63D CONGRESS, 2d Session. } HOUSE OF REPRESENTATIVES. { REPORT No. 780.

PREDACEOUS FISHES AND AQUATIC ANIMALS.

JUNE 8, 1914.—Committed to the Committee of the Whole House on the state of the Union and ordered to be printed.

Mr. HINDS, from the Committee on the Merchant Marine and Fisheries, submitted the following

REPORT.

[To accompany H. R. 16477.]

The Committee on the Merchant Marine and Fisheries, having had under consideration the bill (H. R. 16477), a bill to conduct investigations and experiments for ameliorating the damage wrought by the fisheries by predaceous fishes and aquatic animals, report the same back with the recommendation that the bill be amended as follows and as amended it do pass.

Amendment.—After "act" in line 13, page 2, strike out the period and insert the following: "*Provided*, That the said sum shall not exceed $15,000 in any fiscal year."

In addition to the bill which is herewith reported, your committee has had before it the bill H. R. 4854, which proposes a bounty on dogfish, that fish being the most troublesome of the predaceous fishes. New England waters have especially been troubled by the dogfish. For the past 10 years bills have been presented before this committee and several devices have been proposed to rid the sea of these fish, but hitherto no effective method has been found. The method which is proposed in the pending bill (H. R. 16477) embodies the result of long study by the scientists in the Bureau of Fisheries and has the cooperation of the Department of Commerce, the Secretary having reported as follows in relation to the bill:

DEPARTMENT OF COMMERCE,
OFFICE OF THE SECRETARY,
Washington, May 20, 1914.

MY DEAR CONGRESSMAN: I acknowledge the receipt of your letter of May 15 inclosing, for an expression of opinion, House bill 16477, "A bill to conduct investigations and experiments for ameliorating the damage wrought to the fisheries by predaceous fishes and other aquatic animals." As several other bills recently introduced for the same general purpose have appeared impracticable or otherwise unsatisfactory, it seems advisable that the department should express its views on the general subject of protecting the fisheries from predaceous animals, and more particularly at present from the dogfishes.

The dogfishes are small sharks which congregate in schools, and there are two species common on the Atlantic coast, the spiny dogfish found north of Cape Cod, and the smooth dogfish occurring in a more southerly habitat. These differ more or less in habits, but are alike in being great nuisances on account of their practice of eating baits and seizing the food fish caught on lines and in nets. It is not believed by the department that they destroy very considerable numbers of free fish—that is, those which are uninjured or untrammeled by nets. The food of the smooth dogfish consists mainly of bottom animals, mussels, scallops, sea snails, crabs, starfishes, etc., and it also, unlike the spiny dogfish whose food is less known, in certain places and at certain seasons destroys considerable numbers of lobsters. The stomachs of both species often contain food fishes and fragments of fishes, but there is good reason to believe that they come principally from lines and nets.

The fishermen justly regard these small sharks with strong disfavor as sources of annoyance and of very considerable loss to the fisheries, and in many places fishing has to be abandoned when the dogfishes appear. The fishermen, especially those of Maine, have asked for relief and have actively advocated two types of measures—one frankly offering a bounty for each dogfish taken, and the other in effect doing the same thing by providing for the purchase of dogfishes at a fixed price at a large number of fertilizer factories to be established along the coast by the United States Government. The department, in reporting on House bill 4854 under date of April 21, 1914, has expressed to your committee its views in respect to bounties, and it is unnecessary to enter into a discussion of the proposition further than to say that the expense involved would be heavy and would be borne principally by that part of the population which has little or no interest in the matter, that it would result in the establishment of a precedent which would be invoked in respect to measures for the destruction of other noxious animals, and that it would result in the waste of material of considerable potential economic value. The proposal for the establishment of Government reduction works for utilizing the dogfish for the manufacture of fertilizer and oil seems more plausible, as it requires the use rather than the waste of the fishes caught; but an analysis of the project shows it to be economicaaly impracticable and in essence the payment of a bounty under cover. If the bill drawn by the proponents of the measure were to be given full effect it would probably cost the Government as much as would the straight bounty.

One of the provisions of a measure introduced at the instance of some of the fishermen of Maine is that the fertilizer produced by the proposed Government factories is to be sold to the farmers at cost. This, quite naturally, looks attractive to the farmers as a blow at the high cost of farming, but it is doubtful if they would give the measure very enthusiastic support if they were to be compelled to buy the product on the terms stated. The official reports of the Canadian Government dogfish reduction works show that 1 ton of dogfish will produce about 250 pounds of scrap, and for the production of 1 ton of fertilizer there would be required about 8 tons of raw dogfish, which at $8 per ton, as provided in the bills introduced in Congress, would make the cost of raw material about $64. Making due allowance for the value of oil extracted, the product of the proposed plants could not be sold for less than about $40 per ton, even if the Government were to donate the plants, and all labor, fuel, and other expenses of operation. If these expenses could be kept as low per ton of material used as in the commercial factories using the more readily handled menhaden, and with an allowance of but 10 per cent for depreciation, repairs, and interest on the cost of the plants, it would cost about $70 to produce a ton of fertilizer which the farmer can purchase in the open market for about half that much. There are other objections to the Government engaging in the manufacture of fertilizer which it is unnecessary to point out to your committee.

While the department is opposed to these measures on account of their impracticability and economic unsoundness, it is in sympathy with their purpose and it believes that H. R. 16477, on which you now ask an opinion, affords an opportunity to attack the problems involved and in the course of time to solve them in a manner to afford relief to the fishermen and benefit to the people as a whole. The belief is entertained that the proper method of procedure is not to exterminate the dogfish by indiscriminate destruction, but to convert a nuisance into an economically useful product and a source of profit. It is believed that the only way in which this can be accomplished is to induce the utilization of this pest as food. Although this has been scoffed at by those who would be the first and principal beneficiaries, the project is practical and economically sound. The dogfish is not eaten in the United States solely on account of prejudice. It is palatable and nutritious, and its food is but little different from that of the haddock and other valued food fishes. It is extensively eaten in Europe, and during the past few years it has grown in favor in England, where 5,500,000 pounds, with a value to the fishermen of $80,000, were marketed in 1912. This large and in-

creasing production of a cheap and excellent food is a boon to the people at large, while the fishermen receive about $28 per ton for their catch as against $8 which they would receive if the Government were to engage in the unprofitable production of fertilizer under the conditions recently proposed in this country.

To introduce the dogfish or any other unutilized fish into consumption in the face of general prejudice and ignorance of its qualities, and the lukewarn interest of the fishermen themselves, will require time and a well-considered practical campaign. It will involve demonstrations and publicity to acquaint the people with the qualities of the fishes and the methods of cooking and preparing them and marketing experiments on a commercial scale. H. R. 16477 appears to give authority for effective work of this character and moreover it makes it possible to extend it not only to the dogfish, but to other marine pests of equal or greater destructiveness. The department regards the bill as a piece of valuable constructive legislation, and urges that your committee give it favorable consideration and that you press its enactment.

Very truly, yours,

WILLIAM C. REDFIELD, *Secretary.*

Hon. J. W. ALEXANDER,
Chairman Committee on the Merchant Marine and Fisheries,
House of Representatives, Washington, D. C.

In addition to the facts which are found in the report of the Secretary of Commerce, the scientists at the Bureau of Fisheries give some interesting facts in regard to the subject:

The dogfishes are little sharks, weighing, when adult, from 5 to 15 pounds. They get their popular name from their habit of traveling in large schools or packs like dogs or wolves, and their chief present interest to the fishermen arises from their predaceous habit and ravenous appetites. They feed solely on animal food, which they get wherever it is most readily obtainable, and on the fishing grounds this is usually on the trawl lines or in the nets of the fishermen.

Trawl lines are long stout lines to which shorter lines, each with a hook, are attached at intervals of about 6 feet. They are stretched on the bottom, held in place by suitable anchors, and marked by buoys, and as a single dory or fishing boat will often fish several thousand hooks, each baited with a piece of herring, alewife, or other fish, the fishing banks are strewn with food which the dogfish finds acceptable and readily obtainable. When a school of dogfish appears, they greedily seize these baits and either carry them away or are themselves hooked, the result to the fishermen being essentially the same in either case, for the line, set for merchantable fish, is either denuded of its lures or is loaded with dogfish for which the fisherman can find no market. The address and rapacity of these pests is such that when they are on the banks or along shore in large bodies the baits are seized before the valuable fish can take them, and the fisherman loses his time, the labor expended in setting and hauling his lines, the value of his bait, and all of the other items which enter into the expenses of the fishery.

In the case of the gill-net fishery the dogfishes are attracted by the helpless food fishes enmeshed in the nets, and they either tear them bodily away and devour them or bite them in two, leaving nothing but the head to show where a valuable fish had been. Worse than this in some respects is the damage wrought to the nets, the sharp teeth of the dogfish cutting them like shears and often leaving of the poor fisherman's property little but a string of tatters attached to the foot and lead lines.

Under these conditions the fisherman can do nothing to protect himself, and his only recourse to save his property and avoid an utter waste of effort is to abandon the fishery, often his only source of livelihood, until such time as his enemy has departed. This is no rare occurrence but a common one on all parts of the New England coast, over a wide stretch of the Pacific coast as well, and to some extent on the shores of the Middle Atlantic States. Even the purse seiner fishing at sea will sometimes inadvertently inclose a school of dogfish and have his net cut and torn to pieces, the pound-net fisherman along shore will find his trap filled with dogfish to the exclusion of fish of value, and lobster pots take dogfish instead of lobsters.

The loss entailed by the destruction of gear and the enforced abandonment of the fisheries by all classes of fishermen over wide areas amounts to large sums annually. The Massachusetts Fish and Game Commission states that the observable damage to the fisheries of that State alone can be conservatively estimated at not less than $400,000 per year, and this loss to those immediately concerned must have its reflex in the increased cost of fish to the consumer. The effects of the dogfish nuisance, therefore, are not only observable over a considerable part of the immediate coast line but are indirectly distributed over the large section of the country depending on the sea

for its supply of fish. Owing to the abundance of the dogfishes, their wide distribution, their remarkable swimming powers, and their wandering habits, which carry them over broad expanses of the seas in which they live, it is probable that but little can be done toward the material reduction of their numbers. A school marauding on the coast one week may be far away the next and its place may be occupied by another host that has come from an unknown distance in the open sea. If they can not be exterminated, the only economic solution of the problem which they present is that they should be utilized and the curse of their presence converted into a blessing. This can be done only in accord with sound economic principles. A bounty, aside from other objectionable features, merely distributes the loss and can have no other effect. It acts like a system of fire insurance with no provision for preventing fires or minimizing their destructiveness. The loss still exists, but its burden is borne by a larger number of persons.

Leaving out of consideration certain secondary or subsidiary uses, principally of waste parts, fishes are economically utilized for fertilizer and for food. For the first purpose they must be cheap as compared with other species which are abundant, in fairly regular supply, easily caught and easily handled. If the dogfish be economically available for the manufacture of fertilizer it will be utilized by factories privately owned and always on the watch for a supply of suitable and cheap raw material. There is no doubt that fertilizer of good quality can be produced from dogfish, the only question being whether the fish can be obtained at a price low enough to show a profit on operations. If they can not be profitably used by private works, there is no reason to suppose that they can be by those under Government control.

The value of the fish will be governed competitively with other fishes and if the price be arbitrarily fixed too low the fishermen will not supply the fish, and if too high, as in bills proposed for the establishment of Government reduction works, there will be an operating loss and the excess price of raw material will be in effect a bounty to the fishermen.

None but the cheapest fish will be used for fertilizer, and considering the heavy wear and tear on gear involved in taking dogfish, it is doubtful if they can be taken profitably except for food and that appears to be the only means by which they may be converted from a nuisance into an economic product. That they are not at present eaten in the United States is no justification for the belief that they can not be introduced into the national diet. There are numerous instances of despised fishes and other aquatic animals attaining high favor after their qualities became known. Within a comparatively recent time the sturgeon, especially in the Great Lakes, was regarded as a nuisance and ruthlessly destroyed, but to-day a single large female fish may sell for as much as $150. The silver hake of the New England coast was formerly wholly unutilized but is gradually coming into the markets; the catfishes are becoming high-priced fishes, and frogs are regarded as a delicacy, and the subject of frog farms is exciting interest as a source of profit. Instances might be multiplied.

The failure to eat dogfish in the United States appears to be due to prejudice against them rather than to any lack of nutritiousness or palatability. There are two species of dogfishes on the Atlantic coast, the spined or horned dogfish, which has the more northern range, and the smooth dogfish, which is generally more abundant south of Cape Cod. These differ somewhat in the character of their flesh, the spined species being more oily and resembling in composition the medium grades of salmon. This fish is well suited for canning. The smooth dogfish is drier and when used fresh its flavor and qualities have been likened to those of halibut and swordfish. Neither of these fish has objectionable or unclean feeding habits, one feeding on organisms similar to jelly fishes and possibly on true fishes, and the other on crabs, starfish, and other bottom-dwelling animals. Both, so far as food is concerned, resemble other fishes highly esteemed on the table. Their flesh is white and in external appearance they are not repulsive; their skins secrete little mucous and they never look slimy like cod and haddock when massed in the holds of vessels. They are eaten extensively in various parts of Europe. In Norway and Sweden they are used both fresh and salted or dried. In England, where there was formerly the same prejudice existing in the United States, the spined dogfish has emerged from its odium and is gradually assuming a position of importance as a food fish, about five and one-half million pounds being used in 1912. In the fried fish shops it masquerades and is readily eaten as plaice, one of the most popular of English fishes, thus demonstrating that the elimination of prejudice against it is a prime factor in its introduction into consumption.

Certain secondary products of the dogfish could probably find a market if the value of its flesh could be established. The liver is rich in oil, having most of the qualities of cod-liver oil; its skin makes an attractive leather, and is unsurpassed abrasive for fine wood and ivory workers, and the fins are righ in gelatine. All of these utilities should be convertible into profit and if they can be availed of on a commercial scale the dog-

fish problem could be solved to the satisfaction of both fishermen and the consuming public, and a heavy annual industrial loss would be converted into a profit.

This bill is intended to provide authority and means for the attempted attainment of these ends by inducing the consumer to recognize the qualities of the dogfish and other waste fishery products and in educating the fishermen to prepare them and market them in such manner as will conduce to that result. It is a practical measure, and it is believed that it will yield practical results.