

MAINE STATE LEGISLATURE

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SEVENTY-EIGHTH LEGISLATURE

SENATE

NO. 120

In Senate, Feb. 7, 1917.

Read and on motion by Mr. Butler of Knox laid on the table and one thousand copies ordered printed, pending reference to a committee.

L. ERNEST THORNTON, Secretary pro tem.

STATE OF MAINE

IN THE YEAR OF OUR LORD ONE THOUSAND NINE
HUNDRED AND SEVENTEEN

In compliance with the legislative act authorizing the appointment of a commission for the better protection and preservation of the lobster fisheries, passed by the Seventy-seventh Legislature, as set forth in the Public Laws of 1915, Chapter 341, the commission herewith presents its report to the Senate and House of Representatives of the Seventy-eighth Legislature for further consideration.

(Signed) J. C. HARMON,

For the Commission.

*To the Honorable Senate and House of Representatives in
Legislature Assembled:*

In compliance with the legislative Act, Public Laws, 1915,

Chapter 341, authorizing its appointment, and in full compliance therewith, we have the honor to present the report of the "Commission for the better protection and preservation of the lobster fisheries."

The commission has given the subject its best efforts, time, careful attention and the strictest investigation that the time and money has permitted. It has interviewed the heads of the Department of the United States Bureau of Fisheries, Department of Commerce at Washington, D. C., the various United States Fish Hatcheries' officials, the departments of the several states having fishery and lobster bureaus, scientists, experts, dealers in lobsters, smackmen and fishermen by the score, both in the state and out.

We have also looked up the history and laws, with the results of same, both in this country and abroad, and we confidently present this report with the firm belief that we have arrived at the best judgment of the best minds familiar with the business and we feel confident that we have arrived at correct results, and the only method that presents any reasonable assurance of safety for this great industry to our state.

The Legislature, by the above Act, conferred upon the commission the following authority, viz.:

"To confer with the United States Department of Commerce and Labor and with similar commissions from other states, or with legislative committees of other states, or department heads of other states, having the lobster industry under their charge, with the purpose in view of determining what legislative and

federal regulation should be adopted for the best interest of the lobster industry in all states, where lobsters are caught; and that their findings shall be reported to the next Legislature.”

One of the first things we ascertained was the lack of information by the people at large, both at home and abroad, about the lobster, its habits, environment, its value to the state and to that great body of workers, known as fishermen, who are dependent upon the industry, not only now, but in the future, together with their dependents. Therefore, we feel constrained to give a brief history before giving the results of our investigation.

BRIEF NATURAL HISTORY OF THE AMERICAN LOBSTER AND ITS HABITATION.

The lobster that we have to deal with, although it swims in the sea, is not a fish but an arthropod and a knowledge of the way of fishes and mollusks will help but a little in the study of its habits, or in the propagation of its race.

The largest of the specie known as the scaly or warty lobster is represented by SCYLLAIUS, which are found both in the Mediterranean and the Atlantic Ocean, some of them having attained a length of eighteen inches, and it is also said that they excel all other lobsters in the quality of their flesh.

There is a species of lobster in California waters called the spiny lobster, which may attain a length of fourteen inches and a weight of three and one-half pounds, the greatest weight accorded being eleven and one-half pounds.

There is also a spiny lobster found in Japan in some quan-

tities and the thrifty Japs have done some work in propagation of the same.

The lobster known as the Norwegian lobster is common not only to Norway, but to the coasts of Scotland and Ireland. While essentially a northern form, it is found as far south as the Mediterranean, but in much less abundance. It attains a length of from seven to eight inches and in life is a delicate flesh tint, boldly marked with a light brown in a symmetrical pattern over the abdomen and tail fan.

The regular European lobster is found on the shore of the British Isles and on the western coast of Europe from Norway to the Mediterranean. The southwestern coast of Norway appears to be the central point of its distribution and still supports the largest of the European fisheries; but the specie is found northward as far at least as Tromso, or about seventy north latitude. It is very rare, if present at all, in Iceland. Of the several kinds of lobsters already described for the Atlantic, and its tributaries, the Norwegian and common lobsters are typically northern formed.

The common lobster of Europe resembles the American lobster so closely in every structural detail that the two might at first sight be considered as geographical varieties of the same stock, rather than as distinct species.

AMERICAN LOBSTER.

The American lobster is found only on the eastern coast of North America. Its geographical range covers about twenty

degrees of north latitude from the thirty-fifth to the fifty-second parallel and embraces a strip of the North Atlantic Ocean thirteen hundred miles long and thirty to fifty miles wide, and according to one estimate seven thousand miles in length, when measured along the curves of the shore. Its vertical distribution varies from one to over one hundred fathoms in depth. The most northern point at which its capture has been recorded is Henley Harbor, Labrador; the most southern point the coast of North Carolina. The states that have any lobster industry are Delaware, New Jersey, New York, Connecticut, Rhode Island, New Hampshire, Massachusetts and Maine.

BEGINNING OF LOBSTER FISHING.

At the opening of the nineteenth century, lobster-fishing was first developed on the coast of Massachusetts and in the region of Cape Cod and Boston, some fishing being done as early as 1810, along the Elizabeth Islands and on the coast of Connecticut. Strangely enough, this industry was not extended to the coast of Maine where it subsequently attained its greatest proportions, until 1840.

FIRST PERIOD.

In the first period lobsters were large, abundant and cheap. They were found anywhere where their habitations were, close in shore, hidden under rocks, seaweed or other protection, and it was common to pull them out by sticks or by any manner convenient to the one who happened to want them. They were cheap and traps and fishermen were exceedingly few.

SECOND PERIOD.

In the second period there was rapid extension of catching the lobster. Beginning in Canada about 1870, and much earlier in the older fishing regions of New England, the greatest supply was demanded each year to meet a growing demand; but the lobsters were in fair size, easy to catch and moderate in price.

PERIOD OF REAL DECLINE.

The period of real decline, which is often interpreted as one of increase, fluctuating yield with tendency to decline, to prevent which we find a rapid extension of areas fished, multiplication of fishermen, traps and fishing gear or apparatus of all kinds, decrease in size of all lobsters caught and consequently the egg-bearing lobster and steadily soaring prices.

PROTECTING THE LOBSTER.

The true condition of the lobster fishery cannot be determined from reports upon single regions or for single years. When long periods are considered, the statistics as a whole present the clearest evidence of decline. In deciding the question of actual increase or decrease in the lobster, certain variables must be duly considered, yet it is these highly important variable factors, which are apt to be neglected. To state that more lobsters were captured one season than another, without a knowledge of the condition under which these captures were made, affords no reliable basis for determining the true state of the fishery. We need to know also the numbers of men engaged and of traps used, as well as the character of the areas fished, and the size of the animals caught.

The lobster fisheries of Canada, next to those of the codfish and salmon, are most valuable to the Dominion, and from 1869 down, the product inclusive yielded a grand total of \$83,291,553. In 1897, the product of this industry was estimated at 23,721,554 pounds, with a value of \$3,485,265. In 1906, ten years later, in spite of rising prices, the yield had dropped to 20,241,764 pounds; but though less than at the earlier time by nearly 3,500,000 pounds, this quantity had nearly the same value, viz: \$3,422,927. The greatest yield of this fishery is recorded for the years 1885 to 1887, in 1886 reaching approximately 34,000,000 pounds, these quantities in all cases representing the lobsters preserved in cans as well as the animals shipped alive.

This great fishery has much to hope for in propagative measures of the right sort and all persons the world over, who like lobsters, should welcome every sign of its actual increase. At the same time, we should wish to know the truth of the matter and a long memory is necessary.

The product of the Maine lobster fishery for 1907 is stated to have been between eight million and nine million pounds of lobsters, ten and one-half inches and over, in length. This seems a large quantity; but if we go back fifteen years to 1892, we find that it is only about one-half the amount recorded for that year, viz., 17,642,677 pounds; but is it not rather significant that the smaller quantity was worth in the market nearly three times as much as the larger quantity, viz., two millions of dollars for the smaller amount as compared with \$663,043 for the larger amount? To catch the smaller number more-

over required some four hundred more men, using we do not know how many more traps and working we cannot say how much wider or more diverse a field.

Now, it is such facts as these, which lead us to pause when we hear of increased yields to this industry, and inquire if our friend has duly considered the variables in his problem, for until he has done this, his assertions have no value, and may be grossly misleading both to himself and to others. So far as we have been able to analyze statistics at present available and from all our investigations and interviews with the officials of the various departments and men in close touch with the business, the conclusion is inevitable that the lobster fisheries in both America and Europe have steadily declined from the time when they began to be pursued with the means and energy characteristic of modern conditions, beginning in Canada more than a century ago. The cause of this decline is evident. More lobsters have been destroyed than nature has allowed to replace, by her slow processes, of reproduction and growth.

How have we tried to check this declining tendency by legislative and other means? Various curative measures have been tried. The three most important is a trap with laths a certain distance apart and small funnel hoop, the gauge law and the artificial hatching of eggs and liberating the young in the sea. All of these curative measures, after being tested and tried, have been delegated to the junk heap as more than useless appendages, causing loss of efficiency to the laborer and uncalled for expense with no benefit whatever. This is the

judgment of all reliable experts of all those acts of legislation, with the sole exception of the artificial hatching of eggs, which is pronounced by all, whose judgment is worth having, a success under the conditions in which it has been employed. Artificial hatching, we will speak of more particularly later in this report.

THE PROPAGATION OF LOBSTERS.

Females spawn once in two years, possibly a little oftener when approaching full growth (sixteen to twenty inches), when moulting becomes infrequent.

While it is probable that any given male fecundates more than one female and that mating takes place at random and without obvious reference to the periods of egg laying, very extensive observations upon the natural ratio of the sexes indicate that to secure proper fertilization of the egg, the number of males and females must be approximately equal.

Sexual maturity is reached in from four to eight years. The smallest lobster ever observed bearing eggs was seven and three-fourths inches. Statistics and experience have determined the scientific fact that no normal lobster less than ten inches in length is expected to produce eggs. It has been found that some abnormally short lobsters, in the proportion of about one in twenty-two thousand, do bear eggs at a length shorter than ten inches; but the line is drawn at the ten-inch length for an egg producing lobster.

Eggs are laid chiefly during July and August; but some during the latter months. The period of carrying eggs is usually

ten to eleven months, the hatching being in June and July. Lobsters ten inches long produce at the first litter from six to ten thousand eggs; the second litter two years later, then twelve inches long, about twenty thousand eggs; the third litter two years later, lobster about fourteen inches long, forty thousand eggs; fourth litter, two years later, lobster about sixteen inches long, sixty to eighty thousand eggs; the fifth litter, two years later, lobster about eighteen inches long, eighty thousand to one hundred thousand eggs.

It is claimed that lobsters remain at their maximum productive capacity for at least from ten to fifteen years.

Each lobster, therefore, to do the work nature designed, produces from six hundred thousand to one million eggs during its life.

The hatching period of a litter of eggs extends over about a week. Therefore, the young are not all liberated at once in large numbers.

On hatching, the young is merely a dark round speck and increases about fifteen per cent each time it sheds its little shell. During the first two weeks, it sheds its shell three times, changing slightly in appearance each time; but on the fourth time it sheds, it resembles the full grown lobster and swimming strongly, it seeks the bottom, there to take on the habits of its parent, hiding among the rocks and burrowing in the sand.

Its enemies are many species of fish, cod destroy lobsters, even up to ten and eleven inches long. Six lobsters were found in the stomach of one cod, several of them measuring ten to

eleven inches in length. The cod fish weighed seventy pounds.

It is also said that the dog fish is one of its worst enemies and that these have been caught containing several lobsters of medium size. It is also known that pollock and other grades of fish and birds of the air destroy many of the fry.

It will, therefore, be easily understood that lobster fry or the small young lobster at the floating age, is the prey for birds and all kinds of small fish, while swimming about on the surface or in the water. It has been clearly recognized for seventeen years or more that some further protection must be given the young fry liberated from the hatcheries and it is practically determined that there is need of a rearing station to be connected with the hatchery, where the young fry may be kept, until it has arrived to the form of the mature lobster at what is called the fourth or fifth stage, when it will sink directly to the bottom and not remain swimming on the surface.

Lobsters are canabals from birth, due primarily to their strong instinct of pugnacity. The small as well as the large are every ready to prey upon those still smaller or weaker than themselves. This is certainly true of all lobsters which have been kept under observation in the restricted space of hatching jars and it was for a long time a great problem.

The Wickford hatchery, at Rhode Island, was the first to overcome this and after much experimenting discovered that the hen's egg properly prepared, was the best food for the lobster fry; but they have now discovered during 1916, a fish food, which takes the place of the hen's egg, is very much

less expensive and has saved the hatchery several hundred dollars during the past season, with equally as good results.

ARTIFICIAL HATCHING.

In the earlier part of this report, we spoke of artificial hatching as the only curative measure that had been tested and tried out that had survived the test, as a means of preventing the entire destruction of the lobster industry. We have called attention to the scientific fact that no normal lobster less than ten inches in length is expected to produce eggs. The eggs carried by all lobsters are attached to the under side of the tail of the lobster and are carried there, if let alone, nearly one year before they are deposited for hatching. The call for lobsters had become so great and the avariciousness, needs and necessities of the fishermen, coupled with the increasing prices, was too strong a temptation for the fishermen to place the mother lobster once caught back into the briny deep, where she could rear her young for the future. Instead of building for the future his business and conserving the product and source of the product, he found that by using a brush broom, he could remove those eggs and sell the lobster to the market. By doing so, you will at once see that a vicious practice had arisen, which, if followed long enough, would completely destroy the producer. Added to this vicious practice was also the natural destruction by the unavoidable storms and other means of destruction, so that it became apparent that something must be done to stay this stern destruction of nature. Through the efforts of men experienced and with the good wishes of the

business at heart, the United States Government was induced to establish in some of the lobster producing states artificial hatching establishing, run by the government. One was established in our state at Boothbay Harbor, equipped to a capacity of handling and hatching the eggs of fifteen thousand mother lobsters during each year. The mother lobster has been purchased of the fishermen or the dealer for a price somewhat exceeding the value of the regular lobster. The government boat has taken that lobster to the hatchery, where the eggs, at the proper time, when ripe, have been carefully removed by experts of the government, hatched, fed and cared for, until they, the fry, had grown to the third stage, or what is termed free swimmers, which stage is attained in about fourteen days, when the lobster fry is taken out in the government boat and liberated in the localities, as nearly as possible from where the mother lobster was obtained.

The Boothbay Hatchery liberated, under this arrangement, the following numbers of fry, viz.: In the year 1912, 179,795,000; in 1913, 186,000,000; in 1914, 173,500,000; in 1915, 193,800,000; in 1916, 128,500,000.

From the Gloucester Hatchery there were liberated in the year 1912, 18,650,000; in the year 1913, 14,480,000; in 1914, 6,490,000; in 1915, 870,000; in 1916, 200,000.

From Woods Hole Hatchery there were liberated in 1912, 3,283,000, and none since.

You will at once see that considerable expense has been made and put out by the government for the benefit of the industry.

These large figures show that the Boothbay Harbor Hatchery from any standpoint must have been of considerable good to the lobster business in the State of Maine. There is no fair minded man, who will undertake to deny it, and every scientific, practical and well-informed man that we have met, or whose articles we have read, or whom we have interviewed, admits that the hatcheries have been of the greatest assistance to the business and without them the lobster would have been to a considerably greater extent exterminated.

We have no doubt and further, we are convinced that notwithstanding this great benefit to the industry, that there are many fishermen and dealers still brushing the eggs off from the mother lobster and dosposing of the lobster in the market. As we stated above, these hatcheries were established to conserve the lobster fisheries and protect them from being exterminated. We believe that the great proportion of the fishermen have come to thoroughly understand the needs of protecting the mother lobster and of preserving the eggs in one manner or another for the future good of the industry and for their own personal business ends. The latter class are honest in their beliefs. They wish to retain the mother lobster with all the benefits that she may be to the business. Their contention is that she can do better, if left to nature and be thrown back overboard, where she can rear her young, as the Almighty originally planned. They believe that the mother lobster should be purchased from each fisherman as fast as caught, a hole punched in its flipper and she be returned to her breeding

place foreverafter to remain the property of the State, to be sold no more; but to continue in her good work of charity and good will toward the fishermen and the business.

The other side claims that the argument is partially true; but not true to the extent that the advocates believe and this statement is made by considering for the argument's sake all fishermen honest, and they say in addition, that while they believe the hatchery has accomplished more than would have been obtained by the regular process of nature, under the ordinary circumstances, they would go one step further. They would have added to the Boothbay Harbor hatchery a rearing plant of such size and capacity in which the fry that had been hatched and matured to the third stage should be further kept, until the fry had reached the fifth stage, at which time he would have assumed the shape of his mother lobster and would have sufficient weight so that it would reach the bottom and could hide among the rocks, seaweed and sand for its self-protection. They contend that by this method the fry is removed from all reasonable possibility of destruction and better results would be obtained than from the regular elements of nature, and in order to ascertain and find out by experiment and tests what, if any, the losses would be under those conditions, the Wickford hatchery, at Rhode Island, a pioneer hatchery, has made a number of tests along that line. They have kept the fry not only the twenty-eight or thirty days necessary for it to reach the fifth or sinking stage, but have kept it confined in cars inshore, both at high water and at the bottom, for a period of three years, with no

material loss. These experiments should show to the sceptical that a method has been found whereby practically the entire loss of fry from destruction has been ascertained and that there should be no further doubt about it.

Furthermore, by this last method, there will be entirely eliminated any possibility of the vicious fishermen disposing of the mother lobster with a hole punched in the flipper to the foreign market.

In the report of the Commission of Conservation of the Sea Fisheries of Canada, 1912, Dr. Robertson asked Professor Found the following questions, which were answered by Professor Found:

“Dr. Robertson: If the lobster could be protected when young, would it not multiply its chances of surviving several hundred times?”

Prof. Found: Several thousand times.

Dr. Robertson: Why go to the expense of hatching at all, unless you can afford better protection in the early stages of the lobsters' existence?

Prof. Found: You are touching a question there, which is one that requires careful consideration. The strong argument in favor of hatching is that if you do not provide a means of caring for these eggs, many will be lost. Lobster fishermen can make a berried lobster legal by merely washing the eggs off, and they are liable to yield to the temptation. If the fishermen washes the berries off instead of returning the lobster to the water, the eggs will go to the bottom and die. The argument is that there

is a saving to that extent. I am not sure that if there were no lobster hatcheries at all it would not be possible to work up a sentiment amongst the fishermen by an educational campaign, which would be sufficient to induce them to release all berried lobsters that they might take.

Dr. Robertson: Could you give us now or at some other time an estimate of the probable cost of taking care of the young lobster?

Prof. Found: It is not a matter of cost at all, it is a matter of discovering some practical method of doing it. The experiments conducted under the direction of the State of Rhode Island has accomplished more than the experiments of any other experimental station in the world; but it is not held, even by the Rhode Island authorities, as I understand it, that they have found a means which is sufficiently workable to be put into common use. The retention of the fry until large numbers of them reach the grounding stage would be a most important matter, for instance, I remarked a little while ago that one in ten thousand under natural conditions reaches maturity, if it could be made one in one hundred, you can see at once what an economic advantage it would be."

Since the above investigation and colloquy between Dr. Robertson and Professor Found took place, the Rhode Island hatchery has made the experiment suggested by Professor Found, that we have referred to above, by keeping the fry for three years in confinement in cars under the severest kind of tests, with no material loss whatever, so that it will be apparent

that there is very strong ground to substantiate the argument in favor of the hatchery and rearing plant.

It is only claimed by the advocates favoring nature that one in fifteen thousand at most reach the stage of maturity.

This same Rhode Island hatchery, in its experiments, has liberated at the fifth or sinking stage, since 1900 and up to 1913, 63,553 with a loss of only 40 per cent on the average, and later experiments they have reduced losses to the average of 30 per cent at the fifth stage.

Before the commission had made any investigation or received any data on the subject of the lobster fishery, it was invited to attend a meeting of delegates from New Hampshire, Massachusetts, Rhode Island, Connecticut, New York and New Jersey, appointed by the Governors of those states and including representative fishermen, dealers, scientists, state and national officials, to be held at Woods Hole, Massachusetts, July 12, 1915, at which meeting, this subject was the paramount issue.

The commission accepted the invitation and attended as a body. The subject was taken up and discussed in all its bearings by the recognized and best informed people of the United States Department and of the various state departments. Experts and scientists wrestled with the problem with the greatest earnestness and with the most serious consideration. It was very evident before the discussions were over that the seriousness of the industry had made the deepest impression upon all. It was perfectly plain that from the admissions of all, through the selfishness, thoughtlessness, avariciousness and necessities perhaps of

the fishermen and from the foolish and unwise laws that had been made in the various states governing the industry, that in Delaware, New Jersey, New York, Connecticut, Rhode Island, New Hampshire and Massachusetts the industry had been practically paralyzed and the future look extremely dark, Delaware being reduced to 20,480 lobsters; New Jersey to 227,776; New York to 348,550; Connecticut to 575,234; New Hampshire to 261,081; Rhode Island to 1,044,308; Massachusetts to 1,197,805, with Maine the only bright star left in the firmament of the producing states, with 5,157,047 lobsters. This year these figures were given from the only year that they all had at common in hand, the year 1913. Since the year 1913, the situation has grown gradually worse and the proportion has gained largely in favor of Maine over the other states. By their unwise laws and especially in reducing from a ten and one-half inch law, which they all once had, the most serious decline had come. It was plain and it is admitted that Maine, through the guiding hand of the all-wise Providence, had had sense enough to retain the ten and one-half inch law, which had supported and maintained her position so much better than the nine inch law had done in the other states.

It was admitted and agreed by the heads of those great departments that the ten and one-half inch law was the only wise and safe law; that they would like to have a uniform law in all the states. We could all agree that a uniform law would be the right thing to have, if the conditions were all alike. To have a uniform law, it would be necessary for our commission to agree

to recommend a change from the ten and one-half inch law to a nine inch, if the State of Maine conformed to the other states; but inasmuch as it was admitted by these great departments that the ten and one-half inch law was the only wise and safe law for the industry and that the other states had ruined their business by changing to the nine inch, we couldn't see and cannot now see how we can have a uniform law on the length of lobster, unless the other states come up to our standard of a ten and one-half inch law. We could not for a minute, after their concessions and agreements, that our law was right, think of recommending a change from ten and one-half inches, which would be entirely for their benefit and to the injury of our state, which would open the fishing grounds of our hardy fishermen to the fishermen of Massachusetts and New Hampshire and other states for their profit and benefit and to our financial loss and the possible destruction of our industry, and the livelihood of that great body of men along our coasts, who are depending upon it.

The convention, after due deliberation, adopted the following resolutions:

“Whereas, this convention fully recognizes the fact that the pioneer efforts of the United States Bureau of Fisheries in restraining the short-sighted practices of fishermen and others in destroying the eggs of the lobster have been well devised, economically administered and beyond question have resulted in vast benefits not alone to the fishermen themselves, but also to the consuming public; and

Whereas, the unwise methods of exploiting the lobster fishery,

which have resulted from the constantly increasing public demand for the lobster as food, has led to such an unmistakable and alarming decrease in the sources of supply, which must shortly menace the best interests of fishermen, dealers and the public of the entire United States and of the Canadian Provinces; and

Whereas, we are of the opinion that the Bureau of Fisheries is, by training and experience, amply competent to deal with this great problem if supported by Congress and the people; therefore, be it

Resolved, that we hereby express our unqualified confidence in the Bureau of Fisheries and urge the public necessity of checking the enormous economic waste now existing, particularly in the destruction of lobster eggs and of lobsters below and above the optimum market size, the avoidable loss both in capture and in transportation, the unfair practices in interstate shipments, and the insanitary methods of marketing lobster meat; and be it further

Resolved, that the delegates to this convention pledge support in securing from Congress the federal legislation and appropriations essential for adequately extending the work to the required activities relating to consideration and adoption of improved practices necessary for

- A. A greater annual natural production of lobster eggs; and
- B. The rearing of a greater number of young from the eggs naturally produced.

We are of the opinion that a union of public effort is neces-

sary for securing progress in increasing the annual production of lobsters through extending the efforts for:—

1. Salvage of eggs.
2. Rearing the young for such a period and by such methods as may best minimize the natural destruction during the swimming period.
3. Protection of the adults, male and female, above and below the optimum market size (the so-called “double gauge”);
4. Measurements made on the carcasses, thus minimizing the personal equation in legal measurements;
5. Licensing all lobster fishermen and dealers for the purpose of securing facile enforcement of laws;
6. State regulation of methods of capture and possession, and federal regulation relative to interstate shipment;
7. Setting aside suitable places for breeding purposes, upon which fishing is regulated.

And be it further

Resolved, that a copy of this resolution be sent to the honorable the Secretary of Commerce, and to the honorable Commission of Fisheries at Washington, and to their Excellencies the Governors of all the States of the Union, with the request that this be given consideration at the conference of Governors soon to be held at Boston.

JOHN L. DONAHUE, of Maine.

GEORGE W. FIELD, of Massachusetts.

CHARLES W. WILLARD, of Rhode Island.”

By an examination of the above resolution, you will at once see the class of subjects connected with the industry that were taken up and discussed and how serious that great body of experts gathered in that convention considered the subject, both to the nation and to the states. We would not have you understand that all of that body of experts were agreed upon all the propositions therein set forth. They did not. But the paramount idea of all was to get the subject in all its bearings before the national government and before the various state governments, with the object of securing a solution of this vexing problem as soon as possible, and with the special object of securing the efforts of the United States Bureau of Fisheries with their experts in solving the problem. There was no question about the seriousness of the outlook for the fisheries, unless a check could be made at once. You will see further that the whole discussion surrounded the one main question of protecting and salvage of the lobster eggs in order that more lobsters should be produced. Then the best method of rearing the young to minimize its natural destruction. Then the subject of measurement of the lobster, followed by the licensing of all lobster fishermen and dealers. Then realizing the frailties of humanity, the temptations to fishermen and the difficulty of enforcing all laws, the subject of federal regulation relative to interstate shipment was considered.

The second idea was, by introducing these resolutions and getting the various Legislatures at work, to immediately start the machinery of careful investigation and a general educa-

tional system throughout the breadth of the lobster producing districts, for the purpose of creating that degree of sensible interest and comprehension of the vastness of the subject, the present needs and the future necessities which must be cared for now, instilled into the minds, if possible, of the fishermen themselves as well as those commercially interested and even to those of us who so much enjoy this delicious food, so that we should have the combined efforts in the end of all interests, to preserve, safeguard and protect this industry for the benefit of all.

We wish to impress upon you the importance of this great industry and we wish you to look over carefully the above resolve, that the breadth, depth and importance of the subject may make the strongest impression upon your minds. We freely confess that those discussions opened up a trend of thought that we had not previously given any thought or consideration. Of course, we had known in a way the seriousness of the subject; but it never had been brought home to our full understanding how serious the real problem was. There was one thing, however, that we were very pleased to learn and ascertain. It was the only real bright spot that we found, and we wish to state it here for the encouragement of the state. This is what we learned: In all the discussions of the subjects there, it was plain and apparent that notwithstanding our State of Maine had been more or less negligent, careless and apparently thoughtless in the management of the department governing this industry, and while it had apparently not given the

subject due consideration and the assistance that the department needs, ought to have had in the past and must have in the future, I say notwithstanding all this, by the admission of that great body of experts in their various arguments, the State of Maine was the only state that was established on anything like a safe basis.

Immediately after returning from this great convention, and for the purposes created by the act under which we were appointed, and to improve the opportunity and to start the machinery, suggested by the thoughts expressed in the above resolution, we sent out to fishermen, dealers, smackmen and others who handle lobsters commercially, a list of questions touching the industry, requesting them to answer same for our information. Our object was to ascertain, if possible, the real information that the fishermen and fishing interests had as to the business in which they were engaged. We were especially anxious to know if they had a just comprehension of the seriousness of the problem and as to whether they were doing anything, were inclined to do anything or would do anything to protect their own business. We thought we would throw out a few test questions to ascertain whether, by a proper school of instruction or by some other similar method, the fishermen and those interested in the business could be educated and brought to such an understanding of the importance of the industry, that they in a short time would one and all assist and aid the department to preserve the industry.

IMPORTANT TO LOBSTER FISHERMEN AND
DEALERS.

In conformity to a Legislative Act passed by the Legislature of Maine at its session held in 1915, the undersigned were appointed a commission with the purpose in view of determining what legislative and federal regulation should be adopted for the best interests of the lobster industry and to report our findings to the next Legislature.

In order to get a full understanding from all parties interested in the lobster industry and that we may have the benefit of the judgment and experience of interested parties, we hereby propound the following questions, each of which we respectfully request you to answer, and we also request you to make any additional suggestions that occurs to you that would be beneficial to the industry, and after answering in detail, mail immediately to the Commissioners for the Preservation of Lobster Fisheries, Rockland, Maine.

We request that you give this circular immediate attention so that we may not be delayed in giving the subject full, careful and unbiased consideration, and also because your prompt attention to this matter may have an important bearing in securing aid from the Federal Government.

Write any special suggestions on the back of this circular.

Respectfully submitted,

JOSEPH C. HARMON, Stonington, Me.

EBEN T. LEWIS, Boothbay Harbor, Me.

JOHN L. DONOHUE, Rockland, Me.

QUESTIONS. WRITE ANSWERS WITH PEN OR PENCIL.

1. Do you believe the supply of lobsters in Maine is diminishing?
2. If so, what remedy would you suggest to keep up the supply?
3. Are you in favor of a uniform law in all lobster waters (off the shores of Me., Mass., N. H., R. I., Ct., N. Y. & N. Jersey) for the measurement of lobsters?.....
4. Are you in favor of the so called "double-gauge" law?
5. If so, what sizes would you liberate?.....
6. Which would you favor; a nine, nine and one-half, ten or ten and one-half inch measure?.....
7. If Massachusetts will not raise her lobster measure to conform to our law, would you be in favor of our state lowering our measure to conform to their standard, which is practically nine inches?
8. Have you any suggestion as to a better way of measuring a lobster than provided by the present law?.....
9. What suggestion have you as to how best to measure a lobster with a broken nose?.....
10. Are you in favor of a general close time on lobsters?

11. If so, for how long a period and what time of the year would you have it apply?

12. If legal, would you favor an interstate commerce law to prohibit the transportation of short or unlawful lobsters out of the state?

13. If you are in favor of making any regulation as to the kind of traps employed in catching lobsters, what would you suggest?

.....

14. If you are not in favor of the present license law, state why?

.....

.....

15. Do you think the present license law is effective?.....

16. If not, why?

.....

17. If you are in favor of any license law for the lobster industry what changes would you suggest?.....

.....

.....

18. Do you consider the government hatcheries beneficial?

.....

19. Do you think if the hatcheries should keep the young lobster till it was large enough to go to the bottom as soon as liberated, it would materially benefit the industry?.....

20. Do you believe it would be of material benefit to have another hatchery and rearing station on the eastern coast of Maine?

21. If you are not satisfied with the present method of handling the spawn lobster, what better method would you suggest?

.....

22. Are you in favor of setting aside suitable breeding places upon which fishing is regulated in a way to protect them?

.....

23. Can you suggest any method by which a greater annual natural production of lobsters' eggs and the rearing of a greater number of young from the eggs naturally produce, can be had better than the method used?

.....

24. If legal, do you think the state should pass a law allowing fishermen the preference over packing establishments in securing their bait?

25. Do you believe it would be of material benefit to establish another hatchery and rearing station further east on the coast of Maine in addition to the one at Boothbay?.....

26. What is the average number of traps you operate and how many months do you operate them a year?.....

27. Are you in favor of close time on lobsters on Sunday?

.....

Note: Every lobsterman should interest himself in answering all questions promptly—otherwise he will have no excuse to criticise the future lobster laws.

Don't hesitate to use a pencil if ink is not handy.

Name

Address

Date..... License No.

REMARKS:

We are sorry to say that up to the present time we have received back answers from only a small portion of the circulars so sent out, so that we are not able to say what could be done with the fishermen at large along that line. However, we did not depend entirely upon answers returned on the circulars. We went further. We sought out and had personal interviews with as many fishermen as we could come into contact with. We had a number of interviews with the wholesalers, smackmen and dealers, with whom we endeavored to talk the problem over in its many phases. We visited the larger lobster sections of the state for our own personal investigation of conditions. From all of these various sources, we received many valuable suggestions, of which we have taken due heed, given proper consideration, and from them and our after investigations at home and abroad we will give you later in this report our conclusions and mature recommendations.

Shortly after the convention, we made a trip to Washington, D. C., for the purpose of securing from that great department, established by the government as a special department known as the Bureau of Fisheries, Department of Commerce, the special aid of the national government to carry out

in the best manner, by research, laws or otherwise, the suggestions embodied in the resolutions adopted at that convention of experts, which is in this report previously reported.

Our senators and congressmen took special interest in the subject and assisted us in every way possible. They secured for us special conferences with Secretary Redfield, Commissioner Hugh M. Smith, Dr. Moore, deputy commissioner and the solicitor of the Department of Commerce. We must say that they were all exceedingly kind, which must have been either natural born or the seriousness of the situation demanded it. Whatever the reason, the departments were thrown open to us and every assistance and suggestion that they could give were freely and unsparingly given. They opened to us for our inspection all of the data in the possession of the department and gave all the explanation connected with same that they were able, in order to further enlighten us. Conferences were afterwards held specially for our purpose at the office of Senator Johnson. Other conferences were also held. At these conferences, we took up and discussed the various topics of the resolution. One of the first topics was the possibility of federal regulation of fishing. The department informed us that the United States had no jurisdiction whatever inside of the three-mile limit; that that jurisdiction belonged exclusively to the State of Maine and must be handled by our own state. They further stated that before the United States could be able to do anything, it would require a period.

of ten years, and a change of laws before they could even commence.

The second proposition was the advisability of federal regulation relative to interstate shipment. The matter was talked over carefully. The subject was referred to the solicitor of the department, who stated that he would look the law up carefully and would report at a later conference. At a later conference he made a report, in which he gave his reasons, which are too long to report here; but in brief he stated that it would be absolutely unwise and impracticable.

The next subject taken up was the salvage of eggs and the rearing of the young through the hatchery. It was agreed that by the experiments of the department the hatchery had been of great benefit to the business; but it would be of much greater importance if a rearing station could be added to the hatchery, so that the fry could be kept after hatching to at least the fifth or sinking stage, when it would sink to the bottom and protect itself by hiding under the rocks, seaweed and sand and thereby obviate its destruction by schools of fish and other enemies, if left floating on or near the surface, in its swimming stage.

We wish to say right here that while there has been a great deal of criticism along this line by fishermen who have claimed that the fry was nearly all eaten up, so that no benefit had been obtained from a hatchery, that their criticism is in the main unfounded. Experiments and careful investigation by the department shows that it is not true, as they claim; but of course, is true to some extent.

As a result of our conference, a bill was introduced in Congress, asking for an appropriation of five thousand dollars for the purpose of establishing a rearing station at Boothbay Harbor to be used in connection with the hatchery located there. The bill received a passage and we understand the government will do something at once. The department has been looking for a suitable location, testing the water conditions and otherwise making preparations for establishing the rearing plant, at Boothbay Harbor, and we wish to state further that the department informed your commission that if the state did its part to protect the industry, that it would do all in its power to assist in any manner where it consistently could. The department further informed us that the length of ten and one-half inches prescribed by our law was the only safe measure and that it should not be disturbed or changed; that if the State of Maine or any other state did not have interest enough to protect its own industry by keeping the law, requiring a ten and one-half inch lobster for a minimum size, it would be perfectly useless for the United States Government to waste money endeavoring to prop up an industry that they themselves, by their own law, were ruthlessly destroying, and that if the other states didn't raise the standard to ten and one-half inches, as a minimum size, the department was contemplating withdrawing all the money benefit that the government had been contributing, as it would be an absolute waste.

In a letter of March 29, 1916, the department among other things states this: "The present four and three-fourths inch

body measurement limit is a good law and if this law could be strictly enforced, lobsters in Maine waters would be steadily on the increase instead of the reverse. The short lobster traffic in the past has been ruinous to the industry."

Our next efforts were with the various fishery departments of the states interested in the lobster fishery. We had personal interviews with the Department of New Jersey, New York, Connecticut, Rhode Island and Massachusetts. We had no opportunity to meet the departments of Delaware or New Hampshire. From these interviews and conferences and with some of the departments we had a number of conferences, our conclusions being formulated from the evidence we had ascertained, were constantly confirmed, that the State of Maine, although unfortunate in not having recognized the importance of the department, was nearest to a safe basis of any of the states. The heads of these departments frankly admitted that they were in full accord with the State of Maine law, and fully believed that the ten and one-half inch law for the minimum length was the only safe thing; but that inasmuch as their states, through unwise legislation caused by the importuning of improvident fishermen, had permitted laws to be made reducing the minimum length to nine inches, the business had got to such a condition that if they undertook to raise the standard to the ten and one-half, it would cause their fishermen for several years severe losses and that they could not produce force enough to make the change, although they freely admitted that in a few years after it had been accomplished,

matters would rectify themselves, the business improved and the safety of the industry with other protection that might be given, could be assured. In order that you may fully appreciate the standing of the lobster industry in the New England States, we are giving you statistics furnished by the national department for the year 1913, which is the only common year that statistics could be compared of all the states interested, and while you look over these statistics, we wish to impress upon you that they are not accurate. There is no way at the present time of securing any accurate information; but they are equally as fair for one state as the other and it is the best that can be secured, as no state has taken any precaution to compel accurate information. These figures will only cover the lobsters reported in to the state departments of each state that are of legal length under their laws. It does not take into consideration the great numbers of undersized or short lobsters that have been disposed of surreptitiously by the fishermen and those handling lobsters in the different states. You will at once see that inasmuch as the short lobster business is contrary to the laws of these States, there is no one who handles same who would care to report that fact. Therefore, the statistics are given from the best source obtainable and for the sole purpose of comparison, and we give them especially to you that you may see with your own eyes the position the State of Maine holds today in the lobster industry field as compared with these other states. The conclusion will at once come to you from what we have previously stated in this re-

port that the State of Maine holds the key to the whole lobster industry, which key she must never surrender to the other states nor even to any foreign government. In the discussion, we have not mentioned in detail the lobster industry of the Dominion of Canada. We shall bring home to your attention by later statements the troubles that they are having. It is true Nova Scotia has been sending large quantities of lobsters to our market and from our investigation, we find for a positive fact that their supply is gradually and rapidly decreasing; that they are subject there as we have been to the short lobster catchers who are taking for the market and for canning purposes especially, lobsters so small that they are termed bugs. The question is just as serious. In Nova Scotia and other lobster sections of the Dominion of Canada as it is in our own state and even more so because of their minimum length allowed to be caught, so that we come back again by affirming that in a very few years, if conditions do not change, the Nova Scotia lobster will be a thing of the past, and if our own State will only hold on to its present minimum size of ten and one-half inches, will give the Department of Sea and Shore Fisheries the place in its recognition that it deserves and safeguard what we have, the future will be brighter. We believe that the trend of events backed up by investigation and experiment point clearly to the conclusion that Maine is the only lobster industrial section that can be counted upon for the future and we must not permit our standard to be lowered to satisfy present greed, avariciousness or to please people who have no real understanding of the situation.

COMPARATIVE STATISTICS OF THE LOBSTER
 PRODUCT OF THE ATLANTIC COAST STATES
 FOR VARIOUS YEARS FROM
 1880 TO 1913.

BY

U. S. BUREAU OF FISHERIES, DEPARTMENT OF
 COMMERCE.

YEARS	MAINE		NEW HAMPSHIRE		MASSACHUSETTS	
	POUNDS	VALUE	POUNDS	VALUE	POUNDS	VALUE
1880	14,234,182	\$ 268,739	250,000	\$ 7,500	4,315,416	\$158,229
1887	22,916,642	512,044	142,824	6,268	3,511,075	156,204
1888	21,694,731	515,880	136,350	6,256	3,743,475	172,936
1889	25,001,351	574,165	137,175	6,415	3,353,787	148,492
1890	(c)	(c)	(c)	(c)	(c)	(c)
1891	(c)	(c)	(c)	(c)	(c)	(c)
1892	17,642,677	663,043	196,350	11,700	3,182,270	205,638
1897b	10,300,880	683,082	90,300	5,493	2,080,502	157,330
1897	(c)	(c)	(c)	(c)	(c)	(c)
1898	11,183,294	992,855	108,515	9,372	1,693,741	147,702
1900	12,346,450	1,062,206	205,122	19,078	1,805,042	171,825
1902	12,163,389	1,066,407	128,463	14,863	1,695,688	175,095
1904	(c)	(c)	(c)	(c)	(c)	(c)
1905	9,018,759	989,799	256,052	32,575	1,283,071	176,234
1908	9,929,000	1,269,000	264,000	43,000	2,455,000	307,000
1913	7,670,667	1,525,776	301,710	108,560	1,524,389	290,423

YEARS	RHODE ISLAND		CONNECTICUT		NEW YORK	
	POUNDS	VALUE	POUNDS	VALUE	POUNDS	VALUE
1880	423,250	\$ 15,871	613,385	\$ 23,002	135,000	\$ 5,062
1887	570,039	27,128	1,487,020	82,594	114,000	6,850
1888	588,500	28,047	1,477,226	85,723	248,000	13,900
1889	456,000	21,565	1,501,290	83,099	124,023	12,780
1890	(c)	(c)	(c)	(c)	150,400	14,754
1891	(c)	(c)	(c)	(c)	165,093	15,655
1892	774,100	53,762	1,614,530	101,358	(c)	(c)
1897b	(c)	(c)	(c)	(c)	130,610	10,913
1897	(c)	(c)	(c)	(c)	381,020	31,458
1898	578,066	43,290	1,098,192	83,748	332,378	30,235
1900	660,017	58,026	550,450	51,484	156,260	21,224
1902	397,305	39,488	371,650	40,719	(c)	(c)
1904	(c)	(c)	(c)	(c)	229,697	27,059
1905	529,827	64,358	436,790	56,141	(c)	(c)
1908	1,425,000	152,000	661,000	84,000	423,000	57,000
1913	1,283,056	197,960	724,435	131,767	435,811	81,783

YEARS	NEW JERSEY		DELAWARE		
	POUNDS	VALUE	POUNDS	VALUE	
1880	156,800	\$ 5,488	150	\$ 6	(c) Represents that no statistics are available.
1887	101,580	7,719	39,000	910	
1888	181,688	12,965	39,000	910	(b) Represents fiscal year.
1889	188,347	14,301	9,600	480	
1890	185,321	13,683	7,200	360	
1891	165,664	12,463	8,200	410	
1892	143,905	10,861	5,600	285	
1897b	79,230	6,197	(c)	(c)	
1897	99,230	8,573	5,095	459	
1898	123,876	11,097	(c)	(c)	
1900	40,800	6,400	3,600	336	
1902	(c)	(c)	(c)	(c)	
1904	141,340	18,269	2,600	286	
1905	(c)	(c)	(c)	(c)	
1908	115,000	16,000	5,500	800	
1913	301,349	54,155	25,600	4,338	

We wish to call your attention to the statistics of the above states and we will take them up in the order of their importance, and before we do it, we wish to assure you that these statistics are the best that can be obtained under the present methods. They are not absolutely reliable. They do not show the exact situation of the industry, as these figures only show what the fishermen who have been seen account for and they do not represent any of the illegal or short lobsters as no one naturally engaged in handling short lobsters would care to admit it; but these statistics are absolutely valuable for the following purposes: They show relatively the amount and value of the lobsters in each state compared with the other states. They also show the shrinkage in the number of lobsters in each state. Of course, you will understand that as lobsters have declined in number, the demand has increased and therefore, the price has advanced rapidly so that the price will give no indication of the real standing of the business. The figures are worthy of a careful study and consideration.

Now, we will call your attention to the last values of those several states. Delaware was \$4,398; New Jersey, \$54,151; New York, \$81,783; Connecticut, \$131,767; New Hampshire, \$108,560; Rhode Island, \$197,960; Massachusetts, \$290,423; Maine, \$1,525,776.

Those last figures give you the relative standing of the states and they will plainly indicate to you that the industry of the other states are practically used up and that Maine, while the

only one that produces reasonable values, has made an awful shrinkage in the number of pounds of lobsters since 1880, about one-half. That gives you plenty of food for thought. We have told you what the departments of these states have admitted to us about their industry and the reasons why they are so crippled in making a change in laws. We shall call your attention to only two of these eight states for special explanation, as the others are practically eliminated and out of the game.

First, Rhode Island; this state, a few years ago, realizing her condition and to overcome the difficulties, succeeded in securing a hatchery and later a rearing station. She also started a general system of instruction to her fishermen. She established a close time of five months each year and adopted a license system with heavy penalties for those who disobeyed and provided in the license system that none but citizens of her own waters could fish for lobsters within the jurisdiction of Rhode Island. As a result of those four valuable precautions and safeguards, Rhode Island is the only state that has come anywhere near holding her own.

In order to show you what the other state—Massachusetts—thinks about the subject, we will quote to you from the report of Hon. George W. Fields, that veteran Commissioner of Fisheries and Game of the State of Massachusetts, whose services, in our judgment, have been of great value to that state, to the Legislature of his State a year ago this winter, which is in part as follows :

REPORT OF MASSACHUSETTS COMMISSION.

The Lobster Fishery.

Decline.—Special attention is called to the deplorable condition which now exists in the lobster fisheries not alone in this state, but in all states along the Atlantic coast. Commercialism has dominated the lobster fishery of the past 25 years, and the public has been blindly lead to believe that the supply of lobsters could not be seriously depleted. On account of the trade in live lobsters from Nova Scotia and Maine, the actual conditions have been efficiently masked, but an extremely small per cent of the lobsters consumed in Massachusetts now come from Massachusetts waters, and the actual situation is especially evident to those who attempt to seek lobsters in places where they were formerly abundant. Nevertheless these localities, except where pollution is obvious, are as well suited for producing lobsters as formerly. The actual catch, however, has been seriously reduced, as a result of unwise legislation, whereby the reproduction of the lobster race has been greatly impaired by killing the best breeders. Previous reports have demonstrated the extent of this decline, and have shown how the Legislature has permitted this profitable industry to diminish to the present status, so that any lengthy discussion of this self-evident condition is needless. The following statistics on the lobster fishery present a concise statement of the actual situation in Massachusetts, and are worthy of a careful perusal by the intelligent reader.

Date	Fisher- men	Traps	No. lobsters above 10½ inches	Egg bearing lobsters	Av. catch per pot	Ratio egg lobsters to total catch	Av. ratio egg lobsters 5 yr. periods	Av. catch per trap 5 yr. periods
1888	367	21,418	1,740,850		81			
1889	344	20,016	1,359,645	61,832	68	1:21.9		
1890	37	19,554	1,612,129	70,909	82	1:22.7	1:27.06	76.0
1891	327	15,448	1,292,791	49,973	84	1:25.3		
1892	312	14,064	1,107,764	37,230	79	1:29.75		
1893	371	17,012	1,149,732	32,741	62	1:36.1		
1894	425	20,303	1,096,834	34,897	54	1:31.14		
1895	377	17,205	956,365	34,343	56	1:27.8		
1896	453	22,041	995,396	30,470	45	1:32.6	1:33.08	49.4
1897	388	18,829	896,273	23,719	48	1:37.7		
1898	340	16,195	720,413	19,931	44	1:36.1		
1899	327	15,350	644,633	16,470	42	1:39.1		
1900	309	14,086	646,499	15,638	46	1:41.3		
1901	331	16,286	578,383	16,353	35	1:35.3	1:38.82	36.3
1902	410	20,058	670,245		34			
1903	300	20,121	665,466		33			
1904	326	19,539	552,290	13,950	28	1:39.6		
1905	287	13,829	426,471	9,865	31	1:43.2		
1906	335	21,918	487,332	9,378	22	1:52		
1907	379	21,342	1,039,886*	10,348	49	1:100.4	1:84.68	40.2
1908	349	19,294	1,035,123*	9,081	54	1:114		
1909	522	29,996	1,326,219*	11,656	45	1:113.8		
1910	390	26,760	935,356*	7,857	35	1:68.1		
1911	341	19,773	822,107*	5,488	42	1:149.8		
1912	291	16,665	631,595*	4,744	38	1:133.1	1:121.14	30.8
1913	254	13,877	543,129*	3,408	39	1:159.4		
1914	310	16,128	566,191*	5,932	35	1:95.4		

*Number of lobsters above 9 inches.

In spite of the fact that absolutely complete returns of all Massachusetts lobster fisheries have never been obtained, the validity of the above figures is in no way impaired, owing to the fact that the points which this table strikingly brings out are based entirely upon ratios, viz., the average catch per pot, and the number of egg lobsters to the total reported catch. In 1907, the catch reported in marketable lobsters suddenly increased, because the law allowed the taking of lobsters nine inches in length, instead of 10 1-2, the previous size limit. The largest catch is found in 1888, when 1,740,850 lobsters over 10 1-2 inches were taken. The lowest catch of 10 1-2 inch lobsters was recorded in 1905, when 426,471 were taken. Under the new law in 1909 the high water mark was reached when 1,326,219 lobsters over 9 inches were taken, but the supply of these lobsters has gradually fallen in the same way, until in 1913, only 543,129 were taken. At the same time the number of traps has varied between 13,877 and 29,996.

The most accurate way to consider the question of the decline of the Massachusetts lobster fishery is to take the average number of lobsters caught per pot between 1888 and 1914 at five-year intervals. In spite of the increase with the change in the size limit, there has been a steady decline from a maximum of 81 per pot in 1888 to a minimum of 28 per pot in 1904, and 35 per pot in 1914. The average for the five years between 1888 and 1894 was 76 per pot; between 1894 and 1899, 49.4; between 1899 and 1905, 36.3; between 1905 and 1910, 40.2; and between 1910 and 1915, 30.8. From a com-

parison of the number of men and pots, it is evident as increased number of men and pots fishing over a wider territory have not been able to increase the catch, owing to the fact that the number of lobsters has diminished. Another factor which points to the decline in the supply of the lobsters is the ratio of egg-bearing lobsters to the total catch. In 1889 the ratio was 1.21, and in 1913 it was 1.159. The average ratio from 1894 was 1.27, from 1894 to 1889, 1.33, from 1899 to 1905, 1.38, from 1905 to 1910, 1.84, and from 1910 to 1915, 1.121. These figures give the decrease in egg lobsters, and show that the reproductive capacity of lobsters has even more seriously decreased than is indicated by the diminution in the actual supply. In spite of all statements as to the relative increase in abundance in various localities, no other conclusion is tenable except that the Massachusetts lobster industry is steadily declining. Unless a radical change in policy is made for the protection of the lobster, the future of this fishery in Massachusetts is seriously threatened.

The causes of this alarming decline in the lobster supply is due to three factors:

(1) Over-fishing, whereby such inroads are made in the natural supply that the normal productivity of the animals cannot be maintained.

(2) The capture of small immature lobsters has done much to decrease the natural supply, while the fisherman has benefited but little from this illegal practice, as he has been

forced to sell his "shorts" at a figure considerably lower than the market price.

(3) The illegal destruction of egg lobsters has been the most striking cause of the decline of the lobster fishery, in spite of the fact that attempts have been made to purchase the egg lobsters. It was the former custom of the fishermen to carefully remove the eggs from the female lobster with a brush or a mitten, in order to make the lobster marketable.

The fundamental condition underlying these causes is unwise legislation."

Later at the same session of the Legislature, he stated, calling attention in the statement to the preceding statistics, as follows:

"The prodigality and wastefulness of man have in few other lines brought so near to extinction so important a food product as the lobster. The policy of the past has been an unfortunate one for the lobster-catching industry of the state, and the citizens of Massachusetts pay today to out-of-state distributors more than \$1,000,000 for a food which the adjacent waters might readily provide.

The fact is patent that the state has permitted a profitable industry to diminish until today it is all but gone. Instead of supplying lobsters to other parts of the country, it is not supplying its own needs but pays a million each year, largely to Canadian fishermen, for what it consumes. This shortage in the home supply has contributed, moreover, to the large increase in the cost.

Every year, when the decreasing lobster supply is spoken of, the newspapers print reports of this and that locality where the crustaceans are more plentiful than ever. To such the figures of the Massachusetts catch should prove a silencer.

It needs no statistician to see that this table points to extinction of the lobster so far as the Massachusetts fisherman is concerned. In point of number of lobsters caught it needs but a glance to see that in the first seven years the catch declined nearly one-half, and in ten years more nearly three-quarters. Then, in 1907, because the law allowed the taking of lobsters of only nine inches in length instead of ten and one-half, the number rose only to decline again in much the same fashion as before. The policy that the state has pursued is evidently one of extinction. That this is pretty near is evident from other columns in the table. Everything has declined save the number of men required to trap a lobster. In 1889, 344 men with 20,000 traps took 1,400,000 lobsters; in 1909, more than 500 men with 30,000 traps took about the same number. The efficiency of the latter group was probably not quite half that of the former group, and of late years it is seen that the same or even an increased number of men with an increased number of pots have not been able to stay the decline in the catch. In plain English, the lobsters are not there to be caught and will not be until a policy more in accord with science is adopted.

That the lobsters are really getting smaller is readily shown by the records. Measurements made in 1905-06 determined

that 159 lobsters of more than twelve inches in length were taken to every 100 of less than twelve inches, while two years later there were but 75 of the larger lobsters to every 100 smaller ones. The falling off in large lobsters has thus been about one-third.

Then there are fewer even of the small lobsters. This is shown by the decline in the average catch per pot. The catch was 81 in 1888 and dropped to 33 in 1903 and 28 in 1904. With the taking of the shorter lobsters, it rose to 49 and 54, but now is again on its downward way.

Condemnatory of past practices as are these figures, they do not present the most serious phase of the situation: namely, that the egg-bearing lobsters caught, the true index of the production potentialities of the race, are diminishing with alarming rapidity. This is evident from one of the columns of the table. The normal ratio of fruitful females to the total catch is one in four; when the statistics touched this matter in 1889 the ratio was 1 in 22, and under the ten and one-half inch regulation it steadily declined to about half as many (1 in 42) in 1905. When the new regulation came into effect, the number dropped to 1 in 104; in three years it had gone down to 1 in 117, and in 1912, it was 1 in 135.

Massachusetts has tried palliative measures and has endeavored to stave off the utter destruction of egg-bearing females by offering to purchase them from the fishermen at about the market rates. There is no question about the value of this policy as far as it goes, and with many of the fishermen the

number of females that they render to the state authorities is the number that they have taken.

But on the other hand it is easy to avoid bother and delay by removing the eggs. The female carries her eggs cemented to the under side of her tail, and here they remain for eleven months till they are hatched. It is a very simple proceeding to brush the creature with a whisk broom and in a moment convert it into an ordinary commercial lobster. With unregulated fishermen, who have not uniform spirit and feeling, it is impossible to gauge the number of females stripped of their eggs in a season.

CATCHING SHORT LOBSTERS.

Then there are the short lobsters. It is an open secret that in Canada the authorities despair of enforcing the legal size on lobsters taken by their fishermen along their shores. Travelers from the islands tell interesting tales of how lobsters down to "grasshopper size" are put up in kitchen canneries and no one is the wiser.

In the first place, assuming the offender to be caught, it is said that his fines are paid from a pool. With comparatively few convictions the contributors may easily maintain this pool at a profit. But, "first catch your lobsterman." It is not difficult for the fishermen to store the shorts at the critical times, where they can easily be dropped overboard. On the approach of the inspecting vessel the incriminating evidence is cast into the sea.

The magnitude of the short lobster catch may be shown by the fact that the commissioners have found and liberated in Boston Harbor as many as 12,000 short lobsters in three months, while suggestive splashes noted by the inspecting boat are grounds for a belief that the annual catch of these illegal lobsters is in the hundreds of thousands. Another straw in the way of evidence is to be found in the statements of one reformed fisherman, whose personal gain from such sources ran up to \$40 a month.

It is evident therefore that some treatment more drastic than a mere fine will be needed to deal with the short lobster fisherman. This position has been taken by some groups of the more intelligent men, and local associations have been formed. The purpose of these is to unite the intelligent, law-abiding fishermen against those who are looking only for immediate personal gain. The movement began at Gloucester where the Cape Ann Lobsterman's Association of ninety members has established itself to protect the lobster industry and look to proper legislation. Within the limits of last year other associations have formed, Boston Harbor with sixty members, and still others have been organized along the South Shore, Nahant and Swampscott and Marblehead, Salem and Manchester, which are in accord with the plan for licensing fishermen.

LICENSES FOR FISHERMEN.

The requiring of hunting licenses is a plan which has proved in Massachusetts, Vermont, Maine and other states to be a suc-

cessful means of controlling hunters and protecting public and private property from irresponsible persons. Hunting on land has been controlled, but hunting in the sea, which fishing really is, has been every man's right. The Colonial spirit that gave to every one of the handful of citizens the right to dig clams, fish and set marine traps anywhere dominates the situation today. There are certain popular ideas that persist, one of them being that the poor man has a right to his food from the sea, but those who are able to read the signs know that conservation of marine products is now necessary.

This feeling that the products of the sea are free of all limitations seems to be the only argument barring the way to the solution of one of the important difficulties in this state. There are a number of factions which centre about it, but the arguments are practically the same. The solution and the situation demand that if Massachusetts is not to lose the lobster industry altogether, it must see to it that the men who practice it are under reasonable control.

The bill in question carries with it the same penalty that the hunter's license does, revocation for a year if the holder is convicted of infraction of the game laws. It is proposed that the fisherman who is convicted of taking short lobsters or females with their eggs, shall be debarred from the fishing privileges for a similar length of time.

The fundamental principles are simple: Massachusetts is losing a business capable of being fostered into millions of dollars a year; it is losing this through mistaken policies that have

proved their own futility. A reasonable measure for the amelioration of the situation is under consideration and needs support.”

This language was used in the legislature of 1915 and '16, by the department advocating a license law, a duplicate of which was sent to us, and on comparing its pages with our own license law, we find that it is almost exactly a duplicate thereof and in all probability our law was copied to a great extent.

We have copied and quoted copiously from the report of the Massachusetts Department and its arguments in order that you may see that they are troubled and have been with the same difficulties that have beset the industry in this state. We have given so much of their report as will show you their position, and when we say their position, it will equally apply to the position taken by the department of the other lobster states. We have stated that the statistics we have given are not absolutely correct, as they did not take into consideration the number of lobsters of illegal length that are regularly handled by our fishermen. You will see that notwithstanding the length of lobster of legal size in Massachusetts is of nine inches that they are troubled by their fishermen catching lobsters in large quantities below that length. That being true, would it not also be true in the State of Maine if we reduced the legal length from ten and one-half to nine inches? The answer is apparent.

Now, in concluding, we wish to call your attention to a number of material matters that apparently have been ignored

thoughtlessly by the state. We wish to say, first, that the values we have given are those of the reported legal size; that in our judgment, of the illegal size that have been disposed of and of which there is no record and can never be, if they could be known, they would be found to quite equal the number of legal lobsters accounted for. If these could have been left in the sea a short time longer, they would have been of legal length, a better lobster, as each lobster increases about 50 per cent in weight every time he sheds, and, therefore, of very much more value.

The Commissioner's report of 1914, which he admits was inaccurate, gives the value of the legal lobster in Maine at \$1,660,901. The increased prices for this year would probably have brought that figure close to \$3,000,000, considerably better than that, if the short lobsters could be ascertained. This industry properly cared for, encouraged and protected ought to be worth to the State of Maine, \$5,000,000.

In doing our work, we have also learned that various other branches of the department should also be looked after and can be with equally good results, to wit, the clam, the alewife, the eel, flounder and the little smelt. All of these are valuable and are being ruthlessly destroyed and the state thereby losing many thousands of dollars, which ought not to be.

But getting back to the lobster business, it seems to us that the department has not been fairly treated, due to the unfortunate lack of knowledge, and we have tried in this report to bring home to the Legislature and the people of the state, the

immense resources that it has, if it will properly conserve them. The State of Maine has a straight coast line of 316 miles, as an indented coast line it is 2,000 miles. The state controls the waters three miles out at sea beyond the headlands. The department has control of all the territory lying within that three-mile limit, of all the streams, bays, coves as far as the tide ebbs and flows, with the exception of the Kennebec river above the city of Bath. This is an immense territory for any department to properly police. We ask you to take due heed to this statement, as it is of the utmost importance to the department and to the industry. Within that territory there are employed directly in the catching of lobsters between 6,000 and 7,000 men, who are dependent upon the business. There are also dependent upon the business directly and indirectly from fifty thousand to one hundred thousand people, nearly one-seventh of the population of our state. Each one of these lobster fishermen sets 100 traps or more, which traps with the connecting gear at the present time, cost two and one-half dollars apiece, or a total of more than a million and a half dollars. These lobster men, instead of using as of old, a rowboat to catch their lobsters inshore, where they used to be found, and convey them home, are obliged to use motor boats, the value of which will run from one hundred dollars to one thousand dollars apiece. It is safe to say that the average value of the boats of the lobster fishermen today, due to necessities, is at least one thousand dollars apiece. On this business they are absolutely dependent for their living. Their all is expended in

boats, traps, other gear and their little homes on our outer islands or along our coast. They are a good, hardy, industrious people. Their business should be protected for them. They should be encouraged in good work and the state should give the department such encouragement as it honestly needs to make the most out of the department, that the industry may be conserved and preserved for the coming generation.

Having taken into due consideration all the data and information that we could get, together with the facts previously given in this report, we now present our findings and conclusions.

First. We find that the work and needs of the department have been very much misunderstood. This department is certainly worthy of the consideration of the state, as it is one of its best industries. It should be immediately established in the State House in quarters sufficient and suitable to its needs. It should be properly equipped so that every report and all data obtained from experiments by the department or otherwise, should be kept there on file, as other property of the state, where it can be of the most use and where its information may be found and given to those interested and in need thereof for the benefit of the industry, that the people who need the department may know where to go and if they do go, that they will find some one there to attend to their wants. This department has always been wherever the Commissioner happened to be, whether he lived in Port Clyde, Portland or Rockland. With him was all the information of the depart-

ment. This is all wrong and should be immediately stopped. All the books, vouchers, reports and data of the department should be kept in the department quarters located at the State House, where they can be under the oversight of the accountant and supervised by the Governor and Council.

The department should be elevated to the position of prominence it deserves as a department, so that it will have the same standing and the same or more power in the counsel of the departments of the other states.

It should be sustained by such financial backing as may be necessary to enable it to continue its police patrol throughout the entire year. This police patrol is absolutely essential, if the department is to be of the benefit desired and necessary for the industry, and in granting the financial aid, it should be taken into consideration the great length and width of the territory to be covered and difficulties in covering it. It should be given sufficient aid so that it can develop a systematic plan to encourage, protect and safeguard, not only the interests of the state directly, but that great body of seagoing men, who, with their families, are dependent upon it for their wages and livelihood.

Second. We find, after deliberate consideration and after spending two years specially investigating the subject, that the laws of the state governing the lobster industry are sufficient and satisfactory as they are now on the books. We can see no reasons for any change in our laws. We have come to the conclusion that all that is needed for the best interests of the

department and the industry is to give the department such encouragement and financial aid as the business requires, so that the department may and can enforce the present laws. These laws should be enforced honestly, conscientiously and strictly and without fear or favor. The honest fisherman should be encouraged in his honesty and the dishonest ones should be summarily punished. We believe that if the law is enforced in this manner and the department is given sufficient aid to do it, the state in a very few years will see a decidedly marked change for the better in the industry. We have tried to point out throughout our report the difficulties of this department and we wish to repeat again that this great territory, due to its extreme length of 2,000 miles on an indented cove line and three miles beyond our outer headlands at sea and bordering also upon a neighboring state, whose business has been carelessly permitted to become exhausted, is at its very best a most prodigious problem, one requiring constant skill, diligence and supreme effort of all officials connected with the department. An officer may easily pursue an offender on land; but an offender in this territory controlled by the Department of Fisheries, is an entirely different problem.

We find and conclude that the legal length ten and one-half inches required by our law, is the safest and sanest length and should be sustained under all circumstances and no change made therein.

However, as the fishermen make some complaint about the bone of the nose breaking, we recommend that the department

make tests to ascertain if the length of the lobster can be as accurately measured from the socket of the eye to the rear end of the body shell, as from the end of the bone of the nose to the center of the rear end of the body shell, as the law now requires, and still keep the length of the lobster accurately at its present legal length of ten and one-half inches. The object of this recommendation is made solely to ascertain if this trouble can be thus obviated and, if it can be, with the ultimate end of adopting that measure as the law.

We find after careful consideration that it would be a wise thing to give the Commissioner of Sea and Shore Fisheries the same power as a sheriff, to appoint or remove fish-wardens at his will and pleasure, without consulting the Governor or Council.

It is our belief that this is the only way that good and efficient work can be accomplished through the fish-wardens.

It is our opinion that the Commissioner of Sea and Shore Fisheries should be instructed to make experiments along the following line:

There are several good lobster-pounds which are not in use which can be rented at a very reasonable price. By renting one of these pounds which could be completely drained and screened of all fish and stocked with spawn-lobsters about a week before they hatch and the fry properly fed after being hatched for about six weeks or more, and frequent observation made during this time and records kept of the condition

of the fry and the fry liberated when it was considered they were of proper size.

We believe that this might solve the problem of the propagation of lobsters.

If this proves practical it would prove a very cheap method of handling the fry.

We believe that some new method should be devised which would give the state the exact number of pounds of lobsters caught each year.

This would give us a new basis to work from and the state would then know if there was a decrease or increase in the catch.

We believe that the fishermen should be compelled by law to report to the Department of Sea and Shore Fisheries, the exact amount of their catch of lobsters, November the 1st of each year.

The individual report of each fisherman could be kept a secret by the department.

Third. We find that so far as the lobster hatchery and its workings are concerned that the fishermen have very erroneous ideas and notions. All statistics and data that we have investigated convince us that it has been of great benefit to our state and to the industry, and we are looking forward to the time when the rearing plant promised by the National Government shall be connected therewith, with the full expectancy to the state, and even the skeptical fishermen will see such marked

benefit to the industry that they will wonder how they could ever have doubted its efficiency.

We are so strongly impressed with what we have seen and ascertained that we find that it would be, in our best judgment, very beneficial to the industry, if the state would erect a rearing station in the eastern part of the state.

The oldest experimental plant in this line was established many years ago by the National Government in the state of Rhode Island. The Canadian authorities, as well as all of our own departments, recognized this station as the best in the world. They have experimented for the special purpose of arriving at some method whereby a greater proportion of the fry could be saved for the benefit of the industry.

The best experts claim that the best nature can do is to save one in every ten or fifteen thousand. This experimental plant of the National Government at Wickford, Rhode Island, have so experimented that under the severest conditions, they are able to rear 70 per cent of the fry and are increasing that gain from time to time. Therefore, it would seem that the experimental stage had passed to a stage of positive assurance of success.

A rearing station is not an expensive proposition. E. W. Barnes, superintendent of the Wickford plant, states: "that a plant, a duplicate of the one at Wickford, can be erected approximately for two thousand dollars."

The following are his specifications :

2 1-2 H. P. engine	\$200
House boat	300
4 rafts	350
Gearing	400
24 boxes	350
Miscellaneous supplies	200
	———
Total	\$1800

He states that the above outfit is capable of turning out 500,000 lobsterlings in a season and he states that the above items have been figured economically but quite liberally. He further states that the actual cost of rearing lobsters to the fourth stage is a little less than three dollars per thousand. This includes labor, food, gasoline, and in fact all necessary running expenses; but does not include the cost of egg lobsters.

We, therefore, think that it would be a wise investment if the state would erect a suitable plant, and that it would take but a very short time to convince the state of the wisdom of the investment.

Fourth. Many experts claim that all large lobsters over fifteen inches should be made unlawful to catch, that is, prohibit the catch and keeping of all over that size, the idea being that they are the great producers and should be permitted to remain in the natural waters without destruction.

We realize that it would be a good thing, if it could honestly be done; but we find that it would be impracticable, be-

cause those lobsters having been thus made illegal, would be caught up just the same, sold out of the state especially, but at a lower price, and they would also be consumed in large quantities in our own state, as they are the large, meaty lobster that the trade demands. The plan would be all right, if all of the lobster states would unite in making a uniform law to that effect, and would see to it that the law was strictly enforced; but without such union, such a law would be foolish and a farce.

Fifth. We ascertain that the department, on the application blank calling for a license, under our license law, have required the applicant to go before a justice of the peace and make oath to the facts he has stated in his application. We do not understand the license law requires this. The purpose of the department is wise enough in its intention; but due to the fact that the applicants for lobster licenses reside in out-of-the-way places, generally, and in very many cases have to go to other towns to find justices of the peace, and if they go there, have difficulty many times in finding one, and at times lose a whole day as well as the expense entailed, we feel constrained to suggest that the hardship thus enforced upon the fishermen is more than the gain to the department, and we think that requirement should be removed, and especially should it be removed for any renewal.

Sixth. As a suppletory measure and means of assistance, we recommend that the department open an educational campaign among the fishermen, furnishing fishermen all the data

and information at its disposal for their benefit, with the end in view of convincing them of the evil effects to themselves as well as the industry, of catching and disposing of short lobsters and egg-bearing lobsters, and especially to impress upon them the needs of the industry and that the department and the fishermen should cooperate together with one and the same interest in view, for the sole purpose of preserving the industry, to convince them that the state, through its department, is their friend and that the interests of each are mutual.

Seventh. We have made this report as exhaustive as a report of this kind would permit us. We have given the subject as careful thought, as full consideration, as extensive an investigation as the two years' time in which we have labored the best we could, has enabled us. We are fully convinced that if the above findings, conclusions and recommendations can be carried out, as suggested, it will take only a short time for the state and department to ascertain that the problem has been reasonably solved. We believe that it will take only a few years to convince the most sceptical that the industry is rapidly improving and would, under the improved conditions, assume the high place in which it belongs.

Respectfully submitted,

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