

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

SOUTH FORK KINGS RIVER
WILD TROUT MANAGEMENT PLAN^{1/}

Inland Fisheries Branch

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TABLE OF CONTENTS

	<u>Page</u>
PREFACE	1
RESOURCE STATUS	2
General Setting	2
Access	3
Fishery Description	3
MANAGEMENT PROGRAM	6
Management Goals	6
Management Direction	6
Fishery Management	7
Environmental Problems and Land Use Conflicts	7
PROGRAM IMPLEMENTATION SCHEDULE	10
REFERENCES	11

PREFACE

In 1966, the Department of Fish and Game in the California Fish and Wildlife Plan recommended expansion of trout management activities to "protect and enhance wild trout fisheries." In response to this recommendation and to concerns expressed by the public, the California Wild Trout Program was established by the California Fish and Game Commission in 1971. A primary purpose of the program is to preserve attractive trout stream fisheries which are naturally sustained by wild strains of trout as opposed to programs which feature the stocking of catchable-sized trout on a put-and-take basis. Emphasis is placed on protecting the aquatic environment to perpetuate natural production and on preserving the natural character of the streamside environment to provide a quality angling experience.

Since 1971, the Fish and Game Commission has designated eight backcountry^{2/} and nine roadside streams as wild trout streams. In addition, Martis Creek Lake was added to the program in 1974. Each wild trout stream is to have its own management plan and regulations which will emphasize individuality and diversity.

Specific management objectives for each stream will use the general objectives of the wild trout program as guidelines. The guidelines are:

1. To maintain wild trout populations at levels necessary to provide satisfactory recreational angling opportunities.
2. To maintain and enhance where possible the habitat required for optimum wild trout production.
3. To preserve the natural character of the streamside environment.

^{2/} Remote with access largely provided by trails.

This plan is an in-house document intended to identify the Department of Fish and Game's activities in the South Fork Kings River drainage, including the management direction to be taken in coordinating with agencies responsible for environmental protection. All land use planning adjacent to the wild trout area is the responsibility of the U. S. Forest Service and the National Park Service. As per the Memorandum of Understanding between the Department and the Forest Service (Title 2600, Forest Service Manual), the Department will identify management direction which is intended to preserve and protect wildlife resources in national forests and the Forest Service will consider the Department's recommendations and concerns along with those of the other users of the forest in their multiple use planning.

RESOURCE STATUS

General Setting

The South Fork Kings River is located in the southern Sierra Nevada, 50 miles east of Fresno. It originates within granitic, glacial-shaped basins situated along the Sierra crest and flows 37 miles before joining the Middle Fork to form the mainstem Kings River (Figure 1). Most of its 458 square mile watershed lies within Kings Canyon National Park.

The designated wild trout area is 11 miles long (Figure 2). It extends from the confluence of the Middle and South Forks of the Kings River to the Sequoia National Forest-Kings Canyon National Park boundary. The Cedar Grove section of the South Fork, from the park boundary upstream 7 miles to Zumwalt Meadows, is a de facto roadside wild trout stream and is included in the current management investigation (see Fishery Management).

The Cedar Grove area of the river is situated in a glaciated U-shaped valley with moraines, meadows and a fairly gentle gradient (Figure 3). The

FIGURE 1 GENERAL LOCATION OF SOUTH FORK KINGS RIVER.

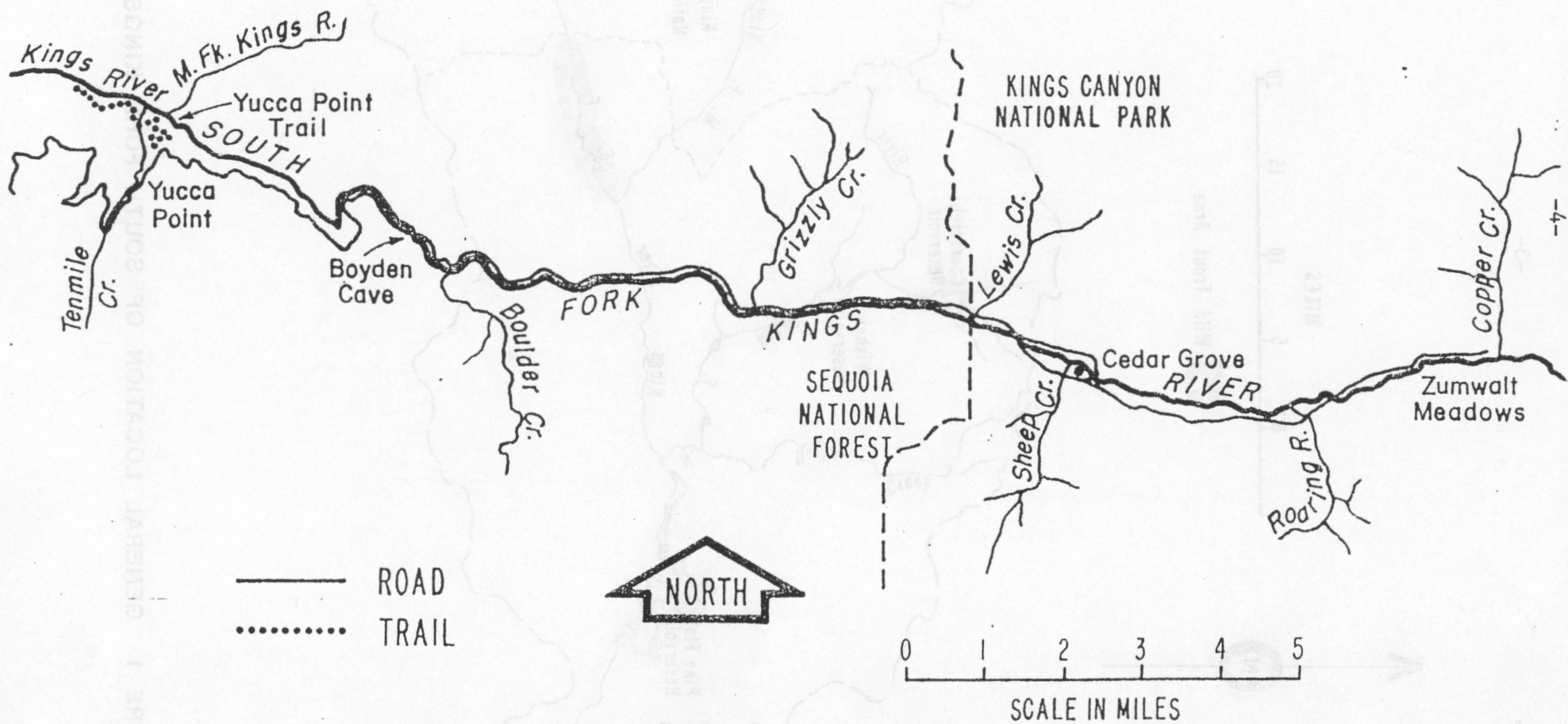


FIGURE 2. South Fork Kings River wild trout management area (below National Park boundary).

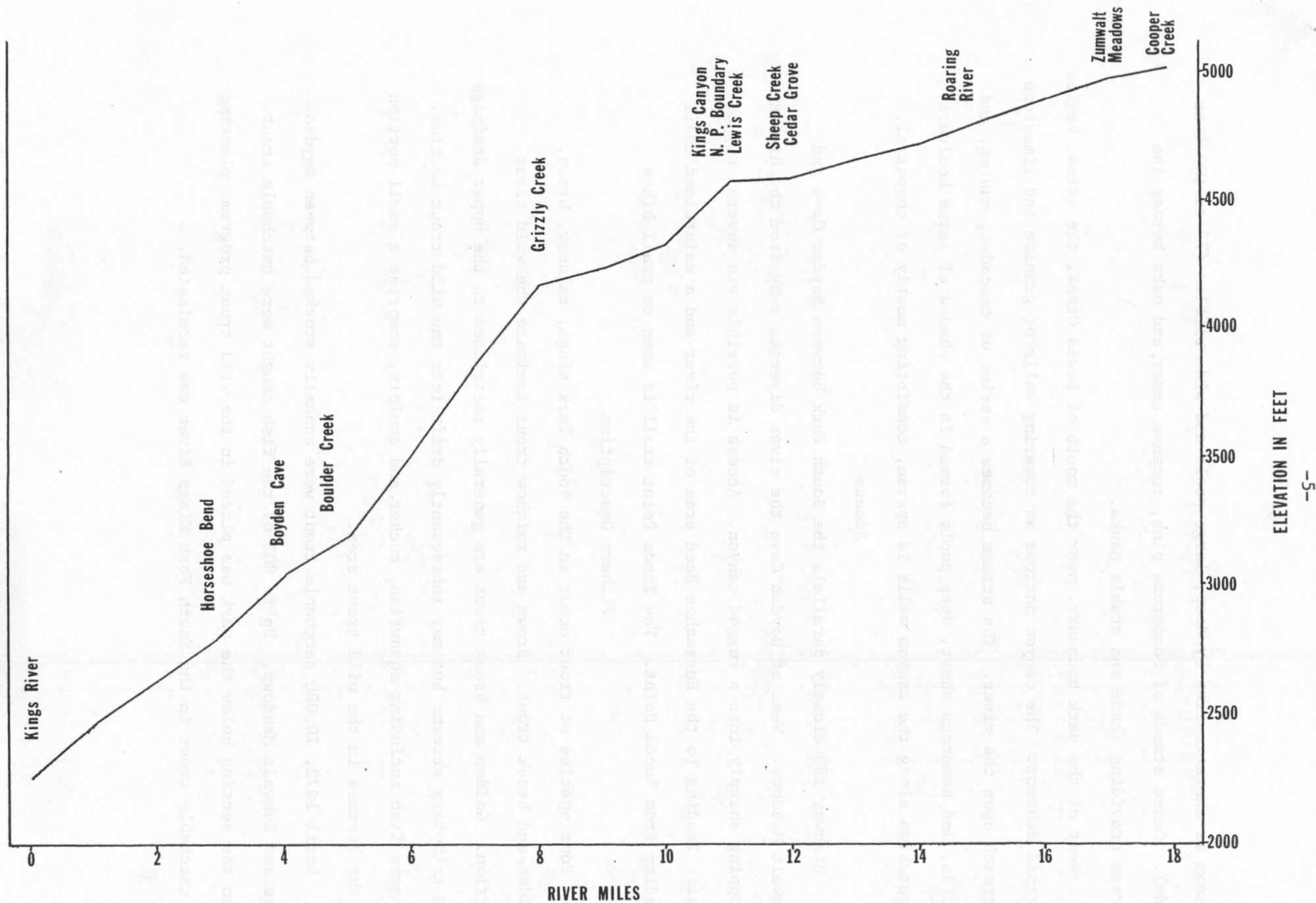


FIGURE 3. LONGITUDINAL STREAM PROFILE - SOUTH FORK KINGS RIVER

stream is characterized by deep, large pools and wide riffles (75 to 100 feet wide). Dense stands of Ponderosa pine, incense cedar, and oaks border the stream providing shade and stable banks.

West of the park boundary, near the mouth of Lewis Creek, the stream begins a rapid descent. The canyon narrows as towering walls of granite and limestone encroach upon the river. The stream becomes a series of cascades, chutes, and rapids, and numerous short, deep pools formed in the shadow of large boulders. Vegetation along the canyon walls is sparse, consisting mostly of chaparral.

Access

Highway 180 closely parallels the South Fork between Boyden Cave and Zumwalt Meadows. West of Boyden Cave the river diverges away from the highway, dropping sharply into a rugged canyon. Access is possible via several rugged trails leading to the Horseshoe Bend area of the river and a maintained trail leading from Yucca Point. The Yucca Point trail is open to trail bikes.

Fishery Description

Four species of trout occur in the South Fork Kings; rainbow, brown, golden, and brook trout. Brown and rainbow trout dominate the wild trout section. Golden and brook trout are generally restricted to the upper drainage and tributary streams but may infrequently drift into the wild trout section. Nongame fish including squawfish, sucker, and sculpin, comprise a small portion of the biomass in the wild trout area.

Until 1972, 10,000 catchable trout were annually stocked between Boyden Cave and Zumwalt Meadows. Up to 80% of the fish caught were catchable trout. When the section below the park was placed in the wild trout program, planting of catchable trout in the South Fork Kings River was terminated.

In 1973, an evaluation of the fishery's response to wild trout management was started. A creel census was conducted each year, through the 1978 season, from Memorial Day weekend through Labor Day weekend. Electrofishing surveys were conducted each fall through 1977. In 1976, the bag limit was reduced from ten to three trout.

Under the ten-fish bag limit regulation (1973-1975), the catch rate for creeled trout averaged 0.29 fish/hr (Table 1) in the upper section and 0.36 fish/hr in the lower section. The average fork length for all trout creeled was 211 mm (8.3 in); rainbow trout averaged 199 mm fork length (7.9 in) and brown trout averaged 223 mm fork length (8.6 in). Use averaged 30,084 angler hours during the 3-month-long study period (Memorial Day weekend through Labor Day weekend).

Under the three-fish bag limit (1976-1978), the catch rate for creeled trout averaged 0.31 fish/hr in the upper section and 0.43 fish/hr in the lower section. The average fork length for all trout creeled was 216 mm (8.5 in); rainbow trout averaged 204 mm fork length (8.0 in) and brown trout averaged 222 mm fork length (8.8 in). Angler use averaged 21,612 angler hours during the 3-month-long study period.

The incidence of catch-and-release angling increased noticeably in the lower section following the bag limit reduction in 1976. The catch rate for released fish went from essentially 0 in 1976 to 0.3 fish/hr in 1978. Catch-and-release angling remained relatively constant in the upper section following the regulation change. The catch rate for released fish went from 0.09 fish/hr in 1976 to 0.14 in 1978. As a result, catch-and-release angling increased the average overall catch rate (fish kept plus fish released) to 0.43 fish/hr in the upper section and 0.61 fish/hr in the lower section.

Table 1. Catch statistics summary for the 10-fish limit period (1973-1975), the three-fish limit period (1976-1978) and the two-fish limit (1981).

	1973-1975 (mean)	1976-1978 (mean)	1981
Catch rate creel trout (fish/hr)			
Upper section	0.29	0.31	0.12
Lower section	0.36	0.43	0.13
Both sections	0.32	0.36	0.12
Catch rate released trout (fish/hr)			
Upper section	<u>1/</u>	0.12	0.24
Lower section	<u>1/</u>	0.18	0.12
Both sections	<u>1/</u>	0.15	0.17
Catch rate overall (fish/hr)			
Upper section	0.29	0.43	0.36
Lower section	0.36	0.61	0.25
Both sections	0.32	0.51	0.29
Species composition of catch (%)			
Rainbow trout	42	45	61
Brown trout	58	55	39
Angler use (angler hours Memorial Day through Labor Day)			
Upper section	20,299	12,773	4,885
Lower section	9,785	8,659	5,744
Both sections	30,085	21,432	10,629
Gear use (% of angler use)			
Bait	77	68	50
Lures	16	21	34
Flies	8	11	16

1/ Number of released fish was not determined during census.

Angling quality dropped slightly in the upper section between 1976 and 1978 (Snider, 1981). The catch/hr went from 0.45 fish/hr in 1976 to 0.31 in 1978, apparently due to a high rate of exploitation (i.e., a continued high rate of catch rate for kept trout) of rainbow trout during the drought years of 1976 and 1977. Conversely, the catch rate in the lower section remained fairly good between 1976 and 1978 due to an increase in catch-and-release angling concurrent with a decrease in harvest.

The overall changes in the fishery, considered to have been solely due to the bag limit reduction, were a sharp decrease in use and a slight increase in catch-and-release angling. Bait anglers dominated the fishery before and after the change (75% mean); overall catch rate for kept fish was essentially the same as was the average length of trout creeled.

In March 1981, the daily bag limit on the South Fork Kings River was reduced to two fish, bait was no longer allowed and only single barbless hooks could be used.

A creel census and use count in 1981 showed that angler use decreased drastically in both sections (Table 1). Catch rate also decreased. Illegal fishing methods (bait angling) still accounted for nearly 50% of the use, and over 50% of the catch (Snider and McKee, 1982). The overall catch rate for released fish increased as did the average size of trout creeled. But if the catch statistics of bait anglers is discounted, the overall quality of angling drops even further below objective quality. The combined catch rate for lures and flies was 0.26 fish/hr. Thus, due to public pressure and the poor quality fishery, the gear restriction was deleted in 1982.

MANAGEMENT PROGRAM

Management Goals

The goals of wild trout management of the South Fork Kings River are:

1. To protect the aquatic environment of the South Fork Kings River and its tributaries.
2. To provide a self-sustaining population of trout which offers the opportunity to: (a) catch age 3 and older trout (8 inches and greater), and (b) catch at the rate of one fish every 2 hours (0.5 trout per hour).
3. To maintain an attractive streamside environment.

South Fork Kings River management goals are based upon the following assumptions:

1. The demand for wild trout angling opportunities in California will continue and perhaps increase in the future.
2. Wild trout anglers will continue to be more interested in the pleasure of fishing and in the challenge of catching older, larger "hard-to-catch" trout in attractive surroundings than in either angling conveniences or the potential for creeling many trout.
3. The Department of Fish and Game will continue to manage the South Fork Kings River for wild trout; hatchery-reared trout will not be planted.

Management Direction

The Department will:

1. Continue to evaluate the wild trout fishery of the South Fork Kings River through periodic, season-long creel censuses. Recommend angling regulation changes, if necessary, to achieve the goals of this plan.
2. Continue to work with Sequoia National Forest and Kings Canyon National Park personnel to assure that aquatic and streamside environments are preserved in their natural character.

3. Work with Caltrans to implement road construction and maintenance activities which will prevent deleterious material from entering the river.
4. Evaluate the impact of future water developments within the drainage which could affect the South Fork's wild trout fishery. Oppose any development which cannot be fully compensated for and which would result in a negative impact on the fishery.

Fishery Management

A creel census program similar to the one conducted in 1981 (Memorial Day weekend through Labor Day weekend) will be run in 1983 to evaluate the 1982 regulation changes. The census may be repeated in 1984 if necessary. Regulation changes may be proposed pending the results of the evaluation.

The only concern regarding the present status of the fishery is the dominance of introduced brown trout over the native rainbow trout. Data suggest that the heavy angling use in the roadside areas favors brown trout dominance. The Boyden Cave and especially the Yucca Point sampling stations receive less pressure than the other stations and are dominated by rainbow trout. The overall quality of the fishery, however, does not appear to be negatively affected by the brown trout dominance.

Environmental Problems and Land Use Conflicts

Situated within Kings Canyon National Park, most of the South Fork Kings River drainage is protected from man-made alterations and environmental impacts. The portion of the drainage situated in Sequoia National Forest, however, is subject to a variety of land uses.

Sequoia National Forest is now in the process of developing a total forest plan which would include land use allocation in the South Fork Kings River drainage. It is to be completed in 1983. The north bank of the South Fork is

in the proposed Monarch Wilderness. Wilderness designation would preserve its natural integrity, protect water quality and be completely compatible with wild trout management goals.

The south bank of the river possesses a marketable timber resource within the view zone of the South Fork. An undisturbed corridor, extending along the south side from the ridge crest to the canyon floor (Alternative A or B of the now defunct Hume Planning Unit draft management proposals), would be most compatible with wild trout management goals (Figure 4).

Recreation use is heavy in the Cedar Grove area of Kings Canyon National Park. Associated with such heavy use is the potential for water pollution and streambank damage. A development concept plan prepared by the National Park Service to guide future management and development of Cedar Grove proposes only modest additional development and should not generate a significant impact on fishery resources of the South Fork. The plan recognizes the problem of damage to streambanks from excessive foot traffic and proposes to locate trails and picnic areas so as to minimize such damage.

No additional recreation development is proposed outside the park.

Water Development

Three hydroelectric power development sites have been identified within the South Fork drainage. The Cedar Grove and Paradise Valley sites were abandoned in 1965 when expansion of Kings Canyon National Park placed the two sites within the Park boundary. Such development is prohibited within a national park. The Junction Reservoir site, situated near the confluence of the Middle and South Forks of the Kings River, is still viable (Figure 5). Development of the Junction site would result in the inundation of several miles of the South Fork and potentially allow nongame fish proliferation above the reservoir to the detriment of the river's wild trout resource.

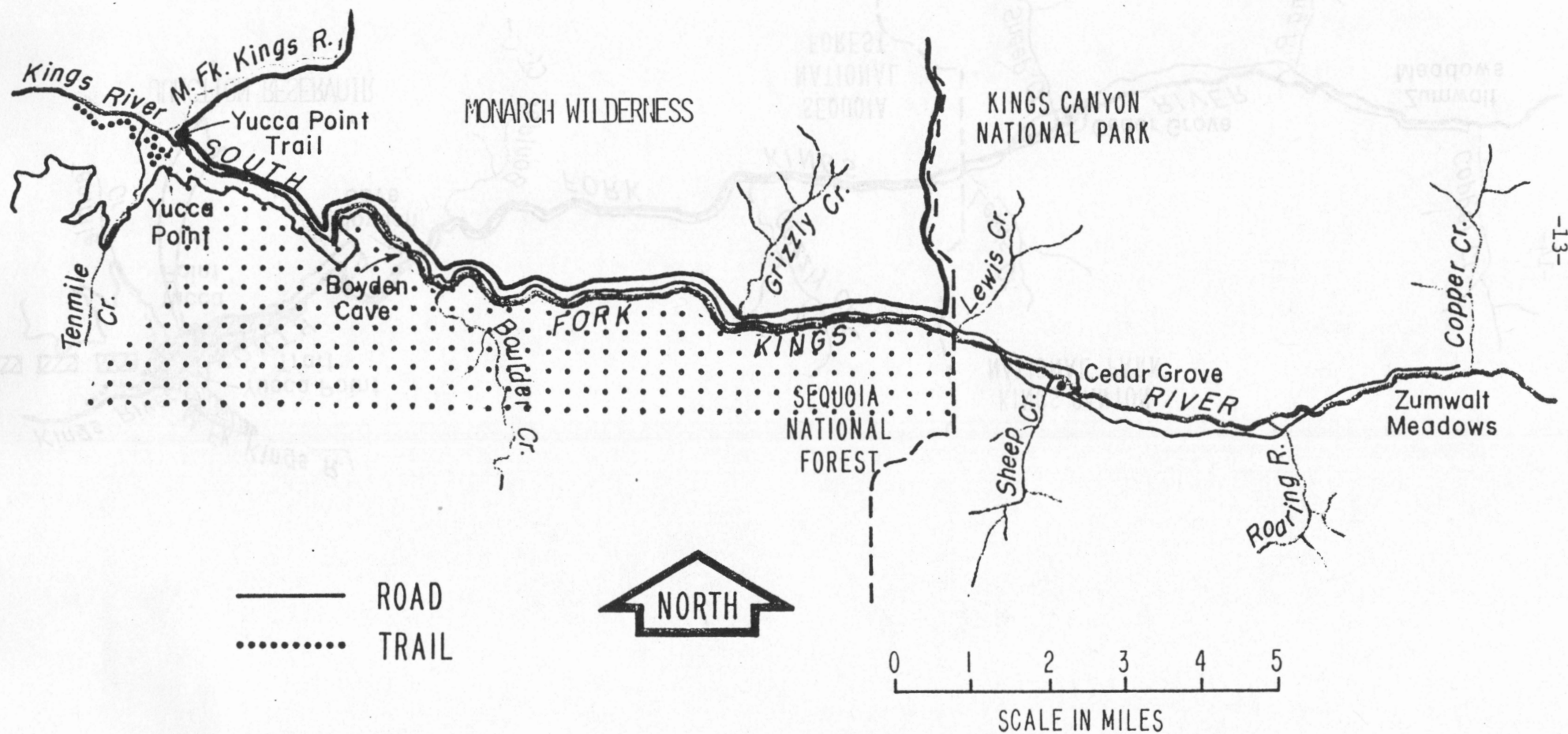


FIGURE 4. Location of the proposed south side management corridor.

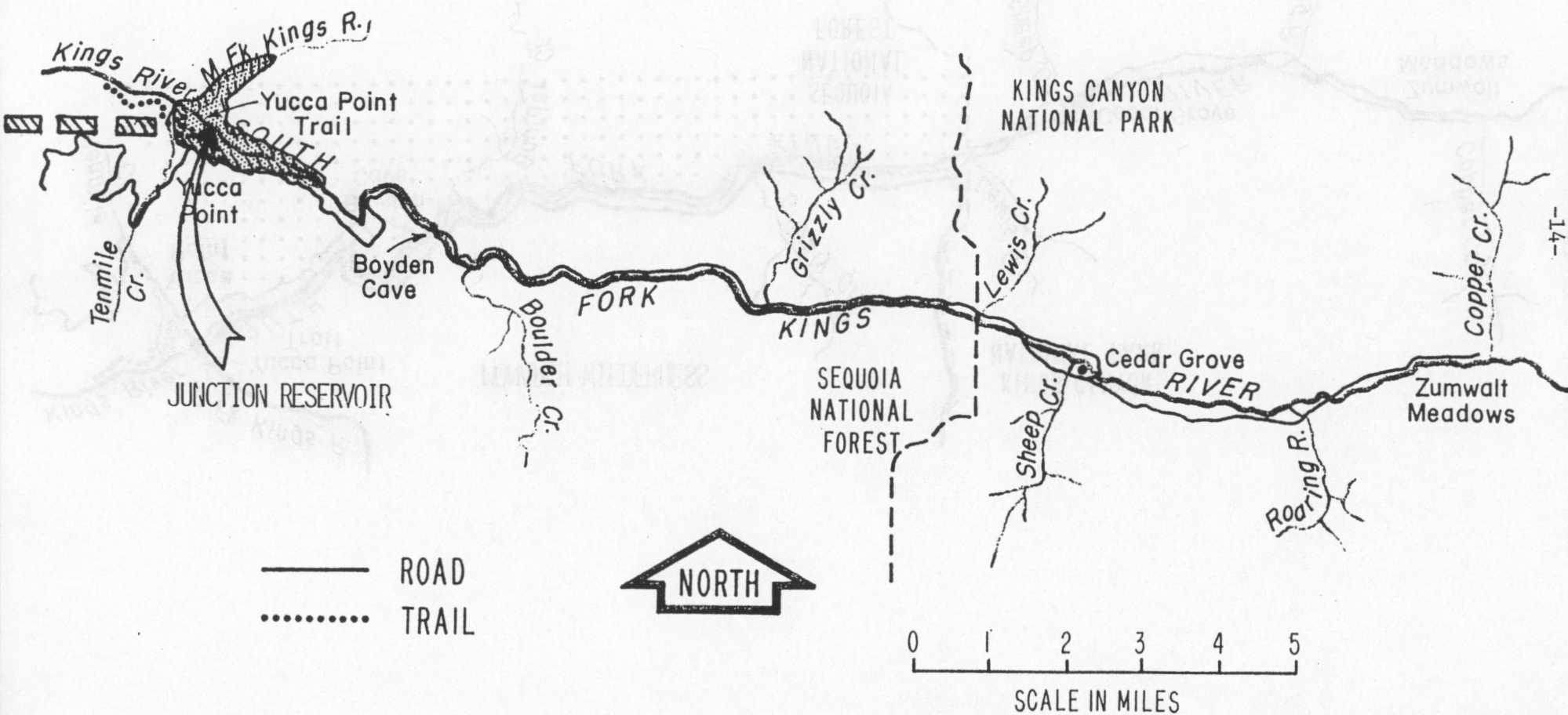


FIGURE 5. Location of possible water development facilities within the South Fork Kings River drainage.

Another water development project which could adversely affect the South Fork's wild trout resource is the Rodgers Crossing project proposed for the mainstem Kings River. This project could also result in nongame fish proliferation in the South Fork. Rodgers Crossing Reservoir would inundate 11 miles of the 17-mile-long wild trout management area of the Kings River as well as valuable winter deer range. As such, the project is opposed by the Department of Fish and Game.

At present, the Rodgers Crossing project is being evaluated by its proponents.

Highway Maintenance

The highway along the river is protected from washout by stone riprap consolidated with cement. Maintenance involving this type of construction could result in fresh cement entering the stream. The threat of water quality degradation from oil and other pollutants reaching the water from wrecks, highway construction and repair, and various other activities also exists.

PROGRAM IMPLEMENTATION SCHEDULE

<u>Task</u>	<u>Department Section Responsible</u>	<u>Implementation Date</u>
A. Fishery Management		
1. Evaluate the two fish bag limit for the South Fork Kings wild trout fishery.	R-4, IFB	May 1983
B. Land Use Planning		
1. Coordinate with Sequoia National Forest in developing a management program which will protect aquatic habitat in the drainage and preserve the natural character of the streamside environment.	R-4	August 1982
2. Coordinate with Kings Canyon National Park to maintain the natural integrity of the aquatic habitat of the South Fork.	R-4	August 1982
3. Coordinate with Caltrans to develop maintenance activities which will protect water quality in the South Fork.	R-4	August 1982

REFERENCES

- Snider, W. M. 1981. Wild trout management of a west slope Sierra Nevada stream. Calif. Dept. Fish and Game, Inland Fish. Admin. Rep. No. 81-3.
- Snider, W. M. and D. C. McKee. 1982. The response of a bait angler dominated trout fishery to catch-and-release oriented angling regulations. Calif. Dept. Fish and Game, Inland Fish. Admin. Rep. (draft).