

Meeting Demands for Trout...

By Alex Calhoun
Chief, Inland Fisheries Branch

California Department of Fish and Game

Trout are California's most popular sport fish. About 900,000 sport fishermen—over half of the state's anglers—fish for them each year, spending some seven million angler-days. This does not include youngsters under 16, who probably bring the current total to 1,000,000 individuals.

The recreational value of this sport is roughly \$70,000,000 annually, assuming that individuals spend \$10 daily on the average to enjoy it, which probably is a conservative estimate. The total state catch probably exceeds 20,000,000 trout annually.

Most of this angling depends on the department's trout program, one way or another. It is substantial, costing about \$2,200,000 annually (fiscal 1965), divided among several subprograms. Let's take a look at them.

Management

This subprogram is the heart of the whole trout operation. "Fish farming" would be a more descriptive title, as the field biologists doing this work are, in effect, farming the aquatic pastures for maximum crops of trout.

They take advantage of opportunities to grow "wild" trout in lakes and streams—no small job, considering there are 18,000 miles of trout streams and 3,500 trout lakes comprising a quarter of a million surface acres in California.

Little can be done for streams beyond protecting them from damage and establishing the most desirable species, which then produces a crop of wild trout each year. But lakes are another matter.

Each type of lake must be managed differently to get the best results, and

learning how to get the most out of each kind of lake is quite a job.

It is often possible to increase the trout crop from a lake inexpensively by stocking suitable strains of fingerlings at the best time of year. This type of management rates high priority because the resulting trout usually are cheaper than those grown to catchable size in hatcheries. Besides, many anglers prefer them to hatchery fish.

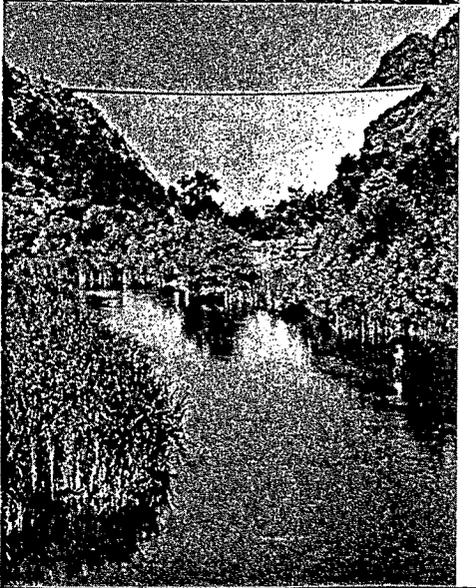
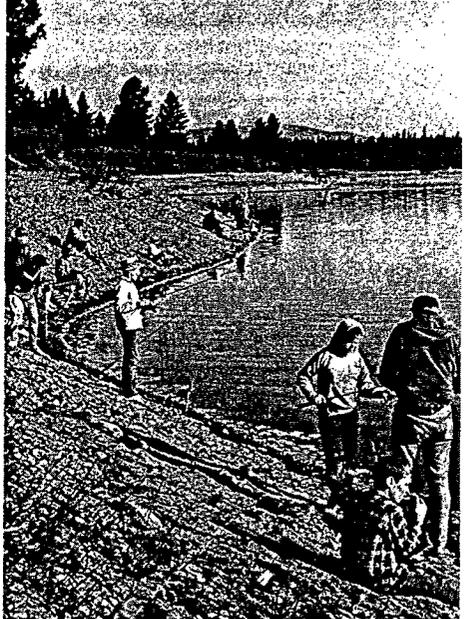
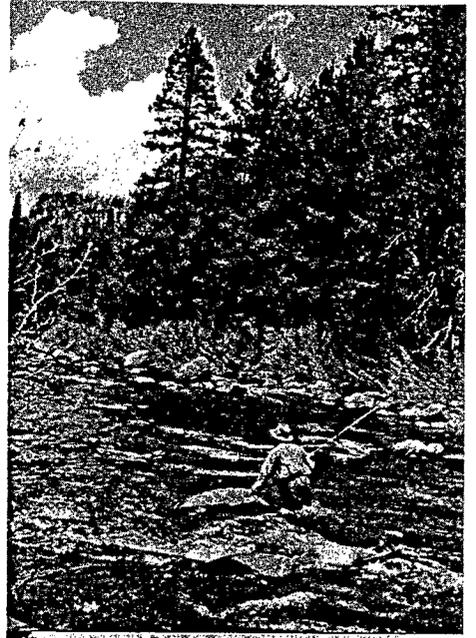
The large number and great diversity of California lakes make this a mammoth task. They range in productivity all the way from two to three pounds per acre for large infertile waters like Tahoe to 100 pounds per acre for rich ones like Frenchman Reservoir.

This trout management subprogram also guides the allotment of 7,000,000 catchable-sized trout stocked in 355 streams totaling 1,279 miles in length, and 196 lakes totaling 30,000 surface acres—a major operation. These expensive fish must be used wisely to provide maximum recreation.

Field biologists in the department's five administrative regions carry on all these functions. They develop management plans for individual lakes and streams and follow the results with surveys and creel checks to determine which methods produce the best results in each situation. They

(Please turn page)

TOP—Flyfishing on the Truckee River, Placer County. DFG photo. CENTER—Boca Reservoir, near Truckee, on 1965 trout opener. Photo by Douglas Galbraith. BOTTOM—Putah Creek, below Monticello Dam, Napa County. Bureau of Reclamation photo. Because of their accessibility and popularity, all three streams are heavily stocked with trout.



MEETING DEMANDS FOR TROUT . . .

(Continued)

then apply what they learn to improve subsequent operations.

The annual crop of "wild" fish now furnishes about half of all the trout fishing in the state. This includes those stocked as fingerlings. The whole management subprogram is costing about \$300,000 a year.

Trout Stocking Study

Field biologists often need more information about stocking trout lakes than they can get from their own occasional observations and periodic creel checks. A two-man research team is therefore gathering basic information for them. Marked fingerlings are stocked in test lakes, where nearly all anglers can be checked, to see how many of the planted fish are caught, and how well they have grown. Different kinds of trout are tried in various habitats, to see which do the best. We sometimes find dramatic differences even among different strains of trout of the same species. The time of year when the fingerlings are stocked, and their size when they go into the lake, can also make a big difference.

Results are already impressive, indicating that trout crops can be increased substantially by stocking small trout of certain strains at the right density and time of year.

The differences in the results from different types of stocking are sometimes astounding. For example, in 17 recent experiments, the cost per pound of trout in the creel for fingerling trout stocked in test reservoirs ranged from \$0.28 to \$67. Once we learn the secret of stocking these waters most efficiently, we should be able

to improve trout fishing substantially, and to save money in the bargain.

However, there is still a lot to learn. Sometimes the results are so unexpected they seem to defy common sense. For example, anglers only caught 2 percent of a group of fingerlings held in the hatchery from July to September and then stocked in Beardsley Reservoir, compared to a 12-percent return from the identical fish stocked in July, when they were only a fourth as large.

Generally speaking, we expect proportionately higher returns from larger fingerlings, but just the opposite occurred in this case.

Significantly, in this test the smaller fingerlings put trout in the creel for 30 cents per pound, compared to a whopping \$4.70 for the larger ones. Clearly, in this business, more knowledge will pay big dividends.

This study also is trying to find ways to increase production by strengthening food chains, through the introduction of new forage organisms, and by further defining the potential role of kokanee salmon. It is cooperating with the University of California at Davis on studies at Castle Lake aimed at increasing trout production from relatively infertile lakes by adding trace elements.

This relatively small operation, currently costing about \$40,000 annually, promises big dividends.

BELOW LEFT—Youth Authority wards under the supervision of the Division of Forestry constructing a rock masonry dam on Black Rock Lake, one of four Amador County lakes improved for fishing by a WCB project. DFG photo by Alex Colhoun. BELOW RIGHT—Laurel Lakes, Mono County, were chemically treated to eliminate all species which might hybridize with golden trout. These waters supply broodstock golden trout eggs for hatchery rearing and planting in high mountain lakes. DFG photo by Phil Pister.



Propagation and Stocking

Back in 1936, with only 300,611 anglers in California, the natural crop of trout from California streams and lakes provided pretty good fishing in many places. This is no longer true except in the more remote waters. The hatchery program has grown over the years to fill the gap, until "catchables" now support roughly half of all trout fishing in the state.

This subprogram supplements angling where the supply of wild trout no longer suffices.

Trout are produced in 13 state hatcheries. Some 7,000,000 "catchables" pour into 500 roadside lakes and streams, usually about once a week during the summer vacation season. An additional 15 million fingerlings are planted in mountain lakes and reservoirs by trucks and airplanes.

Under Fish and Game Commission policy, the cost of catchable and subcatchable trout must not exceed the income from fishing stamp sales to anglers who fished for trout the preceding year.

In fiscal 1965, the whole trout hatchery operation will cost about \$1,850,000. Of this amount, roughly \$1,500,000 (about 80 percent) will go to rear and stock "catchables."

Lake Tahoe Fisheries Improvement

This operation is trying to improve trout angling at Lake Tahoe. It has already demonstrated the futility of stocking trout under eight inches in Tahoe. Various kinds of wild and hatchery trout were tested, including native cutthroat, Kamloops rainbows, and steelhead. Returns to the creel always were negligible. On the other hand, 12-inch fish returned over 60 percent to the creel.

(Continued on page 9)