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REPORT

OF THE

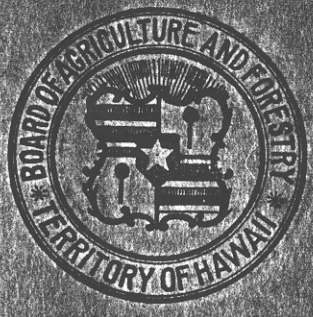
Board of Commissioners of Agriculture and Forestry

OF THE

TERRITORY OF HAWAII

FOR THE

Biennial Period Ended December 31, 1930



Division of Fish and Game

REPORT OF THE CHIEF TERRITORIAL WARDEN

Board of Commissioners of
Agriculture and Forestry,
Honolulu, Hawaii.

Gentlemen:

I have the honor to submit the following report which covers the principal activities of this department for the biennium ending December 31, 1930.

LICENSES AND STATISTICS

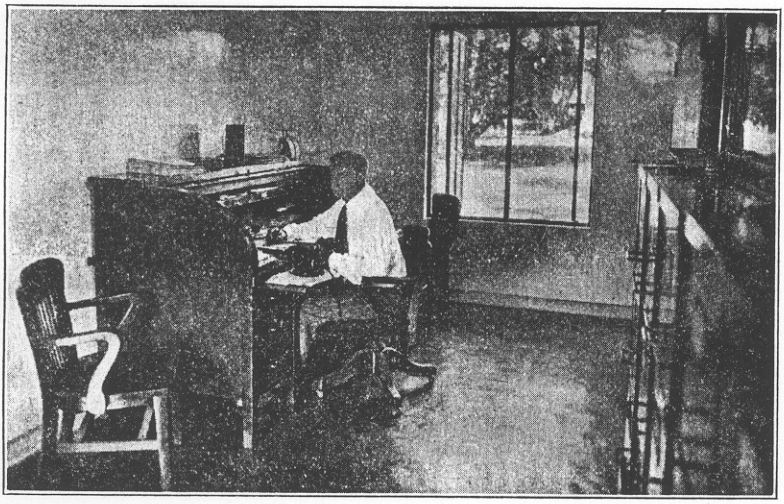
During the fiscal year ending June 30, 1929, the following licenses were issued and moneys collected.

Commercial fishermen:		
Citizens	159	
Sampans	388	3,149.50
Aliens	1,329	$ 6,640.50
Rowboats	402	401.50
Mullet	94	470.00
Night angling	179	1,790.00
Total amount collected		$12,451.50

This sum was deposited with the various county treasurers as follows:

City and County of Honolulu	$ 7,034.25
County of Hawaii	2,530.00
County of Maui	1,713.25
County of Kauai	1,174.00
	$12,451.50

The weights and value of fish caught as reported by dealers and fishermen follows:



H. L. Kelly, Chief Territorial Warden. In charge of the Fish and Game

Name	Weight	Value
Aku—for markets	2,964,391	$ 209,784.09
Opakapaka	93,820	19,579.42
Ulua	161,441	51,587.69
Uku	131,618	29,109.26
Oio	93,508	24,812.93
Ula	40,016	12,334.40
Ahi—for markets	1,660,409	201,810.40
Mullet—sold by companies	59,672	23,059.36
Moi	13,359	5,454.24
Ulaula	39,136	14,954.19
Akule	591,982	129,062.27
Mahimahi	251,024	35,336.37
Weke	120,266	37,765.37
Opelu	299,227	40,505.49
Au	596,856	90,710.16
Ono	97,187	14,615.75
Hapuupuu	37,222	7,538.22
Kawakawa	11,281	2,152.64
Kahala	183,032	34,659.90
Miscellaneous—sold by companies	630,324	165,325.44
	8,075,771	$1,150,157.59
Miscellaneous—sold by pond men	56,066	16,850.95
Mullet—sold by pond men	88,473	36,282.70
Aku—for canning	373,973	9,615.50
Ahi—for canning	22,608	1,940.76
Sardines—for canning	1,151	46.04
Total	8,618,042	$1,214,893.54
Clams	15,127	902,14
Grand Total	8,633,169	$1,215,795.68

For the year ending June 30, 1930, licenses were issued and moneys collected as follows:

Commercial fishermen:		
Citizens	200	
Aliens	866	$ 4,330.00
Alien—Emp.	491	2,455.00
Sampans	417	3,433.75
Rowboats	506	506.00
Night angling	463	2,315.00
Throw net	80	800.00
Mullet	99	495.00
Total amount collected		$14,334.75

This money was deposited with the various county treasurers as follows:

City and County of Honolulu	$ 7,695.00
County of Hawaii	2,659.75
County of Maui	2,248.75
County of Kauai	1,731.25
	$14,334.75

The weights and value of fish caught as reported by dealers and fishermen follows:

Name	Weight	Value
Aku—for markets	3,917,976	$ 207,462.31
Opakapaka	118,048	25,450.01
Ulua	169,715	45,506.08
Uku	174,788	17,003.72
Oio	69,500	17,818.80
Ula	40,112	25,972.40
Ahi—for markets	1,486,708	178,446.42
Mullet—sold by companies	100,319	30,914 99
Moi	15,647	6,314.45
Ulaula	46,120	14,713.04
Akule	616,967	134,043.37
Mahimahi	260,044	23,905.90
Weke	121,657	32,917.86
Opelu	211,460	28,409.95
Au	904,510	85,172.64
Ono	134,328	17,830.98
Hapuupuu	32,900	8,367.66
Kawakawa	34,007	4,796.67
Kahala	172,818	27,784.68
Miscellaneous—sold by companies	625,302	$ 143,620.16
	9,252,926	$1,076,452.09

Miscellaneous—sold by pond men	47,078	10,785.75
Mullet—sold by pond men	49,479	18,925.25
Mullet—sold by individuals	7,854	1,679.70
Aku—for canning	2,319,036	52,471.66
Ahi—for canning	110,399	11,495.83
Total	11,786,772	$1,171,810.28
Clams	11,469	820.67
Grand Total	11,798,241	$1,172,630.95

Cases of aku and ahi packed from July to December, 1929 53,416
Cases of aku and ahi packed from January to June, 1930 12,036

Total 65,452

The number of gear used and value are as follows:

Sampans	417	$ 87,622.00
Rowboats	506	7,756.00
Seines	76	7,622.00
Gill nets	1,718	40,833.06
Throw nets	175	634.00
Hand lines	3,081	15,463.05
Traps	546	3,058.00
Drag nets	66	8,540.00
Lobster nets	257	3,620.00
Crab nets	107	107.00
	6,949	$175,255.11

For the six months ending December 31, 1930, the licenses issued and moneys collected are as follows:

		Commercial fishermen:
Citizens	87	
Aliens	666	$ 3,330.00
Alien—Emp.	430	2,150.00
Sampans	295	2,534.50
Rowboats	403	403.00
Night angling	414	2,070.00
Throw net	43	430.00
Mullet	87	435.00
		$11,352.50

This money was deposited with the various county treasurers as follows:

City and County of Honolulu	$ 6,803.00
County of Hawaii	1,333.00
County of Maui	1,567.50
County of Kauai	1,649.00
	$11,352.50

There was collected for tags and boat numbers $333.50, which amount was deposited with the Territorial Treasurer.

The weights and value of fish caught as reported by dealers and fishermen follows:

Name	Weight	Value
Aku—for markets	1,274.064	$ 74,526.55
Opakapaka	37,333	7,051.70
Ula	78,045	13,142.89
Uku	45,357	7,540.88
Oio	24,585	6,023.65
Ula	2,011	790.73
Ahi—for markets	624,451	75,467.24
Mullet—sold by companies	25,876	7,250.52
Moi	3,864	1,266.50
Ulaula	17,898	4,957.01
Akule	251,823	40,411.14
Mahimahi	90,365	6,255.18
Weke	32,316	9,173.15
Opelu	42,964	5,598.85
Au	331,159	29,733.11
Ono	47,551	5,457.05
Hapuupuu	28,016	3,992.64
Kawakawa	5,500	723.45
Kahala	54,767	7,289.08
Miscellaneous—sold by companies	174,315	39,913.83
	3,192,260	$346,565.15
Miscellaneous—sold by pond men	12,226	2,638.64
Mullet—sold by pond men	29,412	8,705.41
Aku—for canning	3,437,367	120,317.83
Ahi—for canning	213,240	23,669.66
Akule—by individual fishermen	7,981	1,029.68
Miscellaneous by individual fishermen	4,716	760.88
Grand Total	6,897,202	$503,687.25

There was collected for boat numbers and fishing tags $672.50, which amount was deposited with the Territorial Treasurer.

PATROL SERVICE

For the year ending June 30, 1929, the wardens made 302 arrests, and 224 resulted in convictions; 42 forfeited bail, 36 were discharged. The fines and bail forfeitures amounted to $5,189.70.

For the year ending June 30, 1930, the wardens made 295 arrests, 261 were convicted, 15 forfeited bail and 19 discharged. The fines and bail forfeitures amounted to $3,015.00.

The following figures will show more clearly the character of the work performed by each warden during the fiscal year ending June 30, 1930.

Arrests

Tavares	155
Tucker	46
Israel	43
Perez	30
Montgomery	11
Manu	6
Kanae	4

Percentage convictions or bail forfeitures

Israel	100 %
Tucker	100 %
Montgomery	100 %
Perez	100 %
Manu	100 %
Kanae	100 %
Tavares	87.7%

Average amount of fines and bail

Perez	$24.63
Manu	21.66
Israel	15.57
Tucker	12.13
Tavares	5.37
Montgomery	4.54
Kanae	2.50

Average mileage per month

Tavares	2,241
Israel	1,910
Montgomery	1,686
Perez	1,110
Kanae	1,281
Manu	996
Tucker	570

Average cost to Territory per arrest—salary plus expenses

Tavares	$ 21.61
Tucker	53.47
Israel	69.76
Perez	98.00
Montgomery	234.54
Manu	300.00
Kanae	630.00

Accuracy, promptness and information of reports

Israel	1st
Tavares	2nd
Perez	3rd
Kanae	4th
Tucker	5th
Montgomery	6th
Manu	7th

Using the above figures as a basis and taking into consideration the character of the different districts and quality of each man's work judged by personal investigations, I believe the following are reasonably fair ratings of each man's efficiency as a warden:

Tavares	95
Israel	95
Perez	90
Kanae	88
Tucker	88
Manu	85
Montgomery	80

For the six months period ending December 31, 1930, the wardens made 150 arrests, 125 were convicted, 8 forfeited bail, 7 were discharged, 5 bought licenses, 4 cases pended and 1 case was nolle prosequied. The fines and bail forfeitures amounted to $1,940.00.

PROPAGATION AND IMPORTATION OF GAME BIRDS

The four counties subscribed a total of $2,000.00 ($500.00 each) towards the game farm work for the 1929 season. The ring-neck pheasants finished laying in July. 4,109 eggs were laid by our birds and 360 were received from the California Fish and Game Commission. Of the chicks hatched, 1,504 were raised to liberation age and the following distributions made—Kauai, 372; Oahu, 388; Molokai, 60; Maui, 304 and Hawaii, 380.

For the season of 1930, the counties subscribed a total of $3,000 ($750.00 each). With this money eight new pens have been constructed which permit holding the birds at the farm a couple of weeks longer on the average before liberating them.

The last eggs were laid by the pheasants in July, 1930. The total for the season being 4,672. The number of birds hatched and reared to liberation age was 1,535, which were distributed as follows: Kauai, 390; Oahu, 402; Molokai, 60; Maui, 343 and Hawaii 340.

In addition to pheasant propagation, 40 Chinese quail were raised and liberated on Oahu; the flock of 4 nene, donated to the farm by Senator Hind in 1928 has been increased to eleven of these birds, and we hope for a further increase from the eggs laid the present season; from 45 eggs donated by the Oregon Game Commission in April of 1929, we have raised and distributed a total of 110 guinea fowl. To Kauai, 27; Oahu, 27; Molokai, 15; Maui, 25; and Hawaii, 16, and have 54 on hand. Distribution of several small flocks of the blue-eyed dove, now become very abundant on Oahu, have been made to Kauai and Maui; several hundred pair of valley quail have been obtained from Molokai, where they are very abundant, and plantings have been made on Kauai and Oahu, and this department has also cooperated with the sportsmen of the different counties in securing shipments of game birds, notably Hungarian partridges and mountain quail for Kauai and Oahu and valley quail for Hawaii. We have also brought in new varieties of fruit and seed bearing plants to furnish additional food for all kinds of birds—song birds as well as game. A recent visit to Kokee showed the plants set out a year ago, hucklberries, salal, black-cap and mountain blackberries, were

alive and sending out new growth, and this lends hope that we may succeed in establishing some if not all these varieties of berries.

According to reports from hunters of the different islands the pheasant shooting has been unusually good the present season. Bags of 30 and 40 birds were not uncommon, and one man on Kauai was reported to have killed over seventy cock pheasants. In Oregon the limit for the year is 20 birds, and few if any of the other states allow more than that number to be killed by one man.

Doves seem to be holding up well, also quail on Molokai, Maui and Hawaii, but plover seem to be decreasing in numbers, while the migratory ducks have become so scarce one seldom hears them even mentioned by the hunters. There is an urgent need for a law prohibiting the killing of all wild ducks for the next four years if they are to be saved from further depletion.

FISH CULTURE

Besides the game work, this department has devoted a great deal of time to mullet culture. All attempts to take the spawn artificially have proved unsuccessful, but we have learned that the natural spawning takes place along the reefs, and are firmly convinced that fertilized eggs are never spawned in the ponds. Experimental work in feeding mullet has been continued, and four new feeding pens have been constructed at the Mokapu station.

Twenty-five thousand salmon eggs and 50,000 rainbow trout eggs were received from the Bureau of Fisheries and the fry hatched from these eggs have been planted in the following streams: Kawaikoi, Kauikinana, Mohihi, North Wailua, Wainiha, Kokee and Koale on Kauai; Punaluu, Kahana and Maunawili on Oahu; Halawa on Molokai; Oheo on Maui and two streams on the Kahua Ranch of West Hawaii.

There is nothing to indicate that any success whatsoever has resulted from our efforts to establish the salmon, and this work has been discontinued. The trout, however, apparently are well established on Kauai, Maui and Hawaii, and some very fine catches were reported the past season by Senator Rice, Reverend Martin and others on Kauai. Many of the fish caught weighed

between one and two pounds. On the mainland the average fisherman is usually well pleased whenever he succeeds in taking a half pounder.

Clam seed has been purchased for restocking the beds in the locks of Pearl Harbor. These beds were virtually killed out by the heavy floods of two years ago. A recent examination shows the clams have increased enough to again permit opening these grounds to commercial fishing. But before this is done there should be a law against taking any clams measuring less than 1¼ inches long.

OYSTER CULTURE

The work of bringing in seed oysters from Australia and the mainland for stocking local waters has been kept up. Dr. Paul S. Galtsoff, oyster expert of the Bureau of Fisheries, here during last summer to make a survey of the pearl oyster fishery at Pearl and Hermes Reef, found oyster spats which he identified as the young of the Australian oysters. These were attached to our pier on the East side of Kaneohe Bay. During the past few months others of the same specie have been found in two different places on the west side of the bay. It would appear from this that these valuable mollusks are slowly establishing themselves. Dr. Galtsoff reported the waters of the bay were rich in the plankton which the oysters feed on, and he was very optimistic about oyster farming being carried on to supply the local markets. He stated the success of this work depended largely on the Board having the authority to close certain areas to all fishing, and to bring in sufficient seed to insure frequent and general spawning. He showed great surprise when he learned we had been attempting to start oysters by importing a few bushels of seed at a time and recommended that in the future we order the seed in thousand bushel lots.

PEARL OYSTER FISHERY SURVEY

In a preliminary report which was submitted to the Board in October, Dr. Galtsoff reported that the pearl oyster beds of Pearl and Hermes had already been over-fished, and acting on his recommendation the Board made a ruling which prohibits taking

pearl oysters at any time, except for scientific investigations by agents of the Board.

Dr. Galtsoff brought back 300 young oysters which were planted in Kaneohe Bay. The last inspection of these was made in December. They are in ten or fifteen feet of water, and it is necessary to send a diver down. He reported finding 121. Of these 117 were alive and some had made considerable growth, while only four were dead. From this it would appear that colonies of the pearl oyster can be started in Kaneohe, Pearl Harbor and other waters suitable for their development.

While here Dr. Galtsoff made a general survey of fishing conditions for a report to Commissioner O'Malley. Congress has passed an appropriation of $10,000 annually for the next five years. This is to enable the Bureau of Fisheries to make a study of the problems connected with the work here. Commissioner O'Malley plans on visiting the islands next summer for a personal investigation preparatory to inaugurating the work.

RECOMMENDATIONS FOR EXPANSION OF WORK

I wish to call your attention to the expansion of this department in the comparatively few years of its existence (less than 12). At the inception of the work it was believed to be a fish cultural problem, and a fish culturist was engaged to take charge and others were engaged to assist. But it soon developed that actual fish culture was only a minor problem. A far more important consideration being the conserving and fostering of the fisheries through establishing close season for spawning fish, as well as other protective measures. This of course necessitated the enactment of laws and wardens to enforce them. Besides these developments, the growing scarcity of game and the constantly increasing number of hunters forced upon us, also the burden of revising the game code and building up the supply by the importation and propagation of more birds.

Considering our personnel (11 all told, while California uses at least 15 men just to patrol 500 miles or a little more than half of our shore line) this is comparable to trying to carry four tons on a one ton truck. This cannot be done for long, and it is not too soon at this time to consider dividing the work into two depart-

ments—one for fish and the other for game. And the day is not far distant when it will be necessary to have four departments, i. e. Commercial Fisheries, Fish Culture, Game Culture and Patrol Service with an expert directing the work of each.

It is fully appreciated that there is little likelihood of increasing the appropriation to make any radical change the coming biennium, but it is most urgent that at least an office assistant be provided to help with the work. One with the necessary experience in clerical work to know how to collect the essential facts and figures sent in by wardens, fishermen and dealers, to segregate these and enter them under their proper category. It is of the greatest importance that these records be kept in such a way that the figures will be quickly available, as well as to assure the accuracy and dependability of the statistics and reports issued.

Not only is it most embarrassing to have to explain when the figures or statements in a report are found to be inaccurate, but valuable time is lost and work delayed in making the corrections. Of still greater consideration is the fact that the increase or falling off in the total catch, or a particular specie, can only be determined from our figures of weights and sizes of the annual catch year after year. Future legislation, the enactment of closed seasons, or opening of same, all hinge on our records. Therefore they must be properly kept. This requires a competent man who has had years of experience in clerical work.

Before closing this report I feel it my duty to call attention to the fact that our Mokapu Station is probably the one and only Territorial institution of importance not provided with electricity and telephone service.

All realize the saving in time and the convenience of an office in the center of a community being equipped with a telephone, and electricity for light and power is considered a primary necessity for any kind of a factory. Mokapu Station, miles away in an isolated section, is both an office and factory, yet it is without either service. The lack of these things is a very great handicap to the work, and it is hoped the Board can secure an appropriation to provide the station with these two services, and which everywhere are looked upon as common necessities.

These things are urgently needed today. There is going to be far greater need in the near future. In this connection, I wish to repeat a statement made in the last biennial report: "The work is only in its infancy." The demand by the hunters for more birds increases year after year; each year finds us with more fish cultural problems waiting to be solved. There still exists the necessity of a training station, where men can be instructed in the work of commercial fishing, and Mokapu probably furnishes the most ideal location of any place in Hawaii. In addition to these things, thanks to the interest of Mr. Judd, Territorial Forester, and the cooperation of his department, a splendid start has been made towards creating a public park which will be visited by thousands of citizens in the years to come.

Over 5,000 trees have already been set out—a commodious shelter house, with necessary conveniences, has been erected—the game is being propagated and other essential details worked out towards the development of a park which will be a credit to the whole Territory—a place where people interested in wild life can gain entertainment and useful knowledge of the habits of wild birds and animals. Already the number of visitors is steadily increasing and if we fail to install electricity and telephone for the station's needs, the public will be demanding for their convenience and protection these things which are a part of the equipment of every park that people are accustomed to visit.

Respectfully submitted,

H. L. KELLY,
Chief Territorial Warden.