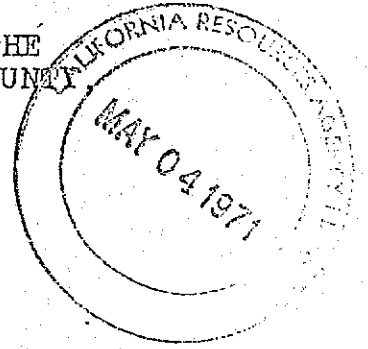


PRELIMINARY REPORT ON THE FISHERIES OF THE  
SANTA YNEZ RIVER SYSTEM, SANTA BARBARA COUNTY,  
CALIFORNIA<sup>1</sup>

By Leo Shapovalov  
Bureau of Fish Conservation  
California Division of Fish and Game



The purpose of this report is to bring together some of the scattered information pertaining to the fisheries of the Santa Ynez River system, particularly the Steelhead fishery, and the factors which affect them. Although incomplete, the report may provide a basis for more comprehensive studies and management plans.

DESCRIPTION OF THE AREA

Location

The Santa Ynez River rises near the boundary line between Santa Barbara and Ventura counties, where the San Rafael and Santa Ynez ranges merge. It flows nearly due west, and enters the Pacific Ocean at Surf, about 8 miles northeast of Point Arguello Lighthouse. The basin extends for a distance of about 80 miles parallel to the coast line and north of the Santa Ynez range and comprises approximately 900 square miles. It forms the mountainous hinterland lying directly behind the city of Santa Barbara.

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EXHIBIT CT 23

### Physiography

Four-fifths of the drainage basin is mountainous, elevations generally ranging from 3,000 to 4,000 feet in the Santa Ynez Range, and from 4,000 to 6,000 feet in the San Rafael. A few peaks, which are simply the highest points of ridges, exceed 8,000 feet above sea level.

Much of the underlying rock is soft shale, readily subject to erosion. As a result, much of the seepage water is highly alkaline. A few conglomerate cliffs along the Santa Ynez River are more resistant to erosive forces.

### Climate

The annual precipitation in the area varies from 15 to 40 inches, the increase being gradual from the lower to the higher elevations. The precipitation is almost entirely in the form of rain, although in severe winters the higher ridges, such as Big Pine ridge, may be covered with 5 feet of snow. The greater part of the rainfall occurs in the months of December-March. Occasional cloudbursts have brought as much as 6 inches of rain in 12 hours.

### Vegetation

The greater part of the basin is sparsely covered with brush and small trees. The vegetative cover of the upper portion of the watershed is described by Bartholomew (1940).

Streams of the Santa Ynez River System

The following list shows the principal streams in the basin, proceeding upstream, and their lengths. The reservoir sites noted are those proposed by the U. S. Bureau of Reclamation (1944).

<u>Name of Stream</u>	<u>Total Length in Miles</u>
<u>Below Santa Rosa Reservoir Site</u>	
Santa Ynez River	25
San Miguelito Creek	5
Salsipuedes Creek	7
El Jaro Creek	12
Los Amoles Creek	3
Ytias Creek	<u>3</u>
	55
<u>Santa Rosa Reservoir Site to Cachuma Reservoir Site</u>	
Santa Ynez River	22
Santa Rosa Creek	6
La Zaca Creek	17
Nojoqui Creek	7
Alisal Creek	7
Alamo Pintado Creek	6
Ballard Creek (Quiota Creek)	5
Santa Cota Creek	2
San Lucas Creek	3
Santa Agueda Creek	<u>10</u>
	85

<u>Name of Stream</u>	<u>Total Length in Miles</u>
<u>Cachuma Reservoir Site to Gibraltar Dam</u>	
Santa Ynez River	25
Cachuma Creek	10
Tequepis Canyon Creek	3
Santa Cruz Creek	18
Peach Tree Creek	5
Santa Cruz Creek, East Fork	<u>6</u>
	67
 <u>Gibraltar Dam to New Gibraltar Reservoir Site</u>	
Santa Ynez River (Gibraltar Reservoir)	2
Gidney Creek	2
Camuesa Creek	<u>4</u>
	8
 <u>New Gibraltar Reservoir Site to Jameson Lake (Juncal Dam)</u>	
Santa Ynez River	13
Mono Creek	21
Indian Creek	15
Buckhorn Creek	5
Alamar Creek	7
Blue Canyon Creek	5
Agua Caliente Canyon Creek	<u>7</u>
	73
 <u>Jameson Lake to Source</u>	
Santa Ynez River (including Jameson Lake)	<u>5</u>
	5
 Total, Santa Ynez River System	 293

Stream Flows

Many of the streams of the basin are essentially intermittent. A number of the direct tributaries of the Santa Ynez River normally go dry in their lower reaches during the dry summer season, but maintain flows or series of pools in their upper portions.

The Santa Ynez River itself normally goes dry over a large part of its course in May-July. Usually several miles of running water remain throughout the summer in the vicinity of the town of Solvang. This is an area of spring seepage. Water also remains in the lagoon, at the mouth of the Santa Ynez. The lagoon is several miles long and of considerable width; its depth is mostly 3 to 5 feet, with some spots 8 to 12 feet deep. (A description of the lagoon is given by Shapovalov (1940).) Except for occasional large pools, the rest of the stream bed below Gibraltar Dam is normally entirely dry each summer.

The maximum discharge on record during the period 1908-18, 1925-41 at the gaging station  $2\frac{1}{2}$  miles downstream from Salsipuedes Creek (near Lompoc) is 50,100 second-feet, obtained on March 3, 1938. The average discharge at this station for 25 years (1907-8, 1910-18, 1925-41) is 240 second-feet. Further data on stream flows within the Santa Ynez River basin are contained in various U. S. Geological Survey Water-Supply Papers.

Flows within the basin have been affected by (1) forest fires, (2) dams, and (3) use of ground water for irrigation.

Especially during the last 20 years, destructive fires have swept over large portions of the watershed. Some of these fires and their effects are described by Bartholomew (1940) and Brown (1943), and on the individual survey cards in the files of the Division of Fish and Game. According to Bartholomew (loc. cit.), only about one per cent of the area in the upper Santa Ynez River drainage (above Gibraltar Dam) has escaped the scourge of fire. In 1932 and 1933, forest fires swept over 37 per cent of the 216 square miles of this area (Brown, loc. cit.).

As a result of loss of ground cover, run-off during the wet season is more rapid. In the summer, less water is available for stream flows, and more of it sinks into the stream beds, which have been filled with mud, sand, gravel, and rock debris.

Stream flows in the main Santa Ynez River have been affected by two dams built on the stream: Gibraltar Dam and Juncal Dam. These dams and the reservoirs formed by them, will be discussed in the following section. Storage and diversion of water at these reservoirs has decreased maximum flows in the Santa Ynez River. Their effects on minimum flows are not clear from available data.

### Development

The great part of the basin is included in the Los Padres National Forest.

"Irrigable lands in the Santa Ynez Basin include the mesa lands in the vicinity of Santa Ynez, the bottom lands along the river, and Lompoc Valley near the mouth of the river. A total of 13,000 acres are irrigated at present in this area, using 19,500 acre-feet of water annually. An additional 11,000 acres of irrigable land remain to be developed for irrigation. The military reservation at Camp Cooke uses 2,400 acre-feet annually.

"The present irrigation supply in Santa Ynez Basin is secured entirely from ground water, and is ample for existing development. . . ." (U. S. Bureau of Reclamation, 1944).

Four dams are now in existence within the basin and are described briefly below.

Gibraltar Dam, built in 1920, is located approximately 72 miles above the mouth. The concrete dam is 150 feet high and impassable to upstream fish. Gibraltar Reservoir, created by the dam, forms the main water supply for the city of Santa Barbara. Water from the Reservoir is carried to Santa Barbara by means of Mission Tunnel. The original reservoir storage capacity of approximately 14,500 acre-feet has been reduced to

7,000 acre-feet by the deposition of silt. "Silt continues to encroach in the reservoir at the rate of 3 acre-feet per month, despite the construction of two debris dams on main tributaries. The present safe annual yield of Gibraltar Reservoir is 3,000 acre-feet" (U. S. Bureau of Reclamation, 1944). Descriptions of various features of the dam and reservoir are given by Curtis (1937), Brown (1943), and U. S. Bureau of Reclamation (1944).

In an attempt to keep large additional amounts of erosional debris, derived from fire-denuded slopes, out of the Reservoir, the U. S. Forest Service constructed two debris dams on tributaries that were yielding particularly heavy sediment. The Mono Debris Dam was constructed in 1935 on Mono Creek, which enters the Santa Ynez River immediately above the original head of backwater of Gibraltar Reservoir. The concrete dam is 35 feet high and the original water storage capacity back of the dam was 400 acre-feet. In the run-off seasons of 1936-37 and 1937-38, the basin was completely filled with dominantly coarse sediment. Further data for this dam are given by Brown (1943).

The Agua Caliente Debris Dam was completed in 1937 on Agua Caliente Creek, which enters the Santa Ynez River about 3 miles above the original head of backwater of Gibraltar Reservoir. The concrete dam is 65 feet high and the original



water storage capacity of the basin was 310 acre-feet. During the 1937-38 run-off season 174 acre-feet of sediment accumulated in the basin. The basin is now completely filled. Further data for this dam are given by Brown (1943).

Juncal Dam, forming Jameson Lake, was constructed in 1933 by the Montecito County Water District. It is located approximately 15 miles upstream from Gibraltar Dam. The concrete dam is 142 feet high and is impassable to upstream fish. Water from Jameson Lake is carried through the Santa Ynez Range to the Santa Barbara area by Doulton Tunnel. The capacity of 7,228 acre-feet is adequate to impound practically all of the available water. Silt encroachment is occurring at the rate of 28 acre-feet per year.

In addition to the dams, a salt water barrier was constructed near the mouth of the Santa Ynez in connection with the Santa Maria-Lompoc Project, a U. S. Army Cantonment. The purpose of this structure is to prevent the percolation of salt water from the estuary into the underground storage of the Santa Ynez River in years of extreme low flow. The barrier has been provided with a fishway, which is reported to operate satisfactorily.

## FISHES AND FISHING

Fishes Present

Native fishes within the system are the Steelhead and the Stickleback, and, in the lower reaches, Newberry's Goby. Sea-run Steelhead have been cut off from the upper reaches by Gibraltar Dam, but their derivatives and possibly various strains of rainbow trout and crosses between the two persist in Gibraltar Reservoir and the streams above Gibraltar Dam. The offspring of sea-run Steelhead are also rescued annually from the River below Gibraltar Dam and planted in streams above and below the dam.

A cyprinid native to southern California, Gila, is also present, but it is not known whether or not it was introduced into the Santa Ynez River system. Large numbers are taken each year by fish rescue crews below Gibraltar Dam. It was also collected in the summer of 1940 by Robert R. Miller and party "in the headwater region of the Santa Ynez River (above Gibraltar Dam)." Undoubtedly some Gila and Sticklebacks are re-introduced into the waters above Gibraltar Dam, whenever these waters are stocked with rescued Steelhead.

Gambusia have been introduced into the river system and are known to be present in the lagoon and in Gibraltar Reservoir. Large-mouthed Black Bass have been reported from the Santa Ynez River, but no definite records are at hand. (Zaca Lake, a 22-acre privately-owned natural lake whose overflow

probably passes into La Zaca Creek and thence into Santa Ynez River, was stocked with Bluegill Sunfish, Square-tailed Catfish, and Large-mouthed Black Bass, and possibly Crappies, on November 26, 1940, but all of these fish are reported to have died within two or three days, as was the case with rainbow trout. Bass are reported to have been present in prior years, but to have died a few years before 1938. Gambusia were present in 1938.)

On September 7, 1944, Carl Tegen of the Division of Fish and Game reported to the writer that Square-tailed Catfish are caught occasionally in the Santa Ynez River below Gibraltar Dam. Tegen also said that he found a dead one, about 12 inches long, in Indian Creek, some distance above the entrance of Buckhorn Creek, in 1940 or 1941. It is difficult to imagine how this fish got into Indian Creek, unless it was accidentally planted along with Steelhead rescued from the Santa Ynez River below Gibraltar Dam.

Brown Trout (as "Loch Leven" and "German brown" trout) and Eastern Brook Trout were formerly planted in various streams of the system. The extent to which either of these species is now present is not known. No reports are at hand of any caught in recent years.

Striped Bass occasionally enter the lagoon and are caught in the ocean off the beach, but are not of importance.

Various typically marine species, such as the Starry Flounder, Shiner Sea-perch, and athernids, also occur in the lagoon (Shapovalov, 1940).

Steelhead as adults enter the River following the first heavy rains of the wet season. The largest numbers enter during the period December-March. No counts have been made, but some intimation of the size of the run may be gathered from the fact that 1,036,980 young Steelhead were rescued from the drying bed of the main Santa Ynez River in 1944. Undoubtedly large numbers migrated downstream prior to the start of rescue operations, and many others perished in various tributaries. Still others survived in stretches of live water and in pools. Carl Tegen of the Division of Fish and Game, who counted Steelhead and salmon at Benbow Dam on South Fork of Eel River during the 1938-39 and 1939-40 seasons and since 1940 has worked as a Trapper over a large part of the Santa Ynez River watershed, stated that he believed the 1943-44 run into the Santa Ynez at least equalled the runs at Benbow Dam. The runs at Benbow Dam have ranged from 12,995 to 25,032 Steelhead during the past six seasons.

Conditions for trout, especially in the portions of the river system above Gibraltar Dam, have deteriorated greatly as a result of the forest fires of the last twenty years. The destructive Indian Creek-Big Pine fire of 1933 burned

30,000 acres. Large numbers of fish were destroyed by the heat of the fire. Subsequent erosion resulted in the destruction of spawning grounds and the filling of pools with mud, sand, and gravel. Among the streams affected were Alamar Creek, Indian Creek, and Buckhorn Creek. Prior to the fire of 1933, trout lived through the summer in stretches of live water in the canyons. For example, in Indian Creek trout survived the summers in The Narrows, a canyon below Loma Pelona, according to H. C. Jackson of the Division of Fish and Game. Here, Jackson reports (survey card), there was more than a mile of good-sized pools with running water.

#### Spawning Areas

Sea-run Steelhead spawn in the main Santa Ynez River and practically all accessible tributaries below Gibraltar Dam. The heaviest spawning takes place in the portion above Buellton. Streams known to be utilized for spawning by sea-run Steelhead include Alisal, Santa Cota, Cachuma, Tequepis Canyon, and Santa Cruz creeks. Extensive spawning and production of fish take place in areas which annually go dry.

Prior to construction of Gibraltar Dam, sea-run Steelhead spawned in a number of streams above the dam site, including Indian and Alamar creeks.

Steelhead in Gibraltar Reservoir spawn in Gidney Creek and by report in the Santa Ynez River above the Reservoir and in Mono Creek below Mono Debris Dam. Both of the latter two streams have good spawning gravels, but become dry in their lower courses.

As noted previously, the forest fires of the past twenty years have resulted in the extensive destruction of spawning grounds, particularly in the watershed above Gibraltar Dam.

#### Fishing

Steelhead may be taken by angling from May 1 through February 28. The bag limit is 25 fish per day, or 10 pounds and one fish, from May 1 through October 31. From November 1 through February 28 angling is limited by law to the main stream as far upstream as the Buellton Bridge, and the limit is three fish per day, irrespective of size. Since 1940 the Santa Ynez River has been closed by special order from its mouth upstream to the westerly end of the jetty for the entire season (to protect adult fish passing over the shallow bar at the mouth) and from the westerly end of the jetty upstream to the Old Baroda Crossing to and including October 31 (to protect juvenile fish in the lagoon). The Old Baroda Crossing is approximately one mile above the Southern Pacific

R.R. bridge and the area downstream consists of the lagoon, i.e., tidewater.

Adult Steelhead are also taken illegally in considerable numbers above Buellton Bridge.

In Gibraltar Reservoir, fishing is allowed only to persons possessing annual "Trespass permits," which are sold for \$1.00 by the city of Santa Barbara. In 1935, 278 such permits were sold, and in 1936, 453. Gibraltar Reservoir was closed to all angling during a part of the war, but was opened in 1944. There are no boats for hire. Since the north shore is almost inaccessible, the bulk of the fishing takes place along a portion of the south shore.

According to Curtis (1937), "Fishing is reported to have been excellent in the early years of the Reservoir, and then to have dropped off in quality. In 1934 it was fair; in 1935 and 1936 poor. In 1937 it seems to have been on the up-grade. . ."

For further details regarding fishing conditions in Gibraltar Reservoir, see Curtis (loc. cit.).

In the streams above Gibraltar Reservoir swept by the fires of 1932 and 1933, angling was reduced practically to the zero point in the first years following the fires. The present situation is not known to the writer.

### Fish Rescue

Extensive fish rescue operations within the Santa Ynez River system are carried out each summer by employees of the Division of Fish and Game and volunteer helpers. The numbers and weights of fish rescued, as well as certain other data, are given in Table 1. No records of rescue operations prior to 1939 are available.

Along with the Steelhead, which are the only game fish rescued, large numbers of chubs (Gila) and sticklebacks are taken. In 1942, in some localities, over fifty per cent of the fish caught were reported to be sticklebacks and chubs, while in other localities these rough fishes were comparatively few (letter of E. D. Beeman to D. A. Clanton, Aug. 10, 1942). In 1944, it was reported that chubs were fewer than in previous years, while sticklebacks were relatively as numerous as in other seasons (letter of E. D. Beeman to D. A. Clanton, Aug. 19, 1944). As many as possible of the chubs and sticklebacks are sorted out, but this process cannot be thorough, and as a result it is probable that these fishes have been introduced wherever rescued Steelhead have been planted.



TABLE 1. SUMMARY OF STEELHEAD RESCUE OPERATIONS IN THE SANTA YNEZ RIVER SYSTEM, 1938-1944.

Year	Name of Stream	Number	Size (No. Fish per oz.)	Total Weight (Ounces Pounds)	Number Planted in Santa Ynez R. System	Per Cent Planted in Santa Ynez R. System	Time of Rescue
1939	Santa Ynez R. <sup>a</sup>	39,500	10 av.	--	29,000	73	June 14-July 2
1940	Santa Ynez R. <sup>b</sup>	525,000	14-35	23,465 oz. 1,467 lbs.	435,700	83	May 26-June 20
1941	Tequepis Canyon Cr.	3,660	27.5 av.	133 oz. 8 lbs.	0	0	May 18
1942	Santa Ynez R.	422,800	7-25	43,094 oz. 2,693 lbs.	296,600	70	June 16-Aug. 1
1943	Santa Ynez R.	868,700	6-35	55,090 oz. 3,443 lbs.	633,900	73	July 6-Aug. 12
1944	Santa Ynez R.	1,036,980	8-40	70,644 oz. 4,415 lbs.	662,300	64	June 14-Aug. 1

Numbers through 1943 are approximate, being based on bulk estimates.

<sup>a</sup> In 1939, 10,000 of the fish were rescued from Santa Cruz Cr.

<sup>b</sup> In 1940, 26,000 of the fish were rescued from Alisal Cr. and 10,000 from Santa Cruz Cr.

In 1944, the numbers of rescued Steelhead were calculated according to the following procedure. Twenty ounces of fish were first weighed out, and the number in the twenty ounces then counted to determine the number of fish per ounce. A truck load was then made up, weighing five pounds of fish to each bucket. This procedure was repeated for each load. Allowances were made for sticklebacks and chubs which had not been separated out. (Letter from E. D. Beeman to D. A. Clanton, Aug. 19, 1944.)

Almost all of the rescued Steelhead are fish of the season's hatch. Most of the fish are rescued from the drying bed of the main Santa Ynez River, in the section from the Santa Ynez-Santa Barbara highway crossing (San Lucas Bridge) to Gibraltar Dam. In some years a few are taken from tributaries of the Santa Ynez in this section. In 1944 rescue operations were conducted along approximately 20 to 24 miles of stream. The first section, from the Los Prietos C.C.C. Camp upstream to the end of the road ( $\pm$  3 miles), yielded approximately 250,000 fish. The second section, from Los Prietos C.C.C. Camp downstream 5 or 6 miles, produced approximately 100,000 fish. The third section, through the San Marcos Land Grant ( $\pm$  12 to 15 miles), yielded about 700,000 fish. Many of the fish are found concentrated at the entrances of tributary streams and places of rising seepage in the main stream bed. Most of the rescued Steelhead are planted within the basin.

### Stocking

Since 1937 all of the fish stocked in the Santa Ynez River system have been composed of Steelhead rescued within the system. The majority are planted in the lagoon. The remainder are stocked in the section of the Santa Ynez with live water near Solvang, in Gibraltar Reservoir, and in tributaries with constant flow. Table 2 shows the distribution of rescued Steelhead within the basin.

The last Brown Trout were planted within the basin in 1936, the last Eastern Brook Trout in 1935, and the last rainbow trout (hatchery-reared) in 1932. Fish stocked from hatcheries within the river system during the years 1930-1944 are listed in Table 3.

TABLE 2. DISTRIBUTION OF SANTA YNEZ RIVER RESCUED STEELHEAD WITHIN THE DRAINAGE BASIN, 1939-1944.

<u>Name of Stream</u>	<u>1939</u>	<u>1940</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>
Santa Ynez R. (lagoon)		191,700		277,600	534,800	452,080
Santa Ynez R. (Solvang)					49,600	146,140
Gibraltar Reservoir	9,000	195,000				25,440
Willard Cr.					1,500	
Whuma Cr.				7,000		
Santa Cruz Cr.	3,000					
Wich Tree Cr.	4,000	22,000		12,000	48,000	38,640
La Caliente Reservoir	13,000	27,000				
<u>Total</u>	29,000	435,700	--	296,600	633,900	662,300

TABLE 3. HATCHERY-REARED FISH PLANTED WITHIN THE SANTA YNEZ RIVER SYSTEM, 1930-1944.

Name of Stream	1930	1931	1932	1933	1934	1935	1936
			Steelhead				
Santa Ynez R.	25,000		8,000	30,000	50,000	20,000	
Libraltar Reservoir			25,000 <sup>a</sup>	87,000	30,000		40,000
Santa Cruz Creek			10,000				
Total	25,000	--	43,000	117,000	80,000	20,000	40,000
			Rainbow				
Santa Ynez R.	5,000						
Libraltar Reservoir			10,000 <sup>a</sup>				
Santa Cota Creek			10,000				
Total	5,000	--	20,000	--	--	--	--
			Brown Trout (Loch Leven and German Brown)				
Santa Ynez R.			5,000	20,000			4,000
Libraltar Reservoir			65,000 <sup>a</sup>	67,000	7,000		
Santa Cota Cr.			15,000			5,000	5,000
Santa Cruz Cr.			25,000				
Indian Cr.	10,000						
Lamar Cr.	20,000						
Total	40,000	--	110,000	87,000	7,000	5,000	9,000
Libraltar Reservoir	--	--	--	--	--	--	4,000

<sup>a</sup> Includes tributaries.

## REFERENCES

Bartholomew, Paul S.

1940. Bird life of the Gibraltar study area. Report prepared in connection with the Coyote-Deer Relationship Study on the area, conducted by the U. S. Fish and Wildlife Service, Calif. Div. of Fish and Game, and U. S. Forest Service. U. S. Forest Service. 19 pp. (mimeographed), map.

Brown, Carl B.

1943. The control of reservoir silting. U. S. Dept. Agric. Misc. Publ. No. 521, 166 pp., 58 figs.

Curtis, Brian

1937. A biological survey of Gibraltar Reservoir, Santa Ynez River System, Santa Barbara County, California. Report submitted to the California Trout Investigation, Nov. 20. 23 pp. (typewritten), map.

Shapovalov, Leo

1940. Report on planting of marked Steelhead Trout in the lagoon of Santa Ynez River, Santa Barbara County, California, 1940. Report submitted to the Calif. Div. of Fish and Game, Oct. 24. 8 pp. (typewritten), photograph.

U. S. Bureau of Reclamation

1944. Report on undeveloped land, water and power resources of California and their utilization in a post-war construction program. U. S. Bureau of Reclamation, Region II, Sacramento, Calif. 45 pp. (mimeographed), with appendices and maps.