

# OREQ-W



**ORICK** Then and Now.....

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# Historically Speaking

## Notes on Orick's Past

Jayina T. Barba

It is interesting to note that although this rugged north country was among the last regions in the United States to give up its secrets to the white man. Humboldt Bay itself was not explored until the very end of 1849, a time when San Francisco, less than 200 miles to the south, was already a city of 20,000. The search for such a harbor had been pushed for three-quarters of a century, first by the Spaniards, then the Russians, the British and last the Americans. All wanted to establish exclusive control of its trappings and trading privileges, and an adequate harbor on the north coast would serve as a base of operations, a supply and trading center, and shipping point for furs...and the explorations stories of each countries attempt to find such a harbor and their hardships is history now, but the Americans under Captain Jedediah S. Smith found our Redwood Creek Valley first ...in his search for Qual-a-waloo, the Indian name for Humboldt Bay.

The early western travels of Captain Smith recorded by his clerk of the expedition, Harrison G. Rogers in his journals, gives details of the hardships of the exploring party of 18 men and horses, pertaining to the Bald Hills, and Redwood Creek Valley...now Orick.

Dated May 9, 1828, the exploring party of Jedediah Smith camped near the mouth of Supply Creek, in Hoopa Valley, coming into the northern boundary of Humboldt County at or near the South Fork of the Trinity River.

Then traveling west about 7 miles encamped again at Pine Creek, as distance through the mountainous country was slow traveling with loaded horses and mules. The rock and brushy

mountains made many of the horses lame, and worn out, so that it was difficult to force them along the way. Then they crossed Scottish Creek, about a mile north of Mill Creek, on Sunday, May 10th. Continuing their westerly course, they traveled up steep mountain, very rocky and brushy, until Sunday, May 18...and here Indian trails led to other villages along the Klamath.

On Monday, May 19, 1828 they started early and came 6 miles west to a prairie, now Gans Prairie, with plenty of feed and a small band of elk, of which killed six for food. From this point they had a fair view of the Pacific Ocean and Indians came to camp to visit them, which were from Redwood Creek. They gave them small presents of beads and elk meat. They remained here through the 20th of May, for horses were lame, and tired, and also wanted to dry the elk meat.

Then Rogers and another man left after breakfast on horseback for the sea shore, following the Indian Trail, and along Redwood Creek, until reach the mouth of Prairie Creek. This same trail was used by Indians as late as 1890.

They continued along the north banks of Redwood Creek until came to Skunk Cabbage Creek area to Mussel Point, overlooking the ocean. They tried to find if travel was possible along the seashore but unable because of the steep bluff, so they returned to Gans Prairie, but not before having trouble with some Indians who shot one of their horses with an arrow. The Indians look on the horses as did the elk, for food, as the horses that they left behind due to injury, disappeared.

McKinleyville News  
April 22, 1970

Back at camp on the prairie they had other Indian visitors, that they "spoke" to them in sign language, and told them of the attack, and they soon left. The day was very foggy and drizzly rain.

Captain Smith in the meantime was looking for the harbor, and saw or learned of Big Lagoon while talking with the Indians, which was marked on old Gallatin map. They also made notes in the journal of the timber in the area, and called the Redwoods "white cedar", and that most of these large trees were 5-15 feet in diameter and tall, and almost impossible to travel through round an open prairie, with good grass for horses to feed on... this is now known as French Camp where camped on May 11th. Men were sent back to get horses that were slow and had to leave to rest and would catch up to party later. They remained another day to rest horses and plenty of feed. On Tuesday May 13 traveling north westerly, over high ranges of rocky and brushy mountains as usual went about 6 miles, and camped again on a grassy mountain, and this opening is known now as Big Prairie. The Indian trails that they followed from the Indian villages along the Klamath River, came together here and became one trail.

On the 14th of May they camped along the Indian trail that led from the Indian village of Morek on the Klamath, and this trail led to the mountain top at Elk Camp, then south across Redwood Creek to Big Lagoon. Moving slowly with the Indian Trails as their guide,

but not for pack animals as crossed many logs and steep rocky places, that injured horses in falls. The Indians from the Morek Village came to camp and wanted to trade knives and beads. This proves the point that the exploring party of Peter S. Ogden in 1826 had been thru here and had traded with them, but they appeared afraid of the horses. Here they saw the women weaving baskets, of which traded for beads.

Next day two men went on ahead to seek out a pass to travel and when they returned they said they were 15-20 miles from the Pacific Ocean, and better traveling plenty of game, elk and deer, but weather cloudy, rain and fog.

High Prairie next camp, but foggy. Decided to stay here as plenty of feed and water, on with all their horses.

Finally after four days at Gans Prairie they broke camp. The fear of the Indians and the foggy, rainy weather was more than these plainsmen could stand, for Rogers records a prayer in his notes, that "Oh, God, not to forsake them, etc." as afraid they wouldn't get out of this country alive. So traveling east again over the same Indian Trails, they left our Redwood Creek area, to go on to further exploring.

Thus is recorded that the Jedediah Smith's party was through here, along the Redwood Creek Indian Trail. . . which later the Gold Dust at Gold Bluff attracted many miners . . . and Pioneers to Orick Valley

Information from "Search for Qual-a-wa-Loo".

# Gold Bluff

Weekly Times—Telephone February 3, 1883—

James S. Baker of Trinidad, has filed his petition of appointment as guardians of the persons and estate of the minor heirs of George Griffin, deceased, and the Superior Court has set Saturday the 3rd of February at 10 o'clock, as the time for hearing same.

From assessment book of the property in the part of Klamath annexed to Humboldt December 22, 1874—George Griffin and Co. Trinidad dist. ranch at the mouth of Redwood Creek 160 Acres Mining Claim on the beach and improvements 3 horses 75. 1 colt 20 5 cows 100 8 calves 20 26 stock cattle 260 4 mules 160 9 hogs 30 10 ch 5. 1 gun 20 total 2322

D.W. Jewell Ranch on Redwood Creek known as Jewell ranch 160 A.

Fernald R.M. and Co Beach mining claims known as the upper Gold Bluffs Garden and improvements 4 acres ranch 6 miles East of Bluffs 1 horse 50 2 cows 40 10 stock cattle 100 20 mules 800 3000 lbs. grain 60 6000 hay 45 60 lbs quicksilver 60 furniture 50 machinery 125 Total 12651

January 2, 1875—Union Gold Bluff Chapman Agent—Mining claims at Union Gold

Bluff goods ware and merchandise 150 farming imp. 150 growing crops 250 2 horses 115 20 mules 800 hay 100 quicksilver 30 20 chickens 10 fire arms 20 machinery 1500

August 19, 1865—More Bodies Recovered from the Late Wreck of the Bro' Jonathan. Nol Edward Cardiff, buried at upper Gold Bluff-Aug. 4 1865 Nothing but his name on clothing, and a pocket-book with likenesses of two ladies.

No. 2—A boy about 8 years of age, with light hair-had on a gray suit of cloth Buried at upper Gold Bluff Aug 9th 1865.

From Harpers Magazine—June to Nov. 1850 Vol 1—page 852

The expedition which sailed in July last to the Klamath and Umpqua rivers has been returned to San Francisco. It has been ascertained that the Klamath and Trinity unite, and form the same river which discharges its waters into the sea, in latitude 41.34' north and that there is no river answering to the description of the Klamath in 42.26' as laid down in the charts of Fremont and Wilkes.

From this river, the expedition visited the Umpqua, which they found to have an opening into the sea, of nearly one mile in width, with some three or four fathoms of water on the bar, an navigable about thirty miles up when it opens into a rich agricultural district.

(Continued on next page)

# Earthquake

The earthquake shook everyone awake Saturday morning. Right in the middle of the shaking was an intense bluish white flash of light in the sky to southwest. Power went out on old state highway and residents were out of electricity until about 2:30 next afternoon. Consensus of opinion is that waving power lines on Hilton's Hill or the transformer at the foot of the hill caused the flash. Stores lost a few liquor bottles off top shelves and some residents had few things fall or drop. The ocean just roared all night. Next day in the forenoon the ocean was pounding up huge high waves and rolling over the sand spit. Huge big high waves breaking way out lasted till late afternoon.

Now what should you do in an earthquake? That brings to mind one of Aunt Fay's stories about the 1906 earthquake. Mrs. Fay Aldrich is now 98-years-old and living in Montgomery Convalescent Hospital in Santa Rosa. In 1906 she was in San Francisco working as secretary. (A few years ago she could still take shorthand!) She and her sister lived in a second floor apartment on Pine St. Came the

earthquake and the city was burning and all were advised to go to Golden Gate Park. They grabbed up canned groceries and staples and packed them in a great big cloth bag. Their best clothes they put into another big bag, and put on their old clothes and started the long hike to Golden Gate Park lugging those big heavy bags. No kind of conveyance was available and they walked and the bags got heavier and bit by bit they began eliminating most of the clothes. When they finally got to Golden Gate Park food kitchens had been set up and they needn't have hauled that heavy food. Aunt Fay's advice was to put on your best duds in an earthquake and leave the old clothes behind.

Now . . . nights are clear and frosty;  
the week's temperature was from 34  
to 67 degrees;  
alder trees now lose their leaves;  
new little grass is green on the hill;  
three flickers peck in the myrtle  
tree;  
fishermen throw their lines from the  
dike;  
and Redwood Creek flows out again  
at Orick Beach.

November 20, 1980

# Agency's crews work to halt erosion along Prairie Creek

By GINA BENTZLEY  
Times-Standard Writer

ORICK — Using techniques they developed, the Redwood Community Action Agency's natural resources staff has been working since last fall to stop erosion of a one-mile stretch of Prairie Creek where valuable pasture land is disappearing every winter.

Most of the streambanks were bare dirt before the RCAA crews began the project, and already their efforts have helped secure areas where recent high water levels in the creek would have done further damage, said Richard Davison, owner of the property where the project is being done.

Davison and his wife were skeptical last summer when the RCAA first contacted them about working in the creek on their property and constructing fences to keep their 80 milk cows away from the creek, but now they're glad the work is under way.

"It sounded like a good idea," he said, "and they've done a very good job. It held fine during the high

water. I have no complaints."

Nancy Reichard, director of the RCAA resources division, said the project began with a survey to identify areas where erosion control was most needed, and was followed by a work plan that gave each problem area its own prescription for improvement.

The project relies heavily on hand-labor and use of natural materials to shore up the banks. A three-member crew, including John Schwabe, Robert Ford and Jen Gavin, developed most of the techniques used at Prairie Creek.

Generally, the in-stream work includes stabilizing the banks with boughs of cut brush and branches, willow sprigs, handmade screens with willow frames, or with large logs found in the stream. All of these techniques are aimed at deflecting the force of the stream's current while the roots of recently planted trees and brush take hold.

Schwabe said that using different techniques will help the crew and RCAA learn which types work best.

"The problem is that there isn't

any real material to refer to that's up-to-date," he said. "There isn't any one source for how to do this." He said that most of the research he did was in soil conservation and agriculture textbooks from the 1930s.

After the banks are replanted, he said, the crew will plant the area just above the creek with willows, alders, conifers and other streamside — or riparian — vegetation that provides shade over the water, as well as a habitat for birds and wildlife.

Reichard said that the RCAA has 14 other stream projects under way. The non-profit organization received \$20,000 grants from the Department of Fish and Game for four projects; \$420,000 from the California Coastal Conservancy for 10 projects; and \$33,000 from the conservancy for educational displays and a footbridge at the Prairie Creek Hatchery.

"The philosophy behind all of these projects is that the North Coast economy depends on the productivity of the natural resources. All that we can do to restore, protect and maintain our resources will benefit us all."

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## LITERATURE CITED

- Blake, L. M. 1981. Movement of tournament-caught and released bass. *New York Fish and Game J.*, 28 (1):115-117.
- Carmichael, G. J., J. R. Tomasso, B. A. Simco and K. B. Davis. 1984. Confinement and water quality-induced stress in largemouth bass. *Am. Fish. Soc., Trans.*, 113(6):767-777.
- Coble, D. W. 1975. Smallmouth bass. Pages 21-33 in Henry Clepper, ed. *Black bass biology and management*. Sport Fish Inst.
- Cooper, G. P. and W. C. Latta. 1954. Further studies on the fish population and exploitation by angling in Sugarloaf Lake, Washtenaw County. *Michigan. Mich. Acad. Sci., Arts and Let., Pap.* (32):209-223.
- Fisher, Charles K. 1953. The 1950 largemouth black bass and bluegill tagging program in Millerton Lake, California. *Calif. Fish and Game* 39(4):485-487.
- Forney, J. L. 1961. Growth, movements and survival of smallmouth bass *Micropterus dolomieu* in Oneida Lake, New York. *New York Fish and Game J.*, 8(2):88-105.
- Forney, J. L. 1972. Biology and management of smallmouth bass in Oneida Lake, New York. *New York Fish and Game J.*, 19(2):132-154.
- Horton, J. L., and D. P. Lee. 1982. Harvest and mortality of tournament caught and released largemouth bass at Don Pedro Reservoir, California. *Calif. Fish and Game Inland Fish. Admin. Rpt. No.* 82-3, 8 p.
- Kimsey, J. B. 1957. Largemouth bass tagging at Clear Lake, Lake County, California. *Calif. Fish and Game*, 43(2):111-118.
- LaFauce, D. A., J. B. Kimsey, and H. K. Chadwick. 1964. The fishery at Sutherland Reservoir, San Diego County, California. *Calif. Fish and Game*, 50(4):271-291.
- Larimore, W. R. 1952. Home pools and homing behavior of smallmouth black bass in Jordan Creek. *Ill. Nat. Hist. Surv. Biol. Notes*, No. 28. 12 p.
- Latta, W. C. 1963. The life history of the smallmouth bass *Micropterus dolomieu*, at Waugoshance Point, Lake Michigan. *Mich. Dept. Conserv. Inst. Fish. Res. Bull.* No. 5. 56 p.
- Lewis, William M. and S. Flickinger. 1967. Home range tendency of the largemouth bass (*Micropterus salmoides*). *Ecology*, 48:1020-1023.
- Maloney, J. E., D. R. Schupp, and W. J. Scidmore. 1962. Largemouth bass population and harvest. Gladstone Lake, Crow Wing County. Minnesota. *Trans. Amer. Fish. Soc.* 91(1):42-52.
- Miller, R. J. 1975. Comparative behavior of centrarchid basses. Pages 85-94 in Henry Clepper, ed. *Black bass biology and management*. Sport Fish. Inst.
- Nicola, S. J. and A. J. Cordone. 1969. Comparisons of disk-dangler, trailer and plastic jaw tags. *Calif. Fish and Game*, 55(4):273-284.
- Pelzman, R. J.; S. A. Rapp and R. R. Rawstron. 1980. Mortality and survival of smallmouth bass, *Micropterus dolomieu*, at Merle Collins Reservoir, California. *Calif. Fish and Game*, 66(1):35-39.
- Pflug, D. E. and G. B. Pauley. 1983. The movement and homing of smallmouth bass, *Micropterus dolomieu*, in Lake Sammamish, Washington. *Calif. Fish and Game*, 69(4):207-216.
- Rawstron, R. R. 1967. Harvest, mortality and movement of selected warmwater fishes in Folsom Lake, California. *Calif. Fish and Game*, 53(1):40-48.
- Rawstron, R. R. and K. A. Hashagen, Jr. 1972. Mortality and survival rates of tagged largemouth bass (*Micropterus salmoides*) at Merle Collins Reservoir. *Calif. Fish and Game*, 58(3):221-230.
- Ricker, W. E. 1958. Handbook of computations for biological statistics of fish populations. *Can. Fish. Res. Bd., Bull.* 119:300 p.
- Van Woert, W. F. 1980. Exploitation, natural mortality and survival of smallmouth bass and largemouth bass in Shasta Lake, California. *Calif. Fish and Game*, 66(3):163-171.

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## COMPARISON OF STEELHEAD CAUGHT AND LOST BY ANGLERS USING FLIES WITH BARBED OR BARBLESS HOOKS IN THE KLAMATH RIVER, CALIFORNIA<sup>1</sup>

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**Klamath River anglers lost fewer steelhead *Oncorhynchus mykiss* on barbed hooks than on barbless hooks, regardless of fish size. Losses from barbed hooks of sizes 8 and 6 did not differ with fish size. Significantly fewer "half-pounders" (<406 mm long) were lost from barbless hook flies of size 6 than size 8. For adult steelhead (≥406 mm long) the loss rate was the same for flies with barbless hooks of size 6 and 8.**

## INTRODUCTION

Trout fisheries managed for catch-and-release fishing are increasing, and are popular with trout anglers (Graff 1987). The California Department of Fish and Game, which manages 17 streams and 7 lakes as catch-and-release fisheries restricted to artificial lures has recently added a "single barbless hook only" regulation for these waters—primarily to reduce mortalities (Deinstadt 1987).

Many fly anglers, regardless of regulations, fish with barbless hooks because they feel that captured trout are easier to release. Other anglers prefer flies with barbed hooks because they believe fish are not hooked as deeply and are less likely to be injured. Although many investigators have compared the hooking mortality of trout caught on barbed and barbless hooks (Wydowski 1977; Dotson 1982; Mongillo 1984; Titus and Vanicek 1988), the catch efficiencies of barbed and barbless hooks have not been rigorously compared—although Knutson (1987) reported that barbless hooks were as efficient as barbed hooks in catching all sizes of salmon taken by charter boat anglers fishing off the California coast.

The objective of this study was to compare numbers of Klamath River fall-run steelhead, *Oncorhynchus mykiss*, caught and lost by fly anglers, by hook type (barbed or barbless, size 6 or size 8), and fish size ("half-pounder" or adult).

## STUDY AREA

The Klamath River, in northwestern California, is an important salmon and steelhead stream. Fall-run steelhead provide a popular sport fishery from August to October (Kesner and Barnhart 1972). This fishery is primarily for small steelhead called "half-pounders", along with some adult steelhead. Half-pounders are unique in being on their first upstream migration after only a few months in the ocean. They are immature and survivors return to the ocean, grow, and migrate upstream in the following year as maturing adults (Kesner and Barnhart 1972, Everest 1973). Half-pounders are popular with anglers because of their willingness to strike and their fighting qualities. This investiga-

tion was confined to the lower 40 km of the river above Klamath, California, where access is primarily by boat; it is not a catch-and-release water.

### METHODS

Local fishing guides agreed to encourage their clients to participate in this study. A form was provided for each angler each day to record the number of half-pounders and adult steelhead caught or lost with barbed- or barbless-hook flies of size 6 or 8. Steelhead less than 406 mm (16 inches) in total length were considered half-pounders. Anglers were asked to fish with barbed or barbless hooks for half the fishing day and then to switch to the alternate choice for the rest of the day, in an effort to eliminate variability due to differences in angler skill. A "fish lost" was defined as one that escaped the hook at any time from the initial hooking to the beginning of the time when the angler had the fish under control and was trying to grasp, net, or bank the fish to release or keep it. A strike or bite did not count as a fish lost.

I used goodness of fit tests with log linear models and chi-square contingency tables (Sokal and Rohlf 1981) to test the null hypothesis that numbers of fish caught or lost were independent of hook type and fish size.

### RESULTS AND DISCUSSION

Angling data were collected from August 17 to November 7, 1988. During this period daytime water temperatures ranged from 14° to 22°C; they were highest in August and lowest in November. The total of 48 anglers who participated hooked 1,914 steelhead, of which 1,372 were caught and 542 lost (Table 1).

TABLE 1. Steelhead Caught or Lost on Flies, Arranged by Hook Type (Barbed, Barbless, Sizes 8 and 6) and Fish Size (Half-Pounder, Adult), Klamath River 1988.

Hook type and fish size	Total fish hooked	Caught (No.)	Lost	
			No.	Percent
<b>Barbed 8</b>				
Half-pounder.....	244	184	60	25
Adult.....	42	35	7	17
Total.....	286	219	67	23
<b>Barbed 6</b>				
Half-pounder.....	402	311	91	23
Adult.....	84	72	12	14
Total.....	486	383	103	21
<b>Barbless 8</b>				
Half-pounder.....	365	225	140	38
Adult.....	31	21	10	32
Total.....	396	246	150	38
<b>Barbless 6</b>				
Half-pounder.....	667	470	197	30
Adult.....	79	54	25	32
Total.....	746	524	222	30
Totals.....	1914	1372	542	28

Analyses of the data showed that the numbers of steelhead caught and lost were not independent of hook type (G value 34.99,  $p < 0.005$ , 6 df) and that fewer fish, regardless of size, were lost from barbed hooks than from barbless hooks (G value 26.3,  $p < 0.005$ , 2 df). For half-pounders, hook sizes combined,

on barbless hooks were lost ( $p < 0.005$ ). For adult steelhead, hook sizes combined, 15% of the fish hooked on barbed flies and 32% of those hooked on barbless flies were lost ( $p < 0.005$ ).

Analyses of the catch-loss rate by hook size showed no significant difference for barbed hooks for either half-pounders or adults (Table 1, G value 0.46, 2df). However, for barbless flies, significantly fewer half-pounders were lost from size 6 hooks (30%) than from size 8 hooks (38%); G value 28.53,  $p < 0.005$ , 2 df. For adult steelhead the catch-loss rate was the same for barbless hooks, regardless of hook size (32% lost).

The actual differences in numbers of fish lost per fishing day may not be important to many Klamath River fly anglers, because many release most or all of the fish caught. The creel limit for steelhead is three fish. If a fly angler hooked 10 half-pounders and 5 adult steelhead during a day's fishing, an average of 2 half-pounders and 1 adult would be lost from barbed hooks and 3 half-pounders and 2 adults lost from barbless hooks.

The use of barbless hook regulations to reduce fish mortality in catch-and-release waters appears to be valid. In addition to possibly reducing the mortality of landed fish through easier hook removal and reduced handling, the regulation may provide additional protection for fish because fewer trout are landed. The regulation should also help to distribute the catch among more anglers.

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### LITERATURE CITED

- Deinstadt, J.M. 1987. California's use of catch-and-release angling regulations on trout waters. Pages 49-67 in R.A. Barnhart and T.D. Roelofs, eds. *Catch-and-release fishing, a decade of experience, a national sport fishing symposium*. Humboldt State Univ., Calif. Coop. Fish. Res. Unit, Arcata, CA.
- Dotson, T. 1982. Mortalities in trout caused by gear type and angler-induced stress. *North Am. J. Fish. Manage.*, 2:60-65.
- Everest, F.H. 1973. Ecology and management of summer steelhead in the Rogue River. Oregon State Game Commission, Fishery Res. Rep. No. 7, Corvallis, OR. 48 p.
- Graff, D.R. 1987. Catch-and-release, where it's hot and where it's not. Pages 5-15 in R.A. Barnhart and T.D. Roelofs, eds. *Catch-and-release fishing, a decade of experience, a national sport fishing symposium*. Humboldt State University, Calif. Coop. Fish. Res. Unit, Arcata, CA.
- Kesner, W.D., and R.A. Barnhart. 1972. Characteristics of the fall-run steelhead trout *Salmo gairdneri gairdneri* of the Klamath River system with emphasis on the half-pounder. *Calif. Fish and Game*, 58(3):204-220.
- Knutson, A.C. Jr. 1987. Comparative catches of ocean sport-caught salmon using barbed and barbless hooks and estimated 1984 San Francisco Bay area charterboat shaker catch. *Calif. Fish and Game*, 73(2):106-116.
- Mongillo, P.E. 1984. A summary of salmonid hooking mortality. Wash. Dept. of Wildlife, Fish Manage. Div., Olympia, WA. Unpublished document. 46 p.
- Sokal, R.R., and F.J. Rohlf. 1981. *Biometry*. W.H. Freeman and Co., San Francisco, CA. 859 p.
- Titus, R.G., and C.D. Vanicek. 1988. Comparative hooking mortality of lure-caught Lahonton cutthroat trout at Heenan Lake, California. *Calif. Fish and Game*, 74(4):218-225.
- Wydoski, R.S. 1977. Relation of hooking mortality and sublethal stress to quality fishery management. Pages 43-87 in R.A. Barnhart and T.D. Roelofs, eds. *Catch-and-release fishing as a management tool, a national sport fishing symposium*. Humboldt State Univ., Calif. Coop. Fish. Res. Unit, Arcata, CA.