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CALIFORNIA FISH AND GAME

"CONSERVATION OF WILD LIFE THROUGH EDUCATION"

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HISTORY OF THE INTRODUCTION OF FOOD AND GAME FISHES INTO THE WATERS OF CALIFORNIA.*

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The California Fish Commission during the first decade of its existence introduced into the waters of this state a number of varieties of food and game fishes and the attending results are regarded as being among the greatest achievements in fish-culture and acclimatization. The only work of the kind that will bear favorable comparison is the introduction of food and game fishes into New Zealand. The success of the work was due largely to the untiring efforts of Dr. Livingston Stone, a fish-culturist of that day, in the employ of the New York Fish Commission; and to the study and the practical work of Mr. J. G. Woodbury, who later became Superintendent of Hatcheries for the California Fish Commission.

The most important work in the introduction of new fishes into the state was accomplished during the period from 1870 to 1883; following this came the preservation of the fishes, and the artificial propagation of the native species on a large scale, to multiply their numbers to meet the demands of commerce and of an increasing population.

Since its initial organization in 1870, the Fish and Game Commission has introduced into the waters of California about thirty new varieties of fish, with varying degrees of success. Following is an account of the species introduced, the dates of introduction, and the results obtained:

1. In 1871, the State Fish Commission secured the services of Mr. Seth Green, the noted fish-culturist, to superintend the transportation of a consignment of shad fry across the continent from New York to California. Mr. Green and an assistant left Albany, New York, on June 19, 1871, with 12,000 young shad fry (*Clupea sapidissima*) and arrived at Sacramento on June 26th. The same day the fish were planted in the Sacramento River, at Tehama. About 10,000 of the fry were in good condition at the time the plant was made. Early in June, 1873, a second shipment of shad was made by Dr. Livingston Stone. The trip across the continent was a joint affair planned by the

Am. Shad

[*No state in the Union has been more successful than California in establishing new food and game fishes, but there are comparatively few of our citizens who know the names or the history of the many introductions. It is fortunate that sufficient records have been kept to make possible this outline of the different attempts to introduce desirable species. The present article is an extract from one which appeared in the "California Blue Book" for 1911, pages 513–527. Although some of the scientific names used are obsolete, yet the name used at the time of introduction has been retained without change.—EDITOR.]

federal and the California commissions, and for the first time a car was used especially equipped for the work of transporting the fish. This aquarium car was the property of the United States Fish Commission; it was fitted with tanks for sea and fresh water, ice chests, apparatus for aerating the water, supplies for the attendants, sleeping accommodations, etc. The car carried nearly 300,000 valuable food and game fishes, consisting of ten species. Unfortunately, owing to the collapse of a railroad bridge over the Elkhorn River, in Nebraska, the car was destroyed and the whole consignment was lost. However, this accident did not deter the California Commission from carrying out its purpose of getting a second lot of shad into California. Dr. Stone was instructed to return East and secure another shipment. Accordingly, on the 25th of June, he left Castleton hatchery, in New York, with a third shipment of shad fry and July 2, 1873, 35,000 were planted in the Sacramento River, near Tehama. The expense of this shipment was paid by the United States Commission. Several other shipments were made by the United States Commission between 1876 and 1880. All the shad fry, totaling 619,000, were planted in the Sacramento River, near Tehama. In 1873, two years after the first shad were deposited in the Sacramento River, several mature specimens were taken in San Francisco Bay. The species has continued to increase until it is now one of the most common fish in our waters.

2. The German carp (*Cyprinus carpio*) was first imported into California in 1872, by Mr. J. A. Poppe of Sonoma County. He brought five fish from Holstein, Germany, and put them into his private ponds, where he held them and did a thriving business for a number of years, selling their progeny for purposes of propagation. In 1877, the California Commission exchanged trout eggs with the Japanese Government for 88 young carp, and in 1879, the Federal Commission shipped 298 carp to California; 60 of these were planted in Sutterville Lake, near Sacramento, the remainder in a private pond in Alameda County, where they were at the disposal of the State Commission. During the same year, J. V. Shebley, a fish-culturist and private pond owner in Nevada County, began the propagation of carp; and in 1883, he sold to the California Commission 600 German carp, which were deposited in the Sacramento River, near the city of Sacramento. In 1882, the United States Commission began to deliver carp to private applicants; and in a short time carp were to be found in nearly all public and private waters of the state, in which they would thrive. At the time these plants were made the carp was one of the most popular of fishes; they were recommended as being valuable food fish that would thrive in all of the warmer lakes, ponds, and streams of California. Much has been said for and a great deal more against the introduction of carp into California; but while they probably have been the principal cause of destruction of the California perch, by eating the eggs and digging up the nests, at the same time they furnish the chief food of the black and the striped bass, two varieties of fish whose value more than offsets the damage done by the carp. In time, as other species become more scarce, the carp will probably become one of the state's most valuable food fishes, as it already is in older states and countries.

3. The eastern brook or speckled trout (*Salvelinus fontinalis*) was first introduced into California in 1872. The state purchased 6,000

fish and distributed them equally in the North Fork of the American River, the headwaters of Alameda Creek, and in the San Andreas Reservoir, near San Francisco. The first shipment of eggs (60,000) that produced results was purchased by the California Commission in New Hampshire, in 1875, and hatched at Berkeley. The fry from this lot were distributed principally in lakes and streams in Mendocino, Sonoma, Napa, Yolo, Alameda, and Santa Clara counties, and in Prosser Creek, Nevada County, and the North Fork of the American River, in Placer County. In 1877, 1878, and 1879, eggs were obtained from New Hampshire and Wisconsin, and the resulting fry were distributed over a large area of the state's waters, the North Fork of the American River and the Truckee River receiving the largest plants. The fish planted in the coast streams did not reproduce, but those planted in Siskiyou, Placer, and Nevada counties, and in the high Sierra lakes and streams multiplied remarkably well. In 1890, the work of propagating the eastern brook trout was taken up in earnest and each year the Commission distributes thousands of these trout in nearly every county having suitable waters; they are now one of our most sought after fish.

4. Between 1872 and 1883 the national commission furnished the state commission with six consignments of whitefish (*Coregonus clupeiformis*), aggregating nearly 1,500,000 eggs. The eggs were hatched at Berkeley, at San Leandro, and in a temporary structure erected on Clear Lake, in Lake County, and the fry were distributed in some of the larger lakes and streams of the state that seemed best adapted to the habits of the fish; but they did not thrive. The western or Rocky Mountain whitefish (*Coregonus williamsoni*) found in the Tahoe basin has been often mistaken for the imported species.

5. In 1874, at the request of the California Commission, a second attempt was successfully carried out to bring the common eel (*Anguilla chrisypa*) to California, the first attempt having ended with the disaster to the aquarium car. Of the original shipment, consisting of several thousand small individuals, the loss in transit of the fresh water eel taken from the Hudson River, New York, was almost complete; but twelve survived, and these were placed in a slough of the Sacramento River, near Sacramento; but the salt water eels from New York Harbor stood the journey better, and about 1,500 were deposited in San Francisco Bay, near Oakland. In 1879, Dr. Stone brought out a second shipment of about 500 small eels; these were planted in the Sacramento River. In 1882, Mr. J. G. Woodbury of the California commission transported ten adult eels from the Shrewsbury River, New Jersey, and deposited them in Suisun Bay. There have been no apparent results from any of these plants.

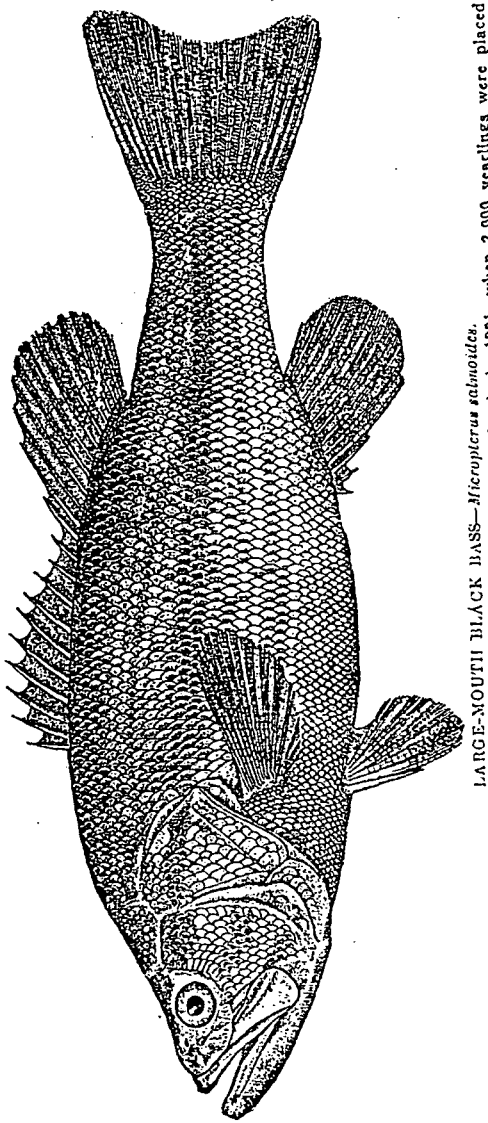
6. The American or eastern lobster (*Homarus americanus*) was first introduced into California waters in 1874, a consignment made the previous year having been lost when the aquarium car was destroyed. Under the auspices of the California commission, Dr. Stone started with 150 full-grown, egg-bearing females from Massachusetts Bay; but four of them reached the coast alive, and these were planted in San Francisco Bay, near Oakland. Subsequently four other small shipments were made, the last in 1888. Plants were made in San Francisco Bay, off Bonito lighthouse, off Point Lobos, to the south of

Carmel Bay, and in Monterey Bay; but although several of those planted in Monterey Bay have been taken by fishermen, no resulting increase in numbers has attended any of the plants made. Thus far the reason for the failure of the lobster to multiply in these waters is not definitely known, as the physical and biological character of the waters of the Pacific Ocean is apparently suitable for its acclimatization.

7. In 1874, several species of catfish were introduced—the common bullhead or horned pout (*Ameiurus nebulosus*), the channel or spotted cat (*Ictalurus punctatus*), the white or Schuylkill cat (*Ameiurus catus*), and one or more species from the Mississippi Valley. On June 12th, fifty-four large Schuylkill catfish from the Raritan River, New Jersey, and the Mississippi catfish, were planted in the San Joaquin River, near Stockton; while seventy bullheads from Lake Champlain, Vermont, were deposited in ponds or sloughs near Sacramento. The Schuylkill cat of the Sacramento River increased very rapidly and soon was as commonly seen in the markets as our native fish.

8. An attempt was made to acclimatize the Atlantic salmon (*Salmo salar*) in 1874, when 305 of the 450 fish brought by Dr. Stone from the Penobscot River, Maine, were planted in the Sacramento River, near Redding. No results were obtained from this plant, as the number of fish planted was not great enough to determine whether they would or would not become acclimated to the waters of the Sacramento. The United States Commission hatched out 200,000 eggs at Fort Gaston, California, in 1890, and in May, 1891, 194,000 fish were liberated in Trinity River; but no run was established.

9. The black basses, both species (*Micropterus salmoides*) the large-mouth and (*Micropterus dolomieu*) the small mouth, have been introduced into California, and have thrived remarkably well. The first shipment, brought out by Dr. Stone in 1874, consisted of seventy-five full-grown spawning bass from Lake Champlain, Vermont, and twenty-four small fish from Saint Joseph River, Michigan, both shipments being of the small-mouth variety; the former were planted in Napa Creek, the latter (twelve survivors), in Alameda Creek. A second shipment of twenty-two mature fish was brought out by Dr. Stone in 1879, and planted in Crystal Springs Reservoir, in San Mateo County, where they increased rapidly; hundreds of the progeny were consigned to various waters in the state. The United States Commission, in 1891, deposited nearly 2,000 yearling large-mouth bass in Lake Cuyamaca, in San Diego County, and 620 in the Feather River, near Gridley. In June, 1895, at the request of the California Fish Commission, the United States Commission delivered 2,500 large-mouth bass fry to the agents of the state commission. These fry were placed in the ponds at the Sisson hatchery, where they thrived, and whence the species was distributed throughout the state, wherever suitable waters were to be found. In the same month, fifty fish were put in each of the following California waters: Buena Vista Lake, near Bakersfield; reservoir near San Diego; and Elsinore Lake, near Elsinore. Agents of the Fish Commission distribute a large number of bass each season from the overflowed districts, where they are seined and deposited in public waters. Both species of the bass are highly esteemed as food and game fishes, and are a great acquisition to the fish life of California.



LARGE-MOUTH BLACK BASS—*Micropterus salmoides*.

Fig. 1. Large-mouthed black bass, first introduced into the waters of California in 1891, when 2,000 yearlings were placed in Lake Cuyamaca, in San Diego County, and 620 in the Feather River near Gridley, Butte County. In 1895 another shipment was received from the United States Fish Commission and placed in ponds at the Sisson Hatchery, from which place they were distributed to all parts of the state.

10. A shipment of eighteen full-grown wall-eyed or glass-eyed pike, or pike perch (*Stizostedion vitreum*) was brought to California in 1874 from the Missisquoi River, Vermont, and sixteen were planted in the Sacramento River, near Sacramento City; but they did not multiply.

11. The tautog (*Tautoga onitis*) was first brought to California by Dr. Livingston Stone in 1874, and a second lot in 1897. Both shipments were deposited in San Francisco Bay; but they consisted of only a few hundred fish each and no results were obtained.

12. Four full-grown rock bass (*Ambloplites rupestris*) of the six obtained from the Missisquoi River, Vermont, were brought to California by Dr. Livingston Stone, in 1874, and deposited in Napa Creek, a tributary of San Pablo Bay, on June 12th. No known results have attended the planting of this fish.

13. In 1877, the California commission exchanged salmon and trout eggs with the Hawaiian Government for a shipment of 100 fish, known as the awa (*Chanos cyprinella*); they were planted in a small stream at Bridgeport, in Solano County. There is no record of any of this species having survived.

14. The eggs of the landlocked salmon (*Salmo salar sebago*) were first brought to California in 1878. Between that date and 1895 at least five shipments were received from the federal commission, totaling about 135,000 eggs. These were hatched at the San Leandro and the Shebley hatcheries, and the fry distributed in the cold lakes of the high Sierras, and in the lakes and streams of the Truckee Basin. A few fish have been taken that had reached maturity, but the species has not increased in numbers. The fish have been held in the hatchery ponds at Sisson for a time and have thrived, but no particular effort has been made to propagate them. A shipment of the eggs was hatched at Sisson hatchery and another lot at Bear Valley hatchery, in the early nineties.

15. One of the most important and successful importations of fish into California waters was made when the striped bass (*Roccus lineatus*) was introduced in 1879. The introduction of this valuable food fish was first suggested by S. R. Throckmorton, president of the California Fish Commission, in a letter to Professor Spencer F. Baird, then United States Commissioner of Fisheries. As a result of this suggestion, Dr. Livingston Stone was instructed to transport a shipment of striped bass to California. Accordingly, he collected from the Navesink River, in New Jersey, 132 fish, ranging from one and one-half to five inches in length, and thirty medium-sized fish. Twenty-five of these died en route, but the remainder, about 135, were deposited in the Straits of Carquinez, at Martinez. Individuals from the first lot were caught in the lower waters of the bay within a year from the time that they were planted, and a number were caught occasionally for several years afterward; but the commission decided to have a second shipment made from the East, as it was not certain that the fish were increasing. Accordingly, in June, 1882, Mr. J. G. Woodbury was sent East by the California Fish Commission to procure another shipment. He collected 450 fish five to nine inches long from the Shrewsbury River, New Jersey, and in the latter part of July arrived with a little over 300 of the fish in good condition; they were planted in Suisun Bay, at Army Point, near Suisun. Considering the small number of fish introduced and their remarkable increase in a few years, the result obtained from the introduction of the striped bass into California is one of the greatest feats of acclimatization of new species of fish in the history of fish-culture. In 1889, hundreds of them, weighing from one-half to a pound each, were being caught and sold in the San Francisco markets. From 1889 to 1892, the number caught had increased 250 per cent; such quantities were being taken in 1889, it was feared the fish would be exterminated before they had come to maturity and had a chance to reproduce; so the Supervisors of San Francisco County, at the request of the Board of Fish Commissioners, passed an ordinance prohibiting the sale of striped bass under eight pounds in weight. A state law was afterward passed making it unlawful to take bass under one pound; and later this was changed to the present limit of three pounds. It is now also unlawful to ship striped bass from the state. The striped bass is one of the finest food and game fishes in the United States; and if the California Fish Commission had not succeeded in acclimatizing any other variety of fish, the value of the striped bass alone would more than repay the people for all the money expended in introducing other species. Over two million pounds of striped bass have been marketed in one season in San Francisco. This does not include the amounts sold in other places.

16. In 1891, 3,000 yearling yellow or ringed perch (*Perca flavescens*) were deposited by the United States Commission in the Feather River, and 3,980 in Lake Cuyamaca, in San Diego County, where they increased rapidly. A few were taken to Sisson hatchery and placed in the rearing ponds, in 1895. They remained healthy and made a good growth, but owing to lack of pond room no efforts were made to propagate them to any extent. Occasionally a few have been taken from the Feather River and from some of the sloughs in that region, but as the species has not been generally distributed, the results of the planting have not been fully determined.

17. Four hundred yearling warmouth bass (*Chænobryttus gulosus*) from Quincy, Illinois, were planted by the United States Commission in Lake Cuyamaca, near San Diego, in 1891. In the same year, 100 yearlings were deposited in Feather River, near Gridley, Butte County; and in 1895, twelve fish were delivered at Sisson hatchery, but they were not in good condition. Six of them died shortly after they were placed in the ponds; the remaining six survived until the following spring, but food conditions not being suitable, they did not thrive and died before spawning.

18. The crappie (*Pomoxis annularis*) and the strawberry or calico bass (*Pomoxis sparoides*) were introduced in the early nineties, but were not widely distributed. In 1891, 285 yearlings were deposited in Lake Cuyamaca, near San Diego, and in 1895, 50,000 fry were sent to the Sisson hatchery; but none of them lived.

19. In 1891, a shipment of 400 yearling pike (*Lucius lucius*) was made to Lake Cuyamaca, near San Diego, and another 100 were placed in the Feather River, in Butte County. The fish planted in Lake Cuyamaca increased for a time, but those in the Feather River have not multiplied. In 1895, six pike were delivered at Sisson hatchery; they thrived in the ponds for a year, when they were placed in an aquarium

at the Mechanics Fair, in San Francisco, and died before the fair was over. It is well that they died and that those planted in the Feather River did not survive; for the species is too predatory to plant among our valuable fishes.

20. In May, 1893, the New York commission gave 100,000 muskellunge fry (*Lucius masquinongy*) from Chautauqua Lake to the California Fish Commission. The United States Bureau of Fisheries transported the fish free of charge as far as Ogden, from which place the consignment was under the auspices of the California commission, the Spring Valley Water Company paying half the cost of transportation from Ogden to San Francisco. The fish were received in good condition, and 93,000 were placed in Lake Merced, near San Francisco, to destroy the carp in the lake, as they were keeping it roily and made the water almost unfit for use, but they did not survive; and as in the case of the pike, it is probably as well that they did not, for while they are a game fish, they are too predaceous to place among our more valuable fishes. These fish were put in private waters with the understanding that the commission might take such fish for distribution or breeding purposes as might be desirable.

21. The lake trout (*Salvelinus namaycush*), known also as the salmon or Mackinaw trout, was first brought to California in 1894. The shipment of 100,000 eggs was hatched at the Sisson hatchery, with a loss of only 7 per cent. Sixty-five thousand of the fry were planted in Lake Tahoe in May, 1865, the remainder being held in the ponds at the Sisson station and shipped the following season. Several other lots were hatched at Sisson, and the fry deposited in the lakes of the Truckee Basin. A number of these fish are taken each season from the waters that have been stocked, where they have thrived to a considerable extent, but not as well as was expected. This trout is abundant in the waters of lakes Superior, Huron, and Michigan, and should attain a large size in Lake Tahoe, as the species is adapted to cold, clear, deep lakes.

22. In February, 1894, 20,000 eggs of the Loch Leven or Scotch lake trout (*Salmo trutta levenensis*) were sent to the California commission from the stock ponds of the United States Government at Northville, Michigan. They were hatched at Sisson hatchery, and the fry deposited in the hatchery ponds, where they thrived. The stock has been retained in the Sisson hatchery ponds ever since, where they have been propagated successfully, and thousands of the fry are shipped each year for distribution in the public waters of the state.

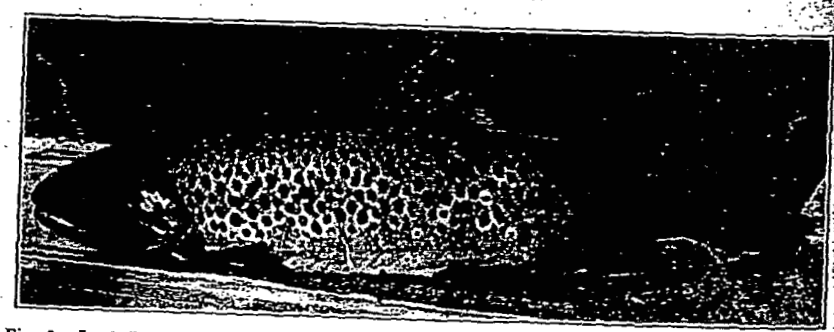


Fig. 2. Loch Leven trout. The original stock of Loch Leven trout was received in 1894, when 20,000 eggs were received from the United States Fish Commission Hatchery at Northville, Michigan. Thousands of Loch Leven trout fry are now shipped out from the Sisson Hatchery each year.

The Loch Leven and the German brown trout are closely allied and appear to be but different varieties of the same species. They are somewhat different in their habits, but do equally well in the clear, cold lakes and streams of the Sierras, as well as in the region around Mount Shasta. The two varieties have been crossed at the Sisson hatchery, and have produced a strong, gamy fish.

23. In 1895, 135,000 Von Behr or German brown trout eggs (*Salmo fario*) were hatched at the Sisson hatchery. Several thousand fry were placed in the ponds to be raised for breeders, and the remainder were distributed in a number of the lakes and streams of the high Sierras. Previous to this the federal government had made several plants in the state.

24. Twelve yearling white bass (*Roccus chrysops*) were received at Sisson hatchery from Quincy, Illinois, in June, 1895. They were not in good condition and seven of them died shortly after their arrival; the others died the following fall. This introductory shipment of white bass is the only one of which there is any record.

25. Small plants of the green sunfish (*Lepomis cyanellus*) and the bluegill or blue bream have been made in California. In 1895, twelve yearlings were delivered to the Sisson hatchery; eighteen were put in Elsinore Lake, and eighteen in the Bolsa Chico River. A few were accidentally introduced with other fish into Lake Cuyamaca, near San Diego, in 1891. Wherever conditions are favorable, these fish have thrived.

26. The California Fish Commission has endeavored to introduce the Montana grayling (*Thymallus montanus*) into the waters of California, but so far without any known results. The eggs are very delicate and the fry hard to raise. In 1904, 100,000 eggs, from Bozeman, Montana, were received at the Sisson hatchery in good condition. Seven thousand of the fry were placed in a pond that was thought suitable for them; they thrived for eighteen months, then became diseased and died off, until only 600 were left; these were placed in a pond where they were in an entirely wild state and could subsist on natural food. These fish and a few that were saved from a lot received the following year grew up together and promised to furnish some eggs for propagation, but owing to the accidental bursting of the pond wall, the fish escaped into one of the tributaries of the Sacramento River, just as they were reaching maturity. Several thousand of the fry were distributed from the second lot of eggs that were received, into waters that, from descriptions given of the fishes' habits, appeared to be ideal, but no results have been noted thus far. The grayling is considered by some anglers to be the most beautiful and graceful of American fresh-water fishes. They rise to the artificial fly more quietly than do the trout, but make a good fight and are an excellent table fish.

The last lot of fresh-water fishes received in California from the United States Bureau of Fisheries was in November, 1908. The fish were shipped from Meredosia, Illinois, and consisted of crappie (*Pomoxis annularis*), blue-gilled sunfish or bream (*Lepomis pallidus*), and yellow perch (*Perca flavescens*). They were distributed as follows:

Four cans of crappie and sunfish in Honey Lake, Lassen County; a number of yellow perch and crappies in Vera Lake, Nevada County;

sunfish and yellow perch in lakes in Placer County, and in sloughs of the Feather and Sacramento rivers; some of all three varieties near Stockton, and in Clear Lake, Lake County; perch and sunfish in Kings River and San Joaquin River, and sunfish and yellow perch in Kern River and Buena Vista Lake. Some of the fish were planted in Russell's Lake, Ventura County, and in suitable waters in Los Angeles, Riverside, and Orange counties. Reports from several of these places have been received and indicate that the fish are thriving and increasing.

No effort has ever been made by the commission to introduce eastern oysters, but it is stated that they were first brought into California in or about 1870, by Mr. A. Booth of Chicago, and it is recorded that the first shipment, consisting of three carloads of large oysters, so overstocked the market that in order to avoid loss the consignee had to plant in San Francisco Bay all the stock not promptly disposed of. The enforced planting resulted favorably, and it became the custom to annually ship one-year and two-year seeds to be planted on the grounds in the southern part of San Francisco Bay, where they remained for two and three years, or until they attained a suitable size for marketing. There have been various reports of wild eastern oysters taken at different points in the bay, and Mr. Chas. H. Townsend, in the Report of the United States Fish Commission for 1889–91, says: "It is possible that during the long time eastern oysters have been kept in the bay they have become in a measure acclimated, and that there is a constantly increasing tendency to propagate—that is, the progeny of oysters grown here become hardier with each generation and better adapted to the colder but more equable waters." Full accounts of the early eastern oyster industry in San Francisco Bay are given in Mr. Townsend's article and in an article by Captain J. W. Collins, in the Report of the United States Fish Commission for 1888.

From 1899 to 1908 the oyster industry decreased gradually, all of the oysters taken in the latter year being taken from private beds, and used for market purposes only. All seed oysters planted that year were shipped from eastern beds.

The appearance of the soft-shell clam in San Francisco Bay was first noted in 1874. The spawn is supposed to have been accidentally introduced with the carloads of eastern oysters planted in the vicinity of San Francisco. They soon covered the mud flats surrounding San Francisco Bay, and were taken in great numbers.

THE FISH DISTRIBUTION OF 1916.

By G. H. Lambson, Superintendent Sisson Hatchery.

When the last carload of trout left the hatchery we gave a sigh of relief to think that the arduous work of the past four months had been brought to a successful conclusion, and that so many fine trout had been planted in the public waters of the state, where all could enjoy the pleasure and profit of catching them. There were the gamy steelhead, the beautiful eastern brook trout, the black-spotted trout from the cold waters of Tahoe, the Loch Leven trout whose ancestors came from Scotland, and last but best our own native favorite—the rainbow. They were fine, lusty fellows, and all were sent forth to the waters best suited to each kind, to add to the health and pleasure of our people.

Our thoughts turned to the many anglers who, by purchasing licenses, supported the hatcheries and made the great work possible. But they have their reward, for any one who catches but two pounds of trout during the season is repaid in a medium as valuable as gold, while he who catches as much as twenty pounds receives a thousandfold return. But there is a greater value, more subtile, but none the less real, that of the health and pleasure of the people. On any summer night along a hundred streams and lakes may be seen gleaming the campfires of the happy anglers, camping out and breathing the health-laden air of wood and stream. The worried business man, the weary laborer, the professional man, all are there, often, with their entire families, and all reaping a greater profit than could be had from any other investment, for health and pleasure are the dividends.

Our state is famous for its beautiful women and keen, alert men of business, and if the cause could be sifted into its component parts I wonder how much would be found to be due to our well-stocked streams? Surely it would be very large.

The favorite prescription of the physician is to "take a rest, go out into the country and live next to nature," and, I would add, come back with renewed vigor for the strenuous life of today. But the physician's advice is disregarded unless there is some incentive to urge them on, and this is supplied by the fine fishing in our streams and lakes which are stocked annually from the hatcheries.

The commercial side has also received close attention and millions of salmon have been planted in the Sacramento and Klamath rivers. They were not the small fish of the earlier season, but fine, big, well-fed yearlings from three to six inches long, fish that are fully able to cope with the dangers that beset them on their journey to the sea, and which will return in from three to six years as mature salmon and add to the wealth of the state, to the delight of the angler, and to furnish a delicious food to those who must, perforce, procure their fish from the market. In our twenty years' experience in salmon work we have never seen planted such large and healthy fish as those distributed this season.

In the distribution from the Sisson hatchery there were forty-three carloads of the various kinds of trout, each averaging 100 cans, and