

California. Dept. of Fish and Game.
Biennial Report 1942-1944.

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STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES
WARREN T. HANNUM, DIRECTOR



THIRTY-EIGHTH BIENNIAL REPORT
OF THE DIVISION OF
FISH AND GAME
FOR THE YEARS 1942-1944



printed in CALIFORNIA STATE PRINTING OFFICE



52283

CONTENTS

| | Page |
|--|-------------------|
| LETTER OF TRANSMITTAL | 5 |
| REPORTS | |
| Fish and Game Commission | 7 |
| Library | 8 |
| Fish Conservation..... <i>By A. C. Taft</i> | 9 |
| Game Conservation..... <i>By J. S. Hunter</i> | 15 |
| Waterfowl Public Shooting Grounds in California..... | 16 |
| Game Farms..... <i>By August Bade</i> | 27 |
| Patrol and Law Enforcement..... <i>By L. F. Chappell</i> | 30 |
| Marine Fisheries..... <i>By Richard Van Cleve</i> | 33 |
| Engineering..... <i>By John Spencer</i> | 42 |
| License Distribution..... <i>By H. R. Dunbar</i> | 45 |
| Sardine Canning and Reduction Plants..... <i>By S. H. Dado</i> | 86 and 100 |
| STATISTICAL REPORTS | |
| License Sales | 46 |
| Fish Distribution and Rescue..... | 59 |
| Predatory Animal Take..... | 74 |
| Arrests and Convictions..... | 75 |
| Seizures of Fish and Game..... | 76 |
| Record of Deer Kill..... | Between 80 and 81 |
| Record of Mountain Lion Bounties..... | Between 80 and 81 |
| California Fresh Fishery Products..... | 81 |

In Memoriam

It is with much regret the Division reports the following deaths and retirements of members of its staff during the biennium and wishes at this time again to give recognition to the faithful and efficient service rendered by these employees.

| | <i>Entered service</i> | <i>Died</i> |
|-----------------------------------|------------------------|----------------|
| A. R. Ainsworth ----- | 8/ 1/27 | 8/ 8/42 |
| James L. Stinnett ----- | 1917 | 8/ 3/42 |
| C. L. Bundoek ----- | 1925 | 6/ 5/43 |
| E. A. Chan ----- | 1926 | 4/26/43 |
| Alvin Granstrom ----- | 1936 | 7/21/43 |
| Charles R. Love ----- | 1929 | 8/11/43 |
| Arthur Boeke (war casualty) ----- | | July, 1943 |
| | <i>Entered service</i> | <i>Retired</i> |
| Henry Lencioni ----- | 8/27/07 | 9/30/42 |
| J. C. Lewis ----- | 1922 | 9/30/42 |
| J. D. Dondero ----- | 1917 | 10/31/42 |
| M. S. Clark ----- | 8/20/11 | 11/30/42 |

LETTER OF TRANSMITTAL

July 1, 1944

To HIS EXCELLENCY, EARL WARREN,
Governor, State of California,
Sacramento

SIR: We, the members of the Fish and Game Commission, are happy to submit our biennial report covering the period July 1, 1942, to June 30, 1944.

The following report covers the activities of the various functions within the division.

Respectfully submitted.

NATE F. MILNOR, President
DOM A. CIVITELLO, Commissioner
LEE F. PAYNE, Commissioner
H. L. RICKS, Commissioner
W. B. WILLIAMS, Commissioner

REPORT OF THE FISH AND GAME COMMISSION

During the past biennium, appointments made to the Fish and Game Commission under the constitutional amendment adopted November, 1940, resulted in the following changes in personnel in the commission :

H. L. Ricks appointed March 6, 1944; vice Edwin L. Carty, term expired January 15, 1943.

Dom A. Civitello appointed March 15, 1944; vice Germain Bulcke, term expired January 15, 1944.

Due to the war, unusual problems were presented to the Fish and Game Commission for its action. They shall be itemized briefly here as more detail is contained in the reports of the bureau chiefs which follow.

Recommended closing of large portion of the State in Southern California to deer hunting. This originated by a request of the General of the Western Defense Command to the Governor requesting such closures due to fire hazard.

In 1943, a portion of Lassen and Modoc Counties was opened to antelope hunting for the period September 11th to September 20th and in 1944 from September 8th to September 17th.

In 1943, due to the closure of a large portion of the State to deer hunting due to fire hazard, and finding that deer had increased in certain areas to such an extent that a surplus thereof existed, a special hunting season for deer was declared for the period December 11, 1943, to December 31, 1943.

Also due to the stress of the times, it was found necessary for the Fish and Game Commission to enact regulations controlling the sardine fishing fleet during 1943. The ensuing year, this work was conducted by the office of the Coordinator of Fisheries of the Federal Government, created by an Executive Order of the President of the United States.

The work of the Fish and Game Commission was greatly handicapped by lack of personnel, but despite this shortcoming, we are proud to report that more fish were produced in the hatcheries and more game birds reared at the State game farms than in previous years.

LIBRARY

By BESSIE W. KIBBE, Departmental Librarian

Despite the war's effect on the personnel of our division, the utilization of the Library's facilities has not diminished; the requests by those who are carrying on definite fish and game studies and projects grow daily.

There has been a reduction in the number of students and other visitors from the outside, due to preoccupation with the war, although officers and men of the Army and Navy have called upon our Library frequently for information about the natural history—especially fish—of the Pacific theatre of war.

The war has continued to prevent the receipt of most foreign periodicals, although those from Australia, New Zealand and England have come through regularly.

The Library has contributed its revised holdings to the *Union List of Serials of the San Francisco Bay Region, Supplement*, one of the important tools in libraries in this territory.

The rehabilitation of some of the Library's much-used volumes, and the binding of periodicals deemed worthy of permanent retention, was carried on.

We were able to purchase the very much desired back numbers of *Biological Abstracts*, thus completing our file of this important library tool.

The Library's shelving and floor space is gradually becoming more and more crowded.

The duties connected with the properly functioning of our division's Library, which cover so many phases and sections of any general or branch library: reference, catalog, laws and legislation (fish and game laws and reports of all States and foreign countries) and order section, have so materially increased with the steady natural growth of our Library, that it is becoming somewhat difficult for one person to carry on, in an adequate and completely satisfactory manner, all the attendant details that the management of such a Library entails. It is hoped that when more normal times return, additional facilities, both in space and assistance, may be given this Library.

The policy of the division's Library, with restricted funds permitting, is to furnish books and material helpful to our force in the studies and work pertinent to fish and game and conservation thereof. To this end, during the thirty-eighth biennial period, we have added 336 books; by purchase amounting to \$1,243.14; by gift \$188.35. The total number of bound volumes on file is 3250, with a value of \$11,772.18.

Scientific pamphlets added during this period were 718, being \$59.11 by gift; \$103.64 by purchase. Total number of pamphlets catalogued and filed are 7997, with an appraised and/or known value of \$1,385.53. Books and pamphlets represent \$13,157.71.

A microfilm reader and certain special films were added to the other property holdings of this Library, but the value of all such property is not included in this report.

REPORT OF THE BUREAU OF FISH CONSERVATION

By A. C. TAFT, Chief

During the biennial period work has centered around an effort to maintain a normal program so far as wartime limitations would permit. Differences between this and the previous biennium are thus largely those brought about by the war.

The year 1941, just prior to the war, was the all time high in the sale of angling licenses, 458,177 having been issued. On the basis of experience in the previous World War it was expected that license sales would fall off rather severely in 1942 and 1943. This did not occur and 433,431 were issued during the first year of the period and 439,860 during the second. Even during 1944 under drastic gasoline rationing both for boats and cars it appears that the number of anglers will be within 6½ per cent of the high figure for 1941.

With angling effort remaining at a high level the problem of maintaining the supplies of fish under definite limitations as to manpower and equipment became difficult. Almost all assistant wardens, both permanent and seasonal, left the division and only 30 permanent fish hatchery assistants remained out of a normal quota of 50. Even with such temporary replacements as could be made the total manpower remained from 12 to 15 per cent below normal. In a number of instances the wives of hatchery employees and other women were hired for seasonal or part time work, which made it possible to carry on work at stations which would have otherwise been closed.

Little new equipment has been available and inability to make replacements has been most severely felt in heavy trucks, gasoline motors for fish planting equipment and tires. No new tires have been purchased since 1941 and only careful management and the utmost economy in mileage has made it possible at the same time to plant an increasing amount of fish.

In 1940 there were 133,949 pounds of trout planted and in 1941 the total was 167,647. In spite of the many problems of operation brought about by the war the poundage was increased to 238,279 in 1942 and to 275,401 in 1943. The 1943 planting was thus an increase of 12 per cent over 1942. The point has now been reached where more than a pound of trout is being planted for each licensed angler who fishes for trout. It is not to be expected that this total can be very much increased with present facilities of manpower and equipment.

The following table shows the hatcheries and egg taking stations that were operated during the biennium. Where operations were temporarily or permanently discontinued that is also indicated.

TABLE 1

Hatcheries and Egg Collecting Stations Operated 1942-43

Hatcheries

| | |
|--|--|
| Alpine, temporarily closed in 1943 | Kaweah |
| Arrowhead, closed in 1943 | Kern |
| Basin Creek | Kings River |
| Black Rock, opened in 1942 | Lake Almanor |
| Brookdale | Madera (seasonal), temporarily closed in 1943 |
| Burney Creek | Mount Shasta |
| Central Valleys | Mount Whitney |
| Coy Flat (seasonal), opened in 1942 | Prairie Creek |
| Fall Creek | Rearing Reservoirs, closed in 1943 |
| Feather River | Sequoia |
| Fern Creek, closed in 1942 | Tahoe |
| Fillmore, enlarged in 1942 | Tallac |
| Fort Seward, closed in 1943 | Yosemite |
| Hat Creek | Yuba River |
| Huntington Lake (seasonal), temporarily closed in 1943 | |

Egg Collecting Stations

| | |
|---|---|
| Fall Creek (Steelhead and salmon) | Heenan Lake (Black spotted), closed in 1943 |
| Little Walker Lake (Eastern brook) | Kirman Lake (Eastern brook), closed in 1943 |
| Prairie Creek and Lost Man Creek (Silver salmon) | Klamathon (King salmon), temporarily closed 1943 |
| Rush Creek (Loch Leven) | Lake Eleanor (Rainbow), closed in 1943 |
| San Lorenzo River (Steelhead) | Shasta River (Steelhead), closed in 1943 |
| Suow Mountain (Steelhead) | |

At the end of the biennium only four of the seven members who composed the regular biological staff at the start of the war remained on duty—Brian Curtis, Supervising Fisheries Biologist, and Joseph H. Wales, Leo Shapovalov and William A. Dill, District Biologist. The three junior aquatic biologists were on military leave, Earl Herald having left before the beginning of the biennium and Elden Vestal and Chester Woodhull at the end of 1942. Six men were employed at various times on seasonal or part-time basis. A. B. Murphy, Alex E. Culbertson, J. C. Marr, Garth Murphy, Warren R. Cheney and William H. Davenport.

The accomplishments of the staff are to some extent reflected in the list of reports and publications which follows. Routine activities were carried on such as lake and stream surveys and recommendations for stocking, for stream closures and for other forms of regulation. Projects of special interest are described below.

The life history of the steelhead and, incidentally, of the silver salmon, has been under study at Waddell Creek since 1932. Mr. Leo Shapovalov has practically completed writing up this work which will be published shortly and which will be an outstanding contribution to the knowledge of these species.

That part of the Colorado River which borders California was surveyed by William A. Dill and Chester Woodhull in 1942. The resulting report, published in July of 1944 after an exhaustive study of the data obtained, presents information about this area never before brought together under one cover and offers concrete proposals for the management and regulation of the fishery.

Experiments on the electric fish screen were carried on by J. H. Wales at Hat Creek in Shasta County where the Pacific Gas and Electric Company installed one of these devices at their Hat No. 2 Power House and made it available to us for this purpose. Here the discovery was made that if, instead of placing the live electrodes downstream from the ground as has been done in the past, they were placed upstream, there would result an electric field extending upstream from the electrodes with gradually diminishing strength. It is possible that this system will prove better adapted to the repulsion of fish of all sizes than the previously used design, where the field extended with quite uniform strength from the electrodes upstream to the ground and then ended rather abruptly. As a result of these experiments the desirability of further knowledge of the water velocities which trout of various sizes can overcome became apparent and accordingly tests on their swimming speed are now underway at Mt. Shasta Hatchery.

Lake fisheries have received much attention during the biennium. June and Gull Lakes in Mono County were under close observation by Elden Vestal prior to his induction into the Army in December, 1942, and here it was shown that planting of sized rainbow from the Hat Creek fall spawning stock at the opening of the fishing season would provide a yield of 50 per cent to the anglers' ereels. Intensive studies by J. H. Wales of Castle Lake in Siskiyou County dealt with the yield obtained by planting fingerling trout of various species and showed that on the average about 5 per cent of the number planted would reach the angler's creel. The latest step here has been the introduction of soy bean meal to see if fertilization of a natural lake of this size can be a practical means of improving its fishery. Clear Lake was investigated at the request of the Lake County Board of Supervisors with respect to the effect on the sport fishery of commercial netting of rough fish and regulations were proposed under which the latter is now carried on. A preliminary survey of Millerton Lake above Friant Dam was completed and one of the Shasta Reservoir initiated. Creel counts of a less extensive nature were carried on at Stevens Creek Reservoir in Santa Clara County and at Frog Lake in Nevada County. A project for the survey of barren lakes has been carried on each summer by Mr. Dill in cooperation with the Fresno County Sportsmen's Club for the purpose of assuring proper management of these lakes from the start.

The control of rough fish in lakes through rotenone poisoning has been difficult due to the shortage of this material, but Ballard Reservoir in Modoc County has been successfully treated and brought back into production, as well as two smaller lakes in this same region, Cave and Lily.

The whole question of stream flow maintenance has received much attention, from high altitude cheek dams for the improvement of mountain streams to amounts of water needed for release, from dams built and to be built on our large rivers, for preservation of fish and fishing.

The Salton Sea mullet fishery was briefly investigated by Dill and Woodhull and recommendations made on which the present regulation of the commercial catch is based.

At the Central Valleys Hatchery at Elk Grove experiments were initiated which have to do not only with the production of spiny rayed fishes for stocking but also with desirable species combinations for use

in farm ponds. Interest in the latter is apparently on the increase in California.

The striped bass investigation has suffered from lack of competent personnel. A trained biologist, Garth Murphy, was employed November 15, 1943, on a part-time basis but was inducted into military service in March, 1944. During that period his work consisted principally of sampling the sportsman's catch with reference to the concentrations of fish and to their growth, food, spawning habits, etc. In an effort to get some idea of the number of striped bass taken by commercial nets, three salmon fishermen were inducted to keep records during May and part of June. These indicated one bass to every 10 to 15 salmon.

An experiment started in 1941 bore fruit in 1943. The "Kokanee," a landlocked form of the sockeye salmon very popular with fishermen in Washington and Oregon, but not found in California, was introduced into Salt Springs Reservoir on the Mokelumne River in July, 1941. These fish thrived and reached maturity in the autumn of 1943 when eggs were taken for transplanting. To the eggs thus obtained were added others purchased outside the State and the experiment is now being extended by planting these fish in several other lakes in different parts of the State.

Statistics on the angling catch were gathered as usual throughout the biennium but the 1943 report is not yet ready due to delay in processing of the material by the organization which contracted for this work when it was given up by the division's statistical department at Terminal Island because of reduced personnel. The 1942 figures showed a trout catch of 16,400,000 by 234,000 anglers as against a catch of 15,700,000 by 238,000 anglers in 1941, with an increase in the average catch from 66 to 70. The striped bass catch in 1942 was 1,760,000 by 93,000 anglers as against 2,035,000 by 111,400 anglers in 1941, the average catch remaining unchanged at 18 fish per angler for the season.

The editorship of the quarterly magazine CALIFORNIA FISH AND GAME was assigned to Brian Curtis when Richard Croker went into the Army at the beginning of the biennium.

Following is a list of the publications and administrative reports prepared during the biennium.

PUBLICATIONS

- Reclamation with Rotenone of Crystal Lake, Los Angeles County, California, Elden H. Vestal. Vol. 28, No. 3, C. F. and G.
- A game fish for the Salton Sea, the ten-pounder, *Elops affinis*, William A. Dill and Chester Woodhull. Vol. 28, No. 4, C. F. and G.
- Resources of the Sea in Wartime. Brian Curtis. Vol. 28, No. 4, C. F. and G.
- Twenty-five years ago in CALIFORNIA FISH AND GAME, Brian Curtis. Vol. 28, No. 4, C. F. and G.
- Twenty-five years ago in CALIFORNIA FISH AND GAME, Brian Curtis. Vol. 29, No. 1, C. F. and G.
- Twenty-five years ago in CALIFORNIA FISH AND GAME, Brian Curtis. Vol. 29, No. 2, C. F. and G.
- Twenty-five years ago in CALIFORNIA FISH AND GAME, Brian Curtis. Vol. 29, No. 3, C. F. and G.
- Twenty-five years ago in CALIFORNIA FISH AND GAME, Brian Curtis. Vol. 29, No. 4, C. F. and G.
- Twenty-five years ago in CALIFORNIA FISH AND GAME, Brian Curtis. Vol. 30, No. 1, C. F. and G.
- Creal Returns From Hatchery Trout in June Lake, California, Elden H. Vestal. Vol. 29, No. 2, C. F. and G.

- Rehabilitation of a Modoc County Reservoir for Trout Fishing, J. H. Wales. Vol. 29, No. 2, C. F. and G.
- Fish Rescue in California, Chester Woodull. Vol. 29, No. 3, C. F. and G.
- Mussel Poisoning Twenty-five Years Ago and Today, Brian Curtis. Vol. 29, No. 3, C. F. and G.
- James Moffitt, 1900-1943, Brian Curtis. Vol. 29, No. 4, C. F. and G.
- *Black Spotted Trout in Blue Lake, California, A. J. Calhoun. Vol. 30, No. 1, C. F. and G.
- Fresh Ocean Fish as a Trout Diet, J. H. Wales. Vol. 30, No. 1, C. F. and G.
- The Tench in California, Leo Shapovalov. Vol. 30, No. 1, C. F. and G.
- Trout Fishing Restored to Modoc County Reservoir, J. H. Wales. Vol. 30, No. 1, C. F. and G.
- **Hesperoleucus symmetricus* Reported From Clear Lake, Lake County, California, Garth Murphy. Vol. 30, No. 1, C. F. and G.
- *The Food of the Black-spotted Trout (*Salmo clarkii henshawi*) in Two Sierra Nevada Lakes, A. J. Calhoun. Vol. 30, No. 2, C. F. and G.
- *The Bottom Fauna of Blue Lake, California, A. J. Calhoun. Vol. 30, No. 2, C. F. and G.
- The Fishery of the Lower Colorado River, William A. Dill. Vol. 30, No. 3, C. F. and G. (In press at end of biennium).

The following were published by members of the Bureau of Fish Conservation other than the biological staff:

- Diamond-back Terrapin Introduced into California, A. C. Taft. Vol. 30, No. 2, C. F. and G.
- In Memoriam, Richard de Large, A. C. Taft. Vol. 30, No. 2, C. F. and G.
- John Otterbein Snyder, A. C. Taft. Vol. 30, No. 1, C. F. and G.
- Selective Breeding of Rainbow Trout at Hot Creek Hatchery, R. C. Lewis. Vol. 30, No. 2, C. F. and G.
- Golden Trout Propagation in California, George McCloud. Vol. 29, No. 4, C. F. and G.

ADMINISTRATIVE REPORTS

Brian Curtis

- Angling Catch Records, 1942. Submitted April 24, 1944.
- Angling Catch Records, 1941. Submitted July 10, 1942.
- The Frog Lake (Nevada County) Fishery in 1943. Submitted March 1, 1944.
- The Frog Lake (Nevada County) Fishery in 1942. Submitted January 12, 1943.
- Fisheries Aspects of South Fork of Stanislaus Stream Flow Maintenance Surveys. Submitted September 14, 1943.
- Report on Check Dam Reconnaissance in Silver Lake, Amador County Area. Submitted September 16, 1942.

Joseph H. Wales

- Poisoning of Cave and Lily Lakes, Modoc County, October 18-19, 1943. Submitted November 30, 1943.
- General Report on Lake Almanor, Plumas County. Submitted December 10, 1943.
- Castle Lake Report for 1943. Submitted March 17, 1944.
- Castle Lake Report for 1942. Submitted January 13, 1942.
- Report of Investigations on Clear Lake, Lake County, California. Submitted April 10, 1943.
- Report of Tests Made at the Hat No. 2 Electric Fish Screen, June-July, 1943. Submitted August 12, 1943.
- Diversion of Water From the Pit River to the Pacific Gas and Electric Pit 5 Power House. Submitted March 12, 1944.
- Summary of Weekly Disease Reports for 1943. Submitted March 15, 1944.
- Summary of Weekly Disease Reports for 1942. Submitted March 2, 1943.
- Shasta Valley Fish Screens. Submitted January 14, 1944.

William A. Dill

- Tule Indian Reservation Project, Report on 1942 Fish Marking and Planting. Submitted October 14, 1942.

* Publications based on work performed by the author while employed by the Division of Fish and Game.

- The Inland Mullet Fishery of California, Report No. 2. Submitted November 10, 1942.
- A Preliminary Report on the Potential Fishery of Millerton Lake With Suggestions for its Management. Submitted April 9, 1943.
- A Fisheries Survey of the Upper Bear Creek Drainage, Fresno County, California. Book I, General Account; Book II, Detailed Surveys of Individual Waters. Submitted May 28, 1943.
- Tule Indian Reservation Project, Report on 1943 Fish Marking and Planting. Submitted October 1, 1943.
- Stream Closure in Tulare County: Boulder Creek. Submitted June 5, 1944.
- Preliminary Suggestions for Postwar Projects, Fresno Biological District. Submitted June 15, 1944.
- The Colorado River Survey, 1942. Book I, Dams, Diversions, Pumps. Submitted June 26, 1944.

William A. Dill and Chester Woodhull

- The Tule River Indian Reservation Creel Count, 1942. Submitted August 21, 1942.
- The Possibilities of Increasing and Maintaining a Run of Salmon (*Oncorhynchus tshawytscha*) in the Kings River, California. Submitted September 10, 1942.

William A. Dill and G. S. Gunderson

- Hatchery Sites, Tulare County: Moorehouse Creek Spring. Submitted September 30, 1943.

REPORT OF BUREAU OF GAME CONSERVATION

By J. S. HUNTER, Chief

The need for a better understanding of the problems of conservation by all interested has been very apparent during the past biennium. With the need to produce more food it has been necessary to give consideration to all those causes that result in less production, and with the higher value of agricultural crops the loss of any portion of the crop has been more apparent to the producer. Wildlife that reduces crop production is regarded by the extremist the same as insect pests and should be destroyed. Fortunately such people do not predominate and wildlife, generally, is regarded both for its intrinsic and aesthetic value. It is, however, necessary for the conservationist to give consideration to the damage that is or may be caused and to develop protective measures that will keep the loss to an inconsequential minimum. Under normal conditions this is a difficult problem but under conditions that have prevailed during this biennium it has been stupendous.

There are several areas in the State where deer have caused many complaints. In the Stonyford area, in the Sacramento Valley, a study was made of the situation and it was agreed by all interested parties that if a brush area were burned in the area adjacent to the farming section, it would relieve the situation but after consent had been secured from the State Department of Forestry, the permit allowing burning was canceled and we were unable to carry out the experiment.

In Modoc County there have been complaints from stock interests that deer were destroying browse and feed and it was no longer possible to carry the same number of cattle as had been grazed in previous years. The deer that caused the damage moved into California during heavy winters from Oregon and in order to relieve the situation the Oregon commission has had an open season on does since 1941. During that time some 4,574 antlerless deer have been taken. From recent studies we find this has greatly relieved the situation.

In the Doyle area of southern Lassen County a study was carried on by the staff of the Bureau of Game Conservation to determine the extent of damage to farmers by Rocky Mountain mule deer and the approximate number of deer involved. This problem is still being studied with a number of proposals being considered to alleviate the damage. Land acquisition, herding and herd reduction have all been proposed, and all of these may be used in part to remedy the situation.

The increase of waterfowl during the past several years has brought about many complaints from certain agricultural areas, particularly in the rice fields of the Sacramento Valley and the rice and other fields in the Imperial Valley. Progress has been made in reducing this problem and we hope to be able to solve it.

Botulinus has been prevalent at Tulare Lake since the area was flooded in 1937. Mr. D. D. McLean has carried on investigations in that region and reports as follows: Botulinus or duck disease was active at

Tulare Lake in 1942 but to a lesser degree than in previous years. The 1943 infection was about the same as in 1942.

| |
|--|
| 1942—461 ducks picked up—388 banded and released—73 lost |
| 1943—576 ducks picked up—484 banded and released—92 lost |
| 15.6 per cent loss in 1942 |
| 16.2 per cent loss in 1943 |

For comparison the 1941 figures show: 5,711 ducks picked up; 4,912 banded and released; 799 lost, 13.9 per cent loss. The radical difference in the number of sick birds was evidently due to the change made by the farmers in the management of their irrigation water during the late summer and fall. They began the new system in 1942, whereby the water was kept moving from one field to the next lower one as soon as the first field was flooded and soaked. The intervening levee is cut and the water kept moving from one field to the next until the irrigation is completed. On completion of the irrigation, water is pumped back into the lake. This system keeps the water moving and does not give the vegetation time to start decomposing in the warm standing water. The old system of allowing fields to remain flooded for weeks at a time found the water temperatures rising and heavy decomposition with a corresponding decrease of oxygen content in the water. The botulinus bacillus thrived in such a medium. Under the new system most of the duck disease was found in low, undrained spots on the fields and in barrow pits.

The fall duck population has increased steadily in the Tulare Lake region each year since 1938. The 1942 and 1943 peak populations were not radically different. The 1942 peak was on or about October 8th, when 3,500,000 were estimated to be in the area, and the 1943 peak was on October 10th, with 4,000,000 birds estimated to be present.

Water surface temperature, bottom temperatures, sun temperatures, shade temperatures, wind direction and velocity, and general weather conditions were noted and correlated with the severity of the disease.

Intensive study has been given the problem of providing shooting areas for unattached duck hunters. To R. E. Curtis, a member of the staff, was given the task of working plans of procedure and operation. His approved report follows:

WATERFOWL PUBLIC SHOOTING GROUNDS IN CALIFORNIA

Suggested Management Practices and Estimated Costs

Objectives

Waterfowl management in California presents problems that are probably unique in the United States. Reclamation has reduced and agriculture has encroached upon the natural waterfowl habitat to an extreme extent.

Public shooting grounds in this State will have two principal objectives: (1) To provide the unattached hunting license holder with a place to shoot at reasonable cost. (2) To control and minimize waterfowl depredation on agriculture.

To accomplish the first purpose it will be necessary to bring under control of the Division of Fish and Game, by purchase, lease, or otherwise, large tracts of strategically located, suitable land, and to so administer these areas that the greatest possible number of hunters may be accommodated with reasonably good shooting.

The second objective can be secured by: (a) Providing on the shooting grounds food and habitat that will successfully compete with the surrounding agricultural lands. (b) Maintaining, through hunting, a waterfowl population level commensurate with the available food and habitat.

Methods

Methods of land acquisition do not require discussion here.

Plans for operation and administration of public shooting areas must be carefully considered. There is little practical experience from which to draw information. Public shooting grounds operated by the U. S. Fish and Wildlife Service are, in the main, not comparable to conditions that must be met in the Sacramento-San Joaquin Valleys. Large commercial clubs furnish the most comparable conditions, but since their objectives are confined to furnishing reasonably good shooting and making a profit, much of their methods are not applicable.

Subsequent to acquisition of suitable lands the operations to be considered are: (1) Engineering development; (2) Food crop planning, planting, and management; (3) Administration of the hunting.

Engineering Development

A reasonably detailed topographic survey is the first requirement. From this data the plan of ditches, dams, and other water control structures can be formulated. In the completed development, water area should approximate one-third of the total.

Under California conditions it is doubtful that all water areas can be maintained continuously. However, as much water area as possible should be maintained at constant level in order to promote aquatic vegetation and minimize the possibility of botulism epidemics.

Water distribution and control structures should be simple to operate and of durable construction. In times of water shortage it should be possible to drain higher ponds, successively into lower ones, in order to retain optimum conditions in at least the lowest structures.

Engineering and development costs will vary with the terrain and it will not be possible to obtain the optimum balance of one-third water, two-thirds land for reasonable cost at all points. On the most suitable terrain these costs should not exceed \$10 per acre, but over all it will be safer to allot a cost of \$15 per acre for this purpose.

Water Supply and Cost

Adequate water supply is the primary necessity for waterfowl developments. In certain localities water rights appurtenant to the lands or agricultural drainage waters may provide this necessity at little or no expense. In considering the over-all plan, it will be more practical to assume that all water must be purchased at prevailing agricultural rates.

Rice growers commonly obtain water for \$1.25 per acre-foot, and this figure is here accepted as the probable average cost for the entire project. It is estimated that in order to provide irrigation, to offset evaporation, seepage, transpiration, and other losses, enough water should be provided to cover the entire area three feet deep each year. Since only one-third of the entire area is to be submerged, this three feet over-all would provide nine feet per year for the pond area. This amount

should be adequate to offset losses from the submerged area and to provide crop irrigation on the rest.

The water cost would thus be \$3.75 per acre per year for the entire area. This is believed to approximate the maximum cost for gravity water. If it is necessary to resort to pumping of subsurface water, this figure will probably be exceeded.

Crops

In order to relieve crop depredation during the entire time waterfowl are in the State in numbers, and to hold them on the shooting grounds during the hunting season, it will be necessary to grow as much food as possible on these areas. Artificial feeding is barred by Federal regulation on the shooting grounds.

Suitable food crops include rice, wheat, barley, oats, rye, millets, watergrass, nonsaccharine sorghums, corn alfalfa, clovers, and aquatic plants.

Numerous rice growers have expressed doubt of the ability of any other grain crop to compete with rice as a waterfowl attractant. This remains to be proven. The high cost of producing a rice crop argues against its use on public shooting grounds, unless other and cheaper crops fail to produce the desired result. It is believed that the common small grains, particularly wheat and barley, properly handled, will serve the desired purpose adequately. The millets (watergrass) are very attractive to waterfowl and are commonly used by blackbirds.

The small growing, nonsaccharine sorghums, such as doubledwarf milo, are readily taken by waterfowl, are economical to produce, and should be used, especially where late planting is necessary.

Along the Mississippi flyway field corn constitutes one of the important waterfowl foods. It should be experimented with here in suitable locations.

In certain locations on the areas under consideration it is reported that "goose-grazing" effectively prevents the production of small grains. In such locations alfalfa, Ladino clover, or perennial burnet should provide a solution to the food problem.

Aquatic plants provide a considerable part of the food of many waterfowl species. Much remains to be learned regarding the successful management of aquatics under California conditions. Most of the native varieties will appear naturally if water conditions are favorable. In new water areas artificial planting will probably be justified. Fertilization of pond waters is a new development and should be studied in this connection. Exotic aquatic species should be tried on an experimental basis. To date, the most favored eastern species, wild rice and "wild celery," have not proved successful in this State.

Cropping Methods and Costs

Three means of producing crops on the state-owned lands have been suggested: (1) Share-cropping; (2) Contract planting; (3) Use of State personnel and equipment.

Share-cropping in this case does not appear to be a practical solution since the primary object in producing the crop is to feed waterfowl, not humans or domestic stock. It would defeat the purpose of the project to drive waterfowl away from the crop. The landowner's share is commonly only one-third.

Crop planting by contractors affords arguments both pro and con. Utilization of this method will relieve the State of the necessity of purchasing and maintaining large quantities of farm machinery. Labor personnel problems will be simplified. Seed furnished by the contractor will eliminate a purchase problem.

On the other hand, the contractor will expect to make a profit on the operation, thus increasing cost. The slow, cumbersome process of awarding State contracts and delay in payments will deter many bidders. Those best fitted to do the work, the local agriculturalists, will do their own planting at the most advantageous time and plant State crops either early or late.

Crop production with State personnel and equipment should be tried on a small scale and expanded if results are satisfactory. Some suitable equipment must be owned by the project for maintenance and its utilization in crop production will be economical.

Crop Production Costs

Small grains are expected to form the backbone of the project program. Seed bed preparation, seed, and seeding should not exceed \$5.25 per acre under any foreseeable circumstances, and under normal conditions should be less. Itemization follows:

| | | |
|----------------|--------|--------------------------------|
| Plowing ----- | \$2.00 | per acre |
| Discing ----- | .50 | per acre |
| Drilling ----- | .50 | per acre |
| Seed ----- | 2.25 | per acre (90 % at \$2.50 cwt.) |
| | ----- | |
| Total ----- | \$5.25 | |

It is estimated that not over 50 per cent of the entire area will be planted in any one season, the remainder being 33 $\frac{1}{3}$ per cent water, 16 $\frac{2}{3}$ per cent waste and grassland. Thus, an average cost of \$2.625 per acre is assignable for the entire tract.

Utilization of Crops—Grazing

A large part of the lands proposed for acquisition are essentially pasture land at present. Minor portions are cropped to barley, rice, milo, and beans. Under management as public shooting grounds the most practical economic agricultural by-product of these lands will be pasturage. The cash return from this source under present usage averages \$3.50 per acre annually. Under game management the grazing intensity and season will be restricted, but the quality and quantity of forage will be increased. Allowable grazing should bring a minimum cash return of \$2 per acre per year.

In normal years a short period of spring grazing (when land is dry enough) can be permitted. This procedure is generally beneficial to grain crops. As soon as grain is matured, pasturage will again be permissible.

It has been found in similar operations at Honey Lake (Lassen County) that grazing cattle on matured grain serves to shatter a large part of the grain onto the ground where it becomes available to waterfowl and pheasants. If grazing is not practiced, it is necessary to drag down the standing stalks or to flood the land to make the grain available to waterfowl.

Pasture cattle should be removed before the shooting season unless owners sign waivers for damage and loss.

Pasturage by sheep should not be allowed in most cases. Their use may be permissible under special conditions as where it is desirable to remove weed growth.

Payments to Counties in Lieu of Taxes

It is anticipated that strong objection to State acquisition of large tracts of lands will arise unless some means is devised to compensate the respective counties for loss of tax revenue. Legislative action will be required before this is possible. Such payment should be limited to the amount of taxes levied at the time of acquisition. The type of lands being considered are largely marginal so far as agriculture is concerned. On the basis of current land values and tax rates, the charge for this item should not exceed 50 cents per acre annually.

Hunting Management

This will unquestionably be the most difficult phase of the entire program. The term "public shooting ground" will convey to many the idea of free and unrestricted use by any or all individuals. This will not be possible. All applicants can not be accommodated at any one time. Some system of accepting and acknowledging applications must be devised. Priority of requests appear to be the only fair basis of assigning hunting privilege. To produce a workable system will require much thought, effort, and experience.

Cost of permits must be kept substantially lower than charges by commercial clubs if the plan is to benefit the hunting public. Charges for the first season must be estimated as closely as possible; thereafter charges should be modified annually in conformity with the previous year's actual costs.

What expense shall be considered in determining permit charges? If initial cost of the land is met from accumulated license fees, paid in part for this specific purpose, then no attempt to recover cost of the land through permit fees is justifiable. Development, maintenance, and operating costs can and should be met by permit fees.

Development costs should be amortized over a considerable period of years, not less than 10, and preferably 20. Over a 20-year period the permit fee attributable to this source would be 75 cents per acre per year. Other costs to be added to the permit fee are outlined and summarized below.

It is believed that a minimum of 20 acres should be allotted to each double blind, or 10 acres per permittee. In addition, one-third of the entire area should be closed to shooting each season to provide unmolesed feeding and loafing space. This will avoid driving the birds from the tract when the season opens. Thus 15 acres becomes the actual minimum for each hunter and is the unit on which the fee per shooter day must be calculated.

If salaries of employed personnel are to be charged to the hunter, they can be estimated as follows:

| | |
|---|-------------------------|
| Two permanent employees for each 5,000 acres----- | \$4,800 per year |
| Extra seasonal labor for each 5,000 acres----- | 2,700 per year |
| Total ----- | <u>\$7,500 per year</u> |

This amounts to a charge of \$1.50 per acre yearly.

Maintenance costs (structural repairs, weed control, etc.) should not exceed \$1.50 per acre.

Summarization of Annual Costs

| <i>Item</i> | <i>Cost per acre</i> | <i>Cost for 15-acre Unit</i> |
|---|--------------------------|----------------------------------|
| Development (20-year amortization)----- | \$7.75 | \$11.25 |
| Planting (one-half of entire area)----- | 2.63 | 39.45 |
| Personnel cost----- | 1.50 | 22.50 |
| Water----- | 3.75 | 56.25 |
| Payment in lieu of taxes----- | .50 | 7.50 |
| Maintenance----- | 1.50 | 22.50 |
| Total yearly cost----- | \$10.63 | \$159.45 |
| Less income (pasturage)----- | 2.00 | 30.00 |
| Net annual cost----- | \$8.63 | \$129.45 |

Under the present season there is an average of 35 shooting days per year (three per week plus opening, closing, and holidays). The cost per man per day thus becomes \$3.70 ($\$129.45 \div 35$ permits). It is reasonable to assume that a small percentage of hunters will not take up their reservations. If this is assumed to be one in seven, the charge becomes \$4.32 for each permit ($\$129.45 \div 30$).

It has been suggested that the guide plan used by the U. S. Fish and Wildlife Service on their large public shooting ground in the Dakotas be followed. Here, we understand, a guide is required for each double blind, the occupants furnishing his wages of \$7 per day as part of their permit fees. It is believed that conditions in Dakota are quite different from those that would prevail on California shooting grounds. Travel to and from blinds is probably by boat, making it practical for a guide to serve only one blind. If the guide system is adopted in this State, it may be practical for a guide to serve as many as four blinds, thus reducing the guide cost per shooter to \$1 per day, wage being assumed to be \$8 per day.

Pheasant Shooting

Under the management plans outlined above, a heavy pheasant population may be expected to develop on the shooting grounds intended primarily for waterfowl. The pheasant hunting season comes within the waterfowl season, but if pheasant hunters were allowed to operate at the time waterfowl blinds are occupied, waterfowl shooting would be spoiled. It is suggested, therefore, that all pheasant hunting on these lands be limited to regular waterfowl shooting days, that the one permit fee pay for both types of hunting, and that pheasant hunting be limited to the period between 10 a.m. and 3 p.m.; before and after these hours all hunting to be restricted to occupants of blinds.

DEER, ELK AND ANTELOPE

Regulations promulgated by the Fish and Game Commission at the request of the War Department restricted the deer season in 1942 to 21 days in the counties on the coast from Santa Cruz to Mendocino, inclusive, and prohibited the hunting of deer in Southern California, including San Luis Obispo, Santa Barbara and Ventura Counties. In the Sierra

region hunting was prohibited below Ponderosa Way, approximately 2,500 feet elevation. This prohibition reduced the kill to 25,902 as against 43,493 for the year previous. In 1943 deer hunting was prohibited by the War Department in the coast counties and in Southern California. The take in the counties opening September 16th totaled 21,882. In view of the fact that there had been no open season in Southern California for two years, the commission declared an open season in the southern counties and in Monterey, San Benito, San Mateo, Santa Cruz, and the western portion of Santa Clara, Merced and Fresno Counties, from December 11th to December 31st. Three thousand three hundred twelve deer were taken during this season.

Questionnaires were sent to nearly 3,000 successful hunters in which they were asked pertinent questions. Only in Los Angeles and San Bernardino Counties were the hunters in favor of a winter season. Few hunters reported fat deer and the general opinion was that the animals were from 25 per cent to 30 per cent underweight. In many instances, antlers were loose and in some localities bucks had already dropped their antlers. Those that favored a winter season did so on account of the cooler weather and less fire hazard. Those against, on account of the condition of the animals.

Acting under the authority of Section 39.1 of the Fish and Game Code, the commission in 1943 had an open season on elk in the Owens Valley. Hunting was permitted from December 4th to 11th. Seventy-five permits issued allowing the taking of one bull each. Forty-three animals were taken. The largest with the viscera removed weighed 490 lbs. Following are the measurements: Antlers, right 38.5"; left 36"; spread 43"; tip to tip 40.12"; base, right 9.12"; left 9.6"; number of points, right 6; left 6.

In 1943 the commission again opened the season on antelope, fixing the dates September 8th to 20th, inclusive. The same procedure in issuing permits was followed as had been used in the 1942 season. Five hundred permits were issued. Eighty-seven per cent of those who hunted were successful and took 362 antelope.

The antelope census was carried on by airplane as in the past with a favorable increase in numbers being indicated. In 1943 the count was 5,338 and in 1944, 6,147. The 1942 count was 3,752. These counts were made in Lassen, Modoc and Siskiyou Counties on the known winter ranges. One band of 171 was found in Shasta County near Fall River Mills, in 1944.

Study of parasites and diseases of game has been continued by Dr. Carlton M. Herman. His report follows.

PARASITES AND DISEASES

During the period covered by this report there have been many cases of evidence of disease causing loss in deer populations, primarily in the coastal counties and particularly in Mendocino and Sonoma Counties, although the same condition occurs more or less from the southern part of the State to Humboldt County, as well as in Lake and Trinity Counties.

Examination of a number of animals seems to point to the roundworm infections of the upper digestive tract as the most frequently occurring disease condition, and to such an extent that much of the losses could be attributed to this infection. A number of species of round-

worms occur, all causing the same general pathology and all having similar direct life cycles. Most of them are common parasites of sheep and cattle and were undoubtedly introduced into this country with the domestic flocks and herds.

The extreme irritation to the intestinal tract usually causes a diarrhetic condition referred to as scours. It is usually more evident in the younger animals. The developing eggs of the worms pass out of the intestinal tract with the deer's droppings and the larval worms hatch out in the soil. After a period of development they become ripe for infection and migrate up moist blades of grass. Deer (or cattle and sheep) become infected when they eat such contaminated grass.

Many factors are involved in the ultimate condition of deer as a result of these parasites. Some of these are temperature, moisture, the extent of use of the pasture by infected deer or livestock, and the amount of grazing done by the deer on such infected areas. In point of sequence this last factor seems to be the most important in the health of the deer population. Where these infections are the only ones involved in reductions of deer, a direct proportion can be hypothesized between the amount of grazing and the extent of the losses. The more browse available, the less infection with these worms. It is mainly in areas where deer would be most likely to live chiefly on a grass diet that this condition becomes severe. In areas where it has not been observed, or where the severity was of little significance, the stomach contents of the deer examined showed a predominance of browse.

In March, 1944, in collaboration with the U. S. Park Service and U. S. Fish and Wildlife Service, an investigation was made of deer conditions in the Sequoia National Park. Here, again, these intestinal worms were found to be of much importance. In this area, too, deer are suffering from intensive eyeworm infections. All deer infected with these small worms in the eye at Sequoia have upwards of 30 worms per eye, whereas when we have observed the same infection in deer in other parts of the State, very few worms have been present.

Our program on the occurrence of blood parasites of quail has been continued, although reduction of field personnel has greatly reduced the number of samples. With the cooperation of the Associated Sportsmen of California and other hunters, we have obtained many samples of blood and hearts in an effort to determine the distribution of these diseases. This program shall be continued and expanded. As a result of our studies on quail we have uncovered at least three important parasites new to science. As a part of this program we are studying the parasites of other species of birds to determine what diseases are common to all birds as well as those that occur only in our game species.

Two winter outbreaks of botulism were observed in ducks and coots: (1) Gridley, with varying intensity during winter 1943-44; (2) Mt. Eden, January, 1944.

Preliminary investigations were made on the source of so-called "iodine" ducks in the lower San Francisco Bay area during the 1943 duck season and plans have been formulated to make an intensive investigation of this condition during the 1944 season.

Numerous other parasites and diseases were diagnosed in the wildlife of the State and investigations on the epidemiology of many of the

parasites are in progress. A total of 614 birds and 149 mammals were autopsied.

The following papers were published:

1942

Reducing Coccidiosis in California Quail During Captivity. *California Fish and Game* 28:148-149.

The Protozoan Blood Parasite *Haemoproteus lophortyx* O'Roke in Quail at the San Joaquin Experimental Range, California. *California Fish and Game* 28:150-153.

Coccidiosis in California Quail. *Condor* 44:168-171.

1943

The Occurrence of Blood Parasites in Birds From Southwestern United States. *Jour. Parasitology* 29:187-196.

Food Habits and Intensity of Coccidian Infection in Native Valley Quail in California. *Jour. Parasitology* 29:206-208.

Fungus Disease in a Glaucous-winged Gull. *Condor* 45:160-161. A parasite in the muscles of ducks in California. *California Fish and Game* 29:148-149.

Epidemiological Studies on Coccidiosis of California Quail. I. Occurrence of *Eimeria* in Wild Quail. *California Fish and Game* 29:168-179.

An Outbreak of Mycotic Pneumonia in Mallards. *California Fish and Game* 29:204.

Parasites of Cottontail Rabbits on the San Joaquin Experimental Range, California. *Journal Wildlife Management* 7:395-400.

Giardia in the Blood of a Kangaroo Rat. *Journal Parasitology* 29:423.

1944

Eyeworm (*Thelazia californiensis*) Infection in Deer in California. *California Fish and Game* 30:58-60.

A parasite from antelope in California. *Transactions American Microscopical Society* 63:27-29.

Notes on the pupal development of *Stilbometopa impressa* (Diptera Hippoboscidae). *Journal Parasitology* 30:112-118.

Preliminary arrangements have been made to obtain more adequate quarters to house the laboratory on the Berkeley Campus of the University of California. The achievement of this move will also afford better library facilities and cooperation with various specialists on the University faculty.

PITTMAN-ROBERTSON

As a direct result of the war the appropriations made by Congress under the Pittman-Robertson Act were considerably reduced during the biennium. This action on the part of Congress generally met with the approval of the States who were fearful that the manpower shortage, the lack of essential materials, and soaring land prices would make it impossible to spend normal appropriations.

As it was, California received allotments totaling \$91,717.86, which brought the total of Pittman-Robertson money allotted to California since the inception of the program to \$398,233.28. Since, according to the terms of the act, a participating State must contribute an amount equal to one-third of the Federal apportionment, the amount that has actually been made available for wildlife restoration in California is now more than one-half million dollars. Of this sum, \$457,570.72 had been obligated at the close of the biennium.

Seventeen projects have been undertaken up to the present time. Eleven of these were begun during the 1940-42 biennium; six were completed during that period, and five were continued after July 1, 1942.

Four new projects were begun during 1942-44, bringing to nine the total number of projects on which work was done during the period covered by this report. Three of these projects came under the heading of surveys and investigations, four were development projects, and two involved the acquisition of lands.

Following is an account of the wildlife restoration work accomplished under each of the three project categories.

Surveys and Investigations

A five-year study of California's fur resources, Project 5-R, first undertaken early in the spring of 1941, was continued through this biennium. Particular emphasis was placed on the accumulation and analysis of both quantitative and qualitative data pertaining to California's annual fur crop. Although the shortage of manpower necessitated the discontinuance of intensive studies of the biology and management requirements of all of the various kinds of fur bearers in the State, it was possible to give some attention to two of the most important species, the beaver and the muskrat. The experimental planting of beaver has been generally so successful that plans are being made for an intensive beaver management program in the immediate future.

The investigation of methods that can be used in connection with valley quail management, Project 6-R, is another five-year study that was continued during the biennium. The general survey of the study area, California's south coast counties, was concluded early in this investigation and during the past two years emphasis was placed on the application of specific management tools such as water development, predator control, artificial feeding, and the like. The results of some of these studies have already been published and at the close of the biennium the manuscript of a well illustrated handbook entitled "How to Increase Valley Quail in California" was nearing completion. This promises to be an important contribution to game management literature.

Arguments, pro and con, over a winter deer season in the south coast and southern regions of the State in 1943 and minor though nonetheless heated contentions over the proper season for taking antelope have emphasized the lack of technical knowledge of the condition of the meat of big game at various times of the year. As a result, a scientific study of deer and antelope meat, Project 15-R, was begun early in 1944. So far, the investigation has been confined to deer from the north coast, Marin County, and the south coast, Ventura and Santa Barbara Counties. The study is being conducted in cooperation with the Department of Home Economics of the University of California. The university is responsible for the analyses of the meat samples and the division for the collection of specimens and recording of field data. Samples of the stomach contents of all deer taken are being analyzed by the U. S. Fish and Wildlife Service.

Development Projects

The restoration of sagehen habitat in Lassen and Modoc Counties through the development of springs and the creation of fenced meadows, Project 1-D, was begun in 1940 and was terminated during the fall of 1942. Nineteen units were completed, some of them in cooperation with the Division of Grazing, the A. A. A., or private landowners who contributed money, labor, or materials.

Project 7-D, providing for resurveying and posting the boundaries of legislative game refuges, operated for almost a year before the shortage of personnel occasioned by the war made it necessary to suspend operations for the duration.

The construction of new levees and the improvement of old, together with the installation of spillways and gates on the Gray Lodge Waterfowl Refuge near Gridley was made possible by the approval of Project 13-D. Two hundred twelve thousand, four hundred and ninety cubic yards of earth were placed on $12\frac{1}{2}$ miles of levee. Over 1,000 feet of concrete culvert of varying diameters, 18-inch to 36-inch, were placed and 135.43 cubic yards of concrete were used in the construction of headwalls.

The construction of a drift fence approximately five miles long on the western boundary of the Tehama Deer Winter Range, Project 14-D, was begun in the spring of 1944 and was still under way at the close of the biennium. The purpose of the fence is to control trespass by domestic livestock.

Land Acquisition Projects

Both Project 10-L, Tehama Deer Winter Range, and Project 11-L, Honey Lake Valley Waterfowl Management Area, were continued through the biennium. Twelve hundred acres were added to the Tehama Range and three parcels of land totaling 1,447 acres have been added to the Honey Lake area.

BUREAU OF GAME FARMS

By AUGUST BADE, Chief

There are two very good reasons for the decline of 12 per cent in production and distribution of game birds for the biennium.

(1) Labor was not only scarce, but the quality of what was available was far below the level of ordinary years. In order to carry on in a comparable way to former seasons, women and high school students were employed as well as men well along in years.

(2) Early in 1942 it became apparent that the supply of protein would be cut about 50 per cent and that meant that all poultry and stock feeds would be affected. Since game birds are insect eaters their food, under domestic handling, must contain a high per cent of protein. With the lowering of the protein content of all commercial feeds, plus the inexperience of available help, the problem of producing game birds became involved.

USE OF MODERN EQUIPMENT

The introduction of more modern equipment such as the battery brooder went a long way in compensating for the food and labor situation. For the past two years we had been working with the battery brooder in an effort to utilize this type of equipment in the production of game birds. The conditions imposed by the war, labor and food, helped to make the development of the battery brooder an actuality in the rearing of all upland game birds.

Not only does the battery brooder multiply labor, but it increases both production and the quality of the birds. And the use of the battery does not mean that we are discarding the former radiant type brooder that has been developed here in California and is now used by many States, but it does mean that the battery supplements the work of the older brooder and makes it even more efficient. With the introduction of the battery brooder all radiant type brooders now in use will be kept and their work merely increased and improved.

THE REARING PEN PROGRAM

Even under war conditions the rearing pen program continues to meet with general approval and, while a few units quit for the duration other new units of pens were built and operated. At the beginning of the biennium we were serving 129 units and at the close that number had increased to 140. These cooperative efforts tend to increase interest in community affairs and lessen game law violations. The rearing pen program is educational as well as productive.

A TRAINING SCHOOL FOR GAME BREEDERS

The two-year course in game management at Humboldt State College, Arcata, continues, but the armed services requirements of

manpower has reduced the number of students who are able to take advantage of this course. As a substitute classes have been organized at the Yountville farm for the training of new employees as well as the older men who are left on the job.

Classwork at the Yountville farm includes lectures supplemented by moving pictures and general discussion. These classes are held at night and are available to all employees and others interested in conservation.

GAME MANAGEMENT AREA PROGRAM

With four years of experience behind us the game management program continues for the man who can afford a longer shooting season and is willing to pay for the privilege. The commercial game breeder has been provided with a market for his product at a price that shows him a profit.

Field trials are now held on these areas where actual hunting conditions may be emulated for all types of hunting dogs. During the four years that game management has been practiced a total of 27,547 game birds have been released (and all these birds came from commercial breeders), while only 12,980 birds have been retaken, or less than 50 per cent. Game management has given to the unattached sportsman 14,567 birds that did not cost him a single penny. A check on territories adjacent to game managed areas shows a decided increase in game birds. In some instances banded birds that were released on game managed areas have been taken by hunters during the regular shooting season as far as 18 miles from the point of release.

FIELD DOG TRIALS

The sport of field trials has to some extent suffered by war restrictions and the number of trials held during a normal year has decreased, but in many cases clubs have functioned regardless of these handicaps. Some clubs have built their own pens for the rearing of birds for field trials. This is a good indication of the growth of this sport in California. There is also a decided increase in the use of hunting dogs, which is a real conservation measure.

QUAIL TRAPPING PROGRAM

As far as manpower and equipment is available the quail trapping program goes ahead and in another year or so we will know more about this sort of work and its place in the general scheme of more upland game.

THE GENERAL PHEASANT SITUATION

The 1943 season brought complaints from many hunters that pheasants were not as numerous as in previous years. Various reasons were advanced for this condition, especially in the Sacramento Valley areas. Some thought it was due to a poor hatching season. Others were sure it came about because too many male birds were taken. A few were of the opinion that the opening of the quail season in advance of the regular pheasant season had resulted in much illegal shooting.

During the spring and early part of 1944 regular checks have been made all over the Sacramento Valley and other areas where there have been a concentration of hunters the year before and there is a very definite decline in the number of birds.

| | <i>Pheasants</i> | <i>Partridges</i> | <i>Quail</i> | <i>Turkeys</i> |
|-------------------------|------------------|-------------------|--------------|----------------|
| Birds distributed ----- | 91,064 | 21,792 | 5,680 | 311 |
| Birds hatched ----- | 100,306 | 25,500 | 7,503 | 637 |
| Eggs laid ----- | 159,558 | 33,378 | 15,592 | 1,461 |
| Eggs set ----- | 131,702 | 32,123 | 10,999 | 1,305 |
| Eggs distributed ----- | 3,144 | 155 | 1,103 | |

BUREAU OF PATROL AND LAW ENFORCEMENT

By L. F. CHAPPELL, Chief

The operations of the Bureau of Patrol during the past biennium were greatly curtailed due to the loss of manpower, rationing of gasoline and rubber incident to the war activities. This was to be expected. No replacement of mobile equipment was possible and no new tires have been available for our use since 1941. This has necessitated very careful handling of equipment and a great deal of credit is due to the personnel of the bureau in carrying on the work as well as they have under these circumstances.

In addition to the wardens and assistant wardens which were on military leave and which were reported in the last biennium, the following employees in the bureau have taken military leave of absence during this biennium:

Wardens

| | |
|------------------|----------|
| Don Davison | 5/ 4/44 |
| Don Chipman | 5/26/44 |
| Harold Erwick | 11/ 4/43 |
| Owen Mello | 9/14/44 |
| H. S. Vary | 5/17/43 |
| Walter Greenwald | 4/20/43 |
| Larry Werder | 3/ 4/43 |
| Jay Cox | 3/14/43 |
| George Shockley | 3/ 8/43 |
| John Spicer | 2/24/43 |
| W. S. Talbott | 1/29/43 |
| A. L. Stager | 1/ 1/43 |
| John Hurley | 12/ 7/42 |
| Karl Lund | 12/10/42 |
| Walter Shannon | 12/15/42 |
| Leo Rossier | 12/14/42 |
| George Seymour | 11/ 4/42 |
| William La Marr | 10/ 2/42 |
| Chester Ramsey | 10/20/42 |
| John Barry | 10/28/42 |
| Carmi Savage | 9/ 5/42 |
| Garric Heryford | 9/28/42 |
| Charles Towers | 8/18/42 |
| N. J. Millen | 8/28/42 |
| Howard Shebley | 7/ 6/42 |

Captains

| | |
|---------------|---------|
| L. J. Weseth | 9/ 2/43 |
| Ralph Classic | 7/30/43 |

Assistant Wardens

| | |
|----------------|----------|
| R. J. O'Brien | 5/ 3/44 |
| Robert Fraser | 4/20/44 |
| Frank Burns | 4/11/44 |
| Will Payne | 3/31/44 |
| Frank Felton | 3/ 4/43 |
| Glen Whitesell | 10/30/42 |
| Robert Hart | 10/19/42 |
| James Wade | 9/12/42 |
| Bolton Hall | 9/30/42 |
| Robert Kaneen | 7/21/42 |
| C. E. Whaley | 7/17/42 |

Deckhands

| | |
|------------------------|----------|
| Robert McDonald | 3/ 9/43 |
| Walter Scrimsher | 11/ 1/42 |
| Harry Peters | 8/ 3/42 |

Diesel Engineman

| | |
|------------------|----------|
| Ralph Dale | 10/20/42 |
|------------------|----------|

Stenographer/Clerk

| | |
|------------------|----------|
| Ruth Smith | 11/ 8/43 |
|------------------|----------|

In addition to the above persons, the following members of the service resigned to enter other lines of work :

*Resignations**Wardens*

| | |
|------------------------|----------|
| Ed Clements | 1/25/44 |
| E. L. Walker | 3/14/44 |
| R. J. Bullard | 11/15/43 |
| L. G. Van Vorhis | 10/18/43 |
| Kenneth Langford | 4/29/43 |
| Chester Parker | 3/27/43 |
| George Johnson | 7/ 7/42 |
| R. W. Remley | 7/ 5/42 |

Assistant Wardens

| | |
|---------------------|---------|
| Allen Swenson | 8/ 2/42 |
|---------------------|---------|

Deckhand

| | |
|---------------------|---------|
| M. G. Stewart | 9/29/43 |
|---------------------|---------|

Ray O'Connor was placed on disability retirement in August of 1943 after 33 years of service with the division and E. A. Chan, former warden and later information clerk, went on disability retirement August 17, 1942 and passed away in April 1943.

Our ranks were further reduced by the deaths of the following wardens which occurred during the biennium :

Deaths

| | |
|-----------------------|---------|
| Alvin Granstrom | 7/21/43 |
| Charles Love | 8/11/43 |
| C. L. Bundoek | 6/ 5/43 |
| A. R. Ainsworth | 8/ 8/42 |

The patrol boat "Sturgeon" based at Monterey, and the patrol boats "Perch" and "Quinnatt III" based in the San Francisco Bay District were requisitioned by the United States Coast Guard in September, 1942. This equipment was sold outright to the War Shipping Administration after rather lengthy negotiations.

The patrol boats "Tuna," "Yellowtail" and "Broadbill" were chartered to the Coast Guard in August of 1942. Under the terms of this charter, we expect this equipment to be returned.

The only remaining patrol boat, the "Bonito" is operating in southern California waters.

To supplement the marine patrol in the bay area a 19-foot open launch was purchased in February of 1943, this boat being of shallow draft, makes it possible to cover more of the restricted waters in the bay area.

With the completion of the Shasta Dam and the storage of water at that point, it became evident that some method of patrol on this lake would be necessary as it opened up a great virgin country which heretofore had been inaccessible as there were very few trails and no roads leading into it. Accordingly the commission approved the purchase of a small launch for use on this reservoir. The purchase was completed in June of 1944.

A boat has been chartered for patrol work in Monterey Bay after it became evident that a more intensive coverage of these waters would be necessary.

Airplanes were used to some extent in northern California where military restrictions did not prevent their operation. During the hunting seasons for antelope and deer in Modoc and Lassen Counties, planes were used to a great extent and with very satisfactory results. This equipment will be a necessary and important part of the patrol activity after the war.

A summary and recapitulation of arrests and convictions will be found in the appendix on page 75.

REPORT OF THE BUREAU OF MARINE FISHERIES

By RICHARD VAN CLEVE, Chief

Total landings of fish, in pounds, for the State of California for the years 1942 and 1943 are shown in Table I, with the production of canned fish, fish meal and fish oil.

TABLE I

| | 1942 | 1943 | Total |
|--|---------------|---------------|---------------|
| Total landings, pounds----- | 1,171,514,793 | 1,229,754,615 | 2,401,269,408 |
| Cases of canned fish----- | 6,941,643 | 6,698,134 | 13,639,777 |
| Tons of fish meal produced----- | 79,003 | 86,151 | 165,154 |
| Gallons of fish oil produced----- | 12,686,640 | 14,016,179 | 26,702,819 |
| Value of canned and processed fishery products----- | \$67,432,689 | \$70,496,100 | \$137,928,789 |

The total landings in these two years were 416,172,000 pounds behind the landings in the previous biennium, but the total value of the fishery products produced was the highest ever recorded for this State. Shortage of labor resulted in a decrease of 29 per cent in the production of canned fish.

The value of the principal species of fish to the fishermen in the two years is shown in Table II.

TABLE II

Pounds and Value of Commercial Fish Landings in California—1942-43

| Species | 1942* | | 1943 | |
|--------------------------|----------------------|---------------------|----------------------|---------------------|
| | Pounds | Value | Pounds | Value |
| Sardine----- | 969,747,099 | \$10,369,736 | 972,249,015 | \$10,781,440 |
| Yellowfin tuna----- | 41,466,614 | 3,823,857 | 49,261,328 | 4,880,540 |
| Skipjack----- | 38,735,228 | 3,334,608 | 28,893,784 | 2,582,850 |
| Albacore----- | 11,091,699 | 2,107,209 | 21,384,864 | 3,477,417 |
| Bluefin tuna----- | 12,844,564 | 1,158,514 | 10,178,768 | 967,562 |
| Shark----- | 3,468,290 | 1,150,497 | 3,729,246 | 1,933,173 |
| Pacific mackerel----- | 52,553,663 | 954,643 | 75,262,739 | 1,492,918 |
| Salmon----- | 6,616,216 | 827,403 | 6,581,076 | 1,227,624 |
| Barracuda----- | 3,454,537 | 332,757 | 3,775,278 | 656,372 |
| Crab----- | 2,414,086 | 282,778 | 2,315,338 | 353,287 |
| Sole----- | 3,155,757 | 228,635 | 4,782,379 | 265,203 |
| Yellowtail----- | 2,726,269 | 192,631 | 4,934,879 | 368,724 |
| Spiny lobster----- | 856,300 | 150,037 | 985,525 | 256,153 |
| Sablefish----- | 1,972,270 | 129,974 | 3,206,074 | 267,671 |
| Bonita tuna----- | 1,650,689 | 126,732 | 2,282,299 | 181,354 |
| Rockfish----- | 1,423,290 | 104,172 | 2,762,192 | 185,541 |
| California halibut----- | 756,065 | 102,422 | 1,121,673 | 238,670 |
| Horse mackerel----- | 5,348,501 | 101,606 | 12,698,974 | 235,878 |
| Broadbill swordfish----- | 445,908 | 94,217 | 336,386 | 102,430 |
| Shad----- | 2,571,633 | 84,459 | 2,348,143 | 114,648 |
| White sea bass----- | 553,726 | 78,095 | 500,183 | 122,797 |
| Black sea bass----- | 378,780 | 46,808 | 700,855 | 157,298 |
| All others----- | 8,291,042 | 427,356 | 19,489,950 | 1,101,219 |
| Totals----- | 1,172,522,226 | \$26,210,046 | 1,229,780,948 | \$31,950,769 |

* Landings for 1942 include shipments to canneries from other States and foreign countries to the value of \$106,778.

The catch of fish sold in the fresh state was 30,092,000 pounds in 1942, and 37,683,000 pounds in 1943. The increase in 1943 occurred among a number of species, and probably reflects the adjustment of the industry to war conditions. Some of the fishing grounds which were closed in 1942 for defense purposes have again been opened. War emergency restrictions on the movements of boats into and out of ports have been somewhat relaxed, and readjustments in price ceilings have encouraged fishermen to again seek species which were formerly priced so low that it was unprofitable to bring them to port.

One of the most interesting developments of the biennium was the heavy catch of albacore during 1943. The catch of this species for this year was the highest recorded since 1925. The albacore fishery developed gradually after the last World War, along the California coast until in 1925 a catch of 22,206,923 pounds was landed. In 1926 the albacore catch fell to 2,469,385 pounds and did not again reach the 1925 figure until 1943. The catch in California is, now, only a part of the total present production of albacore on the coast, since a considerable fishery has developed off the coasts of Oregon and Washington in the last ten years.

COMMERCIAL FISHING LICENSES

The record of licensed commercial fishermen in California for the biennium, is shown in Table III.

TABLE III
Licensed Commercial Fishermen

| <i>Nativity</i> | <i>1942-43 licensed fishermen</i> | <i>1943-44 licensed fishermen</i> |
|---------------------|---|---|
| United States ----- | 5,346 | 7,893 |
| Italy ----- | 1,197 | 1,374 |
| Jugoslavia ----- | 940 | 909 |
| Norway ----- | 461 | 360 |
| Portugal ----- | 328 | 341 |
| Great Britain ----- | 187 | 239 |
| Sweden ----- | 85 | 94 |
| Mexico ----- | 68 | 62 |
| Spain ----- | 57 | 59 |
| Denmark ----- | 45 | 61 |
| Finland ----- | 45 | 56 |
| Russia ----- | 45 | 64 |
| Greece ----- | 44 | 51 |
| Germany ----- | 34 | 55 |
| Austria ----- | 29 | -- |
| France ----- | 21 | 23 |
| Netherlands ----- | -- | 28 |
| All others ----- | 111 | 134 |
| Total ----- | 9,043 | 11,803 |

It is of interest to note that while the number of fishermen dropped in the 1942-43 season, from the previous season, the number of commercial fishing licenses sold in the 1943-44 season was the largest ever recorded for this State. The decrease in 1942-43 was due in part to the loss of the Japanese fishermen who were barred from operations off the coast. These were only partially replaced by the other nationalities.

Interest in the lucrative albacore and soupfin shark fisheries, which were successful in 1943, as well as high prices of all fish, encouraged large numbers of people to enter the industry. However, commercial licenses were also bought by some solely to qualify for the Coast Guard passes required for movement of boats in ocean waters. An unknown number of licenses must be classified as temporary, and do not represent a permanent increase in the number of commercial fishermen in the State.

Some idea of the distribution of the increase within the State may be obtained from Table IV which shows the number of commercial fishermen registering as residents of the different ports.

TABLE IV

| <i>Region of Residence</i> | <i>1942-43</i> | <i>1943-44</i> |
|--------------------------------------|----------------|----------------|
| Eureka ----- | 213 | 315 |
| Sacramento ----- | 367 | 442 |
| San Francisco ----- | 927 | 1,347 |
| Monterey ----- | 994 | 968 |
| Santa Barbara ----- | 306 | 276 |
| Los Angeles ----- | 4,379 | 6,536 |
| San Diego ----- | 1,391 | 1,552 |
| Alaska, Washington, and Oregon ----- | 466 | 354 |
| Mexico ----- | — | 13 |
| Total ----- | 9,043 | 11,803 |

SARDINES

The catch of sardines is reported on a seasonal basis, the season in northern California extending from August 1st to February 15th, and that in southern California from October 1st to March 1st. The details of the production are given in the catch circulars which are reprinted in the appendix. The total production of sardines and sardine products is shown in Table V for the two seasons of the biennium.

TABLE V

| <i>Sardines (seasonal record)</i> | <i>1942-43</i> | <i>1943-44</i> |
|---|----------------|----------------|
| Total tons landed ----- | 501,341 | 473,522 |
| Tons received for canning ----- | 271,703 | 231,527 |
| Total cases of all size cans packed ----- | 3,743,373 | 3,160,701 |
| Number of reduction permits issued ----- | 76 | 75 |
| Permit tonnage granted ----- | 378,634 | 370,272 |
| Number of tons used under permit ----- | 229,334 | 241,733 |
| Tons of sardine meal produced ----- | 76,983 | 73,512 |
| Gallons of sardine oil produced ----- | 13,148,783 | 13,783,011 |

A further increase in the number of reduction permits over the previous biennium is noted. Furthermore, a decrease in the total case pack from the record established in the 1941-42 season also occurred. The catch in both years was below that of 1941-42. During the 1941-42 season, an overall average of 9.2 cases of sardines were packed for every ton of sardines landed. In the 1942-43 season this case pack had fallen to 7.5 per ton; and decreased still further in 1943-44 to 6.7 cases per ton. While the decrease in catch of the last year of the biennium amounted to 5.5 per cent over the first year of the biennium, only 49 per cent of the last year's catch was received for canning, whereas 54 per cent of the first year's catch was received for this purpose. The decrease in pack was due not only to the decrease in catch. There is no doubt that the high prices

of meal and oil, as well as the shortage of cannery labor, also contributed to the diversion of a greater proportion of the fish into the reduction plants.

Allocation

The decrease in the canned pack of the last year of the biennium occurred in spite of the complete regulation of the fishing and utilization of sardines by the Federal Government under the so-called "allocation orders."

After the beginning of hostilities, and with the beginning of the 1942-43 season, it was apparent that some outside agency would have to enter the sardine picture in order to prevent a major loss in production. The sardine fishing fleet had been reduced in size by the loss of large numbers of the sardine boats to the Army and the Navy. Those plants owning boats naturally desiring to ensure their own catch prevented the sale of the catch of their boats to other plants and in other ports. As a result some plants at times had an excess of fish, most of which was diverted to reduction while other canners were unable to obtain enough fish to operate their plants. During periods of heavy fishing the boat loads were limited by the plants to keep the landings within the owner's production capacity.

An attempt was made by the California Division of Fish and Game to remedy this situation; and the first order of the commission was issued on August 22, 1942, to prevent the loss of boat production by imposition of catch limits and to distribute the fishing fleet between the three California sardine ports in proportion to their plant capacities. Several months were required to solve the numerous problems involved in the inauguration of such a radical departure from normal fishing operations; and the commission was unable to put allocation into operation before injunction proceedings, instituted by several sardine plant operators in the port of Monterey, forced the cessation of allocation activities. Allocation was then taken over by the War Production Board which had cooperated closely with the commission in its early attempts to organize the allocation program. The War Production Board carried through allocation to the end of the 1942-43 season.

During the period between the end of that season and the beginning of the 1943-44 season, the office of the Coordinator of Fisheries was established in the Department of the Interior within the personnel of the U. S. Fish and Wildlife Service. This organization took over allocation at the beginning of the 1943-44 season. The imposition of limits on the boat catches was prohibited. Boats were licensed to fish in certain ports in an attempt to distribute an inadequate fleet equitably between the three fishing ports in California, to obtain the greatest possible production from them. Poor fishing experienced in the ports of Monterey and San Francisco during the months of October, November, and December, however, made it impossible to maintain the distribution of boats on an equitable basis and the canned pack fell to the lowest figure reached in the last three years.

Sardine Investigations

Although sardine investigations have been curtailed due to lack of personnel, the essential phases are being continued. During each season the daily catch has been sampled so that there will be no break in the

continuity of studies of size changes of fish. The age analysis of the catch has been carried on through a cooperative study with the U. S. Fish and Wildlife Service. No sardines were tagged during this biennium, but tags were recovered from former releases. In the 1942-43 season, 1,328 tags were recovered in the California fishery, and eight in the Pacific northwest. In 1943-44, 648 tags were returned in California, and 52 in the Pacific northwest. These represent recoveries from groups released in previous years off the coast of Mexico, Southern California, Monterey and San Francisco. In addition, 78 recoveries were made in California of tags released off the mouth of the Columbia River by the Oregon Fish Commission, and three were taken which had been released by the Fisheries Research Board of Canada off the Washington coast.

Analyses have been continued of the fisherman's catch per unit of effort expended. These studies, together with the age readings and length measurements, indicate that at present the sardine population is in a comparatively healthy condition due to good spawning survival in 1937 and 1939. These two year-classes have been the main support of the fishery for the past three or four seasons.

Annual meetings with representatives of fisheries departments of Canada, Washington, Oregon, California, and the U. S. Fish and Wildlife Service have been held to coordinate the sardine investigations of the fisheries staffs of Canada, and the Pacific Coast States.

TUNA

The landings in pounds of tuna at California ports for the years 1940 through 1943 are as follows:

TABLE VI

| | 1940 | 1941 | 1942 | 1943 |
|-----------------|-------------|-------------|-------------|-------------|
| Albacore ----- | 3,885,000 | 2,747,000 | 10,621,000 | 21,385,000 |
| Bonito ----- | 5,291,000 | 10,177,000 | 1,651,000 | 2,282,000 |
| Bluefin ----- | 19,970,000 | 9,519,000 | 12,845,000 | 10,179,000 |
| Skipjack ----- | 56,650,000 | 25,585,000 | 38,715,000 | 28,894,000 |
| Yellowfin ----- | 113,760,000 | 76,702,000 | 41,167,000 | 49,261,000 |
| Total ----- | 199,556,000 | 124,730,000 | 104,999,000 | 112,001,000 |

MACKEREL

The catch of mackerel in 1942 was 52,353,663 pounds. In 1943 it rose to 75,261,000 pounds. A shortage of fish in 1942 added to the difficulties of movement of the boats in and out of the harbors in Southern California, resulted in the lowest mackerel catch that has been recorded in 10 years. The canning season, which is determined only by the availability of fish, began in September, 1942; and extended for that season only to March, 1943. The latter part of this season was characterized by the presence of large numbers of fish which were too small for the canners to handle properly. In 1943-44 the return in large numbers of the 1942 yearlings resulted in a major increase in the catch. As two-year olds, these fish were satisfactory for canning. The 1943-44 season started in August, and ended in February.

Mackerel Investigations

The loss of the staff working on Central Valleys and salmon investigations required another shift in the personnel. It has been necessary to suspend most of the mackerel investigations and to shift that personnel to the salmon work. Sampling of the mackerel catch has been maintained at San Pedro and at Newport.

Mackerel tagging was greatly reduced. From November, 1942, to March, 1943, 2,474 fish were tagged at Catalina, 1,361 at Newport, and 2,536 in Santa Monica Bay.

The numbers of mackerel tags recovered from different sections of the coast during the biennium are shown in the table below.

TABLE VII

| <i>Released</i> | <i>1942-43</i> | | <i>1943-44</i> | |
|-----------------------------|-----------------------|------------------------|-----------------------|------------------------|
| | <i>Recovered</i> | | <i>Recovered</i> | |
| | <i>Central Calif.</i> | <i>Southern Calif.</i> | <i>Central Calif.</i> | <i>Southern Calif.</i> |
| Oregon ----- | — | — | — | 1 |
| Central California * ----- | 5 | 23 | — | 5 |
| Southern California † ----- | 10 | 399 | 29 | 237 |
| Mexico ‡ ----- | 3 | 75 | 5 | 28 |
| Total ----- | 18 | 497 | 34 | 271 |

* Monterey to San Francisco

† Santa Barbara to San Diego

‡ West Coast Lower California

CENTRAL VALLEYS AND SALMON INVESTIGATIONS**Tagging**

Salmon tagging with numbered celluloid button tags fastened below the dorsal fin was started off the coast of California in 1939 and was carried through the fall of 1942. A total of 1,765 fish were tagged from chartered trolling boats in 1942. Sufficient personnel was not available to expand the effort required to obtain quantitatively significant returns. Only 143 tags were recovered in 1942, and 31 in 1943. Salmon have been retaken that have borne their tags for three years.

Migrant Counts

Counts of the adult salmon were made in 1942 on the following streams: Trinity River at Hoopa, American River at Folsom Dam, as well as at a rack established near Sacramento, the Tuolumne River at Modesto, and on the Mokelumne River at Woodbridge Dam. Estimates of numbers spawning in the San Joaquin River were made by surveys of the spawning areas below Friant Dam.

The 1942 estimates and counts made on these rivers are as follows:

| | |
|------------------------------------|--------|
| Tuolumne River ----- | 44,494 |
| American River (Folsom) ----- | 1,888 |
| Mokelumne River (Woodbridge) ----- | 12,119 |
| Trinity River ----- | 1,137 |
| San Joaquin (approximate) ----- | 6,000 |

None of these counts except that on the Tuolumne are considered to be accurate. The count on the Trinity depended upon the installation of a weir by the Indians at the Hoopa Indian Reservation. The weir was not installed until late in the year; and it washed out with the first large freshet. No estimate of the run that passed this point, either before or after the weir was in place, was obtained.

In 1943 no one was available to make a count on the Tuolumne River. An estimate of the number of fish that ran up the San Joaquin River and spawned below Friant was again made. Approximately 7,000 fish were counted on the spawning beds in this area. From similar counts made in other streams where check counts at weirs were available indicate that this must be considered a minimum estimate of the numbers of fish present in the upper San Joaquin.

A trap was installed on the American River below the spawning grounds and the run in that stream was estimated by tagging fish at this trap and later comparing proportions of tagged and untagged fish on the spawning beds. Heavy spring and fall freshets preclude the possibility of obtaining complete counts of migrants remaining below Folsom Dam. The 1943 run was estimated to total 7,000 fish by this method.

Fyke Net Work

Fyke nets were operated to determine the numbers of salmon fry lost in various diversion canals. Nets were also run in the rivers near the intake of those canals tested to check the time and size of the downstream migration.

From May 1st to June 9, 1943, nets were operated in the Sacramento River (near Chico), the Glenn-Colusa Canal, the Feather River (near Oroville), the Sutter-Butte Canal, and the Great Western Canal. The movement of young salmon was evidently early, and most of them had moved out of the rivers by the time the ditches began taking water. Results obtained can not therefore be considered significant.

In 1944 the work was started earlier with an earlier start of the irrigation season. On the Feather River (near Gridley) nets were operated from January 23d to May 31st. The heaviest downstream movement of young salmon occurred during March and April. The Sutter-Butte Canal opened early in April and moderate numbers of salmon were taken in the canal between mid-April and the end of May. The Great Western Canal opened in mid-April and took very few salmon. These catches were again affected by variations in stream flow and the difficulty of operating fyke nets in irrigation canals. They must be repeated to determine the significance of the results obtained. Both of these canals divert water from the Feather River.

On the San Joaquin River near Mendota the fyke nets were operated from January 19th to July 16th. Four large canals and one small one leave the river at this point. At least one canal diverts water at all times. By March 7th of 1944 all canals were operating.

The migration of young salmon down the San Joaquin was heavy from January 27th through March, and reached its peak on February 24th. The canals diverting water at Mendota did no appreciable damage until February 11th, but from that time on the loss of young salmon was heavy. On February 18th one fyke net took 3,000 young salmon from one canal.

Shasta Salvage Operations

In November of 1942 the fall run of adult salmon was blocked for the first time at Shasta Dam when construction reached the point where it was no longer possible to take the fish over. From that time on the salvage program of the U. S. Bureau of Reclamation was in full operation.

The salmon run reaching the vicinity of the Shasta Dam after November, 1942, was forced to spawn in the river below this point. The entire fall run in 1943 spawned in the river below Keswick and the spring runs of 1943 and 1944 were transferred into Deer Creek and Battle Creek. It is too early as yet to determine how successful the salmon maintenance program below Shasta is. This will only become evident when fish that have been produced by the runs blocked by Shasta Dam and have been handled by the salmon maintenance program operated by the U. S. Fish and Wildlife Service for the Bureau of Reclamation, return again to the fishery and to the river areas in which they were produced. The first effects of the salvage operation should become evident in the fall of 1946; and the full effect of the salvage operations on the fall run will be felt in 1947.

SOUPFIN SHARK

The decrease in the production of soupfin shark, noted in the previous biennium, continued during the present biennium. Total landings for 1942 and 1943 were 3,468,290 and 3,722,729 respectively. This decline in landings occurred in spite of an increased fishing effort and the greater efficiency of the various types of nets used. The effort required to catch one shark has increased 27 times from 1942 to 1944.

An investigation of the Vitamin A potency of the soupfin shark and its relationship to the biology of the species was continued. From July 1, 1942, to July 1, 1944, samples of 461 livers were collected and analyzed at Stanford University. During 1943 the fishery was observed; and samples of the catch were obtained along the entire coast of California. Data obtained is being analyzed, and a report is being prepared for publication.

The observations of the catch have indicated that in Southern California the fisherman's catch is composed almost entirely of female soupfin. In contrast to this, male soupfin appear to be concentrated in the northern waters of the State. It has been established that the vitamin potency of the soupfin shark increased with size, and in the female definite relationship of Vitamin A potency to the state of sexual maturity, as well as the sexual development of the individual, has been found. In both males and females immature individuals exhibit very low vitamin potencies and their total value in terms of Vitamin A is small. On attaining maturity, however, the vitamin potency increased rapidly with size. This change from low potency to high potency livers begins in males at a total length of about 155 centimeters, and in females at a total length of about 165 centimeters.

OYSTERS

After some years of trying to cultivate native oysters (*Ostrea lurida*), in Humboldt Bay, it has been finally demonstrated that it is impractical. Following the closure of the last company attempting this, the commission rescinded its previous regulations closing the bay to the introduction of Pacific oysters (*Ostrea gigas*). The bureau is planning to make some experimental plants of this large Pacific oyster to determine the possibility of inducing it to reproduce in this area.

Oyster cultivation was carried on successfully, especially at Morro Bay; but within the last year operations of the Army Engineers in

dredging channels through the bay indicate that it may be difficult to continue to maintain these beds unless these plans are held within the bounds of reason.

ABALONES

Early in the biennium most of the abalone divers had moved from Monterey to Southern California, south of Point Conception, where they worked on the collection of agar weed, or *Gelidium*. After this southern coast was opened to abalone diving by the 1943 Legislature, they fished for green abalones. The small size of this species and increasing difficulties in gathering *Gelidium* made the venture unprofitable. By the end of the biennium most of the divers had moved back to Morro Bay. The two years' rest given to the abalone beds in District 18 while the divers were in Southern California has resulted in a plentiful supply of large abalones.

STATISTICS

Continued shortage of personnel has required a modification of operations in the statistical system. Insofar as possible, the collection of basic material has been continued, although difficulty has been experienced in obtaining an adequate field check to maintain the accuracy of the records. The inadequate clerical help has made it necessary to drop most of the special analyses that were heretofore published annually. The basic records, however, have for the most part been obtained; and these analyses can be brought up to date as soon as the employment situation recovers.

REPORT OF THE BUREAU OF ENGINEERING

By JOHN SPENCER, Chief

The activities of the bureau were, as in other lines, curtailed by the war. Routine inspections and investigations were carried on and consideration was also given to the future operations when more nearly normal conditions will prevail.

Investigations and some construction were carried on where it was permitted by the Federal agencies. The major portion of this activity was for the Bureau of Game Conservation in connection with their administration of the Pittman-Robertson Projects. When what appears to be suitable projects are found, a preliminary survey is made, and the data thus obtained determines its possible benefits to game. Six surveys of this kind were made, the data worked up and submitted to the Bureau of Game Conservation. In time some of these will probably receive further consideration.

The Tehama Winter Deer Refuge in Tehama County, comprising 25,000 acres, was surveyed, specifications were issued for fencing the exterior boundaries, and the contract was awarded. The work, however, has been under the supervision of the Bureau of Game Conservation.

About 10 miles west of Gridley is the commission's Gray Lodge Waterfowl Refuge of 2540 acres. This refuge did have a system of levees but these were improved and made more effective, and substantial water control facilities and improvements were added. The levees, which are of sufficient width for vehicle travel, required the placing of 212,000 cubic yards of material and totaled $12\frac{1}{2}$ miles in length. Some further work is to be done when present war restrictions will permit.

Several projects are under consideration in Lassen County. One purchase of 2,200 acres has been made for waterfowl purposes and surveys are now in progress, and the intent is to proceed with the needed and extensive improvements in 1945 if it is permitted under the war regulations.

The bureau has not had the proper facilities for storing its construction equipment and supplies. When material for construction is available it is expected to provide these facilities on land that has been purchased in the City of Redding as that place will be equipment headquarters for central and northern sections of the State.

The regular inspection of fish screens, previously installed, has continued, the 1,500 inspections made have well demonstrated that fish screens, as designed and installed, do stop the fish from entering the water diversions and subsequently being destroyed, and at the same time the continued flow of water is not stopped or interfered with. No new fish screens have been installed.

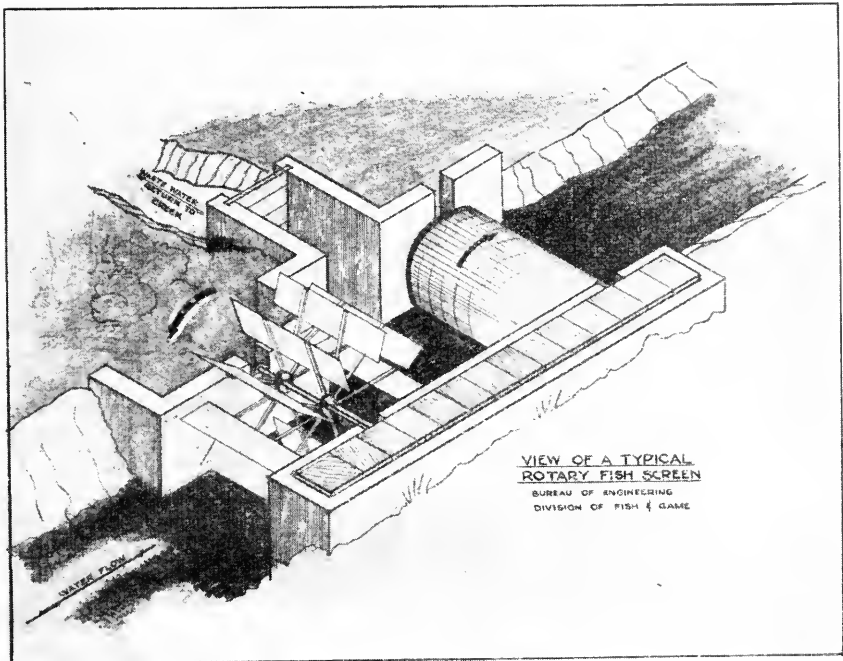
Four new fishways over or around dams have been constructed by the owners of these dams. These installations were made due to commitments made by the owners to the writer in the preceding biennium. Over 250 inspections of dams and existing fishways were made to see if improvements or repairs were required. Twelve fish ladders were

repaired. The bureau has recommended to the executive secretary the installation of a number of fishways or their repair.

Special matters requiring investigations numbered 104, while 160 maps or plans were prepared.

In the spring of 1941, the greater portion of the responsibility for the work in connection with fish screens and fish ladders was placed in other bureaus, and the obligations and responsibilities of the Chief of the Bureau of Engineering were not definitely defined and hence no further report on these subjects is made.

The subject of fish screens, and to a somewhat lesser degree that of fish ladders, has been before the commission for many years. Some progress has been made though the rate is far from satisfactory. It does not appear that there is sufficient knowledge of the need for protecting fish from the water diversions of the State by the ones who should be interested in this subject and this apparent lack benefits those who are opposed to an active and definite program with respect to these two matters. The problem of fish protection is probably more acute in this State than in some other States due to limited rainfall in certain areas and the numerous and large diversions of water made for agricultural, industrial, domestic and power purposes.



A number of agencies diverting water, and others, profess to believe that the problem has no solution, and appear to be of the belief that some one fish screen, yet to be found, is necessary before the great loss of fish through these unprotected water diversions can be stopped. The fact that this commission has had installed a number of successful

fish screens of different types for varying conditions is carefully ignored. The need is not for some visionary and undemonstrated fish screen but rather the application of the knowledge at hand and which has been available for some years.

It should be kept in mind that fish screens and fish ladders concern themselves with water, a vital need in the State of California. A policy of dealing with the diverters of water and the owners of dams should be determined based on a broad understanding of the needs of these parties as well as a reasonable application of fish protection measures, looking toward cooperation with those with whom the commission must deal in the application of the Fish and Game Code in these subjects.

In order that a defined policy be effective and reasonable in its operation, it appears that the responsibility should be fixed in one person. Several people can not be engaged in this work and have it carried out in an orderly and economical manner.

The subject of fish screens and fish ladders is a most important one in conservation work and it is recommended that conservationists give this subject their earnest and active consideration.

REPORT OF THE BUREAU OF LICENSES

By H. R. DUNBAR, Chief

The biennium from July 1, 1942, to June 30, 1944, has presented many problems in the distribution and sale of licenses. Due to the various wartime restrictions, license sales have decreased and we have lost many of our license agencies as they were unable to obtain merchandise, or the lack of help caused them to discontinue handling licenses for the duration.

In past years, it has been difficult to maintain proper distribution of licenses in the northern counties of the State and at times the sportsmen found it difficult to purchase their licenses. In July of 1942, an office was established at Redding. This office served all cash agents in Trinity, Siskiyou, Shasta, Tehama, Modoc, and Lassen Counties. The office also serves as headquarters for the Patrol captain for the same territory.

In the distribution and sale of our licenses and tags, the license agents who conduct sporting goods, hardware, and various types of businesses, play an important part in assisting the division in making it possible for the sportsmen to obtain their licenses throughout the State. To simplify the work of the agents, the style of the license book was changed by eliminating the separate application form and incorporating it with the license stub. This has saved the agents considerable time and work, and they are well pleased with the change.

For various reasons as a result of the war, our license sales have decreased from the sale in 1941. Gasoline rationing and areas closed to hunting have been important factors in the decrease in sales. During the 1942 deer hunting season, all of Southern California and coastal areas were closed to hunting except the area north of San Francisco, which area was opened from August 1st to August 21st. In 1942, the deer tag sale dropped from a total of \$173,699 in 1941 to \$116,121. Hunting licenses dropped from \$643,700 in 1941 to \$522,985 in 1942. During the 1943 deer hunting season, the same areas were closed as in 1942 although in the month of December hunting was permitted in Southern California and the coastal area south of San Francisco. This resulted in an increase in deer tag sales from \$116,121 in 1942 to \$147,755 in 1943.

During the 1943 Session of the Legislature, a law was approved providing for a pheasant tag costing \$1. Due to priorities and other causes, it was not possible to obtain a suitable type of tag. A cardboard tag, similar to the deer tag, was finally adopted. Approximately \$121,000 in tags were sold.

The annual antelope drawing, as provided by Section 1346, was held at Sacramento on August 13, 1943. In all, 3,653 persons made application. Of the first 500 applicants who were entitled to a permit, 379 made application and were issued a permit. The 500th or last permit was issued to the applicant whose drawing number was 716.

The commission, in compliance with Section 1347, provided for an elk season in Inyo County in the fall of 1943. A drawing similar to that held for antelope was held at the Fish and Game office at Los Angeles on November 8, 1943. There were 2,837 applications received. Permits were issued to the 75 applicants who qualified at the drawing.

FINAL STATEMENT OF ANGLING LICENSE SALES, 1942 SERIES

| County | Citizen, \$2 each | Non-resident, \$3 each | Alien \$5 each | Duplicate, 50c each | Total |
|------------------------|----------------------|---------------------------|-------------------|------------------------|--------------|
| Alameda | \$65,730 00 | \$48 00 | \$575 00 | \$39 00 | \$66,392 00 |
| Alpine | 328 00 | 183 00 | | | 511 00 |
| Amador | 1,678 00 | 6 00 | 5 00 | 2 00 | 1,691 00 |
| Butte | 9,662 00 | 39 00 | | 13 00 | 9,714 00 |
| Calaveras | 1,862 00 | | | 3 00 | 1,865 00 |
| Colusa | 1,432 00 | | 10 00 | 1 00 | 1,443 00 |
| Contra Costa | 21,232 00 | 48 00 | 205 00 | 18 00 | 21,503 00 |
| Del Norte | 3,194 00 | 258 00 | 5 00 | 10 00 | 3,467 00 |
| El Dorado | 4,696 00 | 144 00 | 10 00 | 5 00 | 4,855 00 |
| Fresno: | | | | | |
| Agents | 22,554 00 | 3 00 | 45 00 | 7 00 | 22,609 00 |
| Fresno Branch | 516 00 | 30 00 | 230 00 | 18 50 | 794 50 |
| Totals, Fresno | \$23,070 00 | \$33 00 | \$275 00 | \$25 50 | \$23,403 50 |
| Glenn | 1,052 00 | 6 00 | 5 00 | 2 00 | 1,065 00 |
| Humboldt | 12,606 00 | 87 00 | 115 00 | 28 00 | 12,836 00 |
| Imperial | 2,752 00 | 3 00 | | 3 50 | 2,758 50 |
| Inyo | 12,256 00 | 171 00 | 70 00 | 21 50 | 12,518 50 |
| Kern | 11,252 00 | 6 00 | 5 00 | 4 00 | 11,267 00 |
| Kings | 2,902 00 | | 30 00 | 1 50 | 2,933 50 |
| Lake | 3,500 00 | 9 00 | 5 00 | 5 50 | 3,519 50 |
| Lassen | 4,644 00 | 54 00 | 25 00 | 3 50 | 4,726 50 |
| Los Angeles: | | | | | |
| Agents | 202,588 00 | 174 00 | 160 00 | 76 50 | 202,998 50 |
| Los Angeles Branch | 564 00 | 120 00 | 620 00 | 75 50 | 1,379 50 |
| Terminal Island Branch | 86 00 | 6 00 | 55 00 | 9 00 | 156 00 |
| Totals, Los Angeles | \$203,238 00 | \$300 00 | \$835 00 | \$161 00 | \$204,534 00 |
| Madera | 3,892 00 | 9 00 | 5 00 | 6 00 | 3,912 00 |
| Marin | 10,094 00 | 3 00 | 100 00 | 7 00 | 10,204 00 |
| Mariposa | 4,506 00 | 114 00 | | 15 00 | 4,635 00 |
| Mendocino | 8,484 00 | 9 00 | 5 00 | 2 00 | 8,500 00 |
| Merced | 4,718 00 | 9 00 | 30 00 | 10 00 | 4,767 00 |
| Modoc | 2,826 00 | 153 00 | | 2 50 | 2,981 50 |
| Mono | 7,242 00 | 486 00 | 5 00 | 26 00 | 7,759 00 |
| Monterey: | | | | | |
| Agents | 8,902 00 | 9 00 | 310 00 | 13 50 | 9,234 50 |
| Monterey Branch | | | 75 00 | | 75 00 |
| Totals, Monterey | \$8,902 00 | \$9 00 | \$385 00 | \$13 50 | \$9,309 50 |
| Napa | 9,040 00 | 15 00 | 30 00 | 9 00 | 9,094 00 |
| Nevada | 5,972 00 | 504 00 | 35 00 | 21 00 | 6,532 00 |
| Orange | 20,114 00 | 24 00 | | 3 00 | 20,141 00 |
| Placer | 6,218 00 | 90 00 | 10 00 | 5 00 | 6,323 00 |
| Plumas | 7,440 00 | 123 00 | 65 00 | 23 50 | 7,651 50 |
| Riverside | 11,396 00 | 12 00 | 10 00 | 8 00 | 11,426 00 |
| Sacramento: | | | | | |
| Agents | 27,408 00 | | 335 00 | 7 50 | 27,750 50 |
| Sacramento Branch | 454 00 | 102 00 | 1,320 00 | 64 00 | 1,940 00 |
| Totals, Sacramento | \$27,862 00 | \$102 00 | \$1,655 00 | \$71 50 | \$29,690 50 |
| San Benito | 1,032 00 | | 10 00 | 3 00 | 1,045 00 |
| San Bernardino | 32,546 00 | 129 00 | 45 00 | 26 00 | 32,746 00 |
| San Diego: | | | | | |
| Agents | 52,614 00 | 201 00 | 5 00 | 1 50 | 52,821 50 |
| San Diego Branch | 92 00 | 81 00 | 80 00 | 12 00 | 265 00 |
| Totals, San Diego | \$52,706 00 | \$282 00 | \$85 00 | \$13 50 | \$53,086 50 |
| San Francisco: | | | | | |
| Agents | 58,166 00 | 12 00 | 530 00 | 22 50 | 58,730 50 |
| San Francisco Branch | 592 00 | 126 00 | 2,375 00 | 110 50 | 3,203 50 |
| Totals, San Francisco | \$58,758 00 | \$138 00 | \$2,905 00 | \$133 00 | \$61,934 00 |
| San Joaquin | 21,328 00 | 12 00 | 15 00 | 14 00 | 21,369 00 |
| San Luis Obispo | 9,078 00 | 3 00 | 10 00 | 17 50 | 9,108 50 |
| San Mateo | 9,254 00 | | 45 00 | 8 50 | 9,307 50 |
| Santa Barbara | 7,552 00 | 6 00 | 20 00 | 13 50 | 7,591 50 |
| Santa Clara | 18,454 00 | 15 00 | 75 00 | 19 50 | 18,563 50 |
| Santa Cruz | 7,876 00 | 12 00 | 185 00 | 14 00 | 8,087 00 |
| Shasta: | | | | | |
| Agents | 11,744 00 | 63 00 | 15 00 | 30 00 | 11,852 00 |
| Redding Branch | 20 00 | 9 00 | 5 00 | 4 00 | 38 00 |
| Totals, Shasta | \$11,764 00 | \$72 00 | \$20 00 | \$34 00 | \$11,890 00 |

FINAL STATEMENT OF ANGLING LICENSE SALES, 1942 SERIES—Continued

| County | Citizen, \$2 each | Non-resident, \$3 each | Alien, \$5 each | Duplicate, 50c each | Total |
|---------------|----------------------|---------------------------|--------------------|------------------------|--------------|
| Sierra | \$1,394 00 | \$15 00 | | \$2 00 | \$1,411 00 |
| Siskiyou | 9,358 00 | 369 00 | | 9 50 | 9,736 50 |
| Solano | 21,914 00 | 12 00 | 310 00 | 58 00 | 22,294 00 |
| Sonoma | 17,872 00 | 18 00 | 160 00 | 22 00 | 18,072 00 |
| Stanislaus | 11,954 00 | 24 00 | 60 00 | 18 00 | 12,056 00 |
| Sutter | 2,518 00 | | | 7 50 | 2,525 50 |
| Tehama | 2,940 00 | 6 00 | | 5 50 | 2,951 50 |
| Trinity | 1,384 00 | 6 00 | 5 00 | 2 50 | 1,397 50 |
| Tulare | 11,316 00 | 27 00 | 35 00 | 9 50 | 11,387 50 |
| Tuolumne | 3,781 00 | | 5 00 | 7 50 | 3,793 50 |
| Ventura | 7,092 00 | | | 4 50 | 7,096 50 |
| Yolo | 2,820 00 | | | 2 00 | 2,822 00 |
| Yuba | 6,242 00 | 36 00 | 30 00 | 7 00 | 6,315 00 |
| Out of State: | | | | | |
| Arizona | 568 00 | 228 00 | | | 796 00 |
| Nevada | | 4,392 00 | | 50 | 4,392 50 |
| Oregon | 142 00 | 99 00 | | | 241 00 |
| Totals | \$857,468 00 | \$8,958 00 | \$8,555 00 | \$1,022 50 | \$876,003 50 |
| Number | 428,734 | 2,986 | 1,711 | 2,045 | |

FINAL STATEMENT OF MARKET FISHERMAN LICENSE SALES, 1942 SERIES

| County | Licenses \$10 each | Total |
|------------------------------------|--------------------|-------------|
| Contra Costa | | \$1,200 00 |
| Del Norte | | 210 00 |
| Humboldt | | 2,240 00 |
| Los Angeles—Terminal Island Branch | | 47,590 00 |
| Mendocino | | 1,000 00 |
| Monterey Branch | | 11,110 00 |
| Sacramento Branch | | 1,350 00 |
| San Diego Branch | | 13,960 00 |
| San Francisco Branch | | 12,000 00 |
| Santa Cruz | | 790 00 |
| Sonoma | | 270 00 |
| Total | | \$91,720 00 |
| Number | | 9,172 |

FINAL STATEMENT OF ANGLING LICENSE SALES, 1943 SERIES

| County | Citizen, \$2 each | Non-resident, \$3 each | Alien, \$5 each | Duplicate, 50c each | Total |
|------------------------|----------------------|---------------------------|--------------------|------------------------|--------------|
| Alameda | \$68,956 00 | \$45 00 | \$800 00 | \$44 50 | \$69,845 50 |
| Alpine | 260 00 | 204 00 | | | 464 00 |
| Amador | 1,714 00 | 3 00 | | 2 50 | 1,719 50 |
| Butte | 10,152 00 | 57 00 | 30 00 | 27 50 | 10,266 50 |
| Calaveras | 2,094 00 | 3 00 | 5 00 | 50 | 2,102 50 |
| Colusa | 1,346 00 | 3 00 | 5 00 | 3 50 | 1,357 50 |
| Contra Costa | 23,988 00 | 27 00 | 260 00 | 25 50 | 24,300 50 |
| Del Norte | 2,380 00 | 294 00 | | 6 50 | 2,680 50 |
| El Dorado | 4,336 00 | 114 00 | 10 00 | 5 00 | 4,465 00 |
| Fresno: | | | | | |
| Agents | 21,442 00 | 15 00 | | 6 00 | 21,463 00 |
| Fresno Branch | 706 00 | 39 00 | 235 00 | 25 50 | 1,005 50 |
| Totals, Fresno | \$22,148 00 | \$54 00 | \$235 00 | \$31 50 | \$22,468 50 |
| Gleann | 1,458 00 | 9 00 | 10 00 | 2 50 | 1,479 50 |
| Humboldt | 12,490 00 | 51 00 | 60 00 | 27 50 | 12,628 50 |
| Imperial | 2,282 00 | 3 00 | | 50 | 2,285 50 |
| Inyo | 10,522 00 | 219 00 | 80 00 | 26 00 | 10,847 00 |
| Kern | 11,388 00 | | | 3 50 | 11,391 50 |
| Kings | 3,012 00 | | 35 00 | 1 00 | 3,048 00 |
| Lake | 5,608 00 | 9 00 | 5 00 | 6 50 | 5,628 50 |
| Lassen | 4,510 00 | 39 00 | 45 00 | 5 00 | 4,599 00 |
| Los Angeles: | | | | | |
| Agents | 193,988 00 | 117 00 | 90 00 | 56 00 | 194,251 00 |
| Los Angeles Branch | 614 00 | 90 00 | 435 00 | 43 00 | 1,182 00 |
| Terminal Island Branch | 186 00 | 6 00 | 30 00 | 6 50 | 228 50 |
| Totals, Los Angeles | \$194,788 00 | \$213 00 | \$555 00 | \$105 50 | \$195,661 50 |
| Madera | 3,578 00 | | | 3 00 | 3,581 00 |
| Marin | 12,736 00 | 3 00 | 75 00 | 18 50 | 12,832 50 |
| Mariposa | 2,532 00 | 69 00 | 5 00 | 6 50 | 2,612 50 |
| Mendocino | 7,122 00 | 15 00 | | 5 50 | 7,142 50 |
| Merced | 5,082 00 | 9 00 | 25 00 | 9 50 | 5,125 50 |
| Modoc | 2,718 00 | 159 00 | 5 00 | 6 00 | 2,888 00 |
| Mono | 5,556 00 | 561 00 | 5 00 | 15 50 | 6,137 50 |
| Monterey: | | | | | |
| Agents | 10,342 00 | 3 00 | 405 00 | 18 00 | 10,768 00 |
| Monterey Branch | | 6 00 | 135 00 | | 141 00 |
| Totals, Monterey | \$10,342 00 | \$9 00 | \$540 00 | \$18 00 | \$10,909 00 |
| Napa | 9,460 00 | 6 00 | 20 00 | 14 50 | 9,500 50 |
| Nevada | 4,940 00 | 555 00 | 65 00 | 11 00 | 5,571 00 |
| Orange | 19,068 00 | 9 00 | | 3 50 | 19,080 50 |
| Placer | 5,864 00 | 48 00 | 25 00 | 4 50 | 5,941 50 |
| Plumas | 6,666 00 | 171 00 | 65 00 | 16 50 | 6,918 50 |
| Riverside | 12,522 00 | 12 00 | 10 00 | 14 50 | 12,558 50 |
| Sacramento: | | | | | |
| Agents | 29,710 00 | | 665 00 | 11 00 | 30,386 00 |
| Sacramento Branch | 468 00 | 90 00 | \$55 00 | 55 00 | 1,468 00 |
| Totals, Sacramento | \$30,178 00 | \$90 00 | \$1,520 00 | \$66 00 | \$31,854 00 |
| San Benito | 1,180 00 | 3 00 | 20 00 | 8 00 | 1,211 00 |
| San Bernardino | 41,074 00 | 51 00 | 50 00 | 33 50 | 41,208 50 |
| San Diego: | | | | | |
| Agents | 59,314 00 | 204 00 | | 3 00 | 59,521 00 |
| San Diego Branch | 114 00 | 48 00 | 95 00 | 24 50 | 281 50 |
| Totals, San Diego | \$59,428 00 | \$252 00 | \$95 00 | \$27 50 | \$59,802 50 |
| San Francisco: | | | | | |
| Agents | 60,022 00 | 6 00 | 615 00 | 24 00 | 60,667 00 |
| San Francisco Branch | 726 00 | 117 00 | 1,390 00 | 74 50 | 2,307 50 |
| Totals, San Francisco | \$60,748 00 | \$123 00 | \$2,005 00 | \$98 50 | \$62,974 50 |
| San Joaquin | 23,980 00 | | 115 00 | 21 00 | 24,116 00 |
| San Luis Obispo | 11,944 00 | 3 00 | 40 00 | 23 00 | 12,010 00 |
| San Mateo | 8,636 00 | 6 00 | 45 00 | 5 00 | 8,692 00 |
| Santa Barbara | 7,510 00 | 6 00 | 70 00 | 9 50 | 7,595 50 |
| Santa Clara | 19,402 00 | | 175 00 | 16 50 | 19,593 50 |
| Santa Cruz | 6,758 00 | 9 00 | 385 00 | 19 00 | 7,201 00 |
| Shasta: | | | | | |
| Agents | 10,302 00 | 57 00 | 45 00 | 10 50 | 10,414 50 |
| Redding Branch | 182 00 | 27 00 | 55 00 | 7 50 | 271 50 |
| Totals, Shasta | \$10,484 00 | \$84 00 | \$100 00 | \$18 00 | \$10,686 00 |

FINAL STATEMENT OF ANGLING LICENSE SALES, 1943 SERIES—Continued

| County | Citizen, \$2 each | Non-resident, \$3 each | Alien, \$5 each | Duplicate, 50c each | Total |
|---------------|----------------------|---------------------------|--------------------|------------------------|--------------|
| Sierra | \$1,262 00 | \$21 00 | | \$1 50 | \$1,284 50 |
| Siskiyou | 10,542 00 | 513 00 | \$180 00 | 9 50 | 11,244 50 |
| Solano | 24,990 00 | 9 00 | 570 00 | 56 00 | 25,625 00 |
| Sonoma | 18,426 00 | 15 00 | 225 00 | 29 50 | 18,695 50 |
| Stanislaus | 15,372 00 | 12 00 | 90 00 | 14 50 | 15,488 50 |
| Sutter | 2,594 00 | | | 3 50 | 2,597 50 |
| Tehama | 2,968 00 | | 10 00 | 4 50 | 2,982 50 |
| Trinity | 1,400 00 | 3 00 | | 3 50 | 1,406 50 |
| Tulare | 11,110 00 | 6 00 | | 5 00 | 11,121 00 |
| Tuolumne | 3,454 00 | 24 00 | | 7 00 | 3,485 00 |
| Ventura | 8,662 00 | 3 00 | | 3 50 | 8,668 50 |
| Yolo | 3,129 00 | 30 00 | 5 00 | 6 00 | 3,161 00 |
| Yuba | 4,532 00 | 6 00 | | 6 00 | 4,544 00 |
| Out of State: | | | | | |
| Arizona | 378 00 | 279 00 | | | 657 00 |
| Nevada | | 3,732 00 | | | 3,732 00 |
| Oregon | 28 00 | 78 00 | | 50 | 106 50 |
| Totals | \$881,808 00 | \$8,331 00 | \$8,675 00 | \$968 00 | \$899,782 00 |
| Number | 440,904 | 2,777 | 1,735 | 1,936 | |

FINAL STATEMENT OF MARKET FISHERMAN LICENSE SALES, 1943 SERIES

| County | \$10 each | Total |
|---------------|-----------|--------------|
| Contra Costa | | \$2,040 00 |
| Del Norte | | 120 00 |
| Humboldt | | 2,130 00 |
| Los Angeles | | 68,490 00 |
| Mendocino | | 1,000 00 |
| Monterey | | 9,650 00 |
| Sacramento | | 1,110 00 |
| San Diego | | 15,440 00 |
| San Francisco | | 17,020 00 |
| Santa Cruz | | 830 00 |
| Solano | | 250 00 |
| Total | | \$118,080 00 |
| Number | | 11,808 |

FINAL STATEMENT OF HUNTING, DEER TAGS, AND TRAPPING LICENSE SALES, 1942 SERIES

| County | Hunting licenses | | | | | | Deer tags | | | Trapping licenses | |
|------------------------|---------------------|--------------------|-------------------------------|---------------------------------|--------------------|-----------------------|------------------|------------|---------------------|-------------------|-------------------|
| | Citizen \$2 each | Junior \$1 each | Non- resident \$10 each | Declarant alien \$10 each | Alien \$25 each | Duplicate 50c each | Total Hunting | \$1 each | Citizen \$1 each | Alien \$2 each | Total Trapping |
| Alameda | \$20,232 00 | \$1,102 00 | \$30 00 | | | \$33 00 | \$30,397 00 | \$7,594 00 | | | |
| Alpine | 128 00 | | 60 00 | | | | 188 00 | 72 00 | | | |
| Anaheim | 1,908 00 | 139 00 | | | | 4 00 | 2,051 00 | 790 00 | | | |
| Butte | 12,412 00 | 1,975 00 | 40 00 | | | 31 00 | 13,558 00 | 3,514 00 | | | |
| Calaveras | 1,410 00 | 97 00 | | | | 2 50 | 1,509 50 | 662 00 | | | |
| Colusa | 4,250 00 | 410 00 | | \$20 00 | \$50 00 | 10 50 | 4,740 50 | 1,095 00 | | | |
| Contra Costa | 11,022 00 | 407 00 | | | | 12 00 | 11,501 00 | 2,952 00 | | | |
| Del Norte | 920 00 | 46 00 | 10 00 | 10 00 | | 17 50 | 987 50 | 235 00 | | | |
| El Dorado | 2,728 00 | 183 00 | | | | 3 00 | 2,914 00 | 1,222 00 | | | |
| Fresno: | | | | | | | | | | | |
| Agents | 17,404 00 | 1,315 00 | 10 00 | | | 5 00 | 18,784 00 | 4,141 00 | | | \$34 00 |
| Fresno Branch | 494 00 | 55 00 | 10 00 | 170 00 | 50 00 | 16 00 | 795 00 | 133 00 | | | \$34 00 |
| Totals, Fresno | \$17,958 00 | \$1,370 00 | \$10 00 | \$170 00 | \$50 00 | \$21 00 | \$19,579 00 | \$4,274 00 | | | \$34 00 |
| Glenn | 4,048 00 | 419 00 | | | | 14 00 | 4,481 00 | 1,197 00 | | | |
| Humboldt | 9,174 00 | 570 00 | | | | 11 50 | 9,755 50 | 3,721 00 | | | |
| Imperial | 4,718 00 | 369 00 | | | | 5 50 | 5,092 50 | 28 00 | | | |
| Inyo | 3,528 00 | 267 00 | | | | 16 00 | 3,811 00 | 1,456 00 | | | |
| Kern | 12,382 00 | 706 00 | | | | 7 50 | 13,155 50 | 2,606 00 | | | |
| Kings | 3,374 00 | 334 00 | | | | 1 00 | 4,309 00 | 756 00 | | | |
| Lake | 3,100 00 | 288 00 | 10 00 | | | 8 00 | 3,406 00 | 1,568 00 | | | |
| Lassen | 5,428 00 | 354 00 | 40 00 | | | 6 50 | 5,828 50 | 2,947 00 | | | |
| Los Angeles: | | | | | | | | | | | |
| Agents | 74,136 00 | 2,519 00 | 10 00 | | | 25 50 | 76,690 50 | 7,525 00 | | | 49 00 |
| Los Angeles Branch | 552 00 | 38 00 | 60 00 | 230 00 | 225 00 | 29 00 | 934 00 | 94 00 | 49 00 | | 49 00 |
| Terminal Island Branch | 34 00 | 8 00 | | | | 1 50 | 43 50 | 5 00 | | | |
| Totals, Los Angeles | \$74,522 00 | \$2,565 00 | \$70 00 | \$230 00 | \$225 00 | \$56 00 | \$77,668 00 | \$7,624 00 | \$49 00 | | \$49 00 |

| | | | | | | | | |
|-----------------------|-------------|------------|----------|--|----------|---------|-------------|------------|
| Madera | 2,896 00 | 169 00 | | | | 4 50 | 3,065 50 | 900 00 |
| Marin | 4,228 00 | 252 00 | | | | 3 50 | 4,483 50 | 1,491 00 |
| Mariposa | 600 00 | 44 00 | | | | | 734 00 | 309 00 |
| Mendocino | 6,952 00 | 468 00 | | | | 5 50 | 7,423 50 | 3,023 00 |
| Merced | 7,548 00 | 770 00 | | | | 30 00 | 8,318 00 | 1,173 00 |
| Modoc | 4,044 00 | 253 00 | 740 00 | | | 4 50 | 5,041 50 | 2,050 00 |
| Monterey | 1,054 00 | 29 00 | 30 00 | | | 50 | 1,113 50 | 470 00 |
| Agents | 5,408 00 | 440 00 | 30 00 | | | 8 50 | 5,916 50 | 1,159 00 |
| Monterey Branch | | | | | | | 30 00 | |
| Totals, Monterey | \$5,408 00 | \$440 00 | \$30 00 | | | \$8 50 | \$5,946 50 | \$1,159 00 |
| Napa | 6,140 00 | 535 00 | | | | 8 50 | 6,683 50 | 2,623 00 |
| Nevada | 3,862 00 | 249 00 | | | | 5 00 | 4,286 00 | 1,843 00 |
| Orange | 4,738 00 | 412 00 | 130 00 | | | 2 50 | 5,152 50 | 596 00 |
| Placer | 5,714 00 | 514 00 | 10 00 | | | 5 00 | 6,243 00 | 1,828 00 |
| Plumas | 4,246 00 | 216 00 | 110 00 | | 50 00 | 9 50 | 4,631 50 | 2,272 00 |
| Riverside | 5,972 00 | 527 00 | | | | 4 50 | 6,503 50 | 274 00 |
| Sacramento | 23,824 00 | 1,590 00 | | | | 8 00 | 25,447 00 | 4,737 00 |
| Agents | 480 00 | 40 00 | 180 00 | | | 61 50 | 2,006 50 | 128 00 |
| Sacramento Branch | | | | | | | | |
| Totals, Sacramento | \$24,304 00 | \$1,630 00 | \$180 00 | | \$500 00 | \$69 50 | \$27,453 50 | \$4,865 00 |
| San Benito | 1,488 00 | 157 00 | | | | 7 00 | 1,652 00 | 556 00 |
| San Bernardino | 8,352 00 | 586 00 | | | | 12 00 | 8,950 00 | 515 00 |
| San Diego | | | | | | | | |
| Agents | 12,808 00 | 750 00 | | | | 1 00 | 13,559 00 | 481 00 |
| San Diego Branch | 32 00 | 2 00 | 10 00 | | | 12 50 | 66 50 | 3 00 |
| Totals, San Diego | \$12,840 00 | \$752 00 | \$10 00 | | | \$13 50 | \$13,625 50 | \$484 00 |
| San Francisco | | | | | | | | |
| Agents | 26,222 00 | 535 00 | | | | 5 50 | 26,812 50 | 6,300 00 |
| San Francisco Branch | 414 00 | 76 00 | 160 00 | | 425 00 | 49 00 | 2,104 00 | 180 00 |
| Totals, San Francisco | \$26,636 00 | \$611 00 | \$160 00 | | \$425 00 | \$54 50 | \$28,976 50 | \$6,480 00 |
| San Joaquin | 13,808 00 | 858 00 | | | | 7 50 | 14,763 50 | 2,969 00 |
| San Luis Obispo | 4,538 00 | 361 00 | | | | 4 50 | 4,923 50 | 583 00 |
| San Mateo | 5,906 00 | 379 00 | | | | 4 50 | 6,194 50 | 1,539 00 |
| Santa Barbara | 3,630 00 | 346 00 | | | 75 00 | 5 00 | 4,081 00 | 291 00 |
| Santa Clara | 12,116 00 | 908 00 | | | | 15 00 | 13,089 00 | 3,795 00 |
| Santa Cruz | 4,220 00 | 369 00 | | | | 9 50 | 4,598 50 | 1,324 00 |
| Shasta | | | | | | | | |
| Agents | 8,918 00 | 389 00 | 30 00 | | | 15 50 | 9,352 50 | 3,903 00 |
| Redding Branch | 40 00 | 1 00 | 10 00 | | | 4 00 | 130 00 | 21 00 |
| Totals, Shasta | \$8,958 00 | \$390 00 | \$40 00 | | \$25 00 | \$19 50 | \$9,482 50 | \$3,924 00 |
| | | | | | | | \$26 00 | 26 00 |
| | | | | | | | \$26 00 | \$26 00 |

FINAL STATEMENT OF HUNTING, DEER TAGS, AND TRAPPING LICENSE SALES, 1942 SERIES—Continued

| County | Hunting licenses | | | | | | Deer tags | | Trapping licenses | | |
|-----------------|---------------------|--------------------|-------------------------------|---------------------------------|--------------------|-----------------------|------------------|--------------|---------------------|-------------------|-------------------|
| | Citizen \$2 each | Junior \$1 each | Non- resident \$10 each | Declarant alien \$10 each | Alien \$25 each | Duplicate 50c each | Total Hunting | \$1 each | Citizen \$1 each | Alien \$2 each | Total Trapping |
| Sierra..... | \$698 00 | \$46 00 | | | | \$1 00 | \$745 00 | \$379 00 | | | |
| Siskiyou..... | 10,770 00 | 757 00 | \$5,510 00 | | | 19 50 | 17,056 50 | 4,824 00 | | | |
| Solano..... | 11,322 00 | 586 00 | | | | 25 00 | 11,933 00 | 2,924 00 | | | |
| Sonoma..... | 10,834 00 | 424 00 | | \$50 00 | | 11 00 | 11,819 00 | 4,237 00 | | | |
| Stanislaus..... | 9,273 00 | 973 00 | | 50 00 | | 12 50 | 10,313 50 | 1,948 00 | | | |
| Butter..... | 2,842 00 | 227 00 | | | | 7 50 | 3,076 50 | 1,540 00 | | | |
| Tehama..... | 3,550 00 | 345 00 | | | | 7 50 | 3,902 50 | 1,294 00 | | | |
| Trinity..... | 1,060 00 | 42 00 | | | | 5 00 | 1,102 50 | 569 00 | | | |
| Tulare..... | 10,436 00 | 868 00 | | | | 5 00 | 11,309 00 | 2,733 00 | | | |
| Tuolumne..... | 1,878 00 | 162 00 | | | | 2 00 | 2,042 00 | 888 00 | | | |
| Ventura..... | 2,950 00 | 259 00 | | | | 1 00 | 3,210 00 | 472 00 | | | |
| Yolo..... | 6,222 00 | 553 00 | 20 00 | | | 14 50 | 6,829 50 | 1,541 00 | | | |
| Yuba..... | 6,750 00 | 607 00 | 10 00 | 20 00 | | 11 50 | 7,378 50 | 1,723 00 | | | |
| Out of State: | | | | | | | | | | | |
| Arizona..... | 92 00 | | | | | | 92 00 | 6 00 | | | |
| Nevada..... | 48 00 | | 3,350 00 | | | | 3,398 00 | 337 00 | | | |
| Oregon..... | 1,664 00 | 9 00 | 4,420 00 | | | | 6,093 00 | 457 00 | | | |
| Totals..... | \$473,794 00 | \$29,404 00 | \$14,990 00 | \$2,720 00 | \$1,400 00 | \$677 00 | \$522,985 00 | \$116,121 00 | \$1,147 00 | \$32 00 | \$1,179 00 |
| Number..... | 236,897 | 29,404 | 1,499 | 272 | 56 | 1,354 | | 116,121 | 1,147 | 16 | |

FINAL STATEMENT OF MISCELLANEOUS LICENSE SALES BY BRANCH OFFICE AND AGENTS, 1942 SERIES

| | Fresno | Los Angeles | Monterey | Redding | Sacramento | San Diego | San Francisco | Terminal Island | Agents | Total | Number |
|---|--------|-------------|----------|---------|------------|-----------|-----------------|-----------------|---------|-----------------|-----------|
| Commercial hunting club: Citizen, \$25 each | | | | | | | \$725 00 | | | \$725 00 | 29 |
| Commercial hunting club operator: Citizen, \$5 each. Alien, \$25 each. | | | | | | | 230 00 50 00 | | | 230 00 50 00 | 46 2 |
| Totals | | | | | | | \$280 00 | | | \$280 00 | |
| Game tags, 3 cents each | 81 98 | \$120 66 | | | \$24 54 | | 76 80 | | | 223 98 | 7,466 |
| Game breeder, \$2.50 each | 45 00 | 730 00 | | | 150 00 | | 245 00 | | | 1,170 00 | 468 |
| Fish packer and shellfish dealer: Citizen, \$5 each | | | | | | \$75 00 | 700 00 | \$165 00 | | 940 00 | 188 |
| Fish importers, \$5 each | | | | | | | 90 00 | | | 90 00 | 18 |
| Fish party boat permits, \$1 each | | | \$0 00 | | | 2 00 | 152 00 | 135 00 | | 298 00 | 298 |
| Fish breeder, \$5 each | | | | | | | 325 00 | | | 325 00 | 65 |
| Fish tags, 1 cent each | | 40 00 | | | | | 3,681 00 | | \$30 66 | 3,751 66 | 375,166 |
| Kelp license, \$10 each | | | | | | | 60 00 | | | 60 00 | 6 |
| Game management: License, \$10 each. Tags, 3 cents each | | | | | | | 180 00 5 58 | | | 180 00 5 58 | 18 186 |
| Autolope permits, \$5 each | | | | | 2,500 00 | | | | | 2,500 00 | 500 |

FINAL STATEMENT OF HUNTING, DEER TAGS, AND TRAPPING LICENSE SALES, 1943 SERIES

| County | Hunting licenses | | | | | | Deer tags | | | Trapping licenses | |
|------------------------|----------------------|---------------------|--------------------------------|----------------------------------|---------------------|------------------------|------------------|-------------|----------------------|--------------------|--------------------|
| | Citizen, \$2 each | Junior, \$1 each | Non- resident, \$10 each | Declarant alien, \$10 each | Alien, \$25 each | Duplicate, 50c each | Total hunting | \$1 each | Citizen, \$1 each | Alien, \$2 each | Total, trapping |
| Alameda | \$30,876 00 | \$1,039 00 | | \$10 00 | | \$50 50 | \$32,035 50 | \$6,688 00 | | | |
| Alpine | 118 00 | | \$70 00 | | | 3 00 | 188 00 | 69 00 | | | |
| Amador | 2,140 00 | 125 00 | | | | 2,268 00 | 2,268 00 | 1,019 00 | | | |
| Butte | 13,034 00 | 944 00 | 100 00 | | | 56 50 | 14,134 50 | 4,313 00 | | | |
| Calaveras | 1,688 00 | 131 00 | | | | 2 00 | 1,821 00 | 857 00 | | | |
| Colusa | 3,948 00 | 337 00 | | 20 00 | \$25 00 | 16 50 | 4,346 50 | 721 00 | | | |
| Contra Costa | 11,136 00 | 410 00 | | 50 00 | | 16 00 | 11,612 00 | 2,519 00 | | | |
| Del Norte | 782 00 | 35 00 | 90 00 | | | 1 00 | 908 00 | 227 00 | | | |
| El Dorado | 3,320 00 | 208 00 | 30 00 | | | 10 00 | 3,568 00 | 1,738 00 | | | |
| Fresno: | | | | | | | | | | | |
| Agents | 18,440 00 | 1,106 00 | | 160 00 | 175 00 | 7 00 | 19,613 00 | 6,212 00 | \$53 00 | | \$53 00 |
| Fresno Branch | 960 00 | 77 00 | 50 00 | | | 42 00 | 1,464 00 | 327 00 | | | |
| Totals, Fresno | \$19,400 00 | \$1,243 00 | \$50 00 | \$160 00 | \$175 00 | \$49 00 | \$21,077 00 | \$6,539 00 | \$53 00 | | \$53 00 |
| Glenn | \$4,016 00 | \$349 00 | \$20 00 | | | \$18 00 | \$4,403 00 | \$654 00 | | | |
| Humboldt | 7,880 00 | 478 00 | | | | 14 50 | 8,372 50 | 3,536 00 | | | |
| Imperial | 4,074 00 | 164 00 | | | | 1 50 | 4,239 50 | 314 00 | | | |
| Inyo | 3,750 00 | 242 00 | | | | 19 50 | 4,011 50 | 1,805 00 | | | |
| Kern | 13,904 00 | 637 00 | | | | 10 50 | 14,551 50 | 3,817 00 | | | |
| Kings | 3,580 00 | 207 00 | | | | 3 50 | 3,790 50 | 1,016 00 | | | |
| Lake | 1,868 00 | 142 00 | | | | 5 50 | 2,015 50 | 410 00 | | | |
| Lassen | 5,534 00 | 374 00 | 90 00 | \$50 00 | | 14 50 | 6,062 50 | 2,705 00 | | | |
| Los Angeles: | | | | | | | | | | | |
| Agents | 88,558 00 | 2,562 00 | 40 00 | | | 48 50 | 91,208 50 | 23,762 00 | | | |
| Los Angeles Branch | 692 00 | 43 00 | 130 00 | 170 00 | \$150 00 | 27 50 | 1,212 50 | 351 00 | \$54 00 | | \$54 00 |
| Terminal Island Branch | 122 00 | 11 00 | | | | 1 50 | 134 50 | 50 00 | | | |
| Totals, Los Angeles | \$89,372 00 | \$2,616 00 | \$170 00 | \$170 00 | \$150 00 | \$77 50 | \$92,555 50 | \$24,169 00 | \$54 00 | | \$54 00 |

| | | | | | | | | | |
|-----------------------|-------------|------------|----------|------------|---------|-------------|------------|------------|------------|
| Madera | \$2,330 00 | \$168 00 | | | \$1 50 | \$3,490 50 | \$1,185 00 | | |
| Marin | 4,032 00 | 147 00 | | | 5 50 | 4,184 50 | 735 00 | | |
| Mariposa | 798 00 | 39 00 | | | 50 | 837 50 | 300 00 | | |
| Mendocino | 2,982 00 | 187 00 | | | 2 00 | 3,171 00 | 807 00 | | |
| Merced | 7,066 00 | 391 00 | | | 27 50 | 7,414 50 | 1,451 00 | | |
| Modoc | 3,890 00 | \$640 00 | | | 20 50 | 4,530 50 | 2,031 00 | | |
| Mono | 902 00 | 110 00 | | | 6 50 | 1,047 50 | 482 00 | | |
| Monterey: | | | | | | | | | |
| Agents | 7,018 00 | 451 00 | | \$50 00 | 13 50 | 7,532 50 | 2,341 00 | | |
| Monterey Branch | | | | 20 00 | | 45 00 | | | |
| | | | | \$25 00 | | | | | |
| Totals, Monterey | \$7,018 00 | \$451 00 | | \$70 00 | \$13 50 | \$7,577 50 | \$2,341 00 | | |
| Napa | \$4,776 00 | \$370 00 | | \$10 00 | \$13 50 | \$5,169 50 | \$1,050 00 | | |
| Nevada | 4,402 00 | 374 00 | \$240 00 | 50 00 | 11 50 | 5,037 50 | 2,219 00 | | |
| Orange | 6,516 00 | 386 00 | | | 41 50 | 6,906 50 | 1,027 00 | | |
| Placer | 6,572 00 | 486 00 | | 20 00 | 12 50 | 7,090 50 | 2,704 00 | | |
| Plumas | 4,908 00 | 256 00 | 80 00 | | 12 50 | 5,071 50 | 2,396 00 | | |
| Riverside | 7,496 00 | 513 00 | | | 14 50 | 8,023 50 | 1,991 00 | | |
| Sacramento: | | | | | | | | | |
| Agents | 24,026 00 | 1,508 00 | | 80 00 | 22 00 | 25,636 00 | 6,339 00 | | \$294 00 |
| Sacramento Branch | 1,422 00 | 81 00 | 170 00 | 460 00 | 71 30 | 2,904 50 | 329 00 | | \$206 00 |
| Totals, Sacramento | \$25,448 00 | \$1,589 00 | \$170 00 | \$540 00 | \$93 50 | \$28,540 50 | \$6,668 00 | \$294 00 | \$306 00 |
| San Benito | \$1,732 00 | \$138 00 | | | \$4 00 | \$1,874 00 | \$565 00 | | |
| San Bernardino | 11,352 00 | 655 00 | \$10 00 | | 25 50 | 12,042 50 | 3,540 00 | | |
| San Diego: | | | | | | | | | |
| Agents | 16,602 00 | 768 00 | | | 4 50 | 17,374 50 | 4,513 00 | | |
| San Diego Branch | 148 00 | 13 00 | 10 00 | \$10 00 | 12 00 | 193 00 | 86 00 | | |
| Totals, San Diego | \$16,750 00 | \$781 00 | \$10 00 | \$10 00 | \$16 50 | \$17,567 50 | \$4,599 00 | | |
| San Francisco: | | | | | | | | | |
| Agents | 28,798 00 | \$670 00 | | \$10 00 | \$8 00 | \$29,486 00 | \$4,453 00 | | |
| San Francisco Branch | 766 00 | 95 00 | \$120 00 | 390 00 | 41 00 | 2,662 00 | 242 00 | \$1,047 00 | \$1,067 00 |
| Totals, San Francisco | \$29,564 00 | \$765 00 | \$120 00 | \$1,000 00 | \$49 00 | \$32,148 00 | \$4,695 00 | \$1,047 00 | \$1,067 00 |
| San Joaquin | \$16,604 00 | \$772 00 | | | \$22 50 | \$17,398 50 | \$4,202 00 | | |
| San Luis Obispo | 4,040 00 | 242 00 | | | 11 50 | 4,293 50 | 702 00 | | |
| San Mateo | 6,142 00 | 368 00 | | \$140 00 | 15 00 | 6,740 00 | 1,156 00 | | |
| Santa Barbara | 4,282 00 | 287 00 | \$30 00 | 20 00 | 5 00 | 4,624 00 | 1,205 00 | | |
| Santa Clara | 11,992 00 | 795 00 | | 80 00 | 11 50 | 12,878 50 | 3,057 00 | | |
| Santa Cruz | 4,065 00 | 372 00 | | 30 00 | 11 00 | 4,496 00 | 1,195 00 | | |
| Shasta: | | | | | | | | | |
| Agents | 9,566 00 | 453 00 | 80 00 | 30 00 | 19 50 | 10,148 50 | 4,717 00 | | \$75 00 |
| Redding Branch | 168 00 | 12 00 | 60 00 | 50 00 | 8 50 | 348 50 | 91 00 | | \$75 00 |
| Totals, Shasta | \$9,734 00 | \$465 00 | \$140 00 | \$80 00 | \$28 00 | \$10,497 00 | \$4,808 00 | \$75 00 | \$75 00 |

FINAL STATEMENT OF HUNTING, DEER TAGS, AND TRAPPING LICENSE SALES, 1943 SERIES—Continued

| County | Hunting licenses | | | | | Deer tags | | | Trapping licenses | | |
|---------------|----------------------|---------------------|--------------------------------|----------------------------------|---------------------|------------------------|------------------|--------------|----------------------|--------------------|--------------------|
| | Citizen, \$2 each | Junior, \$1 each | Non- resident, \$10 each | Declarant alien, \$10 each | Alien, \$25 each | Duplicate, 50¢ each | Total hunting | \$1 each | Citizen, \$1 each | Alien, \$2 each | Total, trapping |
| Sierra | \$736 00 | \$55 00 | | | | \$2 00 | \$793 00 | \$418 00 | | | |
| Siskiyou | 12,374 00 | 705 00 | \$3,730 00 | \$20 00 | | 24 00 | 16,853 00 | 5,579 00 | | | |
| Solano | 11,064 00 | 553 00 | | | | 29 50 | 11,646 50 | 2,182 00 | | | |
| Sonoma | 7,624 00 | 620 00 | | 70 00 | | 15 50 | 8,329 50 | 1,411 00 | | | |
| Stanislaus | 9,040 00 | 712 00 | | 70 00 | | 29 00 | 9,857 00 | 2,481 00 | | | |
| Stuffer | 3,078 00 | 240 00 | | | | 10 00 | 3,328 00 | 647 00 | | | |
| Tehama | 3,608 00 | 437 00 | | | | 12 00 | 4,057 00 | 1,788 00 | | | |
| Trinity | 1,254 00 | 65 00 | | | | 2 00 | 1,321 00 | 685 00 | | | |
| Tulare | 11,224 00 | 683 00 | | | | 5 50 | 11,912 50 | 3,987 00 | | | |
| Tuolumne | 2,690 00 | 234 00 | 10 00 | 10 00 | | 7 00 | 2,951 00 | 1,455 00 | | | |
| Ventura | 5,168 00 | 314 00 | | | | 4 50 | 5,486 50 | 2,204 00 | | | |
| Yuba | 6,000 00 | 478 00 | 20 00 | 40 00 | | 18 50 | 6,556 50 | 1,032 00 | | | |
| Out of State: | | 323 00 | | | | 19 00 | 6,342 00 | 1,635 00 | | | |
| Arizona | \$56 00 | | | | | | \$56 00 | | | | |
| Nevada | | \$2 00 | \$1,030 00 | | | | 4,030 00 | \$513 00 | | | |
| Oregon | 748 00 | | 6,800 00 | | | \$2 50 | 7,552 50 | 530 00 | | | |
| Totals | \$507,416 00 | \$26,568 00 | \$17,660 00 | \$2,720 00 | \$1,900 00 | \$990 00 | \$557,254 00 | \$147,795 00 | \$1,523 00 | \$32 00 | \$1,555 00 |
| Number | 253,708 | 20,508 | 1,766 | 272 | 76 | 1,980 | | 147,795 | 1,523 | 16 | |

FINAL STATEMENT OF MISCELLANEOUS LICENSE SALES BY BRANCH OFFICE AND AGENTS, 1943 SERIES

| Type | Fresno | Los Angeles | Monterey | Redding | Sacramento | San Diego | San Francisco | Terminal Island | Agents | Total | Number |
|---|----------|--------------------|----------|---------|-----------------|-----------|-------------------|-----------------|---------|--------------------|-----------|
| Commercial hunting club: Citizen, \$25 each. Alien, \$100 each. | | | | | | | \$750 00 | | | \$750 00 | 30 |
| Commercial hunting club operator: Citizen, \$5 each. Alien, \$25 each. | | | | | | | 205 00 | | | 205 00 | 41 |
| Fish packer and shellfish dealer: Citizen, \$5 each. Alien, \$20 each. | | | | | | \$85 00 | 695 00 20 00 | \$210 00 | | 900 00 20 00 | 198 1 |
| Fish tags, 1 cent each. | | \$130 00 | | | | | 3,665 00 | | \$12 63 | 3,807 63 | 380,763 |
| Game tags, 3 cents each. | \$1 02 | 87 69 | | | \$16 74 | | 19 83 | | | 125 28 | 4,176 |
| Fish importer, \$5 each. | | | | | | | 85 00 | | | 85 00 | 17 |
| Fish party boat permits, \$1 each. | | | \$5 00 | | | | 131 00 | 150 00 | | 286 00 | 286 |
| Fish breeder, \$5 each. | | | | | | | 275 00 | | | 275 00 | 55 |
| Game breeder: \$2.50 (prior to August 4, 1943) \$5.00 (from August 4, 1943) | \$100 00 | \$607 50 230 00 | | | \$75 00 5 00 | | \$145 00 20 00 | | | \$927 50 255 00 | 371 51 |
| Totals, game breeder. | \$100 00 | \$837 50 | | | \$80 00 | | \$165 00 | | | \$1,182 50 | 422 |
| Keel license, \$10 each. | | | | | | | 20 00 | | | 20 00 | 2 |
| Game management: Licenses, \$10 each. Tags, 3 cents each. | \$0 24 | \$3 51 | | | \$0 90 | | \$160 00 0 78 | | | \$160 00 5 43 | 16 181 |
| Antelope permits, \$5 each. | | | | | 2,500 00 | | | | | 2,500 00 | 500 |
| Elk permits, \$10 each. | | 750 00 | | | | | | | | 750 00 | 75 |

FINAL STATEMENT OF PHEASANT TAG SALES, 1943 SERIES

| County | \$1.00 each | Total |
|-----------------------------|-------------|-------------|
| Alameda | | \$10,671 00 |
| Alpine | | |
| Amador | | 326 00 |
| Butte | | 5,669 00 |
| Calaveras | | 242 00 |
| Colusa | | 2,100 00 |
| Contra Costa | | 4,261 00 |
| Del Norte | | 20 00 |
| El Dorado | | 432 00 |
| Fresno: | | |
| Agents | | 4,000 00 |
| Fresno Branch | | 433 00 |
| Total, Fresno | | 4,433 00 |
| Glenn | | 2,152 00 |
| Humboldt | | 318 00 |
| Imperial | | 746 00 |
| Inyo | | 849 00 |
| Kern | | 1,790 00 |
| Kings | | 867 00 |
| Lake | | 669 00 |
| Lassen | | 1,270 00 |
| Los Angeles: | | |
| Agents | | 6,782 00 |
| Los Angeles Branch | | 132 00 |
| Terminal Island Branch | | 14 00 |
| Total, Los Angeles | | 6,928 00 |
| Madera | | 769 00 |
| Marin | | 1,138 00 |
| Mariposa | | 116 00 |
| Mendocino | | 695 00 |
| Merced | | 3,016 00 |
| Modoc | | 606 00 |
| Mono | | 51 00 |
| Monterey | | 962 00 |
| Napa | | 1,903 00 |
| Nevada | | 1,060 00 |
| Orange | | 745 00 |
| Placer | | 2,229 00 |
| Plumas | | 641 00 |
| Riverside | | 551 00 |
| Sacramento: | | |
| Agents | | 10,088 00 |
| Sacramento Branch | | 1,116 00 |
| Total, Sacramento | | 11,204 00 |
| San Benito | | 265 00 |
| San Bernardino | | 1,129 00 |
| San Diego: | | |
| Agents | | 665 00 |
| San Diego Branch | | 8 00 |
| Total, San Diego | | 673 00 |
| San Francisco: | | |
| Agents | | 8,810 00 |
| San Francisco Branch | | 372 00 |
| Total, San Francisco Branch | | 9,182 00 |
| San Joaquin | | 5,911 00 |
| San Luis Obispo | | 142 00 |
| San Mateo | | 1,960 00 |
| Santa Barbara | | 265 00 |
| Santa Clara | | 3,515 00 |
| Santa Cruz | | 975 00 |
| Shasta: | | |
| Agents | | 1,692 00 |
| Redding Branch | | 95 00 |
| Total, Shasta | | 1,787 00 |

FINAL STATEMENT OF PHEASANT TAG SALES, 1943 SERIES—Continued

| County | \$1.00 each | Total |
|---------------|-------------|--------------|
| Sierra | | \$92 00 |
| Siskiyou | | 2,190 00 |
| Solano | | 4,535 00 |
| Sonoma | | 2,819 00 |
| Stanislaus | | 4,127 00 |
| Sutter | | 1,604 00 |
| Tehama | | 1,439 00 |
| Trinity | | 11 00 |
| Tulare | | 2,242 00 |
| Tuolumne | | 356 00 |
| Ventura | | 356 00 |
| Yolo | | 3,310 00 |
| Yuba | | 2,415 00 |
| Out of State: | | |
| Arizona | | 150 00 |
| Nevada | | 217 00 |
| Oregon | | |
| Totals | | \$121,186 00 |
| Number | | 121,186 |

DEPARTMENT OF NATURAL RESOURCES, DIVISION OF FISH AND GAME,
 RECORD OF FISH DISTRIBUTION
 RECAPITULATION—1942

| Trout | | GENERAL FISH RESCUE | |
|-----------------------|------------|-----------------------|-----------|
| Rainbow | 12,908,387 | Trout | |
| Steelhead | 3,064,253 | Rainbow | 5,950 |
| Golden | 13,138 | Steelhead | 856,114 |
| Black Spotted | 419,000 | Cutthroat | 48 |
| Cutthroat | 735 | Total | 862,112 |
| Loch Leven | 3,712,350 | Salmon | |
| Eastern Brook | 2,907,425 | King | 232,668 |
| Total | 23,025,289 | Silver | 18,490 |
| Salmon | | Total | 251,158 |
| King | 3,189,796 | Spiny Rayed | |
| Silver | 78,907 | Smallmouth Black Bass | 685,362 |
| Total | 3,268,697 | Largemouth Black Bass | 1,418,269 |
| Spiny Rayed | | Striped Bass | 9,634 |
| Smallmouth Black Bass | 36,614 | Sturgeon | 2 |
| Largemouth Black Bass | 195 | Sacramento Perch | 3,500 |
| Total | 36,809 | Crappie | 88,383 |
| | | Squaretail Catfish | 821,208 |
| | | Forkedtail Catfish | 1,468,162 |
| | | Bluegill Sunfish | 214,672 |
| | | Green Sunfish | 397,330 |
| | | Warmouth Bass | 41,890 |
| | | Shad | 231 |
| | | Total | 5,148,643 |

DEPARTMENT OF NATURAL RESOURCES, DIVISION OF FISH

| Hatchery | County | Total from hatchery by county | Rainbow | Steelhead |
|---------------------------|-----------------|-------------------------------|---------|-----------|
| ALPINE | Alpine | 607,000 | 112,000 | |
| ARROWHEAD LAKE | San Bernardino | 20,600 | 20,600 | |
| BASIN CREEK | Alpine | 80,557 | 40,557 | |
| | Calaveras | 316,030 | 174,030 | |
| | Tuolumne | 659,105 | 428,325 | |
| BEAR RIVER PLANTING BASE | Nevada | 865,151 | 382,101 | |
| | Placer | 372,253 | 278,738 | |
| | Sierra | 84,507 | 84,507 | |
| NOAH BEERY PURCHASED FISH | Los Angeles | 52,122 | 52,122 | |
| | San Bernardino | 34,604 | 34,604 | |
| BLACK ROCK SPRINGS | Inyo | 231,070 | 231,070 | |
| | Mono | 32,174 | 32,174 | |
| | Tulare | 10,000 | 10,000 | |
| BROOKDALE | Alameda | 7,046 | 7,046 | |
| | Marin | 59,349 | 59,349 | |
| | Monterey | 94,842 | 36,008 | 41,070 |
| | San Benito | 9,225 | 9,225 | |
| | San Mateo | 84,564 | 9,138 | 75,426 |
| | Santa Clara | 98,450 | 98,450 | |
| | Santa Cruz | 617,194 | 16,177 | 618,777 |
| Solano | 19,360 | 19,360 | | |
| BURNEY CREEK | Lassen | 185,000 | 140,000 | |
| | Modoc | 526,000 | 365,000 | |
| | Shasta | 754,700 | 455,800 | |
| | Siskiyou | 30,000 | | |
| COY FLAT | Tulare | 51,230 | 51,230 | |
| EXPERIMENTAL | Siskiyou | 15,535 | 15,181 | |
| FALL CREEK | Siskiyou | 3,838,490 | | 648,700 |
| FEATHER RIVER | Plumas | 535,000 | 283,300 | |
| | Sierra | 169,395 | 69,995 | |
| FILLMORE | Los Angeles | 73,532 | 73,532 | |
| | Riverside | 16,800 | 16,800 | |
| | San Bernardino | 193,415 | 193,415 | |
| | San Diego | 41,500 | 41,500 | |
| | San Luis Obispo | 30,200 | 30,200 | |
| | Santa Barbara | 15,300 | 15,300 | |
| Ventura | 111,830 | 111,830 | | |
| FISH SLOUGH | Inyo | 94,994 | 37,977 | |
| | Madera | 1,001 | | |
| | Mono | 6,048 | 6,048 | |
| FORT SEWARD | Humboldt | 537,056 | | 537,056 |
| | Mendocino | 129,650 | | 129,650 |
| | Trinity | 34,680 | | 34,680 |
| HOT CREEK | Inyo | 61,960 | 61,960 | |
| | Madera | 27,000 | 27,000 | |
| | Mono | 1,293,100 | 758,561 | |
| HUNTINGTON LAKE | Fresno | 111,525 | 111,525 | |
| KAWEAH | Tulare | 648,214 | 287,307 | |
| KERN | Kern | 49,107 | 23,864 | |
| | Tulare | 242,358 | 214,638 | |
| KINGS RIVER | Fresno | 906,668 | 737,030 | |
| LAKE ALMANOR | Butte | 20,000 | | |
| | Lassen | 285,202 | 173,802 | |
| | Plumas | 726,300 | 500,000 | |
| | Shasta | 124,000 | 100,000 | |
| | Tehama | 75,000 | 15,000 | |

AND GAME, RECORD OF FISH DISTRIBUTION 1942

| Golden | Black Spotted | Cutthroat | Loch Leven | Eastern Brook | King Salmon | Silver Salmon | Miscellaneous | Miscellaneous | Total |
|--------|---------------|-----------|------------|---------------|-------------|---------------|---------------|---------------|-----------|
| | 419,000 | | | 75,000 | | | | | 607,000 |
| | | | | | | | | | 20,600 |
| | | | | 40,000 | | | | | |
| | | | 142,000 | | | | | | |
| | | | 139,100 | 91,680 | | | | | 1,055,692 |
| | | | 181,778 | 301,272 | | | | | |
| | | | 57,600 | 35,915 | | | | | 1,322,211 |
| | | | | | | | | | 86,726 |
| | | | | | | | | | 273,244 |
| | | | | | | | | | 990,030 |
| | | | 45,000 | | | | | | |
| | | | 120,000 | 41,200 | | | | | |
| | | | 229,900 | 69,000 | | | | | 1,495,900 |
| | | | | 30,000 | | | | | 51,230 |
| | | | 173 | 181 | | | | | 15,535 |
| | | | | | 3,189,790 | | | | 3,838,490 |
| | | | 144,200 | 107,500 | | | | | |
| | | | 50,000 | 49,400 | | | | | 704,395 |
| | | | | | | | | | 482,577 |
| 2,047 | | | 54,970 | | | | | | |
| 1,001 | | | | | | | | | 102,043 |
| | | | | | | | | | 701,386 |
| 10,000 | | | 376,429 | 148,020 | | | | | 1,382,060 |
| | | | | | | | | | 111,525 |
| | | | 180,482 | 180,425 | | | | | 648,214 |
| | | | 25,243 | | | | | | 291,495 |
| | | | 27,750 | | | | | | |
| | | | 110,265 | 59,373 | | | | | 905,668 |
| | | | | 20,000 | | | | | |
| | | | 15,000 | 96,400 | | | | | |
| | | | 130,000 | 22,000 | | 74,300 | | | |
| | | | | 24,000 | | | | | |
| | | | 30,000 | 30,000 | | | | | 1,230,502 |

DEPARTMENT OF NATURAL RESOURCES, DIVISION OF FISH

| Hatchery | County | Total from hatchery by county | Rainbow | Steelhead |
|--------------------------------|----------------|-------------------------------|------------|-----------|
| MADERA | Madera | 487,526 | 227,738 | |
| MOUNT SHASTA | Alpine | 74,000 | 69,000 | |
| | Amador | 148,500 | 116,000 | |
| | Butte | 448,000 | 287,000 | |
| | El Dorado | 468,500 | 333,000 | |
| | Lassen | 40,000 | 40,000 | |
| | Modoc | 16,570 | 15,000 | |
| | Plumas | 25,000 | 25,000 | |
| | Shasta | 582,720 | 426,720 | |
| | Siskiyou | 900,558 | 646,263 | |
| | Tehama | 255,000 | 200,000 | |
| | Trinity | 466,000 | 158,000 | 160,000 |
| Yuba | 10,000 | 10,000 | | |
| MOUNT WHITNEY | Fresno | 80,750 | 73,760 | |
| | Inyo | 571,638 | 185,026 | |
| | Madera | 118,080 | 118,080 | |
| | Mono | 282,207 | 108,587 | |
| PLASKETT MEADOWS PLANTING BASE | Colusa | 6,000 | 6,000 | |
| | Glenn | 25,000 | 25,000 | |
| PRAIRIE CREEK | Del Norte | 229,910 | | 229,910 |
| | Humboldt | 553,402 | | 548,660 |
| | Marin | 600 | | |
| | Trinity | 40,320 | | 40,320 |
| REARING RESERVOIRS | Los Angeles | 62,296 | 62,296 | |
| | Orange | 4,000 | 4,000 | |
| | Riverside | 5,120 | 5,120 | |
| | San Bernardino | 87,107 | 87,107 | |
| | San Diego | 10,452 | 10,452 | |
| SEQUOIA | Fresno | 59,706 | 59,706 | |
| | Tulare | 39,041 | 39,041 | |
| TAHOE | Alpine | 10,000 | | |
| | El Dorado | 514,700 | 86,000 | |
| | Nevada | 81,280 | | |
| | Placer | 291,185 | 66,560 | |
| TALLAC | El Dorado | 1,138,690 | 1,138,690 | |
| | Nevada | 150,240 | 150,240 | |
| | Placer | 60,000 | 60,000 | |
| YOSEMITE | Mariposa | 719,400 | 438,300 | |
| | Tuolumne | 463,000 | 377,400 | |
| YUBA RIVER | Nevada | 85,915 | | |
| | Sierra | 363,700 | 209,625 | |
| Grand totals | | 26,293,636 | 12,908,387 | 3,064,253 |

AND GAME, RECORD OF FISH DISTRIBUTION - 1942 - Continued

| Golden | Black Spotted | Cutthroat | Loch Leven | Eastern Brook | King Salmon | Silver Salmon | Miscellaneous | Miscellaneous | Total |
|--------|---------------|-----------|------------|---------------|-------------|---------------|---------------|---------------|------------|
| | | | 144,643 | 115,145 | | | | | 487,526 |
| | | | | 5,000 | | | | | |
| | | | 15,000 | 17,500 | | | | | |
| | | | 151,000 | 10,000 | | | | | |
| | | | 90,000 | 45,500 | | | | | |
| | | | 1,570 | | | | | | |
| | | | 142,000 | 14,000 | | | | | |
| | | | 76,195 | 178,100 | | | | | |
| | | | 55,000 | | | | | | |
| | | | | 148,000 | | | | | 3,434,848 |
| | | | | 16,990 | | | | | |
| | | | 242,992 | 143,620 | | | | | |
| | | | | 173,970 | | | | | 1,053,025 |
| | | | | | | | | | 31,000 |
| | | 135 | | | | 4,607 | | | |
| | | 609 | | | | | | | |
| | | | | | | | | | 824,232 |
| | | | | | | | | | |
| | | | | | | | | | 168,975 |
| | | | | | | | | | 98,747 |
| | | | | 10,000 | | | | | |
| | | | 47,000 | 381,700 | | | | | |
| | | | | 81,280 | | | | | |
| | | | 179,625 | 45,000 | | | | | 897,165 |
| | | | | | | | | | |
| | | | | | | | | | 1,348,930 |
| | | | 281,100 | | | | | | |
| | | | 85,600 | | | | | | 1,182,400 |
| | | | 65,925 | 19,990 | | | | | |
| | | | 74,810 | 79,265 | | | | | 449,615 |
| 13,138 | 419,000 | 735 | 3,712,350 | 2,907,426 | 3,189,790 | 78,907 | | | 26,293,986 |

CENTRAL VALLEYS BASS HATCHERY

| Source | County | Small-mouth Black Bass | Large-mouth Black Bass | Kentucky Bass | Striped Bass |
|------------------------------------|-----------------|------------------------|------------------------|---------------|--------------|
| CENTRAL VALLEYS BASS HATCHERY..... | Santa Cruz..... | ----- | 125 | ----- | ----- |

SALMON AND TROUT RESCUE

| Source | County | Rainbow | Steelhead |
|--------------------------------------|----------------------|---------|-----------|
| CENTRAL VALLEYS FISH RESCUE..... | Sacramento..... | ----- | ----- |
| | Yolo..... | ----- | ----- |
| NORTH COAST FISH RESCUE..... | Del Norte..... | ----- | 256 |
| | Humboldt..... | ----- | ----- |
| | Mendocino..... | ----- | 349,138 |
| SOUTHERN CALIFORNIA FISH RESCUE..... | Riverside..... | 3,650 | ----- |
| | San Bernardino..... | 2,300 | ----- |
| | San Luis Obispo..... | ----- | 16,000 |
| | Santa Barbara..... | ----- | 406,300 |
| | Ventura..... | ----- | 3,800 |
| UPPER EEL RIVER FISH RESCUE..... | Lake..... | ----- | 196,438 |
| UPPER EEL RIVER FISH RESCUE..... | Sonoma..... | ----- | 26,743 |
| TOTAL TROUT AND SALMON RESCUE..... | ----- | 5,950 | 998,675 |

RECAPITULATION—1942

| Calico Bass | Sacraments Perch | Crappie | Square-tail Catfish | Forked-tail Catfish | Bluegill Sunfish | Mixed Sunfish | Miscellaneous | Miscellaneous | Total |
|-------------|------------------|---------|---------------------|---------------------|------------------|---------------|---------------|---------------|-------|
| | | | 30 | | | 40 | | | 195 |

RECAPTULATION—1942

| Golden | Black Spotted | Cutthroat | Loch Leven | Eastern Brook | King Salmon | Silver Salmon | Miscellaneous | Miscellaneous | Total |
|--------|---------------|-----------|------------|---------------|-------------|---------------|---------------|---------------|-----------|
| | | | | | 50,600 | | | | 50,600 |
| | | | | | 165,130 | | | | 165,130 |
| | | 48 | | | 16,938 | 18,034 | | | 35,276 |
| | | | | | | 456 | | | 456 |
| | | | | | | | | | 349,138 |
| | | | | | | | | | 3,650 |
| | | | | | | | | | 2,300 |
| | | | | | | | | | 16,000 |
| | | | | | | | | | 406,300 |
| | | | | | | | | | 3,800 |
| | | | | | | | | | 196,438 |
| | | | | | | | | | 26,743 |
| | | 48 | | | 232,668 | 18,490 | | | 1,255,831 |

DEPARTMENT OF NATURAL RESOURCES, DIVISION OF FISH AND GAME,

RECORD OF FISH DISTRIBUTION

RECAPITULATION—1943

| Trout | | GENERAL FISH RESCUE | |
|---------------|------------|-----------------------|-----------|
| Rainbow | 13,784,642 | Trout | |
| Steelhead | 1,974,801 | Rainbow | 4 |
| Black Spotted | 53,883 | Steelhead | 1,333,939 |
| Loch Leven | 1,569,530 | Cutthroat | 48 |
| Eastern Brook | 1,722,200 | Loch Leven | 23 |
| Total | 19,105,056 | Total | 1,334,014 |
| Salmon | | Salmon | |
| King | 3,503,320 | King | 239,820 |
| Silver | 105,325 | Silver | 32,362 |
| Total | 3,608,645 | Total | 272,182 |
| | | Spiny Rayed | |
| | | Smallmouth Black Bass | 322,597 |
| | | Largemouth Black Bass | 752,999 |
| | | Sacramento Perch | 100,000 |
| | | Crappie | 32,561 |
| | | Squaretail Catfish | 406,155 |
| | | Forkedtail Catfish | 314,419 |
| | | Bluegill Sunfish | 134,854 |
| | | Green Sunfish | 29,821 |
| | | Warmouth Bass | 16,644 |
| | | Sturgeon | 3 |
| | | Total | 2,110,053 |

DEPARTMENT OF NATURAL RESOURCES, DIVISION OF FISH

| Hatchery | County | Total from hatchery by county | Rainbow | Steelhead |
|---------------|-----------------|-------------------------------|---------|-----------|
| ALPINE | Alpine | 63,160 | 40,200 | |
| | Amador | 3,200 | | |
| | Calaveras | 308,980 | 201,980 | |
| | Tuolumne | 708,200 | 565,680 | |
| BLACK ROCK | Alpine | 2,240 | | |
| | Inyo | 258,854 | 249,615 | |
| | Mono | 37,421 | 12,384 | |
| | Tulare | 4,760 | 4,760 | |
| BROOKDALE | Alameda | 1,080 | 1,080 | |
| | Marin | 43,009 | 43,009 | |
| | Monterey | 88,436 | 34,188 | 54,248 |
| | San Benito | 9,154 | 9,154 | |
| | San Mateo | 82,177 | 9,029 | 73,148 |
| | Santa Clara | 134,064 | 134,064 | |
| Santa Cruz | 362,040 | 48,717 | 313,323 | |
| BURNEY CREEK | Lassen | 154,000 | 144,000 | |
| | Modoc | 339,000 | 258,000 | |
| | Shasta | 834,375 | 648,500 | |
| | Siskiyou | 30,000 | | |
| COY FLAT | Tulare | 107,608 | 107,608 | |
| FALL CREEK | Siskiyou | 3,646,480 | 58,350 | 576,730 |
| FEATHER RIVER | Plumas | 331,850 | 266,100 | |
| | Sierra | 125,800 | 89,200 | |
| FILLMORE | Los Angeles | 203,320 | 203,320 | |
| | Orange | 15,650 | 15,650 | |
| | Riverside | 39,800 | 39,800 | |
| | San Bernardino | 391,600 | 391,600 | |
| | San Diego | 25,025 | 25,025 | |
| | San Luis Obispo | 5,850 | 5,850 | |
| | Santa Barbara | 21,600 | 21,600 | |
| | Ventura | 121,515 | 121,515 | |
| HOT CREEK | Alpine | 7,900 | 7,900 | |
| | Fresno | 53,800 | 53,800 | |
| | Inyo | 40,220 | 21,620 | |
| | Madera | 71,335 | 71,335 | |
| | Mono | 1,133,264 | 811,827 | |
| | Tulare | 182,370 | 10,020 | |
| KAWEAH | Tulare | 182,370 | 10,020 | |
| | | | | |
| KERN | Kern | 73,862 | 73,862 | |
| | Tulare | 214,688 | 214,688 | |
| KINGS RIVER | Fresno | 608,638 | 605,305 | |
| LAKE ALMANOR | Lassen | 174,440 | 174,000 | |
| | Plumas | 642,706 | 478,206 | |
| | Shasta | 26,000 | 10,000 | |
| | Tehama | 75,000 | 75,000 | |
| MADERA | Fresno | 5,550 | | |
| | Madera | 434,161 | 270,106 | |
| MOUNT SHASTA | Alpine | 80,000 | 75,000 | |
| | Amador | 170,000 | 120,000 | |
| | Butte | 400,000 | 337,000 | |
| | El Dorado | 432,000 | 402,000 | |
| | Glenn | 20,000 | 20,000 | |
| | Lake | 5,000 | 5,000 | |
| | Modoc | 9,002 | 9,002 | |
| | Nevada | 706,000 | 561,000 | |
| | Placer | 453,000 | 309,000 | |
| | Plumas | 45,000 | 45,000 | |
| | Shasta | 613,764 | 585,764 | |
| | Sierra | 40,000 | 40,000 | |
| | Siskiyou | 1,060,992 | 851,010 | |
| | Tehama | 328,000 | 273,000 | |
| | Trinity | 437,390 | 402,200 | |
| Yuba | 10,000 | 10,000 | | |

DEPARTMENT OF NATURAL RESOURCES, DIVISION OF FISH

| Hatchery | County | Total from hatchery by county | Rainbow | Steelhead |
|---------------------|-----------------|-------------------------------|------------|-----------|
| MOUNT WHITNEY | Fresno | 21,990 | 15,990 | ----- |
| | Inyo | 395,189 | 152,559 | ----- |
| | Mono | 310 | 310 | ----- |
| | Tulare | 50,990 | 50,990 | ----- |
| PRAIRIE CREEK | Del Norte | 766,840 | 10,000 | 264,920 |
| | Humboldt | 761,705 | 60,348 | 692,432 |
| SEQUOIA | Fresno | 101,899 | 101,899 | ----- |
| | Tulare | 319,818 | 319,818 | ----- |
| TAHOE | El Dorado | 667,910 | 305,020 | ----- |
| | Placer | 239,420 | 196,280 | ----- |
| TALLAC | El Dorado | 804,965 | 804,965 | ----- |
| | Nevada | 32,650 | 32,650 | ----- |
| | Placer | 102,150 | 102,150 | ----- |
| YOSEMITE | Mariposa | 787,270 | 489,770 | ----- |
| | Tuolumne | 228,940 | 151,140 | ----- |
| YUBA RIVER | Sierra | 378,135 | 283,750 | ----- |
| | Yuba | 18,380 | 18,380 | ----- |
| Totals | ----- | 22,732,891 | 13,784,642 | 1,974,801 |

AND GAME, RECORD OF FISH DISTRIBUTION—1943—Continued

| Golden | Black Spotted | Cutthroat | Loch Leven | Eastern Brook | King Salmon | Silver Salmon | Miscellaneous | Miscellaneous | Total |
|--------|---------------|-----------|------------|---------------|-------------|---------------|---------------|---------------|------------|
| | | | 242,630 | 6,000 | | | | | 468,479 |
| | | | | | 491,920 | 8,925 | | | 1,528,545 |
| | | | | | | | | | 421,717 |
| | | | | 362,890 | | | | | 907,330 |
| | | | | 43,140 | | | | | 939,765 |
| | | | 297,500 | | | | | | 1,016,210 |
| | | | 77,800 | | | | | | 396,515 |
| | | | | 94,385 | | | | | 22,732,891 |
| | 53,883 | | 1,569,530 | 1,757,300 | 3,503,320 | 105,325 | | | |

SPINY RAYED FISH RESCUE

| Source | County | Small-mouth Black Bass | Large-mouth Black Bass | Kentucky Bass | Striped Bass |
|--------------------------------------|----------------------|------------------------------|------------------------------|------------------|-----------------|
| CENTRAL VALLEYS FISH RESCUE..... | Contra Costa..... | | 180 | | |
| | Fresno..... | 3,000 | 14,228 | | |
| | Kern..... | | 250 | | |
| | Kings..... | | 800 | | |
| | Merced..... | | 598 | | |
| | Napa..... | | 171,500 | | |
| | Sacramento..... | | 542,249 | | |
| | San Francisco..... | | 6,608 | | |
| | San Joaquin..... | 168,985 | | | |
| | San Mateo..... | | | | |
| | Solano..... | 52,792 | 3 | | |
| | Stanislaus..... | | 1,140 | | |
| Sutter..... | | 13 | | | |
| Yolo..... | 97,820 | 11,010 | | | |
| COAST FISH RESCUE..... | Santa Clara..... | | | | |
| SOUTHERN CALIFORNIA FISH RESCUE.. | Kern..... | | 150 | | |
| | Los Angeles..... | | 350 | | |
| | Riverside..... | | 2,485 | | |
| | San Bernardino..... | | 1,130 | | |
| | San Diego..... | | 280 | | |
| | San Luis Obispo..... | | | | |
| | Ventura..... | | 25 | | |
| TOTAL FISH RESCUE (SPINY RAYED)..... | | 322,597 | 752,999 | | |

RECAPITULATION—1943

| Calico Bass | Sacramento Perch | Crappie | Square-tail Catfish | Forked-tail Catfish | Bluegill Sunfish | Green Sunfish | Warm-mouth Bass | Sturgeon | Total |
|-------------|------------------|---------|---------------------|---------------------|------------------|---------------|-----------------|----------|-----------|
| | | | | | 450 | | | | 630 |
| | | 9,014 | 11,093 | 55 | 6,151 | 280 | | | 43,821 |
| | | 275 | 475 | | | | | | 1,000 |
| | | | 800 | | | | | | 1,600 |
| | | 157 | 49 | 3,750 | 130 | | 71 | | 4,755 |
| | | | | | | | | | 171,500 |
| | 100,000 | 12,560 | 392,334 | 130,047 | 75,894 | 940 | 15,880 | 1 | 1,269,905 |
| | | 247 | 2 | 80,500 | 1,622 | 2,010 | 190 | | 6,608 |
| | | | 240 | 150 | | | | | 253,556 |
| | | | | | | | | | 390 |
| | | 444 | 61 | 2,367 | 1,730 | 16 | 413 | | 52,795 |
| | | 14 | | 36,100 | | 24,000 | | | 6,171 |
| | | 50 | 1,000 | 61,450 | 950 | 2,500 | 90 | 2 | 60,127 |
| | | | | | | | | | 174,872 |
| | | | 92 | | 116 | | | | 208 |
| | | 2,500 | | | 8,000 | | | | 10,650 |
| | | 2,680 | | | 13,940 | | | | 16,970 |
| | | 1,840 | | | 9,710 | | | | 14,035 |
| | | 400 | 9 | | 7,586 | | | | 9,125 |
| | | 1,940 | | | 7,000 | | | | 9,220 |
| | | 390 | | | 900 | | | | 1,290 |
| | | 50 | | | 675 | 75 | | | 825 |
| | 100,000 | 32,561 | 406,155 | 314,419 | 134,854 | 29,821 | 16,644 | 3 | 2,110,053 |

TROUT AND SALMON RESCUE

| Source | County | Rainbow | Steelhead |
|--------------------------------------|--------------------|---------|-----------|
| CENTRAL VALLEYS FISH RESCUE..... | Placer..... | 4 | ..... |
| | Sacramento..... | ..... | ..... |
| | Sutter..... | ..... | ..... |
| | Yolo..... | ..... | ..... |
| NORTH COAST FISH RESCUE..... | Del Norte..... | ..... | 10,063 |
| | Humboldt..... | ..... | ..... |
| | Lake..... | ..... | 206,872 |
| | Mendocino..... | ..... | 311,700 |
| | Santa Clara..... | ..... | 4 |
| SOUTHERN CALIFORNIA FISH RESCUE..... | Santa Barbara..... | ..... | 778,100 |
| | Ventura..... | ..... | 27,200 |
| TOTAL TROUT AND SALMON RESCUE..... | ..... | 4 | 1,333,939 |

RECAPITULATION—1943

| Golden | Black Spotted | Cutthroat | Loch Leven | Eastern Brook | King Salmon | Silver Salmon | Miscellaneous | Miscellaneous | Total |
|--------|---------------|-----------|------------|---------------|-------------|---------------|---------------|---------------|-----------|
| | | | 23 | | | | | | 27 |
| | | | | | 93,800 | | | | 93,800 |
| | | | | | 70,300 | | | | 70,300 |
| | | | | | 69,060 | | | | 69,060 |
| | | 48 | | | 6,660 | 23,402 | | | 40,173 |
| | | | | | | 8,960 | | | 8,960 |
| | | | | | | | | | 206,872 |
| | | | | | | | | | 311,700 |
| | | | | | | | | | 4 |
| | | | | | | | | | 778,100 |
| | | | | | | | | | 27,200 |
| | | 48 | 23 | | 239,820 | 32,362 | | | 1,606,196 |

FISH AND GAME COMMISSION

PREDATORY ANIMAL CATCH BY COUNTIES

| | July 1, 1942 to June 30, 1943 | | | | July 1, 1943 to June 30, 1944 | | | | Total for bien- nium |
|----------------------|-------------------------------|--------|--------------------|-------|-------------------------------|--------|--------------------|-------|-------------------------------|
| | Coyote | Bobcat | Other predators | Total | Coyote | Bobcat | Other predators | Total | |
| Alpine..... | | | | | 15 | | | 15 | 15 |
| Amador..... | 29 | 5 | 7 | 41 | 51 | 2 | 5 | 58 | 99 |
| Calaveras..... | 2 | | 10 | 12 | | 1 | | 1 | 13 |
| El Dorado..... | 26 | 2 | 74 | 102 | 55 | 7 | 26 | 88 | 190 |
| Fresno..... | 70 | 2 | 11 | 83 | 79 | 5 | 10 | 94 | 177 |
| Glenn..... | 6 | 3 | 23 | 32 | 46 | 26 | 56 | 128 | 160 |
| Inyo..... | 65 | 6 | 6 | 77 | 116 | 20 | 28 | 164 | 241 |
| Kern..... | 156 | 38 | 29 | 223 | 77 | 14 | 9 | 100 | 323 |
| Lake..... | | | | | 1 | | | 1 | 1 |
| Lassen..... | 169 | 15 | 23 | 207 | 311 | 19 | 53 | 383 | 590 |
| Los Angeles..... | 95 | 12 | 31 | 138 | 125 | 49 | 37 | 211 | 349 |
| Marin..... | | | | | | 1 | 1 | 2 | 2 |
| Mariposa..... | 17 | 28 | 35 | 80 | 43 | 28 | 72 | 143 | 223 |
| Modoc..... | 145 | 6 | 52 | 203 | 118 | 3 | 65 | 186 | 389 |
| Mono..... | 119 | 9 | 10 | 138 | | | | | 138 |
| Monterey..... | 87 | 54 | 137 | 278 | 137 | 50 | 98 | 285 | 563 |
| Nevada..... | 24 | 2 | 130 | 156 | 39 | 6 | 293 | 338 | 494 |
| Placer..... | 44 | 6 | 31 | 81 | | | | | 81 |
| Plumas..... | 9 | | 21 | 30 | 18 | 1 | 49 | 68 | 98 |
| Riverside..... | 149 | 34 | 123 | 306 | 183 | 51 | 244 | 478 | 784 |
| San Benito..... | 162 | 87 | 171 | 420 | 210 | 100 | 155 | 465 | 885 |
| San Bernardino..... | 58 | 20 | 11 | 89 | 145 | 28 | 114 | 287 | 376 |
| San Diego..... | 370 | 85 | 360 | 815 | | | | | 815 |
| San Luis Obispo..... | 236 | 87 | 127 | 450 | 113 | 37 | 87 | 237 | 687 |
| Santa Barbara..... | 338 | 97 | 76 | 511 | 445 | 96 | 78 | 619 | 1,130 |
| Santa Clara..... | 13 | 1 | 27 | 41 | | | | | 41 |
| Santa Cruz..... | 4 | 6 | 31 | 41 | | | | | 41 |
| Shasta..... | 60 | 5 | 45 | 110 | 23 | 6 | 21 | 50 | 160 |
| Siskiyou..... | 1 | | | 1 | 60 | 17 | | 77 | 78 |
| Stanislaus..... | 71 | 26 | 87 | 184 | 58 | 7 | 14 | 79 | 263 |
| Tehama..... | 9 | 2 | 10 | 21 | 13 | | | 13 | 34 |
| Trinity..... | 78 | 16 | 19 | 113 | 38 | 8 | 12 | 58 | 171 |
| Tulare..... | 94 | 19 | 125 | 238 | 73 | 10 | 117 | 200 | 438 |
| Tuolumne..... | 80 | 21 | 97 | 198 | 93 | 9 | 89 | 191 | 389 |
| Ventura..... | 94 | 20 | 25 | 139 | 8 | | | 8 | 147 |
| Yuba..... | 5 | | 17 | 22 | | | | | 22 |
| Totals..... | 2,855 | 714 | 1,981 | 5,580 | 2,693 | 601 | 1,733 | 5,027 | 10,607 |

1942-43 1943-44

| | | |
|---------------------------------|---------|---------|
| Average number of trappers..... | 21 | 22 |
| Miles of trapline..... | 182,147 | 214,285 |
| Number of sets..... | 253,865 | 264,465 |
| Number of days..... | 6,696 | 6,546 |

**ARRESTS AND CONVICTIONS
RECAPITULATION**

| | Number of arrests | Fines imposed | Jail sentences (days) |
|-----------------------------|-------------------------|------------------|-----------------------------|
| Fish cases, 1942-1943 | 1035 | \$31,692 50 | 100 |
| Game cases, 1942-1943 | 1076 | 41,497 50 | 238 |
| Totals, 1942-1943 | 2111 | \$73,190 00 | 338 |
| Fish cases, 1943-1944 | 1079 | \$28,768 00 | 197 |
| Game cases, 1943-1944 | 1108 | 50,550 00 | 180 |
| Totals, 1943-1944 | 2187 | \$79,318 00 | 377 |
| Recapitulation: | | | |
| 1942-1943 | 2111 | \$73,190 00 | 338 |
| 1943-1944 | 2187 | 79,318 00 | 377 |
| Totals | 4298 | \$152,508 00 | 715 |

TOTAL ARRESTS FOR A PERIOD OF FORTY-TWO YEARS

| | |
|-----------------|-------|
| 1902-1904 | 550 |
| 1904-1906 | 774 |
| 1906-1908 | 1,192 |
| 1908-1910 | 1,771 |
| 1910-1912 | 2,063 |
| 1912-1914 | 1,993 |
| 1914-1916 | 2,087 |
| 1916-1918 | 1,797 |
| 1918-1920 | 1,891 |
| 1920-1922 | 2,258 |
| 1922-1924 | 2,715 |
| 1924-1926 | 3,207 |
| 1926-1928 | 4,390 |
| 1928-1930 | 5,388 |
| 1930-1932 | 5,237 |
| 1932-1934 | 3,795 |
| 1934-1936 | 4,535 |
| 1936-1938 | 6,382 |
| 1938-1940 | 7,444 |
| 1940-1942 | 7,262 |
| 1942-1944 | 4,298 |

SEIZURES OF FISH AND GAME

| Fish | July 1, 1942, to June 30, 1943 | July 1, 1943, to June 30, 1944 | Total |
|---------------------------|--------------------------------------|--------------------------------------|------------------|
| Abalones | 121 | 234 | 355 |
| Abalones, red | 626 | 735 | 1,361 |
| Abalones, green | 128 | 23 | 151 |
| Abalones, black | 126 | 202 | 328 |
| Barracuda | 57 | | 57 |
| Bass, black | 160 | 164 | 324 |
| Bass, striped | 44 | 25 | 69 |
| Bass, pounds | 6,077 | | 6,077 |
| Bass, striped, pounds | 853 | 1,577 | 2,430 |
| Bluegill | | 53 | 53 |
| Bluegill, pounds | 9 | | 9 |
| Clams | | 528 | 528 |
| Clams, Pismo | 489 | 108 | 597 |
| Clams, Cockles | 102 | 101 | 203 |
| Clams, Horseneck | 50 | | 50 |
| Catfish | 19 | 23 | 42 |
| Catfish, pounds | 16 | 400 | 416 |
| Crappie | 76 | 48 | 124 |
| Crappie, pounds | 5 | | 5 |
| Fish spear | 1 | | 1 |
| Frogs | 10 | | 10 |
| Gill nets | 2 | | 2 |
| Lobster, pounds | 21 | | 21 |
| Lobster, traps | 16 | 153 | 169 |
| Lobster, receiver | | 1 | 1 |
| Lobsters, spiney | 8 | 72 | 80 |
| Lobsters | 7 | 23 | 30 |
| Perch | 1 | 4 | 5 |
| Perch, saltwater, pounds | | 50 | 50 |
| Salmon | 95 | 52 | 147 |
| Salmon, pounds | | 520 | 520 |
| Salmon, net | 1 | | 1 |
| Salmon, King | | 25 | 25 |
| Salmon, Silver, pounds | | 45 | 45 |
| Scallops | 214 | | 214 |
| Shad, pounds | | 102 | 102 |
| Sturgeon, pounds | 42 $\frac{1}{2}$ | | 42 $\frac{1}{2}$ |
| Sunfish | 388 | 175 | 563 |
| Sunfish, pounds | 4 | | 4 |
| Sunperch | 25 | 18 | 43 |
| Swordfish, Marlin, pounds | | 3,000 | 3,000 |
| Trammel nets, pieces | | 11 | 11 |
| Trout, Easternbrook | | 62 | 62 |
| Trout, pounds | 11 $\frac{1}{4}$ | 22 | 23 $\frac{1}{4}$ |
| Trout, steelhead | 244 | 69 | 313 |
| Trout, steelhead, pounds | | 21 $\frac{1}{2}$ | 21 $\frac{1}{2}$ |
| Trout, rainbow | 277 | 856 | 1,133 |
| Trout, rainbow, pounds | | 35 | 35 |
| Trout, Loch Leven | 7 | | 7 |
| Trout | 820 | 1,028 | 1,848 |
| Tuna | 15,300 | | 15,300 |

SEIZURE OF FISH AND GAME—Continued

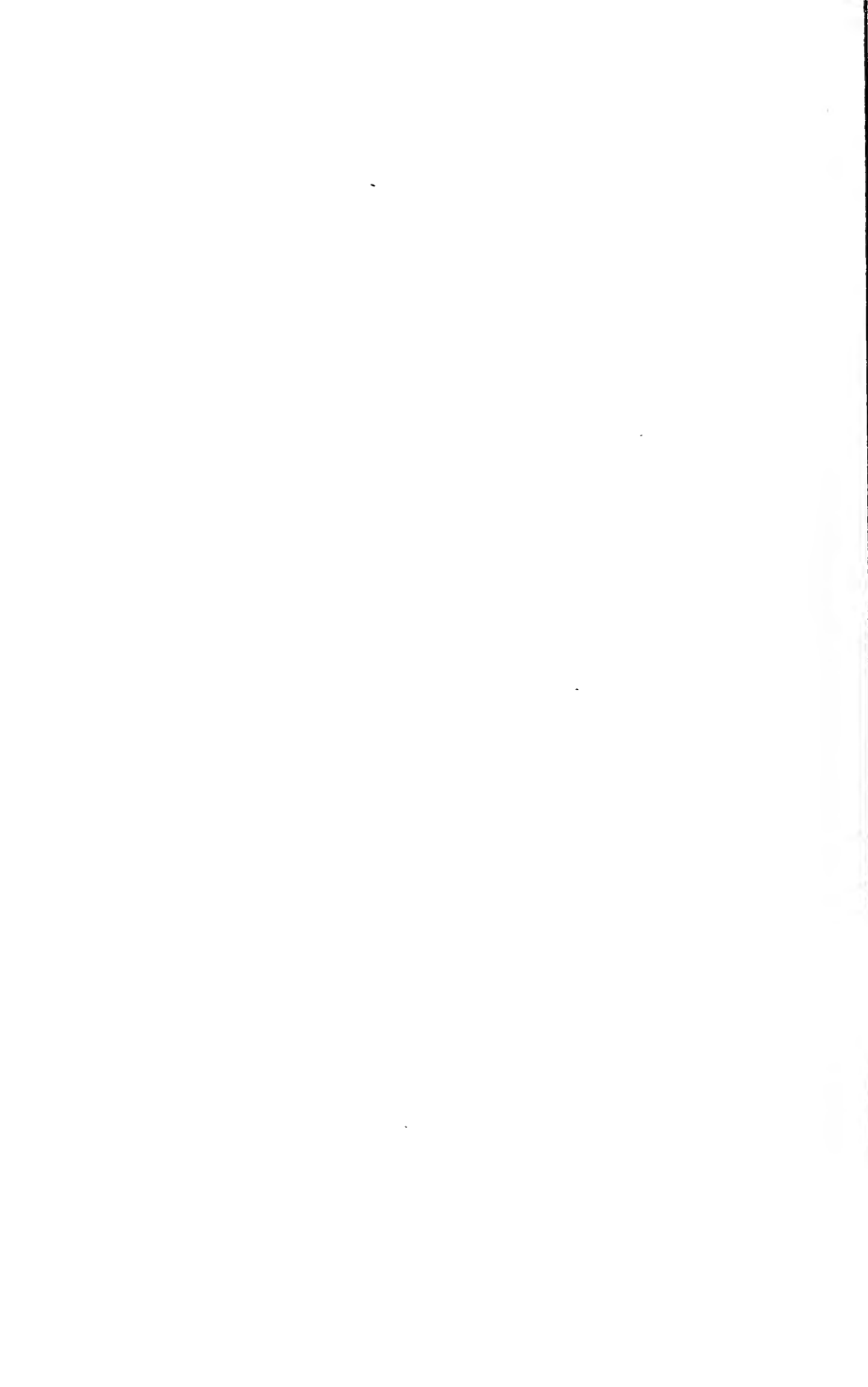
| Game | July 1, 1942, to June 30, 1943 | July 1, 1943, to June 30, 1944 | Total |
|------------------------------|--------------------------------------|--------------------------------------|-----------------------------------|
| Antelope..... | 1 | | 1 |
| Bear meat, pounds..... | | 60 | 60 |
| Deer..... | 39 | 96 | 135 |
| Deer meat, pounds..... | 1,623 | 1,642 ¹ / ₂ | 3,265 ¹ / ₂ |
| Deer meat, canned, jars..... | 32 | | 32 |
| Doc..... | 2 | | 2 |
| Doc meat, pounds..... | 60 | | 60 |
| Doves..... | 303 | 377 | 680 |
| Ducks..... | 653 | 754 | 1,407 |
| Elk..... | | 1 | 1 |
| Geese..... | 20 | 69 | 89 |
| Jacksnipe..... | 1 | | 1 |
| Killdeer..... | 2 | | 2 |
| Meadowlark..... | 1 | | 1 |
| Pheasants..... | 219 | 366 | 585 |
| Pigeons..... | 1 | 1 | 2 |
| Quail..... | 39 | 13 | 52 |
| Rabbits, brush..... | 28 | 17 | 45 |
| Rabbits, jack..... | 2 | | 2 |
| Rabbits, cottontail..... | 74 | | 74 |
| Squirrel, tree..... | | 13 | 13 |
| Squirrel, grey..... | | 2 | 2 |
| Sagehens..... | 5 | 2 | 7 |
| Shorebirds..... | 1 | | 1 |
| Sparrows..... | | 12 | 12 |
| Swans..... | 14 | 3 | 17 |
| White crowned sparrows..... | 5 | | 5 |
| Woodducks..... | 7 | 3 | 10 |
| Wilson snipe..... | 2 | | 2 |

FISH CASES

| Offense | July 1, 1942, to June 30, 1943 | | | July 1, 1943, to June 30, 1944 | | |
|---|--------------------------------|-------------|------|--------------------------------|-------------|------|
| | Arrests | Fines | Jail | Arrests | Fines | Jail |
| Abalones: Undersize, overlimit, out of shell, no license, closed season, remove from shell below high tide, fail to show license on demand, no commercial license | 211 | \$5,283 00 | | 246 | \$6,592 50 | |
| Angling: No license, closed season, closed area, within 150 feet of dam, not holding rod, false statement in securing license, set lines after sundown, two poles, fish gaff 300 feet of stream, fishing in fish ladder, closed waters, lending license to another, illegally taken fish, using trout roe for bait, back dating angling license, operating set line | 214 | 3,743 50 | 10 | 292 | 5,250 50 | 140 |
| Barracuda: Overlimit, undersize, no license | 3 | 30 00 | | | | |
| Bass: Undersize, using two rods, after sundown, night fishing, closed season, no license, two lines, overlimit, possess for sale, fail return bass to water taken in shad net, buying striped bass | 115 | 2,558 00 | 16 | 132 | 2,855 00 | |
| Bass, black: No license | 32 | 860 00 | | 23 | 635 00 | |
| Catfish: Selling, undersize, closed season, use of net to take catfish, closed waters | 4 | 105 00 | | 4 | 135 00 | |
| Clams: Undersize, clam forks in preserve, take clams in preserve, out of shell, overlimit, no license, closed season | 90 | 1,832 50 | 29 | 69 | 1,460 00 | 15 |
| Cockles: Overlimit | 2 | 50 00 | | | | |
| Commercial: Operating net and taking tuna in closed season, gill net in closed waters, no license, failure give fishermen copy at delivery, operating round whole net in District 20, operating net Stanislaus River, operating purse seine net and taking bluefin tuna in closed area, failure to keep record of fresh fish purchased and from whom | 68 | 4,340 00 | | 36 | 2,770 00 | |
| Crabs: Undersize, closed season, overlimit | 3 | 50 00 | | | | |
| Crappie: Selling | 16 | 425 00 | | 2 | 70 00 | |
| Fail show fish on demand | 8 | 100 00 | 5 | | | |
| Frogs: Overlimit, closed season, no license | 4 | 125 00 | | | | |
| Game fish: Taken illegally | 33 | 655 00 | | | | |
| Gill net: Closed area, meshes over $\frac{3}{4}$ " in length | 3 | 150 00 | | | | |
| Habitat: Closed season | 2 | 100 00 | | | | |
| Lobsters: Closed season, undersize, overlimit | 8 | 432 50 | | 6 | 220 00 | |
| No party boat permit | 2 | 25 00 | | | | |
| Operating fish trap | 1 | 50 00 | | 2 | 200 00 | |
| Perch: Closed season, no license | 3 | 60 00 | | 3 | 85 00 | |
| Pollution | 47 | 6,250 00 | 5 | 6 | 975 00 | |
| River otter: Closed season | | | | 1 | 10 00 | |
| Salmon: Undersize, taken illegally, other than angling, at night, at fish screen, no license, spearing, night spearing | 38 | 810 00 | 35 | 79 | 2,735 00 | 30 |
| Spearing: Spearing in prohibited area, 300 feet of stream, using gaff hook | 5 | 125 00 | | 4 | 80 00 | |
| Steelhead: Taken illegally, overlimit, no license, possess 34 tagged steelhead, District 1 $\frac{1}{2}$ | 5 | 135 00 | | | | |
| Sturgeon: Possession | 2 | 50 00 | | | | |
| Sunfish: No license, closed season, overlimit | 46 | 950 00 | | 15 | 422 50 | 12 |
| Trout: Overlimit, closed area, not using hook and line, sale, more than one pole, closed area, closed season, snagging with "spanish liver," taking steelhead other than in tidewater | 66 | 1,798 00 | | 154 | 4,022 50 | |
| Tuna: Closed area, selling, closed lake, without a commercial license | 2 | 550 00 | | | | |
| Taking marine life within marine refuge | 1 | 25 00 | | | | |
| Use nonnative minnows as bait | | | | 1 | 25 00 | |
| Use and possess otter board trawl | | | | 4 | 225 00 | |
| Wilful waste of food fish | 1 | 25 00 | | | | |
| Totals | 1,035 | \$31,692 50 | 100 | 1,079 | \$28,768 00 | 197 |

GAME CASES

| Offense | July 1, 1942, to June 30, 1943 | | | July 1, 1943, to June 30, 1944 | | |
|--|--------------------------------|-------------|------|--------------------------------|-------------|------|
| | Arrests | Fines | Jail | Arrests | Fines | Jail |
| Antelope: Closed season..... | 2 | \$160 00 | | | | |
| Bear: Closed season, refuge..... | 2 | 100 00 | | 3 | \$100 00 | |
| Beaver: No commercial license..... | 1 | 75 00 | | | | |
| Coots: Shooting with 22 rifle..... | 2 | 25 00 | | | | |
| Deer: Night hunting, refuge, take forked horn deer in District 13 $\frac{1}{2}$, transfer deer tags, overlimit, closed season, doe, no tags, failure to have deer tag validated, spike buck, fawn, altering deer tags, fawn, two deer in a one deer district, firearms, spotlighting, unplugged gun, early and late shooting, allowing hounds to run deer during closed season..... | 179 | 9,617 00 | 54 | 301 | 18,780 00 | 95 |
| Deer meat: Closed season, female, unstamped, no permit, illegally taken..... | 69 | 5,432 00 | 74 | 76 | 5,090 00 | |
| Doves: Closed season, shooting from auto, no license, overlimit, taking by trap, use license of another, unplugged gun..... | 49 | 1,375 00 | | 36 | 1,710 00 | 30 |
| Ducks: Closed season, early and late shooting, overlimit, no license, unplugged gun, no duck stamp, failure to show game on demand, taking young from nest, shore bird possess baby ducks..... | 273 | 9,046 00 | | 182 | 8,077 50 | 55 |
| Elk: Overlimit, cow..... | | | | 2 | 200 00 | |
| Firearms: Refuge, shooting from highway..... | 25 | 575 00 | | 5 | 85 00 | |
| Fox, grey: Closed season..... | 1 | 10 00 | | | | |
| Game birds: Closed season, selling domesticated game birds, no license..... | 2 | 50 00 | | 5 | 400 00 | |
| Geese: Overlimit, unplugged gun, refuge, no license, harrying geese with car, after sunset..... | 8 | 205 00 | | 28 | 852 50 | |
| Hunting: No license, failure show license on demand, transfer of license, hunting in refuge, falsifying in order to secure citizen's license, at night, use license of another, spotlighting, refuse to show license on demand..... | 94 | 1,992 00 | | 121 | 3,230 00 | |
| Jacksnipe..... | 1 | 12 50 | | | | |
| Meadowlark..... | 1 | 25 00 | | | | |
| Mudhens: No license..... | 1 | 35 00 | | 1 | 10 00 | |
| Muskrats: Trapping for profit, no license..... | | | | 3 | 20 00 | |
| Mountain Sheep: Kill and possess..... | 2 | 200 00 | | | | |
| Nongame birds..... | 15 | 310 00 | | 7 | 200 00 | |
| Pheasants: Closed season, hen, no license, set lines to take pheasants, failing to tag, trapping hen, no tags, shooting from auto..... | 180 | 8,448 50 | 105 | 270 | 9,940 00 | |
| Pigeons: Closed season..... | 2 | 50 00 | | 1 | 50 00 | |
| Quail: Closed season, no license..... | 30 | 650 00 | | 18 | 585 00 | |
| Rabbits: Closed season, no license..... | 46 | 694 50 | 5 | 4 | 100 00 | |
| Robins and flickers..... | 1 | 70 00 | | | | |
| Sagehens: Closed season..... | 5 | 325 00 | | 4 | 150 00 | |
| Seized evidence destroyed..... | | | | 1 | 10 00 | |
| Shooting from auto..... | 15 | 405 00 | | 25 | 540 00 | |
| Shorebirds..... | 7 | 155 00 | | 2 | 20 00 | |
| Squirrels, tree..... | 2 | 55 00 | | 3 | 200 00 | |
| Swans..... | 2 | 125 00 | | 3 | 60 00 | |
| Taking birds with trap..... | | | | 1 | 25 00 | |
| Trapping: Disturbing traps of licensed trapper, trapping for profit, no license..... | 1 | 10 00 | | 5 | 105 00 | |
| Trespassing..... | 2 | 75 00 | | 1 | 10 00 | |
| Waterfowl: Closed season, early and late shooting, no license, overlimit, no duck stamp..... | 46 | 945 00 | | | | |
| Willits..... | 1 | 25 00 | | | | |
| Wilson snipe..... | 1 | 25 00 | | | | |
| Woodducks..... | 8 | 195 00 | | | | |
| Totals..... | 1,076 | \$41,497 50 | 238 | 1,108 | \$50,550 00 | 180 |



CALIFORNIA FRESH FISHERY PRODUCTS FOR YEAR 1942

Compiled by Division of Fish and Game, Bureau of Marine Fisheries

| Species of fish | Eureka region | Sacramento region | San Francisco region | Monterey region | Santa Barbara region |
|---------------------------------|---------------|-------------------|----------------------|-----------------|----------------------|
| Albacore..... | 11,616 | | 8,286 | 284,684 | 577,893 |
| Anchovy..... | | | 5,400 | 149,076 | 75 |
| Barracuda..... | | | | | 256,281 |
| Bonito..... | | | | | 33,727 |
| Cabezone..... | | | 504 | 1,788 | 12 |
| Cabrilla..... | | | | | |
| Carp..... | | 39,968 | | | |
| Catfish..... | | 170,580 | | | |
| Cultus, Pacific..... | 200,828 | | 42,261 | 68,230 | 484 |
| Eel..... | | | | | 103 |
| Flounder..... | 265,255 | | 89,101 | 15,168 | 60 |
| Flying Fish..... | | | | | 66 |
| Grouper..... | | | | | |
| Hake..... | 25 | | 2,991 | 38,920 | |
| Halibut, California..... | | | 6,140 | 12,226 | 275,673 |
| Halibut, Northern..... | 233,462 | | | | |
| Hardhead..... | | 92,822 | | | |
| Herring, Pacific..... | 22,042 | | 109,022 | 59,730 | 21 |
| Kingfish..... | | | 1,617 | 89,305 | |
| Mackerel, Horse..... | | | | 323,886 | |
| Mackerel, Pacific..... | | | 122,230 | 802,896 | 1,086,595 |
| Mackerel, Spanish..... | | | | | |
| Mullet..... | | | | | |
| Perch..... | 24,113 | | 14,498 | 5,578 | 3,144 |
| Pike..... | | 173 | | | |
| Pompano, California..... | | | | 79 | 2 |
| Rock Bass..... | | | | | 38,980 |
| Rockfish..... | 269,134 | | 70,019 | 655,809 | 83,767 |
| Sablefish..... | 1,625,819 | | 29,512 | 290,874 | 2,382 |
| Salmon..... | 2,255,862 | 2,552,944 | 1,642,051 | 164,931 | 462 |
| Sand Dab..... | 162,671 | | 112,555 | 67,309 | 7 |
| Sardine..... | 179 | 44,790,700 | 165,896,261 | 332,491,022 | 10,234,078 |
| Sculpin..... | | | | | 221 |
| Sea-bass, Black..... | | | 142 | 34 | 4,940 |
| Sea-bass, Short-fin..... | | | | | |
| Sea-bass, White..... | 5,714 | | 14,440 | 115,138 | 77,485 |
| Shad..... | 38 | 2,571,595 | | | |
| Shark..... | 800,563 | | 1,155,759 | 312,371 | 407,936 |
| Sheepshead..... | | | | | 35,178 |
| Skate..... | 12,938 | | 54,410 | 19,162 | 11,242 |
| Skipjack..... | | | | | |
| Smelt..... | 37,877 | 164 | 166,927 | 108,048 | 11,327 |
| Sole..... | 2,066,856 | | 589,773 | 378,673 | 100,863 |
| Split-tail..... | | 15,391 | | | |
| Sucker..... | | 95 | | | |
| Swordfish, Broadbill..... | | | | | 246,011 |
| Tomcod..... | 145 | | | | |
| Tuna, Bluefin..... | | | 159 | | 122,640 |
| Tuna, Yellowfin..... | | | | | 25 |
| Turbot..... | 3,095 | | 3,001 | 21 | 439 |
| Whitebait..... | 151,022 | | 8,227 | 9 | |
| Whitefish, Ocean..... | 94 | | | | 26,751 |
| Yellowtail..... | | | | | 115 |
| Miscellaneous Fish..... | 24,349 | | 16,743 | 13,677 | 28,295 |
| Total fish, in pounds..... | 8,173,697 | 50,234,432 | 170,162,029 | 336,468,734 | 13,667,280 |
| Crustacean: | | | | | |
| Crab..... | 694,486 | | 1,638,944 | 80,656 | |
| Shrimp..... | | | 800,958 | | |
| Spiny Lobster..... | | | | | 71,441 |
| Mollusk: | | | | | |
| Abalone..... | | | | 3,675 | 160,787 |
| Clam, Cockle..... | | | 257 | | |
| Clam, Gaper..... | | | 760 | | |
| Clam, Pismo..... | | | | 3,000 | 90,613 |
| Clam, Soft-shell..... | | | 73,144 | | |
| Clam, Washington..... | 9,848 | | | | |
| Octopus..... | 2,226 | | 1,015 | 4,140 | |
| Oyster, Eastern..... | | | 92,426 | | |
| Oyster, Japanese..... | | | 317,216 | | 292,017 |
| Oyster, Native..... | 4,070 | | 1,612 | | |
| Squid..... | | | | 875,732 | |
| Total shellfish, in pounds..... | 710,630 | | 2,926,332 | 967,203 | 614,858 |
| Grand total, in pounds..... | 8,884,327 | 50,234,432 | 173,088,361 | 337,435,937 | 14,282,138 |

NOTE: All amounts shown in pounds. This record does not include albacore shipped from Oregon and Washington

CALIFORNIA FRESH FISHERY PRODUCTS FOR YEAR 1942—Continued
 Compiled by Division of Fish and Game, Bureau of Marine Fisheries

| Species of fish | Los Angeles region..... | San Diego region..... | Total taken in state waters and off the coast of California..... | South of International Boundary brought into Los Angeles..... | South of International Boundary brought into San Diego..... | Total landings in California, including fish from west coast south of the International Boundary brought in by boat..... |
|--------------------------|-------------------------|-----------------------|--|---|---|--|
| Albacore..... | 4,941,674 | 2,173,140 | 7,997,293 | 121,250 | 2,592,650 | 10,621,193 |
| Anchovy..... | 1,539,334 | 405 | 1,694,290 | 1,006,579 | 204,969 | 1,694,290 |
| Barracuda..... | 1,725,956 | 260,926 | 2,243,163 | 373,267 | 413,581 | 3,448,711 |
| Bonito..... | 572,706 | 255,408 | 868,341 | | | 1,650,089 |
| Cabazonne..... | 8 | | 2,312 | | | 2,312 |
| Cabrilla..... | | | | 117,783 | 107,583 | 225,366 |
| Carp..... | 32,650 | | 72,618 | | | 72,618 |
| Catfish..... | | | 170,580 | | | 170,580 |
| Cultus, Pacific..... | 1,157 | 482 | 313,442 | | | 313,442 |
| Eel..... | | | 103 | | | 103 |
| Flounder..... | 46 | | 369,030 | | | 369,030 |
| Flying Fish..... | 2,740 | | 2,806 | | | 2,806 |
| Grouper..... | | | | 61,347 | 67,247 | 128,594 |
| Hake..... | 45 | | 41,981 | | | 41,981 |
| Hallbut, California..... | | 64,349 | 574,756 | | | 755,340 |
| Hallbut, Northern..... | 216,368 | | 233,462 | 86,451 | 94,133 | 233,462 |
| Hardhead..... | | | 92,822 | | | 92,822 |
| Herring, Pacific..... | | | 190,815 | | | 190,815 |
| Kingfish..... | 190,929 | 2,294 | 284,143 | 24 | 56 | 284,225 |
| Mackerel, Horse..... | 4,907,835 | 56,780 | 5,348,401 | 140 | 21,131 | 5,348,941 |
| Mackerel, Pacific..... | 48,707,505 | 1,786,228 | 52,966,434 | | | 52,926,585 |
| Mackerel, Spanish..... | | | | 8,304 | 2,817 | 11,181 |
| Mullet..... | 15,174 | 34,843 | 50,017 | | | 50,017 |
| Perch..... | 10,666 | | 57,999 | | 85 | 58,084 |
| Pike..... | | | 173 | | | 173 |
| Pompano, California..... | 3,261 | | 3,342 | | | 3,342 |
| Rock Bass..... | 29,235 | 22,371 | 90,586 | | | 111,098 |
| Rockfish..... | 164,158 | 22,323 | 1,265,300 | 3,197 | 17,315 | 1,410,414 |
| Sablefish..... | 16,809 | 64 | 1,965,460 | | | 1,965,580 |
| Salmon..... | | | 6,616,250 | | 120 | 6,616,250 |
| Sand Dab..... | 10,998 | | 353,540 | | | 353,540 |
| Sardine..... | 411,384,755 | 4,949,002 | 969,743,997 | | 102 | 969,746,099 |

| | | | | | | |
|---------------------------------|-------------|------------|---------------|------------|------------|---------------|
| Sealpin..... | 42,283 | 1,588 | 44,092 | 7 | 233 | 44,332 |
| Sea-bass, Black..... | 3,746 | 4,675 | 13,537 | 227,050 | 136,809 | 377,896 |
| Sea-bass, Short-fin..... | | 28 | 28 | | | 28 |
| Sea-bass, White..... | 129,297 | 14,424 | 356,498 | 105,890 | 91,207 | 553,595 |
| Shad..... | | | 2,571,633 | | | 2,571,633 |
| Shark..... | 545,009 | 186,605 | 3,408,843 | 384 | 8,266 | 3,417,493 |
| Sheepshead..... | 8,422 | 3,903 | 47,503 | 566 | 2,189 | 50,258 |
| Skate..... | 7,204 | 195 | 105,151 | 225 | | 105,376 |
| Skipjack..... | 201,855 | 15,983 | 217,838 | 8,788,410 | | 38,715,182 |
| Smelt..... | 117,490 | 1,389 | 443,222 | | 29,708,934 | 443,939 |
| Sole..... | 8,841 | 21 | 3,145,027 | | 717 | 3,145,027 |
| Split-tail..... | | | 15,391 | | | 15,391 |
| Sucker..... | | | 416,431 | | 95 | 445,908 |
| Swordfish, Broadbill..... | 137,158 | 33,262 | 416,431 | | 29,477 | 445,908 |
| Tomcod..... | | | 145 | | | 145 |
| Tuna, Bluefin..... | 9,460,511 | 748,196 | 10,331,506 | 1,916,490 | 596,568 | 12,844,594 |
| Tuna, Yellowfin..... | 693 | 597 | 1,315 | 12,298,743 | 28,897,383 | 41,107,441 |
| Turbot..... | 15 | | 6,571 | | | 6,571 |
| Whitebait..... | | | 159,258 | | | 159,258 |
| Whitefish, Ocean..... | 4,859 | 375 | 32,079 | 1,390 | 2,517 | 35,986 |
| Yellowtail..... | 13,804 | 41,098 | 55,017 | 1,087,532 | 1,583,406 | 2,725,955 |
| Miscellaneous Fish..... | 27,137 | 229 | 110,430 | 2,102 | 377 | 112,909 |
| Total fish, in pounds..... | 485,242,933 | 10,681,183 | 1,074,630,288 | 26,203,191 | 64,604,986 | 1,165,438,465 |
| Crustacean: | | | | | | |
| Crab..... | 80 | | 2,414,166 | | | 2,414,166 |
| Shrimp..... | | | 800,958 | | | 800,958 |
| Spiny Lobster..... | 54,892 | 42,608 | 168,641 | 9,424 | 591,556 | 769,621 |
| Mollusk: | | | | | | |
| Atlantone..... | | | 164,462 | | | 164,462 |
| Clam, Cockle..... | | | 257 | | | 257 |
| Clam, Gaper..... | | | 760 | | | 760 |
| Clam, Pismo..... | | | 93,613 | 90,979 | | 184,592 |
| Clam, Soft-shell..... | | | 73,144 | | | 73,144 |
| Clam, Washington..... | | | 9,848 | | | 9,848 |
| Octopus..... | 15 | | 7,396 | | | 7,396 |
| Oyster, Eastern..... | | | 92,426 | | | 92,426 |
| Oyster, Japanese..... | | | 606,233 | | | 606,233 |
| Oyster, Native..... | | | 5,682 | | | 5,682 |
| Squid..... | 30,240 | 33,766 | 939,738 | | 4,045 | 943,783 |
| Total shellfish, in pounds..... | 84,927 | 76,374 | 5,380,324 | 100,403 | 565,601 | 6,076,328 |
| Grand total, in pounds..... | 485,927,860 | 10,757,557 | 1,080,010,612 | 26,303,594 | 65,200,587 | 1,171,514,793 |

CANNED, CURED AND MANUFACTURED FISHERY PRODUCTS OF CALIFORNIA FOR THE YEAR OF 1942

Canned

| Kind of fish or fishery product | Size of cans | San Francisco district, cases | Monterey district, cases | San Pedro district, cases | San Diego district, cases | Total, cases |
|---------------------------------|----------------------|-------------------------------|--------------------------|---------------------------|---------------------------|--------------|
| Albacore..... | 1-lb..... | | | 3,199 | 177 | 3,376 |
| | 1½-lb..... | | 6,257 | 124,948 | 103,966 | 235,171 |
| | ¼-lb. 100's..... | | | 523 | 435 | 435 |
| Anchovies..... | ¼-lb. 100's..... | | 261 | 242 | | 523 |
| Barracuda..... | ½-lb..... | | | 4,676 | | 503 |
| Bonito..... | 1-lb..... | | | 746 | 276 | 4,676 |
| | ½-lb..... | | | 17,369 | 13,897 | 1,022 |
| Clams..... | No. 10, 6's..... | | | 110 | | 31,266 |
| | ½-lb..... | | | 1,944 | | 110 |
| Clam juice..... | No. 10, 6's..... | | | 7,926 | | 1,944 |
| Mackerel..... | 4-lb. 12's..... | | | | 443 | 7,926 |
| | 1-lb..... | | 4,539 | 579,053 | 17,456 | 443 |
| | ½-lb..... | | | 8,815 | 3,220 | 601,048 |
| Sardine..... | ¼-lb. 100's..... | | | 664 | | 12,035 |
| | No. 10, 6's..... | | 1,106 | | | 664 |
| | 4-lb., 12's..... | | | | 63 | 1,106 |
| Shad..... | 1-lb. oval..... | 164,452 | 638,343 | 619,881 | | 63 |
| | 1-lb. tall..... | 164,363 | 498,946 | 1,342,030 | 1,222 | 1,422,676 |
| | ½-lb..... | | 8,283 | 1,707 | | 2,006,561 |
| | ½-lb. 96's..... | | 37,253 | 84,069 | | 9,990 |
| | ½-lb. filet..... | | 75,386 | | | 121,324 |
| | 5-oz. 100's..... | 22,049 | 72,706 | 90,672 | | 75,386 |
| | ¾-lb. sq. 100's..... | | 19,129 | 2,918 | | 185,427 |
| | 3-oz. paste..... | 2,205 | | | | 22,047 |
| | Shad Roe..... | 1-lb..... | 20,058 | | | 2,205 |
| | Squid..... | ½-lb..... | 4,887 | | | 20,058 |
| Tuna, Bluefin..... | 1-lb. tail..... | | 941 | | | 4,887 |
| | 1-lb..... | | | 8,749 | | 941 |
| | 12½ oz..... | | | 179 | | 8,749 |
| | ½-lb..... | | | 221,330 | 28,236 | 179 |
| | ¼-lb..... | | | 1,507 | 177 | 249,566 |
| Tuna, Striped..... | ¼-lb. 100's..... | | | 18,920 | | 1,684 |
| | 1-lb..... | | | 4,018 | 7,438 | 18,920 |
| | ½-lb..... | | | 98,427 | 486,671 | 11,456 |
| | ¼-lb..... | | | 8,539 | 93,315 | 585,098 |
| Tuna, Yellowfin..... | ¼-lb. 100's..... | | | 17,996 | 3,170 | 101,854 |
| | 4-lb., 12's..... | | | 123 | | 21,166 |
| | 1-lb..... | | | 7,939 | 16,567 | 123 |
| | 12½ oz..... | | | 1,919 | | 24,506 |
| | ½-lb..... | | | 192,413 | 498,707 | 1,919 |
| Tuna flakes..... | ¼-lb..... | | | 3,410 | 29,424 | 691,120 |
| | ¼-lb. 100's..... | | | 8,587 | 819 | 32,834 |
| | 1-lb..... | | | 3,613 | 1,948 | 9,406 |
| Tuna, "tonno" style..... | ½-lb..... | | | 36,267 | 109,148 | 5,561 |
| | ¼-lb..... | | | 383 | | 145,415 |
| Yellowtail..... | ¼-lb. 100's..... | | | 23,096 | | 383 |
| | 1-lb..... | | | 2,079 | 208 | 23,096 |
| Pet food..... | ½-lb..... | | | 14,348 | 20,757 | 2,287 |
| | Misc. sizes..... | | | 197,403 | | 35,105 |
| Totals..... | | 378,014 | 1,363,152 | 3,762,737 | 1,437,740 | 197,403 |

NOTE: Forty-eight cans to the case unless otherwise specified. San Francisco District includes all area north of Monterey. San Pedro District includes Orange County.

Cured and Manufactured

| Fishery product | Size or quantity | San Francisco district | Monterey district | San Pedro district | San Diego district | Total |
|--------------------------|------------------|------------------------|-------------------|--------------------|--------------------|------------|
| Anchovies, salted..... | Pounds..... | | 5,500 | | | 5,500 |
| Mixed fish, dried..... | Pounds..... | 47,002 | | | | 47,002 |
| Mixed fish, salted..... | Pounds..... | | | | 41,248 | 41,248 |
| Sablefish, kippered..... | Pounds..... | 236,863 | | | | 236,863 |
| Sablefish, salted..... | Pounds..... | 72,000 | | | | 72,000 |
| Salmon, smoked..... | Pounds..... | 104,206 | | | | 104,206 |
| Sardine, salted..... | Pounds..... | | 190,920 | | | 190,920 |
| Shrimp, dried..... | Pounds..... | 2,091 | | | | 2,091 |
| Shrimp, meal..... | Pounds..... | 5,120 | | | | 5,120 |
| Stickwater residuum..... | Tons..... | | 195 | | | 195 |
| Fish, meal..... | Tons..... | 17,748 | 25,170 | 31,633 | 4,452 | 79,003 |
| Fish, oil..... | Gallons..... | 4,183,492 | 5,219,441 | 3,146,680 | 137,027 | 12,686,640 |
| Shark liver oil..... | Gallons..... | 148,043 | 49,097 | 63,795 | | 260,935 |

Miscellaneous Data

| | San Francisco district | Monterey district | San Pedro district | San Diego district | Total |
|------------------------------|------------------------|-------------------|--------------------|--------------------|--------------|
| Estimated value of pack..... | \$8,812,250 | \$12,570,434 | \$27,042,118 | \$19,007,887 | \$67,432,689 |
| Number of employees..... | 1,665 | 3,380 | 5,172 | 2,033 | 12,250 |
| Value of plants..... | \$3,578,273 | \$3,923,808 | \$4,418,812 | \$1,626,931 | \$13,547,824 |

REPORT OF SARDINE CANNING AND REDUCTION PLANTS, SEASON 1942-1943

Compiled by S. H. DADO

Prior to the opening of the season fishermen and plant operators in San Francisco and Monterey with the aid of the OPA agreed on a price of \$22 per ton if the insurance was paid by the plants or \$22.50 per ton if the insurance was paid by the boat owners. In Monterey fishing operations were delayed a few days after August 1st adjusting cannery workers pay and differences between the C. I. O. and A. F. L. fishermen's unions. In San Francisco the first load of sardines came in on August 8th. In Monterey the first deliveries were made on August 12th. In southern California fishing started promptly on October 1st and was exceptionally heavy for the first two weeks of the season. Landings were above average for the first three months of the season.

Hearings were held June 25th by the Commission on 76 applications for permits to use sardines by a reduction or extraction process. At the Board meeting held on July 11th 75 permits for 4,750 tons each were granted. On October 17th two more permits were granted to Associated Sardine Cannery, Inc. and Del Mar Canning Company, Plant No. 2, both in Monterey. The permit was issued to Del Mar Canning Company since it was declared ready to operate but no permit was issued to the Associated Sardine Cannery, Inc. as their plant was not completed and ready to operate.

On January 8, 1943, additional permits for 1,000 tons each were granted and issued to 13 canning plants in the San Pedro district and on February 11th additional permits for 1,000 tons each were granted and issued to four canning plants in Monterey. On March 5th, a permit was granted and issued to Van Camp Sea Food Co., Inc. "I. P.-A. T." Plant to use 634 tons to cover fish taken in excess of permits the plant held.

Permits were issued for the season as shown in the following table:

| <i>District</i> | <i>Number of Plants</i> | <i>Tons</i> |
|---------------------|-------------------------|-------------|
| San Francisco ----- | 33 | 156,750 |
| Monterey ----- | 23 | 113,250 |
| San Pedro ----- | 16 | 89,634 |
| San Diego ----- | 4 | 19,000 |
| Totals ----- | 76 | 378,634 |

A transfer of 577 tons was made from the San Francisco district to be run in a Monterey plant.

Only 54.6 per cent of the reduction permit tonnage granted was received in the San Francisco district, 68.3 per cent in the Monterey district, 70.8 per cent in the San Pedro district, and 15 per cent in the San Diego district. In the four districts combined 60.6 per cent of the tonnage granted was received leaving an unused tonnage of 149,302 tons to be canceled at the close of the season.

The permits granted on July 11th provided that not more than one-third of the tonnage granted for the season could be taken in one calendar month. In the San Francisco and Monterey districts 700 tons and in southern California 950 tons was set as the minimum amount that could be taken during any one month during the season. These rulings on maximum and minimum monthly allotments were canceled on October 16th.

During the season 208 boats engaged in fishing sardines were operated on the following basis:

| <i>Port of operations</i> | <i>Number of boats</i> |
|--|------------------------|
| San Francisco only----- | 19 |
| Monterey only----- | 66 |
| San Pedro only----- | 37 |
| San Francisco and Monterey----- | 20 |
| San Francisco and San Pedro----- | 18 |
| Monterey and San Pedro----- | 36 |
| San Francisco, Monterey and San Pedro----- | 12 |
| Total----- | <u>208</u> |

Of the total boats, 197 were purse seiners and 11 were small lampara type boats using ring nets. During the season five purse seiners were lost during storms, two at San Pedro and three at Monterey.

This report does not include sardines taken for fresh fish markets, bait, quarter oil pack, or fish packed after March 31st, in square cans of less than 10 ounces in weight.

The following plants operated during the season:

SAN FRANCISCO DISTRICT

Alaska Salmon Co., Richmond
 American Sardine Co., Benicia
 Benicia Fisheries (2 plants), Benicia
 F. E. Booth Co., Inc. (2 plants), Pittsburg
 California Fish Products Co., Richmond
 Carquinez Fishery, Ltd., Richmond
 Cypress Fisheries, San Francisco
 East Bay Fisheries, Richmond
 Edible Fish Meals & Oils, Richmond
 Farallone Packing Co., Div. of Borden Co. (2 plants), San Francisco
 Fish-Dee-Lish Corp., Richmond
 Fish Packers, McNears Point

Gardenia Packing Co., Richmond
 Golden State Fisheries, Inc., Benicia
 Hofmann Packing Co., McNear's Point
 Lansing Fisheries, San Francisco
 Martinez Food Cannery, Ltd., Martinez
 McGovern and McGovern, Richmond
 Northern Packing Corp., San Francisco
 Old Capitol Packers, Inc., McNear's Point
 Ozol Packing Co., Martinez
 Pittsburg Cannery, Inc., Richmond
 Point Edith Fisheries, Ltd., Richmond
 Polarine Fisheries, Inc., Richmond
 Red Rock Fisheries, Inc. (2 Plants), Richmond
 Redondo Fish Products Co., Richmond
 Richmond Fisheries, Inc., Richmond
 San Pablo Fisheries, Richmond
 Tamalpais Fishing and Packing Co., Richmond

MONTEREY DISTRICT

California Packing Corp., Monterey
 Carmel Canning Co., Monterey
 Custom House Packing Corp., Monterey
 Del Mar Canning Co. (2 plants), Monterey
 Edgewater Packing Co., Monterey
 E. B. Gross Canning Co. (2 plants), Monterey
 Hovden Food Products Corp. (2 plants), Monterey
 Hovden Food Products Corp. (2 plants), Moss Landing
 M. A. Leonis, Moss Landing
 Lucido Fisheries, Monterey
 Monterey Canning Co., Monterey
 Monterey Fish Products, Inc. (2 plants), Monterey
 Oxnard Cannery, Inc., Monterey
 Port Costa Packing Co., Moss Landing
 San Carlos Canning Co., Monterey
 San Xavier Fish Packing Co., Monterey
 Santa Inez Fisheries, Inc., Moss Landing
 Sea Pride Packing Corp., Ltd., Monterey

SAN PEDRO DISTRICT

California Marine Curing & Packing Co., Terminal Island
 California Sea Food Co., Long Beach
 Coast Fishing Co., Wilmington
 Franco Italian Packing Co., Terminal Island
 French Sardine Co. of California, Inc. (2 plants), Terminal Island ¹
 K & M Fisheries, Inc., Terminal Island ²
 Sardamack Fisheries, Inc., Wilmington
 Sea Pride Packing Corp., Ltd., Terminal Island

¹ Plant No. 2 burned Jan. 2, 1943.

² Plant burned Jan. 2, 1943.

South Coast Fisheries, Inc., Terminal Island ³
South Pacific Canning Co., Inc., Long Beach
Southern California Fish Corp., Terminal Island
Van Camp Sea Food Co., Inc. (3 plants), Terminal Island
West Coast Packing Corp., Long Beach

SAN DIEGO DISTRICT

American Fisheries Co., San Diego ⁴
High Seas Tuna Packing Co., Inc., San Diego
Sun Harbor Packing Co., San Diego
Westgate Sea Products Co., San Diego ⁴

³ Plant burned Jan. 2, 1943.

⁴ Permit issued, no sardines received.

FISH AND GAME COMMISSION

PRODUCTION OF SARDINE PLANTS

August 1, 1942, to March 31, 1943

| District | Sardines received, tons | Used for canning, tons | Cannery fish overage used for meal and oil, tons | Used for meal and oil under permit, tons |
|--|-------------------------|------------------------|--|--|
| San Francisco..... | 115,586 | 20,657 | 9,344 | 85,585 |
| Monterey..... | 183,158 | 71,482 | 33,968 | 77,404 |
| San Pedro..... | 199,750 | 93,092 | 43,160 | 63,498 |
| San Diego..... | 2,847 | ----- | ----- | 2,847 |
| Totals..... | 501,341 | 185,231 | 86,472 | 229,334 |
| Add cannery overage used for meal and oil..... | ----- | 86,472 | ----- | ----- |
| Total tons received for canning purposes..... | ----- | 271,703 | ----- | ----- |

¹ The law requires that 13½ cases of 1-lb. oval cans be canned from each ton of sardines received for canning purposes, but in calculating the amount of fish actually used in canning, a basis of 20 cases per ton is used.

| District | Cannery offal, tons | 1-lb. ovals packed, cases | Other size cans packed, cases | Other size cans reduced to equivalent of 1-lb. ovals, cases | Cases, per ton |
|--------------------|---------------------|---------------------------|-------------------------------|---|----------------|
| San Francisco..... | 10,327 | 203,287 | 215,560 | 209,878 | 13.8 |
| Monterey..... | 35,770 | 705,317 | 750,376 | 724,335 | 13.5 |
| San Pedro..... | 46,546 | 491,690 | 1,377,143 | 1,370,383 | 13.6 |
| San Diego..... | ----- | ----- | ----- | ----- | ----- |
| Totals..... | 92,643 | 1,400,294 | 2,343,079 | 2,304,596 | ----- |

| District | Sardine meal, tons | Ratio per ton of meal | Sardine oil, gallons | Gallons of oil per ton of fish and offal |
|--------------------|--------------------|-----------------------|----------------------|--|
| San Francisco..... | 19,114 | 5.5 | 4,467,454 | 42.4 |
| Monterey..... | 28,255 | 5.2 | 5,590,335 | 38.0 |
| San Pedro..... | 29,015 | 5.3 | 3,049,132 | 19.9 |
| San Diego..... | 599 | 4.8 | 41,862 | 14.7 |
| Totals..... | 76,983 | ----- | 13,148,783 | ----- |

| District | Permits issued, tons | Unused permit tonnage cancelled tons | Used for other purposes, tons |
|--------------------|----------------------|--------------------------------------|-------------------------------|
| San Francisco..... | 150,750 | 70,588 | ----- |
| Monterey..... | 113,250 | 36,423 | 304 |
| San Pedro..... | 89,634 | 26,136 | ----- |
| San Diego..... | 19,000 | 16,153 | ----- |
| Totals..... | 378,634 | 149,300 | 304 |

¹ 304 tons for salting.

² 577 tons transferred San Francisco to Monterey.

**COMPARATIVE STATEMENT OF SARDINE PLANT OPERATIONS,
SEASONS 1941-1942 AND 1942-1943**

San Francisco District

| | Season 1941-42 | Season 1942-43 | Increase |
|---|-------------------|-------------------|------------|
| Tons of sardines received for canning..... | 63,279 | 30,001 | *33,278 |
| Tons of sardines received under permit for meal and oil..... | 121,381 | 85,585 | *35,796 |
| Tons of sardines received for pet food..... | 1,261 | ----- | *1,261 |
| Total tons of sardines received for all purposes..... | 185,921 | 115,586 | *70,335 |
| Cases of 1-lb. oval cans packed..... | 449,589 | 203,287 | *246,302 |
| Cases of other size cans packed..... | 427,566 | 215,560 | *212,006 |
| Other size cans reduced to equivalent cases of 1-lb. ovals..... | 405,120 | 209,878 | *195,242 |
| Meal, tons..... | 29,935 | 19,114 | *10,821 |
| Oil, gallons..... | 7,162,343 | 4,467,454 | *2,694,889 |

* Decrease.

Monterey District

| | Season 1941-42 | Season 1942-43 | Increase |
|---|-------------------|-------------------|------------|
| Tons of sardines received for canning..... | 179,549 | 105,450 | *74,099 |
| Tons of sardines received under permit for meal and oil..... | 70,139 | 77,404 | 7,265 |
| Tons of sardines received for salting..... | 29 | 304 | 275 |
| Total tons of sardines received for all purposes..... | 249,717 | 183,158 | *66,559 |
| Cases of 1-lb. oval cans packed..... | 1,098,747 | 705,317 | *393,430 |
| Cases of other size cans packed..... | 1,413,546 | 750,376 | *663,470 |
| Other size cans reduced to equivalent cases of 1-lb. ovals..... | 1,331,057 | 724,335 | *606,722 |
| Meal, tons..... | 36,309 | 28,255 | *8,054 |
| Oil, gallons..... | 7,222,683 | 5,590,335 | *1,632,348 |

* Decrease.

San Pedro District

| | Season 1941-42 | Season 1942-43 | Increase |
|---|-------------------|-------------------|----------|
| Tons of sardines received for canning..... | 123,396 | 136,252 | 12,856 |
| Tons of sardines received under permit for meal and oil..... | 18,633 | 63,498 | 44,865 |
| Tons of sardines received for pet food..... | 4,256 | ----- | *4,256 |
| Total tons of sardines received for all purposes..... | 146,285 | 199,750 | 53,465 |
| Cases of 1-lb. oval cans packed..... | 633,298 | 491,690 | *141,608 |
| Cases of other size cans packed..... | 1,244,910 | 1,377,143 | 132,233 |
| Other size cans reduced to equivalent cases of 1-lb. ovals..... | 1,236,037 | 1,370,383 | 134,346 |
| Meal, tons..... | 18,590 | 29,015 | 10,425 |
| Oil, gallons..... | 2,088,695 | 3,049,132 | 960,437 |

* Decrease.

San Diego District

| | Season 1941-42 | Season 1942-43 | Increase |
|---|-------------------|-------------------|----------|
| Tons of sardines received for canning..... | 68 | | *68 |
| Tons of sardines received under permit for meal and oil..... | 1,472 | 2,847 | 1,375 |
| Total tons of sardines received for all purposes..... | 1,540 | 2,847 | 1,307 |
| Cases of 1-lb. oval cans packed..... | 1,266 | | *1,266 |
| Cases of other size cans packed..... | 1,266 | | *1,266 |
| Other size cans reduced to equivalent cases of 1-lb. ovals..... | 269 | 599 | 330 |
| Meal, tons..... | | | |
| Oil, gallons..... | 25,244 | 41,862 | 16,618 |

* Decrease.

California, All Districts Combined

| | Season 1941-42 | Season 1942-43 | Increase |
|---|-------------------|-------------------|------------|
| Tons of sardines received for canning..... | 366,292 | 271,703 | *94,589 |
| Tons of sardines received under permit for meal and oil..... | 211,625 | 229,334 | 17,709 |
| Tons of sardines received for pet food, salting, etc..... | 5,546 | 304 | *5,242 |
| Total tons of sardines received for all purposes..... | 583,463 | 501,341 | *82,122 |
| Cases of 1-lb. oval cans packed..... | 2,181,634 | 1,400,294 | *781,340 |
| Cases of other size cans packed..... | 3,087,588 | 2,343,079 | *744,509 |
| Other size cans reduced to equivalent cases of 1-lb. ovals..... | 2,973,480 | 2,304,596 | *668,884 |
| Meal, tons..... | 85,103 | 76,983 | *8,120 |
| Oil, gallons..... | 16,498,965 | 13,148,783 | *3,350,182 |

* Decrease.

SARDINE CATCH BY MONTHS, SEASON 1942-43

| Month | San Francisco | | | |
|--------------------|---------------|-----------|----------------|---------|
| | Canning | Reduction | Other purposes | Total |
| August, 1942..... | 4,628 | 27,640 | | 32,268 |
| September..... | 7,395 | 20,502 | | 27,897 |
| October..... | 4,766 | 14,015 | | 18,781 |
| November..... | 4,268 | 12,553 | | 16,821 |
| December..... | 4,118 | 5,252 | | 9,370 |
| January, 1943..... | 4,447 | 5,502 | | 9,949 |
| February..... | 379 | 121 | | 500 |
| March..... | | | | |
| Totals..... | 30,001 | 85,585 | | 115,586 |

| Month | Monterey | | | |
|--------------------|----------|-----------|----------------|---------|
| | Canning | Reduction | Other purposes | Total |
| August, 1942..... | 14,430 | 16,202 | 41 | 30,673 |
| September..... | 28,989 | 19,717 | 167 | 48,873 |
| October..... | 7,268 | 4,098 | 2 | 11,368 |
| November..... | 13,185 | 12,889 | 44 | 26,118 |
| December..... | 16,921 | 10,477 | | 27,398 |
| January, 1943..... | 9,636 | 4,532 | | 14,168 |
| February..... | 14,294 | 9,489 | 50 | 23,833 |
| March..... | 727 | | | 727 |
| Totals..... | 105,450 | 77,404 | 304 | 183,158 |

| Month | San Pedro | | | |
|--------------------|-----------|-----------|----------------|---------|
| | Canning | Reduction | Other purposes | Total |
| October, 1942..... | 35,929 | 22,200 | | 58,129 |
| November..... | 32,720 | 20,371 | | 53,091 |
| December..... | 35,639 | 13,084 | | 48,723 |
| January, 1943..... | 19,308 | 7,554 | | 26,862 |
| February..... | 12,590 | 289 | | 12,879 |
| March 1..... | 66 | | | 66 |
| Totals..... | 136,252 | 63,498 | | 199,750 |

| Month | San Diego | | | |
|--------------------|-----------|-----------|----------------|-------|
| | Canning | Reduction | Other purposes | Total |
| October, 1942..... | | 331 | | 331 |
| November..... | | 827 | | 827 |
| December..... | | 1,042 | | 1,042 |
| January, 1943..... | | 647 | | 647 |
| February..... | | | | |
| March 1..... | | | | |
| Totals..... | | 2,847 | | 2,847 |

FISH AND GAME COMMISSION

PACK OF 1-LB. OVALS BY MONTHS, SEASON 1942-43

| Month | San Francisco, cases | Monterey, cases | San Pedro, cases | San Diego, cases | Total, cases |
|---------------|----------------------|-----------------|------------------|------------------|--------------|
| August, 1942 | 19,397 | 97,298 | | | 116,695 |
| September | 42,971 | 199,350 | | | 242,321 |
| October | 39,245 | 47,169 | 128,534 | | 214,948 |
| November | 27,201 | 84,668 | 115,252 | | 227,121 |
| December | 28,414 | 115,715 | 117,891 | | 262,020 |
| January, 1943 | 41,808 | 65,209 | 70,277 | | 177,294 |
| February | 4,251 | 95,908 | 58,989 | | 159,148 |
| March | | | 747 | | 747 |
| Totals | 203,287 | 705,317 | 491,690 | | 1,400,294 |

PACK OF OTHER SIZE CANS REDUCED TO EQUIVALENTS OF 1-LB. OVALS, BY MONTHS, SEASON 1942-43

| Month | San Francisco, cases | Monterey, cases | San Pedro, cases | San Diego, cases | Total, cases |
|---------------|----------------------|-----------------|------------------|------------------|--------------|
| August, 1942 | 43,079 | 97,561 | | | 140,640 |
| September | 56,902 | 192,132 | | | 249,034 |
| October | 30,541 | 52,197 | 356,734 | | 439,272 |
| November | 30,450 | 93,394 | 326,487 | | 450,331 |
| December | 29,589 | 112,820 | 363,234 | | 505,643 |
| January, 1943 | 18,220 | 66,523 | 190,445 | | 275,188 |
| February | 1,097 | 98,089 | 133,168 | | 232,354 |
| March | | 11,619 | 515 | | 12,134 |
| Totals | 209,878 | 724,335 | 1,370,383 | | 2,304,596 |

SARDINE MEAL PRODUCTION BY MONTHS, SEASON 1942-43

| Month | San Francisco, tons | Monterey, tons | San Pedro, tons | San Diego, tons | Total, tons |
|---------------|---------------------|----------------|-----------------|-----------------|-------------|
| August, 1942 | 5,370 | 4,644 | | | 10,014 |
| September | 4,598 | 7,355 | | | 11,953 |
| October | 3,130 | 1,669 | 8,173 | 60 | 13,032 |
| November | 2,888 | 4,160 | 7,847 | 152 | 15,047 |
| December | 1,422 | 4,246 | 7,274 | 261 | 13,203 |
| January, 1943 | 1,639 | 2,156 | 4,111 | 126 | 8,032 |
| February | 67 | 3,937 | 1,602 | | 5,606 |
| March | | 88 | 8 | | 96 |
| Totals | 19,114 | 28,255 | 29,015 | 599 | 76,983 |

SARDINE OIL PRODUCTION BY MONTHS, SEASON 1942-43

| Month | San Francisco, gallons | Monterey, gallons | San Pedro, gallons | San Diego, gallons | Total, gallons |
|---------------|------------------------|-------------------|--------------------|--------------------|----------------|
| August, 1942 | 1,325,287 | 1,098,094 | | | 2,423,381 |
| September | 1,165,268 | 1,713,064 | | | 2,878,332 |
| October | 768,976 | 354,523 | 1,216,837 | 9,362 | 2,349,698 |
| November | 640,630 | 881,961 | 946,778 | 14,548 | 2,483,917 |
| December | 280,465 | 802,864 | 605,502 | 14,218 | 1,703,049 |
| January, 1943 | 281,511 | 313,276 | 235,902 | 3,734 | 834,423 |
| February | 5,317 | 422,554 | 43,908 | | 472,079 |
| March | | 3,699 | 205 | | 3,904 |
| Totals | 4,467,454 | 5,590,335 | 3,049,132 | 41,862 | 13,148,783 |

CALIFORNIA FRESH FISHERY PRODUCTS FOR YEAR 1943
 Compiled by Division of Fish and Game, Bureau of Marine Fisheries

| Species of fish | Eureka region | Sacramento region | San Francisco region | Mont-rey region | Santa Barbara region |
|---------------------------------|---------------|-------------------|----------------------|-----------------|----------------------|
| Albacore..... | 488,361 | | 474,332 | 300,549 | 294,675 |
| Anchovy..... | | | 78,793 | 198,432 | |
| Barracuda..... | | | | 60 | 190,540 |
| Bonito..... | | | | 112 | 367,637 |
| Cabezone..... | | | 140 | 7,379 | 13 |
| Cabrilla..... | | | | | |
| Carp..... | | 16,735 | 506 | | |
| Catfish..... | | 209,485 | 40 | | |
| Corbina, Mexican..... | | | | | |
| Cultus, Pacific..... | 478,755 | | 151,410 | 84,802 | 1,857 |
| Flounder..... | 311,135 | | 160,063 | 14,279 | 18,043 |
| Flying Fish..... | | | | | |
| Grouper..... | | | | | |
| Ilake..... | 6,427 | | 3,057 | 1,015 | |
| Halibut, California..... | | | 10,869 | 15,511 | 352,263 |
| Halibut, Northern..... | 269,991 | | 1,070 | | |
| Hardhead..... | | 2,096 | | | |
| Herring, Pacific..... | 125,584 | | 495,132 | 9,190 | 452 |
| Kingfish..... | | | 4,829 | 205,547 | 368 |
| Mackerel, Horse..... | | 155,500 | 43 | 162,793 | |
| Mackerel, Pacific..... | | 231,500 | 150,048 | 4,430,090 | 92,780 |
| Mackerel, Spanish..... | | | | | |
| Mullet..... | | | | | |
| Perch..... | 24,525 | | 28,694 | 13,879 | 20,244 |
| Pike..... | | 273 | | | |
| Pompano, California..... | | | 198 | 396 | |
| Rock Bass..... | | | | | 15,784 |
| Rockfish..... | 1,375,468 | | 202,781 | 684,754 | 85,130 |
| Sablefish..... | 1,907,664 | 700 | 36,901 | 1,221,784 | 3,409 |
| Salmon..... | 2,176,182 | 1,295,424 | 2,021,123 | 1,101,934 | |
| Sand Dab..... | 280,395 | | 143,862 | 75,023 | |
| Sardine..... | 462 | 73,645,540 | 171,029,377 | 439,702,334 | 362 |
| Seulpin..... | | | | | 1,680 |
| Sea-bass, Black..... | | | | | 1,832 |
| Sea-bass, White..... | 3,114 | | 13,948 | 62,897 | 55,837 |
| Shad..... | | 2,347,902 | 17 | 145 | 79 |
| Shark..... | 1,070,856 | | 1,064,882 | 326,768 | 478,980 |
| Sheepshead..... | | | | | 96,653 |
| Skate..... | 16,696 | | 34,116 | 16,777 | 4,292 |
| Skipjack..... | | | | | |
| Smelt..... | 66,851 | | 965,644 | 292,011 | 10,107 |
| Sole..... | 3,449,278 | | 996,257 | 86,134 | 232,647 |
| Split-tail..... | 72 | 10,925 | | | |
| Swordfish, Broadbill..... | | | | | 134,835 |
| Tuna, Bluefin..... | | | 43,182 | | 275,899 |
| Tuna, Yellowfin..... | | | | | |
| Turbot..... | 6,401 | | 13,196 | 705 | 17,745 |
| Whitebait..... | 137,880 | | 3,487 | | |
| Whitefish, Ocean..... | | | | | 22,412 |
| Yellowtail..... | | | | | 13 |
| Miscellaneous Fish..... | 49,150 | | 26,117 | 2,169 | 19,966 |
| Total fish, in pounds..... | 12,245,247 | 77,916,080 | 178,154,054 | 449,017,469 | 2,796,534 |
| Crustacean: | | | | | |
| Crab..... | 229,058 | | 2,021,556 | 64,724 | |
| Shrimp..... | | | 253,215 | 43 | |
| Spiny Lobster..... | | | | | 125,528 |
| Mollusk: | | | | | |
| Abalone..... | | | 5,891 | 100 | 631,558 |
| Clam..... | 728 | | 120 | | |
| Clam, Pismo..... | | | | 1,759 | 44,111 |
| Clam, Soft-shell..... | | | 46,557 | | |
| Oetopus..... | 3,404 | | 4,962 | 9,582 | |
| Oyster, Eastern..... | | | 79,878 | | |
| Oyster, Japanese..... | | | 301,454 | | 439,651 |
| Oyster, Native..... | | | 30,448 | | |
| Squid..... | | | 39,060 | 9,065,688 | |
| Total shellfish, in pounds..... | 233,190 | | 2,783,141 | 9,141,896 | 1,240,848 |
| Grand total, in pounds..... | 12,478,437 | 77,916,080 | 180,937,195 | 458,159,365 | 4,037,382 |

NOTE: All amounts shown in pounds. This record does not include albacore shipped from Oregon and Washington or fish imported from South America or the Gulf of California. This record is the catch made in or off the regions shown in the tables.

CALIFORNIA FRESH FISHERY PRODUCTS FOR YEAR 1943—Continued
 Compiled by Division of Fish and Game, Bureau of Marine Fisheries

| Species of fish | Los Angeles region..... | San Diego region..... | Total taken in State waters and off the coast of California..... | South of International Boundary brought into Los Angeles..... | South of International Boundary brought into San Diego..... | Total landings in California, including fish from west coast south of the International Boundary brought in by boat..... |
|--------------------------|-------------------------|-----------------------|--|---|---|--|
| Albacore..... | 6,565,745 | 3,762,153 | 11,885,815 | 1,100,893 | 8,398,156 | 21,884,864 |
| Anchovy..... | 1,293,493 | 85 | 1,870,803 | 989,116 | 402,428 | 1,870,803 |
| Barracuda..... | 1,835,780 | 356,504 | 2,382,884 | 958,270 | 522,079 | 3,774,428 |
| Bonito..... | 400,842 | 32,944 | 801,535 | 186,930 | 46,106 | 2,281,884 |
| Cabezone..... | 7,532 | | 7,532 | | | 7,532 |
| Cabrilla..... | | | | | | 233,036 |
| Carp..... | | | 17,241 | | | 17,241 |
| Catfish..... | | | 209,525 | | | 209,525 |
| Corbina, Mexican..... | | | | 5,076 | 30 | 5,106 |
| Cuttus, Pacific..... | 1,273 | 1,031 | 719,128 | | 190 | 719,318 |
| Flounder..... | 1,689 | | 505,390 | | | 505,390 |
| Flying Fish..... | 2,271 | | 2,271 | | | 2,271 |
| Grouper..... | | | | | | 81,887 |
| Hake..... | 297,090 | 35,155 | 10,499 | | | 10,499 |
| Halibut, California..... | | | 710,894 | 206,004 | 201,846 | 1,118,744 |
| Halibut, Northern..... | | | 271,061 | | | 271,061 |
| Hardhead..... | | | | | | 2,096 |
| Herring, Pacific..... | | | 636,358 | | | 636,358 |
| Kingfish..... | 183,534 | 2,219 | 396,497 | | 27 | 396,524 |
| Mackerel, Horse..... | 12,379,755 | 883 | 12,698,974 | 250 | 11,939 | 12,698,974 |
| Mackerel, Pacific..... | 69,698,555 | 645,838 | 75,248,811 | 6,043 | 12,609 | 75,261,000 |
| Mackerel, Spanish..... | | | | | | 18,652 |
| Mullet..... | | 66,063 | 66,063 | | 7,218 | 73,281 |
| Perch..... | 25,408 | | 112,750 | 213 | | 112,963 |
| Pike..... | | | 273 | | | 273 |
| Pompano, California..... | 4,549 | 25 | 5,168 | | | 5,168 |
| Rock Bass..... | 106,919 | 21,500 | 144,203 | 12,177 | 25,067 | 181,447 |
| Rockfish..... | 198,374 | 11,395 | 2,553,902 | 26,255 | 177,473 | 2,750,630 |
| Sablefish..... | 34,147 | | 3,204,065 | | 1,469 | 3,205,071 |
| Salmon..... | | | 6,394,063 | | | 6,394,063 |
| Sand Dab..... | 6,058 | | 505,338 | | | 505,338 |
| Sardine..... | 282,710,040 | 5,160,375 | 972,248,490 | | 525 | 972,248,015 |
| Sculpin..... | 29,372 | 4,331 | 35,983 | | | 42,550 |
| | | | | | | 6,567 |

| | | | | | | |
|---------------------------------|-------------|------------|---------------|------------|------------|---------------|
| Sea-bass, Black..... | 7,280 | 10,159 | 19,271 | 430,512 | 250,419 | 700,202 |
| Sea-bass, White..... | 215,244 | 28,138 | 379,178 | 69,408 | 51,512 | 500,098 |
| Shad..... | | | 2,348,143 | | | 2,348,143 |
| Shark..... | 571,687 | 203,627 | 3,716,800 | 2,991 | 3,038 | 3,722,729 |
| Sheepshead..... | 25,608 | 2,437 | 124,698 | 2,027 | 20,822 | 147,547 |
| Skate..... | 9,098 | | 80,909 | | | 81,100 |
| Stripjack..... | 15,573 | 2,331 | 17,004 | 6,991,375 | 21,884,505 | 28,893,754 |
| Smelt..... | 226,108 | 303 | 1,561,084 | 151 | 776 | 1,562,011 |
| Sole..... | 17,856 | 5 | 4,782,177 | 157 | 35 | 4,782,379 |
| Split-tail..... | | | 10,997 | | | 10,997 |
| Swordfish, Broadbill..... | 174,502 | 8,231 | 317,028 | | 18,758 | 336,386 |
| Tuna, Bluefin..... | 6,763,490 | 581,316 | 7,663,887 | 2,217,911 | 296,372 | 10,178,170 |
| Tuna, Yellowfin..... | 385 | 1,573 | 2,058 | 19,058,888 | 30,200,382 | 49,261,328 |
| Turbot..... | | | 38,047 | | | 38,047 |
| Whitebait..... | | 1,741 | 141,367 | | | 141,367 |
| Whitefish, Ocean..... | 17,862 | | 42,015 | 4,901 | 49,096 | 96,012 |
| Yellowtail..... | 17,043 | 16,303 | 33,359 | 4,018,566 | 882,924 | 4,634,879 |
| Miscellaneous Fish..... | 61,072 | 2 | 158,476 | 1,177 | 924 | 160,577 |
| Total fish, in pounds..... | 383,806,008 | 10,937,367 | 1,114,982,759 | 36,328,203 | 63,516,407 | 1,214,827,369 |
| Crustacean: | | | | | | |
| Crab..... | | | 2,315,338 | | | 2,315,338 |
| Shrimp..... | | | 283,258 | | | 283,258 |
| Spiny Lobster..... | 120,481 | 52,308 | 298,377 | 178,902 | 508,246 | 985,325 |
| Mollusk: | | | | | | |
| Abalone..... | 42,725 | | 680,274 | | | 680,274 |
| Clam..... | | | 848 | | | 848 |
| Clam, Pismo..... | | | 45,870 | 356,849 | 208,915 | 611,634 |
| Clam, Soft-shell..... | | | 46,557 | | | 46,557 |
| Octopus..... | 72 | | 18,020 | | | 18,020 |
| Oyster, Eastern..... | | | 79,878 | | | 79,878 |
| Oyster, Japanese..... | | | 741,105 | | | 741,105 |
| Oyster, Native..... | | | 30,448 | | | 30,448 |
| Squid..... | 27,213 | 32,400 | 9,164,361 | | | 9,164,361 |
| Total shellfish, in pounds..... | 190,491 | 84,768 | 13,674,334 | 535,751 | 717,163 | 14,927,248 |
| Grand total, in pounds..... | 384,086,499 | 11,042,135 | 1,128,657,093 | 36,863,954 | 64,233,568 | 1,229,754,615 |

CANNED, CURED AND MANUFACTURED FISHERY PRODUCTS OF CALIFORNIA FOR THE YEAR 1943

Canned

| Kind of fish or fishery product | Size of cans | San Francisco district, cases | Monterey district, cases | San Pedro district, cases | San Diego district, cases | Total, cases |
|---------------------------------|--------------------|-------------------------------|--------------------------|---------------------------|---------------------------|--------------|
| Albacore | 1-lb. | | | 2,280 | 17,435 | 19,715 |
| | 1/2-lb. | | 11,342 | 184,772 | 209,906 | 406,020 |
| | 1/4-lb. | | | | 6 | 6 |
| Anchovy | 1/4-lb., sq. 100's | | 87 | | | 87 |
| Barracuda | 1-lb. | | | 389 | | 389 |
| Bonito | 1-lb. | | | 352 | | 352 |
| | 1/2-lb. | | | 28,463 | 6,457 | 34,920 |
| | 1/4-lb. | | | | 353 | 353 |
| Clams | 1/2-lb. | | | 10,225 | | 10,225 |
| Clam juice | No. 10, 6's | | | 906 | | 906 |
| Mackerel | 1-lb. | 20 | 7,997 | 827,040 | 4,255 | 839,312 |
| Sardine | No. 10, 6's | 32,523 | | | | 32,523 |
| | 1-lb. ovals | 270,005 | 775,446 | 400,504 | | 1,445,955 |
| | 1 lb. tall | 89,966 | 742,968 | 846,314 | 697 | 1,679,945 |
| | 10 1/2 oz., E. O. | 3,514 | | | | 3,514 |
| | 1/2-lb. sq. | 2,934 | 25,526 | | | 28,460 |
| | 1/2-lb. 96's | 1,506 | 53,537 | 44,516 | | 99,559 |
| | 1/2-lb. filet | | 44,935 | | | 44,935 |
| | 5-oz. 100's | 10,104 | 10,176 | 26,507 | | 46,787 |
| | 1/4-lb. sq. 100's | | 16,193 | 2,235 | | 18,428 |
| Salmon | 1/4-lb. 100's | 1,475 | | | | 1,475 |
| Shad | 1-lb. | 11,516 | | | | 11,516 |
| Shad Roe | 1/2-lb. oval | 6,252 | | | | 6,252 |
| Skipjack | 1-lb. | | | 1,981 | 3,856 | 5,837 |
| | 1/2-lb. | | | 84,592 | 285,236 | 369,828 |
| | 1/4-lb. | | | 403 | 5,872 | 6,275 |
| | 1/4-lb. 100's | | | 1,227 | | 1,227 |
| Squid | 1-lb. | | 112,175 | 80 | | 112,255 |
| | 1/2-lb. | | 6,982 | | | 6,982 |
| Tuna, Bluefin | 1-lb. | | | 2,159 | 162 | 2,321 |
| | 1/2-lb. | | | 160,685 | 11,859 | 172,544 |
| Tuna, Yellowfin | 1-lb. | | | 23,952 | 41,505 | 65,457 |
| | 1/2-lb. | | | 268,513 | 350,609 | 619,122 |
| | 1/4-lb. | | | 11,416 | | 11,416 |
| | 1/4-lb. 100's | | | | | 214 |
| Tuna flakes | 1-lb. | | | 4,624 | 179 | 4,803 |
| | 1/2-lb. | | | 115,924 | 381,788 | 497,712 |
| Tuna, "tonno" style | 1-lb. | | | 1,041 | | 1,041 |
| | 1/2-lb. | | | 16,198 | | 16,198 |
| Yellowtail | 1-lb. | | | 4,530 | | 4,530 |
| | 1/2-lb. | | | 63,250 | 5,488 | 68,738 |
| Totals | | 429,815 | 1,807,364 | 3,135,292 | 1,325,663 | 6,698,134 |

NOTE: Forty-eight cans to the case unless otherwise specified. San Francisco District includes all area north of Monterey. San Pedro District includes Orange County.

Cured and Manufactured

| Fishery product | Size or quantity | San Francisco district | Monterey district | San Pedro district | San Diego district | Total |
|-------------------------|------------------|------------------------|-------------------|--------------------|--------------------|------------|
| Anchovy, salted | Pounds | | 4,000 | | | 4,000 |
| Mackerel, salted | Pounds | | 34,000 | | | 34,000 |
| Mixed fish, dried | Pounds | 64,037 | | | | 64,037 |
| Mixed fish, smoked | Pounds | 12,553 | | | | 12,553 |
| Sablefish, kippered | Pounds | 230,241 | | | | 230,241 |
| Salmon, mild cure | Tierces | 226 | | | | 226 |
| Salmon, smoked | Pounds | 86,650 | | | | 86,650 |
| Sardine, salted | Pounds | | 135,350 | | | 135,350 |
| Shad, mild cure | Pounds | 92,800 | | | | 92,800 |
| Shrimp, dried | Pounds | 2,075 | | | | 2,075 |
| Shrimp, meal | Pounds | 4,500 | | | | 4,500 |
| Fish, meal ¹ | Tons | 19,682 | 37,416 | 24,753 | 4,300 | 86,151 |
| Fish, oil | Gallons | 4,979,798 | 6,652,715 | 2,262,889 | 120,777 | 14,016,179 |
| Liver oil | Gallons | 188,826 | 90,939 | 77,509 | | 357,274 |

¹ Includes 4,160 tons of residuum from stickwater.

Miscellaneous Data

| | San Francisco district | Monterey district | San Pedro district | San Diego district | Total |
|-------------------------|------------------------|-------------------|--------------------|--------------------|--------------|
| Estimated value of pack | \$10,608,935 | \$17,048,271 | \$27,180,215 | \$15,658,679 | \$70,496,100 |
| Number of employees | 1,906 | 3,308 | 5,158 | 1,771 | 12,143 |
| Value of plants | \$3,933,244 | \$4,368,836 | \$5,324,824 | \$2,416,886 | \$16,043,790 |

REPORT OF SARDINE CANNING AND REDUCTION PLANTS, SEASON 1943-1944

Compiled by S. H. DADO

Price for sardines was set by the O. P. A., prior to the opening of the season, at \$22 per ton plus insurance.

Fish were delivered in the San Francisco District on August 5 and in the Monterey District on August 2. In southern California deliveries started on the opening day of the season, October 1. Hearings on 82 applications for permits to use sardines by a reduction process were held on June 2 in Los Angeles, and permits were granted to 82 applicants to be issued when the plant was equipped and ready to operate. Prior to the opening of the season, 74 permits for 4,750 tons each were issued; and one additional plant in the San Francisco District qualified and was issued a permit in October for 3,270 tons, a deduction from the basic tonnage being made as the plant was not ready to operate on opening of the season. On December 15 an additional grant of 1,000 tons was made to such plants as could show need for such additional tonnage to continue operations. Thirteen plants in the Monterey District, and three plants in the San Pedro District were issued additional permits for 1,000 tons each.

Permits were issued for the season, as shown in the following table:

| <i>District</i> | <i>No. of plants</i> | <i>Tons issued</i> | <i>Tons used</i> | <i>Tons unused</i> |
|---------------------|----------------------|--------------------|------------------|--------------------|
| San Francisco ----- | 34 | 160,020 | 95,332 | 64,688 |
| Monterey ----- | 22 | 117,002 | 96,826 | 20,176 |
| San Pedro ----- | 16 | 79,000 | 46,912 | 32,088 |
| San Diego ----- | 3 | 14,250 | 2,663 | 11,587 |
| Totals----- | 75 | 370,272 | 241,733 | 128,539 |

In the Monterey district 498 tons of permit tonnage was revoked, and has been deducted in the above table.

Of the permit tonnage issued, only 59.6% was used in the San Francisco District, 82.7% in the Monterey District, 59.4% in the San Pedro District, and 18.7% in the San Diego District. For the entire State, 65.3% of the permit tonnage issued was used.

The permits were issued without any limitation on the amount of fish that could be received monthly.

During the season there were 206 boats engaged in fishing sardines, of which 197 were purse seine boats, and 9 were lampara type boats, using ring nets. These boats were operated during the season, as follows:

| <i>Port of operation</i> | <i>No. of boats</i> |
|---|-------------------------|
| San Francisco, exclusively----- | 10 |
| Monterey, exclusively----- | 59 |
| San Pedro, exclusively----- | 41 |
| San Francisco and Monterey----- | 37 |
| San Francisco and San Pedro----- | 38 |
| Monterey and San Pedro----- | 15 |
| San Francisco, Monterey, and San Pedro----- | 6 |
| Total----- | 206 |

This report does not include sardines taken for fresh fish markets, bait or fish packed after March 31st, in square cans of less than 10 ounces in weight.

The following plants operated during the season :

SAN FRANCISCO DISTRICT

Alaska Salmon Co., Richmond
 American Sardine Co., Benicia
 Benicia Fisheries (2 plants), Pittsburg
 F. E. Booth Co., Inc. (2 plants), Pittsburg
 California Fish Products Co., Richmond
 Carquinez Fishery, Ltd., Richmond
 Cypress Fisheries, San Francisco
 East Bay Fisheries, Richmond
 Edible Fish Meals & Oils, Richmond
 Farallone Packing Co., Div. of Borden Co. (2 plants),
 San Francisco
 Fish-Dee-Lish Corp., Richmond
 Fish Packers, McNears Point
 Gardenia Packing Co., Richmond
 Golden State Fisheries, Benicia
 Hofmann Packing Co., McNears Point
 Lansing Fisheries, San Francisco
 Martinez Food Cannery, Ltd., Martinez
 McLaughlin, Harold, Richmond
 Monitor Fisheries, Richmond
 Northern Packing Corp., San Francisco
 Old Capitol Packers, McNears Point
 Ozol Packing Co., Martinez
 Pittsburg Cannery, Inc., Richmond
 Point Edith Fisheries, Ltd., Richmond
 Polarine Fisheries, Inc., Richmond
 Red Rock Fisheries, Inc. (2 plants), Richmond
 Redondo Fish Products Co., Richmond
 Richmond Fisheries, Inc., Richmond
 San Pablo Fisheries, Richmond
 Tamalpais Fishing and Packing Co., Richmond

MONTEREY DISTRICT

California Packing Corp., Monterey
 Carmel Canning Co., Monterey
 Custom House Packing Corp., Monterey
 Del Mar Canning Co., Monterey
 Edgewater Packing Co., Monterey
 Hovden Food Products Corp. (2 plants), Monterey
 Hovden Food Products Corp., Moss Landing
 Lone Wolf Packing Co., Moss Landing
 Lucido Fisheries, Monterey
 Monterey Canning Co., Monterey
 Monterey Fish Products, Inc. (2 plants), Monterey
 Oxnard Cannery, Inc., Monterey
 Peninsula Packing Co. (2 plants), Monterey
 Port Costa Packing Co., Moss Landing
 San Carlos Canning Co., Monterey
 San Xavier Fish Packing Co., Monterey
 Santa Inez Fisheries, Inc., Moss Landing
 Sea Pride Packing Co., Monterey
 Western Fish Products Co., Moss Landing

SAN PEDRO DISTRICT

California Marine Curing & Packing Co., Terminal Island
 California Sea Food Co., Long Beach
 Coast Fishing Co., Wilmington
 Franco Italian Packing Co., Terminal Island
 French Sardine Co. of California, Inc. (2 plants), Terminal Island
 Golden State Sea Food Co., Long Beach
 K & M Fisheries, Inc., Terminal Island
 Sardamack Fisheries, Wilmington
 South Coast Fisheries, Inc., Terminal Island
 South Pacific Canning Co., Inc., Long Beach
 Southern California Fish Corp., Terminal Island
 Terminal Island Sea Foods, Ltd., Terminal Island
 Van Camp Sea Food Co., Inc. (3 plants), Terminal Island
 West Coast Packing Corp., Long Beach
 West Coast Packing Corp., Newport Beach

SAN DIEGO DISTRICT

High Seas Tuna Packing Co., Inc., San Diego
 Sun Harbor Packing Co., San Diego
 Westgate Sea Products Co., San Diego

PRODUCTION OF SARDINE PLANTS

August 1, 1943, to March 31, 1944

| District | Sardines received, tons | Used for canning, tons | Cannery fish overage used for meal and oil, tons | Used for meal and oil under permit, tons |
|--|-------------------------|------------------------|--|--|
| San Francisco..... | 126,132 | 21,269 | 9,531 | 95,332 |
| Monterey..... | 212,383 | 78,147 | 37,148 | 96,826 |
| San Pedro..... | 132,317 | 58,047 | 27,358 | 46,912 |
| San Diego..... | 2,690 | 27 | ..... | 2,663 |
| Totals..... | 473,522 | 157,490 | 74,037 | 241,733 |
| Add cannery overage used for meal and oil..... | ..... | 74,037 | ..... | ..... |
| Total tons received for canning purposes..... | ..... | 231,527 | ..... | ..... |

¹ The law requires that 13¹/₂ cases of 1-lb. oval cans be canned from each ton of sardines received for canning purposes, but in calculating the amount of fish actually used in canning, a basis of 20 cases per ton is used.

| District | Cannery offal, tons | 1-lb. ovals packed, cases | Other size cans packed, cases | Other size cans reduced to equivalent of 1-lb. ovals, cases | Cases, per ton |
|--------------------|---------------------|---------------------------|-------------------------------|---|----------------|
| San Francisco..... | 10,631 | 277,724 | 153,866 | 147,763 | 13.8 |
| Monterey..... | 39,076 | 747,978 | 821,082 | 815,058 | 13.5 |
| San Pedro..... | 29,019 | 377,420 | 781,934 | 783,633 | 13.6 |
| San Diego..... | 14 | ..... | 697 | 697 | 25.8 |
| Totals..... | 78,740 | 1,403,122 | 1,757,579 | 1,747,151 | ..... |

| District | Sardine meal, tons | Ratio of wet material per ton of meal | Sardine oil, gallons | Gallons of oil per ton of fish and offal |
|--------------------|--------------------|---------------------------------------|----------------------|--|
| San Francisco..... | 20,064 | 5.7 | 5,018,816 | 43.5 |
| Monterey..... | 32,840 | 5.2 | 6,578,416 | 38.0 |
| San Pedro..... | 20,081 | 5.1 | 2,135,162 | 20.7 |
| San Diego..... | 527 | 5.1 | 50,617 | 18.9 |
| Totals..... | 73,512 | ..... | 13,783,011 | ..... |

| District | Permits issued, tons | Unused permit tonnage cancelled, tons | Used for other purposes, tons |
|--------------------|----------------------|---------------------------------------|-------------------------------|
| San Francisco..... | 160,020 | 64,688 | ..... |
| Monterey..... | 117,002 | 20,176 | 1262 |
| San Pedro..... | 79,000 | 32,088 | ..... |
| San Diego..... | 14,250 | 11,587 | ..... |
| Totals..... | 370,272 | 128,539 | 1262 |

¹ 262 tons for salting.

**COMPARATIVE STATEMENT OF SARDINE PLANT OPERATIONS,
SEASONS 1942-43 AND 1943-44**

San Francisco District

| | Season 1942-43 | Season 1943-44 | Increase |
|--|-------------------|-------------------|----------|
| Tons of sardines received for canning..... | 30,001 | 30,800 | 799 |
| Tons of sardines received under permit for meal and oil..... | 85,585 | 95,332 | 9,747 |
| Tons of sardines for salting..... | | | |
| Total tons of sardines received for all purposes..... | 115,586 | 126,132 | 10,546 |
| Cases of 1-lb. oval cans packed..... | 203,287 | 277,724 | 74,437 |
| Cases of other size cans packed..... | 215,560 | 153,866 | *61,694 |
| Other size cans reduced to equivalent of 1-lb. ovals..... | 209,878 | 147,763 | *62,115 |
| Meal, tons..... | 19,114 | 20,064 | 950 |
| Oil, gallons..... | 4,467,454 | 5,018,816 | 551,362 |

* Decrease.

Monterey District

| | Season 1942-43 | Season 1943-44 | Increase |
|--|-------------------|-------------------|----------|
| Tons of sardines received for canning..... | 105,450 | 115,295 | 9,845 |
| Tons of sardines received under permit for meal and oil..... | 77,404 | 96,826 | 19,422 |
| Tons of sardines received for salting..... | 304 | 262 | *42 |
| Total tons of sardines received for all purposes..... | 183,158 | 212,383 | 29,225 |
| Cases of 1-lb. ovals packed..... | 705,317 | 747,978 | 42,661 |
| Cases of other size cans packed..... | 750,376 | 821,082 | 70,706 |
| Other size cans reduced to equivalent of 1-lb. ovals..... | 724,335 | 815,058 | 90,723 |
| Meal, tons..... | 28,255 | 32,840 | 4,585 |
| Oil, gallons..... | 5,590,335 | 6,578,416 | 988,081 |

* Decrease.

San Pedro District

| | Season 1942-43 | Season 1943-44 | Increase |
|---|-------------------|-------------------|----------|
| Tons of sardines received for canning..... | 136,252 | 85,405 | *50,847 |
| Tons of sardines received under permit for meal and oil..... | 63,498 | 46,912 | *16,586 |
| Totals..... | 199,750 | 132,317 | *67,433 |
| Cases of 1-lb. oval cans packed..... | 491,690 | 377,420 | *114,270 |
| Cases of other size cans packed..... | 1,377,143 | 781,934 | *595,209 |
| Other size cans reduced to equivalent cases of 1-lb. ovals..... | 1,370,383 | 783,633 | *586,750 |
| Meal, tons..... | 29,015 | 20,081 | *8,934 |
| Oil, gallons..... | 3,049,132 | 2,135,162 | *913,970 |

* Decrease.

San Diego District

| | Season 1942-43 | Season 1943-44 | Increase |
|---|-------------------|-------------------|----------|
| Tons of sardines received for canning..... | | 27 | 27 |
| Tons of sardines received under permit for meal and oil..... | 2,847 | 2,663 | *184 |
| Total tons of sardines received for all purposes..... | 2,847 | 2,690 | *157 |
| Cases of 1-lb. oval cans packed..... | | 697 | 697 |
| Cases of other size cans packed..... | | 697 | 697 |
| Other size cans reduced to equivalent cases of 1-lb. ovals..... | | 527 | *72 |
| Meal, tons..... | 599 | 527 | |
| Oil, gallons..... | 41,862 | 50,617 | 8,755 |

* Decrease.

California, All Districts Combined

| | Season 1942-43 | Season 1943-44 | Increase |
|---|-------------------|-------------------|----------|
| Tons of sardines received for canning..... | 271,703 | 231,527 | *40,176 |
| Tons of sardines received under permit for meal and oil..... | 229,334 | 241,733 | 12,399 |
| Tons of sardines received for salting..... | 304 | 262 | *42 |
| Total tons of sardines received for all purposes..... | 501,341 | 473,522 | *27,819 |
| Cases of 1-lb. oval cans packed..... | 1,400,294 | 1,403,122 | 2,828 |
| Cases of other size cans packed..... | 2,343,079 | 1,757,579 | *585,500 |
| Other size cans reduced to equivalent cases of 1-lb. ovals..... | 2,304,596 | 1,747,151 | *557,445 |
| Meal, tons..... | 76,983 | 73,512 | *3,471 |
| Oil, gallons..... | 13,148,783 | 13,783,011 | 634,228 |

* Decrease.

SARDINE CATCH BY MONTHS, SEASON 1943-44

| Month | San Francisco | | | |
|--------------------|---------------|-----------|----------------|---------|
| | Canning | Reduction | Other purposes | Total |
| August, 1943..... | 4,515 | 16,432 | ----- | 20,947 |
| September..... | 10,813 | 62,644 | ----- | 73,457 |
| October..... | 2,956 | 2,445 | ----- | 5,401 |
| November..... | 4,710 | 4,834 | ----- | 9,544 |
| December..... | 1,674 | 389 | ----- | 2,063 |
| January, 1944..... | 5,968 | 8,333 | ----- | 14,301 |
| February..... | 164 | 255 | ----- | 419 |
| Totals..... | 30,800 | 95,332 | ----- | 126,132 |

| Month | Monterey | | | |
|--------------------|----------|-----------|----------------|---------|
| | Canning | Reduction | Other purposes | Total |
| August, 1943..... | 19,040 | 7,609 | ----- | 26,649 |
| September..... | 22,810 | 23,092 | ----- | 45,902 |
| October..... | 14,171 | 9,683 | 25 | 23,879 |
| November..... | 18,643 | 21,772 | 50 | 40,465 |
| December..... | 20,873 | 22,015 | 74 | 42,962 |
| January, 1944..... | 13,733 | 10,821 | 64 | 24,618 |
| February..... | 5,989 | 1,834 | 49 | 7,872 |
| March..... | 36 | ----- | ----- | 36 |
| Totals..... | 115,295 | 96,826 | 262 | 212,383 |

| Month | San Pedro | | | |
|---------------------------|-----------|-----------|----------------|---------|
| | Canning | Reduction | Other purposes | Total |
| October, 1943..... | 31,430 | 17,754 | ----- | 49,184 |
| November..... | 14,055 | 6,104 | ----- | 20,159 |
| December..... | 17,921 | 11,623 | ----- | 29,544 |
| January, 1944..... | 16,410 | 9,971 | ----- | 26,381 |
| February and March 1..... | 5,589 | 1,460 | ----- | 7,049 |
| Totals..... | 85,405 | 46,912 | ----- | 132,317 |

| Month | San Diego | | | |
|--------------------|-----------|-----------|----------------|-------|
| | Canning | Reduction | Other purposes | Total |
| October, 1943..... | ----- | 631 | ----- | 631 |
| November..... | 14 | 831 | ----- | 845 |
| December..... | 13 | 424 | ----- | 437 |
| January, 1944..... | ----- | 768 | ----- | 768 |
| February..... | ----- | 9 | ----- | 9 |
| Totals..... | 27 | 2,663 | ----- | 2,690 |

PACK OF 1-LB. OVALS BY MONTHS, SEASON 1943-44

| Month | San Francisco, cases | Monterey, cases | San Pedro, cases | San Diego, cases | Total, cases |
|--------------------|----------------------|-----------------|------------------|------------------|--------------|
| August, 1943..... | 40,708 | 124,945 | | | 165,653 |
| September..... | 97,418 | 144,589 | | | 242,007 |
| October..... | 31,247 | 83,509 | 119,903 | | 234,659 |
| November..... | 40,348 | 121,154 | 69,505 | | 231,007 |
| December..... | 12,143 | 140,160 | 81,084 | | 233,387 |
| January, 1944..... | 55,472 | 91,911 | 75,053 | | 222,436 |
| February..... | 388 | 41,710 | 31,875 | | 73,973 |
| March..... | | | | | |
| Totals..... | 277,724 | 747,978 | 377,420 | | 1,403,122 |

PACK OF OTHER SIZE CANS REDUCED TO EQUIVALENTS OF 1-LB. OVALS.
BY MONTHS, SEASON 1943-44

| Month | San Francisco, cases | Monterey, cases | San Pedro, cases | San Diego, cases | Total, cases |
|--------------------|----------------------|-----------------|------------------|------------------|--------------|
| August, 1943..... | 20,252 | 135,729 | | | 155,981 |
| September..... | 48,601 | 163,436 | | | 212,037 |
| October..... | 9,518 | 107,867 | 310,141 | | 427,526 |
| November..... | 23,720 | 130,652 | 121,478 | 35 | 276,207 |
| December..... | 10,969 | 142,123 | 161,002 | 340 | 314,524 |
| January, 1944..... | 32,281 | 93,761 | 146,881 | | 272,923 |
| February..... | 2,422 | 40,965 | 44,041 | | 87,458 |
| March..... | | 495 | | | 495 |
| Totals..... | 147,763 | 815,058 | 783,633 | 697 | 1,747,151 |

SARDINE MEAL PRODUCTION BY MONTHS, SEASON 1943-44

| Month | San Francisco, tons | Monterey, tons | San Pedro, tons | San Diego, tons | Total, tons |
|--------------------|---------------------|----------------|-----------------|-----------------|-------------|
| August, 1943..... | 3,239 | 3,558 | | | 6,797 |
| September..... | 12,015 | 6,940 | | | 18,955 |
| October..... | 789 | 3,668 | 7,219 | 117 | 11,793 |
| November..... | 1,297 | 6,491 | 3,147 | 154 | 11,089 |
| December..... | 309 | 7,002 | 4,586 | 97 | 11,994 |
| January, 1944..... | 2,344 | 3,921 | 4,150 | 157 | 10,572 |
| February..... | 71 | 1,255 | 979 | 2 | 2,307 |
| March..... | | 5 | | | 5 |
| Totals..... | 20,064 | 32,840 | 20,081 | 527 | 73,512 |

SARDINE OIL PRODUCTION BY MONTHS, SEASON 1943-44

| Month | San Francisco, gallons | Monterey, gallons | San Pedro, gallons | San Diego, gallons | Total, gallons |
|--------------------|------------------------|-------------------|--------------------|--------------------|----------------|
| August, 1943..... | 811,233 | 779,287 | | | 1,590,520 |
| September..... | 3,247,398 | 1,715,873 | | | 4,963,271 |
| October..... | 224,920 | 749,362 | 1,075,203 | 16,397 | 2,065,882 |
| November..... | 353,538 | 1,411,859 | 373,732 | 19,635 | 2,158,767 |
| December..... | 50,100 | 1,254,368 | 436,781 | 6,603 | 1,747,852 |
| January, 1944..... | 322,338 | 539,941 | 212,325 | 7,939 | 1,082,543 |
| February..... | 9,289 | 127,681 | 37,121 | 40 | 174,131 |
| March..... | | 45 | | | 45 |
| Totals..... | 5,018,816 | 6,578,416 | 2,135,162 | 50,617 | 13,783,011 |

SARDINE CATCH, CASE PACK, MEAL AND OIL PRODUCTION

For Sardine Packing Seasons

Sardine Catch, Tons

| Season | San Francisco district | Monterey district | San Pedro district | San Diego district | Total |
|---------|------------------------|-------------------|--------------------|--------------------|---------|
| 1925-26 | 248 | 69,011 | 61,992 | 5,214 | 136,465 |
| 1926-27 | 2,653 | 76,690 | 64,216 | | 143,559 |
| 1927-28 | 11,066 | 98,678 | 67,459 | 3,973 | 181,176 |
| 1928-29 | 12,757 | 119,102 | 119,180 | 1,394 | 252,433 |
| 1929-30 | 20,655 | 159,434 | 140,432 | 2,079 | 322,600 |
| 1930-31 | 24,468 | 108,953 | 38,580 | | 172,001 |
| 1931-32 | 19,938 | 68,825 | 42,557 | | 131,320 |
| 1932-33 | 17,417 | 89,257 | 83,492 | | 190,166 |
| 1933-34 | 35,467 | 151,937 | 124,950 | 1,488 | 313,842 |
| 1934-35 | 67,140 | 229,992 | 178,755 | 4,859 | 480,746 |
| 1935-36 | 74,231 | 184,113 | 138,333 | 10,489 | 407,166 |
| 1936-37 | 139,429 | 206,229 | 137,914 | 4,569 | 488,141 |
| 1937-38 | 132,248 | 104,464 | 109,015 | 107 | 345,834 |
| 1938-39 | 200,361 | 180,090 | 145,335 | 2,790 | 528,576 |
| 1939-40 | 211,471 | 227,231 | 93,081 | 95 | 531,878 |
| 1940-41 | 117,817 | 165,145 | 170,559 | 1,188 | 454,709 |
| 1941-42 | 185,921 | 249,717 | 146,285 | 1,540 | 583,463 |
| 1942-43 | 115,586 | 183,158 | 199,750 | 2,847 | 501,341 |
| 1943-44 | 126,132 | 212,383 | 132,317 | 2,690 | 473,522 |

Sardines, 1-Lb. Ovals, Cases

| Season | San Francisco district | Monterey district | San Pedro district | San Diego district | Total |
|---------|------------------------|-------------------|--------------------|--------------------|-----------|
| 1925-26 | 3,892 | 937,014 | 968,495 | 66,074 | 1,975,475 |
| 1926-27 | 51,657 | 1,150,859 | 986,858 | | 2,189,374 |
| 1927-28 | 110,911 | 1,363,251 | 878,175 | 39,380 | 2,391,717 |
| 1928-29 | 114,446 | 1,405,746 | 1,140,488 | 12,383 | 2,673,063 |
| 1929-30 | 206,478 | 1,797,566 | 1,493,615 | 16,551 | 3,514,210 |
| 1930-31 | 266,598 | 1,069,627 | 403,041 | | 1,739,266 |
| 1931-32 | 269,586 | 720,518 | 470,796 | | 1,460,900 |
| 1932-33 | 157,469 | 253,000 | 321,794 | | 732,263 |
| 1933-34 | 221,798 | 748,706 | 526,540 | | 1,497,044 |
| 1934-35 | 264,805 | 629,779 | 591,759 | | 1,486,343 |
| 1935-36 | 336,554 | 919,497 | 680,103 | | 1,936,154 |
| 1936-37 | 198,621 | 818,909 | 629,802 | | 1,647,332 |
| 1937-38 | 127,214 | 502,194 | 553,306 | | 1,182,714 |
| 1938-39 | 172,454 | 687,287 | 630,998 | | 1,490,739 |
| 1939-40 | 196,011 | 1,092,981 | 545,182 | | 1,834,174 |
| 1940-41 | 168,700 | 622,219 | 672,780 | | 1,463,699 |
| 1941-42 | 449,589 | 1,098,747 | 633,298 | | 2,181,634 |
| 1942-43 | 203,287 | 705,317 | 491,690 | | 1,400,294 |
| 1943-44 | 277,724 | 747,978 | 377,420 | | 1,403,122 |

Other Size Cans Reduced to Equivalents of 1-Lb. Ovals, Cases

| Season | San Francisco district | Monterey district | San Pedro district | San Diego district | Total |
|---------|------------------------|-------------------|--------------------|--------------------|-----------|
| 1925-26 | | 35,956 | 16,361 | 13,065 | 65,382 |
| 1926-27 | | 21,673 | 63,264 | | 84,937 |
| 1927-28 | 40,825 | 14,160 | 145,143 | 31,995 | 232,123 |
| 1928-29 | 69,886 | 45,778 | 173,540 | 10,368 | 299,572 |
| 1929-30 | 79,224 | 90,238 | 458,416 | 12,552 | 640,430 |
| 1930-31 | 69,932 | 176,384 | 170,388 | | 416,704 |
| 1931-32 | 8,381 | 43,816 | 159,066 | | 211,263 |
| 1932-33 | 5,129 | 10,815 | 75,775 | | 91,719 |
| 1933-34 | 9,846 | 113,842 | 331,631 | 5,396 | 460,715 |
| 1934-35 | 12,025 | 142,535 | 222,661 | 13,058 | 390,279 |
| 1935-36 | 39,597 | 594,191 | 627,117 | 19,856 | 1,280,761 |
| 1936-37 | 42,986 | 469,296 | 819,859 | 9,573 | 1,341,714 |
| 1937-38 | 33,763 | 326,543 | 756,369 | 1,040 | 1,117,715 |
| 1938-39 | 51,658 | 376,076 | 655,303 | | 1,083,037 |
| 1939-40 | 90,628 | 670,420 | 539,666 | 80 | 1,300,794 |
| 1940-41 | 119,713 | 597,627 | 934,975 | 452 | 1,652,767 |
| 1941-42 | 405,120 | 1,331,057 | 1,236,037 | 1,266 | 2,973,480 |
| 1942-43 | 209,878 | 724,335 | 1,370,383 | | 2,304,596 |
| 1943-44 | 147,763 | 815,058 | 783,633 | 697 | 1,747,151 |

Sardine Meal, Tons

| Season | San Francisco district | Monterey district | San Pedro district | San Diego district | Total |
|---------|------------------------|-------------------|--------------------|--------------------|--------|
| 1925-26 | 20 | 6,393 | 5,962 | 467 | 12,842 |
| 1926-27 | 228 | 6,447 | 5,962 | | 12,637 |
| 1927-28 | 1,183 | 9,355 | 7,128 | 184 | 17,850 |
| 1928-29 | 1,387 | 12,395 | 14,802 | 140 | 28,724 |
| 1929-30 | 2,282 | 16,671 | 16,258 | 251 | 35,462 |
| 1930-31 | 2,716 | 11,490 | 4,317 | | 18,523 |
| 1931-32 | 2,303 | 7,825 | 4,911 | | 15,039 |
| 1932-33 | 2,297 | 14,370 | 14,060 | | 30,727 |
| 1933-34 | 5,073 | 22,206 | 19,166 | 262 | 46,707 |
| 1934-35 | 10,571 | 36,396 | 29,836 | 848 | 77,651 |
| 1935-36 | 11,604 | 26,933 | 19,422 | 1,945 | 59,904 |
| 1936-37 | 23,686 | 31,867 | 18,735 | 827 | 75,115 |
| 1937-38 | 23,058 | 15,383 | 14,525 | 15 | 52,981 |
| 1938-39 | 34,751 | 28,859 | 22,066 | 537 | 86,213 |
| 1939-40 | 36,324 | 34,568 | 12,145 | 16 | 83,053 |
| 1940-41 | 20,541 | 25,805 | 24,560 | 216 | 71,122 |
| 1941-42 | 29,935 | 36,309 | 18,590 | 269 | 85,103 |
| 1942-43 | 19,114 | 28,255 | 29,015 | 599 | 76,983 |
| 1943-44 | 20,064 | 32,840 | 20,081 | 527 | 73,512 |

Sardine Oil, Gallons

| Season | San Francisco district | Monterey district | San Pedro district | San Diego district | Total |
|---------|------------------------|-------------------|--------------------|--------------------|------------|
| 1925-26 | 2,629 | 1,110,983 | 658,817 | 43,995 | 1,816,424 |
| 1926-27 | 60,967 | 1,501,384 | 682,796 | | 2,245,147 |
| 1927-28 | 257,989 | 1,601,993 | 711,579 | 10,253 | 2,581,814 |
| 1928-29 | 288,055 | 2,651,524 | 2,178,815 | 6,857 | 5,125,251 |
| 1929-30 | 474,530 | 3,887,472 | 1,986,704 | 11,071 | 6,359,777 |
| 1930-31 | 763,643 | 3,363,912 | 630,011 | | 4,757,566 |
| 1931-32 | 612,181 | 2,143,101 | 762,701 | | 3,517,983 |
| 1932-33 | 574,958 | 3,761,387 | 2,161,476 | | 6,497,821 |
| 1933-34 | 1,175,401 | 4,819,900 | 3,242,899 | 24,303 | 9,262,503 |
| 1934-35 | 2,514,588 | 9,379,239 | 4,865,486 | 111,252 | 16,870,565 |
| 1935-36 | 3,196,286 | 6,854,372 | 2,939,863 | 210,171 | 13,200,692 |
| 1936-37 | 5,509,905 | 6,814,184 | 1,898,134 | 77,700 | 14,299,923 |
| 1937-38 | 4,659,147 | 3,067,587 | 1,447,631 | 912 | 9,175,277 |
| 1938-39 | 7,804,909 | 5,462,066 | 2,197,757 | 37,325 | 15,502,057 |
| 1939-40 | 9,313,706 | 7,090,963 | 984,851 | 472 | 17,389,992 |
| 1940-41 | 4,809,853 | 5,197,570 | 2,369,300 | 21,587 | 12,398,310 |
| 1941-42 | 7,162,343 | 7,222,683 | 2,088,695 | 25,244 | 16,498,965 |
| 1942-43 | 4,467,454 | 5,590,335 | 3,049,132 | 41,862 | 13,148,783 |
| 1943-44 | 5,018,816 | 6,578,416 | 2,135,162 | 50,617 | 13,783,011 |

Sardine Oil Production, Gallons per Ton

| Season | San Francisco district | Monterey district | San Pedro district | San Diego district |
|---------|------------------------|-------------------|--------------------|--------------------|
| 1930-31 | 47.5 | 43.2 | 26.3 | |
| 1931-32 | 47.1 | 43.1 | 28.5 | |
| 1932-33 | 43.0 | 45.6 | 29.1 | |
| 1933-34 | 39.6 | 37.0 | 31.3 | 17.7 |
| 1934-35 | 41.7 | 44.5 | 30.7 | 24.7 |
| 1935-36 | 49.9 | 46.8 | 27.9 | 21.0 |
| 1936-37 | 41.3 | 39.1 | 18.9 | 17.9 |
| 1937-38 | 36.3 | 36.6 | 19.3 | 11.1 |
| 1938-39 | 40.2 | 35.6 | 19.8 | 13.4 |
| 1939-40 | 45.5 | 38.7 | 15.5 | 5.0 |
| 1940-41 | 43.8 | 38.6 | 18.7 | 18.3 |
| 1941-42 | 43.8 | 38.2 | 21.9 | 16.7 |
| 1942-43 | 42.4 | 38.0 | 19.9 | 14.7 |
| 1943-44 | 43.5 | 38.0 | 20.7 | 18.9 |

CASE PACK, MEAL AND OIL PRODUCTION FOR CALENDAR YEARS 1928-1944

Sardines, 1-Lb. Ovals, Cases

| Year | San Francisco district | Monterey district | San Pedro district | San Diego district | Total |
|------|------------------------|-------------------|--------------------|--------------------|-----------|
| 1928 | 109,198 | 1,402,237 | 945,676 | 39,755 | 2,496,966 |
| 1929 | 204,578 | 1,834,648 | 1,438,159 | 12,225 | 3,489,910 |
| 1930 | 237,159 | 1,342,249 | 863,254 | 15,500 | 2,458,162 |
| 1931 | 307,575 | 696,640 | 498,996 | ----- | 1,503,211 |
| 1932 | 125,737 | 334,019 | 415,874 | ----- | 875,630 |
| 1933 | 239,917 | 598,616 | 365,750 | ----- | 1,204,283 |
| 1934 | 292,216 | 798,942 | 531,619 | ----- | 1,622,777 |
| 1935 | 301,455 | 825,011 | 615,808 | ----- | 1,742,274 |
| 1936 | 225,185 | 804,498 | 586,038 | ----- | 1,675,721 |
| 1937 | 101,912 | 577,405 | 761,776 | ----- | 1,441,093 |
| 1938 | 164,559 | 556,477 | 600,532 | ----- | 1,321,568 |
| 1939 | 225,462 | 1,023,285 | 627,524 | ----- | 1,876,271 |
| 1940 | 178,316 | 755,639 | 664,241 | ----- | 1,598,196 |
| 1941 | 459,454 | 1,142,052 | 689,210 | ----- | 2,290,716 |
| 1942 | 164,452 | 638,343 | 619,881 | ----- | 1,422,676 |
| 1943 | 270,005 | 775,446 | 400,504 | ----- | 1,445,955 |
| 1944 | 228,561 | 822,836 | 434,414 | ----- | 1,485,811 |

Sardines, Other Size Cans, Cases

| Year | San Francisco district | Monterey district | San Pedro district | San Diego district | Total |
|------|------------------------|-------------------|--------------------|--------------------|-----------|
| 1928 | 82,207 | 49,022 | 153,376 | 33,759 | 318,364 |
| 1929 | 71,546 | 77,340 | 286,135 | 16,528 | 451,549 |
| 1930 | 79,108 | 160,293 | 346,472 | 25,489 | 611,362 |
| 1931 | 17,929 | 77,755 | 192,641 | 3,425 | 291,780 |
| 1932 | 4,366 | 23,719 | 90,489 | 7,641 | 126,215 |
| 1933 | 10,226 | 81,458 | 116,301 | 10,592 | 218,577 |
| 1934 | 8,505 | 125,740 | 284,241 | 10,463 | 428,949 |
| 1935 | 28,383 | 477,103 | 273,565 | 11,437 | 790,488 |
| 1936 | 66,421 | 505,865 | 549,679 | 22,863 | 1,144,828 |
| 1937 | 18,290 | 411,817 | 1,099,513 | 12,491 | 1,542,111 |
| 1938 | 45,059 | 385,580 | 693,000 | 19,056 | 1,142,695 |
| 1939 | 96,331 | 647,743 | 705,588 | 229 | 1,449,891 |
| 1940 | 138,571 | 664,801 | 786,484 | 37 | 1,589,893 |
| 1941 | 436,487 | 1,424,558 | 1,240,748 | 2,775 | 3,104,568 |
| 1942 | 188,617 | 712,811 | 1,521,396 | 1,285 | 2,424,109 |
| 1943 | 140,547 | 893,335 | 919,572 | 697 | 1,954,151 |
| 1944 | 281,470 | 979,491 | 987,888 | ----- | 2,248,849 |

Fish Meal, Tons

| Year | San Francisco district | Monterey district | San Pedro district | San Diego district | Total |
|------|------------------------|-------------------|--------------------|--------------------|---------|
| 1928 | 1,589 | 10,986 | 12,923 | 2,367 | 27,865 |
| 1929 | 2,576 | 16,640 | 20,040 | 3,565 | 42,821 |
| 1930 | 3,375 | 13,752 | 13,653 | 4,859 | 35,639 |
| 1931 | 3,597 | 8,416 | 7,600 | 2,827 | 22,440 |
| 1932 | 2,435 | 12,560 | 9,846 | 2,659 | 27,500 |
| 1933 | 4,941 | 18,869 | 18,249 | 4,310 | 46,369 |
| 1934 | 11,138 | 34,492 | 27,236 | 4,858 | 77,724 |
| 1935 | 12,994 | 27,966 | 31,163 | 6,572 | 78,695 |
| 1936 | 24,598 | 30,431 | 23,588 | 7,655 | 86,267 |
| 1937 | 22,916 | 21,118 | 29,184 | 8,300 | 81,518 |
| 1938 | 31,773 | 25,202 | 24,209 | 6,732 | 87,916 |
| 1939 | 43,369 | 33,238 | 21,858 | 6,704 | 105,169 |
| 1940 | 21,256 | 28,004 | 29,542 | 7,335 | 86,137 |
| 1941 | 32,773 | 38,875 | 25,832 | 5,332 | 102,812 |
| 1942 | 17,748 | 25,170 | 31,633 | 4,452 | 79,003 |
| 1943 | 19,682 | 33,626 | 24,383 | 4,300 | 81,991 |
| 1944 | 24,452 | 42,452 | 34,945 | 5,283 | 107,132 |

Includes meal produced from sardines and other species of fish, and residuum from stickwater.

Fish Oil, Gallons

| Year | San Francisco district | Monterey district | San Pedro district | San Diego district | Total |
|------|------------------------|-------------------|--------------------|--------------------|------------|
| 1928 | 282,043 | 2,174,673 | 1,268,518 | 24,068 | 3,749,302 |
| 1929 | 454,726 | 3,750,392 | 2,280,991 | 62,017 | 6,548,126 |
| 1930 | 747,931 | 3,769,950 | 1,282,893 | 41,989 | 5,842,763 |
| 1931 | 726,514 | 2,372,363 | 818,364 | 7,511 | 3,924,692 |
| 1932 | 426,831 | 3,378,929 | 1,293,961 | 25,678 | 5,125,399 |
| 1933 | 933,696 | 4,209,366 | 2,585,784 | 58,948 | 7,787,794 |
| 1934 | 2,490,156 | 9,322,080 | 4,221,447 | 94,525 | 16,128,208 |
| 1935 | 3,106,785 | 6,734,305 | 3,821,566 | 261,482 | 13,924,138 |
| 1936 | 5,626,422 | 6,756,541 | 2,834,887 | 260,059 | 15,477,909 |
| 1937 | 4,431,668 | 4,122,817 | 2,578,600 | 191,757 | 11,324,842 |
| 1938 | 7,032,792 | 4,753,160 | 2,126,661 | 130,606 | 14,043,219 |
| 1939 | 10,395,398 | 6,894,201 | 1,594,122 | 96,806 | 18,980,527 |
| 1940 | 4,831,500 | 5,745,120 | 2,509,291 | 129,079 | 13,214,990 |
| 1941 | 7,429,493 | 7,537,870 | 2,627,959 | 81,876 | 17,677,198 |
| 1942 | 4,183,492 | 5,219,441 | 3,146,680 | 137,027 | 12,686,640 |
| 1943 | 4,979,798 | 6,652,715 | 2,262,889 | 120,777 | 14,016,179 |
| 1944 | 5,722,966 | 8,509,678 | 3,903,785 | 133,356 | 18,269,785 |

Includes oil produced from sardines and other species of fish, except vitamin oil from livers.

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