contact the author (D.P. Lee, telephone: 916/654-1369) if you need further clarification regarding the statements in his paper. Other sources report 70 percent of freshwater anglers in California fish for salmonids and account for 56 percent of angler days (USFWS, 1996).

② Regarding your analysis of hatchery costs, I believe you are citing material that has not been finalized or reviewed (CRI 1995). In addition, the DFG budget allocation proportions for Inland Fisheries Management you referenced have changed significantly since FY 92/93. The current (FY 98/99) Inland Fisheries Management budget allocation is \$69.3 million. Trout hatchery budgets comprise 10.0 percent (\$6.9 million) and anadromous hatchery budgets comprise 6.6 percent (\$4.6 million) of the total. While trout hatchery expenditures have remained constant during the past few years, allocations for recently established salmon and steelhead programs have risen substantially. The 1998-99 budget reflects \$21.5 million for new salmon and steelhead related programs. By comparison, the FY 96/97 Inland Fisheries Management budget totaled \$45.1 million.

Does CRI still have "trout stamp" formerly catchable trout were tied into no trout sold?

I believe the statement you referenced from an unpublished CalTrout source that "8% of angler days in California were generated by stocking catchable trout" does not correctly portray angling activity in California. Although I do not have any direct data to refute this claim, Fletcher and King (1988) present two data bits that imply far greater than 8% of angler effort is directed towards catchable trout. Based on survey results that 1) 60% of anglers

① Problem of fishing vs. wishing ("prefer") the data published by Lee 1995 (in citation) has a figure that depicts "% of Calif. inland anglers fishing for native (salmonids) and nonnative (other) species" --  "Native" is approximately 70% and "Other" is approximately 30%. The text clearly states: "The contribution of nonnative salmonids is unknown because they are not distinguished from native species in the survey". - I pointed this out to Mr. Hopelain - now read again his reply. Incredible someone so dense is in charge of the strategic plan -- but not really if your objective is to defend and maintain status quo.

② - What % of angler days supported by catchable Trout? He sent me data from 1996 National Survey of fishing & hunting (compiled by USFWS) for Calif. -- Shows: - Total no. resident & nonresident anglers: 2,175,000; 1,526,000 of them fish for "Trout" (at some time -- even if bass fishing in Irvine L. in winter is only trout fishing) - This 71% figure ($2,175 \div 1,526$) obviously is the figure C7 & G used to claim that 71% of license sales are "attributable" to Trout -- In "Days of Fishing" in 1996 in Calif., following figures given: total for all fish: 28,987,000 angler days; of which, 16,293,000 are for "Trout" -- Note by this figure, "Trout" ≈ 56% of total angler days -- not 71%! - Now, in 1996,

catchable Trout production had been cut back from ca. 10 million to about 8 million - but let's use 10 million catchables with 60% return = 6 million catchables caught. "Official" figure is for catchable Trout fisheries, average catch is 3 per day - this "produces" 2 million angler days "attributable or supported" by catchable trout (cont'd of 2)

May 17, '81

Dear John,

The enclosed article re. steelhead in Argentina and my response re. origin (your 78 paper is cited--wrongly--as in authority) may be of interest.

The number of repeat spawning is amazing, if true (the methods - Univ. WA scale analysis - should be state-of-art correctness). I suspect these 'steelhead' are using estuary as a large lake, probably not roaming open ocean. This possibility reminded me of an early report on Rogue R. steelhead. It wasn't realized that some (most) Rogue steelhead populations have the half-pounder life history. Scale reading mistakenly interpreted the overwinter in freshwater after few months in estuary as > spawning monk.

Thanks for clippings about the fluny at big bass catches and the letter from one of your neighbors in Encinitas re. environmentalist conspiracy spreading crazy stories about global warming and such. Reminded me of similar letter writer to Fort Collins paper. I thought the fellow was really a clever satirist-like > Sonstun Swift or Oscar Wilde. No, he was honestly writing inane musings on the environment that made wise use of rantings seem intelligent. He was president of local Farm Bureau, got in with conservative Republicans and was elected a county commissioner.

I had to vacate my office at CSU after removing tons of accumulated material

Transactions of the American Fisheries Society
Journal Manager
5410 Grosvenor Lane, Suite 110
Bethesda, MD 20814

A comment on Pascual et al., First documented case of anadromy in a population of introduced rainbow trout in Patagonia, Argentina. TAJS 130:53-67

This paper states that the rainbow trout eggs first imported into Argentina in the early 1900's came from Baird station of the U.S. Fish Commission on the McCloud River, California. In my monograph on western trout (Behnke 1992), I discussed the early history of rainbow trout propagation. I pointed out that: 1. The McCloud River was not the first source of rainbow trout used in propagation; 2. both resident trout (McCloud redband trout) and steelhead were mixed together in the propagation program at the Baird station; and, 3. The U.S. Fish Commission propagated trout on the McCloud River only from 1880 through 1888. During this time about 2.6 million eggs were shipped to state and federal hatcheries. After 1888 and into the early 1900's, the U.S. Fish Commission took eggs from wild steelhead populations. Spawning operations occurred on Redwood Creek and the Klamath River, California, and on the Rogue and Willamette rivers, Oregon. The U.S. Fish Commission Report for 1904 states that 20,000 "steelhead" eggs and 50,000 "*irideus*" eggs were sent to Argentina. The "*irideus*" eggs were probably from a hatchery brood stock. Neither the "*irideus*" nor the "steelhead" eggs came from the McCloud River.

Behnke, R.J. 1992. Native trout of Western North America. American Fisheries Society Monograph G.

Robert Behnke 
Department of Fishery & Wildlife Biology
Colorado State University

Either their fish came from
hatcheries utilizing McCloud fish
obtained between 1880 and 88 or
from steelhead from CA Ore or Wash.

II

and the fish collection--several tons to
By u. I have my home office now
in operation for writing book--still trying
to organize, but I'll check at csu
regularly for mail, messenger etc. I
have a small room in Engineering Bldg.
to set up library and files that I
couldn't get to my house--but don't
know when it will be ready. - In
meantime, you can contact me at
home: 3429 E. Prospect Rd.
Fort Collins, CO 80525.

— Bob

ishes. I. Physical factors. *Biology* 28:553–566.
bladder and the vertical fishes. II. The restriction agents. *Journal of Experimental Biology* 1953. The structure of the swim bladder. *Biologia* 33:1975. Effect of dumplings on stamina of Atlantic salmon. *Journal of the Fisheries Research Board of Canada* 32:559–563.
es. 1985. Swimming performance of rainbow trout (*Salmo gairdneri* (*Morone americana*)): effects of transmitters. *Canadian Journal of Aquatic Sciences* 42:488–493.

T. P. Quinn. 1990. Effects of transmitters on juvenile coho salmon. N. C. Parker, A. E. Giorgetti, Jester, Jr., E. D. Prince, rearing techniques. *American Fisheries Society, Bethesda, Maryland*.
1969. Seasonal buoyancy of young brown trout (*Salmo salar*) parr and smolt. *Canadian Journal of Fisheries Research Board of*

ment of buoyancy in young brown trout by changes in swim bladders. *Journal of the Fisheries Research Board of Canada* 35:352.

procedure. SAS/stat user's manual. SAS Institute, Cary,

Comparisons between juvenile brown trout of wild and hatchery origin. *Transactions of the American Fisheries Society* 111:1–11.
dder studies on salmonids growth. Doctoral dissertation, University of Toronto, Ontario.
water biotelemetry. Pages 1–18 in D. L. Johnson, editor. *American Fisheries Society, Bethesda, Maryland*.

First Documented Case of Anadromy in a Population of Introduced Rainbow Trout in Patagonia, Argentina

MIGUEL PASCUAL*

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MICHAEL T. KINNISON

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Gilman Hall, Hanover, New Hampshire 03755, USA*

ROBERT WALKER

*University of Washington, School of Fisheries,
Box 357980, Seattle, Washington 98195, USA*

20% 2nd spawning
would be high.

Abstract.—The examination of population-specific adaptations of introduced salmonids to the wide range of environments found in Patagonia (southern South America) can help unveil some of the genetic and environmental contributions to life history variation. The rainbow trout *Oncorhynchus mykiss* introduced into Argentina originated from a few parental stocks. Although some of these stocks were anadromous, all of the dozens of established populations described until now have been freshwater resident. In this paper we provide the first documentation of the presence of an anadromous run of rainbow trout in the Santa Cruz River, the second largest river of Argentinean Patagonia. Microsatellite analysis revealed that anadromous and resident fish from the Santa Cruz River are genetically indistinguishable, probably representing alternative life histories within the same population. Both wild types are very different from the fish of Danish origin that were reared in a local hatchery, suggesting that they are descended more directly from California stocks or that they have been affected by strong drift or selection. Marine growth and freshwater residence are comparable to those of California steelhead. River entrance peaks in early fall. Population age structure and scale pattern analysis indicate that fish enter the river at age 3 but that most do not spawn until their next river entry as 4-year-olds. An unusual aspect of Santa Cruz anadromous fish is that they are long-lived and highly iteroparous. For instance, 20% of the fish analyzed had experienced as many as five spawning events.

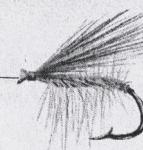
Few aquatic animal groups have been as extensively exported outside of their native range as salmonids. Among them, rainbow trout *Oncorhynchus mykiss* have been among the most successfully introduced species (MacCrimmon 1971; Lever 1996). Trout shipments to Patagonia, the south-

ernmost region of South America (Figure 1), started early in the 20th century with the primary goal of establishing wild populations. In Argentina, introductions started in 1904 (Tulian 1908), and over the following 70 years the fish were distributed throughout the region by federal and provincial government agencies as well as private landowners. Rainbow trout have become the most conspicuous freshwater fish in Patagonia, inhabiting every basin in the region.

* Corresponding author: pascual@cenpat.edu.ar

Received September 29, 1999; accepted July 11, 2000

Letters



SUPPORT FROM SOUTH AFRICA

We are a long-established fly-fishing club located in Cape Town, South Africa. Like the rest of the world, we felt deep dismay as we learned of the terrorist attacks on your country. The horror of it all speaks for itself, but in the context of our gentle pursuit these acts somehow seem even more bewildering and intolerable.

The point of this letter is to convey the sentiments of a distant group of fly-fishers to those in America. We extend our sympathy and support to your nation that now must endure the aftermath of these ghastly events. We praise the great courage and tireless resolve so many Americans have shown, particularly those at 'Ground Zero' in New York. We also express the hope that justice triumphs soon over these forces of evil, so that people all over the world can once again carry on with life in freedom and in peace.

Tony Biggs

President, Cape Piscatorial Society
Cape Town, South Africa

DR. BEHNKE ON WINE & BROOK TROUT

Enclosed is a copy of a comment I submitted to *Transactions of the American Fisheries Society* regarding limitations of genetic analysis to correctly identify steelhead (migratory) from rainbow trout (non-migratory) in the same river drainage—and how wrong conclusions about the hereditary basis for migratory behavior can be detrimental for best management practices. When I read Ted Williams' column on coaster brook trout [July/October] and the different attitudes to favor migratory (coaster) behavior in Ontario and Minnesota on one hand and Wisconsin on the other—where, supposedly, "a brook trout is a brook trout"—I added some advice with Wisconsin managers in mind.

A grape is also a grape. One species of grape (*Vitis vinifera*) is used in virtually all wine made in the world—reds, whites, best and worst. The "a grape is a grape" point of view is the most simplistic and would save money for wine drinkers because the cheapest wines

would be the same quality as the most expensive wines. I wouldn't want some of the managers Williams quotes selecting wine for me or, for that matter, being in charge of fisheries programs where subtle genetic differences that may not show up in genetic analysis can be important.

Robert J. Behnke

Dept. of Fishery and Wildlife Biology
Colorado State University
Fort Collins, Colorado

Dr. Behnke is considered to be the world's foremost scientific authority on trout and salmon.—Ed.

Ted Williams responds:

Having been influenced for my entire adult life by Dr. Behnke's writing, I am flabbergasted and delighted by the news that mine has influenced him.

SHOULD TED PULL HIS PUNCHES?

I looked forward to my first issue of *FR&R*. This had to be my kind of magazine. Just reading the title brought back memories of the sights and sounds of days gone by.

Then my first copy came, the January/February, 2001 issue. I opened it and started reading "Road to the Outhouse" by Ted Williams. I thought maybe it would be a funny story—how wrong I was. It was nothing more than another environmentalist spouting off, degrading good people and their way of life because it didn't agree with his. If this guy drove to Elko, he most likely traveled on numerous roadways and highways along many streams. Of course, he might have been so preoccupied with planning his assault on the good folks of Elko that he didn't even notice that he was doing exactly what the people in Elko wanted to do, which was to drive a road beside a stream to gain entry to their hunting and fishing country—no big deal.

Williams should read *FR&R*'s April "Sporting Life" article by John Gierach. Gierach is for real and tells it the way it is now, the way it has always been and the way it will always be. Fish thrive in roadside streams, just as they do in the wilderness lakes and streams. My suggestion is for John to take Ted by the hand and

teach him these facts, unless Ted over-the-edge and out of touch reality that he is unable to see the facts for the trees.

Which brings me to the end of my line and the end of reading *FR&R* until Williams no longer writes for you. For

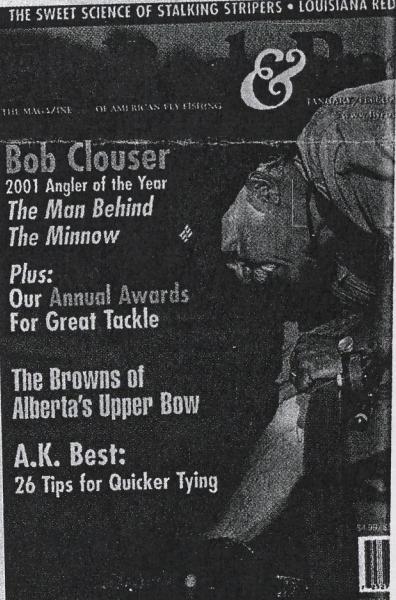
THE SWEET SCIENCE OF STALKING STRIPERS • LOUISIANA REDS
THE MAGAZINE OF AMERICAN FLY FISHING

Bob Clouser
2001 Angler of the Year
The Man Behind The Minnow

Plus:
Our Annual Awards For Great Tackle

The Browns of Alberta's Upper Bow

A.K. Best:
26 Tips for Quicker Tying



'It was nothing more than another environmentalist spouting off. . . .'

I will go down to the Little Deschutes River this evening, tie on one of my favorite hand-tied flies and catch a couple of nice, healthy German brown trout for dinner. I think my wife would like that.

John Garrick
Crescent, Oregon

I'd just like to add another cheer for Ted Williams. It's worth many times the subscription price to see the protests of the catch-and-kill crowd described as "porcine squeals." Keep it up.

Eric Hammar
Mankato, Minnesota

I haven't made my mind up yet about CARA [The Conservation and Reinvestment Act], but tend to agree with most of Ted Williams' comments in your article [Conservation, July/August 2000]. But one part of his article really turns me off—when he calls names. Specifically, when he labels several people

You'll
Some
choice
family

Herr LINDON hade tillika godheten tillsända mig några engelska tidningar, hvaraf jag inhemitat att detta första försök, att till Nya Zeeland öfverplantera bayriska laxarter från flera håll blifvit helsad med tillfredsställelse.

I tidningen Land and Water no 104 för den 18 Jan. 1868 pag. 410 har Hr W. C. YOUNG, hvilken af Nyzeeländska styrelsen haft i uppdrag att anskaffa laxägg, afgifvit en uttörlig berättelse öfver det verkställda uppdraget, i hvilken han vid uppräknandet af de romfyllda lådorna, hvilka blifvit afsända till Nya Zeeland med skeppet Celestial Queen anför åfven:

7 boxes Salmon ova (*Salmo Umbla*) from Schliersee Bavaria 9000.

På denna sändning af 9000 rödings-ägg fäster berättaren uppmärksamheten med följande ord: "I beg to call particular attention to the seven boxes of *Salmo Umbla* from Bavaria, which have been obtained through the personal exertion af your correspondent E. V. LINDON, Esq., under very great difficulties, and I beg to return him my best thanks on behalf of the Otago Government, for his assistance in procuring so valuable an addition to our shipment. I feel satisfied the *Salmo Umbla* will be peculiarly well adopted for the extensive New-Zealand lakes, and I hope Mr. LINDON will take an early opportunity of diffusing his information respecting this valuable fish, with a view to its succesful culture in our colony."

Ur dessa berättelser framgår att för denna transport af 234,000 laxägg, hvilken blifvit anförtrodd åt Celestial Queen, medföljt en sakkunnig person för att under den långa sjöresan öfvervaka äggens tillstånd. Jag håller detta försigtighetsmått för särdeles vigtigt, emedan helt säkert många ägg dö och fördervas under vägen och det är vigtigt, att de friska

newspaper

vessel

106 days from
England to
New Zealand

shipment

315	boxes salmon eggs	220 000	pcs
9	" Salmo Eriox eggs	4 000	"
7	" " Umbla "	9 000	"
3	" " Fario "	1 500	"
Total:		234 500	" eggs

Old book, May 1869, Finland, 96 pgs

On Aquakultur

Jan. 18 82

Dear Tony

Enclosed is page from Fly Rod & Reel w/ my letter
(as suggested by Ted Williams). Note that I was
elevated from "one of the" to the "foremost authority"

I came across another Xerox I had for you about
an 1869 shipment to New Zealand. Dan Scott covered
this in his paper on origins of sea-run browns in
N.Z., but this was from an 1869 Finnish book on
aquaculture. "Salmus umbra" = Salvelinus alpinus. Umbra
is Alpine char of Central Europe. They were confident
they would do well. — Salmus eriox is name Linnaeus
gave to sea trout — but, you can see that Atlantic
salmon was the species of emphasis.

I wonder if I had sent you this item before.
I've been so consumed to get text for book to
publisher, I forget what day it is and I forget
people's names — problem of a one-track mind. I
completed brown trout and Atlantic salmon this
past week and now have only few sp. of Salvelinus
to complete first draft of species accounts by
Feb. 1. I'm taking a few days to revise my
comment to AFS re. endocrinology and residency in
Argentine rainbow trout, before I immerse myself
again in writing text.

When I did text for pink and chum salmon,
I noted that natural hybrids between these species
occur (and have been produced in hatcheries many

times) despite chromosome differences of $2N=74$ in chum
and $2N=52$ in pinker, yet these two sp. one most closely-
related to each other! Brown trout $2N=80$ At. salmon
 $2N=56$ (N. Am.) 58 (Europe) hybridize - rare in Europe except in
a highly modified river in Sweden, also infl. by hatchery
stocking - but fairly common in Newfoundland where
brown trout aren't native.

I added a note to my golden trout article in last
Trout re. Stuart Edward White's warning in his 1904 book,
about stocking rainbow trout in S. Fr. Kenn. The
main, and only, concern for future of golden trout
I could find in Evermann's 1906 rept. was need
to protect them from 'fish hogs'. All the fish hogs
in Calif. couldn't compare to threat from stocking
rainbows. Hindsight is so much easier than foresight.
Your tender feelings for fish and any trout
they suffer by being caught is more often an American
phenomenon. The European tradition of "blood sports"
is that quick killing of the fish "justifies" the
brief traumas induced. I got another letter from
PETA thanking me for my "helpful statements"
re. fish feeling pain, then seeking my opinion on
"AquaBabies" - a small fish in a 4" tank sold in stores.

I wasn't aware of AquaBabies - I've never seen one.
Tomelleri is doing several new illustrations for the
book. The last two he's working on now. Extinct Trout,
yellowfin and Alvard cutthroat. He borrowed yellowfin
specimen (from 1889) from US Nat. Mus., and Alvard Trout
from BYU (my old collection). There is color photo of
Alvard trout, but yellowfin requires improvisation.
Prosek just sent me a CD of his 'Trout Band' - original
songs he'd composed, probably never made the top 40.
We've been hit with cold wave. Last night our electricity
and furnace were off from 5 to 9:30 P.M. as temp. dropping toward 0.

Pentatively, we have fireplace insert and lots of wood to burn.
Regards, Bob

May 4, 06

Dear John,

A "25 lb." LMB is big news -- saw it several times in various media. ESPN with their buzz tournaments, leading to superbowl atmosphere among the fanatics, must have set the stage for Li Dixon to rise 2 ft. when inundated with all the record seekers and their boosters. After that ♀ spawns, she'll lose about 5-6 lbs. and it would be no record at a lifetime. I met with a fellow from U.C. Boulder, who has NSF postdoc grant to study and report on historical-sociological aspects of sport fishing - using rainbow trout as a model fish. We discussed the diversity among anglers -- the obvious gap between tournament LMB addicts and trout anglers in belief systems, personality profiles, etc. - I pointed out that the most intense antagonism, as with religious wars, is between subsets of the same category -- trout angling with nymphs - barbless flies vs. wild trout w. hatchery only ideology w. 211 the rest --

trout, etc.

I was away much of last month. James Prosek had me give talk for Yale Anglers' Soc. fund raising banquet at NY Anglers Club. Also gave talk at Yale, and visited relatives while in Conn. Before I left, James took me to private club stream. Hatchery truck must have recently dumped load of 12" brook trout. Caught about 15 in 20 min. Not wild trout, but they were very nice for hatchery fish. I must go to Div. wildlife office and pick up my free license - New law gives free fish license if your old enough and lived here long enough.

Also had lunch at Morey's in New Haven. Site of the wiffenpoof song, where Louis dwelled (he was owner at the time) - I think Rudy Valley, who started his band while a student at Yale, popularized the song.

Often there is no logical explanation why some species did not extend their distribution despite no physical or ecological barriers. Brook trout in Great Lakes basin is good example. The migratory (coaster) form was only in Lks. Nipigon and Superior. The whole lower peninsula in Mich., south of Jordan R., both tributaries to L. Michigan and L. Huron had no native brookies. Also L. Erie basin of Ohio, only one stream (Chagrin R.) had brook trout. After 1000s of years of opportunity to disperse, why didn't they move? I suspect that nearest suitable spawning rivers on Azlon Pen. and Tierra del Fuego, one beyond the range of migration, but I've never seen any factual info about this.

I wasn't much aware of how many parents get so involved in getting their children into the right college. Our grandson is 4. His mother related how this is big topic among her local group of contemporary mothers of young kids. Determination and enthusiasm for learning are more important than the school you go to, unless it's a family like the Bush's and Yale. Abe Lincoln is role model for this concept. We had warm spell and I began planting garden. Yesterday and today, max. temp. in 90s (79°F day before yesterday), but it did bring some rain - perhaps 1/2" or so, but only about 2" total precipitation during first 4 mo. of '86. Purchased tickets to Harrisburg next month for T.U. Youth Conservation camp. Air fares are up-up-up - no bargains available.

Regards, Bob



Dr. Robert Behnke, Ph.D.
3429 East Prospect St.
Fort Collins, CO 80525-9739

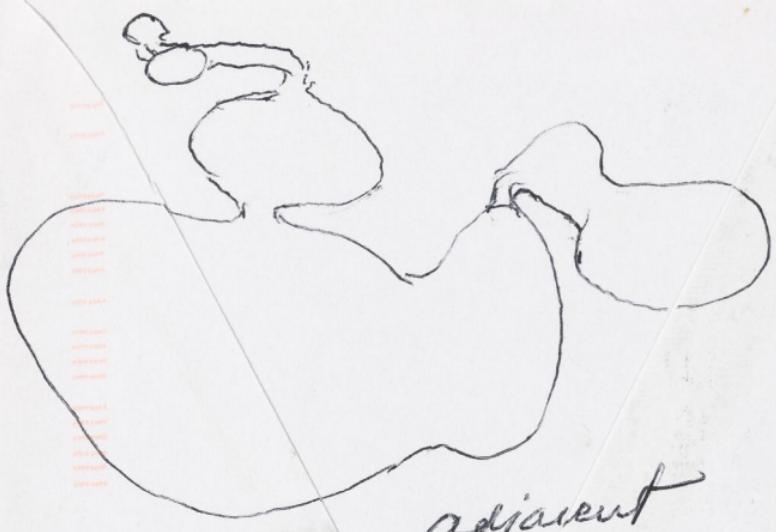
Dear Wanda,

I just wanted to thank you for giving me some time yesterday. I have been in a bit of a turmoil for the last couple of weeks and your kindness is much appreciated!

John Hewitson
1033 Sanabella Dr.
Encinitas, CA 92024



2024-3343

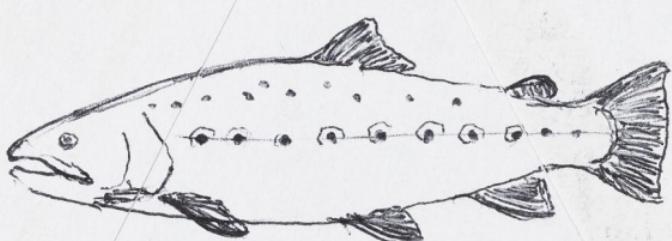


~~Ballock~~

weighed

Crown cup

across



Sept. 3, '82

Dear John,

I came across this photo (ca. 25+ yrs. ago) of a brown trout from my backyard pond - spring-fed, ca. 1/4 acre. I had no problem with keeping pond full and growing lots of trout, all on natural feed. It produced brook Trout to 19" and Snake R. cutthroat to 24" -- Larger trout consumed crayfish and darters + fathead minnows. Now, with record drought, my spring, which depends on subsurface water ^{on the} edge of Poudre R. flood plain, barely seeps - just enough to form pool for our donkey's drinking water.

Besides trout fishing, the pond supplied water to irrigate lawn, gardens, and much of our 5 acres of land. This year, the pond is mostly gone. There is a deep hole to pump water, but only enough for a few hours of pumping per week - then allow several days for seepage to produce enough water for next pumping. It had pond dry, in 1967. Only fish left is a native "top minnow", Fundulus sciaticus, a very hardy species that can thrive in inch or two of water. The drought became personal. I'm discomfited by seeing > brown _{town}.

Is colonoscopy the same as sigmoidoscopy? I have it done every 5-6 years to check for colon cancer. This year I took a valium pill before and it relaxed muscles so the probing went quite easily, with little discomfort, but the ca. 18 h. starvation and purging period is the worst part.

Thanks for observations and illustrations of N.Z. sea trout. I'll have to learn

more on the different life histories and sizes
acc. with different regions. J. M. Elliott's book,
"Quantitative ecology of brown trout" contains detailed
life histories on some British sea trout populations.
Even at 7-8 yrs. of age, end "4 winters" in marine
waters, max. size is only co. 16-18" - much
like ^{coastal cuts w/} comparable life histories. Evidently, they
don't feed or grow much during their "winters" at
sea. Very different from 25-30 lb. sea trout
at Baltic Sea and Rio Grande of Tierra del Fuego.

Enclosed is copy of my Trout column for
winter issue. Joe Tomelleri has expedition
planned to survey the highest elevation tributaries
of Conchos R. in Oct.

The Tree R., char, Dolly Varden, or Arctic char,
might be resolved soon. A friend from AK
is at Arctic char symposium in Ireland
this week. He hopes to get the ~~definitive~~
~~a~~ definitive identification from a Canadian
biologist who's been doing study. I believe
the world record A.C. is really a D.V.-
but about 2X the record D.V.

Regards,
Bob

Present world

Definitive ?

A reviewer of my new book on trout and salmon asked if I considered the book to be "definitive"—the last word on trout and salmon. I replied that no book dealing with subject matter infused with unknowns, uncertainties, unsolved mysteries and questions with less than satisfactory answers can ever be definitive in the true sense of the word. It can only be as definitive as an author can possibly make it at the time of writing. It will always be open to change as new information becomes available. "Definitiveness" is an ongoing, never ending process when dealing with such subject matter. Come to think of it, similar to angling, it is the anticipation and excitement of the chase that creates the passion to learn more, rather than the capture or resolution that sustains interest. How many would be familiar with Jack the Ripper and his foul deeds if Jack had been caught, confessed, and convicted soon after his last Murder?

One might consider degrees of definitiveness. Long ago, Aristotle pondered on this matter. He concluded that for an in-depth understanding of a subject, one must know what sorts of things can be proven and made precise, and what sorts require a tolerance of vagueness and only tentative or probable conclusions—that is, some things can be more definitive than others. A good example of this is the taxonomy used in the book: my classification of genera, species, and subspecies. According to my way of thinking (or opinion), the classification is as definitive as it can be at the time I wrote it, but I frequently invoke qualifiers such as "tentative", "judgment call", "more information needed", "may be changed in the future", etc.

In the book, I also raise the sorts of questions that could be precisely answered if new information becomes available. The trout native to Mexico are examples of questions where new information is necessary for more definitive answers. Questions presently lacking definitive answers are : What is the southernmost natural distribution of trout or salmon; and , are cutthroat trout native to Mexico?

Besides a rainbow trout native to the Rio Santo Domingo on Baja California, trout are known to be native to rivers from the Rio Yaqui in the north to the Rio del Presidio in the south. All of these rivers flow from the Sierra Madre Occidental to the Gulf of California on the Mexican mainland. The diversity of trout found in these several river basins includes the Mexican golden trout Oncorhynchus chrysogaster and three unnamed subspecies of rainbow trout O. mykiss. The southernmost known natural distribution of trout, and of the family Salmonidae, is in the head waters of the Rio del Presidio near 24°

N. Latitude (Tropic of Cancer). During the summer of 2000, Joe Tomelleri, the artist who created the magnificent illustrations for the book, accompanied an expedition to the Sierra Madre Occidental to obtain specimens of the native trout so he could accurately reproduce their living colors. During the expedition, it was learned that trout occur south of the Presidio basin in headwaters of the Rio Baluarte and Rio Acaponeta. It is not known, however, if these trout are native or introduced—a question in need of further study before a definitive answer can be given.

I assume that during the last glacial period from about 10,000 to 60,000 years ago, the Gulf of California was sufficiently cold to allow trout such as steelhead to freely move in the marine waters of the Gulf. One such ancestor entered the Rio del Presidio. With the end of the glacial period and subsequent warming, the trout of the Rio del Presidio persisted as "landlocked" populations in the coldest tributary streams at the highest elevations. I would also assume that the environmental conditions allowing the invasion of trout into the Rio del Presidio also allowed invasion of the same ancestor into the Rio Baluarte and Rio Acaponeta. If so, have their descendants persisted to the present? Trout fossils have been found 250 miles south of the present distribution of trout in the Presidio basin. The possibility that cutthroat trout are (or were) native to Mexico presently rests on a short note published in American Naturalist in 1886 by paleontologist-zoologist Edward Drinker Cope. Cope wrote: "I owe to my friend, Professor Lupton two specimens of black-spotted trout from a locality far south of any which has heretofore yielded Salmonidae. They are from streams of the Sierra Madre of Mexico at an elevation between 7000 and 8000 feet, in the southern part of the State of Chihuahua, near the boundaries of Durango and Sinaloa. The specimens are young and have teeth on the basihyal bones, as in Salmo purpuratus, which they otherwise resemble." These two specimens were lost and never seen again so their identity as cutthroat trout could not be verified. The circumstantial evidence that the specimens sent to Cope were cutthroat trout concerns the common name of "black-spotted" trout, which was the common name used for cutthroat trout at the time, the "resemblance to Salmo purpuratus," the scientific name used for cutthroat trout at that time, and "teeth on the basihyal bones". In modern terminology, Cope's basihyal bones most likely are the basibranchial bones that lie between the bases of the gill arches. Basibranchial teeth are a distinguishing character between cutthroat trout that have these teeth, and rainbow trout that lack them. No one has ever "definitively" documented the existence of cutthroat trout in Mexico. All of the various forms of rainbow trout and the Mexican golden trout in river basins draining to the Gulf of California lack basibranchial teeth. If the two specimens collected by Prof. Lupton were cutthroat trout, they would have had to come from the headwaters of the Rio Conchos that drains eastward from the Sierra Madre Occidental to the Rio Grande. There is no definitive record of native trout in the Rio Conchos basin, but its headwaters at higher elevations (6000 to 9000ft.) does (or did at one time) provide cold water habitat suitable for trout. During the last glacial period the Rio Grande should have had flows of cold water downstream into Texas and Mexico. Evidence for this is a nineteenth century account in Forest and Stream by a Civil War surgeon describing trout fishing in Rio Grande tributaries in the Davis Mountains of Texas. The streams mentioned flow to the Rio Grande in the vicinity of the mouth of the Rio Conchos. Circumstantial but not definitive, evidence that Rio Grande cutthroat trout had access to the Rio Conchos.

June 13, '86

Dear John,

I was just about to write to you, thinking I must owe you a letter, when I received your letter of June 9, explaining your experiences on the medical merry-go-round. If you were able to walk in and out of the Poems Crt. canyon and feel no ill effects, you should be in pretty good shape. It would take me a very long time, with many rest stops, to take such a biker. I have little stamina but assume it's a gradual aspect of aging. Last Sept. I was found to have borderline anemia, which affects stamina, but it improved before it would be covered by medicare. One side effect of leviteniz is feeling tired, but otherwise I feel in good health. I hesitate to make a complaint when I have check-ups next month, or I might be sent through the gauntlet of modern medical technology or you were. We've had an intense heat spell in June - one week max. temp. in 50°, next day, and since, in 90°. - About 20° F above average daily highs. Also no rain. To date only a bit over 3" since Jan 1. - Less than $\frac{1}{2}$ the average. I go out and work in yard and garden, but after 15-20 min. I have to come in and cool down and rest up.

I was prompted to write by a book.

"Some western fishing" 1926, by W.W. Crosby.

I used the book to find clues on the origin of rainbow trout stocked into Bright Angel Crk. in 1923. I was asked my opinion on photos of peculiar trout in headwaters of creek. They looked like RBCUTT hybrids. The author was Sup't. of Grand Canyon N.P. in 1923 and in absent angler. Obviously, when he saw this potential trout stream with no fish, he arranged a shipment of rainbows. They came from Leadville federal hatchery in Colo. At the time RB "brood stock" were taken from wild populations in lakes. These lakes also had cutthroat trout, so it's likely the cutthroat genes came with original shipment. He has chapters on fishing in southern CA-- bass fishing in reservoirs around San Diego (bass didn't attain $\frac{1}{2}$ the size they do now). He tells about popular trout fishery in Cuyamaca L. State stocks 50,000 RB & steelhead fly each year and trout grow rapidly to 5-6 lbs. (to 9 lbs. record). Is there still a trout fishery in Cuyamaca L? The water co. charged a fee and rented boats. The outlet, Boulder Crk., was full of small rainbows, but had difficult access.

Bass are notoriously difficult to raise in hatcheries. They will starve to death unless given live food (or its odor). To ~~teach~~ ^{teach} young LMB to accept dry food, it was found if you started them feeding on carp eggs, they could gradually learn to take artificial food. Next week, I'll go to Penn. for TU Youth Conservation Camp. Next month I have field trip planned to eastern Oregon desert basins. Regards, Bob

One advantage brook trout have over cutthroat occurs in the first year of life. Being fall spawners, brookies hatch about 2-3 months before cutts. Thus, they are always longer than cutts in their first year. This size advantage translates to establishing feeding sites in preferred areas. That is, larger trout are dominant over smaller trout. The young cutthroat are forced into marginal (low survival) habitat.

Anything yet on the "genetic analysis" of Son Mateo Crk. trout? The biologist quoted in the article evidently doesn't understand the limitations for genetic analysis to identify steelhead. Both resident rainbows and steelhead of some river can be expected to be "genetically identical" by genetic analysis. There may be a "marker" gene that can distinguish trout of some species by geographical area—but not by life history type. Thus, the Son Mateo trout might be found to be "native trout of southern Calif."—as opposed to hatchery rainbow from northern Calif. ancestry, but no genetic analysis can separate resident rainbows from steelhead.

Regards,
Bob

May 25, 99

Department of Fishery and
Wildlife Biology

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FAX: (970) 491-5091

Dear John:

Enclosed is postcard from James Prosek from Japan. He is working on a new book about fishing around world on the 42° latitude (his home in Connecticut is at 42° N). I also heard the PBS broadcast featuring Prosek telling about his new book on F. W. Walton. A day or two later, I received a copy from Prosek. I was impressed with his historical research and writing ability -- quite a good book.

Also enclosed is article on sterile rainbows. L. Rufus Woods (reservoir just downstream of Grand Coulee dam) is relatively sterile, never noted as a good fishery. The 25+ lb. Washington state record is comparable to fattening a deer on elk until it reached record proportions, then turn it out to be "harvested". As I understand it, the fish culturist stocks some of these monster trout to be caught for publicity purposes.

Aug. 1, 97

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Dear John:

The newspaper story is about as I would expect when a journalist, unfamiliar with the subject matter, is fed information by Greenwood and Pottorff.

Watch San Diego paper. I had long talk yesterday with reporter (I think he said he wrote for San Diego paper). I explained the "most primitive" and "motherlode" issues were false, but there are rationale arguments to preserve So. Calif. native trout. He has copy of my book and I suggested ^{her} ^{& the} last chapter or epilogue. I also suggested he contact you as a person knowledgeable on the subject (and rational, as opposed to Greenwood & Pottorff). This fellow seemed willing to dig a bit deeper and get a better understanding of what he would write about than the North County Times article.

Enclosed is title page from just published paper. Jennifer Nielsen has been doing this work for some time and it is the basis for the "most primitive" and "motherlode" claims (as interpreted and greatly distorted by Pottorff).

Study (actually, represents several studies over several years) includes Pauma Crk. fish and three taxidermy steelhead caught by Ed Henke's father in Ventura R. about 50 yrs. ago (some mitochondrial DNA can be retrieved from fins of mounted fish). From reading my reply

to Mr. Pottorff, you might surmise that there is really nothing earth-shaking in results. Native pop. (such as Pumas etc.) do have some markers (base pairs of DNA) not found in hatchery rainbows, as would be expected. I sent copy of title page to Pottorff (pointing out if he reads article, there is nothing on which to base assertions of motherlode, most primitive, etc., but also it verifies that there are distinctions you can't find in supermarket ^{although very slight} rainbow trout). Also sent copy to Ed Henke to let him know he and his father's steelhead are acknowledged.

Also enclosed is copy of letter written after a visit to a tiny creek on USFS lands, used for skiing by Winter Park Resort. Environmentalists are trying to block a snow trail that, if constructed, would cut trees to make opening in forest. Claims were made that this "road" would harm the cutthroat trout. A reporter had called me month or so ago and I told him I had never been there and couldn't speak with any authority. I did agree that logging roads have, historically, been a major source of sediment input into streams, but I expressed doubts that the USFS would permit such a road without strict environmental safeguards. You might imagine how stony come out, as I was very selectively quoted (TU, Denver office, is one of groups claiming great potential damage). My letter attempts to set things straight. -- Got through the great Dent Collins flood. Amazingly, our 7. xw. building escaped with only 1-2" in basement (where my office is). Buildings around us were devastated. I feared the worst--all my library and years of info accumulated--all made it through O.K. (very damp, but intact) -- Regards, Bob

in Fort Collins might still have some position
he had with USFWS. Few years ago, all research
biologists in USDI (FWS, NPS, BLM) were put into
the USGS (Biological Services Div.) There is
a regional office in Fort Collins - the Cooperative
Fishery & Wildlife Units at universities also changed
from USFWS to USGS, but nothing else changed.

I'm supposed to go to Chile for last
 $\frac{1}{2}$ of Jan. Two fishing lodges wanted me to
come down and advise them. I said if
they covered all expenses I wouldn't charge
any consulting fee - of course I can fish
all I want. — wishing you the best
for the holidays - Bob

OFFICE MEMO

II

TO:

FROM: Snake where we fished-- the ID state record Date
of 26 lb. was caught there. Several boats had

SUBJECT: of 26 lb. was caught there. Several boats had

REMARKS: anglers casting long lures for the browns where we fished. They had caught a few of about 18", but were disappointed - they are often 10+lbns. - I didn't find any errors in your account of rainbow trout origins.

As I wrote, I had no great success with large steelhead (^{24" yrs. in ocean} 10-12-15 lb. class) - one strike on Grande Ronde and one hook-up in John Day. No doubt it was in the "large" class. Never broke water, but very powerful - a good memory at least. - You're former student working

Colorado
State

University

went to AFS meeting in Monterey
and didn't mail this before I left.

Sept. 4
~~Aug. 25, 97~~

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Wildlife Biology

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Dear John:

Thanks for additional clipping-- I sent them to Ed Henke.

Enclosed is steelhead story written by experienced editor-journalist. I come across a bit skeptical. My basic question was: what will or can be done for steelhead after listing that couldn't be accomplished without listing? One thing was done after listing of upper Columbia and Snake R. steelhead -- all fishing, even catch-and-release, is banned, which upset some people. A friend in Wenatchee WA sent clippings on NW steelhead listing.

I couldn't help but thinking, how the BioScience story might come out if editor interviewed people like Greenwood and Pottoroff. Experienced editors-journalists should have ability to sort out unsubstantiated, far-out rhetoric from factual content unless they work for a tabloid -- then you pick up on "motherlodes", "original ancestor", etc.

Had call from writer for USA Today doing story on World Fly Fishing Championship in Jackson Wyo. this week (I'll go up this weekend to participate in conservation symposium part of the event). He wanted to know about fine-spotted Snake R. cutthroat that is the fish the anglers will be fishing for. Said his article might come out in Friday's edition. He has my book as reference; interesting to see how he interprets it.

Ed Henke sent thanks for your clippings-

Regards,
Bob

June 25, '82

Dear John,

~~over~~ Received advance book reviews-sounds good.

Ed Henke also sent clippings re. southern CA steelhead and the 'Alpine' trout. Enclosed is Ed's clipping that cites Allen Greenwood, who stocks 'Alpens' trout. If from private hatchery, C.F. & G. shouldn't be involved.

We got about an inch of rain in two storms since I canate last, but as you can see ^{from} the Colo. fires on T.V., we're still in grip of severe drought. Two weeks ago, we went up in mountains to cool off during heat wave. I took rod along to catch a few small brook trout for our dinner. Only few patches of snow > 10,000 ft. - run off so small that flames are just a trickle in headwaters of Hornbine R. Aware of this, I took along some worms. I could see no fish, nor any sign of a fish-fly fishing was futile. Found a deep hole and dropped worm under bank to get our dinner - actually, it was fun, just like 60 years ago. Last wed, we went to the private pond west of Boulder. This time of year, pond should be overflowing, but level is 2 ft. below overflow culvert. The weather was hot,

Date: 5/14/02 9:40:40 PM
 From: gscott@chanticleer.net
 To: rjsjbehnke@aol.com joe@americanfishes.com
 Sent from the Internet (Details)

Gents:

I thought you two would appreciate seeing some of the advance praise for the book...

"A long overdue—and remarkable—book! This crowning achievement of our greatest trout biologist is wonderfully authoritative, clear, complete, and the illustrations are exactly right. No trout or salmon fisherman should miss this treasure."

—Nick Lyons, author of *Full Creek*

"I can't think of a better author or illustrator for this beautiful and informative book. Dr. Behnke is arguably the country's top authority on trout and salmon and better yet, he writes about them with thoroughness and clarity. And Joseph Tomelleri's illustrations just have to be seen to be believed. These two have done for trout and salmon what Roger Tory Peterson did for birds."

—John Gierach, author of *Death, Taxes, and Leaky Waders*

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Sunny, and dry. The longer trout inactive in
 deep water, I only caught two.
 Yesterday, I found out PSA level is up-- after
 many years, cancer cells have started to set up
 somewhere in my body. I'll be in Penn. next
 week to lecture at T.U. conservation school. I have
 appointment for leukemia monitoring when I
 return, I'll discuss course of action then -
 probably testosterone blocker to start and find
 out what options available. Otherwise, I feel fine.

Tuesday, May 21, 2002 America Online: Rjsjbehnke Regards,

Bob

Nov. 13, '03

Dear John,

Enclosed is copy of my original draft of winter 2004 column that you can compare with the toned down, trimmed down version that will be in Trout. My book editor wants to plan to put together a selection of my columns over past 20 yrs. If we do this, I can not only update, but add excised parts of columns.

I received a copy of Prosek's new book - Trout of the world. I wrote him that he did a good job of, at least, getting most of his text "right" - exceeded my expectations as his writings have emphasized pleasant prose and pretty pictures with little concern for accuracy. When he visited a few yrs. ago, I gave him a copy of Bob Berle's review of Schwiebert's Trout and discussed the difference between a commercially successful author and one who is recognized by his peer group for good, authentic writing. James learned quite a lot from his association with Johanna Schöffmann as can be seen in his text. He, and most biologists, know little of taxonomy. He didn't want to offend people, whom he dealt ~~with~~ so I did point out some errors that resulted from his desire to avoid controversy. The "Kamchatka cutthroat", is actually O. mykiss of Big Shantar Is. (Island in Okhotsk Sea and only known location of mykiss outside of Kamchatka in Far East). James, I'm sure, never saw actual specimen, but made illustration from slide given him by Mikhail Skopets, and he repeated Skopets' belief that Shantar Is. trout is primitive cutthroat. I'm sure it's mykiss-illustration is wholly typical

of Kamchatkan mykiss. Example of how James made mistakes because he didn't want to offend Skopets.

I hope your wife is making progress in rehab. There's always a hope that a new drug can improve quality of life. Parkinson's is a high profile disease, with so many famous people suffering from it, any "good news" would be widely publicized. The Pope has become very frail, virtually immobilized.

I take Citrical + vit.D to offset bone loss from Lupron. I've been on Lupron for 18 mo, 2nd, statistically, its effectiveness should run out.

When it does, chemotherapy has been typically given. Last Time - I was at cancer clinic I was told new treatments can avoid chemotherapy and I could go ahead on plan activities, such as trips, next year without worry of chemotherapy and its effects.

The Southern Calif. wildfires with great losses of life and property might be looked at as nature's revenge for human encroachment pushing development to limits to accomodate population sprawl. I suspect people will go right back and put up new houses. If it was a 1 in 100 yr. fire event, they will assume it could never happen again in their lifetime. I assume Encinitas is well-buffered by urbanization against wild fires.

Our long Indian summer is about over. Warm, sunny weather was quite protracted. Oct.

29 was 82°F and we were cutting lawn. Next morning it was 24° and for next week it was more like New England weather - overcast, freezing drizzle, snow flurries. Summer ended

quite suddenly - Next week I'm planning a trip to Death Valley for Desert Fisher Meeting - should see many old friends! - Bob



Merchandising spinoff from book. A calendar w/ Tomekkeni's illustrations is also being sold.

I finally received my additional books. When I find suitable mailer, I'll start to send them out. My next communication, hopefully, will be the book. We're going to Berkeley, Nov. 14, to spend week with our daughter and granddaughter. I'll try to get some books sent by then.

Nov. 4

Dear John,

As you can see, some very large Dolly Varden were caught during past 6 wks or so - several are 20-24 lbs., larger than old record of 19 lbs. - Photo sent via e-mail by Al DeCicco, AK biologist in Kotzebue region where all giant D.V. are known - about 2x size of any other D.V. from other areas. A 27 1/4 lb. fish, measuring 47" is largest to date.

I saw photo of this fish in AK newspaper clipping. Looked like a spawned-out female. A "normal" Trout, salmon, an charr of 48" would weigh about 50 lbs. (- 42 lbs. world record rainbow was 43") (world record lake trout of 102 lbs. was 50"). Thus, I suspect this 47" D.V. if in good, or normal condition would have well exceeded 40 lbs. - well above the 32 lbs. world record "Arctic char" (probably same form of D.V. as found in Kotzebue area) from the Tree R. How to explain the sudden appearance of such super-size fish? Feeding conditions in Chukchi Sea must have been phenomenal in recent years.

Turned cold the last $\frac{1}{2}$ of Oct. (8°F yesterday morning - last week, temp. didn't rise above freezing) also snow - c. 10-12" which raised total annual precipitation (incl. water content of snow) to almost 9" or c. 65% of normal - lots of snow in mountains, which cities and irrigation depends on for next year. If it's a big snow year, all the water conservation plans will be forgotten until the next drought.

- The northern part of Baltic Sea is mostly freshwater (only few ppm salinity) and few fishes such as whitefishes & cyprinids ("bream") are fished commercially. Spawning must be in lower reaches of rivers
(Hope to get book off to you soon.)

Regards, Bob



Westslope Cutthroat Trout, *Oncorhynchus clarki lewisi*

MIDDLE FORK, SALMON RIVER, IDAHO

TROUT OF NORTH AMERICA

Illustrated by

JOSEPH R. TOMELELLERI

Creative Papers[®]
BY C.R.GIBSON

crgibson.com

MADE IN CHINA

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I was reading that the Casitas Water Dist. has a biologist, Leo Lentcho. Leo was CSU student about 25 yrs ago and we've been good friends ever since. He worked for Utah Dept. Nat. Res. as head of end.-native fish program. He's a highly competent biologist, but I imagine he'll have problems with the mentality of ^{what} the water-user group believe to be the 'best use' of water.

I had mentioned that Nick Hughes (Univ. of AK) and John Hayes (Cawthron Inst., Nelson, N.Z.) visited with me last June. We discussed their research project on feeding behavior of brown trout in a N.Z. river using underwater video cameras. Hayes recently sent me two issues of "Fish and Game New Zealand". Issue 33 (2001) has article on their study. About (curate review of Schwiebert) some time I received letter from Bob Bentz, editor of N.Y. Anglers Club bulletin seeking info on trout feeding. I told him the Fish & Game NZ article was just what he wanted. I assume that the Anglers Club library or one of its members gets F&G NZ. Lots of interesting stuff in this magazine. Bob McDowall, evidently is a regular contributor, attempting to educate N.Z. anglers to better appreciate wild trout and their habitat rather than to maintain naive faith in raising and stocking hatchery trout. He has interesting story on ^{Denisley} Hobbs who demonstrated the success of natural reproduction and great surpluses of young in N.Z. rivers > 60 yrs. ago -- He actively propagandized his findings among acclimatization societies showing what a great waste it was to stock 1000s & 1000s of fry.

and fingerlings on top of already surplus young in streams. Acclimatization society hatcheries were a long tradition, and stupidity based on tradition is resistant to enlightenment (also knows no national boundaries). Hobbs' progressive ideas on using natural reproduction and maintaining suitable habitat as the basis for trout mgt. were rejected by the soc. sec. and he died a frustrated and bitter old man.

① McDowell's story of Hobbs subtly brings in his own experiences of attempting to enlighten and educate -- things really haven't changed that much. Letters and responses to McDowell's articles extol the necessity of hatcheries and stocking -- similar to my columns in Trout. Stupidity based on tradition, I'll have to think about this for future Trout column. I see a problem with being too straightforward in my writings for Trout. They have a new editor, Beth Dunis, who came from Nature Conservancy -- an organization that assiduously avoids offending anyone. I sent in a column for winter issue "Ignorance or forgetfulness" re. what can and can't (or shouldn't) be assumed from genetic data. She trimmed it down & changed title and 'sanitized' it. If you want to read my original version, I can send you a copy.

① - In 1950s K. Radway Allen did his classic research on the Honokiu Stream where he completely verified Hobbs' conclusion on the success of natural reproduction and the futility of stocking 1000s of baby trout on an already great surplus of young. About 1960 I met Allen and mentioned that the society that managed the Honokiu must have ceased their senseless stocking after his study. He told me - No they paid no attention, they're still stocking.

— Regards, Bob

Oct. 16, '03

Dear John,

The high pressure hot area that produced all-time record temp. this summer, has remained in place to result in a prolonged Indian summer into mid Oct. Daily max. have consistently been in 70s, even 80s. Min. temp. have not dropped below 30° until past week when I noted early morning lows about 28°-by afternoon its into 70s. Still enjoying tomatoes from garden. Last Thur, we went up to the lake near Nederlands, assuming that summer weather can't last much longer at 9000+ ft. el. Bright sunny day. Could see "schools" of rainbows cruising around feeding in surface--evidently on midge pupae as they were emerging. A pair of osprey nested nearby and a bald eagle soars over lake so the trout in bright sunlight are wary--easily spooked. I found shaded areas and had the best fishing of the year. One after another, but so much weed growth, I spent half the time pulling weeds off line. With such active fishing, I felt hot, sweating--when, at this time, snow should have covered the ground. Generally, we have first snow by late Sept. - not a flake yet. Although we are about 2" above the annual precip. average, all, or almost all came in a few big storms - Mon. blizzard had 5" of water, last rain, Aug. 30 was 3", but no more than 0.1" since, so, except for the big storm, the moisture pattern resembles last year's drought. The water table must have been so depleted last year that the spring seeps into my backyard ponds are less than last year.

I tried to get cohos on flies when in AK, but

spawning runs hadn't begun to move into streams yet. There are several small streams around Juneau that one can drive to. I read an AK Dept report on these small streams and was amazed at the abundance of coho spawning in them -- several thousands. If comparable runs into watersheds of comparable size in CA, OR, and WA existed now, coho would be exceedingly common -- millions of fish - yet most of our former coho watersheds along the coast have been long devasted from clear-cutting and urbanization, and the coho is an end. sp.

I suspect there must be some anglers who pursue coho in marine waters ^{with flies} around Juneau, but I didn't see any. It would be difficult as the coho are highly mobile, don't seem to feed in any regular pattern, so trolling over a broad area will encounter one here, a few there, but there are no sites where they concentrate. All the ones I cleaned had fish in stomachs -- pollock and "Irish lards" (a large sculpin) of 10"-12". I suspect the forage fish are more-or-less evenly distributed throughout the bay. Most anglers want to keep the coho, so trolling is the way to ensure a catch. Party boats for tourist anglers is big business in waters where coho occur such as Juneau. The weekend I left Juneau was the annual "coho derby". Thousands of nonresident anglers were expected for the festivities. AK airline offers a "fish pack" - 70 lbs. of fish can be shipped as baggage in this insulated container. I haven't heard of how many 1000s of coho were taken in the derby, but I'm glad I fished during the previous week.

Hi Cuyamaca must have suitable O₂ and temp. in hypolimnia during summer for brown trout not only survive but grow at phenomenal rate if story is true that one gained almost 5 lbs. in 9 mo. Coho and Chinook can put on 5-10 lbs during a year of ocean feeding, and brown and rainbow trout that grow to 20 lbs. or more in Great Lakes, probably put on 5 lbs./yr., but it's unusual for such growth in fw. At that rate, Cuyamaca should produce brown trout of 20-25 lbs.

I get info on southern Calif. steelhead, especially Ventura R. restoration from Ed Honke This week

Sept. 30, 02

Dear John,

← Another review. Last wed., I received an e-mail from a large Denver book store (the Tattered Cover is a Denver landmark and one of the last of the great bookstores characteristic of large cities). It said they had just received a shipment and the fellow who organizes "meet the author" events, wants me to come down to make presentation and sign books. The Sept. 24 date of release was correct, but I haven't received my copies.

Before droughts and reduced spring flow, I had two very productive trout ponds that grew trout, all on natural food, at a rapid rate. After I had first pond constructed in 1967, it overflowed, and I had second pond dug out to utilize the surplus water. The brook trout salvaged from a greenback restoration in 1967, somehow wiggled up a channel and into a drain pipe, that carried the water from the spring, that fall and spawned. The following fall I had loads of young brookies about 8" and we ate quite a few to reduce their numbers. Then I would stock rainbows, browns, or cutthroat, or fingerlings in fall and would have enough surplus to catch some for dinner throughout the year, and keep numbers down for optimal growth. Your trout ponds were certainly a labor of love. In Yugoslavia, brown trout are native to both the Danube basin (with Huchen) and to Adriatic sea drainages. The marble trout (S. marmoratus) is native only to Adriatic tributaries. When hatchery brown trout (not native to Adriatic) were stocked, hybrids become common--like Lewis cutthroat of Salmon and Clearwater drainages that coevolved with rainbows (steelhead), but hybridized with hatchery rainbows. Some weird looking Yugoslavian trout might be hybrids.

Robert Behnke

From: "George Scott" <gscott@chanticleer.net>
To: "Robert Behnke" <rjsjbehnke@earthlink.net>; "joe tomelleri" <joe@americanfishes.com>
Sent: Monday, September 09, 2002 11:28 AM
Subject: Library Journal Starred Review

Here's the text of a review that appears in this month's Library Journal. This is a very important source for librarians who buy books for their collections.

Library Journal
September 1, 2002
Starred Review

Behnke, Robert J. (text) & Joseph R. Tomelleri (illus.). Trout and Salmon of North America.
Free Pr: S & S. Oct. 2002. c.384p. illus. bibliog. index. LC 2002069256. ISBN
0-7432-2220-2. \$40.

Behnke (emeritus, fishery and wildlife biology, Colorado State Univ.) has served on numerous advisory boards for state and federal agencies. Noted illustrator Tomelleri has traveled over 135,000 miles to collect fish for his extraordinary drawings. Their new book is an authoritative, easy-to-use guide to the more than 70 types of trout and salmon of North America. Chapters are arranged by type: *Oncorhynchus* (Pacific salmon, rainbow trout, and redband trout, Gila, Apache, and cutthroat trout); *Salmo* (Atlantic salmon and brown trout); and *Salvelinus* (brook trout, lake trout, bull trout, Arctic char, and Dolly Varden). Other salmonids included are the Arctic grayling and mountain whitefish. Each section contains an overview of the species, a side bar summarizing physical information, and a description of the fish and its biology, distribution, evaluation, classification, and conservation requirements. Tomelleri's are, perhaps, the best nonphotographic illustrations available in books of this kind, and Behnke's text reflects his expertise. If Behnke's *Native Trout of North America* and David Carroll's *Trout Reflections* are already a part of your collection, then this book is a highly recommended addition. General collections needing an excellent field guide and reference for serious anglers and naturalists will also find this a terrific choice.—Mary J. Nickum, Lakewood, CO.

--
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II

I talked to Canadian biologist who has studied the char at Tree and Coppermine rivers. He told me that both Arctic char and Dolly Varden occur there and both attain large sizes. Thus, it is not known what species is the world record. If a good color photo exists of the record fish, it could be identified - if spotting pattern is clearly discernible. Dolly Varden are not native south of Puget Sound tributaries, so any "Dolly Varden" from (Columbia R basin) ^(e.g. Pend Oreille) were bull trout. Also, the name Dolly Varden originated from McCloud R. char, which were really bull trout (extinct since ca. 1970). Most Baltic sea trout, like salmon, are produced in hatcheries - all of the larger rivers have hydroelectric dams that block runs. Sweden has the most advanced hatchery system and they get good survival of both salmon and trout, but don't get most of the benefits. The salmon ~~and~~ exploited in the open sea by multi-national fisheries, typically in first or second years after stocking before they attain adult size. The sea trout stay near shore and are heavily fished in fisheries targeted for whitefishes and other species.

This month we had several days with rain - ① Sept. total of 1.4" - greatest month of the year.

The big storm dropping 2" of rain in 30-40 min. that caused much flooding in Denver, submerging ^{causing} one highly localized - One such event flooded I-25 in Denver, rainfall was 20.1" at underpass - 2 mi. away official Denver rainfall was 20.1".

With cooler weather and shorter days, we were able to get our lawn and gardens through the drought. Houses down the street from us were pumping well water to irrigate - every lawn has sign - "well water" - to let everyone know they weren't violating water restrictions for city water. Problem is there many wells tap into the same ground water that feeds my spring, and they lower water table. Since

early summer my spring has been barely seeping. It has now started to produce more water and pond level is slowly rising. I'll start to pump irrigation water and try to drain pond to lowest level because I'm having a backhoe come this week to dig out the pond as much as possible. Mainly, this is to ensure irrigation water for next year. I doubt it can ever be the trout pond of old.

I was at Cancer clinic last weeks and picked up latest info on "advanced prostate cancer" (once it spreads to other parts of body). Several tests are going on or getting started on various new treatments. My anti testosterone treatment typically is good for about 2 yrs., before the cancer starts up again, butⁱⁿ about 10% of patients it lasts 10 yrs. or more. My hope is that it lasts long enough for the test results to indicate what^{new} treatment works best for specific situations. I feel fine, no real side effects from Lupron (anti-testosterone blocker - 1360 for a shot lasting 3 mo.), except minor annoyance of "hot flashes". Two weeks ago, I entertained Paul Guenney, editor of Fly Rod & Reel - we went to the private lake (got several nice rainbows) - and while getting into canoe, I lost my balance and was in up to my neck. - Cool, breezy day, but even in wet clothes, I didn't suffer much - 'hot flashes' can have a positive effect. Another side effect can be osteoporosis - loss of bone calcium - also like women in menopause. I'll have bone density baseline scan done this week.

Regards,
Bob

II

I took item to Death Valley and gave it to Phil Pister. Phil was shocked. I pointed out that Jordan was a victim of his times. Eugenics had its scientific basis in the genetic theory of that period. The opposite reaction came in Russia after the revolution when Lysenko came up with a communist version of evolution-Lamarckian. All hereditary traits determined by environment, and this produced changes that were passed on to offspring. Russian agriculture was devastated by trying to implement Lysenko's crazy ideas - but Lysenko was great friend of Stalin. Thus, we now know by modern genetic theory that incorporates Darwin's ideas on evolution by natural selection, that eugenics, as it influenced both Nazis and communists, was wrong, but terrible evil resulted and left a stigma on Jordan that I hadn't been fully aware of.

I noted ~~that~~ besides 'Alpen trout' southern Calif. reservoirs are also stocked with "Utah trout" - That's a new one. And, that striped bass are stocked in Costic Res., among others - 19 1/2 lb. Stripers caught - often 3000 lbs. of rainbow stocked. With stripers in reservoir, no more 19-20 lb. L.M. bass will be caught.

Winter has set in here for past few weeks. Some snow with temp. rarely above freezing, often near zero - couple times slightly below. Not conducive to outdoor activities, except skiing.

You mentioned the depletion of rockfishes. Typical example of the "Tragedy of the Commons" of commercial fisheries. As I recall, about 60-70 years ago, rockfishes were underexploited - an untrapped resource - but they had fine flavor.

The first frozen fish sold by Birdseye were

rockfish under the name "red perch". When I was student in Berkeley, late 50s - early 60s, rockfishes were still abundant and among the cheapest fish - \$49/lb. for fillets. It is now known 50 or more closely related (morphologically very similar) species, ^{are exploited}, ~~occur~~. All have a long life span and very slow growth - they are easily overexploited. Similar to the New Zealand orange roughy fishery.

I have a good book "The Rockfishes of the NE Pacific" by Milton Love (UC San Diego) and three authors from NMFS. Their Table 1 - entitled "So many rockfishes, so little time" lists 101 species of Sebastodes and 8 sp. in three other genera called "rockfishes". Good review of long history of taxonomic confusion. I got this book and several others from UC Press for reviewing a MS for them last year - they offer \$100 or \$300 worth of UC Press books.

I'll turn 74 this month. I'm still enjoying good health, with normal erosion of body functioning - aching joints, dry skin problems, etc. with age, children and grandchildren bring us more joy and satisfaction. Yesterday, our 2-yr.-old grandson was with us for a few hours. He is a great joy to us, but he wears us down.

Tomorrow I'll go to Bozeman, MT, for a PBS-TV show on cutthroat trout. It's produced by Montana PBS, but, I assume, will be made available to other PBS stations (if sufficiently attractive).

Wear my seasonal regalia,

Bob

Dec. 15, '03

Dear John,

First, I send my warmest greetings for holidays.

When TU commissions illustrations, I assume, as with my columns, TU has first publication rights, after that, the works are property of artist & writers. George Scott, the editor at Chanticleer Press, has to have several ongoing projects to publish to keep staff employed (and make profit). Thus, an "anthology" of my columns, might be somewhere in future - for past year, George would let me know it is planned and encourage me to begin, but I'm not going to put much time on project until he sets some firm dates. In meantime, I put George in touch with James Prosek and they've discussed an anthology of selections from the Yale Angler's Jour. I've been in contact with Bob Beals, editor of N.Y. Angler Club Bull., and suggested a selection from their bull. could be combined w/ Yale stories - Prosek is on NYAC editorial board. Two years before I seriously began my book, George had contacted me and sent me contract to write it. He and the people at Chanticleer, at the time, were fully engaged in completing Sibley's Guide to birds, which proved to be a blockbuster. After they had Sibley's book off for publication, we started, in earnest, on Trout & Salmon.

In Prosek's new book, he discusses a large trout from the Moosach R. (trib. Danube) that was brought to U.S. and stocked in Arkansas implying that the world record brown trout from Red River, Ark. was, in fact, a "Moosach" trout.

This raised serious doubt in my mind. All fish imports must go through USDI-FWS and I should have heard of such an import. I raised the question and James recently sent me a communication from Jean-Paul, a French outdoorsman-adventurer. It was Jean-Paul who told James about the Moosach trout, but Jean-Paul couldn't recall where he heard it--he gave three possibilities, including "fisheries scientists" in Ank. Jean-Paul mentioned that his brain cells deteriorated, and his memory was fuzzy.

I responded that the evidence for his comment on Moosach trout in Ank, is flimsy, hearsay--no documentation. He committed a borderline Schwiebertism. Borderline, because Ennie would need no one to tell him something like this, he'd simply make it up. James put too much faith in people he thought are "authorities"--such as his cutthroat trout from Far East.

I enjoyed decent fisher meeting in Death Valley now many old friends. Ed Henke had sent me item from S.F. Chronicle about the evil consequences of the eugenics movement during early 20th century--how the proponents in U.S. greatly influence Hitler and Nazis to justify ethnic clearing--That was time the early geneticists dominated scientific thinking on evolution--emphasizing heredity over nature over nurture (environmental influences, such as cultural background

of ghetto life) in determining human behavior--at time, great concern was given to immigration of "unfit" people from Asia and Southern Europe (as contrasted with the Nordic race).

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Knowledge to Go Places
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Chronicle story featured photo of David Starr Jordan, who authored a eugenics-realist tract--"The blood of the nation".

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I : 5 : 00

Dear John:

Herb Enclosed is letter received from Joseph's wife. I sent Herb the enclosed pages from my Spring 2000 column highlighting the persistent efforts of Ed Henke. I pointed out that we've made significant progress, but we'll need the same dedication and perservance in the younger generation who'll take over as the old timers fade away.

You mentioned Prosek's popularity and success that you friend attributed to his sister who's in public relations. I believe I mentioned this to you 2-3 years ago when I first talked with Prosek on the phone. When I inquired how he had such success (when there are more talented artists struggling to gain recognition) and he told me about his sister being a big help--honest fellow. Also he's bright, ambitious and comes across as a really nice fellow. He recently sent me a poster of his trout art that he sells,

I haven't seen the 2000 T U calendar yet.
I received a reminder that I hadn't paid.
I looked around and can't find it. Probably
I did get it but I misplaced it before
seeing it. I sent a check requesting they
send me another. Last month the Fish &
Wildlife faculty gave me a large steelhead
print by Joe Tomelleri--who autographed and
personalized it. It was for my retirement,
but caught me completely by surprise as I've
remained too busy to consider myself
as retired.

Last month I attended the panel meeting
on federal hatcheries (how they should be managed,
etc.) in Dallas (to make recommendations to
Sec. of Interior). Next meeting will be in
Atlanta next month. This 'major review'
of hatchery systems is done about every
10 years and so far it's been waste of
time and money-- no meaningful changes. I've
brought up the question why is this? what
can our panel do differently? we should
all recite Santayana's dictum: "Those who
cannot remember the past are condemned to
repeat it," before each of our meetings.

Regards,
Bob

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Apr. 28, 2000

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Dear John,

I'm curious as to what species of minnow was depicted in Outdoor Calif. as a "whitefish"? Perhaps the people responsible are the same ones who were writing the C7&G strategic plan. I haven't heard anything more about the strategic plan "for the future" that I was highly critical of last year for its incompetence.

I once attempted to point out to Allen Greenwood and Pottoroff that having several types of mtDNA does not mean that populations possessing these types are unique or primitive. Phylogenetic markers would be very rare types of mutations, such as a change in the base sequence of mtDNA at the first or second (rather than the third) position of a codon, and the mutation is a transversion (coding for new amino acid) rather than a transition. Then if such a rare mutation was also found in primitive redband, Gila, Apache, Mexican trout, it would be a phylogenetic

marker denoting a primitive condition. This has never been locked at, to my knowledge, for so, Calif. steelhead. The "diagnostic" mt DNA "haplotype 5" for S. CA O. mykiss is far from universally distributed. Found in 1 of 3 Ventura fish, 4 of 13 Malibu Crk., 1 of 22 White Rock hatchery stock of S. CA. native rainbow, and 0 of 17 Santa Ynez fish. Because this haplotype has not yet been found north of Pt. Concepcion, it's commonly regarded as a genetic marker for S. CA rainbows/steelhead -- but what about Santa Ynez? No basis for assuming "mother lake" type of propaganda. The FBALD 70 allele needs more sampling to better plot distribution, especially in Sacramento basin. Lagunitas Crk. rainbow (north S. F. Bay) have ca. 70% of the 70 allele. Alameda Crk. ^{Trout}, the only Bay stream sampled, had ca. 65% southward: Carmel R. 80%, San Lorenzo 75%, Scott 90%. Three samples from Sacramento: Coleman hatchery, Deer Crk. and Mill Crk. have only ca. 5-6-7%. I would expect a transition zone -- but more sampling is necessary.

III

Haven't heard yet about NSF proposal
for Kamchatka studies. Talked to my
friend Claudio Meier yesterday - Claudio
is back in Chile teaching at the
Univ. Concepcion. He visited two
sport fisheries that received grant \$
for consultation - advice. Wanted to
know about me coming down. I told
him I will work with him via

e-mail, fax, phone advising until
next fall-winter (No. Hemisphere spring -
summer).

In mean time, I'll
be getting check up -- next week
I do treadmill test, then 6 mo.
cancer check. My blood pressure

had been gradually rising during
past year (ca. 160/90) so I began
taking medication - seems to be working
with no side-effects.

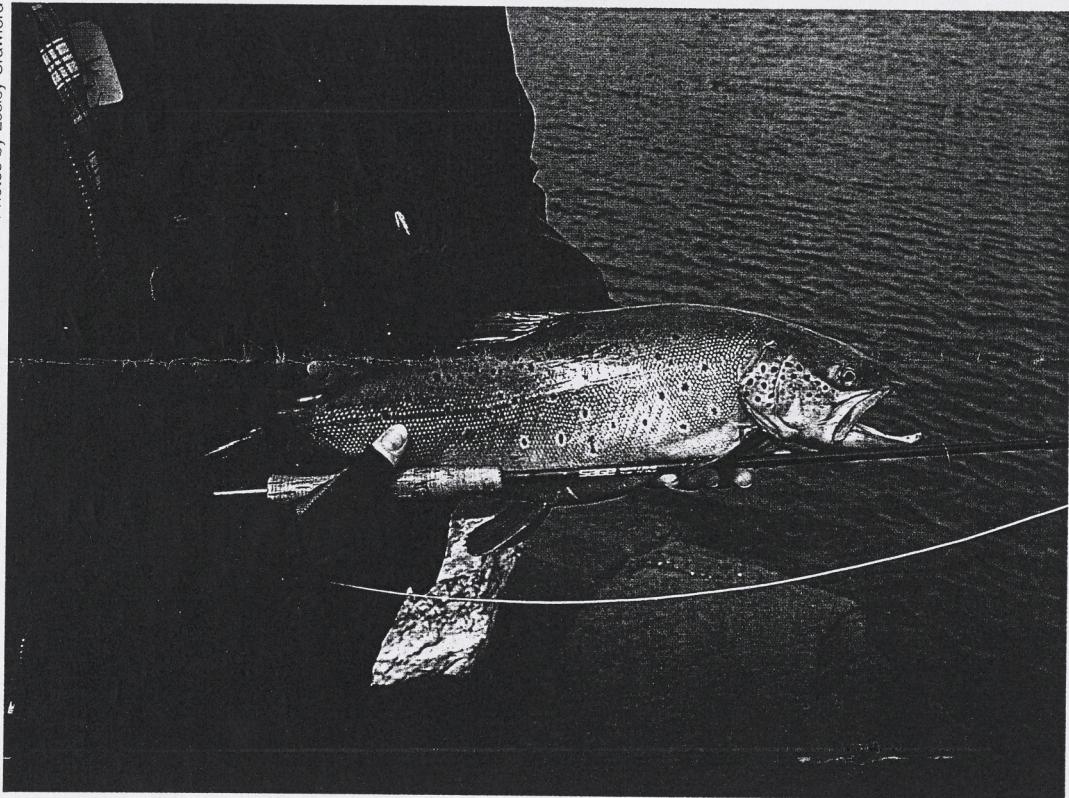
Regards,

Bob

Wild Trout Conservation

Lesley Crawford believes it's time the brown trout came in from the cold

Photos by Lesley Crawford



A fine 6lb wild trout from Loch Calder, Caithness

The term "wild trout conservation" can mean very different things to different people. To some it will mean the restoration of trout habitat, a rescue operation of the surrounding environment so that trout may survive and breed in a rejuvenated system. To others it will mean a comprehensive restocking policy to bolster apparently depleted numbers of trout. Since Victorian times the theory that adding more fish to the water will automatically increase catch rates has held sway over many anglers, so much so that many original colonising strains of trout have been irretrievably lost. Then there is the concept of catch-and-release, one which can do much good when applied to a pristine population but can otherwise be unhelpful in a natural water overburdened with uniform fingerling fish. Finally conserving wild trout may simply be seen as doing nothing other than letting nature take its course, the *laissez faire* approach.

Without a doubt, most trout anglers want to see their beloved fish nurtured and conserved but all too often it is a case of the quick fix, rather than any well-thought-out, long-term plan. Anglers' demands

frequently dictate that more trout are required. How often do you read in the fishing log: "When is this fishery going to be restocked?". While it could well be that a) the wild fishery is naturally poor with trout predominantly feeding from the bottom, b) fish numbers are merely naturally fluctuating according to the success or failure of past spawnings and c) visiting anglers may not be as skilled in fishing for wild trout as they are on the heavily stocked waters of home; restocking still remains the most popular cure all.

Holistic approach

Unfortunately this method of "improvement" can lead to all sorts of problems. Knee-jerk reactions like high density stocking of "grown on" trout into waters which actually contain a reasonable number of naturalised fish, can turn a wild fishery into little more than a put-and-take. The more user-friendly ploy of adding fry to burns/inflowing streams in the hope that they will adapt and supplement the population does not always work either. It can turn out that there are significant numbers of fry already present and adding more simply wastes money

and puts unnecessary competitive stress on the local fish.

Conservation policies have to be devised holistically according to the individual needs of each fishery rather than blindly following a catch-all approach. This means looking first at what fish are currently present and in particular at the numbers and range of sizes of trout on the spawning redds.

Angler co-operation

The general condition of the natural spawning grounds has to be examined together with records as to what fish have been added in the past (if any). Catch returns or fishing diaries can be helpful in this if they have been kept honestly, recording blanks as well as successes, and are maintained over several seasons rather than a single year. Exemplary management practices on the River Tweed actively encourage anglers to maintain a fishing diary which includes these details plus where the trout was caught, its weight, length and whether it was returned. Angler co-operation is seen as vital if management plans are going to succeed.

Modern trout management thinking will usually classify fisheries as wild, supplementary stocked or stocked, and plan future management steps around these classifications. I would further enhance these divisions by adding the term native to these categories. This is not being pedantic, it is merely highlighting the distinction between "wild" trout, which are actually third or fourth generation stocked fish which have bred successfully in a natural setting, and "native" trout which have seen little or no past stock adulteration. Native trout are probably the most ignored fish resource in the UK. Salmon may have a hard time of it but at least they have better legal status and attract some inward investment, brown trout often don't even get a look-in. Native trout have adapted and evolved over a significant length of time (hundreds of years) to survive and thrive in a particular environment.

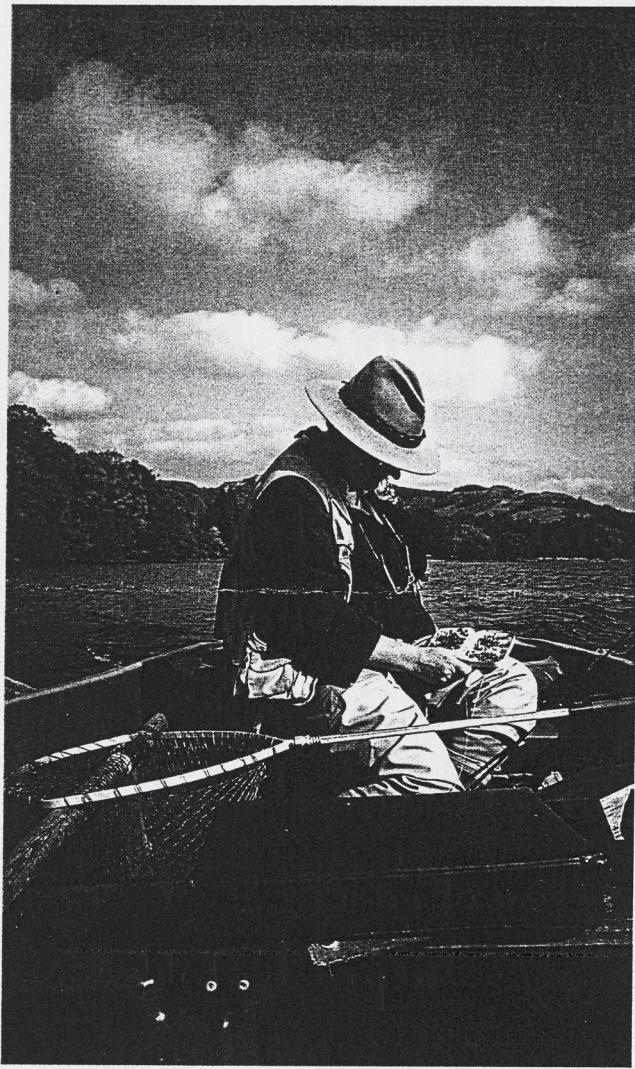
Unfortunately anglers can often be their own worst enemies regarding our native trout. You will often hear claims that, because our forefathers went about restocking everywhere possible with

II

From Trout & Salmon Ass. annual

report. Something new for the British.
Not only distinguishes between hatchery
and wild, but between wild & native.

Last Monday, I took my old friend Bob Hunt (retired WI habitat biologist - who was visiting his daughter in ST. Collins), fishing up to the private pond where we keep > greenback cutthroat broodstock - but mostly hatchery rainbows. At elevation of just > 9000 ft., weather is very unpredictable this time of year. Warm and sunny when we got there, but soon a great wind came up - clouds, snow, soon blizzard-like conditions. Fishing was fast, however. Caught lots of (20+) nice rainbows 12"-18" on lead-head jigs (so fly sinks rapidly - rainbows are cruising along bottom, highly excited over spawning - feeling their hormones). No cutthroat but this is the 'hottest' time of year for catching rainbows. (figuratively speaking - we froze our fingers).



Without a doubt, most trout anglers want to see their beloved fish nurtured and conserved but all too often it is a case of the quick fix, rather than any well-thought-out, long-term plan

hatchery-reared fish and also that restocking has been used as an improvement by angling clubs for so long, there just ain't no real ones left! This is both unhelpful and untrue. Current genetic research led by Dr Andy Ferguson of Queens University Belfast has revealed a number of pockets of native trout populations still in existence with hardly any gene adulteration and this could well be the tip of the proverbial iceberg. These native fish range from "dinosaurs", that is trout which carry genes directly descended from fish left land-locked when the last Ice Age retreated, to distinct populations of trout showing remarkably similar yet unusual characteristics, almost like clones of one another. Ferguson's study of the trout of Lough Melvin, which revealed three separate races of trout within one water (Gillaroo, Ferox and Sonaghan), remains the benchmark in trout genetic studies.

Today, with government environmental policies moving toward maintaining biodiversity and the recognition/protection of native species which are under threat, the brown trout must surely come in from the cold. Rare species such as golden eagle, pine marten, corncrake, bittern or red squirrel gain immensely from their scarcity and enjoy obvious status in the natural world. It's time for trout to gain similar acknowledgement. For innumerable years our silent unseen beautiful

friends have been open to attack on all sides from man-made ills like habitat degradation, unregulated additions of alien fish species, overfishing and a lack of proper legal controls. The classifying of distinct native trout populations (as opposed to naturalised stocked brown trout) opens the door for better conservation of the fish species.

Combined effort

Both the Salmon & Trout Association Scotland and The Fishmongers' Company have recognised that one way to achieve better protection of brown trout is to facilitate the categorising of these often fragile unusual trout populations. Both have joined forces with Highland Council and Scottish Natural Heritage in sponsoring such a research project in the northern highlands initiated by the Caithness & Sutherland Trout Angling group (CASTAG). The results from this survey, which is being carried out by the Freshwater Fisheries Lab, Pitlochry under the guidance of Dr Andy Walker, will be incorporated in a wider genetic survey of brown trout populations.

It is only when we can turn round and hold up the hard evidence that native, ie true Scottish, English, Irish or Welsh trout populations, do indeed exist and that biodiversity of the species must be maintained, that we can begin to convince government to do something about it. ■



Aug. 11, 2000

Dear John,

Thanks for copy of Fly Fish. news item re. "two new sp. Mexican trout"-- Enclosed (reverse sides) are comments I wrote for Audubon guide text re. "good" species and "doubtful, dubious, not-so-good" sp. - Note I hold up the five sp. of Pacific salmon >= "good", "non controversial" species - now see enclosure A from most recent Trans. A.F.S. about documenting pink x chinook hybrids in outlet of L. Superior (St. Mary's R) -- "clearly unacceptable to recognize two sp." - Nonsense! who reviewed this stupid paper. Species have long been known to hybridize with closely-related species. Basic question is do they maintain integrity despite occasional hybrids? - Ex. coastal cutthroat x rainbow. No experienced, reasonable, taxonomist would doubt chinook and pink salmon species status because they occasionally hybridize when introduced into new environment.

1990 edition of the American Fisheries Society's List of Common and Scientific Names of Fishes.

The American Fisheries Society's classification recognizes the Gila and Apache trout as two separate species and the California golden trout as a separate species.

Attempts to classify all the divergences associated with the "rainbow trout" branch of Pacific trout evolution will lack unanimous agreement. Different people with different species concepts and with different views on classification will come up with different classifications of species and subspecies. Any classification of rainbow trout and all of the divergent evolutionary lines associated with O. mykiss, will, to a large extent, be arbitrary.

What should be emphasized in relation to conservation of biodiversity is that we should attempt to preserve as full a range of diversity as possible, and not be overly concerned how or if this diversity is formally described as species or subspecies. The greater the range of diversity, the greater are the options for continued existence and evolution into the future when a species is exposed to changing environments.

2nd forced into spawning together.
Their innate reproductive isolation
due to differences in time & place of
spawning can break down under highly
"artificial" conditions in non-native habitat.
This is nothing new - old hat to
taxonomists-systematists. No license
is needed to practice taxonomy and name
new species - any book can get in the game,
and many do. I'm afraid new species
of Mexican trout will be described in a
Mexican journal without peer review.

I didn't realize that your wife
suffers from Parkinson's disease. The outlook
for significant prognosis seems better for
Parkinson's than for Alzheimers. So many
prominent people have Parkinson's it
would seem in epidemic -- but, because
the diagnosis ^{typically} comes later in life --
and the X life span has greatly
increased: 1900 ♂ = 48 yrs. ♀ = 51 yrs., 2000
♂ = 74 yrs. ♀ = 78 yrs. and incidence of
age-related diseases have increased
proportionally.

cut geographical boundaries that could provide a basis for partitioning a species into subspecies.

On the other hand, the cutthroat trout species O. clarki, except for one subspecies, is restricted to freshwater and broadly distributed in western North America in many river basins from California to Alaska, and inland to east of the Continental Divide. This distribution has limited or long blocked connections among cutthroat trout of different drainage basins. Some subspecies of cutthroat trout are long isolated (perhaps a million years) from other subspecies of the species. This type of species evolution, by fragmentation and long isolation delimited by geographical boundaries, allows for intraspecific diversity to be partitioned into subspecies.

Perhaps toward the end of the Pliocene period ~~or~~ a separation of a common ancestor into two evolutionary lines occurred. One line became the cutthroat trout species, the other the rainbow trout species, O. mykiss. O. mykiss is a controversial species. The problem arises when several evolutionary lines branched off, became isolated and strongly differentiated from typical rainbow trout. Several of these evolutionary lines are associated with the Gulf of California. These include the Gila and Apache trout of New Mexico and Arizona, Mexican golden trout, and other rainbow-like trout native to river basins tributary to the Gulf of California in northwestern Mexico. Classification of this diversity, long diverged from the main evolutionary stem leading to rainbow trout, could be arranged as several full species O. mykiss depending on one's philosophy of classification. For this guide, a middle ground is followed. The Gila and Apache trout are considered as two subspecies of the species O. gilae. The Mexican golden trout is classified as a full species O. chrysogaster and populations north and south of the native range of O. chrysogaster are treated as undescribed subspecies of O. mykiss. The California golden trout is considered a subspecies, O. mykiss aguabonita. This classification somewhat differs from the

You'll have to keep me informed about the invasion of the monster algae in the Colorado River - sounds like science-fiction and is greatest example of dangers of turning loose non-native species.

We've had an unrelenting heat wave (temp. in 90's, almost every day for weeks -- average year has 19 days of 90° or above max.). To cool off we drove to mountains west of town and spent most of day at 10,000+ ft. el. picnicking and enjoying mountain air. I brought fly rod along and fished for grayling. Originally, the reservoir was managed for Tongue RB (16" min. size) but grayling got in from upstream reservoir and they've reproduced very well. So well, the reservoir is swarming with 5-6" fish (yearlings?) and fish it only 2-3" (young-of-year?) that resemble schools of sardines. We then stopped by small creek where brookies have replaced cutthroat and I killed a few of the aliens for dinner.

billion chum salmon fry, resulting in a return of adults of about 20 to 50 million, depending on ocean productivity. About 1.5 billion pink and chum salmon fry are released in the Russian Far East. Ocean ranching in Alaska also releases about 1.5 billion newly hatched fry of pink and chum salmon.

Most pink and chum salmon are canned or processed in other ways. Most salmon purchased in markets or eaten in restaurants are from "ocean farming". Farmed salmon are raised in large pens sited in protected bays or fjords. World production of pen, or cage-cultured, salmon should well exceed a billion pounds in 2000. Most of the farm-reared salmon is Atlantic salmon Salmo salar (about 90% or more of the total). Chinook and coho salmon make up most of the rest of farm-reared salmon production. Atlantic salmon, chinook salmon, and coho salmon command a considerably higher market price than do pink or chum salmon.

The species of Oncorhynchus vary from "good" species that generate no controversy concerning their classification to controversial species that lack agreement among taxonomists as to how many species and/or subspecies should be recognized. This difference between noncontroversial species and controversial species can be explained by the degree of anadromy present in a species (how much of life spent in ocean). The five species of Pacific salmon exhibit the greatest degree of anadromy of all salmonid fishes. By occasional straying of salmon from river to river, a degree of continuity ^{2nd} of connectedness occurs among populations throughout the range of the species. That is, throughout the range of the species of Pacific salmon, no long term isolation (since before the last glaciation, or about 1000,000 years or more) has occurred among populations of different geographical regions. The diversity within Pacific salmon species (intraspecific diversity) is not partitioned or compartmentalized into discrete groupings with clear boundaries or continuous gradations in degree of differentiation.

— Joe Tomelleni called Wed. re,
his trip to AK to get some salmon
and charn for illustrations of different
stages of life history and range of
variations. Ten minutes after I
talked with Joe, James Prosek calls.

Prosek's itinerary calls for him to be
in Salt Lake City on Sept. 14-15 and he
plans to then drive to Fort Collins.

I told him I'll take him fishing.
This summer he and the Austrian fellow,
Johann Schöffmann went to Armenia and
Lake Sevan to see Salmo ischchan. —

Respectfully,
Bob

SALMON INTROGRESSION

677



and chinook salmon. For example, Hubbs (1955, 1961) pointed to great disparities in abundance of spawning individuals on the breeding grounds as a force that could lead to hybridization and influence its direction. In the St. Marys River, chinook salmon spawn from June to November with peak spawning occurring from late September to early October. Pink salmon may spawn from August through early October with the peak spawning period in mid-September (Greil, unpublished data). Thus, chinook salmon are spawning during the entire time that pink salmon spawn in the St. Mary's River. If disparities in spawning population size (between species) or sex ratio (within species) play a role in hybridization, the period during which hybridization occurs is probably limited to the tails of the pink salmon spawning season (August or October).

Behavioral mechanisms may also limit production of chinook salmon \times pink salmon hybrids in the wild while encouraging the reciprocal cross. Sexual selection is strongly size-dependent among salmon (Gross 1985; van den Berghe and Gross 1989). Male pink salmon may be attracted to female chinook salmon because the latter are so much larger than pink salmon females. Pink salmon males might gain access to mature chinook salmon females by employing a sneaker tactic. The sneaking reproductive tactic is well documented in *Oncorhynchus* (e.g., Gross 1985) and particularly in pink salmon (Keenleyside and Dupuis 1988; Noltie 1990). Size-dependent sexual selection has been proposed as a mechanism for unidirectional hybridization between other fish species (Konkle and Philipp 1992; McGowan and Davidson 1992). If hybridization between pink and chinook salmon is driven by male selection for large females, F_1 hybrids with pink salmon mothers should be rare or nonexistent.

Implications

Hybridization and introgression between these two species presents questions and problems for those who study and manage Pacific salmon. The implications discussed here depend, in part, on the frequency of hybridization and the fitness of hybrid salmon. Hybrids are often expected to be less fit than their parent species; but, this is not always, or even usually, the case (Arnold and Hodges 1995; Arnold 1997).

If survival and fecundity of hybrids are less than those in the parent populations, hybridization would represent a drain on natural population growth of pink salmon and chinook salmon in the

Great Lakes. State fishery management agencies and anglers will no doubt be interested in the growth rate of the hybrids and backcrosses because one hybrid has already confused size-record awards (Rosenfield 1998). If the hybrid population grows large enough, hybrid salmon could have significant and unforeseen effects on the Great Lakes ecosystem.

In addition to fast growth (Greil, unpublished data), hybrid salmon may experience higher fitness than members of their parent species if their heterozygous genomes provide added physiological, developmental, or behavioral options (Arnold 1997). Some hybrid organisms successfully colonize habitats beyond the range of their parental species (Arnold 1997; Echelle et al. 1997). If hybrid salmon can accomplish such a range expansion, they may invade neighboring ecosystems or closely related gene pools. The ecological consequences of such a range expansion are unforeseeable.

Natural introgressive hybridization between pink salmon and chinook salmon may create problems for those concerned with salmonid speciation and systematics. It is clearly unacceptable to recognize pink salmon and chinook salmon as two species where they remain distinct (the Pacific Coast) while recognizing only one species where introgression occurs (the Great Lakes). However, under most species criteria in use today, populations that exchange genetic information in the wild must be classified as members of the same species (Arnold 1997). Whether F_2 hybrids or backcross salmon are selected for or against is undetermined, but this is not necessarily important with regard to species delineation since permanent transfer of genetic information is possible even when hybrids and backcrosses are selected against (Arnold 1997). These issues extend beyond this species pair. Introgression within the genus *Oncorhynchus* is well documented, particularly among the Pacific trout (e.g., Loudenslager et al. 1986; Leary et al. 1987; Dowling and Childs 1992). Even though we know of no other modern cases of introgression between Pacific salmon species, Smith (1992) presented evidence for historical introgression between pink salmon and chum salmon *O. keta*, and natural hybridization between Pacific salmon species has occurred in modern times (Hunter 1949; Bartley et al. 1990). Members of this genus are highly differentiated (Stearly and Smith 1993) and very old (Smith 1992; McKay et al. 1996); yet, reproductive barriers between the species appear to be incomplete.

R.
shells
grass
ignorance

① Apr. 29. 04

Dear John,

I was in Orange Co. last week to give presentation for fund raiser. On reverse sides of letter you can see I picked up the latest news on the new hatchery bill from Orange Co. paper. One positive aspect is the big push in Southern Calif. for private funding and stocking and less dependency for subsidy from all anglers. I read that a $27\frac{1}{2}$ lb. rainbow was caught in Santa Ana River. A new Calif. record, but in category called "aquaculture" - Trout come from Lassen Trout Farms and, of course, are sterile triploids -- needs a catchy moniker, such as "Lassen Zunker trout". The evening before my Orange Co. presentation, I made another presentation in Cleveland to Cleveland Mus. Trout and TU chapter. Before my talk I went to county archives with my host, Peter Krember. My story about the first artificial propagation of fish in U.S. in 1853 in spring 2003 Trout told the story, but we didn't find the site where propagation occurred (Ackley's farm, about 2 mi. from Cleveland). We zeroed in on Ackley's farm from clues we got in archives - finally locating it as plot 317, ward 18. We drove out to see the site, now the Newburgh section of Cleveland -- "low rent - high crime" area now - some big changes from the "wooded ravine" out in the country in 1853. Dr. Garlick was born in 1805, so we're planning an exhibit at Cleveland Mus. next year - should have state historical marker for site on Ackley's farm - but it would probably be vandalized.

Groups scurry to save

Anglers heading up to the Eastern Sierra trout opener Saturday will find area waters stocked with the usual allotment of fish. On the surface, normalcy prevails.



DAVE
STREGE
OUTDOORS

Yet the atmosphere behind the scenes is anything but business as usual — not with the state hatchery system having taken a \$2.6 million cut as a result of the state's budget deficit.

Plans are on the drawing board to help save the hatchery system. Mono and Inyo county officials, local businesses and politicians are rallying to ensure future trout seasons have plenty of fish for visiting anglers.

Among the latest developments:

- A trout hatchery bill: Assemblyman Dave Cogdill, R-Modesto, has reintroduced a hatchery bill that would require a percentage of revenue from fishing license sales go to help fund the hatchery system.

Assembly Bill 2280 is similar to AB 590, which died last fall in the appropriations committee. The most significant change is that the old bill dedicated 45 percent to hatcheries. The new bill leaves the percentage to be determined. The bill just passed into the appropriations committee.

Cogdill is asking anglers for letters of support. For more

details, visit www.assembly.ca.gov/cogdill or www.storm-source.org/ab2280/index.php.

- Making an IMPACT: The Inyo Mono Preservation And Culture of Trout (IMPACT) has just been established by the Mono County Fisheries Commission. Its mission statement is "to fight for adequate support of state hatcheries and wild trout programs, and (to) fund the production and distribution of more and larger fish from private sources."

Neil McCarroll, chairman of the fisheries commission, said the association will help get local business and resort owners involved and contributing to fishing enhancement in the Eastern Sierra. Businesses can join for \$100 a year and individuals for \$35 a year.

John Frederickson of Crowley Fish Camp said the hope is for the association to eventually become as powerful politically as United Anglers of Southern California has become, funding a lobbyist in Sacramento and an attorney.

Brochures about the association are being printed and will be distributed throughout the Eastern Sierra two weeks after the opener, McCarroll said.

There wasn't time to get them out sooner, but anyway, McCarroll said, "it's next year we're worried about and working toward."

For more details, call Avery Gilleland at (530) 495-2121.

- Bridgeport trout event: The inaugural Bridgeport Trout Tournament is being planned

for Oct. 2. It is designed to help the area's fish-enhancement program.

Skip Baker of Orange, owner of Big Meadow Lodge in Bridgeport, is co-chairman of the event, which will feature divisions for bait, fly-fishing and kids. Entry fees will be \$40 for adults and \$20 for kids.

Baker said the proceeds will go toward the purchase of trout from private hatcheries for stocking in area water such as Twin Lakes, Bridgeport Reservoir, Virginia lakes, East Walker River and Robinson Creek.

He said he hopes the event will become as popular as the Double Haul in the Fall tournament put on by Western Outdoor News in September on Crowley Lake. Baker said WON is sponsoring the even-

- Sierra Trout Foundation: The private hatchery established a few years ago by Mono County will be planting 20,000 pounds of 1.5-pound rainbows this season. Steve Marti of the foundation said plans to increase trout production next year to 50,000 pounds, upwards to 60,000 two years and ultimately 100,000 pounds. Visit www.sierratrout.com.

- Hot Creek Hatchery Foundation: A cooperative effort between the Department of Fish and Game and Tim Apers, who owns a private hatchery and stocks several waters in the Eastern Sierra, is currently being worked out under which the foundation and DFG will split the costs to keep Hot Creek Hatchery

(2)

The Xanax should make biopsy more tolerable. Last year I took a Valium pill before having a sigmoidoscopy and I felt more relaxed. If cancer cells show up, you'll be given several options--wait and monitor, implant radioactive particles (or radiation), operation, or do nothing--which was the way prostate cancer used to be considered for men >65. With max. life span extended, treatment is now recommended for older men. Dick Gord (at Needham & Gord) who I visited last summer had operation last year at age 75--doctor told him he was in good health and new method of operating is much less traumatic--only 1-2 days in hospital (he had operation at Univ. Wash. Med. Cent.). Dr. probably told you that, for most men, Lupron works for only 1-2 yrs, but it could ~~put off~~ decision on other options. - My doctor recommends continuing Lupron after cancer comes back for retarding development. I'm having my PSA & leukemia retarding development. I'm having my PSA & leukemia blood samples taken next week--I've been on Lupron 2 yrs. (began May 2002). - No real side effects for me. Another Alaskan friend I visited last year wrote that his PSA is up and should have biopsy (he's 73). My travels left me weary and feeling my age. Denver → Minneapolis/St. Paul → Cleveland → M/SFP → LAX → Denver. Left hotel 3 hr. before flight time last Fri., anticipating freeway jam. We found the HOV lane open and we cruised along making good time while 1000s vehicles with only driver were "inching" along. Why don't they find another person and use HOV lanes? - but then, they would jam up also.

Hope that you're gradually finding some
peace of mind. Regards,
Bob

have - Stripers fair to good.
Low Beach - A few stripers to 28-0 show-
at night.

Wed. 12:21 2.5 12:39 0.2
Thurs. 5:45 4.1 7:24 4.3
First quarter moon on Tuesday

state hatchery system

ren.

Meanwhile, the future of Alers' hatchery remains uncertain. Since the New Zealand mud snail was found in the waters of his hatchery, Alers can only stock his trout in waters that have the snail (Wenatchee River, Pleasant Valley Reservoir and Crowley Lake).

Like the hatchery issue, the mud snail is an on-going concern. Stay tuned.

Everest climb: John Rost, 40, Huntington Beach is the latest Orange County climber attempting to scale Mount Everest.

Rost and his expedition reached base camp on Saturday and this week began the acclimatization process, which takes a few weeks before the summit try.

Shooting event: The 23rd annual End of the Trail World Championship of Cowboy Action shooting and Wild West Jubilee is Wednesday-May 2 at Laahauge's Ranch in Norco.

It draws more than 800 authentically dressed competitors from around the world. It's also billed as the greatest Wild West show since the days of Buffalo Bill.

Live entertainment, stunt shows, trick roping, seminars, pony rides, petting zoo and shooting competitions are among the festivities.

Admission is \$10 daily, kids 2 and under free. Parking is \$5. Hours are 9 a.m.-6 p.m. Call (714) 694-1800 or visit www.sassnet.com.

Boat show: Mary Murphy, 86, of Los Alamitos will again be atop a hydrofoil water ski to promote the latest boat

show. She will ski non-stop 23 miles from Long Beach Harbor to Newport Beach Pier at 8 a.m. Wednesday.

The Southern California Marine Association Boat Show at the Dunes in Newport Beach is Wednesday-May 2.

Hours are noon-9 p.m.

weekdays, 10 a.m.-9 p.m. Saturday and 10 a.m.-6 p.m. Sunday. Admission is \$10, kids 12 and under free. Visit www.scma.com.

CONTACT THE WRITER:

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dstrege@ocregister.com

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Feb. 15, '82

Dear John,

Enclosed is my revised and simplified note to be published in the Trans. Am. Fish. Soc. Note how the authors used your 1978 paper in support of their view that all early shipments of rainbow trout come from the USFC Board Station on the McCloud. Evidently they didn't bother to read what you really said.

I've completed all the species (and subsp.) accounts for the book and I'm editing the text as put together by editor. Have to read carefully, some errors made as my original text was rewritten and transposed on book pages. I hope I catch & correct all mistakes—such as (in Alvard basin) "rainbow trout first stocked 1933, by 1934 the native cutthroat was hybridized out of existence." Condensation to fit page allotment omitted key sentence or two. I get to read all the pages before they go to press, so the 'howler' type errors that come out in the Stockpole trout book should be avoided. It's obvious, however, that the people putting the book together don't know much about fish in general and trout specifically. Publication date is aimed at Oct.

A paper was published in Trans. Am. Fish. Soc. 127(4) (1998) on New Zealand sockeye salmon. In 1901 ^(anadromous) ^{from} Sockeye eggs at Shuswap L., B.C. sent to N.Z. They were stocked in Lake Ohau. They gave rise to resident, "Kokanee". Now there are two life history types. Lake Benmore was created in 1964. Sockeye migrating downstream from L. Ohau established another population, where, with richer food supply, they grow faster and have different life history than their parents in L. Ohau.

I recall the Wind R. tribes went to court over water rights ^{and flows} on their reservation in Wyo., but state water law and old US Bon Rec. contracts to supply water pretty much prevailed.

Did you experience any of the cold, wet climate that hit S. F. Bay region few weeks ago? Snow was on the ground in Berkeley! My wife never saw white on the ground in Berkeley going back 60 years. Some times a dusting of white could be seen down to about 1000 ft. elevation, but not at sea level.

I was in Denver yesterday to be on a panel at Whirling Disease Conf. Big topic is a German hatchery strain, the "Hofer" rainbow, that seems to be highly resistant to whirling disease. All kinds of "environmentally correct" concerns were expressed about importation of another "exotic". My comment was "get real" - how much concern should we make over another non-native rainbow, anyway. Rainbows are not native to most all of famous western trout streams, and they've all been stocked with millions of hatchery rainbows for past 100 yrs. Another, hatchery rainbow in waters where they were never native - so what? I couldn't get worked-up on the matter. My mention of the diverse sources of hatchery rainbow trout that were shipped to Germany (incl. ^{known} 3 shipments of steelhead) as discussed in my paper raised some interest. (source of heterozygosity for selection to openste). Everyone thought they all come from McCloud.

Regards,
Bob

**Comment on Pascual et al., First documented case of anadromy in a population of introduced rainbow trout in Patagonia, Argentina.
Transactions of the American Fisheries Society 130: 53-67**

This paper contributes important information on the basis for anadromous and resident life history forms of *Oncorhynchus mykiss* introduced into a new environment. I agree with the authors that this is phenomenon well-deserving of "further research". My comments concern two points that I believe can contribute to any further research. The first point concerns the possible range of diversity of rainbow trout that were introduced into the Rio Santa Cruz, and this relates to the origins of *O. mykiss* that were propagated and distributed during the early 1900s. The McCloud River was not the sole or even the first source of rainbow trout used in early propagation. The second point concerns the conclusion of no reproductive isolation between anadromous and resident life history forms in the Rio Santa Cruz and its implications. I suggest an alternative nongenetic method for testing this hypothesis.

The assumption that the origin of virtually all hatchery rainbow trout can be traced to the McCloud River has persisted in the literature for more than 100 years. The authors state (p.57): "All early shipments of rainbow trout and Pacific salmon, including those directed to the Santa Cruz Hatchery, came directly from California (citations). At that time, most of the eggs exported by the United States were obtained from the Baird Hatchery on the McCloud River in California" *

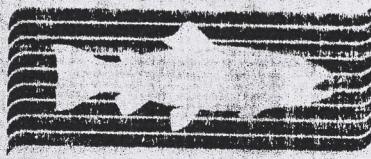
(Scott et al. 1978). The Scott et al. paper concerns the documentation of the origin of the rainbow trout of New Zealand. These authors wrote: "With few exceptions, American fisheries literature has perpetuated the belief that Baird Station on the McCloud River in California was the source of nearly all exports of rainbow trout eggs to other countries including New Zealand." They cite Dollar and Katz (1964) who stated: "From these McCloud River trout have been developed most of the hatchery trout stocks used today in the U.S. Europe, New Zealand and other countries."

Scott et al. (1978) discovered that New Zealand rainbow trout are derived from an 1883 shipment of eggs from a private hatchery that was propagating steelhead from Sonoma Creek, California. In regard to the Rio Santa Cruz trout, it is interesting to note that the descendants of the Sonoma Creek steelhead became resident rainbow trout in New Zealand. New Zealand does have anadromous introduced populations of chinook salmon *Oncorhynchus tshawytscha* and sea-run brown trout *Salmo trutta* but no steelhead. Scott et al. (1978) did mention that on the island of Tasmania, the stocking of rainbow trout in rivers with access to the sea was terminated because the stocked fish were lost to seaward migration.

A brief summary of the early propagation of rainbow trout is given in my western trout monograph (Behnke 1992) with further details and citations given in Behnke (1990). My sources are the comments of Livingston Stone found in the annual reports of the U.S. Fish Commissioner from the first report of 1872-73 to the 1888 report, and information on propagation and distribution found in the biennial reports of the State Board of California Fish Commissioners from the first report of 1870-71 to the 1888-1890 report.

Propagation of rainbow trout from the McCloud River drainage began in 1877 when J.B. Campbell and Myron Green (assistant to Livingston Stone) began propagating rainbow trout on Campbell Creek, a tributary to the McCloud River, on Campbell's property. These eggs were supplied to the California Acclimatization Society for hatching and distribution. It is not known if the eggs were taken from resident rainbow trout, steelhead, or both.

The U.S. Fish Commission's involvement with rainbow trout propagation at the Baird Station began in 1880 at Crooks Creek (later Greens Creek) on the McCloud. This operation lasted until 1888. During this time, about 2.6 million eggs were shipped to state and federal hatcheries for distribution and for the establishment of brood stocks. Thus, shipments of rainbow trout eggs to Argentina beginning in 1905 did not come directly from the Baird Station.



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August 16, 1983

Please reply to:

Herbert L. Joseph, M.D.
1516 Napa Street
Vallejo, Ca 94590
(707) 643-5785

Dr. Ray Simon
U. S. Fish & Wildlife Service
Fish Research Laboratory
Leetown, Route 3, Box 40E
Kearneysville, West Virginia 25430

Dear Dr. Simon:

Surprise! We have 43 small steelhead from Sonoma Creek, from 3" to 7", captured by electroshocking by Bill Cox, California Department of Fish & Game biologist on August 9. He observed a surprisingly good population of small steelhead.

The fish came from the reach above Kenwood, well upstream. Enclosed is Bill's card in case you wish to contact him.

I tried to phone you today, but you are on vacation. The fish are being kept frozen. On checking with the airlines, United Flight 50 direct from San Francisco will be best, arriving Dulles International at 4:45 PM. I can get them on this flight for you next Wednesday, August 24.

United also has a flight to Dulles arriving at 9:10 PM and Western one at 5:50 AM. If you wish I can get the package on one of these.

Wednesday is my day off, like most of my colleagues, so I can send the fish from San Francisco next Wednesday, August 24. However, I could get them on Western leaving San Francisco at 8:45 PM, arriving Dulles on a Monday or Wednesday at 5:50 AM. You may wish to further inquire about flights and check the times.

I will hold the fish in the freezer until I hear from you when to ship them.

Yours very truly,

Herbert L. Joseph, M.D.

HLJ/aj

CC: Cox, Rawstron, Hunter, May, Lufkin, Schley

I am Dick May Son with fisheries in re the protection of the smolt runs by J.L.S. H.P.

In going through accumulated notes, reports, etc. I come across file sent to me by Herb Joseph - Herb got sample of Sonoma Crk. trout to use in genetic comparisons with New Zealand rainbows. Were you aware of this study? - Evidently, in 1982, Ben Schley (USFWS) and W.L. Newman (Senior Wildlife Officer, Rotorua, N.Z.) got idea for the genetic "proof" of origin. Conclusion w/ Sonoma Crk. fish was no conclusion could be reached their genetics was inconclusive. This is not unexpected - actually, I would be surprised if conclusive parent \rightarrow derived pop. was established. - Problem is similar to having co. (one million marbles - with 20 different colors, each color occurring at certain frequencies. Now take random sample of co. 100-1000 marbles to start new pop. - do this several times (\approx 100 or so pop. of New Zealand rainbows) - what would be chance that all of derived populations retained all of original (\approx alleles) colors, at original frequencies?

The table of genetic data concerns L. Telpo rainbows - reputedly stocked into L. Rotomahana - after several generations they are quite different - obviously not identical.

← Dean John - Dec. 14
A sample of the page design for book
Trout was put together to show Simon
& Schuster people what book will be like.
Yes, we'll include brown trout.

The New Zealand rainbow in photo
could pass for a rainbow x cutthroat hybrid
→ might be caught in the Snake or
Yellowstone rivers where I fished. Since,
after all these years, no one has come
up with any hard evidence that to doubt
your conclusion that all New Zealand
rainbows come from Sonoma Crk. steelhead,
I assume that thementation found in
New Zealand rainbows is inherited from
the Sonoma Crk. ancestors. — It was a
trout like one in photo that misled
anglers (and Univ. Moscow people) to believe
there are cutthroat trout in Kamchatka.
Were you aware of the attempt
to genetically connect Sonoma Crk. rainbows to New
Zealand rainbows as can be seen in
other enclosures?

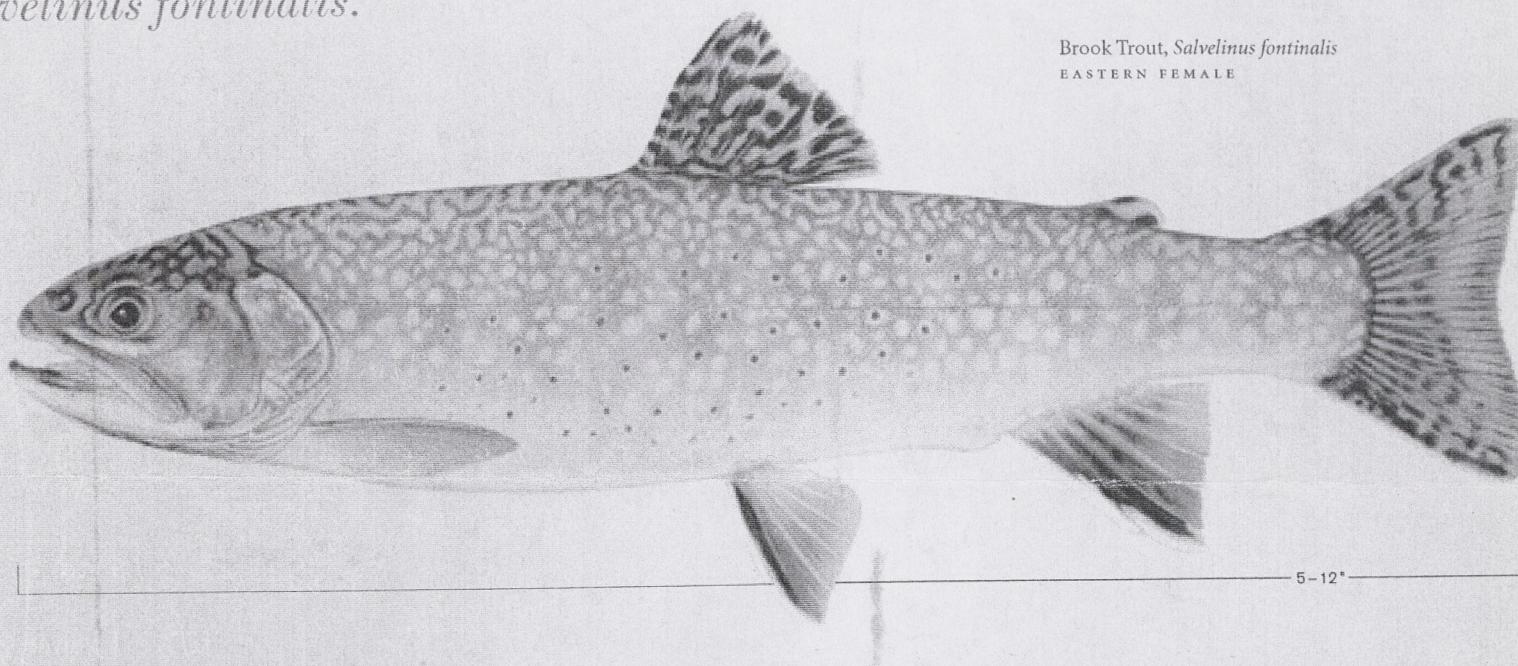
Nothing was ever published on it.

— When the Snake R. leaves Wyoming and
enters Idaho, it is called the "South Fork"
(of the Snake) — There is no North Fork, but at
junction w/ Henry's Ft., it becomes the Snake R.
(again).

Sample copy

Brook Trout, *Salvelinus fontinalis*.

Brook Trout, *Salvelinus fontinalis*
EASTERN FEMALE



The brook trout is the most "trout-like" of all the species of char. Its life history, ecology, and habitat are more similar to rainbow trout and brown trout than to any species of *Salvelinus*. Although its water temperature preference is lower than that of brown trout and rainbow trout, *Salvelinus fontinalis* is the most warm-adapted, most thermally tolerant and more generalist (least specialized) species of char.

BIOLOGY Brook trout spawn in the fall, typically in October or November. Most spawning occurs in streams, similar to rainbow and brown trout. In lakes, brook trout may spawn on lake bottoms, successfully reproducing where other species of trout cannot. In a typical small stream population, brook trout will sexually mature and spawn at a young age of one or two years. In dense, small stream populations, few live beyond three years. In

the northern part of its range in Canada, however, in large rivers and lakes, brook trout may reach nine or ten years of age and 9–10 pounds (4–4.5 kg) in size. There are both hereditary (nature) and environmental (nurture) factors that influence age at maturity and maximum life span. The most extreme age recorded in brook trout concerns fish of a hatchery strain that generally would not live more than three years. When stocked into a high elevation, a very cold lake with a sparse food supply in the Sierra Nevada of California, their life was greatly prolonged. The extreme conditions lowered metabolic rates to very low levels and greatly extended the life span. The last surviving brook trout recorded from this lake was 24 years old; about a six or seven fold increase over its normal maximum life span.

Brook trout, as with brown and rainbow trout, feed opportunistically. Under similar conditions

BROOK TROUT

Scientific name: *Salvelinus fontinalis*

Other common names: Eastern brook trout, char, speckled trout

Habitat: Clear, cool, freshwater streams; tidal streams; rarely in saltwater

Length: Adult in small streams 5–7 inches (10–17.5 cm); averages 12 inches (20 cm) in rivers and lakes; maximum 21 inches (52.5 cm).

Weight: 1.5–16 ounces (45 g–45 kg); maximum 14.5 pounds (6.6 kg).

Life span: 2–3 years average; maximum 24 years in high-altitude mountain lakes.

Diet: Chiefly aquatic invertebrates; smaller amphibians.

OFFICE MEMO

TO: (cont.)

II

Date

FROM: — it took > bout 15 min. to wade downtown where I could

SUBJECT: land it. The die-off must be over for the year now

REMARKS: the surviving trout appear healthy. Stressful situations
were greatest impact on larger older fish after they've

sexually matured and, physiologically, are vulnerable. There's
still lots of trout left and I hope Bob Hunt will

have a good day. Many of trout that perished had
clouded consciousness (see factors). A common phenomenon is

productive, weedy lakes, that provide the ^{life history} link of a

Trematode parasite - bird → snail → crustacean → trout? The larval
parasite accumulates and migrates through connectives. By time
several hundred have established (2-3 yrs.) the trout is
essentially blind. Before the cause was known, fisheries

people had a term, "alkali blindness," mistakenly assuming that the cataracts were caused by water chemistry.

Enclosed is pg. from Field & Stream about San Diego. Writer is probably a local outdoor writer, but where did he get into that Puma Crk. Trout are same as Big Trout?

Many years ago, as you might recall, genetic analysis was made on S. Calif. rainbows by one of U.C. Davis students.

I remember that Puma Crk. Trout shared an allele (at low freq.) with Santo Domingo trout - but how would the writer know this? Perhaps it's influence of Alan Greenwood who constantly hyped So. Calif. trout and their genetics ("mother of all diversity"). I'm initiating meeting with Mont. St. Univ. special collection librarian to begin transferring my library - mainly files, letters, etc. To the Bud Lilly Angling Library. I visited there two years ago and was impressed.

Regards,
Bob