

State of California  
The Resources Agency  
DEPARTMENT OF FISH AND GAME

BEAR CREEK (SAN BERNARDINO COUNTY)  
WILD TROUT MANAGEMENT PLAN

By

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CALIFORNIA WILD TROUT MANAGEMENT PROGRAM  
BEAR CREEK MANAGEMENT PLAN

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ABSTRACT

This plan describes Bear Creek, San Bernardino County, and the status of its wild trout fishery. Trout population data collected during electrofishing surveys in 1978, 1986, and 1987 are presented. In 1987, estimates of the number of trout eight inches or more in length from four sample sections averaged 742 per mile. Based on recent surveys, Bear Creek offered more opportunities to catch eight to ten inch or larger trout than five other productive southern California streams. Management goals for Bear Creek are stated together with Department programs and policies to maintain and improve (1) stream habitat, (2) trout populations, and (3) the streamside environment. A schedule for implementing the programs considered necessary to manage the resource is included in the plan.

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- 1/ This plan was prepared as part of California Dingell-Johnson Project California F-10-R, "California Wild Trout Stream and Lake Survey", supported by Federal Aid in Sport Fish Restoration Act funds.
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## PREFACE

In 1965, the California Department of Fish and Game recommended expansion of trout management activities to "protect and enhance wild trout fisheries" (CDFG 1966). In response to this recommendation, and to address public concerns, the California Wild Trout Program was established by the California Fish and Game Commission in 1971. The primary purpose of the program is to preserve fisheries which are naturally sustained by wild trout strains rather than artificially maintained by put-and-take hatchery trout. 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. In addition, appropriate angling regulations are established to protect and manage the wild trout resource and fishery.

Since 1971, the Fish and Game Commission has designated 13 backcountry <sup>1/</sup> and 13 roadside streams as wild trout streams (Martis Creek Lake, the only lake in the program, was added in 1974). Each wild trout stream is to have its own management plan and angling regulations which will emphasize individuality and diversity. Bear Creek, San Bernardino County, has been classified as a candidate wild trout stream and is being managed in anticipation of official designation.

Management goals for each stream will use the general goals of the wild trout program as guidelines. These goals 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.

This plan was prepared to identify the Department of Fish and Game's current and proposed activities on Bear Creek, and to define the management direction to be taken in coordinating with agencies responsible for environmental protection. Along most of Bear Creek, land use planning is the responsibility of the U. S. Forest Service. Pursuant to the Memorandum of Understanding between the Department and the Forest Service (Title 1600, Forest Service Manual), the Department will identify management direction which is intended to preserve and protect fish and wildlife resources in National Forests and the Forest Service will recognize the Department's responsibilities and concerns along with those of the other users of the forest in their multiple use planning.

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<sup>1/</sup> Remote with access largely provided by trails.

## RESOURCE STATUS

### General Setting

Bear Creek is located in the San Bernardino Mountains of southern California about 15 miles northeast of the Redlands-San Bernardino area (Figure 1). The stream now originates from Bear Valley Dam at an elevation of approximately 6,660 feet. It flows 8.75 miles in a southerly direction through a steep, narrow canyon and, in its lower portion, down a broad sandy wash to its confluence with the Santa Ana River at an elevation of about 3,460 feet (Figures 2, 3, and 4). With a watershed of about 9,000 acres, the stream is considered a major tributary to the Santa Ana River.

Historically, Bear Creek originated in Bear Valley. In 1884, a dam was constructed at the west end of this valley to retain water for downstream irrigation use in the Redlands area. A second dam was constructed in 1911 slightly to the west of the original dam. This dam, known as the Bear Valley Dam, enlarged the reservoir to a capacity of approximately 72,000 acre feet. From 1911 until 1977 the Bear Valley Mutual Water Company owned and operated Bear Valley Dam. In 1977, the dam and later the lake bed were acquired by the Big Bear Municipal Water District. The purpose of this acquisition was to allow the community of Big Bear Lake to gain control of the reservoir and maintain the more stable reservoir levels needed to enhance the lake's recreational values. The former owners of the dam, stockholders in the Bear Valley Municipal Water Company, retained the right to 65,000 acre feet of lake water per decade (annual average of 6,500 acre feet) to be released downstream upon demand (The Planning Consortium, 1987).

Bear Creek receives no regular established flow releases from Bear Valley Dam. There is leakage and seepage through and around the dam which was determined between September 1986 and August 1987 to average about 0.1 cubic feet per second (cfs) immediately downstream from the dam. This average flow was established during a period of below normal precipitation and may be less than the long-term mean. While this creates a small flow below the dam, that flow is inadequate to maintain trout in the uppermost reaches of stream.

There are no gauging stations on Bear Creek. Available observations and measurements show the flow gradually increases downstream. East and West Cub Creek together contribute about 1/3 cfs (Figure 5). In the Glory Ridge Trail area, 2.5 miles downstream from the dam, Bear Creek flows at about 1 1/2 cfs. The flow in Siberia Creek was once measured at about 6 1/2 cfs, but it is not known if that flow is typical. The North Fork of Bear Creek probably adds about 2 cfs. While the base flows in the upper portion of Bear Creek are quite small for a quality trout stream, observations indicate the configuration of the stream in the Glory Ridge area (numerous small to medium size pools connected by cascades and short riffles) is such that even the low flows can sustain viable trout habitat.



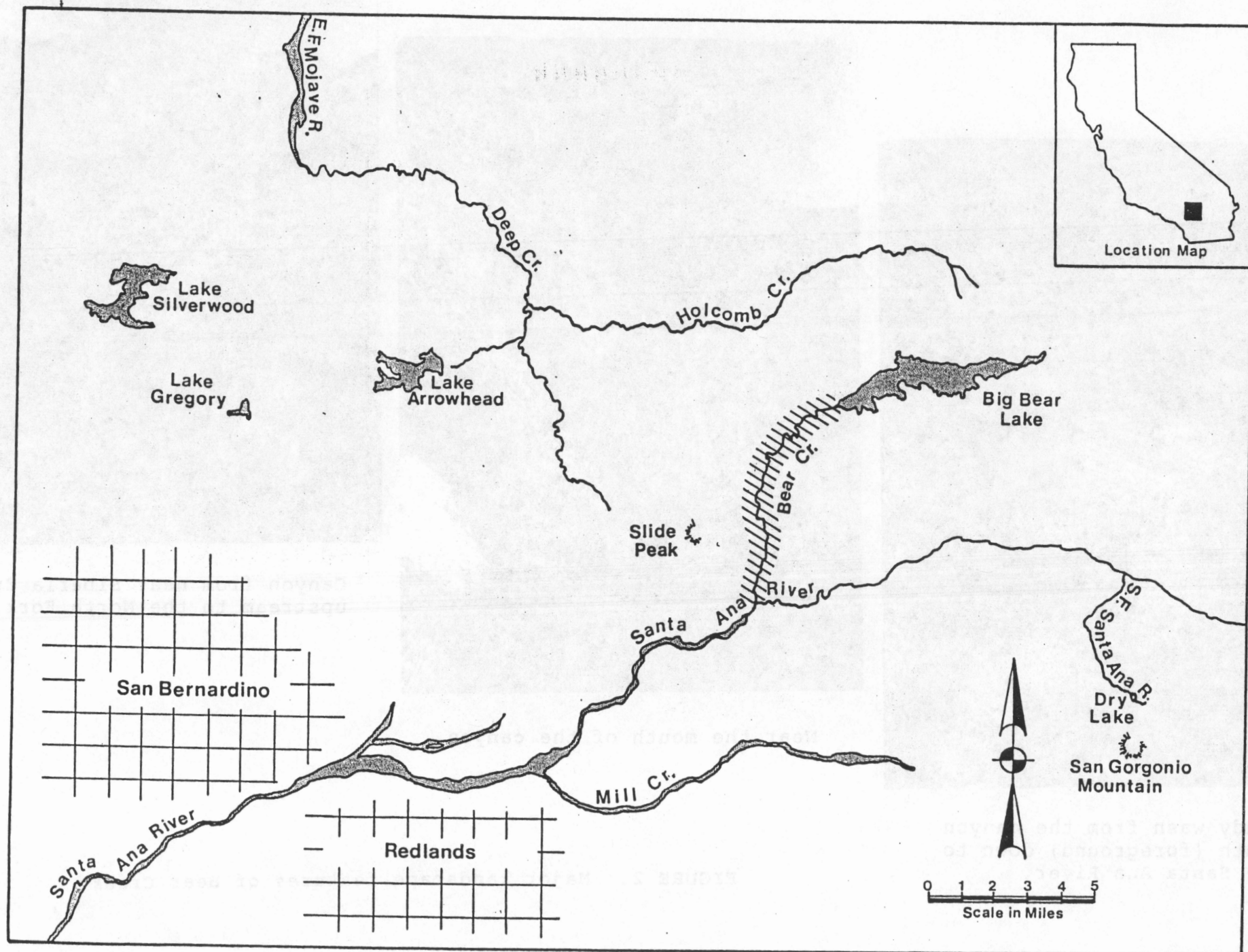


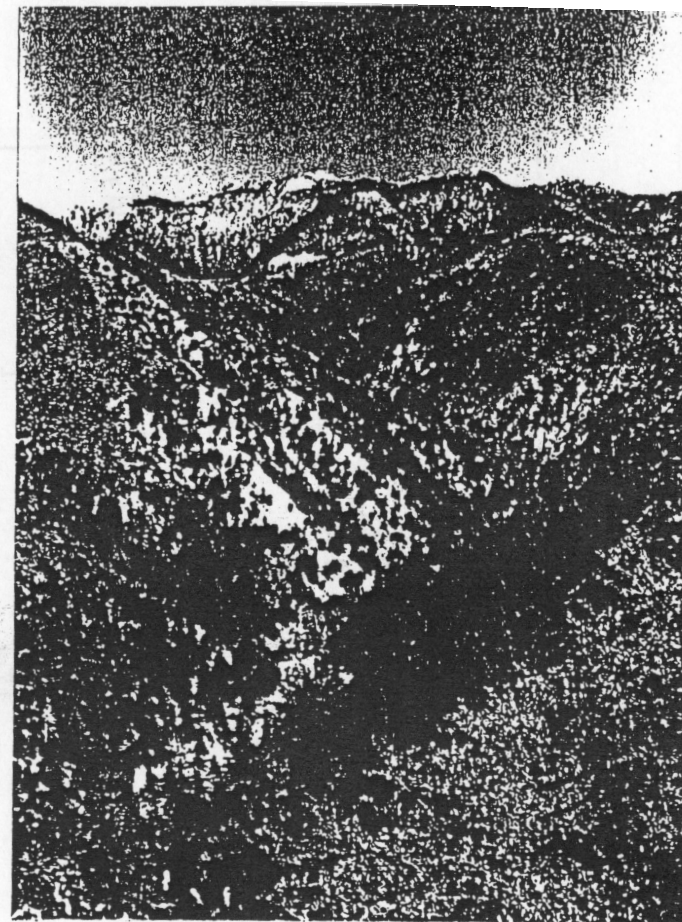
FIGURE 1. Location of Bear Creek.



Sandy wash from the canyon mouth (foreground) down to the Santa Ana River.



Near the mouth of the canyon.



Canyon from near Siberia Creek upstream to the North Fork.

FIGURE 2. Major landscape features of Bear Creek.

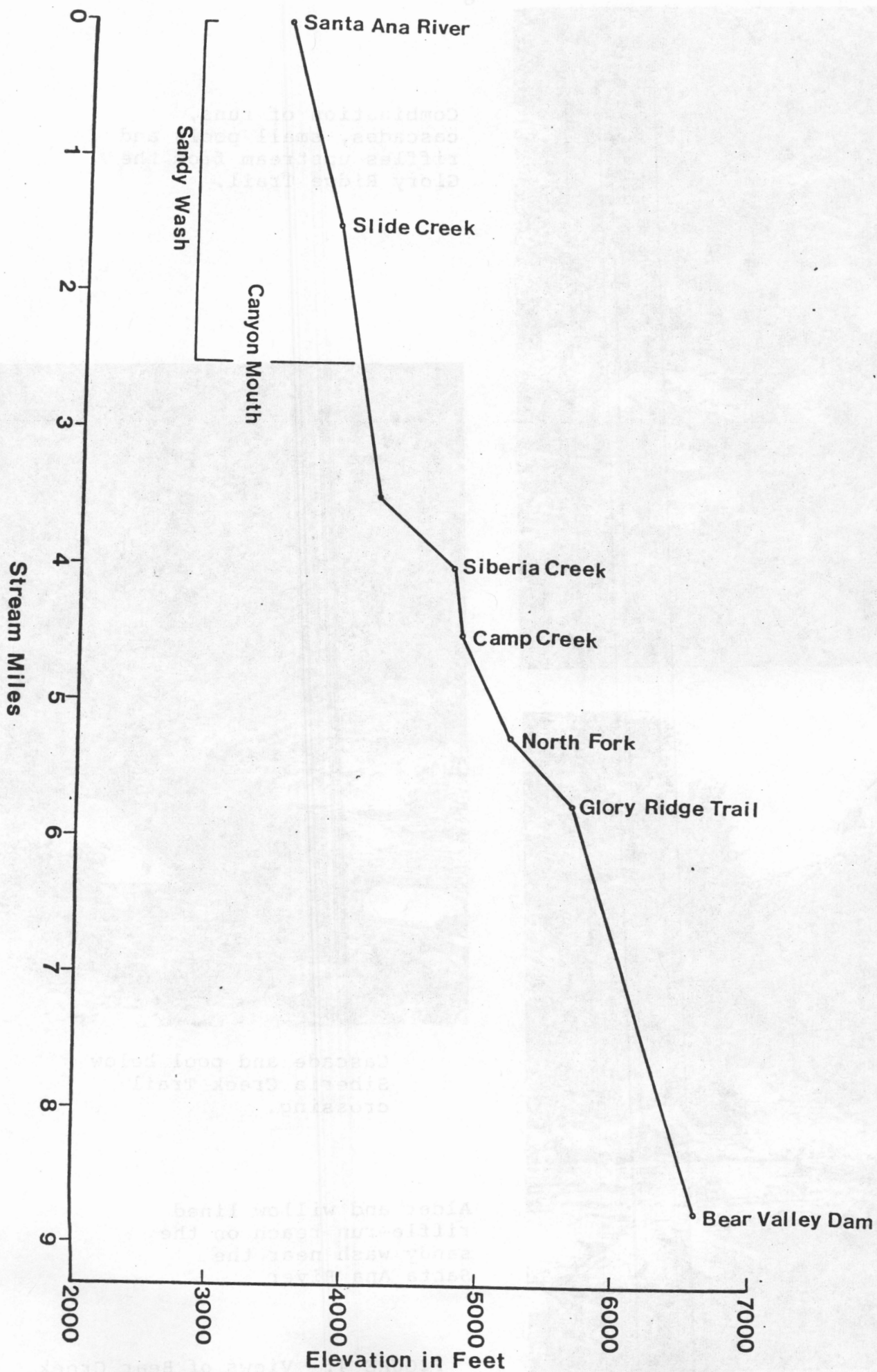
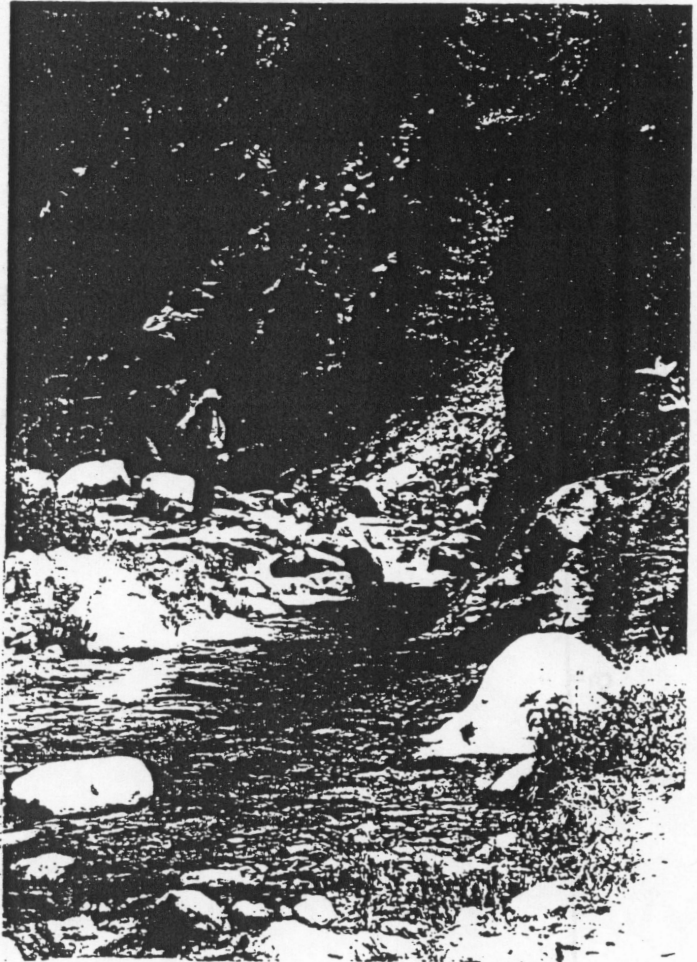


FIGURE 3. Longitudinal stream profile of Bear Creek.



Combination of runs, cascades, small pools and riffles upstream from the Glory Ridge Trail.



Cascade and pool below  
Siberia Creek Trail  
crossing.

Alder and willow lined  
riffle-run reach on the  
sandy wash near the  
Santa Ana River

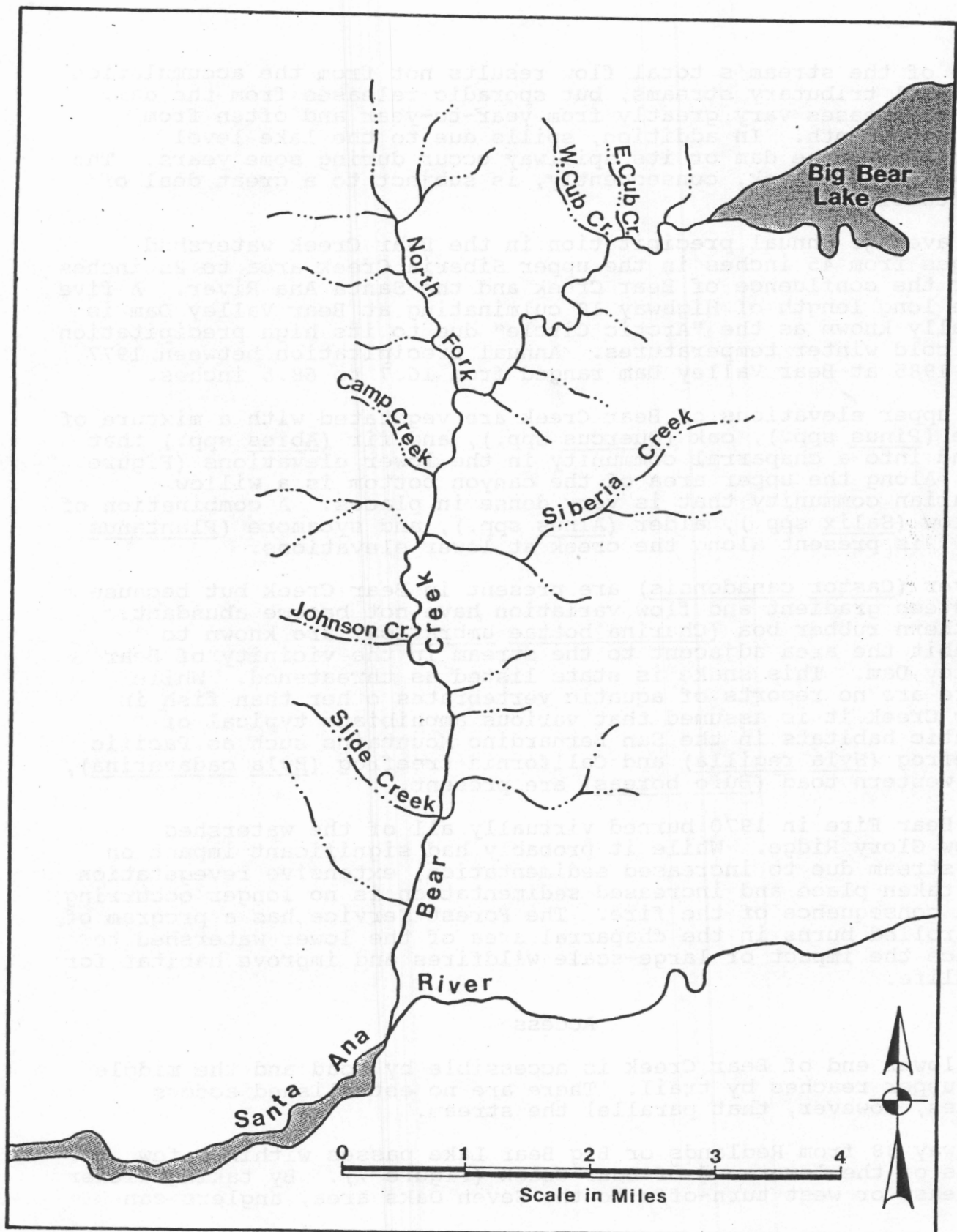


FIGURE 5. Tributary streams to Bear Creek.

Much of the stream's total flow results not from the accumulation of small tributary streams, but sporadic releases from the dam. These releases vary greatly from year-to-year and often from month-to-month. In addition, spills due to the lake level overtopping the dam or its spillway occur during some years. The flow in Bear Creek, consequently, is subject to a great deal of fluctuation.

The average annual precipitation in the Bear Creek watershed ranges from 45 inches in the upper Siberia Creek area to 25 inches near the confluence of Bear Creek and the Santa Ana River. A five mile long length of Highway 18 culminating at Bear Valley Dam is locally known as the "Arctic Circle" due to its high precipitation and cold winter temperatures. Annual precipitation between 1977 and 1985 at Bear Valley Dam ranged from 16.7 to 68.5 inches.

The upper elevations of Bear Creek are vegetated with a mixture of pine (Pinus spp.), oak (Quercus spp.), and fir (Abies spp.) that blend into a chaparral community in the lower elevations (Figure 6). Along the upper area of the canyon bottom is a willow riparian community that is very dense in places. A combination of willow (Salix spp.), alder (Alnus spp.), and sycamore (Plantanus spp.) is present along the creek at lower elevations.

Beaver (Castor canadensis) are present in Bear Creek but because of steep gradient and flow variation have not become abundant. Southern rubber boa (Charina bottae umbratica) are known to inhabit the area adjacent to the stream in the vicinity of Bear Valley Dam. This snake is state listed as threatened. While there are no reports of aquatic vertebrates other than fish in Bear Creek it is assumed that various amphibians typical of aquatic habitats in the San Bernardino Mountains such as Pacific treefrog (Hyla regilla) and California treefrog (Hyla cadaverina), and western toad (Bufo boreas) are present.

The Bear Fire in 1970 burned virtually all of the watershed below Glory Ridge. While it probably had significant impact on the stream due to increased sedimentation, extensive revegetation has taken place and increased sedimentation is no longer occurring as a consequence of the fire. The Forest Service has a program of controlled burns in the chaparral area of the lower watershed to reduce the impact of large-scale wildfires and improve habitat for wildlife.

#### Access

The lower end of Bear Creek is accessible by road and the middle and upper reaches by trail. There are no established access routes, however, that parallel the stream.

Highway 38 from Redlands or Big Bear Lake passes within a few miles of the lower end of Bear Creek (Figure 7). By taking either the east or west turn-offs to the Seven Oaks area, anglers can



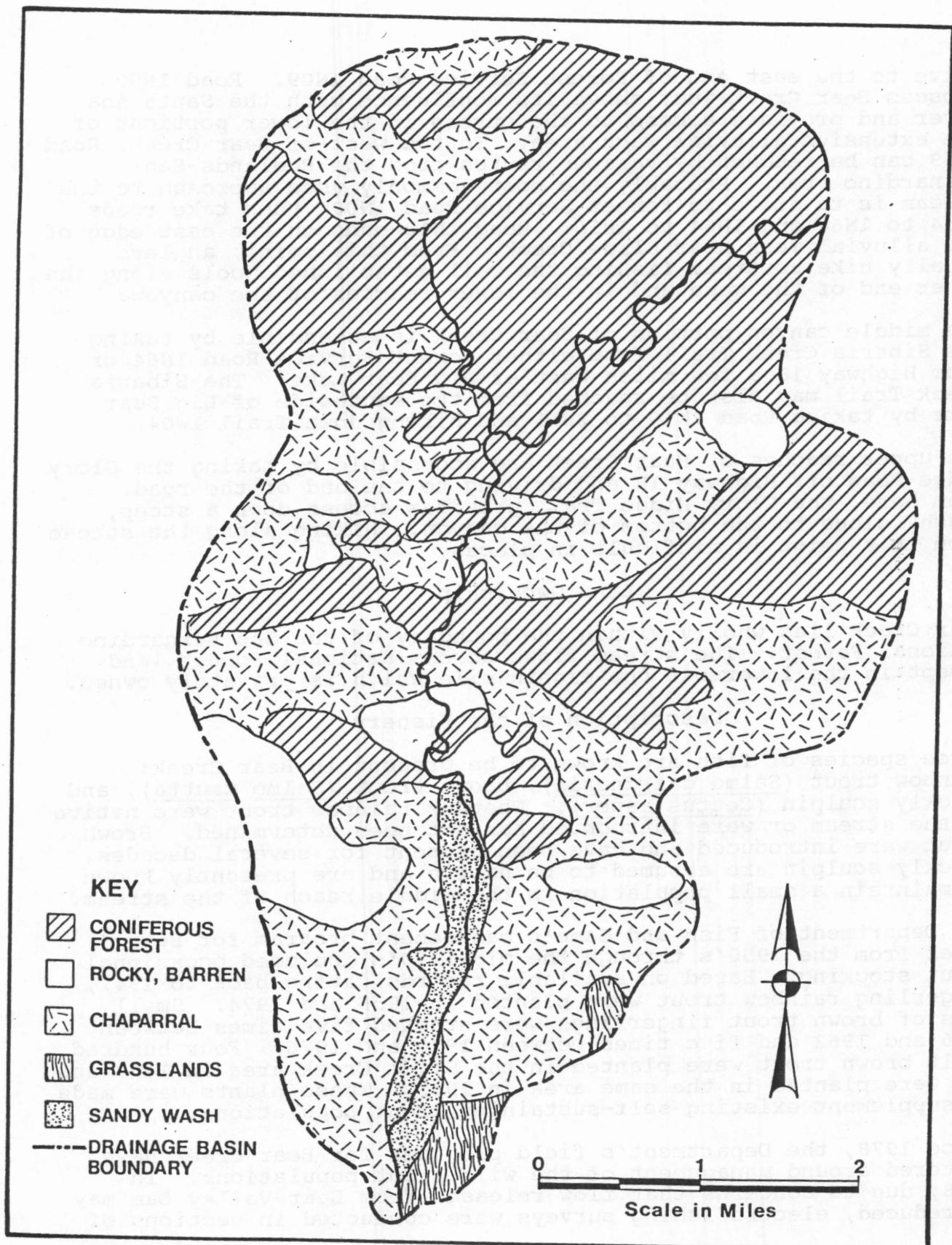


FIGURE 6. Distribution of vegetation in the Bear Creek drainage.

drive to the east end of Forest Service Road 1N09. Road 1N09 crosses Bear Creek just above its confluence with the Santa Ana River and provides access to the stream in the lower portions of the extensive alluvial wash area. To the west of Bear Creek, Road 1N09 can be reached by various routes from the Redlands-San Bernardino area. Probably the most commonly used approach to the stream is to drive to Forest Service Road 1N09, then take roads 1N54 to 1N64 and 1N64 to 1N10. Road 1N10 ends on the east edge of the alluvial wash near Slide Creek. From this point, anglers usually hike upstream fishing the well established pools along the upper end of the wash and in the lower reaches of the canyon.

The middle canyon portion of Bear Creek is accessible by taking the Siberia Creek Trail from either Forest Service Road 1N64 or from Highway 18 a few miles west of Big Bear Lake. The Siberia Creek Trail may also be reached from the southside of Big Bear Lake by taking Road 2N10 to 2N11 and hiking down Trail 1W04.

The upper reaches of Bear Creek are accessible by taking the Glory Ridge Road off Highway 18 and driving to the end of the road. From here, the Glory Ridge Trail provides access down a steep, brushy slope to the bottom of the canyon. Hiking along the stream from this point is difficult in places.

#### Land Ownership

Bear Creek lies wholly within the boundary of the San Bernardino National Forest. The stream flows across National Forest land except in the lowermost one-eighth mile which is privately owned.

#### Description of the Fishery

Three species of fish are known to be present in Bear Creek: rainbow trout (Salmo gairdnerii), brown trout (Salmo trutta), and prickly sculpin (Cottus asper). Whether rainbow trout were native to the stream or were introduced has not been determined. Brown trout were introduced and have been present for several decades. Prickly sculpin are assumed to be native and are presently known to maintain a small population in the middle reach of the stream.

The Department of Fish and Game's management program for Bear Creek from the 1950's through the mid-1970's included occasional trout stocking. Based on available records dating back to 1947, fingerling rainbow trout were planted in 1956 and 1974. Small lots of brown trout fingerlings were stocked five times between 1956 and 1962 and five times between 1970 and 1976. Four hundred adult brown trout were planted in the Slide Creek area in 1959 and 300 were planted in the same area in 1962. These plants were made to supplement existing self-sustaining trout populations.

Since 1978, the Department's field programs for Bear Creek have centered around management of the wild trout populations. In 1978, due to concerns that flow releases from Bear Valley Dam may be reduced, electrofishing surveys were conducted in sections of

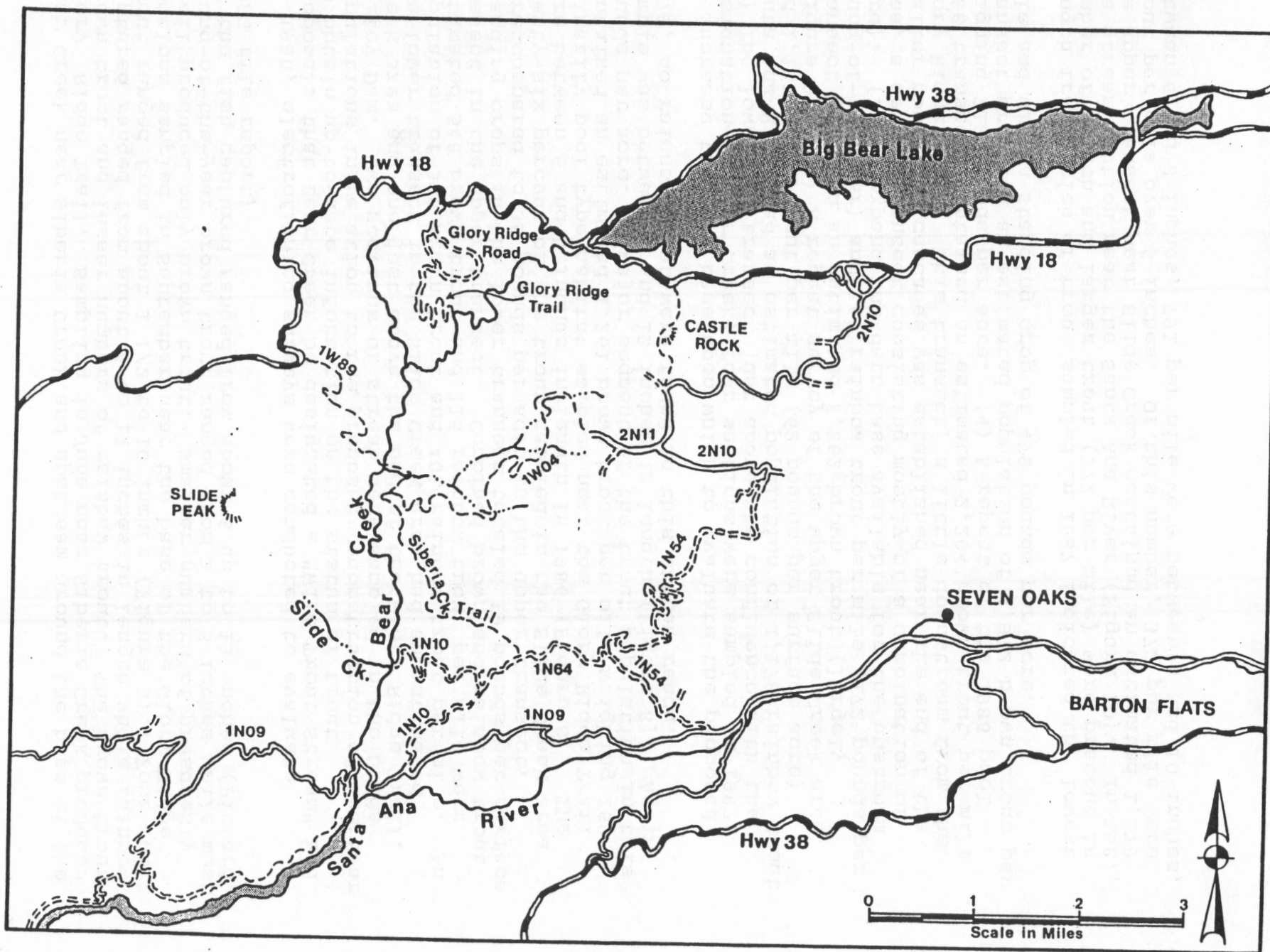


FIGURE 7. Road and trail access to Bear Creek.



Bear Creek near Siberia Creek and upstream around the base of the Glory Ridge Trail. Sampling in June near Siberia Creek produced brown trout and lesser numbers of rainbow trout. The brown trout captured ranged from about 4 to 12 inches in length while rainbow trout ranged from about 1 1/2 to 10 inches (Figure 8). Four short sections sampled in September near the base of the Glory Ridge Trail produced only brown trout. Smaller numbers of presumably young-of-the-year brown trout ranged from 3 to 5 inches while most of the fish captured ranged from about 6 up to 13 inches (Pickard, CDFG file report).

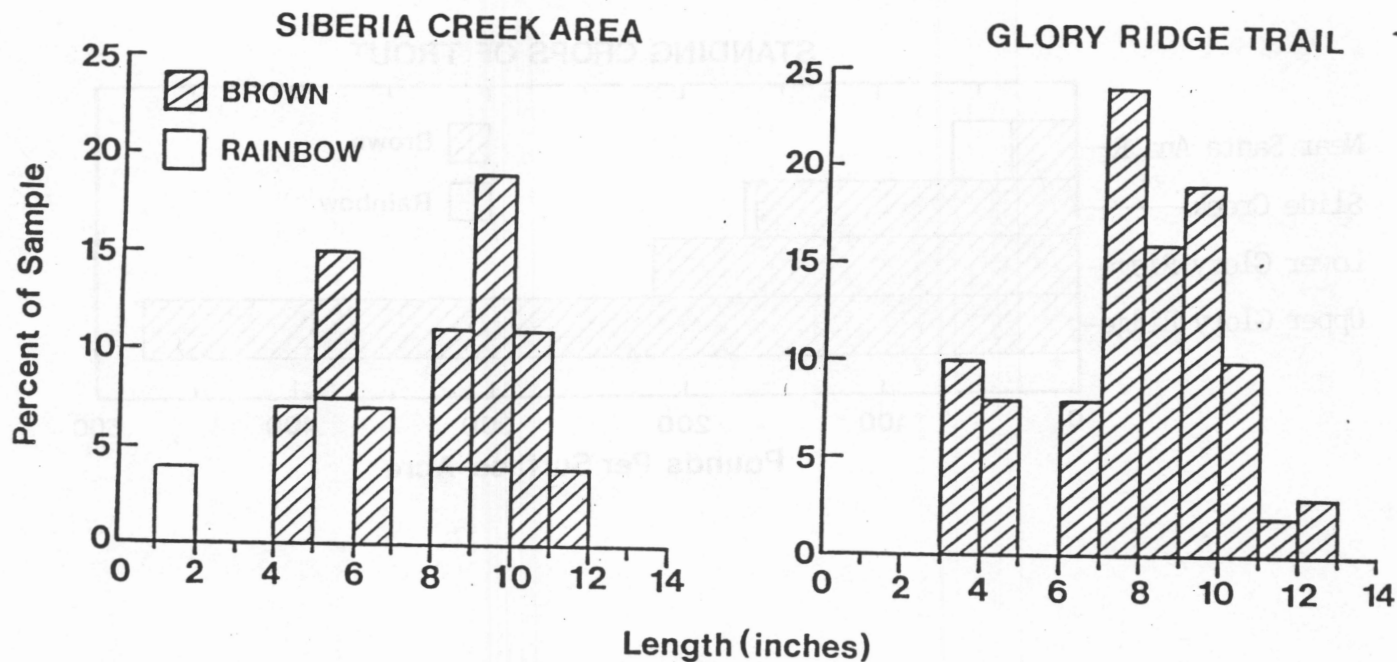
In 1986, electrofishing surveys were conducted to evaluate proposals that Bear Creek be designated a "Wild Trout Stream" and to obtain up-to-date information on the status of trout populations in relation to the proposed reconstruction of the Bear Valley Dam. Two sections of stream were sampled in the Slide Creek area and one just above the end of the Glory Ridge Trail. The lower transect in the Slide Creek area had an estimated population of 380 brown trout and 401 rainbow trout per mile. An estimated 548 brown trout and 115 rainbow trout per mile were present in the upper transect. Combined brown and rainbow trout standing crops in the lower transect totaled 19 pounds per surface acre compared to 35 pounds per acre in the upper transect. Twenty-six percent of the trout sampled in the Slide Creek area were between 6 and 8 inches in length in 1986 (Figure 8). The primarily pool type habitat sampled near the Glory Ridge Trail contained an estimated 1,261 brown trout per mile weighing 268 pounds per acre. A major segment of the trout population in this sample was between 9 and 12 inches in length (Figure 8). As in 1978, no rainbow trout were found in this stream reach.

To increase the data base upon which to evaluate the proposed designation of Bear Creek, four sections were sampled in 1987: (1) The lowermost transect just above the confluence with the Santa Ana River had an estimated population of 1,178 rainbow trout and 1,110 brown trout per mile (62 pounds per surface acre) (Figure 9). (2) A repeat survey of the upper Slide Creek area transect produced an estimated 8,862 brown trout (largely young-of-the-year) and 163 rainbow trout per mile (172 pounds per acre). (3) To expand the data base available for the upstream area, a second transect consisting mostly of a combination of smaller pools and cascades was established near the end of the Glory Ridge Trail. This transect, a little downstream from the 1986 transect, contained an estimated 2,204 brown trout per mile weighing 218 pounds per acre. (4) A repeat of the 1986 pool transect produced an estimated population of 4,972 brown trout per mile and with a standing crop of 479 pounds per acre.

Length frequencies of trout sampled in 1987 indicated the lowest number of 6 inch and larger trout (377 per mile) were present in the stream section near the Santa Ana River (Figure 10). In 1987, the upper transect near Slide Creek contained an estimated 1,279 trout per mile over 6 inches. Of this number, 372 per mile were between 6 and 8 inches, 791 per mile were between 8 and 10 inches,



## 1978 SURVEY



## 1986 SURVEY

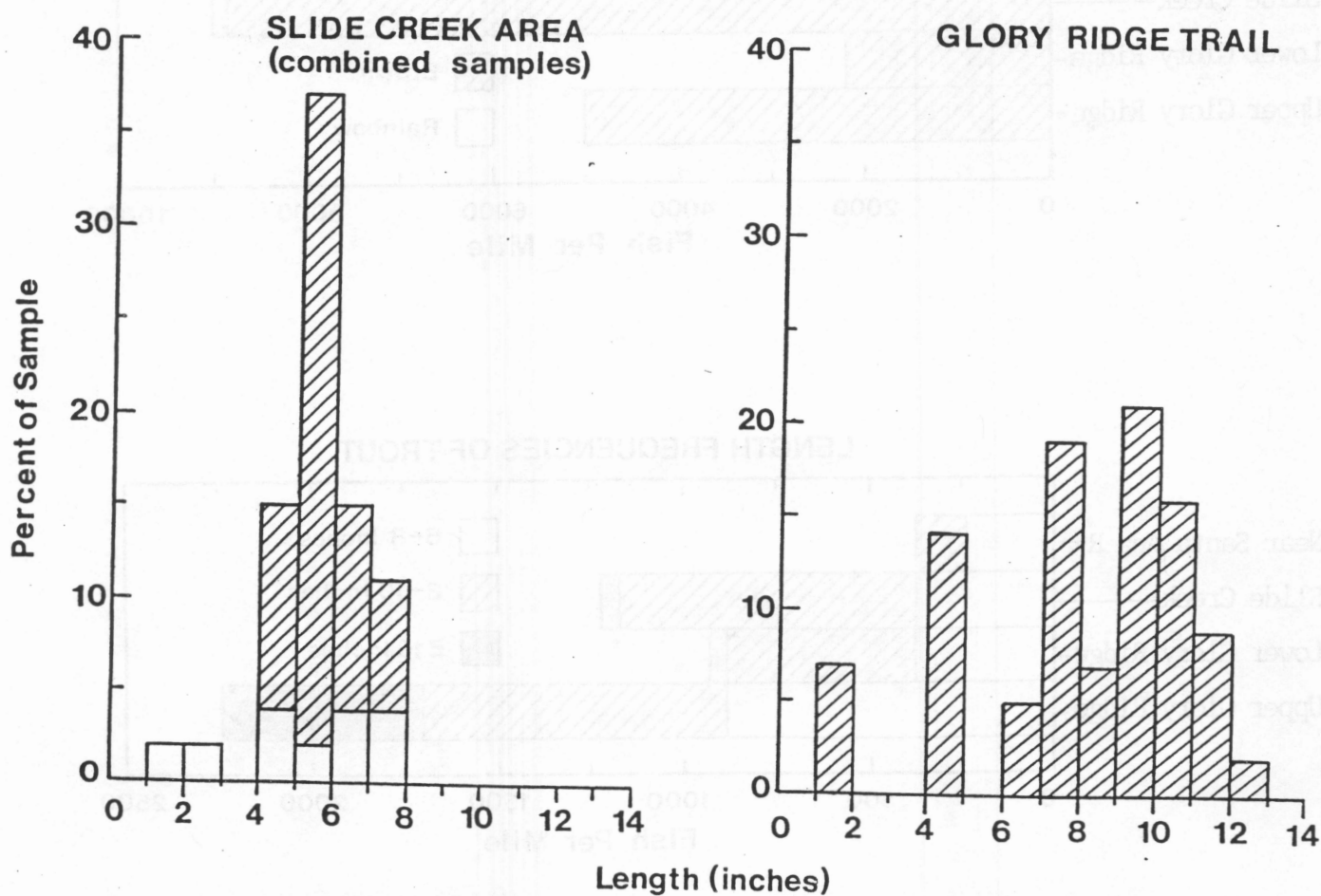


FIGURE 8. Length frequencies of trout sampled during the 1978 and 1986 electrofishing surveys in Bear Creek.

## BEAR CREEK - 1987

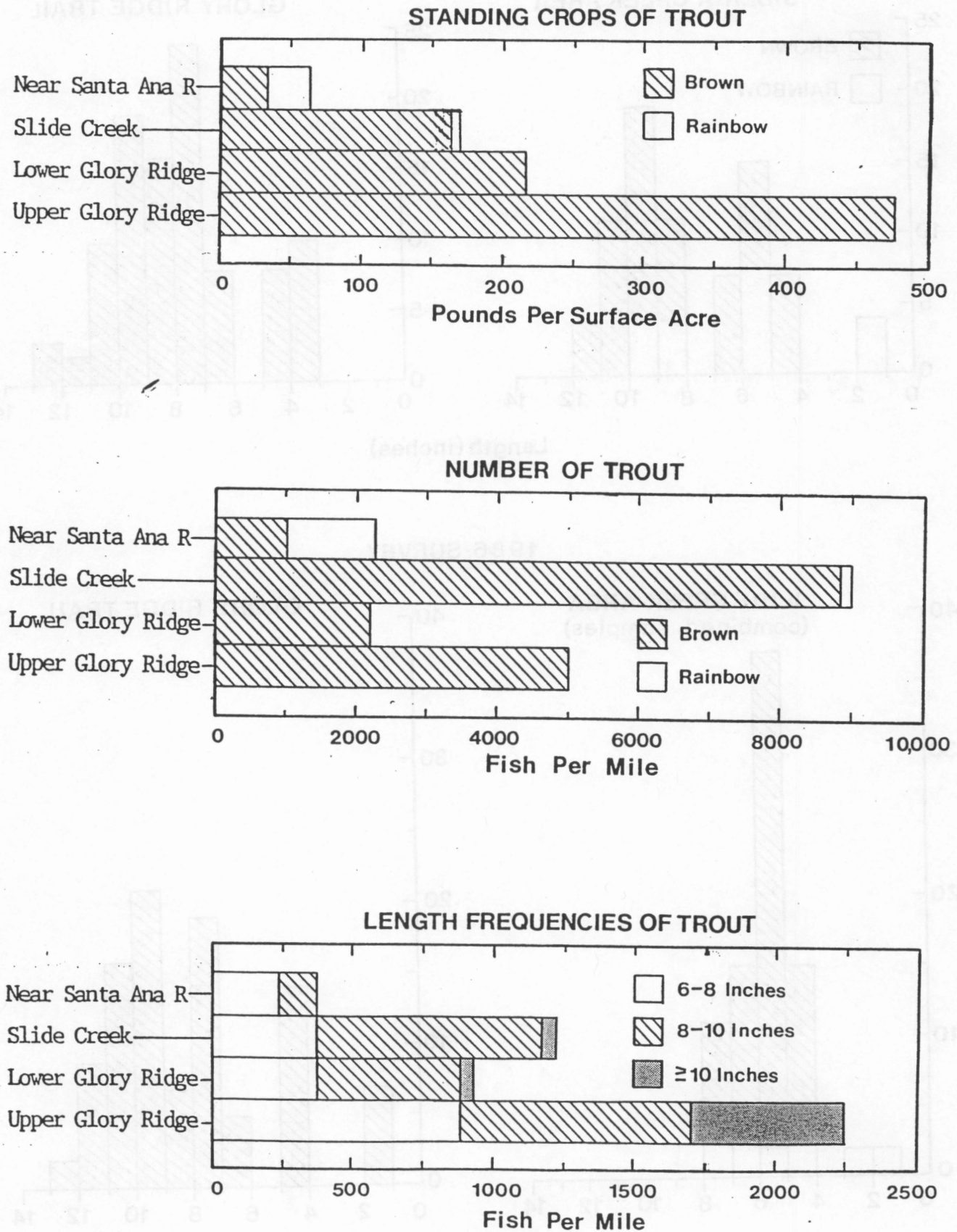


FIGURE 9. Estimated standing crops, numbers, and length frequencies of trout in four sections of Bear Creek sampled in 1987.

## 1987 SURVEY

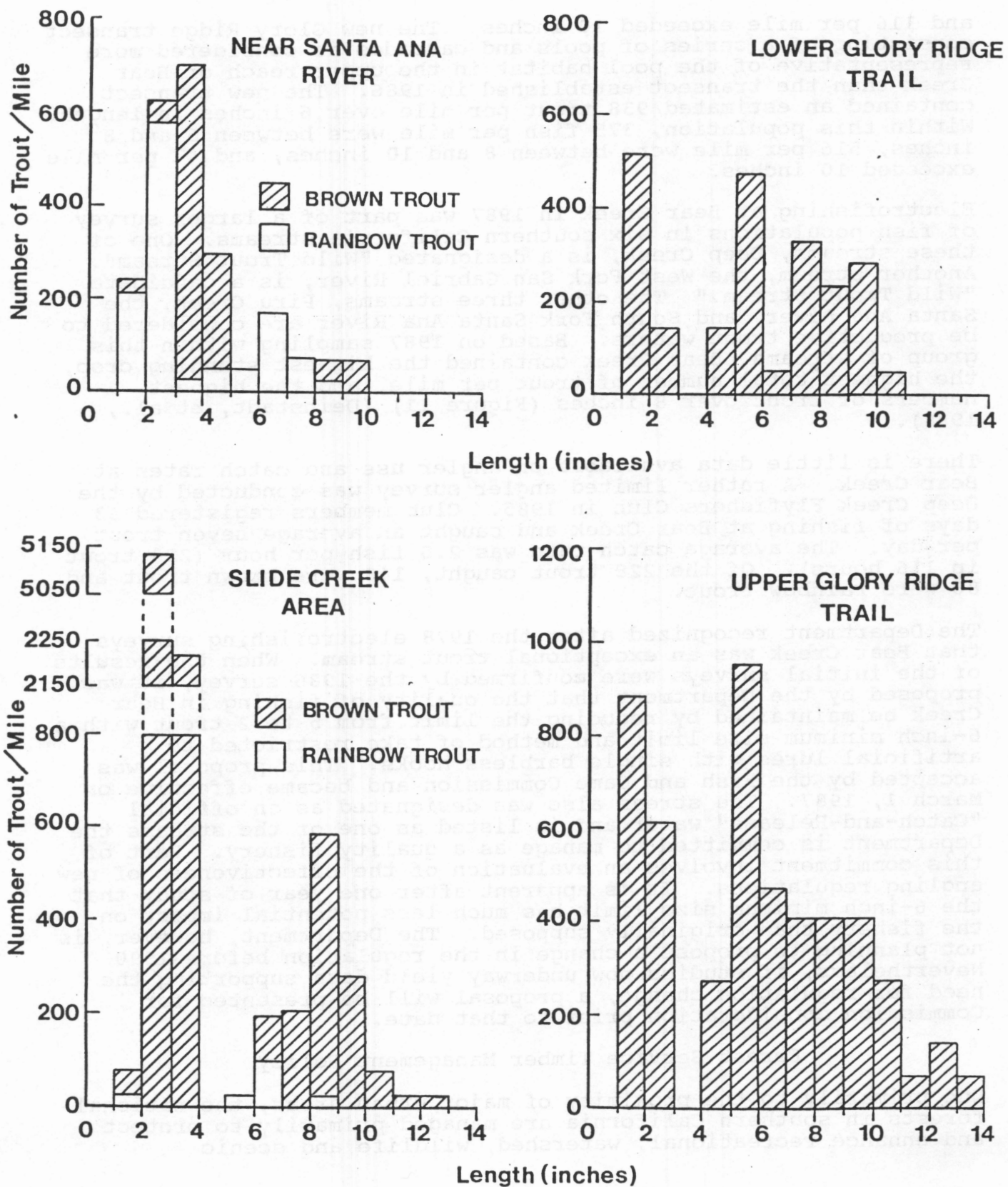


FIGURE 10. Length frequencies of trout sampled in four sections of Bear Creek in 1987.

and 116 per mile exceeded 10 inches. The new Glory Ridge transect consisting of a series of pools and cascades is considered more representative of the pool habitat in the upper reach of Bear Creek than the transect established in 1986. The new transect contained an estimated 938 trout per mile over 6 inches in length. Within this population, 375 fish per mile were between 6 and 8 inches, 516 per mile were between 8 and 10 inches, and 47 per mile exceeded 10 inches.

Electrofishing at Bear Creek in 1987 was part of a larger survey of fish populations in six southern California streams. One of these streams, Deep Creek, is a designated "Wild Trout Stream". Another stream, the West Fork San Gabriel River, is a candidate "Wild Trout Stream." The other three streams, Piru Creek, the Santa Ana River, and South Fork Santa Ana River are considered to be productive trout waters. Based on 1987 sampling within this group of streams, Bear Creek contained the highest standing crop, the highest total number of trout per mile, and the highest numbers of trout over 8 inches (Figure 11) (Deinstadt, et al., 1988).

There is little data available on angler use and catch rates at Bear Creek. A rather limited angler survey was conducted by the Deep Creek Flyfishers Club in 1985. Club members registered 33 days of fishing at Bear Creek and caught an average seven trout per day. The average catch rate was 2.0 fish per hour (228 trout in 116 hours). Of the 228 trout caught, 148 were brown trout and 80 were rainbow trout.

The Department recognized after the 1978 electrofishing surveys that Bear Creek was an exceptional trout stream. When the results of the initial surveys were confirmed by the 1986 survey, it was proposed by the Department that the quality of fishing in Bear Creek be maintained by reducing the limit from 5 to 2 trout with a 6-inch minimum size limit and method of take restricted to artificial lures with single barbless hooks. This proposal was accepted by the Fish and Game Commission and became effective on March 1, 1987. The stream also was designated as an official "Catch-and-Release" water and is listed as one of the streams the Department is committed to manage as a quality fishery. Part of this commitment involves an evaluation of the effectiveness of new angling regulations. It is apparent after one year of study that the 6-inch minimum size limit has much less potential impact on the fishery than originally supposed. The Department, however, is not planning to propose a change in the regulation before 1990. Nevertheless, if studies now underway yield data supporting the need for regulation change, a proposal will be presented for Commission consideration prior to that date.

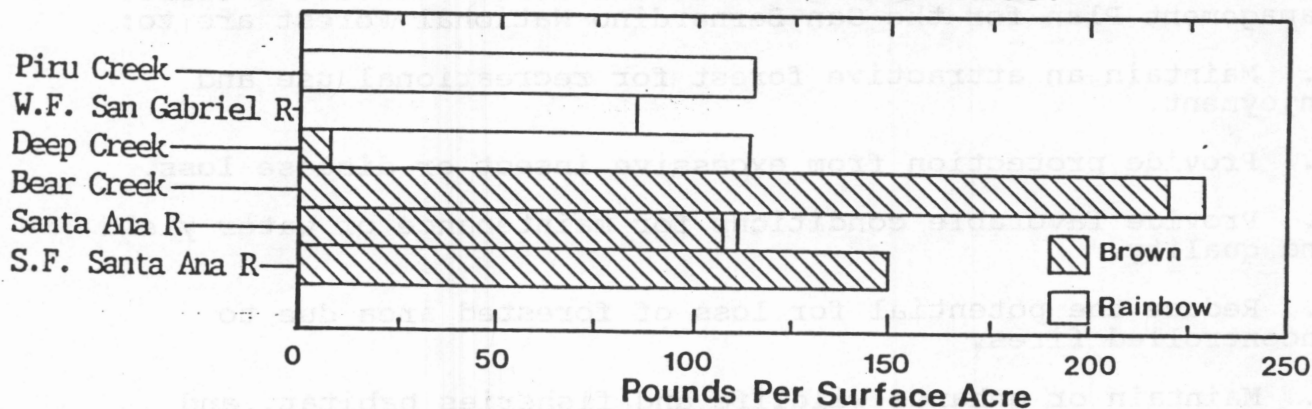
#### Forest Service Timber Management Policy

Due primarily to the proximity of major urban areas, the national forests in southern California are managed primarily to protect and enhance recreational, watershed, wildlife and scenic

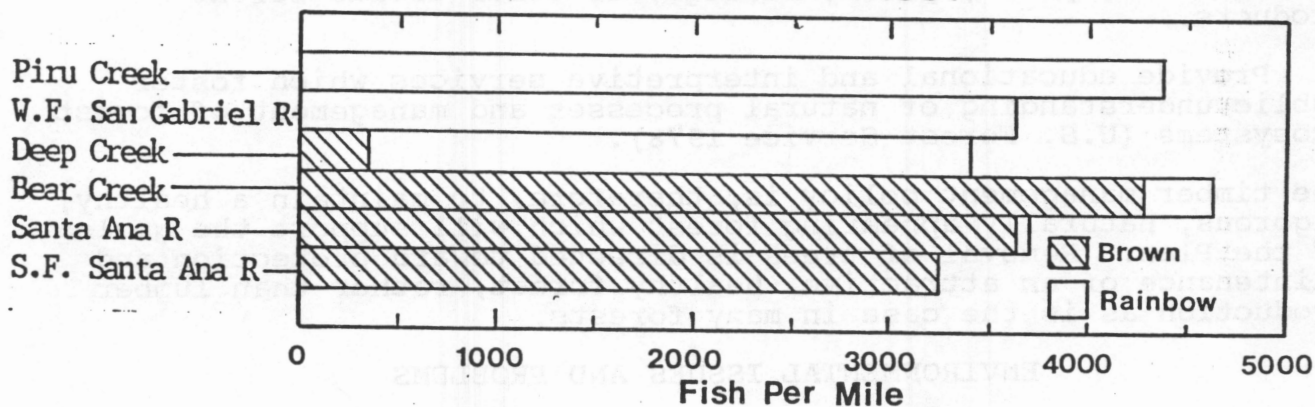


## SOUTHERN CALIFORNIA STREAMS

## STANDING CROPS OF TROUT



## NUMBER OF TROUT



## LENGTH FREQUENCIES OF TROUT

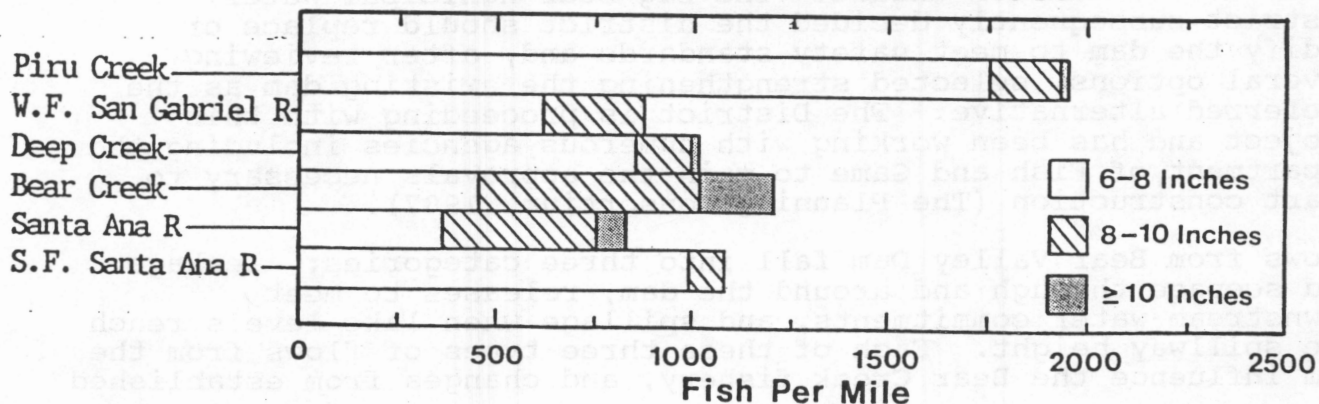


FIGURE 11. Average standing crops, numbers, and length frequencies of trout in six southern California streams sampled in 1987.

resources. The principal goals of the Forest Service's Timber Management Plan for the San Bernardino National Forest are to:

1. Maintain an attractive forest for recreational use and enjoyment.
2. Provide protection from excessive insect or disease loss.
3. Provide favorable conditions for maintenance of water yield and quality.
4. Reduce the potential for loss of forested area due to uncontrolled fires.
5. Maintain or enhance wildlife and fisheries habitat, and provide necessary protection for those already designated as critical habitat for threatened and endangered species.
6. Utilize trees removed from the forest - as a result of implementing stand treatments to achieve the preceeding goals - for fuelwood, posts, poles, sawlogs, or other useful forest products.
7. Provide educational and interpretive services which foster public understanding of natural processes and management of forest ecosystems (U.S. Forest Service 1978).

The timber management policy is, therefore, to maintain a healthy, vigorous, naturally appearing forest which will support the goals of the Plan. Removal of trees is directed toward protection and maintenance of an attractive, healthy forest, rather than lumber production as is the case in many forests.

#### ENVIRONMENTAL ISSUES AND PROBLEMS

##### Flows from Bear Valley Dam

In 1980, the California Division of Safety of Dams studied the potential effects of a major earthquake upon the structural integrity of Bear Valley Dam. It was concluded that during such an event the dam was unsafe. The Big Bear Municipal Water District subsequently decided the district should replace or modify the dam to meet safety standards and, after reviewing several options, selected strengthening the existing dam as the preferred alternative. The District is proceeding with this project and has been working with numerous agencies including the Department of Fish and Game to gain the approvals necessary to start construction (The Planning Consortium, 1987).

Flows from Bear Valley Dam fall into three categories: leakage and seepage through and around the dam, releases to meet downstream water commitments, and spillage when lake levels reach the spillway height. Each of these three types of flows from the dam influence the Bear Creek fishery, and changes from established

patterns could adversely or beneficially impact this resource. For many years there has been water leaking and seeping through, under, and around Bear Valley Dam. At times of the year this small amount of water constitutes the only flow in the uppermost portion of Bear Creek. To measure this flow, the Big Bear Municipal Water District installed a flume a short distance below the dam. Time constraints resulting from the requirement to bring the dam up to current earthquake standards has not allowed a long observation period, but based on 32 flow measurements between September 29, 1986 and August 3, 1987 the flow ranged between 0.076 to 0.187 cfs and averaged 0.105 cfs. On an annual basis this average results in 76.0 acre feet of water. The Water District has agreed to maintain a flow at the flume of at least 0.105 cfs following dam renovation (The Planning Consortium, 1987).

The Water District has met commitments to provide water for downstream use in two ways. Between 1977, when the Water District acquired the dam, and 1985, from 999 to 26,375 acre feet per year (average 5,498 acre feet) was released to meet the downstream commitments. The District also has used the option of purchasing State Water Project water to meet their downstream commitments. By purchasing water, the Water District can maintain a more stable level in Big Bear Lake and conserve water for potential critical periods of low rainfall. The releases that are made can occur during any month, but tend to be made more during the last half of the year. Current practices concerning these controlled releases involve suddenly starting and stopping the flows. It is assumed that such sudden changes have a deleterious impact on the trout populations and that increasing or decreasing flows would best be done in stages. During future survey work on Bear Creek recommendations on staged flow releases should be developed.

Spills occur only occasionally and result less from the amount of annual precipitation than the annual pattern of precipitation and the level of the lake at the time when major storms occur. Between 1977 and 1985, spills occurred in four years and averaged 3,299 acre feet for each of those years.

Since 1951, the owners of Bear Valley Dam have been required by the California Division of Safety of Dams to lower the lake level a minimum of three feet from the spillway level from November to March of each year. This is because of inadequate emergency spillway capacity which, during major storms, could result in overtopping damage to the toe of the dam and lake shoreline flooding. The dam renovation project involves modification of the spillway to increase its capacity thereby allowing the lake level to be raised during the winter. The Department of Fish and Game recognizes that additional storage capacity not utilized in the winter for over 35 years will be available following spillway modification. When the process involving reconstruction of the spillway begins, the Department intends to negotiate for additional flows from the dam to enhance stream conditions for fishlife in Bear Creek. The Department is recommending flow



studies be completed prior to the spillway modification project so that the cumulative impacts of the entire dam renovation project can be better evaluated. It should be recognized that as little as a constant 1.0 cfs release could have significant benefits to the fishery in the upper reaches of Bear Creek, yet involve only 1.1% of the storage capacity of Big Bear Lake.

#### Sedimentation

Small-scale landslides frequently occur on Highway 18 above Bear Creek. The California Department of Transportation maintains this road. They normally place the dirt and debris resulting from landslides in designated dump areas, however, under emergency conditions, the material is side-cast off the roadway onto the slope draining into the North Fork of Bear Creek. The Forest Service has evidence that this material not only reaches the North Fork of Bear Creek, but also the mainstem of Bear Creek. Bear Creek is particularly susceptible to the influence of sedimentation because the regular occurrence of flushing flows is blocked by Bear Valley Dam. The Forest Service is working with the Department of Transportation to establish designated dump areas and encourage their use whenever feasible to dispose of slide material.

#### Cattle Grazing

The Forest Service has let grazing leases in the Bear Creek watershed. Cattle very rarely venture down the steep canyon slopes to the stream since there are water developments above the canyon for them. This grazing activity has no significant impact on Bear Creek.

#### Timber Harvest

There is some timber harvesting occurring in the Bluff Mess area in the upper Siberia Creek watershed. This has little or no affect on conditions in Bear Creek.

#### Mining

There is no current mining activity in the Bear Creek watershed that is believed to be affecting the stream.

#### Recreation

Recreation is rather limited along Bear Creek due to limited access. A group camp exists where the Siberia Creek Trail crosses Bear Creek, but it is rather lightly used. Most recreation occurs at the lower portion of the stream where there is access via roadways. Due to the rocky nature of the canyon bottom there is little off-highway vehicle use there and the impact of OHV use on aquatic habitat is considered to be very limited. Much of the recreation probably consists of partying and picnicing.

Fishing is considered the primary recreational activity along Bear Creek. The heaviest use is assumed to occur from the end of Road 1N10 upstream to the area near the mouth of the canyon. The stream sections near the Siberia Creek and Glory Ridge trails are considered areas of moderate use. Areas of the stream in the canyon remote from these access points are very lightly fished.

### MANAGEMENT PROGRAM

#### Management Goals

The goals of wild trout management for Bear Creek are:

1. To protect, maintain, and enhance where possible the aquatic environment of Bear Creek and its tributaries.
2. To provide self-sustaining populations of wild trout which offer the opportunity to: (a) catch trout 10 inches and larger, and (b) catch trout at rates of 2 fish or more per hour.
3. To maintain an attractive streamside environment featuring more remote, secluded angling in the upper canyon reach and quality angling in both the upper canyon reach and the more accessible lower reach.

#### Management Direction

The Department of Fish and Game intends to pursue the following programs and policies in the management of Bear Creek's wild trout resources:

1. Continue to evaluate the wild trout fishery in Bear Creek by monitoring the trout populations and angler use and success.
2. Collect baseline instream habitat data from which to evaluate the impacts of present and potential land or water developments and land use practices.
3. Preserve the natural integrity of Bear Creek and maintain or improve trout habitat.
4. Seek Bear Valley Dam water release practices which will benefit trout habitat and production.
5. Oppose land or water developments which would have significant deleterious impacts on the flows needed to maintain abundant self-sustaining wild trout populations in Bear Creek.
6. Encourage the California Department of Transportation to avoid, whenever possible, sidecasting landslide materials associated with maintaining Highway 18.
7. Recommend that Bear Creek be designated a Wild Trout Stream by the California Fish and Game Commission.

8. Coordinate implementation of the management plan with the U. S. Forest Service.

### Fishery Management

The present program of collecting baseline fish population data near the lower end of the Glory Ridge Trail and in the Slide Creek area of Bear Creek will be expanded to include both riffle/run and pool habitat. Trends in abundance and the age and size structure of the trout populations will be monitored annually for three years at these locations. After this time, two long-term monitoring sections will be selected and sampled at three year intervals. Assistance in conducting population monitoring will be sought, as needed, from angling clubs in southern California.

To monitor angler use and success, a program of soliciting and collecting voluntarily returned angler surveys at three or four locations along the stream will be pursued. The implementation of this program will be conditioned upon the participation of interested angling groups and the approval of the Forest Service.

The combination of trout population sampling and angler surveys will provide a basis for determining if fisheries management goal #2 (as stated on page 21) is being achieved. If this goal is not being met, consideration will be given to implementing remedial measures, such as changing angling regulations.

### Instream Habitat

Baseline information which accurately describe basic instream habitat parameters (water temperature, streamflow, water quality and sedimentation) are not available for Bear Creek. Flows immediately below Bear Valley Dam are being monitored; however, flows in the middle and lower portions of the creek are not being measured. Sedimentation, though potentially impacting trout production, is not being measured and is considered too complex and time consuming for the Department to monitor at this time. Alternative methods of measuring Bear Creek sedimentation rates and sediment budget will be explored. The Department will begin to record water temperatures through the summer period, measure flows once at the beginning of the summer and once in early fall and, at the same time, take samples for water quality measurements in the Slide Creek area. Baseline data have been collected on microinvertebrate species present in Bear Creek (Hafele, 1988). The goal of this field collection program is to describe present environmental conditions and to determine the impact of possible future developments. Also, information collected will assist in evaluating desirability and feasibility of habitat improvement projects.

### Wild Trout Stream Designation

Bear Creek is considered to be an excellent wild trout fishery resource which has exceptional value due to its proximity to the state's largest metropolitan area. Studies have shown that trout production and the angling opportunity offered by the trout resource are comparable to other officially designated semi-remote streams. Wild trout designation will encourage recognition of the value of this resource as a part of California's program to maintain and manage the best of the state's remaining wild trout waters. The proposed designation has been coordinated with the Forest Service and is now ready for Commission consideration. The Department will propose that the entire length of Bear Creek from Bear Valley Dam to its confluence with the Santa Ana River (8.75 miles) be designated by the Fish and Game Commission as a Wild Trout Stream.

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## PROGRAM IMPLEMENTATION SCHEDULE

<u>Task</u>	<u>Department Section or Agency Responsible</u>	<u>Implementation Date</u>
<b>A. Fishery Management</b>		
1. Slide Creek, and Glory Ridge population transect surveys:		
a. Continue baseline surveys	Region 5-IFD	Summer 1988, 1989 and 1990
b. Periodic monitoring	Region 5	1993, 1996, etc.
2. Age and growth studies:		
a. Complete reading fish scale collections from surveys prior to 1988	Region 5-IFD	1988
3. Conduct angler questionnaire survey	Region 5	1988-1990
4. Evaluation of angling regulations	Region 5-IFD	1990
<b>B. Habitat Studies</b>		
1. Record water temperatures, measure streamflows and obtain samples for water quality analysis	Region 5	Summer and fall 1988-1990
2. Evaluate need for stream habitat improvements	Region 5/USFS	As needed
<b>C. Wild Trout Stream Designation</b>		
1. Coordinate with U.S. Forest Service and interested groups	Region 5-IFD	February-March 1988
2. Recommend to Commission	Region 5-IFD	April 1988
<b>D. Land Use Planning</b>		
1. Coordinate implementation of the management program	Region 5/USFS	Continuing
2. Seek improved water flows	Region 5	1988-1993
3. Coordinate efforts to minimize sedimentation from Highway 18 maintenance operations	Region 5/USFS	Continuing