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1907

TWENTY-NINTH REPORT

OF THE

Commissioner of Sea and Shore Fisheries

OF THE

STATE OF MAINE

FOR

1905 and 1906.

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STATE OF MAINE.

DEPARTMENT OF SEA AND SHORE FISHERIES,

BOOTHBAY HARBOR, ME., December 31, 1906.

To His Excellency, William T. Cobb, Governor of Maine:

I herewith submit my fifth biennial report as Commissioner of Sea and Shore Fisheries for the two years ending November 30, 1906, as required by law.

Respectfully,

ALONZO R. NICKERSON,

Commissioner.

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REPORT.

The total production of all branches of the fisheries in the State for the year 1905 was 211,657,874 pounds, valued at $4,154,115, and for the last year, 1906, a total yield of 179,888,290 pounds, worth $4,048,923.

These figures do not include the pack of the sardine factories. By enactment of 1905 this department is not required, or allowed, to report the sardine pack, therefore it is not included in this report.

The total investment in the fisheries was, in 1905, $3,361,698, and in 1906 it was much less, $2,839,839.

In 1905, the number of persons engaged in the fisheries and allied industries was 15,103. In 1906, the persons employed had increased to 15,954.

Washington county makes by far the largest catch in both years,—101,182,109 pounds in 1905, and 85,072,304 in 1906. In value of fish caught Washington county also leads with $1,151,546 in '05, and $1,031,751 in '06.

There will be found under each title detailed information in tables, by counties, including catch, persons engaged, gear and apparatus used, etc., in each fishery for each year, and general tables of investments, persons employed, and grand summary at the end of report.

In making the summary table it is necessary to reduce all products to the arbitrary standard of pounds. To do this, barrels of all kinds of fish are reckoned two hundred pounds; box-herring five pounds; bloaters, forty pounds; oil, seven and one-half pounds per gallon; clams and scallops, twelve pounds per gallon of meats; clams, ten pounds meats to each bushel in shell; clams, canned, fifty pounds per case; alewives, one-half pound each; lobsters, one and one-half pounds each.

In fixing values of catch the landing value is, as near as possible, always adopted.

In 1905 the lobster fishery was prosecuted by 2,562 men, who used 169,350 traps, and the catch for the year was 7,425,298 lobsters, for which the fishermen received $1,394,356.

In 1906 the men thus engaged numbered 2,762 (a gain of 110 men) who employing 174,071 traps (4,721 more traps than 1905) increased the catch to 8,579,512 lobsters, and the fishermen received the increased return of $1,640,646.

The average return to each man in the lobster fishery for his year's work was $544 in 1905, and $614 in 1906.

Each trap employed averaged a catch of 44 lobsters worth $8.02 in 1905, and 49 lobsters, worth $9.42 in 1906.

In 1899	the	average	catch	to	a	trap	was	39	lobsters,
1900	"	"	"	"	"	"	"	44	"
1901	"	"	"	"	"	"	"	46	"
1902	"	"	"	"	"	"	"	48	"
1903	"	"	"	"	"	"	"	49	"
1904	"	"	"	"	"	"	"	42	"
1905	"	"	"	"	"	"	"	44	"
1906	"	"	"	"	"	"	"	49	"

The average number of traps attended to by each fisherman was 66 traps in 1905 and 65 traps in 1906.

The price paid the fishermen for lobsters averaged 18 cents each for the year 1905, and 19 cents each for 1906.

In the four large lobster producing counties of our State the catch of lobsters for the two years has been as follows:—

Knox (the banner county), 4,579,353; Lincoln, 3,933,968; Hancock, 3,258,965; Washington, 2,864,366.

With a gain over 1903 and 1904 of 6,251,300 pounds in production, and $206,780 in value, the ground fishery shows a total yield of 93,706,102 pounds worth $1,974,128.

The herring fishery for the two years covered by this report, with a yield of 243,359,650 pounds, and a valuation of $1,685,510, shows a splendid gain of more than thirteen million pounds in production, and more than $450,000 in value. Washington county makes the largest catch.

The gross investment in factories, boats, plants, pounds, traps, and fishing gear and apparatus used in the herring and sardine business in 1905 was $1,498,253 and in 1906, $1,277,372.

I have said that I consider the clam fishery one of the most important of all. I repeat the statement.

The value of yield of this fishery was $355,821 in 1905, and the production was 6,158,162 pounds. In 1906 the value was $379,093 and the production 7,723,965 pounds. The average investment in the business in boats and gear was for both years $33,696.50. There were 1,634 persons engaged in making the above showing, which is a gain of almost 900,000 pounds over the production of 1903 and 1904.

Systematic effort is being made under the law of 1905 to "farm" the clam producing grounds. The experiments are in the hands of very enthusiastic, practical, but not scientific gentlemen, and their interest is shown elsewhere in this report by their individual reports to this office, and I have there made some comments as to the fishery and its possibilities.

The New England mackerel fleet for the year 1906 comprised about 70 vessels, and the business has been discouraging.

The catch as compared with that for the period covered by previous report has fallen off about 200,000 pounds, and the returns reduced by about $144,000. Prices have consequently ranged higher.

The smelt fishery for 1905 and 1906 shows a total catch of 1,691,912 pounds, of a value $193,794, a decrease from the amount reported for 1903 and 1904 of 319,128 pounds, and in value only $5,695.

The averaged high price of about 12 cents per pound to the fishermen helped to make up the loss in weight.

The shad fishery produced 1,557,400 pounds, worth $62,000. This is a loss of about one million pounds as compared with 1903 and '04.

Efforts are being made to increase this fishery on the Kennebec river, and 'tis hoped that it may be brought up to its old time importance and magnitude.

The production of the salmon fishery is 122,110 pounds, valued at $26,991. This is a gain of 17,000 pounds as compared with last report.

Every means should be used to protect this industry that the yield may be increased to much greater proportions.

The product of the alewife fishery is very unsatisfactory indeed,—2,898,125 pounds, valued at $22,368, little more than half that returned for the period of last report.

In the several fisheries in the State the same deplorable conditions of neglect still exist. In reference to this neglect I refer those interested to my last two reports.

There is not an alewife fishery in the State that cannot be improved, and the yield greatly increased, and many that are now worthless can be made valuable.

The alewife, with peculiar and characteristic patience and pertinacity, regularly returns to our shores and in its efforts to reach the immemorial spawning grounds of the species finds the entrances and approaches to all neglected, many clogged with all manner of refuse and offal, and others impassable, while the waters of all are more or less obstructed with mill or factory waste.

While the supine negligence of the municipal proprietors may and probably will continue indefinitely, the patient alewife will sometime become discouraged and seek other and more easily reached spawning grounds, if some have not already done so.

AS TO NEW LEGISLATION.

There will be the usual number of petitions for special and general laws as to the fisheries presented at this coming session, I presume.

Many "clam" laws are discussed, all ostensibly intended to preserve this very important fishery. I think the proposed size limit, or a law restricting the marketable clam to not less than 2 inches in length, for instance, is impracticable from the standpoint of enforcement. Close time, local or general, is practicable and feasible, of course, and is now operative in many sections.

I cannot approve of all of the many laws that are proposed for the increase of the clam. My previous reports will show what I think are the possibilities of the clam culture from a sensible and practicable standpoint under the protection of the State.

I think well of, and heartily recommend, the proposition for an absolute close time for a period of, say, two years, applied to a certain portion of the clam flats. At the end of the close time the same to be opened to fishery under State supervision and regulation, and at the same time another portion of the flats closed to fishing.

I recommend that the capacity of the barrels used for the shipment of clams in the shell, and shocked, both fresh and salt, be fixed and established by law, as is the case of other fish barrels.

The law of 1905, chapter 62, enacted for the preventing of netting of cod and other ground fish in the Sheepscot river is somewhat uncertain in its terms. Such amendments should be made so that it may be certain as to its meaning, clear in terms and easy of enforcement.

I believe the smelt law should be uniform throughout the State. I am satisfied that many local laws are a great injury

to the fishery in general. Such statutes, which were passed to subserve selfish ends should be promptly repealed, and such fisheries opened to the public.

The laws in relation to inspection of fish need changes to bring them up to the requirements of the modern conditions now existing. These laws were enacted when business was done differently than at the present time.

Transportation facilities have improved greatly; markets have been extended; the methods of catching, packing, and preparation of fish for the consumer have changed. Rapid movement of cargoes require new methods of inspection, which needed amendment will provide.

I earnestly recommend the amendment of the lobster law in the very important matter of measurement. I suggest that the measurement of the body shell of the fish be taken, and not the whole of the body and tail, as at present required by law.

Such amendment will save many thousands of dollars each year to our lobster fishery; besides, there will be no occasion, or incentive, for the cruel practice of pulling and stretching (both of which is forbidden by the present law, but which is impossible of preventing) by the selling-fishermen to dealers whereby possibly a quarter inch in length is gained, but the lobster is killed by the act.

Hundreds of thousands of lobsters are killed every year by this practice of stretching the lobster at the time and after delivery to purchasers. The stretching of the fish a quarter of an inch is a rupture of the ligaments connecting the tail to the body, to that extent, and while it may make the lobster legal in length, thus mutilated, in every such case the fracture of the connective tissue in the body of the lobster to gain this quarter inch causes the death of the fish, and at the same time the meat becomes unfit for food.

The proposed body shell measure overcomes all the above difficulties, and there is no reason why anyone should oppose such a change except, possibly, those few who would thus mutilate a lobster to gain a fraction of an inch in length and make thereby a fraudulent sale, and the party (if there is such) who would put on sale the meat taken from a dead lobster.

The lobster law in relation to seizures by the officers is somewhat obscure. I recommend that it be changed so that they

may be plainly authorized to seize as was intended by the legislature which enacted the law.

It is hoped that those interested in the Kennebec shad fisheries will present amendments to the incoming legislature that will close certain parts of that river, and its tributaries which cover the spawning grounds of the fast diminishing shad in that river.

GREAT DESTRUCTION OF FISH AT EASTPORT BY THE USE OF DYNAMITE.

During the summer of 1906 many complaints were made that the law against the use of dynamite in killing fish was being violated in the waters in the vicinity of Eastport.

By the use of this powerful explosive, which is sunk in the water where fish are known to be, and then exploded, all species of fish regardless of size, within the radius of the explosive power, are killed, and while the pollock, which were schooling in great numbers in the bay were the fish sought by the law breakers, a very small proportion of fish killed were used, or could be secured. The destruction of fish in this way was reported to be enormous, almost beyond calculation.

This condition the local wardens seemed powerless to prevent. The slaughter continuing, the city of Eastport board of trade finally took up the matter and made application to this department that a revenue cutter be sent there to see that this law was enforced.

Your commissioner enlisted the cooperation and assistance of the State authorities, and also made application to Commissioner Bowers of the United States Fisheries Department for a government steamer to protect the waters and the schools of fish.

The Washington authorities declined to act for the reason that there was no national statute prohibiting the killing of fish by the use of dynamite.

The State launch " Sea Gull " Capt. Nickerson, was, with the consent of the governor, detached from her special service in the collection of seed lobsters and sent to Eastport, where for five weeks the boat patrolled those waters on the American side, while a Canadian cruiser did similar duty on the English side, and thus the law was enforced and the use of dynamite stopped.

Important changes to make more effectual its enforcement should be made in the dynamite law.

THE DOG FISH EVIL.

The great damage caused by the dog fish to the fishermen along the coast is very hard to estimate. The state of Massachusetts has appropriated money to carry on an investigation by the state commission. I have read the report that is made of that investigation.

Anybody who has any knowledge of the ground fishery is aware that these fish are a great pest and a nuisance of such proportions that the fishermen, tired out by the continued fight with dog fish, have, on occasion, given up their fishing and left the grounds with their gear until sure that the dog fish had gone from this vicinity.

Dog fish will not only ruin gear, line, and trawls, destroy fish and bait, but will crowd upon fishing gear and gobble every hook, crowding out every fish of value and putting the tired and disgusted fisherman to the trouble of pulling up his lines or trawls loaded, every hook, with nothing but the worthless, worse than disgusting, dog fish.

I believe that investigation would be useless, and an appropriation for that purpose, money thrown away.

There are parties interested in the organization of a company for the purpose of utilizing dog fish and converting the flesh, skin, and livers into marketable products, but unless those states interested in the destruction of the dog fish, or the general government, assist in the initial expenses and costs, I fear that the excellent project may become impracticable, for the risk is a great one for any individual to undertake.

While the dog fish seem to be so plentiful, in my opinion but a short time will be required to rid our waters of this pest. They come in schools, and very big ones, too, and they go in schools and disappear as suddenly as they came to us.

Unlike menhaden, mackerel, herring, or other migratory fishes, the dog fish do not spawn. In fact, they are an animal and not

a fish. Their young is born alive, and the species is not so prolific as the above fishes.

Back in the '80s, Mr. L. Maddocks in connection with his menhaden works at Boothbay Harbor when the porgy was very scarce advertised that he would buy all dog fish that might be brought to his factory. The first season in a short time he received 2,000,000; the second season about 1,000,000; the third season 500,000, all able-bodied dog fish; the fourth season, none. The fishermen then claimed that the coast waters for a distance of 40 miles from the reduction works were rid of dog fish.

If the proprietors of this new extermination scheme, which proposes to buy up these fish and put to useful purposes the skin, flesh, livers, etc., thereof, should ask the legislature for an appropriation to assist the initial establishment, I would most certainly favor such expenditure of a moderate sum under proper restrictions, that will assist us in getting rid of one of the greatest menaces to our fishery interests, and I can assure the legislature incoming that every fisherman on the New England coast would be more than pleased to know that the new company proposed and was able and willing to tan the hide of every individual dog fish in the Atlantic ocean.

LOBSTER FISHERY.

The catch has been large, a gain, when compared with the figures of my last report, of 2,605,231 lobsters, while the money returns increased about three-quarters of a million dollars ($748,174).

The exposures suffered, and dangers incurred by the lobster fishermen may be judged by the figures of the total catch, the result of their efforts, more than sixteen million lobsters, while the cash received for the same—more than three million dollars—is a consolation and balm of the right sort, so the fishermen say.

While the returns have been large, the expenses in connection with this fishery are being increased every year. In order to handle the increased number of traps and cover the grounds fished, which are continually being extended, better and larger boats are needed, most of them furnished with power. The kind of boat and the leisurely, old-fashioned methods of not many years ago employed in the lobster fishery could not now be profitably used.

I believe that larger catches will be made, and bigger returns received in the future than have been in the past, in the lobster fishery.

In addition to the 8,579,512 lobsters taken in our State waters during 1906 there have been imported from the Provinces of Nova Scotia 245,905, as will be seen in the table relating to this fishery, showing that the State of Maine dealers have handled 8,825,417 market lobsters during the twelve months previous to the date of this report.

I am informed by a reliable lobster dealer of Portland that during this same period there were imported at Boston from N. S. by steamer 268,864 crates of lobsters, averaging 20 to each crate, which means 537,280, and that this does not include those brought to Massachusetts in smacks.

I mention this to show what an immense and important business this is to New England. Maine cannot and *must* not lose a business of such magnitude and importance when, by the expenditure of a few thousand dollars each year for enforcement, and to assist in artificial propagation, this great fishery can be preserved and increased.

Number of lobsters caught in Maine each year since 1897:

1898	8,178,332
1899	7,267,506
1900	8,232,115
1901	8,185,342
1902	7,790,265
1903	7,494,691
1904	6,904,888
1905	7,425,298
1906	8,579,512
Total catch for past nine years	70,057,949

I am indebted to the Rhode Island Commission for the article on "Natural History of the Lobster," and also for the different cuts of the lobsters given in this report.

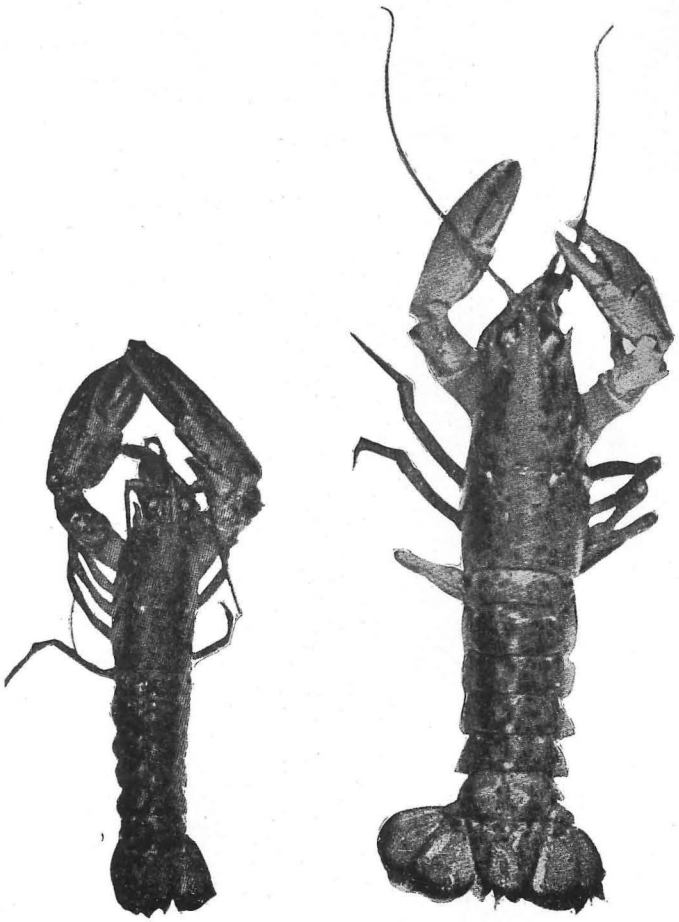
"Natural History of the Lobster.

1. *Distribution.*

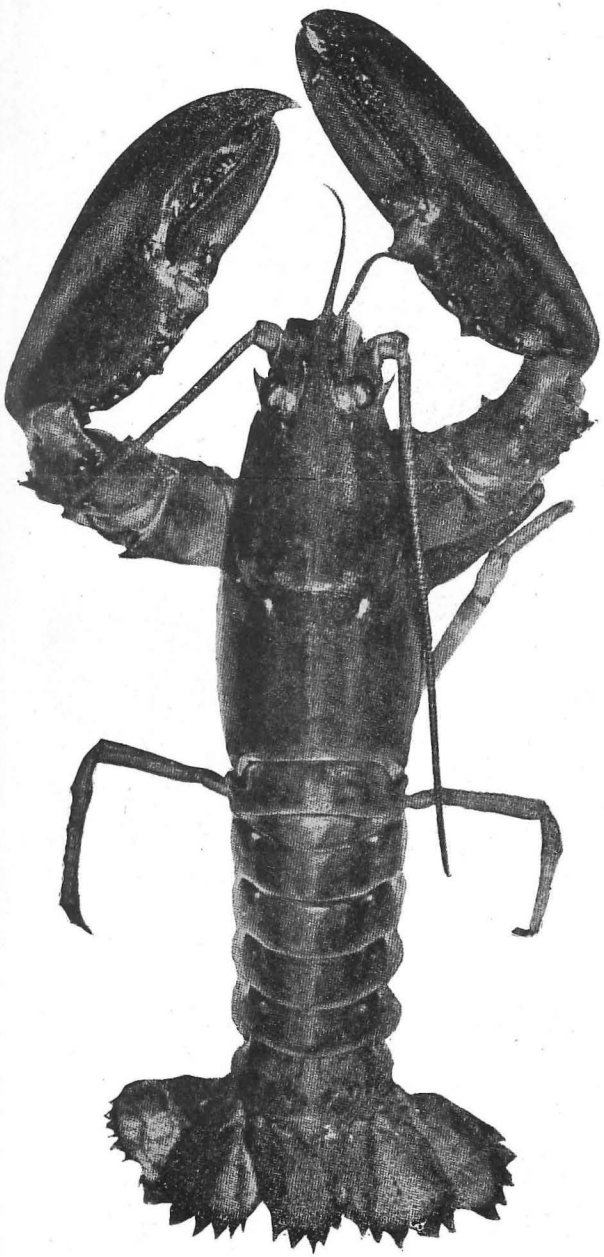
The American lobster is found along the Atlantic coast from Labrador to Delaware. It attains its largest size and is most abundant in the northern half of this range (Nova Scotia and Maine). It is found in all depths up to 100 fathoms. In deeper water than this it is very rarely found, though sometimes reported from fishing banks farther off shore.

2. *Natural Home and Migrations.*

The character of the shores where the lobster lives varies from rocky and precipitous to sandy or muddy. During the winter the lobsters probably retreat to deeper water and burrow in the mud, since the fishermen find it necessary to gradually move their traps farther off shore with the approaching winter. This migration to deep water is not common to all lobsters, as we find some



Three lobsters of the same age, illustrating the differences in the rate of growth. They were hatched in the summer of 1901, and photographed alive October 23, 1902. Age about one year and four months. Life size



MAINE FARMER PRESS AUGUSTA

in holes along the shores which are exposed by extreme low tides during the winter months.

With the return of spring and early summer the lobstermen move their pots nearer shore. This movement of the lobsters to and from shore is probably the whole extent of their migrations, and therefore the restocking of the shores of a particular locality is possible. Efforts are being made to get more exact data on migrations by liberating tagged lobsters. Female lobsters, with eggs ready to hatch, are most often caught on rocky bottoms; and lobsters ready to shed, or those that have just done so, are most abundant on sandy or muddy shores. Dutch Island Harbor in Narragansett Bay seems to be a great shedding ground.

3. *Food.*

Although lobsters are called the "scavengers of the sea" and do undoubtedly feed on dead fish, yet they seem to prefer recently killed food. Rotten fish, while it probably attracts hungry lobsters, is found to remain untouched, or is even pushed aside, by lobsters in cars which have been reasonably well fed. Lobsters in their natural homes undoubtedly have long intervals between meals, and eat ravenously when any food is found. This will account for the ease with which they are caught in traps. The food of the lobster includes nearly all kinds of fish; whatever shellfish it can find, crabs, and other invertebrates. Pieces of shell and pebbles are also found in their stomachs. The material for the hardening of the shell is probably obtained from the former. The lobster does not hesitate to eat another lobster which has been weakened by molting or injury. This cannibalism is most marked in the larvæ, where it is a most serious obstacle to rearing.

4. *Length of Life.*

The age of a lobster can only be told with a moderate degree of accuracy. Size may be an indication, but frequently among those reared in cars some will be found four or five times the length of others of the same age. From accounts of early days there seems to be no limit to the size which lobsters may attain, but in recent years no lobster of over 25 pounds (21 inches in length) has been authentically recorded. From the slow growth which we know lobsters have, this specimen could not have been under 20 years old, and many considerations would point to a greater age.

5. *Molting and Growth.*

Covered by a hard shell, the only means which the lobster has of becoming larger is by casting off its old shell; that is, by molting. Growth has already taken place within, rendering the animal more compact, so that when the lobster sheds it immediately expands through the absorption of water. (Plate 6.) The new shell, at first as soft as wet paper, becomes hardened in a few days and prevents further expansion. The lobster in the first year molts about 14 or 15 times. Each successive year it molts less often till lobsters between 8 and 9 inches long shed no more than 3 or 4 times a year. Concerning the molting periods of larger lobsters scarcely anything is known. It is known, however, that regeneration of various parts will very often retard the molting period and presumably the growth. Excessive light (as rearing in cars without covers) will lessen the percentage of gain at each molt, if not the frequency of the periods.

6. *Regeneration.*

If a claw or any appendage is lost the lobster has the power of growing it again (regeneration). Should the loss occur within a certain period, too near an approaching molt, the molting occurs regularly without anything being done in the way of repair. If, however, the loss happens a considerable length of time before the molt, this period will be delayed somewhat, and, in place of the lost limb, a bud will grow out. When the molt occurs the lost limb will come out fully formed, but about one-half size. When the next molt occurs it will be full size. This is true, with some variation, of all external organs unless it is the eye. This has never been observed to regenerate at the Experiment Station. Closely related to this power of regeneration is the habit which the lobster has of throwing off a claw when it is crushed or injured (autotomy).

7. *Sexual Maturity.*

Since it is impossible to tell how old a lobster is, we can not tell at what age it reaches sexual maturity. Observation on over one thousand egg lobsters received at the Experiment Station during several years seems to indicate that, in Narragansett Bay, lobsters may become sexually mature when from 8¼ to 9 inches

long. In the past five years only about a dozen egg lobsters under 9 inches in length have been received, though a considerable number have been just 9 inches. This would indicate that in Narragansett Bay very few lobsters under 9 inches have become sexually mature, although 9 inches is a good average. Herrick places the range in length of the Massachusetts lobster at the time of sexual maturity at from 8 to 12 inches, and thinks that 10½ inches is the average length at sexual maturity.

8. *Spawning Habits.*

The female lobster spawns once in two years. (Plate 5.) The eggs as a rule are laid during July and August, but some few lobsters lay them later in the fall or winter. Hatching occurs the following summer at a time determined by the temperature of the water. In Narragansett Bay it takes place from the first of May to the middle of July.

The lobster therefore carries its eggs for a period of 10 or 11 months before they hatch. The number of eggs carried by a lobster varies according to the size of the lobster; thus, according to Herrick, assuming that an 8-inch lobster has on the average 5,000 eggs, a 10-inch lobster would have 10,000, a 12-inch lobster 20,000, etc. A lobster about 16 inches long would thus lay about 80,000 eggs. This is, however, a low average. Lobsters 16 inches in length may have 100,000 eggs. When the female lobster is bearing eggs, she usually frequents some rocky shore where she can better protect herslf.

9. *Larval Stages.*

During the first two weeks which follow hatching, the lobster passes through larval period, during which it molts 3 times before it takes on the general external appearance of the adult. In each period it differs in form and habits as well as size. The main characteristics are as follows:

First Stage. (Plate 1.) In this stage the lobster swims rather feebly at the surface by the use of the outer branches of the thoracic appendages. The last segment of the abdomen bears one piece which is cleft like a fish's tail. The abdominal swimmerets are lacking, and the limbs that usually bear the big claws are of the same size as the walking limbs. In this, as

in the second and third stages, the fry are ravenous feeders. The average number of days that the fry continue in this state at Wickford is five.

Second Stage. (Plate 2.) After the first molt the lobster's claws become a little larger than the other limbs, but remain hanging down. The abdominal swimmerets appear, although the thoracic swimming organs are used almost entirely in swimming. The tail lacks those outer segments which cause it to be characterized later as the "tail-fan." The average number of days in this stage at Wickford is three.

Third Stage. (Plate 3.) The lobster after the second molt has proportionally still larger claws than the larvæ of the second stage, but they still droop. The abdominal swimmerets become fringed with short hairs, and the outer blades of the "tail-fan" make their appearance. Swimming is still by use of the thoracic appendages. The greater size and more vigorous swimming causes this stage to be easily distinguished from the preceding stages. Four days is the average length.

Fourth Stage. (Plate 4.) The lobster at this stage becomes shaped like the adult. The claws are carried in front while swimming. The thoracic swimming appendages become reduced and functionless, and in general the unmistakable resemblance to the adult easily determines this stage from the preceding ones. The swimming is now very vigorous, and, when swimming in the rearing bag, it always heads toward the current. Burrowing is begun to a certain extent in this period. The average number of days required at Wickford to reach this stage from the time of hatching is thirteen.

10. *Adolescent Period.*

Later stages develop other structural changes, although more gradually. At the seventh stage the appendages on the first abdominal segment appear as buds, and by the eighth stage have developed sufficiently to enable the sex to be told. Beyond this stage the changes consist merely in the gradual assumption of the mature form and structure.

11. *Some Peculiar Means of Self-Preservation.*

Any one who has handled lobsters under 3 inches in length is familiar with the fact that the little fellows, when handled, will straighten out and to every appearance seem to be dead. The rigidity does not cease immediately when replaced in the water. This death-feigning habit is gradually outgrown, and perhaps is never found among adult lobsters. It is supposed to be useful to the animal in protecting itself against fishes which prefer live food.

Autotomy, the voluntary shedding of an appendage, is another habit which is more easily seen to be self-preservative. If a lobster's claw is held too tightly or crushed, it is almost always quickly dropped off. As it can again be regenerated the lobster is only maimed for a short time, while the loss of the claw may prevent the lobster from getting pulled out of its burrow and destroyed.

12. *Sensibility to Light.*

The adult lobster is negatively heliotropic, *i. e.*, it will endeavor to get away from the light. This is not, however, characteristic of all stages. In the first three larval stages the fry seem to seek the lighted area (positively heliotropic). The fourth stage also has this peculiarity till near the end of the stage, when it seems to anticipate the later stages and becomes negatively heliotropic. This negative heliotropism is perhaps the explanation of the fact that at this time also the lobster leaves the surface and begins to burrow at the bottom.

It is an interesting fact, also, that the fry when confined in one of the rearing bags, though closely crowded together, while carried rapidly around by the current, will avoid, and keep some little distance away from, any white object, such as a stick or a paddle blade thrust in among them.

13. *The Enemies of the Lobster.*

From the moment of hatching until death the lobster is beset with enemies. The amount of harm which these can do, however, decreases as the lobster becomes larger. Some of these enemies are particularly antagonistic while the lobster is in the larval stage. In this period the natural mode of life of the lobster

fry renders them helpless. Their efforts at swimming are little more than "treading water." They are powerless against the slightest current of water, and are an easy prey to even the smallest fishes. Shrimp and tautog, as they frequent the places where the fry are found, are particularly dangerous foes. But perhaps they are their own worst enemies. A lobster larvæ is just as willing to pounce upon a weake neighbor as upon the choicest morsel of food.

After the larval period is past the lobster's enemies do not lessen, but the lobster can better protect itself by burrowing among the rocks. Herrick says that "every predaceous fish which feeds upon the bottom may be looked upon in general as an enemy to the lobster." Among these the cod, the sea eel, and the dogfish are particularly effective. So frequently are lobsters found in the stomachs of these fishes that fishermen are not loathe to state that the lobster is their principal diet. The most important foe of the adult lobster, however, is man, and his attacks are so successful that the lobster can not hold his own against them.

14. *Decrease in Abundance of Lobsters.*

From consideration of the many enemies it is not wonderful that the supply of lobsters all along the coast should become less. All of the facts as given above are, to some extent, responsible for this depletion, but excessive fishing is the most important. The problem of lobster preservation, therefore, resolves itself into the protection of the lobster from its natural enemies at the critical periods of its life, and also in regulating and restricting the fishing."

Infractions of the lobster law still continue, and the Wardens have been very busy enforcing its provision. That there are still those who handle illegal lobsters the following table, showing the number of short lobsters seized, will demonstrate:

Table showing short lobsters seized in 1905 and 1906, and the county wardens who took the same.

County	Number lobsters seized under 10½ inches long	
	1905	1906
York wardens seized.....	557	240
Cumberland wardens seized.....	8,020	16,650
Sagadahoc wardens seized.....	1,487	1,627

Lincoln wardens seized	28,517	27,190
Knox wardens seized	3,144	3,382
Hancock wardens seized	3,200	731
Washington wardens seized	205	1,586
Total seizures	45,130	51,406

The large number of seizures made by Lincoln county wardens was made in several counties, while most of the other seizures were made each in their respective counties.

I make this explanation in order to show that Lincoln county is not as wicked as the above figures indicate.

The act of the legislature in 1903 known as the Seed Lobster law is working admirably, and its importance and value to the fishery is being recognized everywhere.

The launch "Sea Gull," Captain L. S. Nickerson, has been constantly engaged in the collection and delivery of the egg-bearing lobsters.

The following statement shows what he has done in conjunction with the United States Department of Fisheries, the United States Commissioner Bowers in charge:

Purchased from the lobster fishermen and dealers, under the act mentioned, from November 30, 1904, to November 30, 1905, 22,980 lobsters

These were disposed of as follows:

Liberated at the time of purchase	8,886		
Delivered to the U. S. hatchery at Boothbay Harbor for propagation of eggs	14,094	22,980	"
Purchased from fishermen and dealers, under act, from November 30, 1905, to Noember 30, 1906		18,593	"
Liberated at time of purchase	4,545		
Delivered to hatchery at Boothbay Harbor	14,048	18,593	"

W. E. Blossom, engineer of the State launch "Sea Gull," reports that she has sailed more than 16,000 miles during the three last seasons in which she has been employed in collecting egg-lobsters for the State—two-thirds the distance around the world.

The table following will show the disposition of the lobster fry artificially hatched from lobsters delivered to hatchery for both 1905 and 1906. The report is made to this department by E. E. Hahn, superintendent at Boothbay Harbor.

About 10,000 lobsters come to the hatchery subsequent to end of the hatching season of 1907 are held in their pound and cars ready to commence hatching operations with the commencement of the season of 1907.

The hatchery has also done good work in the hatching of cod fish, having collected the spawn from the fishermen on the fishing grounds from their market fish, and has liberated 47,105,000 young codfish in our waters during 1905 and 29,780,000 in 1906.

There is no question in my mind as to the great assistance the United States is giving Maine to keep up her supply of cod and lobsters. Fishermen along our coast report that there have never during their experience been so many small lbsters as at the present time, notwithstanding the continued practice of many of our fishermen of saving and selling the "shorts."

In this connection I quote a letter from N. J. Hanna, published by the Portland Advertiser in September, 1905, in reply to a published interview by the Advertiser with a lobster smack captain, who thought the reported scarcity of lobsters was wholly due to the work being done by the United States lobster hatchery in our State.

NEW HARBOR, September 4, 1905.

To the Editor of the Advertiser:

SIR:—Please allow me the privilege of answering the opinion of the smack captain who was interviewed by one of your reporters last week relative to the present scarcity of lobsters. He assigns but one reason which is, that the United States government hatchery has done the work. Now let me contrast the difference before the government thought of hatching lobsters by artificial process, and the condition now.

Before this process began nine-tenths of the 2,500 lobster fishermen would, in violation of law, take the mother fish as soon as she was caught and scrape the eggs from her body with a coarse brush carried in his boat for this purpose and sell them to the smacks which would eagerly grab them, consign them to their well and land them in the market, never again to be egg bearing but simply to fill the stomach, and our smack captains

were as fierce to get them as the lobster fisherman was to sell them. Now let us see what our State government is doing. Why, she has appropriated $5,000 annually to pay the fishermen for these seed lobsters; in other words, she has paid them a bonus to take care of a statute law that they were in duty bound to obey under a penalty of $10 for every lobster sold or scraped in seed.

The government takes these fish, impounds them and as fast as the eggs come to maturity they are taken from the lobsters to the hatchery, there hatched out, and liberated in the bays and rivers of our state, while the mother lobster is tagged and set free to again become egg bearing and again caught by our fishermen. By this method the mother lobster is always kept for breeding purposes. Don't you think, captain, this method is far better than the scraping process, and which method do you think would go the farthest or have the greatest tendency to destroy our lobster industry?

I will now offer three causes for the present scarcity of lobsters and three causes they are that no fisherman can deny: First, each lobster fisherman on the coast of Maine now engaged in the lobster business is using on an average 12 little lobsters per day for the purpose of catching cunners to bait his traps and as there are at present 2,700 men employed in the business it takes 32,400 little lobsters per day for cunner traps alone, or 226,800 per week, or 907,200 per month or 19,886,400 per year; no fisherman will dare to dispute these figures.

My second reason is this, that for two months out of the year we have on the coast of Maine about 100,000 summer tourists and with all the vigilance of twenty-four wardens, these people will average at least one small lobster to each person per day. This would take 100,000 per day of 700,000 per week or 2,800,000 per month or 5,600,000 for the two months that our summer visitors are with us. Add to this what the fishermen consume in their families and what is smuggled out of the state each year, you will then come pretty near knowing what has depleted our lobsters on the Maine coast and I now ask the captain whom he holds responsible for this wholesale extinction? Has the lobster hatchery had anything to do with the several ways I have enuremated, which you know to be facts. The whole fault lies with the 2,700 lobster fishermen. If they don't haul short

lobsters, no person can buy them, the summer tourist cannot get them, the hotels cannot get them.

Let every fisherman haul nothing but the 10½ inch fish that he takes from his trap; do just as he agreed to do when the 10½ inch law was enacted, and in less than five years from this date there would not be smacks enough on the coast to freight the legal lobsters, but the disappointed captain says, let us commence at the tail to kill the snake, a method, by the way, so often tried before and proved a failure; yes, he says, catch up the little ones and throw over the large ones, or in other words, let us kill all the boys, the old men will die themselves, for this is about what that kind of legislation amounts to. Let the fishermen, by the present and all sufficient law, do as they agreed and there will be no further need of tinkering the lobster law, and your smack captains can be asked with some sense of propriety to throw overboard all those that you put into your wells that you know are too short, and that you are forbidden by law to purchase.

I have had twelve years' experience as a warden on our coast and many years' experience as a fisherman, and this is the first time I have ever advocated a close time, and I am not advocating this close time against summer tourists, or summer boarding houses or hotels, but I advocate it against the fishermen who are continuously hauling and destroying little lobsters in the manner I have described. I also advocate a close time against the smackmen who purchase from three to six shorts in every hundred, and oftentimes from ten to fifteen in a hundred. This close time is as sure to come as death is sure.

There has been practically a close time for the past two months from Bar Harbor to Eastport, very nearly half of the Maine lobster fishermen having had their traps on dry land, which has been another cause for the scarcity of legal lobsters. I now advocate, and shall continue to advocate, a close time on the taking of lobsters in Maine water from June 1 until October 1 of each year for a period of five years, and that the wardens be empowered to cut everything away found in the Maine water between that time, for the purpose of taking lobsters. The summer tourist would not be badly hurt by this close time for this reason, all the lobster pounds would be filled with Nova Scotia lobsters in April and May, and from these pounds our

summer tourist could get them simply by paying the market price; they would no longer be obliged to hold out inducements to our easily persuaded fishermen to bring them the baby lobsters and to violate law. The hatchery would not suffer much for seed lobsters as these pounds yield up a much larger percentage of seed fish than the fishermen in Maine purcahse, and by the way these seed fish are a clear gain to our fishermen as they are all caught in foreign waters. The only class who will suffer any great inconvenience by an annual close time of four months is the violating fishermen and the smack men who insist on takig lobsters less than 10½ inches long. But in conclusion, I still adhere to the fact that no close time is needed or ever would be on the Maine coast, if the 2,700 lobster fishermen would only obey the present and all-sufficient law.

N. J. HANNA, *Warden.*

TABLE No. 1—DISTRIBUTION OF LOBSTER FRY.

Date planted.	Fry planted.	Where liberated.
1905.		
May 31....	2,000,000	Near shore of Monhegan Island.
May 31....	500,000	Head of Tenants Harbor.
June 1...	500,000	Head of Rockland Harbor.
June 5....	1,200,000	Stonington Harbor.
June 5....	1,200,000	1 mile north of Mackerel Cove, Blue Hill Bay.
June 5....	300,000	¼ mile east of Prospect Point, Prospect Harbor.
June 5....	300,000	¼ mile east of Clark's Point, Prospect Harbor.
June 5....	300,000	¼ mile west of Shark's Cove, Prospect Harbor.
June 5...	450,000	East by south of Cranberry Point, Prospect Harbor.
June 6....	1,000,000	Horse Island Harbor, Casco Bay.
June 6....	1,000,000	Lowell's Cove, near Orr's Island, Casco Bay.
June 9....	875,000	½ mile S. S. E. of Petit Manan Light.
June 9....	875,000	½ mile south of Jonesport, Moosebec Reach.
June 9....	2,800,000	¾ mile W. by N. of Little River Light, Cutler Harbor.
June 12 ...	900,000	Georges Island Harbor.
June 12....	1,050,000	Port Clyde Harbor.
June 14....	500,000	5 miles west of Monhegan Light.
June 15....	1,500,000	Georges Island Harbor.
June 15...	750,000	Near northern end of Metinic Island.
June 15....	750,000	Near southern end of Metinic Island.
June 15....	1,500,000	Mouth of Matinicus Harbor.
June 16....	500,000	Tenants Harbor.
June 17....	300,000	Harmond's Harbor, near Georgetown.
June 17....	300,000	Griffith's Head Cove, near Georgetown.
June 19....	1,140,000	Indian Harbor, near Steuben.
June 19....	1,900,000	¼ mile S. E. of Steuben, Dyer's Bay.
June 19....	1,710,000	¼ mile south of Milbridge, mouth of Narraguaguas River.
June 21....	800,000	Boothbay Harbor, near Tumbler Island.
June 23....	2,500,000	Wood Island Harbor.
June 24....	1,000,000	Kennebunkport Harbor.
June 24. ..	1,000,000	Off Kennebunk Beach.
June 24....	2,000,000	Cape Porpoise Harbor.
June 26....	1,050,000	¼ mile south of Winter Harbor, in Mosquito Creek.
June 26....	1,050,000	Cranberry Island Harbor.
June 26....	1,050,000	Southwest Harbor, near Mt. Desert Island.
June 28....	500,000	Tenants Harbor.
June 29. ..	2,500,000	Matinicus Harbor.
June 29....	700,000	Friendship Harbor.
June 30....	850,000	Boothbay Harbor, near Mouse Island.
July 3. ..	2,500,000	Lowell's Cove, near Orr's Island, Casco Bay.
July 5....	700,000	¼ mile S. by E. of High Head, near Deer Island.
July 5....	700,000	¼ mile of Toothacher H'd., Pickering's Cove, near Deer Is.
July 5....	700,000	¼ mile S. W. of Robbin's Bar, S. W. Harbor, near Deer Is.
July 5....	525,000	Crocket's Cove, near Deer Island.
July 5 ...	700,000	Billings' Cove, near Deer Island.
July 7....	1,075,000	Lobster Cove, near west shore of Linekins Bay.
July 7....	1,200,000	½ mile north of Five Islands, Sheepscot River.
July 11 ...	3,000,000	Cape Porpoise Harbor.
July 11....	3,000,000	Near Fletcher's Neck.
July 12...	850,000	Boothbay Harbor, near McKown's Point.
July 14....	1,050,000	Bass Harbor.
July 14....	1,050,000	Prospect Harbor.
July 14....	1,225,000	Winter Harbor.
July 18....	1,000,000	South West Harbor.
July 19....	500,000	Prospect Harbor.
July 24....	380,000	Smith's Harbor, S. E. side Vinalhaven Is., Penobscot Bay.
July 24....	380,000	Arey's Harbor, S. E. side Vinalhaven Is., Penobscot Bay.
July 24...	380,000	Robert's Harbor, Vinalhaven Island, Penobscot Bay.
July 24....	380,000	Old Harbor, S. W. side Vinalhaven Is., Penobscot Bay.
July 24....	190,000	Sand's Harbor, Vinalhaven Island, Penobscot Bay.
July 24....	190,000	Carver's Harbor, Vinalhaven Island, Penobscot Bay.
July 26....	850,000	Boothbay Harbor.
July 27....	925,000	Kennebunk Beach Cove.
Aug. 1...	1,375,000	Lowell's Cove, Orr's Island.
Aug. 2....	975,000	Boothbay Harbor
Aug. 5....	1,000,000	Boothbay Harbor, off Mouse Island.
Aug. 7...	2,625,000	Tenants Harbor.
Aug. 8....	993,000	Boothbay Harbor
Aug. 9....	850,000	Boothbay Harbor, off Burnt Island.
Aug. 10 ...	3,000,000	¾ mile N. W. Cow Island, Casco Bay.
Aug. 11....	1,000,000	Ebenecook Harbor, Sheepscot River.
Aug. 12....	1,000,000	Pemaquid Harbor.
Aug. 14 ...	2,000,000	Off Small Point, Casco Bay.
Aug. 16....	2,150,000	Long Cove, Westport, Sheepscot Bay.
	81,518,000	

TABLE No. 2—DISTRIBUTION OF LOBSTER FRY.

Date of shipment. 1906.	Fry shipped.	Date planted.	Fry planted.	Point of deposit.
June 1...	1,000,000	June 1...	500,000	Casco Bay, Orr's Island.
		June 1...	500,000	Monhegan, Atlantic Ocean.
June 4...	500,000	June 4...	250,000	Southern end Georges Island, Atlantic Ocean.
		June 4...	250,000	Carver's Harbor, Vinalhaven.
June 4...	2,000,000	June 5 ..	2,000,000	Garrish Island Cove, Kittery Point, Atlantic Ocean.
June 6...	3,500,000	June 6...	500,000	New Harbor, New Harbor, Me.
		June 6...	3,000,000	Tenant's Harbor, Tenant's, Harbor.
June 7...	2,500,000	June 7...	1,500,000	Horse Island Harbor, Small Point, Me.
		June 7...	1,000,000	Small Point Harbor, Small Point, Me.
June 8...	3,000,000	June 8...	1,000,000	Marsh Island, Muscongus Sound.
		June 8...	2,000,000	Friendship Harbor, Friendship, Me.
June 9...	3,000,000	June 9...	1,500,000	Christmas Cove, Damariscotta River.
		June 9...	1,500,000	Pemaquid Beach, Thread of Life, John's Bay.
June 11...	5,000,000	June 11...	2,000,000	Tenant's Harbor.
		June 11...	3,000,000	Rockland Harbor.
June 12...	4,000,000	June 13...	1,000,000	York Harbor, York, Me.
		June 13...	2,000,000	Waters around Isle of Shoals, Me.
		June 13...	1,000,000	Kittery Point, Me., Atlantic Ocean.
June 13...	2,500,000	June 13...	1,000,000	Cape Porpoise Harbor.
		June 13. .	1,500,000	Biddeford Pool.
June 14...	3,000,000	June 14...	3,000,000	Waters around Pond Island, Casco Bay.
June 15...	1,500,000	June 15...	1,500,000	Waters around Georges Island, Atlantic Ocean.
June 15...	2,500,000	June 15...	1,000,000	North Haven Cove, North Haven, Me.
		June 15...	1,500,000	Webb's Cove, Deer Isle, Me.
June 16...	3,000,000	June 16...	3,000,000	Waters around Bailey's Island, Casco Bay.
June 18...	4,500,000	June 18...	4,500,000	Waters around Schoodic Peninsula, Frenchman's Bay.
June 19...	3,500,000	June 19...	3,500,000	Herrick's Bay, Brooklin, Me.
June 19...	6,500,000	June 20...	2,000,000	Wood Island Harbor, Biddeford Pool, Me.
		June 20...	2,000,000	Cape Porpoise Harbor.
		June 20...	2,500,000	Kennebunk Beach Harbor.
June 20...	6,000,000	June 20...	500,000	Frenchman's Bay, New Harbor, Me.
		June 21...	4,000,000	Johnson's Bay, Eastport, Me.
		June 21...	1,500,000	Haycock's Harbor, Cutler, Me.
June 21...	3,500,000	June 21...	1,500,000	Port Clyde Harbor, St. George, Me.
		.....	2,000,000	Pleasant Gut, Cushing, Me.

DISTRIBUTION OF LOBSTER FRY—CONCLUDED.

Date of shipment. 1906.	Fry shipped.	Date planted.	Fry planted.	Point of deposit.
June 23...	5,000,000	June 23...	1,500,000	Linekin's Bay, Head Waters.
		June 23...	1,500,000	Maddocks Cove, Southport, Me.
		June 23...	2,000,000	Waters around Five Islands, Me.
June 25...	3,500,000	June 25...	3,500,000	Matinicus Harbor, Matinicus, Me.
June 25...	5,500,000	June 26...	5,500,000	Waters around Garrish Island, York, Me.
June 26...	1,500,000	June 26...	1,500,000	McCartie's Cove, Sheepscot River, Westport, Me.
June 27...	2,500,000	June 27...	1,000,000	New Harbor.
		June 27...	1,500,000	Marsh Island Harbor.
June 28...	4,000,000	June 28...	1,000,000	Northwest Harbor, Cross Island, Me.
		June 28...	1,000,000	Northeast Harbor, Cross Island, Me.
		June 29...	2,000,000	Lakeman's Harbor, Machias, Me.
June 29...	5,000,000	June 30...	1,000,000	Saco Bay, Biddeford, Me.
June 30...	2,000,000	July 1...	3,000,000	Wood Isle Harbor, Biddeford, Me.
		July 3...	3,000,000	Cape Porpoise, Harbor.
July 2...	2,000,000	July 2...	1,000,000	Pemaquid Harbor.
		July 2...	1,000,000	John's Bay, South Bristol, Me.
July 3...	1,500,000	July 3...	1,500,000	Lowell's Cove, Orr's Island, Me.
July 5...	3,000,000	July 6...	3,000,000	Eastern Bay, Lamoine, Me.
July ...	1,500,000	July 7...	1,500,000	Cape Porpoise Harbor.
July 10...	3,[illegible],000	July 10. .	1,500,000	Long Island Harbor, Bluehill, Me.
		July 10...	1,500,000	Southwest Harbor, Mt. Desert, Me.
July 12...	3,000,000	July 13...	3,000,000	Penobscot Bay, West shores of Little Deer Isle.
July 16...	3,500,000	July 16...	3,500,000	Damariscotta River, East Boothbay, Me.
July 19...	1,500,000	July 19...	1,500,000	John's Bay, Head waters.
July 24...	3,500,000	July 24...	3,500,000	Lowell's Cove, Orr's Island, Me.
July 30...	3,000,000	July 30...	3,000,000	York Harbor, Me.
July 31...	2,125,000	July 31...	2,125,000	Boothbay Harbor, Me.
Aug. 4...	2,375,000	Aug. 4...	2,375,000	Boothbay Harbor, Me.
Aug. 9...	2,500,000	Aug. 9...	2,500,000	Boothbay Harbor, Me.
Total .	122,500,000	.....	122,500,000	

TABLE No. 3—DISTRIBUTION OF COD FRY.

Date planted.	Fry planted.	Where liberated.
1905.		
March 28....	390,000	Ebenecook Harbor.
March 30....	1,332,000	Near west shore of Dog Fish Head, Sheepscot River.
March 31....	1,766,000	Southwest of bell buoy, ½ mile off the Cuckolds.
April 6....	1,562,000	¼ mile S. S. W. of Spruce Point Ledge, mouth of Linekens Bay.
April 7....	1,532,000	⅝ mile Northwest of Hendricks Head Light, Sheepscot R.
April 11...	2,592,000	1 mile south of Squirrel Island.
April 13...	1,344,000	1 mile W. N. W. of Hendricks Head Light, Sheepscot R.
April 18....	1,307,000	East of Duck Rock, near Monhegan Island.
April 19....	813,000	4 miles N. E. by E. of Squirrel Island.
April 25....	1,978,000	½ mile east of Sisters Ledge, Sheepscot Bay.
April 26....	1,295,000	⅜ miles S. W. of bell buoy off The Cuckolds.
April 29....	980,000	1 mile N. N. E. of Mark Island, Harpswell Sound, Casco Bay.
May 2....	1,566,000	1½ miles north of Black Rocks, Sheepscot Bay.
May 5....	1,189,000	½ mile S. W. of Pond Island Reef. Casco Bay.
May 6....	1,203,000	1 mile E. S. E. of New Harbor, Muscongus Sound.
May 8....	1,007,000	2 miles south of Pemaquid Point.
May 9....	1,730,000	1½ miles southeast of the Sisters, Sheepscot Bay.
May 10....	1,021,000	1 mile south of the Sisters, Sheepscot Bay.
May 12....	2,189,000	5 miles southeast of Monhegan Island.
May 13....	2,124,000	5 miles S. S. E. of Halfway Rock.
May 15...	1,249,000	1½ miles southeast of Toms Rock buoy, Sheepscot Bay.
May 16....	567,000	½ mile west of Hendricks Head Light, Sheepscot River.
May 18....	1,832,000	⅝ mile west of Mark Island, Sheepscot Bay.
May 22....	1,281,000	¼ mile E. N. E. of Dog Fish Head, Sheepscot River.
May 24....	1,903,000	2 miles S. E. of Cape Elizabeth Lights.
May 25....	834,000	¼ mile N. E. by E. of Dog Fish Head, Sheepscot River.
May 30....	4,326,000	3 miles south of Cape Elizabeth Lights.
May 31....	3,185,000	4 miles south of Cape Elizabeth Lights.
June 1...	940,000	2½ miles S. W. of Ragged Island, Casco Bay.
June 2...	2,068,000	Pemaquid Harbor, Johns Bay.
Total.....	47,105,000	

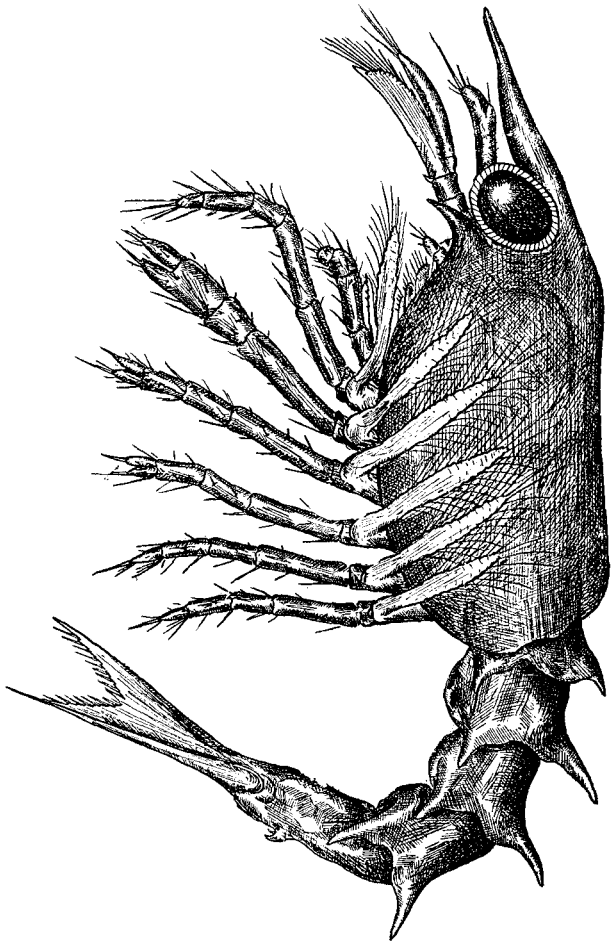
Detailed information as to the fishery will be found in the following tables to which reference may be had.

TABLE No. 4.

EXHIBITING BY COUNTIES DETAILED INFORMATION AS TO THE LOBSTER FISHERY IN THE STATE OF MAINE, FOR THE YEAR 1905.

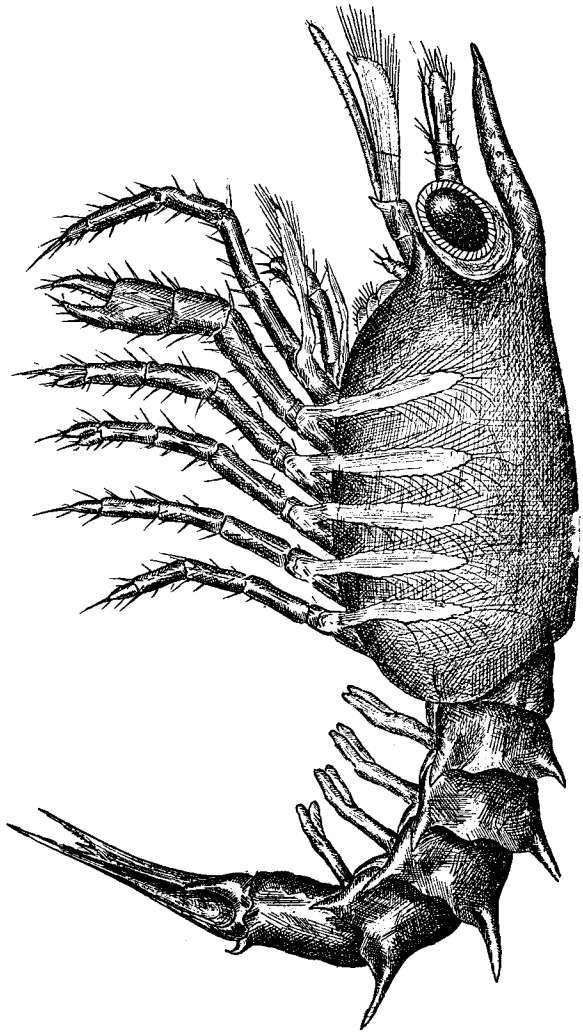
County.	Lobsters taken.		Boats Used.		Cars.		Pounds.		Pots.		Men engaged.	Lobster Smacks.	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.		Number	Value.
Washington ...	1,372,090	$260,144	450	$76,800	335	$5,600	4	$9,000	27,120	$27,120	452	20	$10,000
Hancock	1,568,558	284,640	495	97,800	430	5,600	3	6,500	34,660	34,660	495	22	12,000
Waldo	6,361	1,477	11	785	6	60	.....	.....	230	175	9		
Knox.....	1,903,817	356,361	485	64,243	462	7,520	2	6,000	40,200	43,000	545	25	36,100
Lincoln	1,939,865	359,816	570	51,055	523	4,050	6	25,000	48,355	56,355	582	5	3,000
Sagadahoc	183,207	35,651	97	5,300	103	417	.....	.....	4,400	4,400	115		
Cumberland ...	272,050	58,574	164	14,940	229	6,815	2	4,500	7,085	7,085	225	23	58,000
York	179,350	37,693	160	10,100	142	845	.....	.....	7,300	9,100	139		
Total	7,425,298	$1,394,356	2,432	$321,023	2,230	$30,907	17	$51,000	169,350	$181,895	2,562	95	$119,100

In addition to the above number of lobsters caught in Maine there have been imported from Nova Scotia 175,590.



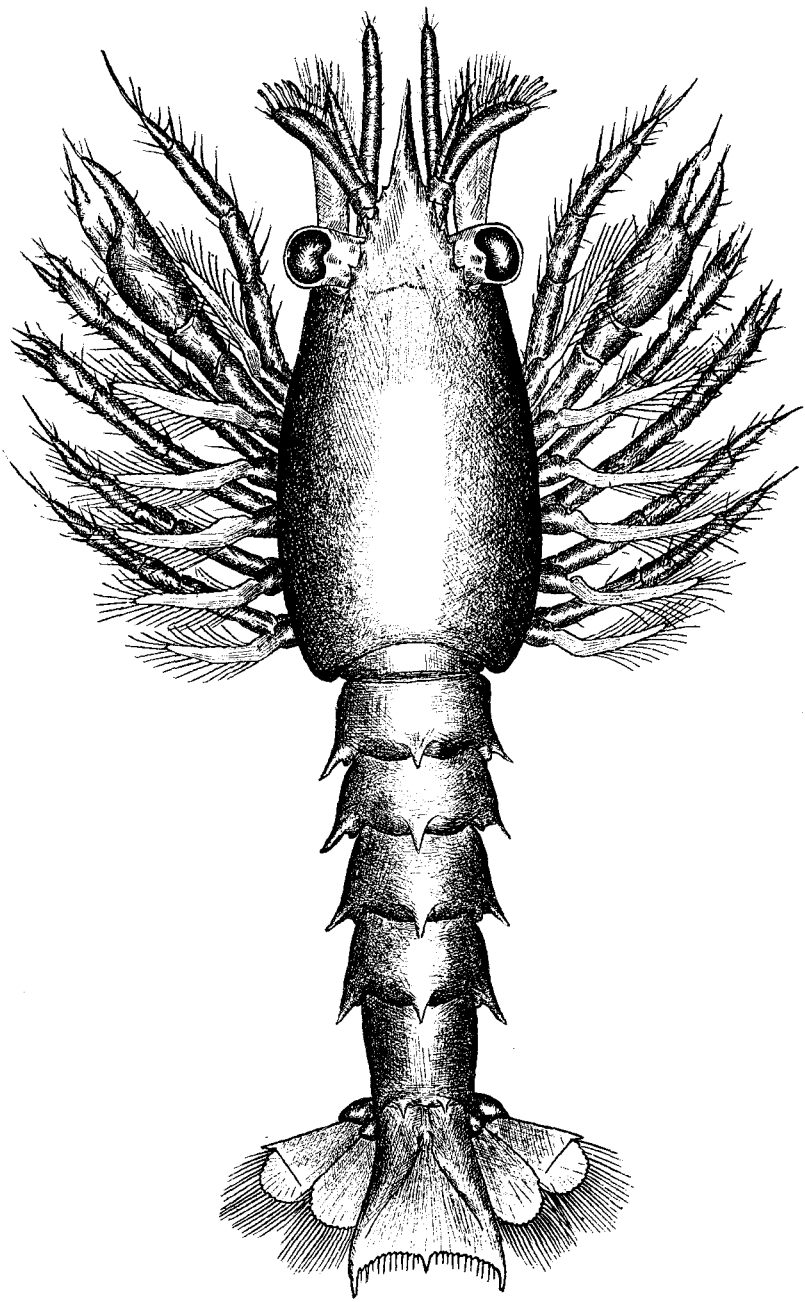
MAINE FARMER PRESS, AUGUSTA

Plate 1
First stage lobster



MAINE FARMER PRESS, AUGUSTA

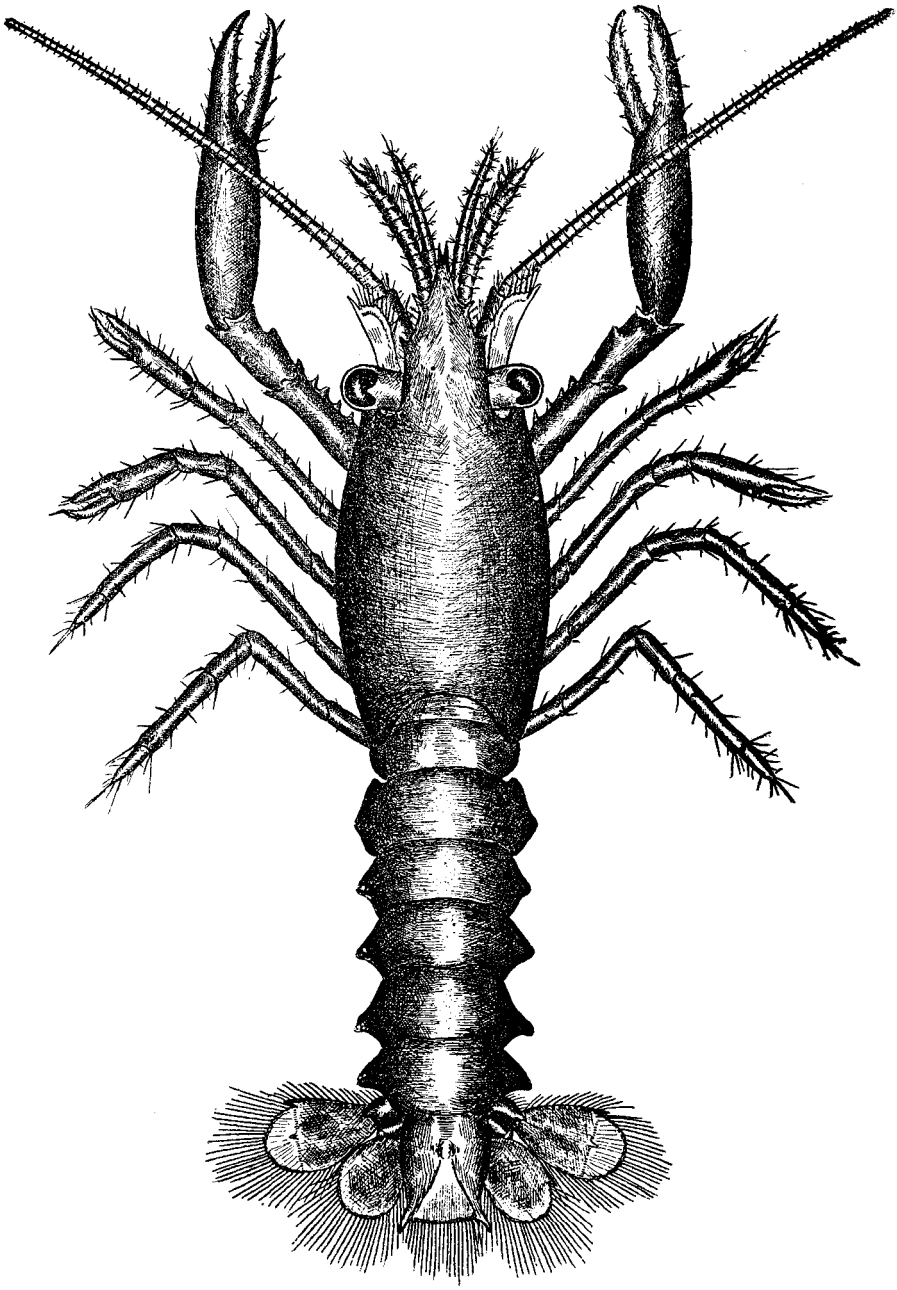
Plate 2
Second stage lobster



MAINE FARMER PRESS, AUGUSTA

Plate 3

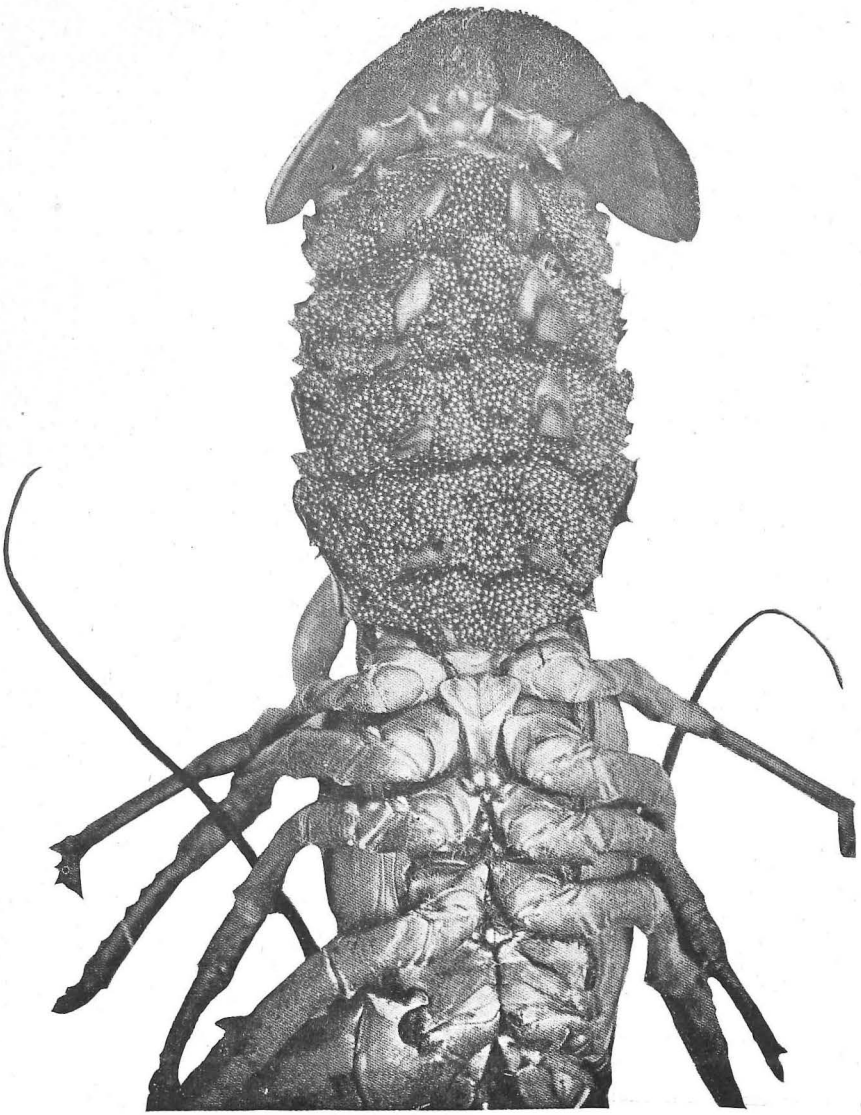
Third stage lobster



MAINE FARMER PRESS, AUGUSTA

Plate 4

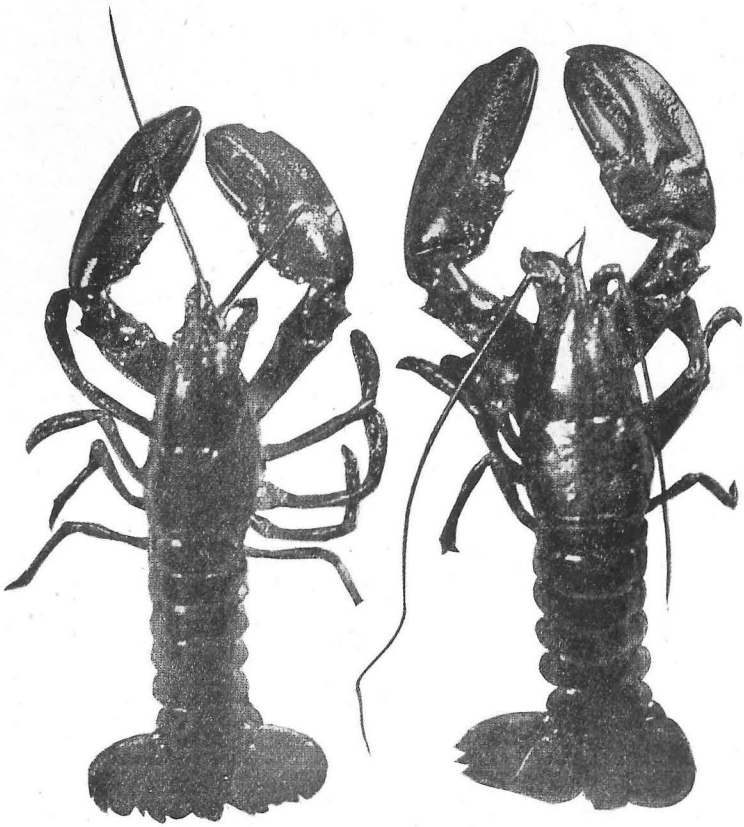
Fourth stage lobster



MAINE FARMER PRESS, AUGUSTA

Plate 5

An adult female lobster in "berry," so-called, or bearing the egg-clusters under the tail
(Photograph from life)



MAINE FARMER PRESS, AUGUSTA

Plate 6

Showing a young, newly-molted lobster (right), together with its old shell
Age, 2 yrs., 5 mos.; size, 5⅝ inches

TABLE No. 5.

EXHIBITING BY COUNTIES DETAILED INFORMATION AS TO THE LOBSTER FISHERY IN THE STATE OF MAINE, FOR THE YEAR 1906.

County.	LOBLTERS TAKEN.		BOATS USED.		CARS.		POUNDS.		POTS.		Men engaged.	LOBSTER SMACKS.	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.		Number.	Value.
Washington ...	1,492,276	$288,154	478	$107,350	337	$5,620	4	$9,000	27,380	$27,380	478	18	$11,000
Hancock	1,690,427	340,586	518	122,800	363	3,800	4	6,000	36,550	36,550	520	9	6,500
Waldo	4,430	1,141	9	735	5	50	.....	.....	161	123	6		
Knox.....	2,675,536	430,240	520	62,800	488	7,220	6	18,000	43,660	46,660	540	23	33,500
Lincoln	1,994,103	426,983	548	53,125	473	3,725	7	28,000	45,400	57,125	614	10	10,200
Sagadahoc.....	245,622	45,836	102	6,070	105	420	.....	.....	3,600	3,600	120		
Cumberland...	317,057	72,946	229	22,440	270	5,970	2	4,500	10,820	10,820	265	23	59,150
York	160,061	34,760	169	10,930	131	1,015	.....	.....	6,500	8,122	129		
Total	8,579,512	$1,640,646	2,573	$386,250	2,172	$27,820	23	$65,500	174,071	$190,380	2,672	83	$120,350

In addition to the above number of lobsters caught in Maine, there have been imported from Nova Scotia 245,905.

TABLE No. 6.

TABLE OF LOBSTER LAWS IN THE VARIOUS STATES, 1906.

State.	Egg lobsters, penalty for not liberating.	Short Lobsters. Minimum size. Alive.	Short Lobsters. Minimum size. Cooked.	Short Lobsters. Penalty.	Uncooked mutilated remains. Penalty.	Not marking gear. Penalty.	Close Time. When.	Close Time. Penalty.	Unauthorized interference with gear. Penalty.	Non-residents fishing, and penalty.
Maine	$10.00 each.	10½ in.	10½ in.	$1.00 each	$20.00	Cars, $10.00 Traps, 5.00	.....	.....	$20.00 to $50.00	
New Hampshire	$10.00 each.	10½ in.	.....	$10.00 each	.....	Marking is necessary in order to bring suits for damages.	.....	.....	$50.00	
Massachusetts	For each offence $10.00 to $100.00, or 1 to 3 months' imprisonment.	10½ in.	10½ in.	$5.00 each	$5.00	.....	.....	.....	First offence $5 to $25, and 30 days; subsequent, $20 to $50, and 60 days.	Must be an inhabitant for 1 year, or $20 fine.
Rhode Island	$5.00	9 in.	8¾ in.	$5.00 each	$5.00	Confiscation; $20, or 30 days' imprisonment.	Nov. 15, to April 15.	$20.00 or 30 days' imprisonment.	$10.00	Must have home and residence in state for 1 year. $20, and 30 days.
Connecticut	$10.00 to $50.00, 30 days' imprisonment.	9 in.	9 in.	$10.00 to $50.00, or 30 days imprisonm't, or both.						
New York	No restriction	9 in.	.....	Determined by court as misdemeanor.						

THE GROUND FISHERY.

The methods employed in this industry are gradually changing from vessels of large capacity to very much smaller craft and boats. The large schooners formerly monopolizing this business are being sold either for fishery in other states, or changed into the coasting trade.

Boothbay Harbor has entirely dropped out of the Grand Bank fishery, and its fleet of vessels removed from the State. Bucksport is the only port left in Maine where a fleet of Grand Bankers is owned, and this fleet was very much reduced during the season last passed.

TABLE NO. 7.

STATISTICS OF THE GROUND FISHERY IN THE STATE OF MAINE, BY COUNTIES, FOR THE YEAR 1905.

County.	Fish Taken.		Tongues and Sounds.		Hake Sounds.		Oil.		Fish Stands and Houses.		Boats and Vessels.*		Men.	Amount paid for labor at fish stands.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Gallons.	Value.	Number.	Value.	Number.	Value.		
Washington	4,583,343	$88,493	.....	.....	23,600	$1,180	22,000	$7,040	88	$59,600	471	$58,676	387	$26,000
Hancock	6,857,569	132,923	9,000	$540	79,627	5,986	16,000	4,812	35	31,500	171	122,020	345	3,100
Waldo	23,200	590												
Knox	12,101,379	195,578	13,700	773	224,268	11,306	33,948	8,941	139	97,700	95	66,976	405	†54,800
Lincoln	4,179,139	80,085	2,400	120	181,200	11,325	16,000	3,455	308	44,700	89	36,748	249	9,000
Sagadahoc	2,404,744	49,189	.....	.....	16,620	757	3,464	1,639	68	12,995	82	6,810	101	1,264
Cumberland	15,019,290	345,089	4,000	210	48,960	2,646	10,300	2,771	81	14,750	84	83,910	260	24,668
York	6,368,500	181,862	.....	.....	.....	.....	1,400	398	78	13,900	252	67,746	199	1,500
Total	52,137,164	$1,073,809	29,100	$1,643	574,275	$33,200	103,192	$28,456	797	$275,145	1,244	$442,886	1,946	$120,332

* Value includes gear used with the boats. † Includes $4,000.00 paid at glue factories.

Ground fish table includes cod, hake, haddock, pollock, cusk, halibut, tom cod, cunners, flounders, eels, sword-fish and bass.

Two glue factories in Knox County, value $7,000, produced 603 barrels glue, value $2,412.00, and two fertilizer plants, value $16,000, produced 210 tons scrap, value $4,200.00.

TABLE NO. 8.

STATISTICS OF THE GROUND FISHERY IN THE STATE OF MAINE, BY COUNTIES, FOR THE YEAR 1906.

County.	Fish Taken.		Tongues and Sounds.		Hake Sounds.		Oil.		Fish Stands and Houses.		Boats and Vessels.*		Men.	Amount paid for labor at fish stands.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Gallons.	Value.	Number.	Value.	Number.	Value.		
Washington	3,935,080	$83,778	.....	.....	11,200	$700	20,060	$5,020	88	$59.000	286	$31,360	497	$25,000
Hancock	6,106,423	151,139	.....	.....	68,160	6,792	13,900	3,197	54	41,500	129	78,440	374	3,500
Waldo	13,300	252												
Knox	7,711,698	158,838	6,200	$310	96,613	4,988	32,637	9,865	137	68,900	103	45,663	404	†21,500
Lincoln	2,721,500	56,434	2,200	132	45,200	2,825	10,200	2,609	270	38,830	82	10,670	170	6,160
Sagadahoc	2,043,644	35,499	.....	.....	5,810	408	650	175	54	2,696	98	9,940	127	875
Cumberland	14,613,667	338,266	6,000	320	81,700	5,025	20,800	4,320	82	24,975	85	82,438	345	26,600
York	6,029,120	160,835	.....	.....	.....	.....	1,275	357	78	13,900	197	66,000	215	1,400
Total	43,174,432	$985,041	14,400	$762	308,683	20,738	99,522	$25,543	763	$249,801	980	$324,501	2,132	$85,035

* Value includes gear used with the boats. † Includes $4,000 paid at glue factories.

Ground Fish table includes cod, hake, haddock, pollock, cusk, halibut, tom-cods, cunners, flounders, eels, sword-fish, and bass.

Two glue factories in Knox County, value $7,000, and two fish fertilizer plants, value $9,000, produced 627 barrels of glue, value $2,508, and 230 tons fish fertilizer, value $5,750.

Knox County also produced 18,000 pounds of cod roes, value $600.

HERRING FISHERY.

There has been a large increase in production and value of this fishery, and this is encouraging.

As to the change in the law in relation to catching the herring which I advocated in my last report, I must say that I am still of the same opinion. I am aware that many weir owners and weir fishermen, and others, disagreed with my expressed opinion in that report, but I am so strongly impressed that I was right, and I consider the question of the change of the laws so important, that I here repeat what I said in my former report.

"During the years 1903 and 1904 I have seen more than ever before the need of a change in our present laws, which now do not allow herring taken in certain waters excepting in certain ways. Many days during this season, thousands of dollars might have come to the different counties if the law had allowed the herring to be taken when and wherever found.

In Washington and Hancock counties there has in the past been quite a general sentiment against the use of seines in the herring fishery, but this season has, I think, demonstrated to those who are connected with the herring fishery that they should have the same laws in the eastern counties that are in force in counties west of the west shore of the Penobscot river. My opinion is that we cannot with any good result legislate to either lessen, increase, or keep good the supply of herring on our coast—take them whenever and wherever they are found. The great ocean is their home, and any contrivance of man to catch them will not apparently lessen the quantity on our shores. Any fish that has the great ocean in which to roam and spawn is not to be relied upon to frequent every season any *one locality,* but in my opinion will be found where certain temperatures exist and food plentiful.

Some seasons these fish are on the coast of Maine in vast numbers, other years they are not with us; thus it behooves us to make the best of them when they are with us.

There is no good reason why the same law should not be operative in both sections of the State. In fact, the action of some of the weir owners and fishermen from the eastern section of the State who appeared before the legislative committee of the fisheries at Augusta, in the winter of 1905, in virulent opposition to the effort to make the same law applicable to waters east of the west shore of the Penobscot river as now applies to waters west of that shore, was most unreasonable and unreasoning.

I hope this session of the legislature will make the catching of herring equally free in both the eastern and western sections of our State waters.

Many sardine packers, because of the change in the law made in 1905 which does not now require the commissioner to report the amount of the sardine pack, have, through a misapprehension as to the scope of the amendment referred to, delayed this department in making report by withholding returns of the amount of wages paid for labor at their factories, and the number of persons employed, apparently fearing that the commissioner was asking too much, or improper returns, for the imformation of the public.

There is no disposition on the part of the commissioner to ask or require unnecessary information from the factory owners.

TABLE No. 9.

Showing in Detail and by Counties, Statistics of the Herring Fishery in the State of Maine for the Year 1905.

County.	Fresh and Salt.		Smoked. †		Smoke Houses.		Weirs and Traps.		Nets and Seines.		Boats and Steamers.		Sardine Canning Fertilizer and Cold Storage Plants.		Amount paid for labor in sardine factories and herring industry.	Amount of Scrap.		No. of persons engaged.*
	Bbls.	Value.	Boxes.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.		Tons	Val.	
Washington	399,612	$455,307	2,499,250	$246,256	162	$75,000	214	$67,000	624	$31,098	555	$174,500	63	$813,000	$1,533,293	1,175	19,370	5,852
Hancock....	86,237	69,428	-	-	2	250	52	14,250	87	920	128	22,240	8	89,000	94,250	1,000	2,500	523
Knox.....	28,018	26,529	-	-	-	-	39	20,000	289	2,950	133	10,560	2	11,000	12,000	-	-	158
Lincoln.....	61,101	75,124	33,600	3,366	27	5,700	34	30,200	191	7,030	105	32,615	8	44,000	33,066	-	-	444
Sagadahoc..	11,661	11,661	-	-	-	-	33	8,250	30	325	89	5,675	-	-	-	-	-	75
Cumberland	18,904	23,866	62,250	11,550	1	1,000	14	3,100	55	1,095	48	9,655	3	13,600	3,452	-	-	109
York.....	2,400	4,830	-	-	-	-	-	-	310	2,900	22	440	1	900	-	-	-	22
Total.....	607,933	$666,745	2,595,100	$261,166	192	$81,950	386	$142,800	1,586	$46,318	1,080	$255,685	85	$971,500	$1,676,061	2,175	21,870	7,183

* Includes cold storage, fertilizer plant, smokehouse and sardine factory employees.

Note—24,500 gallons herring oil were made in Washington County valued at $4,900.

† Includes bloaters.

TABLE NO. 10.

SHOWING IN DETAIL, AND BY COUNTIES, STATISTICS OF THE HERRING FISHERY IN THE STATE OF MAINE FOR THE YEAR 1906.

County.	FRESH AND SALT.		SMOKED.†		SMOKE HOUSES.		WEIRS AND TRAPS.		NETS AND SEINES.		BOATS AND STEAMERS.		SARDINE CANNING, FERTILIZING AND COLD STORAGE PLANTS.		Amount paid for labor in sardine factories and herring industry.	AMOUNT OF SCRAP.		Number of persons engaged.*
	Bbls.	Value.	Boxes.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.		Tons	Val.	
Washington	301,380	$257,291	3,287,600	$308,530	162	$75,000	214	$77,600	614	$30,899	550	$181,500	65	$846,000	$794,418	680	$ 11,000	6,200
Hancock ...	33,139	24,941	1,500	350	1	500	52	14,300	90	1,150	119	14,300	6	70,500	40,030	90	180	653
Knox	20,544	21,901	.....	.....	12	400	44	17,900	148	3,100	63	11,500	1	6,000	6,000	.....	.....	242
Lincoln.....	51,579	53,027	34,000	3,400	31	5,850	44	30,950	193	7,775	125	13,420	9	45,000	29,905	.....	.....	502
Sagadahoc .	10,753	19,046	.....	.....	....	.....	40	8,775	20	1,650	98	6,110	.....	.....	.....	.....	.....	185
Cumberland	33,097	34,267	36,000	5,200	3	1,100	17	6,000	65	4,080	65	14,167	3	18,900	5,850	22	44	132
York	5,712	7,876	.....	.....	....	.....	....	.....	299	3,044	57	2,055	1	900	.....	.....	.....	57
Total ...	456,204	$418,349	3,359,100	$317,480	209	$82,850	411	$155,525	1,429	$51,698	1,077	$243,052	85	$987,300	$876,203	792	11,224	7,971

* Includes cold storage, fertilizer plant, smoke house and sardine factory employees.
† Includes bloaters.
NOTE—25,250 gallons herring oil were made in Washington County, valued at $5,090.

THE FARMING AND CULTURE OF SHELLFISH.

Following in the line of the healthful agitation for several years of the important question of the increase of our shell fisheries, and adopting the urgent suggestions included in my recent reports—the last contained the substance of an official report made by Doctor Moore of the U. S. Fisheries Commission, Washington, upon the feasibility of oyster planting and culture in Maine waters, and also an urgent letter from Hon. Benjamin Thompson of Portland, upon the same subject, in which he is enthusiastically interested—the Legislature of 1905 passed the following bill, drawn by Mr. Thompson:

CHAPTER 88.

AN ACT for the encouragement, development and conservation of the Shellfish industry.

Sec. 1. The commissioner of sea and shore fisheries is hereby authorized and directed to expend from the moneys appropriated for the year nineteen hundred and five, for the protection of sea and shore fisheries, so much thereof, not exceeding the sum of one thousand dollars, as may be found necessary to make such experiments as in his judgment are necessary to conserve, extend, encourage, develop, improve and increase the shellfish industry in this state; and he is authorized, during the year nineteen hundred and six, to expend from the same appropriation and for the same purposes, not exceeding the sum of one thousand dollars, if in his judgment such expenditure can be judiciously made in the prosecution of the purposes and objects of this act.

COMMISSIONER MAY TAKE TWO ACRES.

Sec. 2. Said commissioner, in addition to the authority granted him under the provisions of section forty of chapter thirty-two of the Revised Statutes, may, for the purposes of this act, take any shore rights, flats and waters not exceeding an area

of two acres in extent at any one location, and hold the same for a period not exceeding ten years; and such location when so taken may be used by said commissioner, or by the United States commissioner of fish and fisheries, in the prosecution of the work of fish culture and scientific research relative to shellfish, or other fish over which said commissioner now has supervision; and whenever said commissioner shall deem it necessary in the furtherance of the objects and purposes of this act to take any such shore rights, flats and waters, he shall proceed in accordance with the provisions of section forty of chapter thirty-two; and in addition thereto shall cause a copy of so much of the proceedings as will show the character and extent of the shore rights, flats and waters taken, and also the location thereof, and time for which taken, to be posted near the location, and shall also cause suitable marks or ranges to be set upon the adjacent upland so as to define, as far as practicable, the limits and boundaries of the location to be used in such experiments; and shall cause public notice of the taking of such shore rights, flats or waters to be given by publishing the fact of such taking once a week for three successive weeks in a newspaper published in the county where the shore rights, flats or waters are situated.

MORE THAN TWO ACRES BY AGREEMENT.

And said commissioner may take possession of by agreement, lease or grant and under such terms and conditions as may be agreed upon with the owner thereof, suitable shellfish grounds, flats, waters and water rights, not limited to two acres in area, with necessary shore rights, and may use and operate the same under the provisions of and for the purposes of this act.

MAY SET APART ONE ACRE FOR PRIVATE EXPERIMENTS.

Sec. 3. The commissioner, upon the application of any person or corporation interested or engaged in scientific research relating to shellfish, or other fish over which the commissioner has supervision, or in the cultivation and development of the shellfish industry for economic purposes, setting forth their desire to make experiments relative to the cultivation and conservation of shellfish, or other such fish over which the commissioner now has supervision, shall, after being satisfied of the facts set out in said application, and that the applicant either owns or has the consent,

so far as the same can be granted, of the owner of the flats, shore rights and waters where such work is to be undertaken, and that the granting of such rights will not unreasonably interfere with navigation, give notice of a hearing on such application, by causing the same to be published at least two weeks in some newspaper published in the county where the proposed location is situated, and stating therein the time and place where such hearing will occur; and if, upon such hearing, the commission is satisfied that the interests of the state will be promoted by such experiments, he shall issue a certificate setting apart so much of such shores, flats and water privileges, not exceeding one acre in extent, to any one of such applicants, and for such length of time, not exceeding the period of six years, as in his judgment may be necessary and proper to accomplish the ends sought to be obtained.

Such certificate shall be recorded in the registry of deeds of the county in which the location is situated, and the applicant shall also cause public notice of the issuance of such certificate to be given by publishing the same in a newspaper published in the county where such location is situated, and by posting in a conspicuous place near said location a copy of such certificate, and also by placing stakes or other monuments upon the adjoining upland, so as to designate the locations so set apart, as the commisioner shall, in his certificate specify.

PENALTIES.

Sec. 4. No person shall, during the period that such shores, flats and waters are taken for the purposes of this act, take, dig, fish or in any manner destroy or interfere with such fish, or interfere with the shores, flats and waters so set apart, under a penalty of not less than fifty dollars, nor more than one hundred dollars, for each and every violation of the provisions of this act, or by imprisonment not exceeding thirty days, or both, as the court before which proceedings for such violation may be instituted, shall determine.

Sec. 5. The penalty provided for by this act may be recovered by complaint, indictment, or action of debt in the name of the commissioner of sea and shore fisheries, or his successor in said office, and all fines and penalties recovered under this act, after restoring the damages sustained by the person holding such cer-

tificate, shall be paid to the state treasurer, and added to the appropriation for sea and shore fisheries.

Under the authority of this bill, for the purpose of experimenting in clam farming and culture, three reservations have been set apart, one at South Cushing, Knox County, one at East Lamoine in Hancock County, and one in Georgetown, Sagadahoc County.

The department has put a competent man in charge of each, and although there has not been time for definite and absolute results as yet, the reservations are in a flourishing condition, and the reports of the caretakers, which follow, show that these practical men are earnestly at work to produce results.

The exhibits shown in connection with the report of Mr. Spinney of clams in the several stages of development are very interesting, and of decided value in connection with the work.

I am very certain that at the end of two years the report of the results of clam farming, under the protection and with the observations of practical and interested men, afforded and provided by the new law, will be of exceeding interest, and will satisfy and convince the people of Maine of the practicability of clam culture upon a commercial basis, and that the shell fisheries of our state may well be increased ten fold in five years. 'Tis a practical matter, not a scientific experiment. Elsewhere, in R. I. for instance, clam farming has long passed the experimental stage and has become a business proposition.

The clam producing grounds should be strictly under state supervision, should be surveyed and systematically fished, either under lease or grant from the state, for a fixed term, or operated under the direct personal management of state wardens; and to make good expenses incurred by the state there should be a regular income from the flats paid by those operating them at nominal, or low, rate, but amounting to a considerable sum in their aggregation.

More than $50,000 is received annually by the state of R. I. in revenue from its fishery rights in oyster and clam producing grounds.

There is more than double the acreage within Maine jurisdiction than has R. I., and with attention to the cultivation of clams,

only within Maine territory, the production may certainly be increased ten fold, as I have said, within a few years.

Popham Beach, Maine.
November 17th, 1906.

Hon. A. R. Nickerson,
Commissioner of Sea and Shore Fisheries,
Boothbay Harbor, Maine.

Dear Sir:—

Having been employed by your commission to experiment with the growth of the soft-shelled clams of Maine, and also to collect all data that would tend to improve their condition, I submit my report for the year beginning October, 1905, to November, 1906.

In order that the people may understand the past as well as the present condition of the clams I will give a brief history of the same.

HISTORY.

The clams in the flats, and the fish in the sea, were the two great factors that enabled our forefathers to obtain a foothold on these shores, living on them until they could clear land and push back to the interior.

The fish had a money value from the first, for they were caught, dried, and shipped back to the old countries and there sold.

Not so with the clams. They were only used by the people to eat, or for fish bait.

As the people acquired ownership of their land their lines extended to low-water mark and included all flats. The weir fisheries on said flats were jealously guarded by the owners as it meant money for them. The clams, however, having no commercial value, everybody was allowed to dig without restraint until the year 1850, when there came a demand from the Bank fishermen for shelled clams. This created a new industry that was gladly hailed by the people along the coast, as there was not much money to be earned there in the winter, and as the orders came in through October they had a chance to dig until the first of the next April, when the fishermen sailed for the Banks.

Here we see an involuntary close time till the next October, for in that time there was no call for clams.

Another feature, they had to shell the clams, and no one would think of picking up a small clam, say, two inches, or less, in

length, for it was too much trouble to shell them when there were plenty of larger ones.

By leaving those, and the smaller ones down to the seed, to grow until another year, there was an abundance of them every fall.

Under these conditions the flats to the north of Fort Popham, comprising some two hundred acres, were dug over by sixty or one hundred men every winter for twenty-four or five years, without apparently diminishing the clams.

The poorest digger could dig six bushels each tide. The best could dig ten, and even twelve. If that could be done today, at the present prices, it would mean from three to six dollars per tide to the men.

At that time it took twelve and thirteen bushels of clams to make a barrel of meats, for which the clammers received three dollars and fifty cents, and sometimes four dollars, exclusive of barrels and salt.

The owners of the flats discovering there was money in them tried to collect a royalty, but the courts at that time decided against them, saying it had become a custom for everybody to dig all they wanted so they had the right.

About 1875 the fishermen began using fresh bait, and the clam digging practically stopped until 1855, when orders began to be received from Boston for clams in the shell to supply hotels and clambakes in the summer, and the public at large in the winter. Then commenced the depletion of these bivalves. Without any close time, and digging summer and winter, they began to diminish rapidly until the winter of 1905 and '06, when flats that had yielded six or seven thousand barrels the first years of their output only brought forth eleven hundred barrels last, and in the fall of 1906 the men who dug the most of the clams that were shipped last winter ordered three or four hundred empty barrels, and when they started to fill them, found there were no clams with which to do it, and were obliged to go to work at something else.

The flats along the coast at the present time are in much the same condition.

THE SPAWNING OF CLAMS.

The clams put forth their seed in abundance. It is very minute and remains at the surface of the water in what is known as the floating stage for a week, then it fertilizes and drops back to the flats, what is not carried off by the currents which at times sweep quite strongly over the clam beds.

There is a byssus gland formed at the lower part of the clam. Even before the clam is visible to the eye, and in its helpless condition being washed round over the flats by the waves, if it does not succeed in getting imbedded therein, from this gland it is able to put forth its byssus, or little ligaments, and attach itself to any object that it may wash against, and there cling until it is large enough to try to embed again, when it will let go.

If the little clams so situated do not get into the flats, they die when they have attained a growth of ½ to ¾ of an inch in length.

I am indebted to Dr. Mead of the R. I. Commission who experimented with the clam seed until it was ⅜ of an inch in length, for his valuable information.

Each full grown clam is capable of putting forth from 600 to 800 thousand seed in a season, but being swept around by strong currents in its floating stage, large quantities of it go to waste in deep water.

CONDITIONS OF FLATS.

I find that where there is a deposit of soft silt from the rivers on the flats from 1 inch to 1½ inches in depth that the young clams will die in it, so that it would be but little use to plant large clams to seed in it. It, however may harden in a few months, and then the seed will grow.

Again, if the flats are packed hard, it takes a great deal longer for the seed to catch than it does where it is looser. In sand bays, where the waters are quiet, and the sand loose, there will the clams propagate the fastest, and can never be entirely dug out, for the sand is always full of small clams.

There is one feature that speaks strong for private ownership of the flats, and that is the growing in of mussels. Under present conditions no one has any interest in the flats other than to dig out the clams, and let it go at that. I know of large areas of

flats that have been destroyed by them, whereas if they had been owned by private parties and protected by law they could have with but little trouble, if taken in time, kept them clear.

EXPERIMENTS ON THE STATION.

The flats which were allotted me to experiment with October, 1905, had some seed in them, but very few large clams, as it had been dug over repeatedly by the cottagers, and others who were getting clams for the hotels.

As soon as possible I planted about 8 bushels of large clams to the acre, in this wise:—I would dig trenches about 8 inches in depth, and long enough to hold one-half peck strewn quite thickly, and turned the flats dug out back over them. In the flow and ebb of two tides they were all righted up in position, their holes clear, ready to go on spawning when they were ready.

By making these trenches all over the flats at intervals they would be more likely to scatter their spawn more evenly over the surface.

I also raked in quarts of small clams which I had taken from where they were attached to objects by their byssus, but they never did anything, so I assumed that breaking the thread with which they were holding must have killed them, for other clams of the same size near them were growing well and developed all right.

Next, I planted ¼ and ⅜ inch clams in boxes sunk in the flats, to note their growth, but after two months had passed a heavy wind, with the sea, washed them out and I had to adopt other means.

THE VALUE OF CLAMS PER ACRE.

No one ever knew the value of clams per acre, and to induce clam farming the commissioner set aside the flats on which I am experimenting. I expected to be obliged to wait until the flats had been brought back to their former condition before I was able to do this, but by good luck I am able to give it very nearly.

There was a small acreage of flats inside Fort Popham which had not been molested for a number of years, and the clams were as thick in the flats as they ever were. There were two men buying in and digging clams and at last, when they struck in on this place, I had been expecting it and went to one of the buyers

and asked him to keep strict account of the barrels of clams he took from this area. He did so, and when done, said he had shipped 212 barrels from it. I then went and measured what they had dug over, and found there was little less than one acre and three-fourths.

The clams sold in Boston for $1.65, net, per barrel, making the flats worth about two hundred dollars per acre just for the digging.

The men who dug for the buyers received one dollar for filling a barrel delivered on the steamboat dock, and made from $2.00 to $2.50 per tide of four or five hours.

After the little patch was dug over they had to go back on other flats where they could not average over one-half barrel per tide.

On the 10th of March, 1906, I selected parts of the flats where no clams were growing except the smallest seed, and staked off three places three feet square, and inside the space planted ¼ and ⅜ inch clams, which I had taken from the surrounding flats, and these proved a success and grew finely.

They, in their growth, are much like human beings, for some will grow faster than others and yet be right beside each other, for what reason I am unable to say as yet.

On the 10th of May I opened one of the enclosures and found the clams had grown to 7-8 of an inch in length.

Again, on the 12th of July I opened another, and in the four months they had increased to 1⅛ inches in length.

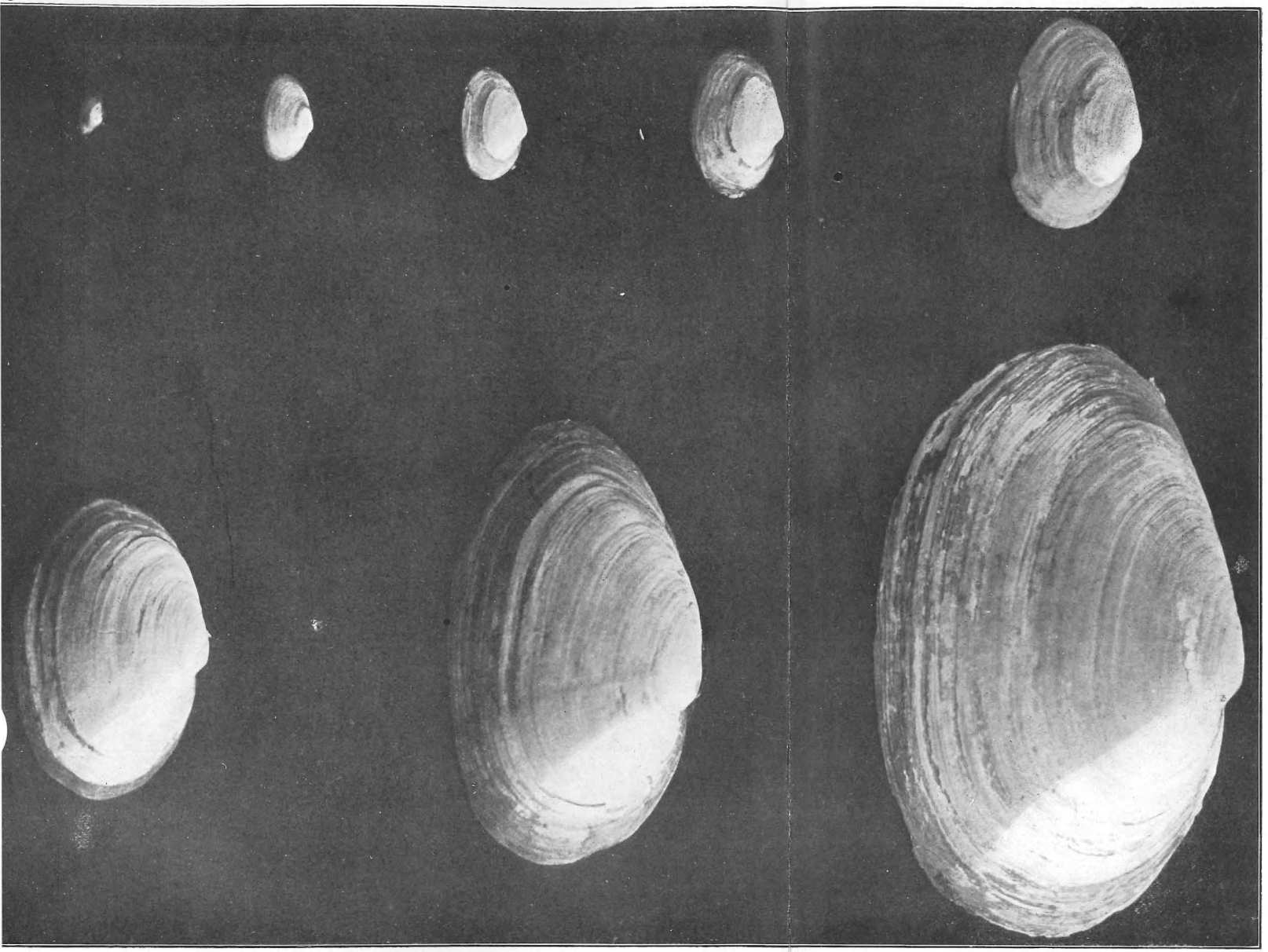
The 10th of November I opened the third enclosure and found the average clams had grown to 2 inches in length, this being the last I shall be able to give to the public this year.

For two years previous to being employed by the state I had been interested in the disappearing clams, and two falls, when the clammers went to work in the cove in which the Experiment Station now is, and the next cove above, three or four hundred yards apart, I took the trouble to measure the average large clams that were dug, and found that in the Station cove they were three inches in length, while in the next cove they would reach 3½.

This difference in growth is ascribed by some of the scientists to the feed in the water, but as these two coves are so near togther and the water conditions the same, I'm more inclined to think it is in the quality of the flats.

Figure 1

Growth in four months from five-sixteenths of an inch to one and one-half inches in length



Growth in sixteen months from two inches to four inches in length

Figure 2

MAINE FARMER PRESS, AUGUSTA

Figure No. 1 of the illustrations shows the gradations of the clams from ⅜ of an inch to 1½, about six months' growth.

In well stocked flats you will find myriads of clams of all sizes.

In Figure No. 2, I show 2, 3, and 4 inch clams.

It will be seen by this that a 2 inch clam is pretty small compared with the overgrowth to 4 inches. This was about the size, and all smaller left in the flats by the diggers from 1850. That, and with the close time from the 1st of April to the 1st of the next October, was the reason why the clams held their own through all those years.

Now if a part of the flats of the state could be set off for a term of years until they had a chance to propagate as they did formerly, then open them up to the diggers and close the other flats that had been left open until they, too, had repopulated, then open all under suitable state laws would seem to be the best solution of the clam question.

That the clams will propagate if given a chance is amply proved by the Experiment Station. The most skeptical could not doubt after looking over flats that have been worked and the flats of the Station, which certainly gained twenty fold on ¾ of it in one year.

The other quarter laying along the low water mark is packed down very hard, and the seed takes to it slowly.

In Figure No. 3 is shown a group of seed clams.

It has been generally thought that the clams spawn in the spring months, but I have found clams in quantities of this size growing every week in the year, showing they must be spawning at all times of the year. This being the case, it may be developed at the Station in time that with an alternate close time certain flats might be set off for summer digging, and closed in the winter, and thus settle the question of supplying the summer people without interfering with the canneries, or winter shipments.

In conclusion I will say that in Sagadahoc County the clams are commercially a failure unless something is done to propagate them. Other Counties may be in a little better condition, but only for a short time at the rate of depletion.

Yours,

MILTON SPINNEY.

South Cushing, Me., Nov. 26, 1906.

Hon. A. R. Nickerson,
Boothbay Harbor, Maine.

Dear Sir:

In response to your request I hereby present a report of my experience in cultivating clams on my reservation.

The flat consists of not quite one acre, and is situated in a little cove quite well protected from all but easterly winds. It is natural clams ground, but two years ago, when I staked out the flat it had nearly been depleted by excessive digging. I levelled up the surface, and in the spring and summer of 1905 planted five (5) bushels of clams varying in size from ½ to 3 inches long. These clams are now from 2 1-2 to 3 1-2 inches long, but the slight increase of length of the large size does not at first glance indicate the increase, for after a clam grows to two inches, he (or she) increases rapidly in bulk, so that a bushel of clams 2 inches long when planted would, when 3 inches long, make at least 2 bushels in one year's time.

This spring and summer I planted a few more clams,—some of them about 2 inches long were taken from the edge of flat as near high water mark as clams grow,—and planted about half way below high and low water. The clams do not seem to grow at all, but may take a start later.

Other clams from various parts of the flats are growing finely, and whereas two years ago the flats were nearly depleted, at the present time there is a good natural set of small clams, so that one turn of the hoe will turn up a dozen or more small clams from 1-2 to 1 1-2 inches long.

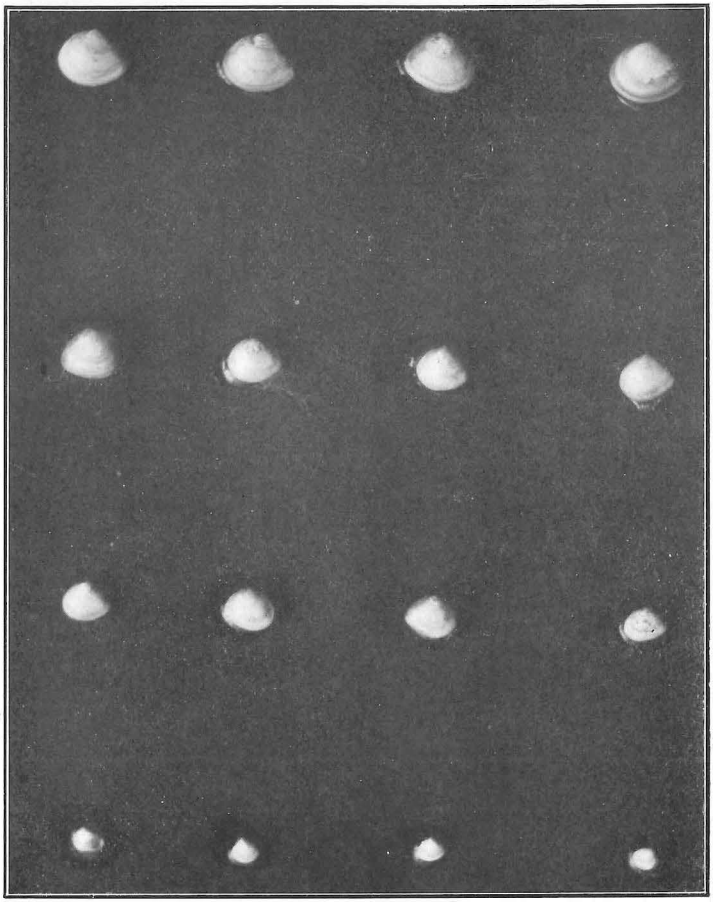
Another year there should be good clamming on the flats.

I tried a number of different ways of planting, but the easiest and most satisfactory way was with an old shovel handle with the end pointed. With this I punched holes with one hand, and dropped the clams with the other.

I regret very much that other work prevented my giving as much time to the cultivation of the clams as I would have liked.

There is no question in my mind but that it will pay to plant clams, but do not think it advisable to plant larger than 2 inches in length.

Respectfully,
B. L. STEVENS.



MAINE FARMER PRESS, AUGUSTA

Figure 3

To the Hon. A. R. Nickerson,
Commissioner of Sea and Shore Fisheries,
Boothbay Harbor, Maine.

Dear Sir:—

In June, 1905, you allotted to me in the town of Lamoine, Hancock County, one acre of clam flats—1st, to increase the productiveness of the flats by the transplanting of small clams on parts of the reservation entirely unproductive,—2nd, to note the time in which a clam would grow to a suitable size for a market.

With these purposes in view, I, at different times from the 20th of July to the 27th of August, transplanted very small clams from ¾ of an inch to 1 inch in length in trenches 4 feet apart, and about 6 inches deep.

I was careful to plant them where there were no clams growing, noting the exact locality.

In March, 1906, I found a large yield of clams of marketable size, proving that clams will grow from seed to full size in one year.

I did not plant clams this season as I find them growing on much larger area than I planted, and think the unproductive part of the acre will be well seeded by next March.

I am hoping the law may be changed the coming legislature to allow the taking of clams from the reservations after two years, as I am sure they are at their best on, or before, that time.

Yours respectfully,
S. P. COUSINS.

East Lamoine, Maine.
November 22nd, 1906.

OYSTER CULTURE IN MAINE.

The producing of oysters within Maine waters, upon a commercial basis, as compared with modern clam-farming, is another and very different, and a much stiffer, proposition.

That there is a natural and volunteer growth of native oysters within Maine is not generally known, I believe, but there is such a deposit of considerable extent located on the upper Sheepscot and Dyer's rivers. It can not be called extensive or thrifty, and its existence in its present condition has continued within the memory of the oldest inhabitants of the locality.

The oysters are healthy, but the extension of the deposit is prevented by lack of suitable grounds upon which to fix, or for want of suitable water and temperature conditions.

With a view to getting practical information and advice from first hands as to the natural conditions available and practicable for the cultivation of oysters within Maine waters I engaged Mr. John S. Payne of the oyster and shellfish house of Payne and Butler, of Providence, R. I., to come here and personally inspect our shores with a view to the pointing out of our available advantages of shore and waters for successful oyster culture, and the selection of the best possible location for commencing the work of oyster culture.

The report of Mr. Payne follows:

Providence, R. I.
April 24, 1905.

To the Hon. Alonzo R. Nickerson,
Commissioner of Sea and Shore Fisheries,
Boothbay Harbor, Maine.

My Dear Sir:

In making my report to your department as to my investigation in relation to the oyster possibilities within Maine water, I wish to make the preliminary observation that while I had heretofore, as I thought, consderable knowledge of the fisheries of the country generally, and of the state of Maine, from my long connection with and interests in fisheries of Rhode Island and elsewhere, I will state that I was agreeably surprised when I became aware of the existing great fisheries of your state as evidenced by your very valuable and interesting current report, and from visiting your waters at the great possibilities for the increase of this very important industry—an industry in my opinion of prime importance to your state and people and to the whole nation.

With a view to further aid your state in its effort for the "Encouragement, development and conservation of the Shellfish Industry" I have quite carefully looked over the bays and rivers on your coast between, and including the Sheepscot River in Lincoln County, and including the Saco River in York County, together with the many pretty bays and coves in Casco Bay in Cumberland County.

There were once in the past abundant oyster beds in the upper waters of the Damariscotta and Sheepscot Rivers. The great

deposits of shells at the head waters of the Damariscotta and in the bed of the river at its mouth is proof that this species existed within those waters at some time in extensive deposits.

And at the present time in the Sheepscot and Dyer Rivers there is a very considerable growth of oysters which I can not say are in a thriving condition, but they are holding their own and possibly increasing under the bare protection of the state law.

The condition of these Sheepscot River oyster beds would indicate possibly, that the past two extreme cold winters was too much for them, causing possibly a lack of sufficient food, or maybe the beds while restricted somewhat, the individual oysters have been too crowded, in any event at the time of my examination the oysters opened seemed to be of reduced vitality, being thin, transparent, stingy and weak where they should be plump and full when in thrifty condition. There may be something in the water that is injurious. There might be many causes for the condition.

The restriction of the beds might be caused by want of suitable bottom upon which to spread and enlarge—only minute, careful scientific examination would give authoritative reasons for present conditions.

However, that the deposit exists at all in such considerable quantity and is increasing even slowly is evidence of strong attachment of the species to even the present uninviting conditions and surroundings which they are successfully combating. I believe that the people of your state do not fully appreciate the fact that within their waters there exists a living and increasing natural oyster bed in the county of Lincoln.

I believe these natural beds could be greatly improved and made thrifty by the introduction of Canadian (Prince Edward Island) oysters and the amalgamation of the species. The Canadian oyster is hardy, prolific more than any other in the world, and can be easily transplanted into these waters, and with every reason to hope for successful growth and great increase in connection with the Sheepscot deposit.

That the bed of oysters survives and reproduces its species in these waters demonstrates that living conditions are present, while the introduction of the thrifty, healthy and very productive Canadian oyster to the present large beds of natives would

probably supply the other conditions necessary to a rapid, strong growth.

With the introduction of the new species as above from Canadian waters, hardy and fully inured to our cold eastern waters, I would for the same reason advise the introduction for the same purpose and with almost equal warrant of success of the more tender, less prolific, but perhaps more popular (at least in American markets,) of the Rhode Island or Connecticut species into the same waters in the vicinity of Sheepscot deposit.

Both the Canadian and the Rhode Island species possess in their native waters and will transmit to our waters, that which is needed to aid in the Sheepscot growth.

I did not observe any starfish, muscle, or other natural enemy of the oyster in that locality in sufficient quantities to be a menace to the life of that deposit.

Besides inspecting the Sheepscot River vicinity I have looked over Casco Bay and have become satisfied that its many bays and coves are excellently well situated and protected and have the general requisite conditions of pure water, suitable bottom, and feed in kind and quantity for the preservation and increase of oysters that may be transplanted there either from the natural beds at Sheepscot River or from the Prince Edward Island deposit, or from the Long Island Sound species.

The most favorable localities in Casco Bay I have pointed out to you, and I may mention especially that one in the vicinity of Bailey's Island and called Garrison's Cove, and also the bay opposite Orr's Island harbor and the Quohog bay, so called. There are many very favorable locations in Casco Bay with natural conditions most apparent.

From every point of view, however, I think most favorably of the Saco River for the purposes of your investigation from my examinations. And I especially mention the location near and below the Saco Water Power Company's wharf and on the Saco side of this river.

There the more favorable conditions seem to combine for the most successful oyster planting and propagation. It would seem that any healthy species of oysters, whether from Canadian waters, Rhode Island or Connecticut, or from the Sheepscot beds, with proper care in planting and protection would live, thrive, and increase in that locality.

I would recommend briefly and generally the protection and preservation from depletion by over fishing or careless dredging of the present volunteer natural growth in the Sheepscot River. That the species be planted there as I have spoken above, and that trial of other inspected waters and locations be made by planting carefully tonged specimens from that deposit and also from Prince Edward Island, from Rhode Island or Connecticut fields.

Purity of the water is essential to growth and cultivation, and of course food in kind and amount, principally diatoms, must be present. Suitable bottom and water free from violent sea and undertow, and especially starfish colonies must be avoided. Oysters cannot live where starfish are plenty.

Shifting sand and very oozy mud should not be selected for beds as these are fatal to both young and adult oysters, natural or transplanted. Currents sufficient to move about the food will be favorable to growth of bed as the microscopic food particles must be brought to the oyster. The oyster can not go after it.

I most heartily commend the action of the legislature of Maine in taking action to preserve and increase the natural oysters in your state. Care, attention, and intelligent observation of conditions will, in my opinion, put the Sheepscot deposit in a condition of which the whole State will be proud.

No reason exists in my mind why the Sheepscot beds cannot be greatly increased, possibly by preparing the bottom for enlarging the beds and by transplanting to other and possibly as favorable or more advantageous locations which I have observed, and the introduction of other species as I have suggested, other and still more extensive fields will be established and the oyster fishery become one of the great industries of the state of Maine.

Of course with the limited time at our disposal my examination was rather hurried and superficial than critical, and the eastern section of the state was not covered, but I am entirely satisfied as to the feasibility of the broad and advanced scheme of the legislature of your state to build up a great oyster industry in state waters, with the Sheepscot natural deposit as a nucleus upon which to enlarge and experiment, and the almost unlimited area of coast waters, bays, coves, inlets and rivers, with feed, bottom, purity of water and other ideal conditions requisite for the increase of the present native growth and the introduction of other proved and successful species from foreign waters.

I only express my own and the general regret that this energy was not exhibited before by the Maine Solons and this native growth of Maine oysters in the Sheepscot River struggling, but continuing to exist among and against adverse conditions *and neglect*—conditions favorable of discovery and elimination, but not apparent without study and investigation—and neglect to be deplored—brought up to a condition of commercial and economic importance as I am sure it can and should be.

You have on your coast the scallop and the hard shelled clam, quahaug, both standing high and in demand in Western markets, and both of which are in almost the condition of your oysters, or may soon be. These can be greatly increased by care of the old beds and the discovery of new deposits. There is no reason why both the scallop and hard shelled clam may not become very important fisheries in your state waters.

Scallops are to be found in small deposits in many of the bays, and rivers along the whole coast line in detached beds, and I am told that Casco Bay has at least one bed of quahaugs of quite considerable area.

Both can be made important, and a large business done principally in the shipment to western markets.

As to the soft shelled clam so important at the present time as a product for shipment out of the State I am informed that the demand is far in excess of the yield of the product.

Without care, preservation, and systematic attention to the increase of the area of the producing beds and flats I am satisfied that this popular article of food and fishery, the means of livelihood to so many of your people, will become reduced to the extremity at present existing in the other shell fisheries mentioned.

Experiences in other localities should be warning enough to foster the clam fishery and not allow it to be destroyed from neglect of cultivation and exhaustion of the deposits.

In your report, which I have read with much pleasure, I note that the production of the clam fishery for the two years was over six hundred and fifty thousand dollars ($650,000.00).

With your great fields for the propagation of clams and the increased demand apparent in all markets for this food no good reason appears to me why in five years the yield should not be $2,000,000 at least.

Finally, I will say from my own experience in the fishing business, acquaintance with the trade, and recent investigation of your waters, that in the fishery of the future no state in the Union compares with your state of Maine in its opportunities to build up a great industry and the supplying of constantly extending markets.

I hope to again visit your state and see the success of the very wise policy inaugurated by your department.

Respectfully,
JOHN S. PAYNE.

OYSTER RESERVATIONS.

After due consideration and personal investigation of many points on the coast as far east as the Damariscotta River, the selection was made of four reservations, one on the York River (this is the location most highly recommended by Dr. Moore of the U. S. Fisheries Commission, Washington); one on the Saco River (this point has the unqualified endorsement of Mr. John S. Payne); one on the New Meadows River, and one on the Damariscotta River, or Bay.

Proceedings were at once instituted for the legal taking of these locations and rights for the purposes of the act, and they were taken under that law.

With the cooperation of the U. S. Commission, through Commissioner Bowers, ten barrels of oysters were planted on each of the above locations, with the distinct understanding with the Washington authorities that the expense and detail of care and supervision of these deposits were to be undertaken by the state of Maine entirely.

At this writing the oysters on these beds are living and in healthy condition. There is as yet no evidence of natural increase upon the beds.

From time to time Mr. Payne has inspected sample oysters from the above deposits, and has briefly reported thereon. Extracts from these letters are as follows:—

May 7, '06, he says, "The York River samples show they are in a good and healthy condition, somewhat poor in meat, but very strong."

June 14, '06, "The Saco River sample, the body or meat, as we call it, is very poor, but quite strong. I think they do not

get food enough. If it is possible, have them taken up and transferred about two miles up the river. I notice a set of mussels on them. If they are thick, they will kill the oysters. Mussels are the oysters' worst enemy."

June 25, '06. "It gives me great pleasure to inform you that the samples from the New Meadows River are in the best condition of any of the samples I have yet examined. The meat is fair, and a fair amount of milk, or spawn, in body, and compares favorably with some of ours of same age. I think you will catch a set in the river if conditions are favorable and the temperature reaches 70 or more degrees from the 8th of July until August 1st."

August 29, '06. "The Damariscotta River samples have a fair meat for the season. The growth was, I think, a little better than ours here in R. I. of the same age. I think the water is too salt to give the body that hardness and color we get where there is less density. All the oysters which I have examined from you I find strong and in a healthy condition, and with the expenditure of a few dollars to put the grounds in condition, etc., the weather being favorable, you will get a set, or in other words, they will propagate."

TABLE No. 11.

THE CLAM AND SCALLOP FISHERY: DETAILED INFORMATION, INCLUDING DISPOSITION OF PRODUCT OF THAT FISHERY FOR THE STATE OF MAINE FOR THE YEAR 1905.

County.	Clams Sold in Shell.		Clams Sold for Bait.†		Clams Sold Fresh.		Scallops.		Clams Canned.		Clam Juice and Clam Chowder.		Clam Canning Factories.		Boats.		Number of persons engaged.*	Amount paid clam factory employees.
	Bushels.	Value.	Barrels.	Value.	Gallons.	Value.	Gallons.	Value.	Cases.	Value.	Cases.	Value.	Number.	Value.	Number.	Value.		
Washington ...	5,268	$2,436	105	$425	625	$342	1,102	$1,102	12,180	$36,238	600	$3,000	1	$1,000	150	$6,000	255	$9,750
Hancock	9,318	4,502	3,892	17,888	7,071	3,535	49,733	55,105	34,108	105,614	150	300	5	5,000	282	2,820	585	23,856
Waldo	2,565	1,028	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	220	15	
Knox	17,235	11,065	1,330	6,417	.....	.....	275	275	23,700	59,700	350	600	4	9,000	60	1,100	185	14,500
Lincoln.....	78,591	42,774	352	1,855	.....	.....	.....	.....	3,260	8,340	.....	.....	2	1,000	215	.....	187	600
Sagadahoc	9,396	5,647	140	560	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	42	825	48	
Cumberland	48,960	25,592	987	4,935	.....	.....	1,238	1,238	4,781	15,369	2,202	6,604	6	4,900	104	1,040	264	10,850
York	7,815	5,051	.....	.....	300	135	.....	.....	.....	.....	.....	.....	.....	.....	20	200	40	
Total	179,148	$98,095	6,806	$32,080	7,996	$4,012	52,348	$57,720	78,029	$225,261	3,302	$10,504	18	$20,900	887	$12,205	$1,579	$59,556

* Includes factory employees.

† Includes both salt and fresh.

TABLE No. 12.

THE CLAM AND SCALLOP FISHERY, DETAILED INFORMATION, INCLUDING DISPOSITION OF PRODUCT OF THAT FISHERY FOR THE STATE OF MAINE FOR THE YEAR 1906.

County.	Clams Sold in Shell.		Clams Sold for Bait.†		Clams Sold Fresh.		Scallops.		Clams Canned.		Clam Juice and Clam Chowder.		Clam Canning Factories.		Boats.		Number of persons engaged.*	Amount paid clam factory employees.
	Bushels.	Value.	Barrels.	Value.	Gallons.	Value.	Gallons.	Value.	Cases.	Value.	Cases.	Value.	Number.	Value.	Number.	Value.		
Washington....	19,644	$6,288	290	$1,465	1,485	$742	2,027	$1,777	11,666	$34,998	2,202	$4,724	1	$1,000	224	$5,580	550	$10,000
Hancock	14,142	6,747	5,278	29,068	6,665	3,307	34,313	33,570	24,970	77,084	.....	.....	5	4,200	290	2,900	400	18,750
Waldo	3,552	1,788	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	189	10	
Knox	25,925	14,045	481	2,395	.....	.....	10,100	9,520	26,800	66,720	2,000	2,500	4	9,000	86	1,700	180	15,000
Lincoln.....	91,434	50,994	342	1,782	.....	.....	.....	.....	2,438	6,834	.....	.....	2	800	157	2,074	194	600
Sagadahoc	7,650	4,807	150	600	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40	835	38	
Cumberland ...	68,328	34,164	1,324	6,660	.....	.....	338	338	3,800	11,535	2,400	6,750	5	4,400	151	1,510	302	11,250
York	4,794	3,096	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	100	15	
Total	235,469	$121,929	7,865	$41,970	8,150	$4,049	46,778	$45,205	69,674	$197,171	6,602	$13,974	17	$19,400	967	$14,888	1,689	$55,600

* Includes factory employees.

† Includes both salt and fresh.

Hancock County produced 160 barrels mussels, worth $320, and 50 barrels periwinkles, worth $150; York County 50 barrels of mussels, worth $100; Lincoln County 102 barrels of periwinkles, worth $640. All used for bait and not included in above table.

THE MACKEREL FISHERY.

This has been a very unprofitable business for the last two seasons. Few vessels of the New England fleet have paid expenses, and the high liners have not made the phenomenal rturns that have characterized this fishery in previous years.

The high line catch, however, for 1905 was made by the Gloucester schooner "Consolation", Capt. Thaddeus Morgan, and the stock was reported at more than $38,000. This last year, although the honor was not entirely vacuous, it seems that the prize was taken by Capt. John Seavey of the Boothbay Harbor schooner "Natalie B. Nickerson", and his return of a stock of $13,500 stands at the head of the list in the fleet of more than seventy vessels engaged in the fishery.

The catches have been mostly made for two seasons in waters south of Cape Cod, and during the spring months. Large bodies of mackeral in countless schools have been seen south of Cape Cod, and scarcely any on the Maine coast, but the utmost efforts of the skilled fishermen were unsuccessful and the fish disappeared from the Maine coast entirely, and where the mackerel go at these times none are able to report.

Maine's fleet of mackerel schooners has gradually dwindled until at the present time she has less than a dozen engaged in the business, the most of the fishing being done in boats and sloops. There seems to be no remedy to suggest except to hope and wait for a return of the once abundant schools to our shores.

Maine could once well boast of a fine fleet of vessels employed exclusively in the mackerel fishery. Now, it has less than a dozen vessels thus engaged.

All the fisheries have "ups and downs," but with the mackerel catchers it has been mostly "down" for many years.

In 1831, when mackerel were marketd in only salted condition, was reported the largest number of barrels of salt mackerel ever landed,—383,548 barrels. Since that date, by looking up

the record, we find that from '31 the catch gradually dropped for about ten years, then again the catch increased. Then again, after vicissitudes various, in 1880 the catch of over 400,000 barrels of both salt and fresh was the largest for any years before or since.

The cause for the uncertainty, so *certain* in the fisheries, has been variously explained, investigated, sat upon, and cogitated over by experts, scientists, fishermen and laymen, whence they come and whither they go when they leave our shores, and why they don't come at all on seasons too frequent, is still unknown.

My old father, a man of wide experience in the fisheries, when asked for his opinion as to why certain fish failed to appear at certain seasons, used to reply, "Fish have fins and tails with which they can come and go as they please, and that is all I know about it."

Following is a statement made by your Commissioner in 1905 in the N. Y. Fishery Gazette in answer to a request for his opinion as to the cause for the disappearance of mackerel from the North Bay.

About this time the U. S. Fisheries Department was asked by Gloucester fishing interests to make an investigation, and report. It is reproduced in this connection to explain that I still believe this to be one, at least, of the causes for absence from the Bay of St. Lawrence of the former great schools of mackerel.

"Thirty and forty years ago New England annually sent several hundred sail of vessels to the Bay of St. Lawrence in pursuit of mackerel, each vessel carrying from twenty-five to one hundred barrels clam and menhaden bait, ground fine and mixed, the clams sinking, while the menhaden being light and oily floated upon the surface. If mackerel were near the bottom the clam bait reached them, and they followed this to the surface where the menhaden bait was found, and while there the men on board cast their hooks and lines among the bait and obtained their supply. This process was kept up continually during favorable weather, the vessels all the time changing positions and to different localities in the bay. Why shouldn't the mackerel frequent those waters, while the ports of Gloucester, Boston, Wellfleet, Provincetown, Harwich, Chatham, Portsmouth, Portland, Boothbay, Southport and many other places in Massachusetts and Maine

were feeding to them at least twenty thousand barrels of clam and menhaden bait each season?

"The purse seine came into quite general use during the seventies, at which time the old mode of hook and line gradually went out of use, the crews depending wholly upon capturing the schools while showing at the surface of the water, thereby practically discontinuing the use of bait.

"For a few years after the adoption of the purse seine, vessels continued to make trips into the Bay of St. Lawrence with fair success, but the catches grew gradually less until it was abandoned altogether. I firmly believe that should the old custom of throwing bait in the same quantities as was done forty years ago be revived, that in less than ten years' time mackerel would be fairly abundant in the Bay of St. Lawrence.

"In my opinion fish frequent certain waters at certain seasons of the year to obtain food which is there. I do not advocate the return to hook and line fishing wholly, but I believe if the same amount of bait (or even a less quantity) was used that was forty years ago, mackerel would be found on their old feeding grounds, where they might be taken both by hook and line and with purse seines. The same reasons apply to fishing in American waters. While I have not gone into the subject to any length I believe the average fisherman will understand and a majority will think as I do whatever may be the result of the investigation by the United States Government."

TABLE No. 13.

The Mackerel Fishery.	For the Year 1905.		For The Year 1906.	
	Quantities.	Value.	Quantities.	Value.
Fresh and salt mackerel landed, pounds	552,500	.....	1,486,800	
Value of fresh and salt mackerel.....	.....	$31,974	.....	$63,819
Number of seines used	20	.....	22	
Value of seines used.....	.....	4,800	.....	4,100
Number of nets used.....	1,841	.....	1,765	
Value of nets	.....	14,365	.....	12,614
Number of weirs and traps.....	14	.....	11	
Value of weirs and traps	.....	5,250	.....	5,650
Number of boats and vessels	71	.....	112	
Value of boats and vessels.....	.....	33,600	.....	45,475
Number of persons engaged in fishery	196	.....	166	
Total value of catch and apparatus.....		$89,989		$131,658

A part of the mackerel catch was landed by Maine vessels in other states.

SHAD FISHERY.

The report I have to make for this fishery is very unsatisfactory for the past two years.

There seems to be a decreasing catch each year, and with the ultimate result in view of the entire disappearance from our waters of the shad.

In the spring of 1906, I made an investigation, interviewed the fishermen on the Kennebec and eastern rivers, and found them anxious to increase the fishery. I opened correspondence with Com'r Bowers of the U. S. Fishery Department, Washington, asking the cooperation of that Department in our efforts to improve the shad fishery, and asking if the steamship Fish Hawk could not be sent to assist during the season while shad were being taken, to artificially hatch.

After some delay, Com'r Bowers granted the request, and the ship, with all the necessary apparatus on board, was placed near Bowdoinham, where she remained until the fishing season ended.

The fishermen in the locality showed a deep interest, and assisted the captain of the ship in his work by supplying the gravid fish from the spawn of which many thousands of young shad were produced and later liberated in their native waters.

The catch being smaller than usual, the yield of young fish, of course, was not as large as it otherwise would have been had there been plenty of fish.

The fishermen are satisfied that some measures must be taken whereby the numbers of shad, if possible, may be increased.

If fish are continually caught while on their spawning grounds, their numbers naturally will be decreased, and some means must be adopted for their preservation and protection possibly during the spawning season.

The ancient and popular shad fishery of the Kennebec must not be allowed to disappear entirely.

Full information is tabulated for both 1905 and '06 in following table:

TABLE No. 14.

The Shad Fishery.	For the Year 1905.		For the Year 1906.	
Pounds shad taken (Fresh and Salt)	1,087,200		470,200	
Value of shad		$54,286		$7,716
Number of boats shad fishing	291		299	
Value of boats shad fishing		8,377		8,710
Number of nets and seines used	346		273	
Value of nets and seines used		4,720		3,270
Number of weirs used	168		155	
Value of weirs used		8,785		6,200
Number of persons shad fishing	285		350	
Total value of catch and apparatus		$76,168		$25,896

SMELT FISHERY.

For the years 1905 and 1906 I am obliged to report a largely reduced catch as compared with last report.

The catch of 770,391 pounds for 1905 was a falling off as compared with the previous year of more than a quarter million pounds, and for the two years here reported the production is 319,128 pounds less than for 1903 and 1904.

This condition may be accounted for in measure by the fact that the number of men engaged in the fishery has been very materially decreased. In 1903 there were 824 men thus engaged, while in 1906 the number has fallen to 654.

The average price received by the fishermen was almost 12 cents a pound, a little better showing than two years ago.

The ice fishing has been classed in some localities as a "sport," but the catches have been so large, and returns so satisfactory that it has become a business proposition, a hundred or more dollars being easily and quickly gathered in, while for a few days the local "sport" has engaged in this "pastime"—a pastime so profitable is likely to be popular.

TABLE No. 15.

THE SMELT FISHERY IN THE STATE OF MAINE FOR 1905.

County.	SMELTS CAUGHT.		BOATS USED.		WEIRS.		SEINES AND NETS.		CAMPS.		Number of persons engaged.
	Pounds.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	
Washington	176,800	$19,567	60	$1,200	57	$2,130	57	$1,140	35	$700	160
Hancock	151,166	18,139	40	850	32	1,400	6	420	150	1,400	180
Waldo	29,160	2,916	15	300	.....	.....	34	1,700	15	150	34
Knox	84,000	7,900	21	700	.....	.....	7	1,300	.....	.....	31
Lincoln	214,700	27,830	75	5,200	6	1,500	54	4,950	130	1,300	222
Sagadahoc	11,945	1,239	7	77	10	1,550	4	625	50	200	72
Cumberland	101,420	8,757	30	1,830	8	350	16	960	.....	.....	73
York	1,200	240	2	40	3	75	2	200	.....	.....	4
Total	770,391	$86,588	250	$10,197	116	$7,005	180	$11,295	380	$3,750	776

TABLE No. 16.

THE SMELT FISHERY IN THE STATE OF MAINE FOR 1906.

County.	Smelts Caught.		Boats Used.		Weirs.		Seines and Nets.		Camps.		Number of persons engaged.
	Pounds.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	
Washington	245,818	$26,592	154	$1,540	50	$2,000	50	$1,000	33	$650	130
Hancock	235,508	23,061	60	600	35	950	6	360	225	1,800	180
Waldo	33,300	3,330	15	450	.....	.....	30	15	6	60	22
Knox	49,500	3,980	8	800	1	125	8	1,000	.....	.....	31
Lincoln	176,887	27,697	96	7,950	8	1,675	52	3,120	130	1,560	184
Sagadahoc	15,535	862	10	750	.....	.....	4	360	80	320	50
Cumberland	164,765	21,659	34	3,885	.....	.....	23	2,010	.....	.....	56
York	208	25	1	20	.....	.....	1	75	.....	.....	1
Total	921,521	$107,206	378	$15,995	94	$4,750	174	$7,940	474	$4,390	654

SALMON FISHERY.

There has been a change in the right direction in this very important Maine specialty. Though small the gain of 17,000 pounds over the production of two years ago I consider very well worth favorable mention.

Prompt and energetic measures should be taken to increase the production of our very important salmon fisheries,—so valued and valuable a culinary asset with the metropolitan chefs and epicures as the Maine salmon should not be allowed to "grow less."

The price obtained for the fish we believe has been better than other years. This is not surprising with a yield of only 122,110 pounds in two years!

Statistics of the fishery follow for both years in one table:

TABLE No. 17.

The Salmon Fishery.	For the year 1905.		For the year 1906.	
Pounds of salmon taken	65,044		56,066	
Value		$14,828		$12,163
Number of boats and scows engaged	101		126	
Value		2,123		3,595
Number of weirs	107		103	
Value		8,750		9,530
Number of nets	70		18	
Value		765		300
Number of persons fishing	132		131	
Total value of catch and apparatus		$26,466		$25,588

ALEWIFE FISHERY.

This has been an unsatisfactory season with the alewife fishermen, the returns being very low as compared with 1903 and 1904.

The condition of these fisheries under town control continues to be most disastrous, and no movement has been made to remedy the existant evils.

The fishery at Damariscotta Mills, the best in the state, has not made the catch expected.

There are some improvements that are imperatively demanded here, including the deepening of the stream and basin, giving clear and unobstructed passage for the fish to the spawning grounds at Damariscotta lake.

The passage should be made as easy as possible, and the depth of water below the pools and fishway should be increased so as to furnish room enough for the fish to enter from the great bay and stay while preparing to enter the fishway, rather than be hampered in their passage on account of lack of water.

Referring to my two last reports as to this important fishery I will say that with prompt additions and improvements, and with deserving care and attention to the several fishways of the state of Maine, that I have many times urged upon the authorities, the report of the yield of this industry might just as well have been 10,000,000 pounds, and increasing, as 2,898,125 pounds and "unsatisfactory."

TABLE No. 18.

SHOWING BY COUNTIES, STATISTICS OF THE ALEWIFE FISHERY IN THE STATE OF MAINE FOR THE YEAR 1905.

County.	ALEWIVES TAKEN.		SMOKE AND FISH HOUSES.		WEIRS.		NETS AND SEINES.		BOATS AND SCOWS.		Number of men.
	Count.	Value.	Number.	Value.	Number.	Value.	Number.	Value	Number.	Value.	
Washington	265,050	$2,096	-	-	-	-	-	-	-	-	25
Hancock	640,000	4,175	-	-	38	$1,900	38	$380	41	$690	38
Waldo	30,200	337	-	-	-	-	-	-	-	-	24
Knox	272,500	1,319	11	$325	7	525	-	-	14	950	57
Lincoln	2,202,000	4,935	15	1,800	16	1,550	280	1,860	60	1,622	50
Sagadahoc	224,000	560	-	-	-	-	-	-	-	-	40
Total	3,633,750	$13,422	26	$2,125	61	$3,975	318	$2,240	115	$3,262	234

NOTE—In some counties smokehouses are used for smoking both alewives and herring.

TABLE No. 19.

SHOWING BY COUNTIES STATISTICS OF THE ALEWIFE FISHERY IN THE STATE OF MAINE FOR THE YEAR 1906.

County.	Alewives Taken.		Smoke and Fish Houses.		Weirs.		Nets and Seines.		Boats and Scows.		Number of men.
	Count.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	
Washington	380,000	$3,439	.....	.....	4	$600	4	$60	7	$170	15
Hancock	270,000	2,587	.....	.....	40	2,000	.....	.....	43	610	40
Waldo	19,000	215	.....	.....	.....	.....	.....	.....	.....	.....	8
Knox	179,100	1,422	12	$400	9	675	.....	.....	14	350	30
Lincoln	198,800	994	10	150	11	700	215	1,325	57	1,515	60
Sagadahoc	115,600	289	.....	.....	.....	.....	.....	.....	.....	.....	6
Total	1,162,500	$8,946	22	$550	64	$3,975	219	$1,385	121	$2,645	159

Note—In some counties smoke houses are used for smoking both alewives and herring.

MENHADEN.

Although there are reported menhaden fishermen for 1906 these men have been employed in waters south of Cape Cod, coming into Maine waters with the fishing steamers long enough only to ascertain whether or not these fish were schooling.

The menhaden factories in Lincoln County were in readiness to operate had the fish been taken on our coast, but they did not appear, and it has been reported that the season can not be reckoned as profitable in those states where fish have been caught. Certainly it has not been profitable in Maine.

TABLE NO. 20.

GRAND SUMMARY SHOWING BY SPECIES, FISHERIES, AND BY COUNTIES, THE YIELD OF ALL THE FISHERIES OF MAINE FOR THE YEAR 1905.

Fishery and Product.	Washington County.		Hancock County.		Penobscot County.		Waldo County.		Knox County.		Lincoln County.		Sagadahoc County.		Cumberland County.		York County.		Totals.		
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Alewife	132,525	$2,086	320,000	$4,175			15,100	$337	136,250	$1,319	1,101,000	$4,935	112,000	$560					1,816,875	Alewife	$13,422
Bass											5,000	1,650							5,000	Bass	1,650
Clam	702,330	42,441	2,007,692	131,839			25,650	1,028	1,414,750	77,782	959,470	52,969	98,160	6,207	868,360	$38,369	81,750	$5,186	6,158,162	Clam	355,821
Cunner															49,755	410	10,000	100	59,755	Cunner	510
Eel	5,200	412	23,990	1,679					19,000	1,420	61,700	4,750	75,697	6,075	26,415	1,379	2,000	140	214,002	Eel	15,855
Flounder			51,000	1,020					51,400	1,860	16,400	696	1,460	87	6,250	170			126,510	Flounder	3,833
Ground fish	4,561,643	87,589	6,782,579	130,224					12,438,716	230,830	4,095,339	72,919	2,327,587	43,027	14,172,869	307,750	6,776,500	172,222	51,155,233	Ground fish	1,044,561
Ground fish oil	165,000	7,040	120,675	4,812					254,535	8,941	120,000	3,455	25,980	1,039	77,250	2,771	10,500	398	773,940	Ground fish oil	28,456
Herring (fresh, salted and smoked)	93,101,150	720,933	17,247,400	71,928					5,603,600	26,529	12,388,200	78,484	2,332,200	11,661	4,170,800	35,416	480,000	4,830	135,323,350	Herring	949,781
Herring oil	183,750	4,900																	183,750	Herring oil	4,900
Lobster	2,058,135	260,144	2,352,837	284,640			9,541	1,477	2,855,726	356,361	2,909,798	359,816	274,810	35,651	408,075	58,574	269,025	37,693	11,137,947	Lobster	1,394,356
Mackerel (fresh and salted)									3,400	269	366,000	16,425	6,400	448	141,200	11,468	35,500	3,364	552,500	Mackerel	31,974
Salmon	12,250	2,450	29,900	6,578	5,074	$1,296	17,394	4,424					426	80					65,044	Salmon	14,828
Shad	30,000	1,200							80,000	1,600	246,200	12,225	592,600	35,556	135,800	3,615	2,600	90	1,087,200	Shad	54,286
Scallop	13,224	1,102	596,796	55,105					3,300	275					14,856	15,369			628,176	Scallop	71,851
Smelt	176,800	19,567	151,166	18,139			29,160	2,916	84,000	7,900	214,700	27,830	11,945	1,239	101,420	8,757	1,200	240	770,391	Smelt	86,588
Sword fish									4,263	348	700	70	16,620	757	751,501	34,755	180,000	9,400	936,464	Sword fish	44,573
Sounds, hake	23,600	1,180	79,627	5,986					224,268	11,306	181,200	11,325			48,960	2,646			574,275	Sounds, hake	33,200
Tongues and sounds			9,000	540					13,700	773	2,400	120			4,000	210			29,100	Tongues and sounds	1,643
Tomcod	16,500	492					23,200	590	8,000	320					12,500	625			60,200	Tomcod	2,027
County totals	101,182,107	$1,151,546	29,722,662	$716,665	5,074	$1,296	120,045	$10,772	23,194,908	$727,833	22,668,107	$647,669	5,875,885	$142,387	20,990,011	$522,284	7,849,075	$233,663			
Grand total yield and value																			211,657,874		$4,154,115

TABLE NO. 21.

GRAND SUMMARY SHOWING BY SPECIES, FISHERIES, AND BY COUNTIES, THE YIELD OF ALL THE FISHERIES OF MAINE FOR THE YEAR 1906.

Fishery and Product.	Washington County.		Hancock County.		Penobscot County.		Waldo County.		Knox County.		Lincoln County.		Sagadahoc County.		Cumberland County.		York County.		Totals.		
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.		Value.
Alewife	190,000	$3,439	135,000	$2,587			9,500	215	89,550	$1,422	99,400	$994	57,800	$289					581,250	Alewife	$8,946
Bass											3,209	1,200							3,200	Bass	1,200
Clam	965,660	48,217	2,525,500	116,206			35,520	1,788	1,788,125	85,660	1,104,640	59,610	106,500	5,407	1,150,080	$59,109	47,940	$3,096	7,723,965	Clam	379,093
Cunner															46,175	461	5,494	55	57,669	Cunner	516
Eel	15,380	1,076	30,168	2,461					12,300	1,251	59,800	4,852			13,000	902	4,700	280	135,348	Eel	10,822
Flounder	22,500	677	121,400	3,695					27,000	1,444	22,800	1,090			20,025	655			213,725	Flounder	7,561
Ground fish	3,867,200	81,275	5,954,855	144,983					8,258,898	163,208	2,633,600	49,121	2,043,644	35,499	13,797,391	283,662	5,884,926	152,120	42,440,514	Ground fish	910,568
Ground fish oil	150,450	5,020	104,250	3,197					244,778	9,865	76,500	2,609	4,875	175	156,000	4,320	9,562	357	746,415	Ground fish oil	25,543
Herring (fresh, salt and smoked)	76,714,000	565,821	6,635,300	25,291					4,108,800	21,901	10,485,800	56,427	2,150,600	19,046	6,799,400	39,467	1,142,400	7,876	108,036,300	Herring	735,829
Herring oil	189,375	5,090																	189,375	Herring oil	5,090
Lobster	2,611,483	288,154	2,958,248	340,586			7,752	1,141	4,682,188	430,240	3,489,681	426,983	429,840	45,836	554,849	72,946	280,106	34,760	15,014,147	Lobsters	1,640,646
Mackerel (fresh and salted)			12,800	1,086					45,800	2,449	329,200	14,838	399,400	13,625	491,200	24,641	208,400	7,180	1,486,800	Mackerel	63,819
Salmon	12,914	2,283	27,100	5,420	4,545	1,152	9,539	2,945	18	2			1,950	361					56,066	Salmon	12,163
Shad	22,000	880									135,200	1,594	187,600	1,876	125,400	3,366			470,200	Shad	7,716
Scallop	24,324	1,777	411,756	33,570					121,200	9,520					4,056	338			561,336	Scallop	45,205
Smelt	245,818	26,592	235,508	23,061			33,300	3,330	49,500	3,980	176,887	27,697	15,535	862	164,765	21,659	208	25	921,521	Smelt	107,206
Sword fish									12,900	933	2,100	171			737,076	52,586	134,000	8,380	886,076	Sword fish	62,070
Sounds, hake	11,200	700	68,160	6,792					96,613	4,988	45,200	2,825	5,810	408	81,700	5,025			308,683	Sounds, hake	20,738
Tongues and sounds									6,200	310	2,200	132			6,000	320			14,400	Tongues and sounds	762
Tomcod	30,000	750					13,300	2,520	4,000	160									47,300	Tomcod	3,430
County totals	85,072,304	$1,031,751	$19,220,045	$708,935	4,545	$1,152	108,911	$11,939	19,547,870	$738,033	18,666,208	$650,143	5,403,554	$123,384	24,147,117	$569,457	7,717,736	$214,129			
Grand total																			179,888,290		$4,048,928

TABLE No. 22.

SUMMARY OF THE VESSELS, BOATS AND APPARATUS USED AND THE VALUE, SHOWING BY FISHERIES TOTAL INVESTMENT IN THE STATE OF MAINE, NOVEMBER 30, 1905.

Fishery.	Items.	Value.	Fishery totals.
Ground fishery ..	1,244 boats and vessels ...	$442,886	
	797 fish stands and houses	275,145	
	2 glue factories	7,000	
	2 fertilizer plants	16,000	$741,031
Alewife	115 boats and scows	3,262	
	61 weirs	3,975	
	318 nets and seines	2,240	
	26 smoke houses	2,125	11,602
Mackerel	71 boats and vessels	33,600	
	20 seines	4,800	
	1,841 nets	14,365	
	14 traps and weirs	5,250	58,015
Salmon	101 boats and scows	2,123	
	107 weirs	8,750	
	70 nets	765	11,638
Smelt	250 boats	10,197	
	116 weirs	7,005	
	180 seines and nets	11,295	
	380 camps	3,750	32,247
Clam and scallop	887 boats	12,205	
	18 factories	20,900	33,105
Lobster	95 smacks	119,100	
	2,432 boats	321,023	
	2,230 cars	30,907	
	17 pounds	51,000	
	169,350 pots	181,895	703,925
Shad	291 boats	8,377	
	346 nets and seines	4,720	
	168 weirs	8,785	21,882
Herring	4 store houses	40,000	
	71 sardine factories	757,000	
	4 canning plants	100,600	
	3 fertilizing plants	52,000	
	3 cold storage plants	21,900	
	192 smoke houses	81,950	
	386 weirs and traps	142,800	
	1,586 nets and seines	46,318	
	1,080 boats and steamers	255,685	1,498,253
Menhaden	3 factories	100,000	
	7 steamers	150,000	250,000
		$3,361,698	$3,361,698

TABLE No. 23.

SUMMARY OF THE VESSELS, BOATS, AND APPARATUS USED, AND THE VALUE, SHOWING BY FISHERIES TOTAL INVESTMENT IN THE STATE OF MAINE, NOV. 30, 1906.

Fishery.	Items.	Value.	Fishery totals.
Ground	980 boats and vessels	$324,501	
	763 fish-stands and houses	249,801	
	2 glue factories	7,000	
	2 fertilizer plants	16,000	597,302
Alewife	121 boats and scows	$2,645	
	64 weirs	3,975	
	219 nets and seines	1,385	
	22 smokehouses	550	8,555
Mackerel	112 boats and vessels	$45,475	
	22 seines	4,100	
	1,765 nets	12,614	
	11 traps and weirs	5,650	67,839
Salmon	126 boats and scows	$3,095	
	103 weirs	9,530	
	18 nets	300	12,925
Smelt	378 boats	$15,995	
	94 weirs	4,750	
	174 seins and nets	7,940	
	474 camps	4,390	33,075
Clam and Scallop	967 boats	$14,888	
	17 factories	19,400	34,288
Lobster	83 smacks	$120,350	
	2,573 boats	386,250	
	2,172 cars	27,820	
	23 pounds	65,500	
	174,071 pots	190,380	790,300
Shad	299 boats	$8,710	
	273 nets and seines	3,273	
	155 weirs	6,200	18,183
Herring	4 storehouses	$45,000	
	71 sardine factories	767,500	
	4 canning plants	100,900	
	3 fertilizing plants	52,000	
	3 cold-storage plants	21,900	
	209 smokehouses	82,850	
	411 weirs and traps	155,525	
	1,429 nets and seines	51,697	1,277,372
		2,839,839	$2,839,839

TABLE No. 24.

SHOWING NUMBER OF PERSONS ENGAGED IN THE SEVERAL FISHERIES OF THE STATE OF MAINE, BY COUNTIES, FOR THE YEAR 1905.

Fishery.	Washington.	Hancock.	Penobscot.	Waldo.	Knox.	Lincoln.	Sagadahoc.	Cumberland.	York.	Totals by fisheries.
Alewife	25	38	.....	24	57	50	50	.....	.....	244
Clam and scallop	255	585	.....	15	185	187	48	264	40	1,579
Ground fish	387	345	.....	.....	405	249	101	260	199	1,946
Herring	5,852	523	.....	.....	158	444	75	109	22	7,183
Lobster	452	495	.....	9	545	582	115	225	139	2,562
Mackerel	.....	.....	.....	.....	.....	61	16	84	35	196
Menhaden	.....	.....	.....	.....	.....	200	.....	...	.....	200
Salmon	18	50	20	44	.....	.....	.....	.....	.....	132
Shad	20	.....	.....	.....	12	38	189	26	.....	285
Smelt	160	180	.....	34	31	222	72	73	4	776
County totals	7,169	2,216	20	126	1,393	2,033	666	1,041	439	
Grand total	.....	.....	.....	.....	.....	.....	.....	.....	.....	15,103

TABLE NO. 25.

SHOWING NUMBER OF PERSONS ENGAGED IN THE SEVERAL FISHERIES OF THE STATE OF MAINE FOR THE YEAR 1906.

Fishery.	Washington.	Hancock.	Penobscot.	Waldo.	Knox.	Lincoln.	Sagadahoc.	Cumberland.	York.	Totals by fisheries.
Alewife	15	40	.....	8	30	60	6	.....	.....	159
Clam and scallop	550	400	.....	10	180	194	38	302	15	1,689
Ground fish	497	374	.....	.....	404	170	127	345	215	2,132
Herring	6,200	653	.....	.....	242	502	185	132	57	7,971
Lobster	478	520	.....	6	540	614	120	265	129	2,672
Mackerel	.....	.....	.....	.....	12	67	15	79	23	196
Salmon	20	50	20	26	.....	.....	15	.....	.....	131
Shad	50	.....	.....	.....	.....	85	203	12	.....	350
Smelt	130	180	.....	22	31	184	50	56	1	654
County totals	7,940	2,217	20	72	1,439	1,876	759	1,191	440	
Grand total	.....	.....	.....	.....	.....	.....	.....	.....	.....	15,954

200 men engaged in 1905 in the menhaden fishery in Maine waters were employed in the same fishery in southern waters during the season of 1906, and are not abulated above.

TABLE No. 26.

MAXIMUM EGG PRODUCTION OF SOME FAMILIAR SPECIES OF FOOD FISHES AND OF OYSTERS.

Brook Trout	2,000
Land Locked Salmon	3,000
Black Bass	10,000
Lake Trout	15,000
Spanish Mackerel	20,000
Atlantic Salmon	21,000
White Perch	40,000
Herring	47,000
Alewife	100,000
Lobsters	100,000
Shad	156,000
Haddock	250,000
Pollock	425,000
Mackerel	546,000
Flatfish (Winter Flounder)	1,462,000
Sturgeon	1,680,000
Striped Bass	2,200,000
Codfish	9,100,000
American Oyster	60,000,000
Canadian Oyster	90,000,000

GENERAL REMARKS.

Now that I have reported upon all the different fisheries of our state separately, I wish to make a few general remarks. I have tried to be as brief as is possible to cover all the subjects in order to make the report readable by those interested in our fisheries, for I am well aware that most departmental reports are read only by those particularly interested in that department, and when they are extended and extremely bulky, they are too often laid aside unread even by those interested.

Maine, in my judgment, does not appropriate money enough to develop her fisheries.

I believe Maine should endeavor to retain and increase the fish that *belong* to her such as the clam, and lobster; they have been in our waters since and before Maine was a state, and there is no reason why they should not always remain (unless all restrictive laws be repealed).

The shad, salmon, and alewive that return to our rivers annually for the purpose of reproduction can, with an outlay of money and the enactment of protective laws, be increased, so that with the lobster and clam, shad, salmon and alewive fisheries yielding to their almost full capacity, coupled with the prospective yield of mackerel, ground fish, and herring, Maine *can* and should be the banner fish state in the Union.

I do not advocate protective laws for the free-swimming fish of the sea, such as the cod, hake, haddock, pollock, cusk, sword-fish, etc., for as yet it is uncertain as to what regions these fish flee to spawn.

The herring fishery in my opinion, requires protection only when the fish are in a spawning condition and in or near spawning grounds. At the present time their spawning grounds seem to be unknown to the fishermen of Maine.

Now, having given my views in a general way briefly, I will recommend what I think should be done by the incoming legislature to preserve and protect Maine's great fisheries.

First, increase the general appropriation for Sea and Shore Fisheries from $15,000 to $25,000 a year,—that for protection of lobsters with eggs attached, from $5000 to $8000 for 1907.

I imagine I hear somebody asking what the extra $10.000 to the usual appropriation is for, so I will explain. When I was first appointed in 1898 the appropriation was $15,000, with the addition of fines collected for violations, and it has continued the same each year since. I have *never* exceeded this appropriation, but have sometimes turned back into the treasury an unexpended balance. I have always managed to cut the garment acording to the cloth furnished, but if more cloth be furnished, the larger the garment might be cut. The extra $3000 which I recommend for the egg-lobster branch for 1907 is to enable the commissioner, or the Governor and Council, to dispose of the launch "Sea Gull," now owned by the State, if it can be done to advantage, and purchase a larger boat with the extra $3000 and the amount which may come from sale of the "Sea Gull."

When the "Sea Gull" was purchased by your commissioner it was an experiment, and as I believe it is better to creep before walking I proceeded carefully in this, *then* new venture, which has since demonstrated itself to be of such great value to our lobster fishery.

If the U. S. was not assisting the state in its collection of egg lobsters it would be impossible for the state to take care of this branch with the "Sea Gull." This boat is unsafe to run along the length of our coast after November, and during the winter months.

Thanks are due U. S. Commissioner Bowers of the Bureau of Fisheries for the great interest shown in the increase of Maine fisheries, and for what he has done, such as locating the lobster hatchery in our state, the placing of the "Fish Hawk" with its crew and floating hatchery for the benefit of the Kennebec shad fishermen in the spring of 1906, and for furnishing seed oysters for planting in 1905.

APPENDIX.

LIST OF FISH WARDENS NOW IN COMMISSION.

YORK.

J. F. Goldthwaite.....Biddeford
O. P. Philbrick.....Kittery

CUMBERLAND.

George A. Dow.....Portland
I. H. Snow.....Brunswick
H. L. Pye.....Orr's Island

SAGADAHOC.

A. C. Johnson.....Ashdale

LINCOLN.

R. T. York.....Damariscotta Mills
N. J. Hanna.....New Harbor
C. E. Sherman.....Boothbay Harbor

KNOX.

L. E. Wade.....Rockland
A. J. Rawley.....Tenant's Harbor

WALDO.

George W. Frisbee.....Belfast

PENOBSCOT.

T. E. Sullivan.....Bangor

HANCOCK.

S. P. Cousins.....East Lamoine
F. L. Hodgkins.....Lamoine
F. M. Trundy.....Oceanville
B. F. Howard.....Deer Isle

WASHINGTON.

W. A. Henderson.....Cutler
P. M. Kane.....Eastport
W. W. Blood.....Milbridge
D. O. French.....Jonesport
F. A. Townsend.....Calais

DEPUTY FISH WARDENS NOW IN COMMISSION.

G. E. Cushman.....Portland
A. S. Colbeth.....Buck's Harbor
L. R. Bunker.....Cranberry Isles

LIST OF INSPECTORS OF PICKLED FISH.

Name.	Residence.	Date of Commission.
A. E. Nickerson	Boothbay Harbor	July 22, 1902
J. E. Wickerson	Eastport	August 21, 1902
A. M. Powers	Boothbay Harbor	October 18, 1892
C. M. Hamilton	Chebeague	October 29, 1902
John A. Beal	Jonesport	March 18, 1903
M. D. Sawyer	Boothbay Harbor	June 30, 1903
S. E. Doyle	Gouldsboro	September 22, 1903
A. B. Holt	Gouldsboro	September 22, 1903
I. M. Bangs	Machiasport	September 22, 1903
M. B. Linscott	Harpswell	March 3, 1904
Freeland R. Bunker	Winter Harbor	July 1, 1904
John H. Benner	Edmunds	July 1, 1904
T. F. Lamson	Rockland	November 24, 1904
B. L. Stevens	Cushing	April 13, 1905
R. B. Stevens	Jonesport	September 7, 1905
A. E. Farnsworth	Brooklin	October 13, 1905
E. A. Holmes	Eastport	November 9, 1905
G. H. Lyons	Eastport	January 23, 1906
Joseph Farris	Eastport	March 23, 1906
Wm. T. Maddocks	Portland	October 25, 1906
Joseph W. Lord	Portland	October 25, 1906
Charles A. Dyer	Portland	November 15, 1906

The above are commissioned for five years.