Special Wilderness and Fisheries Supplement Included

Bulk Rate
U. S. POSTAGE
PAID
Permit No. 34
Davis, Ca

WILDERNESS RECORD

PROCEEDINGS OF THE CALIFORNIA WILDERNESS COALITION

Vol. 4 | P.O. Box 429, Davis, CA 95616 | July-August 1979 | No. 4

Salvage Sales Endanger Roadless Areas

Although the dust is slowly settling after the tumultuous conclusion of RARE II, the controversy surrounding the Forest Service's final recommendations has yet to end. Needless to say, as a program to settle "once and for all" the final disposition of the roadless areas on the National Forests, RARE II was an unqualified flop.

With President Carter's approval of the Forest Service recommendations in April, many unique and valuable roadless areas which were designated "non-wilderness" in RARE II are now open for commercial exploitation. Supposedly, those areas that were designated "further planning" are under interim protection until a final Forest-Wide Plan is completed.

Unfortunately, true protection of further planning roadless areas is turning out to be little more than Forest Service rhetoric.

Examination of proposed timber salvage sales on the National Forests throughout California indicates that there is an on-going region-wide attempt to obtain timber resources from roadless areas "locked up," if only temporarily, by the further planning designations of RARE II. Because sales are approved on an individual basis for each National Forest, the complete impact of the total number of proposed salvage sale in roadless areas has yet to be accurately assessed.

A large amount of timber was killed during the 1976-77 drought by a combination of the Western Bark Beetle and lack of water. Much of this dead timber on regular Forest lands has been salvaged over the last two years. However, the harvesting of dead trees within roadless areas inventoried in RARE II requires the approval of the chief of the Forest Service. The chief has the authority to approve salvage entry into roadless areas in an emergency situation. In the case of the numerous salvage sales being proposed throughout the state, the "emergency" usually cited is the control of further bark beetle infestation by removal of dead trees. The Forest Service fears that if trees killed by bark beetles remain unsalvaged, then they will provide a habitat base for further infestation into unaffected portions of the forest.

On the Lassen and Plumas forests alone, the Forest Service is planning to salvage a total of 16 million board feet of timber in three roadless areas. Areas slated for salvage cutting include the Cub Creek, Polk Springs and Middle Fork inventoried roadless

cont. on page 4

Tuolumne River Study

A draft of the Wild and Scenic River Study and Environmental Impact Statement for the Tuolumne River has been released for public comment. The report analyzes five alternatives for possible inclusion of portions of the Tuolumne River in the National Wild and Scenic Rivers System. The study has been an interagency effort under joint leadership of the U.S. Forest Service, Department of Agriculture, and the National Park Service, Department of the Interior.

A 92-mile portion of the river, located entirely within Tuolumne County, California, was identified for study as a possible candidate for wild and scenic designation by an amendment to the Wild and Scenic Rivers Act (Public Law 90-542).

The draft study found several segments of the river possessing outstanding values to make it eligible for designation. Alternative A, identified as the prefered alternative, would result in protection of all eligible river segments of the Tuolumne — a total of 83 miles. The eight-mile Hetch Hetchy Reservoir and the one-mile area around the Early Intake Diversion Dam were found ineligible for inclusion. Alternatives B, C and D would protect smaller portions of the river, allowing planned hydroelectric developments to be unaffected by Wild River protective provisions. Alternative E represents "no action."

While the Tuolumne study was ongoing, the Turlock Irrigation District hired a $15,000-a-month lobbyist, former Federal Power Commissioner Lee C White, to lobby for their proposed $475 million Clave-Wards Ferry Project on the river. The TID's project would destroy an 18-mile segment of the Tuolumne that is noted as one of the best in the nation for rafting and kayaking.

The draft study concludes that Alternative A preserves 83 miles of free flowing stream including stretches of some of the finest whitewater in California and the nation; and preserves an estimated 250 archaeological sites associated with the Miwok Indians. These sites are especially important to the interpretation of the Miwok heritage with the loss through inundation of sites in much of the Stanislaus River Canyon. Preservation of the river corridor would also protect the significant fishery resources and provide opportunity to interpret the early history of the area including that of the Gold Rush era.

A 90-day public review period for the draft ends on September 15, 1979. Your comments must be received by that date to be considered in preparation of the final report. Support of Alternative A and maximum protection of the environmental, recreational and archaeological resources of the river is needed. Also urge the study team to recommend that a very wild tributary, the Clavey River, be designatd a "wild river." This tributary flows through Stanislaus National Forest, including the Tuolumne River RARE II area (#05258). Address for comments is Tuolumne Wild and Scenic River Study, Stanislaus National Forest, 19777 Greenley Road, Sonora, CA 95370. Four public hearings on the draft will be held on August 4, 7, 9 and 11 at Sonora, Modesto, San Francisco and Oakland respectively. For times and locations contact the Stanislaus National Forest at the above address or the Coalition (P.O. Box 429, Davis, CA 95616).

Roadless Area Reprieve?

Secretary of Agriculture Robert Bergland has agreed to defer development of 64 California roadless areas recommended for "non-wilderness" designation by the Forest Service. This action was in response to a request for a six-months "hold" on 77 areas by Congressman Morris Udall on behalf of California Rep. Phillip Burton.

Burton asked for the delay after he learned of the many roadless areas threatened with development as a result of the Roadless Area Review and Evaluation (RARE II) program. Bergland first rejected the hold request for all 77 areas, but later agreed to defer any action which might impair wilderness characteristics on 64 of them.

Seven of the areas are not currently threatened, as a result of President Carter's changes to RARE II recommendations. The remaining six scheduled for development are Portuguese, Thatcher, City Creek, Deep Creek, Rincon, and San Joaquin. Timber salvage operations would affect four of the roadless areas with fuelbreaks and habitat manipulation on two others (see chart).

A number of planned activities on other areas would not adversely affect their wilderness character. In a letter to Secretary Bergland, Udall, Burton and Rep. ohn Seiberling pointed ou that activities "such as t e construction and mainte ance of range improvements, fuelbreak maintenance, fishery structures, trail construction and maintenance, and burning or other activities to control insects and disease, are consistent with, and permissable in, wilderness areas."

While agreeing to the development hold, Bergland did state that the Forest Service plans to proceed with layout and design activities to the extent necessary to plan programs for 1980 and beyond. They will also honor statutory rights, such as allowing access to private lands and will take prompt action to suppress fire or insect outbreaks. They may also salvage further timber where this can be done with minimum impact on an area.

ROADLESS AREAS SCHEDULED FOR DE ELOPMENT

ROADLESS AREA	#	FOREST	DEVELOPMENT PLANS
PORTUGUESE	B5074	KLAMATH	TIMBER SALVAGE
THATCHER	05141	MENDOCINO	700 ACRES OF RANGE AND WILDLIFE HABITAT IMPROVEMENT CARRIED OUT UTILIZING BROADCAST BURNING. THE FIRST 200 ACRES HAS BEEN COMPLETED. NO MECHANICAL LINE CONSTRUCTION IS REQUIRED
CITY CREEK	05183	SAN BERNARDINO	130-ACRE FUELBREAK CONSTRUCTION
DEEP CREEK	05178	SAN BERNARDINO	TIMBER SALVAGE AFFECTING 108 ACRES
RINCON	05208	SEQUOIA	TIMBER SALVAGE, WILDLIFE HABITAT IMPROVEMENT AND FIRELINE CONSTRUCTION AFFECTING 3,000 ACRES. (THE TIMBER SALVAGE IS ONGOING AND RESULTED FROM THE BONITA FIRE)
SAN JOAQUIN	B5047	SIERRA	RECENTLY IDENTIFIED TIMBER SALVAGE RESULTING FROM INSECT DAMAGE IN THREE AREAS AFFECTING 2,000 ACRES ON EDGE OF ROADLESS AREA

Coalition Report

by Wendy Cohen
President

The Coalition is starting this summer in a new office in downtown Davis. The office will be shared with Jim Eaton of the Wilderness Society. With the additional space and copying and postal services nearby, this central location will allow the CWC staff to work more effectively. The new office will also provide space and materials for volunteers or interns to work on special projects, tasks or office activities. Anyone interested in volunteering for CWC on any of a wide variety of projects should contact us at (916) 758-0380. The office is located at 204 "F" Street, Suite E. Come by and visit!

Our move to a new office was necessitated in part by expansion of the staff. We now have two employees, with a third to be hired in July. Dennis Coules is our Public Lands and Resources Project Coordinator, and Sheri Russell is a part-time Office Coordinator. In mid-July we plan to hire our second project position of Administrative Assistant. This new employee will work with Dennis on public lands issues and help set up a resource library in the office consisting of background material on a wide variety of wilderness issues and specific areas.

With this expanding staff and additional space in the office, we can use donations of office supplies or office furniture including, among other things, desks, chairs, tables, bookshelves and typewriters. Any donations will be gratefully accepted.

The Coalition has 42 member groups and 14 business sponsors. In addition, other businesses have made contributions to the California Wilderness Foundation, among them Northface and Ski Hut. We thank these groups and businesses for their donations of both financial and human resources and urge our members to patronize our business sponsors (listed on the back page of this issue).

Middle Fork Victory

In an unexpected decision, the Chief of the Forest Service may have permanently halted a large-scale gold dredging operation on the Middle Fork of the Feather River in Plumas National Forest.

Chief John McGuire has remanded a conservationist appeal to the California Regional Forester with the direction that a further attempt be made to determine the validity of the Neptune Claims at Hanson Bar, on the Middle Fork. The Middle Fork is one of the two National Wild and Scenic Rivers in California.

Continental Quicksilver Inc. of Oracle, Arizona, had planned to dredge a mile and a quarter of the river with a 12-inch suction dredge. The three-year operation would have overturned approximately 90,000 cubic yards of riverbed gravel. A coalition of environmental groups consisting of the Northern California Flyfishers for Conservation, Northstate Wilderness Committee, and Friends of the River had appealed the Plumas Forest Supervisor's approval of Continental's dredging plan.

Arguments against the dredging included questions concerning the validity of the Neptune Claims, the adverse impacts of the operation on the Middle Fork's renowned water quality and fisheries, and the legality of the mining under the National Wild and Scenic Rivers Act.

A key section of the Act which was the basis of the Chief's decision states, "Subject to valid existing rights, the minerals in Federal lands which are part . . . of any river designated a wild river. . . . are hereby withdrawn from all forms of appropriation under the mining laws." Although the Act allows mining of valid claims, it prohibits prospecting after October, 1968 (the date of the Act's passage).

In his decision, Chief McGuire stated, "The validity of a mining claim located prior to the withdrawal must be established as of the date of the withdrawal (October, 1968). A prime requisite for determination of validity is a discovery of a valuable mineral deposit. . ."

"The Chief concluded, "There is no report of a mineral examination by a Forest Service mineral examiner, nor is there any evidence submitted by Continental to establish the validity of its claims." Thus Continental must show legal proof of mineral discovery at Hanson Bar prior to 1968. The burden has been laid upon them. If the claims are not valid, Continental will not be allowed to operate.

Brian Smith, attorney for the conservation groups involved in the Middle Fork issue, expressed surprise at the rapidity of the Chief's decision. "We were not expecting a decision so soon . . . and certainly not one as positive as this."

"Chief McGuire's decision," Smith explained, "probably means the end of Continental's schemes to dredge the Middle Fork. Although the decision allows them to mine the claims if they can prove mineral discovery before 1968, it is questionable that they can do this."

According to Bob Baiocchi, the fisheries consultant who did most of the research on the Middle Fork issue for the Northern California Flyfishers, the validity question has always been the key.

"We always felt that the claims were probably invalid," he stated, "but the important question was whether the Forest Service would allow them to operate without first determining mineral discovery as required by law. We felt that the Plumas Supervisor's approval was a clear violation of the mining laws and the Wild and Scenic Rivers Act."

"The Chief's decision," Baiocchi added, "proves that our views on that particular matter were correct. Now that this issue is over, we might just take a look over the rest of the river. Who knows? There might be other illegal mining operations we could stop."

BLM Critical Area Program

The Bureau of Land Management (BLM) is inviting public comment on proposed guidelines for identifying and designating areas of the public lands where special management is needed. Termed "areas of critical environmental concern" (ACEC), the areas involved are those that required special management to (1) protect important and critical historic, cultural or scenic values, or (2) provide protection to the public from natural hazards.

The ACEC program is required by the Federal Land Policy and Management Act of 1976 (FLPMA), which also directed the BLM to review its lands for potential wilderness designation. The ACEC concept will have its first test in the California Desert Conservation Area Plan, to be published in draft form in January.

BLM Director Frank Gregg said the ACEC process will provide BLM resource managers with a multi-use planning and management tool that will be useful in special situations.

"The law mandates us to protect our most environmentally significant and most vulnerable resources within a framework of multiple use," he said. "We have a dual responsibility; to protect those genuinely important and critical natural, historic, cultural or scenic values that make the places where they are located special places, and to protect the public from natural hazards, and to do this without necessarily restricting these lands from any compatible uses."

Uses such as the production of food, timber or minerals, and recreational or other development, when wisely planned and properly managed, may take place in ACECs, and will be controlled to ensure that the significant and critical enviornmental resources within these areas are not damaged or endangered, Gregg said.

The draft guidelines, which were published in the **Federal Register** June 6, include the following proposals:

(1) ACEC identification and designation will be done through BLM's on-the-ground resource management planning process with opportunities for broad public participation.

(2) Each ACEC's management prescription will be site-specific, individually "hand-crafted" to fit each area's particular resources or hazards.

(3) An ACEC designation will constitute a commitment that future actions within that area will be limited to those that are consistent with the area's particular special management requirements.

(4) To the extent that any

cont. on page 4

Santa Rosa Mountains

During RARE II (Roadless Area Review & Evaluation) process, many conservationists in Southern California became aware of the possibilities for large wilderness areas within easy access of urban centers. The San Bernardino National Forest Coalition, which is composed of the Sierra Club, The Wilderness Society, California Wilderness Coalition, San Bernardino and Riverside County Audubon Societies, Desert Protective Council, Nature Conservancy, Defenders of San Gorgonio, Torres-Martinez Indian Reservation, Pinyon Crest Property Owners Association, and Desert Riders (an equestrian group), have decided to make their top priority for wilderness status the Cactus Springs roadless area (that portion of the Santa Rosa Mountains in the San Bernardino National Forest). Under RARE II it was designated "further planning."

The Coalition hopes to see approximately 170,000 acres of the Range eventually under wilderness management, with the adjacent Bureau of Land Management lands being a major addition to the 19,800-acre Forest Service Wilderness. The State in 1974 designated its portion of the Range in Anza-Borrego State Park "wilderness."

Major issue of contention with the Forest Service is the management of the habitat of a local herd of peninsular bighorn sheep, designated by Department of Fish and Game as "rare" species. This issue, which seems to be a greater wilderness roadblock to the Forest Service than the Department of Fish and Game, should soon be resolved to the satisfaction of Congressman Jerry Lewis. He has tentatively agreed to introduce a Santa Rosa Mountains Wilderness bill.

The SBNF Coalition urges you to contact your Congressman to support the establishment of a Santa Rosa Mountains Wilderness. This Cactus Springs area is high-desert country with alpine forests, vast sloping benches, boulder-laced hills covered with Pinyon Pine, Juniper, Redshank Camise, Yucca and Agave. Magnificent displays of Santa Rosa Sage are found only here.

Horsethief Creek, a perennial stream with many inviting deep clear pools and waterfals, traverses the area. This is the high-altitude range of the Santa Rosa herd of peninsular bighorn sheep. The Cahuilla Indians have historically used the resources of the area and their ancient sites would be best protected by wilderness status for the area. The Santa Rosas would make an outstanding wilderness. For more information, please contact: SNF Coalition, P.O. Box 106, Barstow, CA., 92311.

News Briefs

Peterson New Forest Service Chief

Max Peterson, former Deputy Chief for Legislative Affiars, has been named new Chief of the U.S. Forest Service by Agriculture Secretary Bob Bergland. He will replace John McGuire. As Deputy Chief, Peterson was responsible for working with the Congress on legislation affecting the agency, such as wilderness.

Ed Hastey Promoted in BLM

Ed Hastey, presently California State Director of the Bureau of Land Management (BLM) has been appointed Associate Director of the BLM.

In the agency's number-two post, Hastey will be responsible on the national level for the management of resources of the western public lands and submerged lands of the Outer Continental Shelf. He reported to Washington, D.C. as full-time Associate Director in June.

Forest managers adopt new "get tough policy"

The Thailand government is taking stern measures to save the country's remaining forests. The export of teak is now forbidden and the penalty for illegal logging is death. These measures were sparked by American satellite photography which revealed a 35 percent decline in Thailand's forest area in the past 20 years.

Yacht builders are the principal users of teak. Not much of Burma's teak reaches western markets, while this "gemstone among woods" is of a lesser quality in India, Indonesia, and Central America.

Demand for Thai teak remains strong. American wholesale prices doubled in 1977 (before the ban) and a black market in teak logs is now said to be operating in Hong Kong.

Stream in the Santa Rosa Mountains **Photo by Joyce Burk**

Wilderness Wildlife

Biology of the Algodones Dunes

by Dennis Coules

The Algodones Dunes, or Imperial Sand Hills, in southeastern California are one of the largest dune masses in the United States. Like most dunes of the California desert, they are thought to have been formed from the shorelines of ancient lakes that once existed. As the lakes disappeared large amounts of sand were available for the wind to work on. Dunes are formed when there are obstructions to the wind, which may be topographic features or plants.

Once a sand mass forms, it tends to collect more sand so that the dunes have a potential for growth. The southern end of the Algodones Dunes is said to offer more variety in dune forms than anywhere else in the state.

Dunes, being isolated ecosystems surrounded by other types of habitat and usually without connection to other dunes, constitute "ecological islands." As a result the plants and animals found there can diverge over evolutionary time to form unique species or populations.

Several rare, endemic plant species are found in the Algodones Dunes and the Andrews dune scarab beetle is found only there. This insect is proposed by the U.S. Fish and Wildlife Service as an endangered species because its habitat — troughs of loose drifting sand between dunes — is being severely disrupted by off-road vehicles (ORVs) which prevent the accumulation of dead organic matter upon which the immature stages of the beetle feed.

The Algodones Dunes, at least the portions that have escaped ORV abuse, contain varied and abundant wildlife populations. The central portion is actually heavily vegetated with mesquite and paloverde, providing good cover and forage for many bird species as well as such mammals as kit foxes, skunks and kangaroo rats.

Most interesting are those species that are specifically adapted to conditions of loose sand and are found in few areas other than dunes and large washes in the desert. The Colorado Desert fringe-toed lizard (**Uma notata**) is another specialized form dependant on the dunes that is now endangered, primarily by ORV use. Completely restricted to fine, loose windblown sand, the lizard has developed such adaptations to the habitat as well-developed earflaps, a countersunk lower jaw to prevent sand from entering the mouth when burying, and fringed toes for better traction. Adaptions of behavior are also noted — a lizard running over the scorching sand may stop suddenly and press itself close to the sand, wriggling its body from side to side. It is actually pushing aside the hottest sand to bring its body in contact with the cooler surface underneath.

Other reptiles adapted to dune life are the sidewinder rattlesnake, Colorado desert shovel-nosed snake, desert banded gecko, and desert horned lizard. The sidewinder and horned lizard are particularly vulnerable to crushing by ORVs because of their habit of burying themselves directly under the surface of the sand with only their head exposed.

Despite the absence of permanent water on the dunes, at least one amphibian, the spadefoot toad, is found there. The spadefoot buries itself deep in the sand, secretes a cocoon around itself and may stay there for a year or sometimes two. It comes out only when there is a thunderstorm and temporary pools form for breeding and larval development.

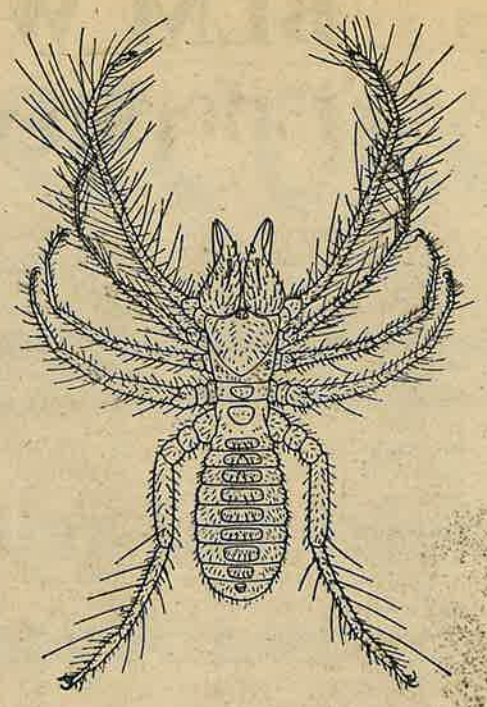
Dr. Bayard Brattstrom of California State University at Fullerton has tested the toads and their response to sounds such as thunder or ORVs. The toads normally burrow in the laboratory and are not disturbed by noises made in the area. However, when dune buggy noises were played, they came right out in repeated experiments.

Thunder probably serves as an environmental clue for emergence in nature. According to Dr. Brattstrom, "If a spadefoot toad comes up in the middle of the summertime in response to dune buggy noise, that can put him in a very precarious situation, because there is no water around. He has lost almost all his energy. He has no water. . . or energy to go back down."

The renowned herpetologist Dr. Robert Stebbins has described the Algodones Dunes after runoff water from storms in the nearby Chocolate Mountains had formed ponds hundreds of feet across and several feet deep: "The water brings forth a surge of life. . . The ponding area is a biologist's paradise. The stark, buff-colored dunes and stands of yellow-green paloverde are reflected in the glassy waters. There are giant creosote bushes reaching heights of 12 feet. The waters soon teem with fairy shrimps and spadefoot tadpoles. At this time, birds from the Salton Sea to the northwest drop in and one may witness the sight of long-billed curlews and other water birds moving about among the dunes as they work the edges of the ponds. I have travelled many parts of the world, but have found no place more fascinating."

Spadefoot toad

R. Stebbins



Solfugid

Other less conspicuous inhabitants of the dunes are the insects and arachnids. The solfugids, also known as false spiders, wind scorpions or camel spiders, are thought to have the strongest jaws in proportion to their size in the animal kingdom. They are extremely voracious and will feed until the abdomen is so distended they can scarcely move. Insects, scorpions, spiders, smaller solfugids, small lizards and occasionally birds are eaten. The solfugid is not poisonous but can administer a painful bite.

Ant lions are very characteristic of the dune habitat, as the larvae digs pits in the sand in which they lie in ambush for passing ants or spiders. When a victim trips on the edge of a pit, loose sand is thrown by the ant-lion, causing it to fall into the pit, where it is drawn partially under the sand to have its fluids extracted.

The dunes are also home to distinct populations of grasshoppers and related insects, which have been utilized in taxonomic research to study divergence in geographically isolated habitats. The isolated "ecological island" nature of the dunes makes them ideally suited to research on mechanisms of evolution. Dr. Stebbins has stated that the dunes and other desert ecosystems "rival the famous Galapagos Islands in their potential for shedding light on the evolutionary processes."

Unfortunately the hordes of off-road vehicle enthusiasts that constantly assault the dunes seem unaware of or unconcerned with the unique resource they are destroying. Dune buggy use has many damaging effects including destabilization of the dunes, removal of vegetation, direct crushing of animals buried beneath the sand, disturbing accumulations of organic matter upon which endemic species of insects feed, and disruptions caused by noise. (In fact, Dr. Brattstrom first became interested in the effects of ORV noise on wildlife when he noticed that after a race many of the kangaroo rats in his study area had bloody ears.) An insidious and difficult-to-detect effect is the removal of moisture under the sand. There is normally a trapped moisture layer from several inches to several feet in width beneath the dry surface of the sand, which is crucial to survival of both plant and animal life. The effect of ORVs on this moisture layer have not been quantified but could be devastating.

The Bureau of Land Management (BLM), responsible for administration of the dunes, has closed only a small portion north of Highway 78 to ORV use. The Bureau admits in its wilderness inventory narratives that much of the Algodones Dunes (inventory areas 360 and 362) has been "trammeled by man" and that "ORV activity has severely reduced much of the vegetation cover."

This was used as a reason to exclude much of the area from wilderness study, which is one of the few ways that the dunes could be protected from further degradation. The Algodones Dunes are now being studied for wilderness designation along with other areas in the desert in conjunction with the completion of a "Desert Plan."

The Desert Plan will not only make recommendations for wilderness areas, but will also specify other allowable uses such as off-road vehicles, grazing and mining for specific areas. Strong agitation from the public for expanded wilderness study boundaries for the dunes, a large wilderness recommendation, and termination of ORV activity is needed to protect this unique area. The address of the responsible BLM personnel is: **BLM Desert Plan Staff, 3610 Central Ave., Suite 402, Riverside, CA 92506.**

Endangered Species Act Update

In early June the Senate passed legislation to reauthorize the Endangered Species Act for three years. The vote was 91 to 5. The Senate also voted by a narrower margin, 53 to 43, to defeat an amendment by Senator Howard Baker (R-TN) to exempt the Tellico Dam in east Tennessee from the Act.

Unfortunately, in the House, where the reauthorization bill has not yet been acted upon, an amendment to an energy and water appropriations bill was passed June 18 which ordered the Tennessee Valley Authority to complete the Tellico Dam despite the assured destruction of the snail darter. This amendment was introduced when few members were on the House floor and apparently caught environmentalists napping. It was passed by a mumbled vote without being read and with no explanation or debate. A spokesman for Representative John Duncan, (D-TN) said that Duncan had carefully picked the time to offer the amendment.

Passed in 1973, the Endangered Species Act requires the Fish and Wildlife Service to review proposed federal projects that might harm an endangered species or the habitat critical to its survival. The act mandated and authorized the agency to protect such species or habitat even if projects have to be abandoned. A U.S. Supreme Court decision to halt completion of the Tellico Dam because it would harm the endangered snail darter unleashed the wrath of development interests.

During the congressional reauthorization process last year, opponents of the act succeeded in weakening it in several respects, particularly by requiring an "economic assessment" before critical habitat is set aside, redefining "species" to exclude populations of species of invertebrates and plants, and creating a cabinet-level committee charged with reviewing and possibly approving projects blocked by the act.

Meanwhile, administration of the act continues to face a host of severe problems, perhaps the greatest of which is the Fish and Wildlife Service's inability to list species in a timely fashion. Since 1973, the agency has listed more than 600 species as threatened or endangered; last year it listed fewer than 40, and it projects listing only 10 this year. Agency officials say the main reason for the slowdown is the economic assessment requirements put in the act last year. This summer the Senate Environment and Public Works Subcommittee on Resource Protection, chaired by Sen. John Culver (D-IA), a strong supporter of the act, will also be holding oversight hearing on its administration.

The Endangered Species Act needs help from the public if it is going to survive the current political climate. Interested readers should contact their representatives. (House Office Building, Washington, D.C. 20515). Members of Congress should hear that the compromises adopted last year are more than enough to solve the few serious conflicts that arise between projects and species protection. They should hear strong support for an amended reauthorization bill.

Staff

Record Staff

Editor - Jim Eaton
Fred Gunsky
Beth Newman
Jim Trumbly
Dennis Coules
Mike Nolasco
Sari Sommarstrom
Wendy Cohen

The **Wilderness Record** is the bi-monthly publication of the California Wilderness Coalition. Address all correspondence to:
P.O. Box 429
Davis, CA 95616
(916) 758-0380
Articles may be reprinted. Credit would be appreciated.

Board of Directors

President - Wendy Cohen
Vice-President - Sari Sommarstrom
Secretary - Steve Evans
Treasurer - Beth Newman
Director - Jim Eaton
Director - Bob Barnes
Director - unfilled

Staff
Project Coordinator — Dennis Coules
Administrative Assistant — Paul Williams
Office Manager — Sheri Russell

PURPOSES OF THE CALIFORNIA WILDERNESS COALITION

. . . to promote throughout the State of California the preservation of wild lands as legally designated wilderness areas by carrying on an educational program concerning the value of wilderness and how it may best be preserved in the public interest by making and encouraging scientific studies concerning wilderness, and by enlisting public interest and cooperation in protecting existing or potential wilderness areas.

BLM Wilderness Review

The Bureau of Land Management (BLM) Wilderness Inventory continues in California, but at the time of writing the intensive inventory documents had not yet been released. The Initial Inventory ended on May 31. The Susanville District office is the only one for which tentative decisions have been released. Only areas which survive the intensive inventory will receive further consideration and wilderness study in coming years.

The Susanville District in northeast California, with an astounding two million roadless acres under wilderness review, is working so far ahead of schedule that despite meager public comment, they are ready to finish their wilderness study recommendations. This is jumping way ahead of public input. What little input has come in has been heavily anti-wilderness, pro-ranching, pro-mining. Perhaps the most intimidating has come from the Nevada state government itself. To summarize, "conservationists are getting creamed" in northeast California.

This shows up in BLM's tentative recommendations for Wilderness Study Areas (WSAs): only 13 of the approximately 100 roadless areas would survive. The last one just added is the Pit River Canyon (CA-020-103), a spectacular wild river gorge and surrounding uplands. But BLM wants to cut away the upland buffer zone from the WSA thus leaving the wildlife-rich canyon unprotected.

The well-known Skedaddle Mountains unit (CA-020-612) is threatened with similar drastic surgery. BLM has cut the original acreage in half, leaving only the small core of the mountians in the WSA. They feel the surrounding flats are influenced by development and lack solitude. Others disagree and feel the original inventoried boundaries should be restored.

A highly popular area not even proposed for WSA is Tunnison Mountain (CA-020-311), better known as Willow Creek. The permanent stream has cut a deep and dramatic canyon in the sage-juniper hills. This linear oasis offers challenging trout fishing in addition to all manner of outdoor activities. Supplemental values include Indian petroglyphs. Yet, incredibly, BLM denies there is outstanding solitude or primitive recreation. Their logic is that the mountain slopes lack sufficient trees for screening.

Those are three of the glaring errors which letters from citizens must correct promptly, before BLM's unilateral decision-making goes further. Susanville BLM people have a good reputation as resource managers, and they are capable of doing better. Comments can go directly to them at BLM Susanville District, 705 Hall Street, Susanville, CA 96130, or to the BLM California State Office, 2800 Cottage Way, Room E-2921 (Wilderness), Sacramento, CA 95825.

Besides the already mentioned areas, you might add that the following areas meet 2(c) criteria of "naturalness and outstanding opportunities for solitude or primitive, unconfined recreation" and should be identified as Wilderness Study Areas: Little Mud Flat (CA-020--611), Sheldon Antelope Contiguous (CA-020-1012) and Tule Mountain (CA-020-2111).

TUNNISON MT. — CA-020-311. Willow Creek Canyon in NE CA is a linear oasis with trout fishing. BLM will exclude it from wilderness study merely due to lack of trees to provide "screening."

Salvage Sales

cont. from page 1

areas. Cub Creek was designated non-wilderness in RARE II and has a proposed one million board feet of salvageable timber. Polk Springs and the Middle Fork roadless areas were both designated "further planning" and the Forest Service plans to salvage eight and seven million board feet respectively.

The primary concern of salvage sales in further planning roadless areas is the potential impact of that action on the area's wilderness qualities. Generally, emergency entry approved by the chief is on the condition that the salvage will not impact the area's roadless characteristics. However, the methods of assessing impacts utilized by the Forest Service are controversial.

The following are critical problems posed by roadless area salvage sales:

1) Many forests are not only proposing to salvage dead trees but they also intend to cut so-called "high-risk" trees. High-risk trees are live trees that **may** be infested and die. In some cases, more high-risk trees are cut than dead ones.
2) Although most sales are to be accomplished through the use of helicopter logging, in many cases, the Forest Service would like to utilize tractor logging within the periphery of areas to decrease costs. This, of course, would ruin the roadless characteristics of an area.
3) Timber initially killed by the drought three years ago probably is not commercially marketable and is greatly reduced in value.
4) The Forest Service is utilizing the controversial Wilderness Attribute Rating System (WARS) developed for use in RARE II. WARS has never been proven to accurately portray the roadless characteristics of an area and was developed simply as a method to generate various alternatives in the program (only three as a matter of fact). Its use in situations outside of RARE II can best be described as being out of context.
5) When pressed, the Forest Service will admit that actual control of bark beetles through timber salvaging is "controversial." Despite the questionable nature of the control theory, the chief requires that it be included in any Environmental Assessment on salvage sales within roadless areas. The reason for this requirement is clear; an emergency situation must exist before the chief can allow entry into a protected roadless area. The current "emergency" exists only because **some** people within the Forest Service feel that salvage of bark-beetle-infected timber is necessary to prevent further infestation. However, not everyone agrees with this premise.

Of course, not all salvage sales are bad. The one big advantage to them (if they are carried out in such a manner as to preserve a roadless area's wilderness characteristics) is that they fulfill, in a relatively painless way, the annual timber cut quotas required of every National Forest.

Requirements for salvage sales on "further planning" roadless areas should be the following:

1) Helicopter logging only,
2) no cutting of "high-risk" trees, salvaging of dead trees only,
3) require reforestation despite ecomonic feasibility,
4) mark each individual tree before cutting,
5) approval on a site-by-site basis of the timber cuts with full participation of all interested individuals and organizations.

Whether the local Forest Service personnel will accept these requirements is questionable. In the local cases that the Northstate Wilderness Committee is involved in, sometimes they do, and sometimes they don't. The Polk Springs salvage sale is currently under appeal before the Secretary of Agriculture because Lassen Forest intends to "salvage" a very large percentage of conifers over a small area in what is essentially a mixed oak, conifer and brush life zone. This would severly impact the area's naturalness despite WARS scores to the contrary.

However, in the case of the Middle Fork, the La Porte District Ranger on the Plumas Forest intends to salvage only dead trees in isolated stands over a 30,000-acre area. The impact upon wilderness qualities in this case would be much less. The overall situation definitely requires a sale-by-sale review with full disclosure and participation between the Forest Service and the public.

Often, however, this is not the case.

BLM Critical Areas

cont. from page 2

otherwise appropriate use can take place within an ACEC without endangering an important environmental resource, or human life or property, the use will be permitted.

(5) Involvement by local and State governments, private organizations and individual citizens will be provided for at each phase of the process.

(6) ACEC designations may be made or revised only through an open public process including environmental analysis.

(7) Responsibility for designating ACEC's rests with BLM district managers, after concurrence by BLM state directors.

Public comment will be received until August 6, 1979, and should be addressed to the Director (303), Bureau of Land Management, Department of the Interior, Washington, D.C. 20240. Copies of the proposed guidelines are available from the BLM California State Office, 2800 Cottage Way, Sacramento, CA 95825.

CWC Business Sponsors

Like any political organization, California Wilderness Coalition depends on sponsorship and support. The organization is grateful to the following businesses that have been able to see beyond just selling their products to the great need to preserve the wilderness in which their products are used.

The Smilie Company
575 Howard St.
San Francisco, CA 94105
415-421-2459

Echo, The Wilderness Company
6505 Telegraph Ave.
Oakland, CA 94609
(415) 658-5075

Wilderness Press
2440 Bancroft Way
Berkeley, CA 94704
(415) 843-8080

Mammoth Maintenance Service
P.O. Box 155
Mammoth Lakes, CA 93546
(714) 934-8616

The Naturalist
219 E Street
Davis, CA 95616
(916) 758-2323

Ski Hut
1615 University Ave.
Berkeley, CA 94704

Antelope Camping Equipment Mfg. Co.
21740 Granada Ave.
Cupertino, CA 95014
(408) 253-1913

Solano Ski Sport
1215 Tabor Ave.
Fairfield, CA 94533
(707) 422-1705

New World Outfitters
1055 Market St.
San Francisco, CA 94103

Alpine Products, Inc.
P.O. Box 403
West Sacramento, CA 95691
(916) 372-2861

The Alpine Supply Co.
130 G. Street
Davis, CA 95616
(916) 756-2241

The Mountain Shop, Inc.
228 Grant Ave.
San Francisco, CA 94108
(415) 362-8477

Four Seasons Sports
410 Redwood
Oakland, CA 94619

San Francisco Travel Service
728 Montgomery St.
San Francisco, CA 94111
(415) 881-6640

Daybell Nursery & Florist
55 N.E. Street
Porterville, CA 93257

California Wilderness Coalition, P.O. Box 429, Davis, CA 95616

☐ **Yes** I wish to become a member of the California Wilderness Coalition.
Enclosed is $ for first-year membership dues.

☐ Here is a special contribution of $ to help with the Coalition's work.

NAME_____

ADDRESS_____

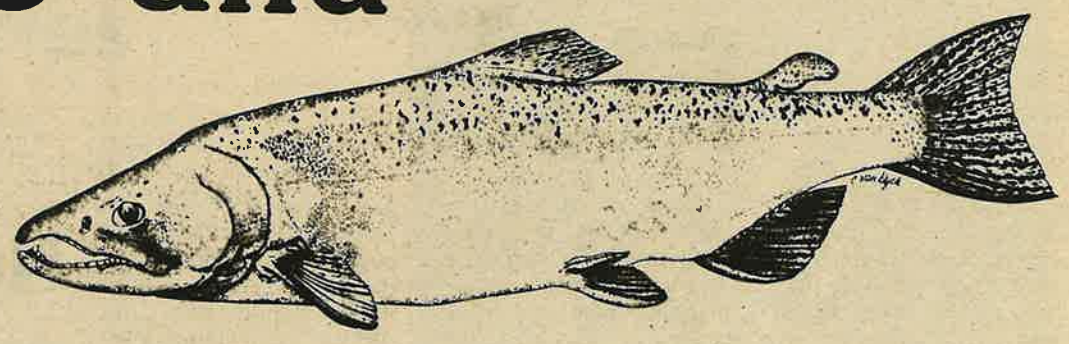
_____ ZIP _____

ANNUAL DUES:
Note: one dollar of annual dues supports the Wilderness Record

Individual	$ 6
Low-income individual	3
Patron	500
Non-profit organization	25
Sponsor (business)	25

not tax deductible

Wilderness and Fisheries



A supplement to the Wilderness Record

July-August 1979

Fish are a critical indicator of the health of our land and waters. Evidence to date demonstrates that the decline in California's fish populations is directly linked to the destruction of wild lands and waters.

The salmon and steelhead runs, once widely acclaimed throughout the country have declined by 60-80% in the past four decades. At least one fish species has become extinct in recent years, the Tecopa pupfish of the Mojave Desert, whose demise was caused by habitat destruction. Many other species of both game and non-game are classified rare or endangered in the state.

Damage or loss of fish habitat in our creeks, rivers, and lakes is the prime cause of our depleted fishery resource. The remnants of these once-plentiful fish populations are now often found within the remaining roadless areas in isolated reaches of California's watersheds.

These few areas, often the headwaters of our major rivers, still provide the essential spawning habitat and other ingredients our native fishes' need for survival and reproduction. **Only through permanent wilderness protection will many of these wild fish continue to survive.**

This special supplement to the Wilderness Record is intended to provide you with some background on the who-what-where-why-how of fishery resource protection in California.

Economic values of sport and commercial fisheries are an important consideration for their maintenance, so quite a few facts and figures were pulled together on the value of fish and fish habitat.

State and Federal agencies which are responsible for protection of our fish are also described. While decrying the loss of the state's fish habitat, the California Dept. of Fish and Game has also done little or nothing to encourage wilderness designation of critical areas.

Governor Brown and Secretary of Resources Huey Johnson recently announced a major salmon restoration program for California. This effort is quite commendable but is only part of the solution. Protection of existing quality habitat is essential also, and wilderness designation of qualifying roadless areas is the first place to begin.

Native Nongame Fish

California has a wide variety of freshwater, nongame, native fish, many of which have suffered from alterations of habitat and introductions of exotic fish since California's settlement by people of European origins. The native fish that have been pushed to the brink of extinction are considered in the article on endangered fish. Other native, nongame fish, if not yet endangered, are still much less appreciated than their more sought-after cousins. Actually a distinction between a game and nongame fish is arbitrary, as many of the native species considered to be "trash" now were heavily utilized by California Indians.

The largest group of native fish in California is the minnow family, Cyprinidae, of which there are 15 species native to the state. However, one of these may be extinct. Six introduced minnows also are now found here. Native members of the family include chubs, hitch, roach, blackfish, splittail, hardhead, squawfish and dace. Most Cyprinids are small, unspecialized fish, but the Sacramento and Colorado squawfish can grow to substantial sizes.

Minnows have been successful in many habitats world wide, due to a well-developed sense of hearing, high reproductive rate and a "fear scent" that is released when an individual is injured, alerting other minnows in the vicinity to the presence of a predator. Unfortunately, introduced minnows such as carp have also been very successful in California, displacing many of the native species.

The second and third largest families of native, nongame fish in terms of numbers of species are the suckers and sculpins. Suckers are closely related to minnows and most are specialized bottom-browsers. Six of California's ten native suckers are now rare or endangered. The sculpins are very abundant marine bottom fish worldwide, but also are quite common in freshwater habitats in California. They are specialized for bottom-dwelling with large flattened heads and fanlike pectoral fins. Sculpins are found in swift trout

cont. on page S-2

Glossary

Anadromous — means "up running" and is used to refer to fishes which spend part of their lives in the ocean but move into fresh water to spawn.

Chinook — species of salmon native along Pacific Coast; called "king" in California.

Coho — species of salmon native along Pacific Coast; called "silver" in California.

Cutthroat — native species of trout with 3 subspecies: coastal, Lahontan, and Piute.

King salmon — also known as "chinook" salmon.

Rainbow trout — native species with six subspecies.

Salmonid — a member of the salmon family of fish, which includes the trouts, Pacific salmons, and chars.

Silver salmon — also known as "coho" salmon.

Steelhead — a subspecies of rainbow trout which is normally anadromous.

Summer steelhead — also called "spring-run," this race differs from other steelhead in that they enter streams in the spring or summer and stay there until the following spring before spawning.

Wild Fisheries Destruction

Possible Solutions

Dam builders and agribusiness, developers, the logging industry, and highway engineers, in fact, probably most Americans are not much concerned with either native fish or roadless areas. Until recently, only a relatively few conservationists and anglers knew that a problem existed with these resources. Today commercial salmon fishermen, fisheries biologists, the U.S. Forest Service and others are becoming aware of the importance of native salmonid fisheries and their habitat.

Roadless Areas

A road into a "wilderness" area containing good anadromous fish habitat is the beginning of the end for native anadromous salmonids. Protected sanctuaries are essential. The rare summer steelhead, still a different creature, enters the streams from the sea in May or June, holding over to spawn the following February or March. (Winter steelhead arrive in Fall or Winter, spawning also in February or March.) Summer steelhead require special habitat with large, deep, cool holes in the main river, in which they spend the hot summer. During this time they are readily visible in the clear water and are extremely vulnerable. Access via roads into areas with summer steelhead habitat are disastrous for these fish. Poachers harrass them, and even well-intentioned hikers attempt to catch these magnificent large trout confined in small pools.

The loss of rearing habitat is largely due to erosion and siltation, filling of the pools, cementing of the streambeds, and loss of normal "pool-riffle relationship." While there is natural erosion, much is man-made from clear-cutting and other soil-disturbing logging practices, and from road construction. In undisturbed small tributaries, though partially dry, there are deep pools with shade where small steelhead and coho survive hot summers. This is their natural habitat even though thousands die, trapped inside pools which become too warm or dry, or from predation. The 1976-77 drought was devastating to the salmonid fisheries.

Some survive moving downstream. Each small fish occupies a specific territory from which he feeds, mostly on aquatic insects and larve. Flooding, such as occurred in Northern California in 1964, also is extremely damaging to fishery habitat and fish and the damage is compounded where there has been extreme soil disturbance. Most habitat is located in areas with extremely steep, unstable slopes where very little soil disturbance is required to initiate erosion.

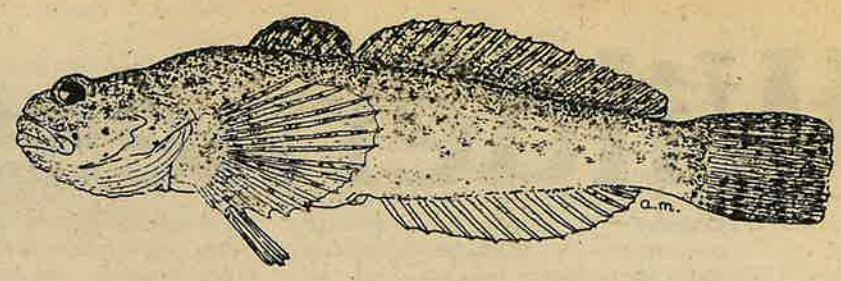
> Roads into areas with summer steelhead are disastrous for these fish.

> Hatcheries are not a solution to the problem.

A solution to the decline in native salmon and steelhead demands consideration of their ecologic and biologic parameters, especially habitat requirements. Dams have cut off thousands of miles of spawning and rearing habitat and mitigation (by hatcheries) often fails. Trinity Dam's hatchery and

cont. on page S-4

Endangered Fish



Rough sculpin

Few areas of the United States have a fish fauna as altered and disrupted as has California. Nearly one-half of the fishes found wild in the state are introduced species such as carp, catfish, and the mosquito fish. Many of the native fish, due to alterations of habitat, negative interactions with introduced species, and other factors, have suffered extensive reductions of range, in some cases to the point of extinction.

For example, the thicktail chub (*Gila crassicauda*) once so common that it was sold in the San Francisco fish market, has not been seen anywhere since 1958 despite extensive searches of its former habitat in the Sacramento-San Joaquin Delta and elsewhere. This apparant extinction was probably caused by the extreme modifications of habitat that the Delta and other Central Valley aquatic habitats have undergone, such as destruction of tule beds, modification of channels and introduction of exotic fish.

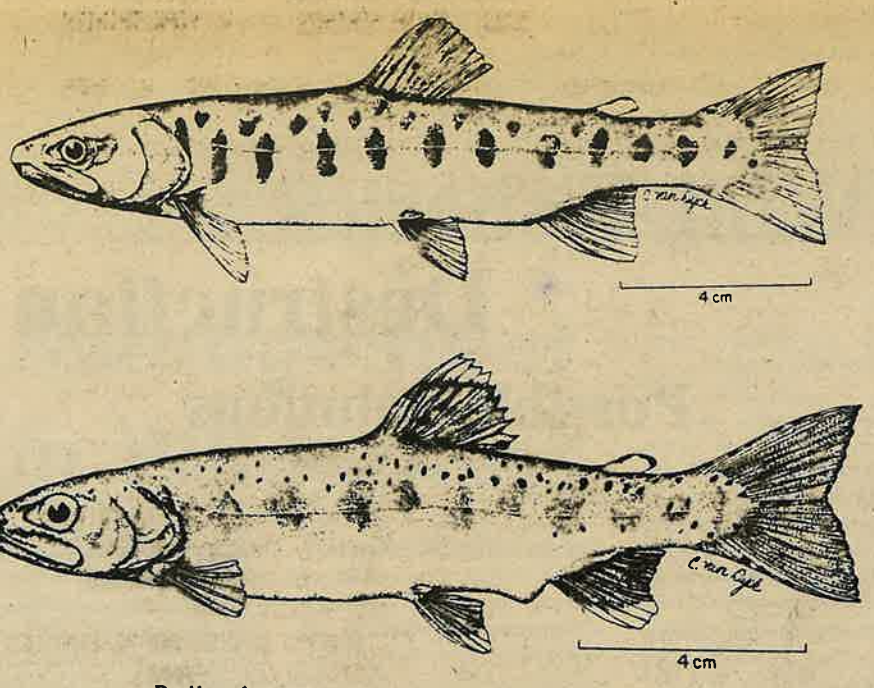
Elsewhere in this supplement is a list of rare, threatened and endangered fishes of California, as well as any wilderness or potential wilderness areas in which they are found. Both game and nongame species are endangered. Three species or subspecies of trout have been included in this category — Paiute cutthroat, Little Kern Golden and Lahonton cutthroat. The redband trout is also managed by the Department of Fish and Game as a threatened species. The only existing pure population inhabits mile-long Sheepheaven Creek in Siskiyou County. All other populations have lost their distinctive characteristics through hybridization with rainbow trout introduced into their previously isolated streams.

The Paiute cutthroat trout (*Salmo clarki seleniris)* is found in pure form only in the upper reaches of Silver King Creek, in the Carson-Iceberg RARE II area (a U.S. Forest Service roadless area). Elsewhere it has hybridized with introduced rainbow trout and other forms of cutthroat. However, genetically pure stocks have been transplanted to other streams by the Department of Fish and Game (DFG).

The Lahontan cutthroat trout (*Salmo clarki henshawi)* has been largely

cont. on page S-3

Lahontan cutthroat trout (upper)
Piute cutthroat trout (lower)



Redband trout

Nongame Fish cont. from page S-1

streams where they are sometimes accused of preying on trout eggs and fry. Usually, however, only loose eggs that were not buried during spawning are accessible.

Four species of lampreys are found in Calfornia waters. Adult lampreys attach to large fish with their sucker-like mouths and extract body fluids until satiated. The prey often recovers. Adults migrate up streams to spawn and the larvae ("ammocoetes") spend four to seven years burrowed in muddy backwaters feeding on algae and detritus.The Pit-Klamath brook lamprey has evolved into a non-predaceous form which does not feed as an adult.

Three species of smelts are found naturally in California rivers and streams. Closely related to salmonids, smelts are small silvery fish that inhabit coastal areas. Populations inland in California are concentrated in the Sacramento-San Joaquin Delta.

In the killifish family are found the pupfish and killifish.. This family is characterized by successful adaptation to extreme environments such as thermal spings, saline inland seas and temporary pools. Our five native species of pupfish are in a precarious situation as their limited habitats become drained, polluted or stocked with exotic predators and competitors. The Desert Fishes Council was established in 1969 to coordinate efforts to preserve these remnants of wetter times in the desert, and native fish sanctuaries have been estalished at Fish Slough in Owens Valley and in Anza-Borrego State Park to protect two of the pupfish as well as other aquatic life.

The surfperch family, Embiotocidae, is primarily marine but the true perch of California is an exclusively freshwater species. The unusual feature of surfperches is that they give birth to fully developed young, which become sexually mature soon after they are born. Tule perch are native to low-elevation waters of the Sacramento-San Joaquin River system, in addition to Clear Lake and some coastal streams.They have declined in abundance due to habitat changes and pollution.

The three-spine stickleback is a small pugnacious fish which is widely distributed in California. Populations in the Los Angeles Basin, which are thought to constitute a separate subspecies, are close to extinction. Sticklebacks have been used in many studies of animal behavior.

A single member of the silverside family, the topsmelt, can be found in the lower reaches of most coastal streams, although silversides are primarily marine. The mullet family, also marine, is represented here by the striped mullet which enters some coastal streams and the lower Colorado River. One goby is occasionally found in the lower reaches of coastal streams.

All seven species of catfish in California have been introduced, as were the striped bass, all freshwater bass species, all sunfish except the Sacramento perch, the mosquitofish and many other fish. Many were originally distributed in North America east of the Rockies, but others have been introduced from sources all over the world.

Some freshwater habitats are now strongly dominated by introduced fish, which may be superior competitors or more successful in the present altered environments. Introduced species are most dominant in the low-elevation areas that have undergone the greatest amount of development, pollution and other disturbances. Reservoirs are usually totally controlled by introduced fish. The native stream species are simply unable to tolerate the altered conditions of flow, temperature, dissolved oxygen and nutrients.

For example, the Sacramento-San Joaquin River system now contains 37 introduced fish compared to 35 native anadromous species. In the Delta the native fishes have either disappeared or have been reduced to minor components of the fauna, living mostly in the least-disturbed sloughs.

Many of the native, nongame fish, though greatly depleted compared to historical levels, have failed to arouse the concern of those persons responsible for fish and wildlife in this state. Fisheries managers are much more concerned with those species that are culturally acceptable as game or commercial fish. With the exception of salmon and most trout species, these are usually introduced.

Peter Moyle, Chairman of the Citizen's Nongame Advisory Committee, makes the following recommendations for management of native fish:

"It is evident that populations of native fishes now seemingly widespread should be watched closely, especially following periods when severe natural conditions stress populations already affected by human activity. If their decline continues, efforts should be made to set aside suitable sections of streams and manage them for native fishes. Certainly, consideration for the native fish fauna, whether or not it contains endangered species, should be part of environmental impact statements for any developments."

Golden Trout

California is home to two subspecies of Golden Trout, found in a limited range of waters in the Kern River drainage. They are *Salmo aguabonita aguabonita*, found in the Kern Plateau in the South Fork of Kern River and Golden Trout Creek, and *Salmo aguabonita whitei,* found in the Little Kern River drainage, which is named for explorer-author Stewart Edward White.

While gathering material for his book, **The Mountains** (1904) White rode over Farewell Gap into what is now the Golden Trout Wilderness. White camped and fished at Rifle Creek in the Little Kern Basin, then traveled over Coyote Pass, crossed the Kern at Lewis Camp, made the steep ascent up to Little Whitney Meadow on the Kern Plateau.

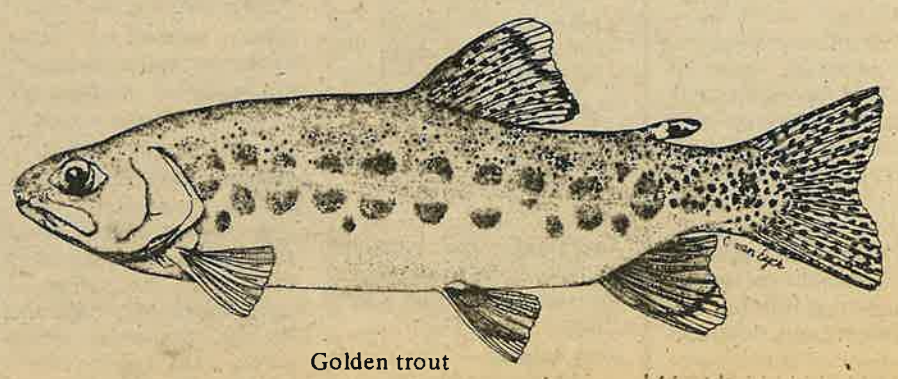
In his book he sounds the earliest concern for survival of the Golden Trout.

"A great many well-meaning people who have marveled at the abundance of the Golden Trout in their native habitat laugh at the idea that Volcano (Golden Trout) Creek will ever become fished out. A simple calculation will show how many fish a hundred moderate anglers, camping a week apiece, would take out in a season. And in a short time there will be many more than a hundred, few of them moderate, coming up into the mountains to camp. All it needs is better trails, and better trails are under way. . . Well-meaning people used to laugh at the idea that the buffalo and wild pigeon would ever disappear. They are gone." White did not observe some of the other problems that have affected the viability of Golden Trout populations in and outside of the present wilderness area. Grazing activities spanning a century have eliminated streamside vegetation in most meadow areas.

Cattle plunging over steambanks have caused accelerated erosion processes. Overgrazing has allowed unnatural encroachment of lodge pole pine in meadows, which causes a lowering of the water table. Non-native sagebush, presumably brought in by cattle, has become established in some overgrazed meadows.

Leave the wilderness area and walk through Monache Meadow where ORV enthusiasts are attacking public land with a special vengeance. Witness four-wheel drivers catapulting off river banks where the Forest Service has posted ineffectual "stay out" signs. Believe your eyes when you see a Blazer get a soap-and-water bath in the south fork of Kern River. Further south, in logging areas, poorly-conceived and poorly managed roads and culvert crossings contribute to excessive levels of sedimentation, choking out the aquatic insects that Golden Trout feed on.

USFS has a responsibility to restore the native habitat of these beautiful and unique trout.



Golden trout

Endangered Fish cont. from page S-2

replaced in its native streams of the Lahontan system by introduced rainbow, brook and brown trout. Hybridization with rainbows has resulted in the loss of their unique characteristics. This subspecies was once abundant in Lake Tahoe, but the population is now extinct. The DFG is attempting to locate pure wild populations so that they can be preserved.

The Little Kern golden trout is listed as endangered. Systematics of the golden trout complex is controversial, confusing the issue of hybrid versus pure stocks. However, as the California State fish, the golden trout has high priority for preservation.

Three of the most critically endangered fish in California are inhabitants of the Colorado River system. They are the Colorado squawfish, bonytail and humpback sucker. The Colorado squawfish and bonytail have not even been seen in California in recent years and may be extinct in the state. All three were originally quite abundant in the California portion of the Colorado River and were associated with its swift, turbid flows, which have been drastically changed by the construction of large reservoirs and channelization.

The Colorado squawfish was formerly the largest North American minnow, with weights reported exceeding 99 pounds in 1896. Since 1930 however, few have been caught which exceeded 40 pounds. Other factors in the decline of these fish include competition with introduced channel catfish, overfishing, and exotic parasites that come with introduced fish species. The only hope for the continued existence of all three species in the wild is the preservation of the remaining sections of river with suitable habitat.

A number of desert-dwelling pupfish are endangered or rare in California. These are the Tecopa pupfish, Owens pupfish and Cottonball Marsh pupfish. Tecopa pupfish was declared extinct in 1979 — the first organism to be removed from the endangered species list for this reason.

Two members of the minnow family also found in the desert are the Mojave chub and Owens tui chub.

Introduction of mosquitofish, contamination of water, drainage of marshy areas along the Owens River, and hybridization with similar species which have been introduced are cited as reasons for the decline of these fish. Pupfish populations in other western states have been destroyed or endangered by cappings of springs and overutilization of ground water, leading to the elimination of spring habitats.

The Lost River drainage of extreme northern California is the home of two endangered fish — the shortnose sucker and Lost River sucker. Increasing demands for agricultural water in the watershed have severely reduced the habitat of these species.

The Lost River sucker is now restricted to Clear Lake Reservoir, for which there is no minimum pool requirement. Thus its remaining habitat could be totally eliminated in a dry period. This contrasts with its former great abundance and utilization as "the most important food fish in the Klamath Lake region" (reported by C.H. Gilbert in 1897).

After 1924 most of Sheepy Lake, Lower Klamath Lake and Tule Lake were drained for farming. The lakes were reflooded after farming failed, but the sucker populations were never recovered. Other reasons for endangerment include elimination of shortnose suckers from Lake of the Woods, Oregon, during "trash" fish control programs and hybridization between different species of suckers.

The remaining endangered fish in California is the unarmored three-spine stickleback. This stickleback is found only in the upper Santa Clara River, Los Angeles County, including the Magic Mountain RARE II area. Populations in the Los Angeles, San Gabriel and Santa Ana rivers have been destroyed.

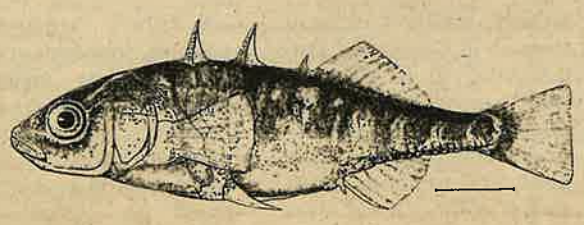
Two rare fish are the Modoc sucker and rough sculpin. The Modoc sucker is found in only three locations in Modoc and Lassen counties. Potential threats are from channelization of its native streams and extraction of water for agriculture. The rough sculpin is very restricted in range, being found in the Pit River for a short distance above and below the falls in Shasta County and two tributaries. No developments are planned in its territory at this time.

It may be too late for some of the California's native fish, such as the thicktail chub, Colorado squawfish and bonytail, but at least the plight of endangered species is now recognized. Endangered species programs have been established on both the federal and state level. Public awareness of the need to preserve critical habitats and stop extinction-inducing developments has increased.

Fisheries management now stresses fewer large-scale poisoning programs to remove "trash" fish — indeed the whole concept of nongame species as being merely trash may be changing. However, as culture changes and economic hardships increase, the preservation of other species may be less important to people.

STICKLEBACK FAMILY (GASTEROSTEIDAE)

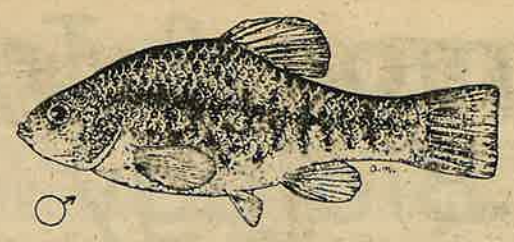
Threespine sticklebacks, *Gasterosteus aculeatus.*



West Coast threespine stickleback, G. a. *microcephalus.* It is partially armored and is not anadromous. It is widespread in California.

Unarmored stickleback, G. a. *williamsoni.* Not anadromous. Found in southern California streams. It has been classed as rare and endangered.

Drawings by Martha B. Lackey, Museum artist, University of Michigan.



Owens pupfish

TABLE I

RARE AND ENDANGERED FISH OF SOME CALIFORNIA FOREST SERVICE ROADLESS AREAS

SPECIES	STATUS*	NUMBER	RARE II NAME	AQUATIC HABITAT
PRIUTE CUTTHROAT TROUT	T	4986	CARSON ICEBERG	SILVER KING CREEK
		5047	SAN JOAQUIN	STAIRWAY CREEK
		5058	WHITE MTNS.	CABIN & N. FK. COTTONWOOD CR.
LAHONTON CUTTHROAT TROUT	T	4986 (1)	CARSON ICEBERG	E. CARSON RIVER INDEPENDENCE LAKE OTHER STREAMS
LITTLE KERN GOLDEN TROUT	T		GOLDEN TROUT WILDERNESS	LITTLE KERN RIVER UPPER MAIN KERN RIVER
UNARMORED 3 SPINE STICKLEBACK	E	5196	HORSE CREEK RIDGE	S. FORK SAN JACINTO R.
		5006	MAGIC MOUNTAIN	SANTA CLARA RIVER
		5178	DEEP CREEK	HOLCOMB CREEK
MODOC SUCKER	R	5166	BIG CANYON	TURNER CREEK
ROUGH SCULPIN	R	5089	HAT CREEK	HAT CREEK
		5090	CINDER BUTTE	HAT CREEK
SHORTNOSE SUCKER	E	5165	STEELE SWAMP	WILLOW & BOLES CR.
LOST RIVER SUCKER	E	5165	STEELE SWAMP	WILLOW & BOLES CR.
SUMMER STEELHEAD (2)	S	5074	PORTUGUESE	WOOLEY CREEK
		5098	ISHI	MILL, ANTELOPE, DEER CR.
		5137	WILDERNESS CONT.	MIDDLE FORK EEL
		5145	BIG BUTTE-SHINBONE	MIDDLE FORK EEL
		5228	LITTLE FRENCH CR.	N. FORK TRINITY
		5701	SISKIYOU	CLEAR CREEK
		5800	BAKEOVEN RIDGE	NEW RIVER
		5803	CHINA SPRINGS	N. FORK TRINITY

* KEY: E = ENDANGERED T = THREATENED S = SENSITIVE R = RARE
(1) INCLUDES 13 OTHER RARE II AREAS
(2) AREAS SHOWN INCLUDE CRITICAL HABITAT SUMMER HOLDING AREAS FOR SPRING-RUN STEELHEAD AND OFTEN SALMON AS WELL

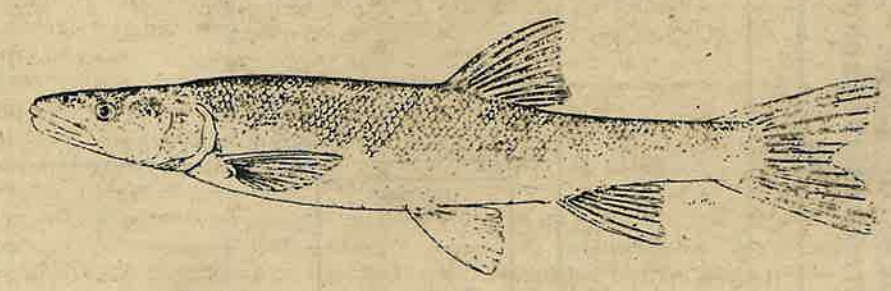
TABLE II

OTHER RARE AND ENDANGERED FISH IN CALIFORNIA

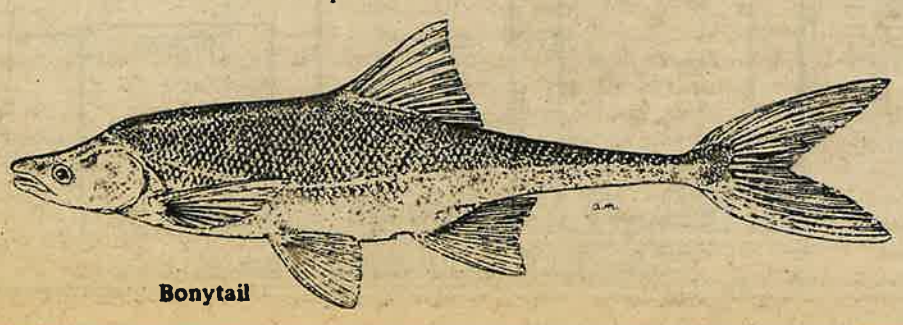
SPECIES	STATUS*	MAJOR HABITAT
COLORADO SQUAWFISH	E (1)	COLORADO R. & MAJOR TRIBUTARIES
THICKTAIL CHUB	E (2)	CENTRAL VALLEY AND DELTA
TECOPA PUPFISH	(3)	NEAR TECOPA HOT SPRINGS
BONYTAIL	E	COLORADO RIVER
HUMPBACK SUCKER	E	COLORADO RIVER AND RESERVOIRS
OWENS TUI CHUB	E	OWENS RIVER CHANNEL
OWENS PUPFISH	E	FISH SLOUGH (OWENS VALLEY)
REDBAND TROUT	T	SHEEPHAVEN CREEK, SISKIYOU CO.
COTTONBALL MARSH PUPFISH	R	COTTONBALL MARSH, DEATH VALLEY
MOJAVE CHUB	E	ZZYZX SPRINGS, SAN BERNARDINO CO.
CLEAR LAKE SPLITTAIL	(4)	CLEAR LAKE, LAKE CO.

* E = ENDANGERED T = THREATENED R = RARE

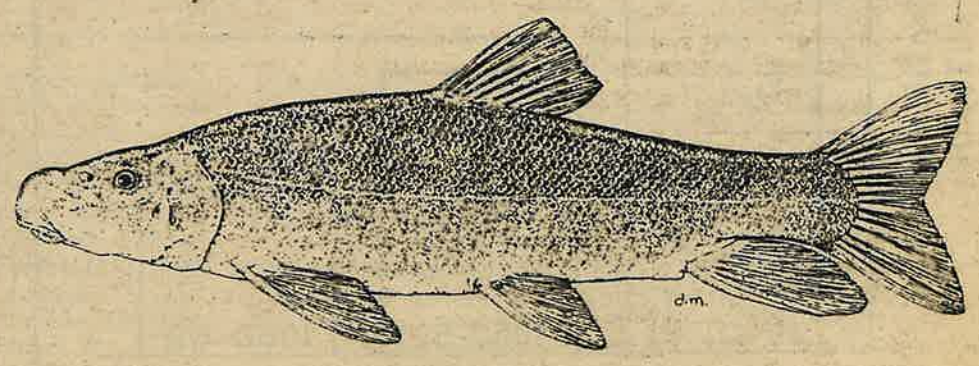
(1) NO LONGER FOUND IN CA SECTION OF COLORADO RIVER
(2) THICKTAIL CHUB MAY BE EXTINCT
(3) DECLARED EXTINCT IN 1979
(4) MAY BE EXTINCT - LAST SPECIMEN COLLECTED IN 1970



Colorado squawfish



Bonytail



Lost River sucker

Salmon & Trout Biology

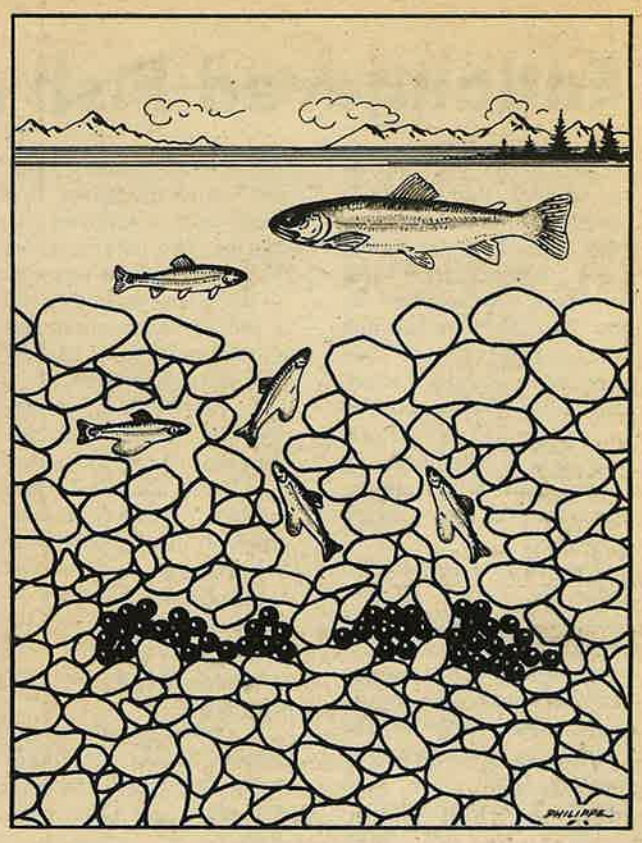
The salmon and trout family, Salmonidae consists not only of salmon, trout, and char (subfamily Salmoninae), but also of whitefish (subfamily Coregoninae) and grayling (subfamily Thymallinae). All members of the family are native to the cooler waters of the northern hemisphere. They all possess an adipose fin and an axillary scale (usually visible as a distinct process) at the base of each pelvic fin. Salmon and trout have strong teeth in the jaws, small scales, and short dorsal fins. Grayling also have strong teeth but they have large scales and long dorsal fins, while whitefish lack strong teeth and have large scales but short dorsal fins. Trout (genus **Salmo**) can be distinguished from char (genus **Salvelinus**) by the presence of teeth on the shaft of the vomer (a bone on the roof of the mouth) and by their spotting patterns. Trout have black spots on a light background while char have light spots, red, pink, orange, or gray in color, on a dark background.

The Salmonidae seems to be a family that evolved for living in the cold, nutrient-poor waters of recently glaciated areas. The advances and retreats of continental glaciers have meant that these waters are often transient or likely to be isolated at one time or another. Thus, an evolutionary premium has presumably been placed on salmonid fishes that are opportunistic in their feeding, adaptable in their behavior and life-history patterns, and capable of moving through saltwater. The behavioral flexibility of salmonids has resulted in their colonization of most of the accessible coastal and headwater streams on the northern hemisphere, and of many coldwater lakes as well. Since anadromous salmonids tend to have strong homing behavior and since many headwater streams become isolated through geological events, local salmonid strains, both resident and anadromous, tend to develop in response to local conditions. Often these populations are morphologically quite distinct from other related populations but will hybridize readily if brought in contact with man. For example, in isolated mountain streams golden colored trout have evolved independently in many areas. They are normally recognized as distinct species or subspecies (e.g., golden trout, Piute cutthroat trout, redband trout) yet they will all hybridize readily with rainbow trout (and other **Salmo**) if given the opportunity. Such situations are characteristic of recently evolved forms and lead to innumerable taxonomic problems.

Because salmonids have a long history as major sport and commercial fishes, a delightful vocabulary has developed for the various stages of the typical salmonid life history. The spawning adults construct a redd (nest depression) in which **alevins** (sac-fry) hatch from the eggs. When the **fry** develop vertical bars on their sides, they are call **parr.** In anadromous forms, parr lose the parr marks and turn silvery as they start moving out to sea. They are then termed **smolts.** Fish that have spent only one year at sea but have returned to spawn are called **grilse,** although such males are more often called called **jacks. Kelts** is a rarely used term for spawned-out fish.

At the present time, fifteen species of salmonids can be found in California, eleven native, four introduced. Despite the natural richness of California's salmonid fauna, numerous attempts have been made to establish other species as well. Attempts that have failed have been those to establish Japanese ayu, lake white fish, and Atlantic salmon.

Reprinted with permission from Moyle, Peter, 1976 **Inland Fishes of California,** UC Press



Steelhead eggs are buried in the gravel of a stream bed, several inches beneath the surface. The fry (alevins) remain in the spaces between the gravel until the yolk sac is absorbed. At that time they work their way up to the surface and escape.

"Once the steelhead were beyond counting during the annual run in all the northern streams, and it could not have occurred to the most conservative individual that their numbers would ever be less."

— C. Kreider (1948)

Fisheries Destruction cont.

those on the Columbia River have shown this. Water diversions account for still further losses. Overfishing, in both ocean and inland waters, also takes a toll. We are left with natural spawning and rearing habitat of two categories: (1) that which still is relatively intact and productive and which must be **protected** at all costs; and (2) that which has been damaged but which can be **restored**. Every effort must be made to restore these natural spawning and rearing areas.

The major need is for protection and restoration of rearing habitat. Salmonids naturally overproduce, each female burying thousands of eggs in the gravel, but the loss of rearing habitat accounts for most of the decline in wild stock. Rearing habitat, for steelhead and coho, means small tributaries, especially ephemeral and intermittent streams. Loggers or roadbuilders, encountering these small, dry creek beds during summer months, do not consider them as fishery habitat which supports abundant fish life during wet seasons. So they destroy it.

This destruction has happened to hundreds of small streams in California. Buffer strips, 50 to 200 feet wide, are needed on each side of creeks to stabilize slopes and provide shade. Road construction, either with or without association with logging, may be more destructive than logging itself. For example, a USFS logging road along Corbin Creek years ago has produced terrible situations, destroying millions of fish in both the Eel and Russian Rivers, and still continues. There is an urgent need for a massive program of watershed restoration to stabilize slopes and minimize erosion.

Conclusions

To summarize the needs of anadromous fish and their habitat include the need for:

1) Recognition that habitat protection and restoration are critical to prevent further decline in anadromous fisheries;

2) A union of commercial and sport fishermen and other conservationists for political action to protect and restore habitat;

3) Recognition by politicians and government agencies of the value of anadromous fish and their wilderness habitat;

4) Fishery management planning, founded on complete baseline inventory data with long-range monitoring, on a stream-by-stream basis;

5) A revised angler ethic based on conservation rather than consumerism;

6) Protection of the gene pools of wild stocks of anadromous fish from the impact of introduced hatchery stocks;

7) Aggressive action by fishery managers to protect anadromous fishery habitat and wild stock despite "pressure" to act otherwise;

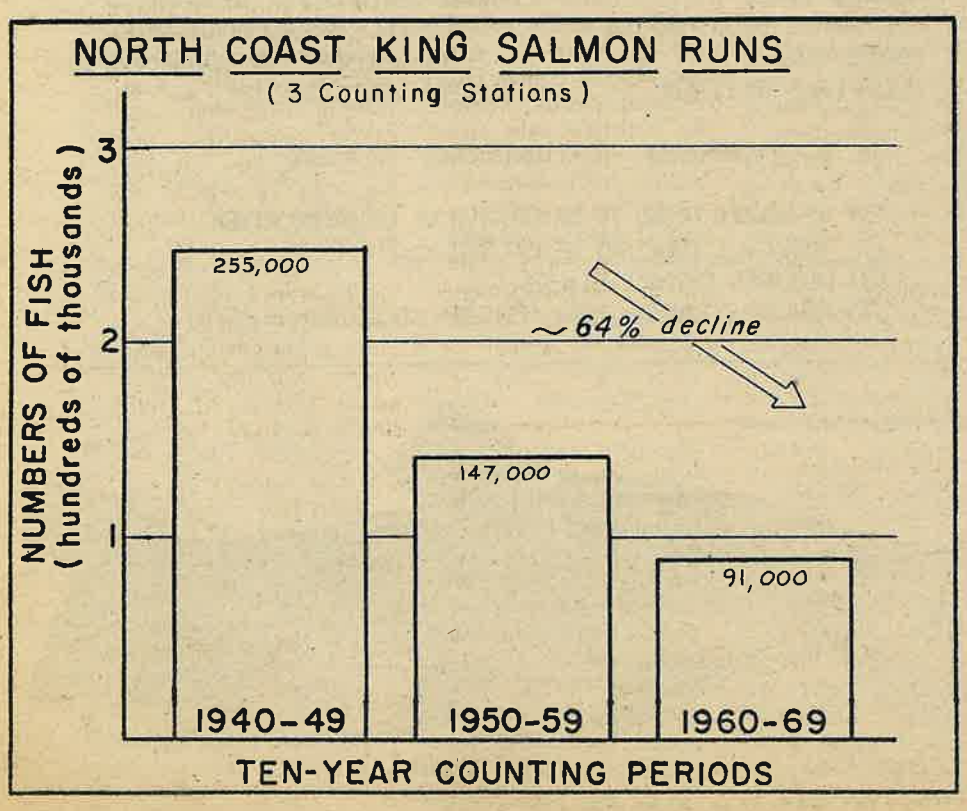
8) Acknowledgement of the importance of roadless areas to provide and preserve anadromous fish habitat;

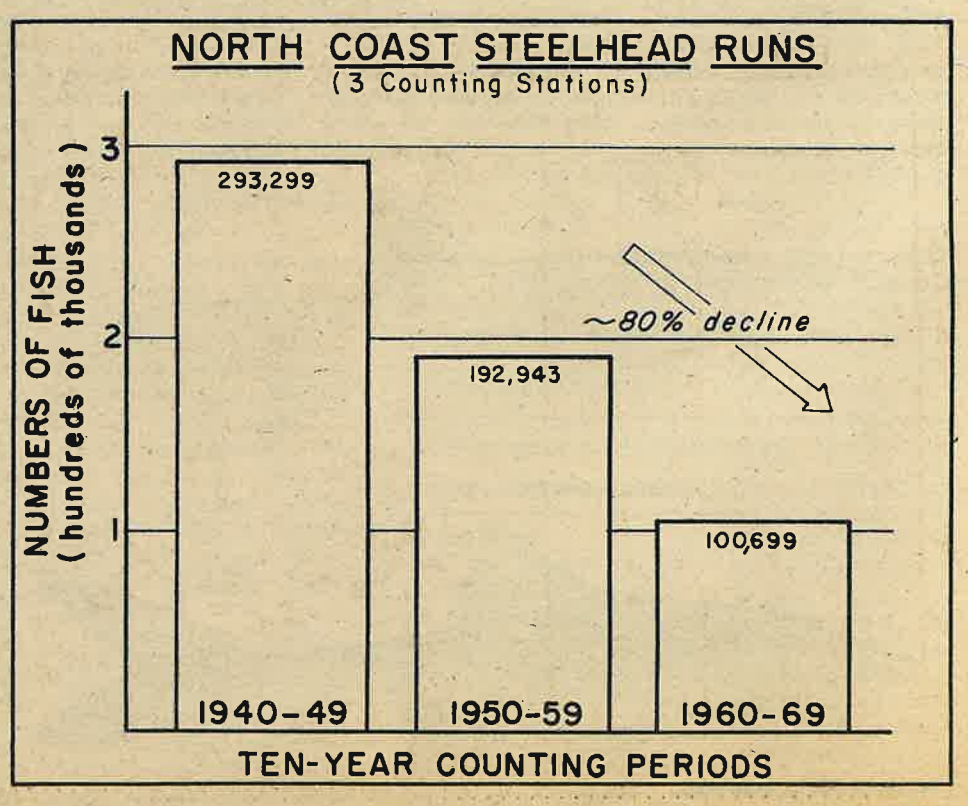
9) Detailed study of the rate of decline of anadromous fisheries. If 80% have been lost over the past 25 years, as estimated, little time remains, and "crash" programs of habitat protection and restoration is in order;

10) A massive program for watershed restoration, including stabilization of slopes and buffer strips along small tributaries.

11) No new dams on rivers utilized during spawning migrations.

Drastic Decline in Fisheries 1940-1969





Fish and Game Dept Wilderness Policy

Despite the protection which wilderness provides to watersheds and fish habitat, the state agency most responsibile for protecting our fishery resources has had a history of not supporting wilderness proposals. It has been silent on most proposals, in outright opposition to some, and in support of only a few.

Officials of the Department of Fish and Game may need reminding of their statements and recommendations which their agency expressed in the **California Fish and Wildlife Plan**. Although published in Jan. 1966, this plan is still the most current until the new plan is completed in 1980.

Some of the more pertinent policies on roadless and wilderness areas include the following:

"An objective of the Fish and Wildlife Plan is to provide for diversified recreational use of fish and wildlife and a number of types of use depend on roadless areas. Traveling by horseback or backpacking is an increasingly popular way of reaching areas where the fish are wild and the animals unsophisticated. Campsites are natural, freer of dust and quieter than those reached by auto . . . [a hiker] does not necessarily plan to consume more of the fish and wildlife resource, but he wants a more intimate relationship with it. . . When a roadless area is penetrated by a road, there are several inevitable and undesirable results. . . **Roads often reduce the quality of the fishery habitat in the streams they flank.** (emphasis added) (Vol. II, p. 23)

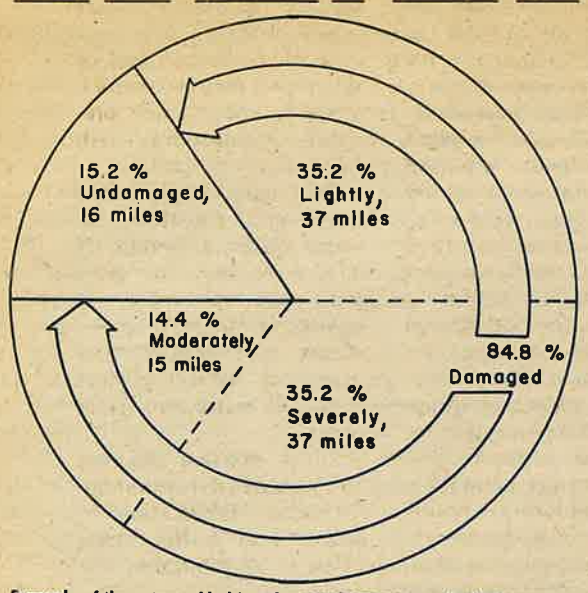
"Management Recommendations: for protecting, maintaining and enhancing fish and wildlife species and their habitat.

Management programs for the following purposes will be established, or, in the case of existing programs, augmented:

. . . #8. To insure the preservation of existing roadless and wilderness areas, and to identify the need for, location of and **establishment of additional ones** in order to preserve original fish and wildlife habitat and provide a special kind of recreational use." (emphasis added). (Vol. 1, p. 33)

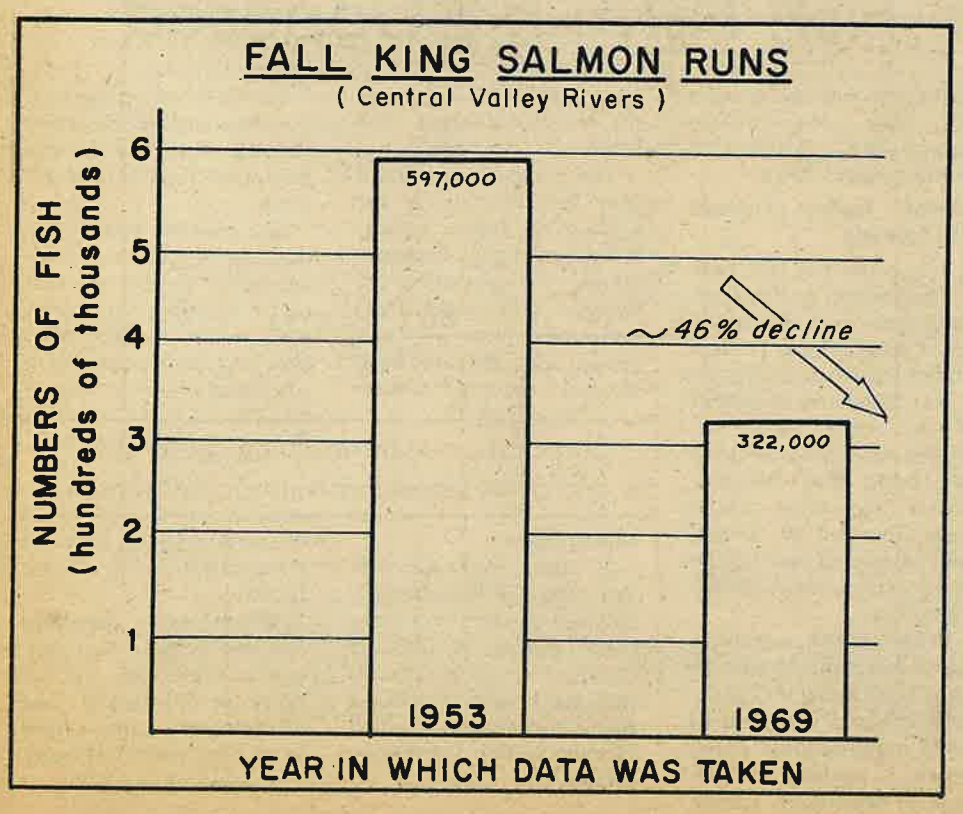
What roadless and wilderness area policies will be adopted in the 1980 Plan?!? A continuation of exisitng ones but with **implementation** this time around might not be a bad idea.

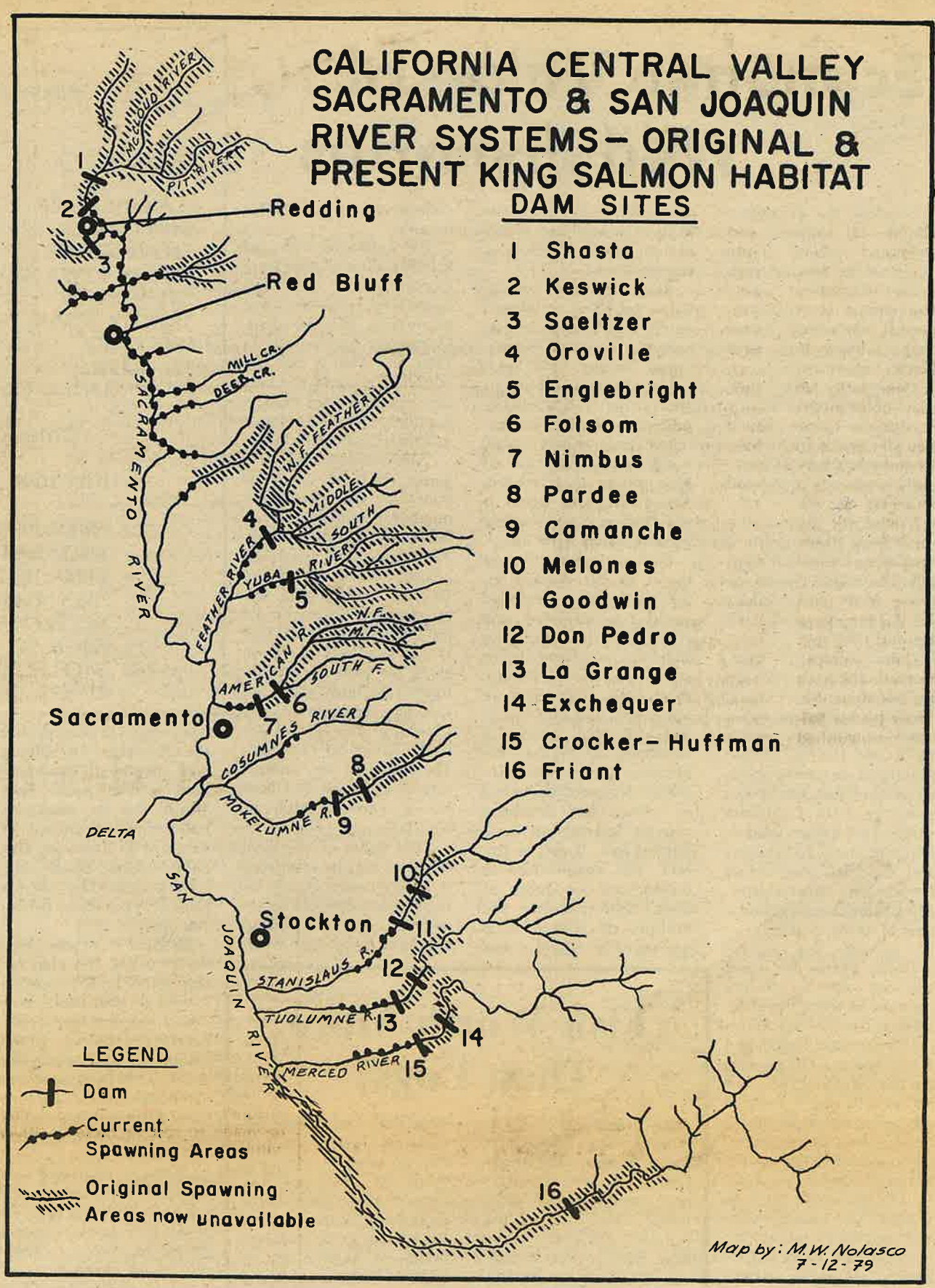
GARCIA RIVER - MENDOCINO CO. - 105 TOTAL MILES



Example of the extent of habitat damage from poor watershed management: logging, road building, dam construction, overgrazing (1966 study)

Drastic Decline in Fisheries 1940-1969





High dams have made previous spawning streams inaccessible to anadromous fish. Inadequate releases from Friant Dam on the San Joaquin River have destroyed the fishery for a great distance downstream.

Graphics by Mike Nolasco adapted from *Environmental Tragedy*, CA DFG 1971.

Wild vs. Artificial

A continuing controversy in fishery management is the utilization of hatchery fish as "mitigation" when spawning habitat for wild salmonids is destroyed or made inaccessible by dams or other developments.

Wild stocks of salmon and steelhead are most essential to production as compared to hatchery stocks. Only now are fishery managers beginning to realize this. At U.S. Senate Commerce Committee hearings in Seattle last May, alarm was expressed about a "very serious decline in abundance of some of the wild stocks" by Washington biologist Dayton Alverson, director of the Northwest Fishing Center. He added, "Hatchery stocks can stand a higher fishing rate than wild stocks. Therefore, a fishing rate adequate to harvest the hatchery fish would over-harvest the wild stocks and, conversely, a rate compatible with the wild stocks would result in over-escapement to the hatcheries." Alverson called for a halt to hatchery additions until there is better understanding of the impact on natural runs. Biologists acknowledge that hatcheries cannot replace natural production and are fraught with problems, especially disease. Commercial fishermen, once major proponents for hatcheries, now also are beginning to support the enhancement of natural production.

A symposium on steelhead genetics, held in Arcata in 1976, had biologists and anglers expressing alarm about pollution of gene pools of wild steelhead from hatchery fish. Hatchery stocks degrade wild stocks, interfering with the processes of adaptation and natural selection. Clearly, hatcheries are not a solution to the problem of our declining salmonid populations, although they may be used as partial mitigation for high dams.

"Logging and roadbuilding on the highly erodible soils in the Eel River Basin are not compatible with maintaining a viable fishery. This is particularly true in the Middle Fork drainage which supports 80% of the state's remaining population of summer steelhead. The increase in siltation from such activities would probably lead to the **extermination** of these fish within the drainage." (emphasis added)

— Calif. DFG, "The Fish and Wildlife Resources of the Big Butte-Shinbone Planning Unit and Recommendations for Their Protection," Regions I and III, April 1978, p. 6.

Economic Value of Wild Fisheries

Consider the economic values of salmon and steelhead habitat. Only now, as the environmentalist movement gains momentum, are conservationists becoming aware that politics and economics are invariably intertwined – that they must unite in their efforts – that they must enter a political area in which their adversaries are "Old pros" and have almost unlimited financial reserves.

Economics cannot be separated from politics. Politicians and government officials must be made aware of the dollar values of fisheries and fish habitat.

Dollar values of commercial salmon catches are well documented. Current retail fish market prices for fresh salmon run about $5.75 per pound. Simple arithmetic, assuming about 25 percent wastage, shows that the 1976 California catch of 6.6 million pounds brings in about $27 million and supports commercial fishermen, processors, wholesalers, retailers and a host of allied workers.

Dollar values for sport fish are not as readily estimated as for the commercial catch. The California Department of Fish and Game keeps a close count on the salmon catch, but no such record is kept on the sport catch of steelhead. In fact, no current inventories of fish population and habitat are kept, so it becomes difficult without such baseline data and long-range monitoring to determine what is happening to the fishery resource. An 80% loss in North Coast steelhead and salmon is a generally accepted figure, however.

Likewise, it is difficult to estimate the value of a sport-caught steelhead except in terms of anglers' figures. Three days of fishing will, on the average, produce one steelhead. Considering all expenses incurred, a fair estimate of daily expenditures would be $50. At this rate, one steelhead is worth $150 to the local economy. Other estimates vary from $60 to $250 per fish. Since the total catch is not tabulated, the total value is at best an educated guess.

Each sport-caught salmon probably is worth more because of the greater cost of boats, motors, etc. for recreational salmon fishing. In addition, there is a large fleet of party boats along the coast supported by sport fishermen after salmon. For the salmon charter boats operating out of San Francisco Bay alone, 48 boats made 4,400 trips in 1977, catching 50,000 salmon and earning gross revenues of $1.2 million (source: "The Value of Fish and Wildlife of S.F. Bay," by Philip Meyer, U.S.F.W.S., and California Water Policy Center.)

The figure of 104,200 salmon caught in California's recreational fishery in 1978, multiplied by the estimated value per fish, gives a total value of $15,630,000 if the value of each salmon is equal to the $150 of a steelhead. A $15 million figure therefore is conservative.

Assuming the annual value of the steelhead catch equals that of the salmon's in the recreational fishery, the total value of the anadromous sport fishery is $30 million. Added to the $27 million commercial fishery value, a total amount value of $57 million is estimated. Admittedly, this figure is not precise; it is definitely a conservative estimate.

Biologists state that as much as 50 percent of adult salmon or steelhead could be harvested and still provide adequate spawning escapement. For steelhead they estimate that about 25 percent are harvested. On this basis, the potential value of steelhead is higher. Remember also, the estimated 80 percent decline in salmon and steelhead runs is largely due to habitat loss. If this is correct, the annual loss to California's economy is about four times the $57 million or about $228 million. The figure could be interpreted as the potential for gain provided that habitat is restored. With today's inflation, undoubtedly the potential is higher.

Dollar values of fishery habitat have been variously calculated. The 1977 study for the Klamath National Forest fisheries computed average annual net values per mile of habitat to be: chinook salmon – $25,000; coho salmon – $2,300; and steelhead – $4,500. In such streams as British Columbia's Adams River, spawning grounds for steelheads were valued some years ago at $300,000 per acre.

The **California Fish and Wildlife Plan** of the State Department of Fish and Game (DFG) provides some interesting figures also. (Although published in 1966, this **Plan** is still the current plan until the new one, scheduled for 1980, is complete.) The Plan states as follows (Vol. II, p.156):

"Streambed gravel has a value which can be determined by considering the number of salmon or steelhead that use it. In 1960, 256 acres of spawning gravel were used by 187,000 fall-run king salmon in the main stem of the Sacramento River. This is 730 spawners per acre. Using the most acceptable figure available, $20 per spawner, an acre of this spawning area has an annual value of $14,600. Therefore, at an interest rate of 4 percent, one acre has a capital value of $365,000.

"The value of one acre of gravel may be estimated in another way; that is by figuring the cost of replacing one acre of natural spawning gravel with an artificial spawning channel. The 2.8 acre spawning channel on the Mokelumne River cost about $750,000, or $270,000 per acre. Spawning channels in Canada, Oregon, and Washington cost from $120,000 to $470,000 per acre."

A Case Study: So. Fork Trinity

Some of the DFG figures were cited in the Shasta-Trinity National Forest's Draft EIS for South Fork Mountain (September, 1977). Using a minimum value of $50,000 per acre of spawning gravel, however, the EIS stated that the 220 acres of salmon and steelhead spawning area in the South Fork Trinity and its tributaries had a minimum annual net value of $11 million. This value alone equals the total estimate by the Six Rivers N.F. of all its fishing streams.

Despite this very high dollar value, the plan for the South Fork Mountain Planning Unit still proposed logging and road-building activities which would increase sediment and fines in the streams to "approximately 65 percent over existing levels." The impact assessment also stated that "about 35 acres of salmon, steelhead and native trout spawning habitat is expected to gradually decline during the last twenty years of the Plan" and "habitat losses will cause a moderate reduction of the estimated annual fish production," which translates to a 50 percent decline in egg production.

What effect did these dollar figures for fish spawning habitat have on the future of the South Fork Trinity watershed? They've been well quoted in public meetings and letters. The commercial salmon trollers took notice of this Draft EIS and the Fort Bragg Salmon Trollers Marketing Association wrote a strong letter of protest to the proposed plan. California Fish and Game also protested, along with many individuals, groups and agencies. The Draft EIS was sent back to the drawing table for "reevaluation" as a result, with an additional alternative to emanate which will "emphasize water quality and fisheries." To date, no revised draft has surfaced.

Wilderness proposals for the South Fork Trinity's roadless areas have fared about as well as the Draft EIS. The major RARE II roadless areas of concern in watershed are: Penney Ridge (5,400 acres), South Fork (17,200 acres) and Chinquapin (21,500 acres). Trinity County's well-publicized RARE II "compromise" position recommended "non-wilderness" status for all three areas, which were among the few recommendations the Forest Service endorsed for Trinity County. Since the State of California adopted the county's position, it too is officially ignoring wilderness protection for this valuable fishery resource.

Forest Service Looks at Fish $

Two studies of the dollar value of anadromous fisheries were recently done by national forests in California: "An Economic Evaluation of the Salmon and Steelhead Fisheries Attributable to Klamath National Forest," by William Kesner, Klamath N.F. (May 1977); and "The Economic Value of Anadromous Fisheries for Six Rivers National Forest," by Dean Smith, Six Rivers N.F., February, 1978).

Both were based on the methods developed by Forest Service biologists from Oregon. Their approach requires spawning escapement data and expresses the fishery resource in terms of net economic values. No secondary or indirect expenses were included, such as expenditures by anglers or commercial fishermen.

Estimates of net economic value were made on a watershed basis for those rivers which were wholly or partially within the National Forest boundaries. The value attributable to the Forest Service lands was determined by taking the total watershed value and multiplying it by the percentage of federal land within that watershed.

Figures were developed separately for chinook (king) salmon, coho (silver) salmon, and steelhead trout but are combined here to save space.

TABLE III

ANNUAL NET VALUE OF ANADROMOUS FISH

WATERSHED	TOTAL*	ATTRIBUTABLE TO KLAMATH NF*	ATTRIBUTABLE TO SIX RIVERS NF*
KLAMATH RIVER	14.2	7.5	3.6
SCOTT RIVER	1.6	0.9	---
SALMON RIVER	2.1	2.1	---
SHASTA RIVER (1)	3.6	---	---
SMITH RIVER	5.5	---	3.8
TRINITY RIVER	3.9	---	1.7
MAD RIVER	1.9	---	0.3
EEL RIVER (2)	4.9	---	0.6
HALF-POUNDER (3)		?	1.2
TOTAL	37.7	10.5	11.2

* MILLIONS OF DOLLARS

(1) ANADROMOUS FISH HABITAT IN THE SHASTA RIVER WATERSHED LIES DOWNSTREAM FROM NATIONAL FOREST LAND, BUT CAN BE ADVERSELY AFFECTED BY IMPROPERLY PLANNED AND ADMINISTERED LAND MANAGEMENT ACTIVITIES IN HEADWATER STREAMS ON PUBLIC LANDS.
(2) NORTH SECTION
(3) STEELHEAD RIVER SPORT ON KLAMATH AND TRINITY RIVERS ONLY

Fish Worth More Than Logs?

An article by USFS biologist Fred Everest, "How to Demonstrate the Importance of Fishery Resources and Interdisciplinary Planning Teams" (Fisheries, Jan.-Feb., 1979, 4:1) shows how fishery professionals can demonstrate the importance of economic values of fishery resources in USFS land use planning and management. Interdisciplinary teams are used by the Forest Service in this process, but only four of 19 teams in the fishery-rich Pacific Northwest Region utilize fishery specialists. "Fishery resources are often not adequately represented in this process because of the difficulty in evaluating recreational fisheries," says Everest.

He then provides an example by estimating the value of the anadromous fisheries in the Mt. Butler/Dry Creek Planning Unit of Siskiyou National Forest, Oregon. Portions of the watersheds of the Elk and Sixes Rivers are located in this Unit, and the 1975 estimated net value of the anadromous fishery in the unit totaled $1.15 million. Timber in the Unit had an estimated net stumpage value of about $.3 million out of a gross potential yield of $1.6 million. Everest then shows how production of timber and fish can be compatible activities on a given unit of land by careful planning and management to protect water quality and fish habitat.

A Fisheries/Recreation Area and a Fisheries/Wildlife Area were established in locations with greatest potential for fish production. Sophisticated logging systems were used where necessary. By quantifying fisheries values, Everest shows that the value of fisheries exceeded other resource values in the same Unit.

He also states that "Even where fishery-commodity conflicts occur on private land, a modest investment of private dollars to protect the value of public fisheries would, in most cases, produce net benefits to society." Decision-makers must be impressed with the high economic values of anadromous fisheries and their habitat.

Fish Farming Opposed

Reprinted with permission of the **Mendocino Grapevine.** Originally printed May 3, 1979.

Salmon Trollers Oppose Fish Farming

A fish farming bill, now in committee in the state legislature, has drawn the fire of the Salmon Trollers Marketing Association.

Nat Bingham, president of the local group, attacked Assembly Bill 1458 by saying that the proposed legislation could mean the end of natural wild salmon as well as the small independent fisherman.

Weyerhauser, a giant in the timber industry with interests in chemicals, paper products and a myriad of other manufactured enterprises, is pushing for passage of legislation authorizing the establishment of the first California fish farm.

The company maintains that fish farming is the wave of the future. A Weyerhauser press release states, "Degradation of streams and rivers from pollutions, dams, etc., and low escapement rates have seriously depleted natural salmon runs."

It also explains that Weyerhauser has made a $10 million investment in a fish farming facility in Newport, Ore., to take up that slack, and Humboldt Bay is also desired as a fish farming facility for Weyerhauser.

The California plans call for shipment of hatchery fish born at their Springfield, Ore. facility to Humboldt.

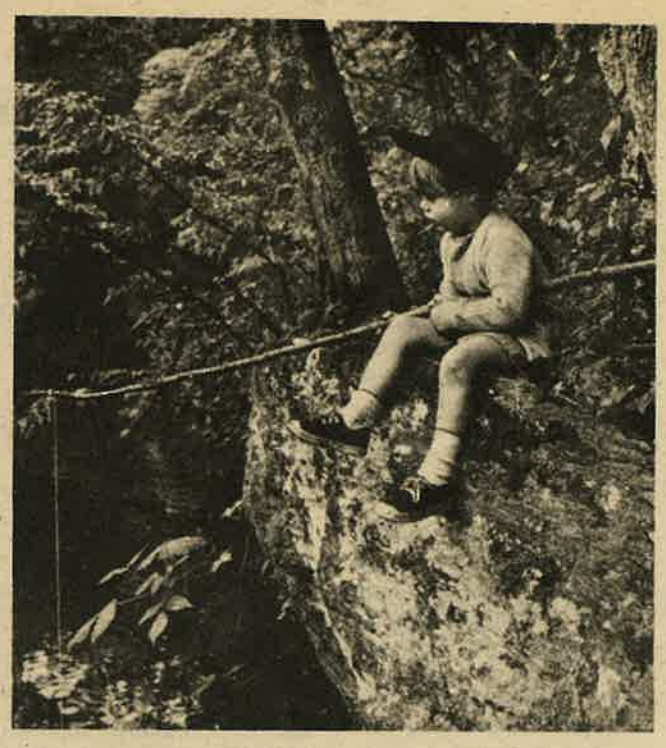
The process works like this: development of the hatchery fish are speeded up by blending river water with water heated from Weyerhauser's paperboard plant and when the fish are of sufficient size, they are transported to a release facility.

Weyerhauser presently has two release facilities, one in Coos Bay, and another in Springfield, and the company wants a third to be constructed at Hum-

Corporate ocean ranching spells the end of independent salmon fishermen.

cont. on page S-7

Non-Monetary Values of Salmonid Fisheries



Why are our salmon fisheries important? Who needs them?

"Need" is a tough word. Man could and would survive without native salmonids and without roadless areas. Man's adaptability and cunning probably enables him to exist — for a time — in a totally plastic, artificial, manmade environment. New Englanders survive without the once-abundant Atlantic salmon, residents of the plains sans passenger pigeon and buffalo, and we are losing still other species. What is special about native anadromous salmonids — salmon and steelhead?

Nutritional Value

Fish, an excellent source of protein, low in cholesterol, constitute an important dietary item. Some idea of the contribution of salmon to our diet is gleaned from the 1978 study by the Pacific Fishery Management Council. The California Salmon troll fishery landed 5.3 million pounds of chinook and 1.3 million pounds of coho (silver) while 104,200 salmon were taken in the recreational fishery. Almost all counts for the Pacific Coast states were down from the 1971-75 average. Salmon — fresh, smoked, canned or as lox — is a gourmet's delight. For coastal Indians it was a basic food. The food value of the steelhead is similar to that of salmon, and few can tell the difference at the table.

Sport Value

As a sport fish the steelhead is unequaled. Anglers travel thousands of miles just for the opportunity to try to catch a steelhead. Few are as intimate with the fish and their habitat as the avid angler who spends year after year on his favorite stream. Winter-run adult fish enter the streams from the sea with the first fall rains as large fish, averaging 8-10 pounds, rarely to 20 or more. Amazingly strong, spectacular fighters, these fish are taken on bait, lures or flies.

Steelhead offer a singular challenge to the angler. Statistics show that almost three "angler-days" are needed to land one fish. Summer-run steelhead are feeders and active strikers, hence more vulnerable to angling. While large summer steelhead are becoming scarce in California, the small "half-pounder," immature steelhead of 15-18", are still plentiful in the Klamath. Half-pounders are unique to the Klamath, Rogue and Eel, entering at age two years from the sea where they have spent only a few months, then soon return to the ocean. They come back as small sexually mature fish the next year on their spawning run.

> Destroy the habitat and the species is lost.

The demand for steelhead and salmon is increasing. Licensed anglers in California have risen from 1,365,410 in 1961 to 2,092,355 in 1970, an increase of 53 percent. The California Fish and Wildlife Plan (1965) predicted an increase in sport fishing effort for salmon from 362,000 man-days in 1963 to 575,000 man-days in 1980. Steelhead sport fishing effort was expected to increase from 302,000 man-days to 480,000 man-days. In order to maintain sport fishing catch-per-unit effort at the same level, it was predicted that an additional 93,000 adult salmon and 79,000 adult steelhead over the 1963 catch will be needed by 1980. The demand for salmon as a food item may possibly increase as California's population increases.

Most of us may think of Pacific salmon as something that comes out of a can. Approximately 85% of the catch is for commercial use. The remainder provide a popular and exciting sport fishery in the ocean and inland. Chinook over 100 pounds are on record, and many are taken over 50 pounds. Coho also offer great sport and are spectacular fighters.

> The major need is for protection and restoration of rearing habitat.

Anglers, too, are now beginning to appreciate the value of wild over hatchery fish, yet, "meat-fishermen" predominate. Most fish are killed, but a growing number of angler-conservationists follow a credo of "catch and release" and are organizing to protect native fish and their habitat in a last-ditch effort to preserve their sport. "Quality" angling, where the angler still enjoys a degree of solitude, is available only where wilderness areas are maintained. To many, this is precious.

Aesthetic Value

Native salmonids and natural wilderness areas are essential elements in an ecosystem which has evolved over eons. These fish are remarkable for their adaptation to a special environment. While the mystery of the salmon's long journey at sea is partially solved, little is known of the steelhead's ocean migration. In the sea, steelhead feed voraciously and grow at an enormous rate, fattening and strengthening for their spawning runs, to return unerringly to their home streams in California from such distant waters as the Bering Sea and the Russian coast off Kamchatka. To this marvel, add the streamlined beauty, the great strength required to migrate upstream through whitewater rapids, over waterfalls, uphill sometimes as high as 2000 feet and far as 1000 miles!

Coastal Indians worshipped salmon, holding them sacred. There is sadness as great spawned-out chinooks wallow and die, rotting alive, yet the carcasses furnish nourishment even in decay. Steelhead, on the other hand, survive the spawning ordeal and return to spawn a second or sometimes a third time. To witness the spawning of steelhead in a small tributary is a rare privilege, a sight seldom seen. Left strictly alone here, undisturbed, given their natural habitat, they can continue to thrive as a species. Destroy the habitat and the species is lost.

Fish Farming

cont. from page S-6

boldt Bay.

The mature fish remain at the release facility until they have been vaccinated, acclimated to salt water, and tagged. The acclimation is necessary for the salmon to establish a home sense to return to be caught after having matured in the ocean.

Weyerhauser maintains that over half of their fish are caught by sport and commerical fishermen, and that their operation benefits everyone.

Nat Bingham, however, says the genetically engineered fish farm salmon are designed to return to the company release facility at a size too small to be legally caught by commercial fisherman.

He explained, "By selecting the stock they want, they've been able to bring a fish which doesn't go very far away from the release point, and therefore, does not grow to its largest size as a normal fish."

"In fact," Bingham emphasized, "by doing this they've been able to come up with a fish that's smaller than the commercial minimum size limit for the ocean troll fishery, and these fish we aren't able to catch."

According to Bingham, the artificially raised salmon of Weyerhauser will compete with the natural fish for a limited supply of feed.

"There's only so much available feed in the ocean, and if you release large numbers of these hatchery fish at the same time as the wild fish are having a hard time making it because of the damaged habitat conditions in the streams, then these ocean ranch fish are going to take over," Bingham contended.

Additionally, Bingham feels that the quality of artificially produced fish is inferior. "We don't feel the quality is as good," he said.

"For one thing, they shoot them with a heavy dose of antibiotics while they're still a small size, to keep them from getting diseased in the hatcheries. They all come in with tetracycline in them.

"It gets into their bones, and doesn't leave them, so you've got that problem. Plus any fish that come into spawn are starting to deteriorate."

According to Bingham, the whole approach is out of harmony with nature. Instead of upsetting the ecosystem with massive artificial fish production, the natural breeding grounds should be repaired and then the salmon would return.

> The whole approach is out of harmony with nature.

"From a wild ecosystem that functions well on its own, to an engineered ecosystem which does not function because we don't really understand how it works well enough to try and control it — this type of operation is a real good example of this type of mismanagement," he said.

Finally, Bingham feels that if corporate ocean ranching is approved by the legislature, it spells the end of independent salmon fishermen.

"If they take over and do manage to get enough of their fish out there and they keep on damaging the watersheds enough, then there'll be nothing but their fish out there.

"They'll get very strong politically, because they'll get most of them to sell, and they'll restrict us out of the fishery to keep us from catching their fish," Bingham stated.

It will have a heavy impact economically then?

"Ultimately," Bingham answered, "it will put this entire salmon fleet right out of business."

Note: This bill, AB 1458, was fortunately defeated in July.

Contributors to this Supplement

Articles: Herbert Joseph
Dennis Coules
Sari Sommarstrom
Peter Moyle
Bob Doody

Photos/Graphics: Mike Nolasco
Herbert Joseph
Susan Wilhite
James Eaton
Chris van Dyck
Alan Marciachi

Production: Jim Trumbly
Dennis Coules
Beth Newman
Sari Sommarstrom
Fred Gunsky

California Wilderness Coalition, P.O. Box 429, Davis, 95616

Fisheries Agencies

The two major agencies concerned with fisheries resources in California are the U.S. Fish and Wildlife Service at the federal level, and the Department of Fish and Game at the state level.

The Fish and Wildlife Service, within the Interior Department, was created by the Fish and Wildlife Act of 1956. At that time the agency was called the Bureau of Sport Fisheries and Wildlife. This was the first federal agency created specifically for fisheries and wildlife. The Fish and Wildlife Act was landmark legislation in that it focused unprecedented attention on the conservation and management of fish and wildlife resources and clearly differentiated between commercial and recreational uses.

The Service has many responsibilities, including managing migratory birds and their habitat, managing wildlife on National Wildlife Refuges, wildlife assistance to federal and state agencies, administration of the Endangered Species programs, monetary aid to state game and fish programs under the Pittman-Robertson and Dingell-Johnson Acts, animal damage control (including controversial predator control), evaluation of effects of pesticides and other pollutants, and evaluation of effects of proposed development projects on fish and wildlife.

With respect to inland fisheries, the Service works in cooperation with state fish and game agencies in development of fishery plans, operates 70 federal fish hatcheries nationwide, and conducts fishery research. The Great Lakes fisheries are managed under a 1955 agreement with Canada. A significant program there is control of sea lampreys. The anadromous fisheries programs include fish protection in hatcheries and rearing ponds, research projects on nutrition, genetics, disease prevention and effects of pollutants, and technical assistance to other federal and state agencies, and to Indian reservations and Native Alaskans.

The address of the California office of the U.S. Fish and Wildlife Service is 2800 Cottage Way, Sacramento, CA 95825. Phone number is (916) 484-4664.

The California Department of Fish and Game (DFG) is included in the Resources Agency. The director of the Department, presently Charles Fullerton, is appointed by the governor.

The Fish and Game Commission, whose five members also are appointed by the governor, sets the policies and regulations for the Department within the framework of California law.

The DFG is organized into five geographical regions with headquarters in Redding, Sacramento, Yountville, Fresno and Long Beach. The Department's activities are divided into various functions – inland fisheries, operations research, marine resources, wildlife management, anadromous fisheries, wildlife protection, environmental services and planning.

The best known functions of the DFG are issuance of fishing and hunting licenses and regulation of sport and commercial fishing and hunting in the state. The Department makes recommendations, while the Commission actually sets the regulations. The Department runs a hatchery program to produce and plant about 60 million fish a year. Some of the more controversial of the Department's activities have included introduction of exotic game species and poisoning of streams to remove "trash" fish, usually native minnows or sculpins.

The Department's involvement with rare and endangered species includes preparation of biennial reports, called **At the Crossroads,** on the status of California's rare and endangered fauna. Funds derived from the sale of personalized license plates are available for the purchase of habitat critical to the survival of native species. The DFG also operates a nongame wildlife conservation program solely through private donations.

The anadromous fisheries activities of the Department include building fish ladders wherever practical to enable fish to reach spawning areas upstream from dams, screening diversion canals, biological analysis of pollution problems, cooperation with other agencies in construction and operation of salmon and steelhead hatcheries, and working on the cleanup of north coastal spawning streams and watersheds to remove such barriers as logging debris. Attempts are also made to assure adequate releases of water downstream from dams.

State Fish and Game headquarters is at 1416 Ninth Street, Sacramento, CA 95814. Phone is (916) 445-3531.

Management in Wilderness

Fish and Wildlife Management in Wilderness Areas — Memorandum of Understanding between U.S. Forest Service and California Dept. of Fish and Game (DFG)

1) ACTIVITIES DFG HAS AGREED **NOT** TO DO IN WILDERNESS AREAS: a) Construct new flow-maintenance dams; b) Plant lakes that have never had fish in them; c) Plant new fish species (except where needed to foster survival of threatened species).

2.) ACTIVITIES WHICH REQUIRE FOREST SERVICE APPROVAL: a) Pesticide application to lake or stream; b) Construction of artificial barriers; c) Transplanting threatened species of fish into a lake that has never had fish in it.

3. ACTIVITIES WHICH DO NOT REQUIRE FOREST SERVICE APPROVAL BUT COORDINATION IS REQUIRED: a) Creel census; b) Population sampling (with nonmotorized equipment); c) Egg taking (temporary structure); d) Transplanting threatened species from one location within a wilderness to another location within the same wilderness; e) Aerial fish stocking (cooperative agreement required for individual wilderness and primitive areas).

4. AERIAL FISH STOCKING: a) Cooperative agreement should list all lakes in the wilderness area that have ever had fish in them; b) Any species ever found or stocked within the boundries of a wilderness or primitive area can be stocked by air; c) The numbers and species stocked by air in any given lake can be changed at any time, as long as a new (new to wilderness areas) exotic species is not introduced; d) Any lake can be stocked by air in wilderness areas unless it is a lake that has never had fish in it.

The use of mechanical equipment, temporary structures, and explosives may be used, dependent upon conditions and need, and when mutually agreed upon by the U.S. Forest Service and Department of Fish and Game.

The above memorandum is intended to be guidelines and not necessarily a binding contract. However, every effort should be made to live up to its spirit and intent. It is DFG's view that virtually all fish and wildlife management activities can be conducted in wilderness areas as needed, with proper consideration for wilderness values. Even activities which DFG has agreed not to do are subject to negotiation with the Forest Service if sufficient justification for the project exist.

June 28, 1974

California Wilderness Coalition is currently developing a list of roadless areas which contain critical spawning habitat for salmon and steelhead. Please contact the Coalition if you are interested in this information.

Further Reading

Fry, Donald. **Anadromous Fishes of California.** California Dept. of Fish and Game 1973. 111p. Free.

Citizen's Advisory Comittee on Salmon and Steelhead Trout, **An Environmental Tragedy,** Cal. DFG, 1971. 50p.

Everest, Fred. "How to Demonstrate the Importance of Fishery Resources to Interdisciplinary Planning Teams," **Fisheries** 4(1) (Jan-Feb. 1979): 15-20.

American Fisheries Society, "Symposium on Steelhead Genetics, Proceedings," Conference held at Humboldt State University, 1976.

U.S. Fish and Wildlife Service, **The Effects of Altered Streamflows on Fish and Wildlife in California,** prepared by Jones & Stokes Assoc., Sacramento, 1976.

American Fisheries Society, **Management of Wilderness Area Waters,** (AFS, 5410 Grosvenor Lane, Bethesda, MD 20014), 1976. 23pp. $2.00.

Kreider, Claude, **Steelhead.** G.P. Putnam's Sons, N.Y., 1948.

Moyle, Peter. **Inland Fishes of California.** UC Press 1976. 405 pp.

Activist Groups

Activist fish habitat protective groups

California Trout*
P.O. Box 2046
San Francisco, CA 94126

California Committee of Two Million
P.O. Box 2046
San Francisco, CA 94126

Izaak Walton League of America
1800 N. Kent St., Suite 906
Arlington, VA 22209

Pacific Coast Federation of Fishermen's Assoc.
P.O. Box 1626
Sausalito, CA 94965

Ft. Bragg Salmon Trollers Marketing Assoc.**
P.O. Box 137
Ft. Bragg, CA 95437

*** Affiliate member of CWC**
****Group member of CWC**

California Trout

California Trout's primary mission is to work for the preservation and enhancement of wild trout and native steelhead and their habitat. Principal concern is that each stream or lake ecosystem capable of maintaining a self-sustaining wild trout or native steelhead population should be protected and managed individually with a specific plan toward preserving, restoring or enhancing the system.

With respect to areas which meet the definition of wilderness under the Wilderness Act, California Trout supports development of specific area management plans which place primary emphasis on protection and enhancement of the watershed and its fish and wildlife resources. In the absence of a satisfactory specific management plan, California Trout supports wilderness classification for watersheds where any major soil disturbing land use activity could adversely affect significant wild trout or native steelhead habitat.

California Trout strongly supports the maintenance of wilderness character in all areas which have been spared the imprint of development by man, including state or federally designated Wild and Scenic Rivers, whether or not the areas are designated as wilderness under the Wilderness Act.