

NOTES ON THE FISHING INDUSTRY OF EASTERN FLORIDA.

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EXPERIMENTAL OYSTER-CULTURE.

It is a well-known principle that flourishing animal life depends on special factors, the most important of which are the facility for obtaining food, the proper temperature of the medium in which the animal lives, and the indefinite continuance of the favorable conditions. Nature in her attempts to bring about the necessary conditions is pre-eminently successful, and only when man interferes or other disturbing elements exist do her efforts prove abortive.

The peninsula of Florida, with its coastwise resources, from the evidences remaining to us at this time, has in the past been teeming with food products that sustain human as well as animal existence. Modern investigation has proved that it is no less prolific under the existing conditions. Modern civilization, through the medium of scientific researches, aided by improved means of communication and transportation, has demonstrated that, by a judicious and thorough examination into the causes that bring about a certain result, nature's food supply can be greatly increased as well as preserved for the use of the present and future generations. Recognizing this fact, his excellency, Governor Bloxham, of the State of Florida, issued a call recommending that the sections of the State interested in this important subject be represented at a national congress of the fishing industries, to convene in Tampa on the 19th of January of the present year, to promote and advance this important industry.

As a delegate to this body, engaged in so laudable an undertaking, I feel highly honored in representing the locality embracing the Halifax and North Indian rivers of the east coast of Volusia County, Fla., a section of country once occupied by a race of people who subsisted mainly on the food products of the water, as is clearly demonstrated by the existence of shell-mounds located at many points on the peninsula and on the mainland, showing the great importance of the salt-water lagoons, bays, and estuaries, as well as the ocean, to keep up their existence.

It is useful to refer to the past merely as an indication of what has been accomplished by those who preceded us; our purpose is with the present, and how we can best advance the interests of mankind, increase our sea products, and preserve our present advantages. With this introduction permit me to advance a few thoughts on this subject in relation to the propagation and culture of the oyster, an industry of vast importance to all sections of the United States, for but few places exist in the civilized world where oysters, in some form, can not be procured.

Oyster culture on the southern seaboard, compared with the sections embraced in New York, New Jersey, Maryland, and Virginia, has not been as productive as could be desired by those interested in that pursuit, and for this reason, among others, we are assembled. That the proper conditions exist in localities no one doubts, but the successful propagation of the oyster under all circumstances, either natural or artificial, is to be considered and discussed, and some definite conclusion arrived at,

if possible. The environments and advantages possessed by individuals have much to do with their powers of observation, and I speak to you after a residence of fifteen years near New Smyrna Inlet, undergoing the trials that attend those who, with unbounded hopes and limited resources, emigrate to a new country, leaving behind all with which they were formerly associated, and relying on the natural food resources to a great extent for sustenance. These conditions bring mankind in close relations with nature, and through the necessities of the case nature's mysteries are unveiled.

The utilization of the salt marshes of the coastwise country for the propagation of the oyster is, in my opinion, the solution of this most important problem—not to ignore the planting of oysters in the creeks, bays, and open waters of the State, but to introduce an intensive system, as it were, that will ultimately insure success. There can be no success without effort, and to the brains and brawn of our land are we indebted for all we possess. The same effort expended in labor or capital in reclaiming a portion of our salt marshes for the planting of the oyster I sincerely believe will result in greater financial returns than in any investment that could be made in either orange, vegetable, or tobacco culture, all conditions being the same. I may be assailed as an extremist, but it certainly will cost no more to prepare the ground in one case than in the other. The cost of fertilizer, the packages necessary for transportation, destruction by frost, and the necessity of securing a market at once or meeting an entire loss—these considerations, with many others, are ever present with the agriculturist. The independence of the oyster-culturist arises from knowing that his product will keep until it can be disposed of advantageously, with no loss by frost or decay; and instead of seeking a purchaser, the purchaser seeks the product and pays a satisfactory price, and the producer only has to bag or deliver the goods. The conditions that now govern the transportation of Florida products are in favor of the oyster, for water communication renders competition possible and the industry profitable, which is not so in vegetable-culture except in special cases.

Again, the natural enemies of the oyster in the open waters of the Southern States are neither so plentiful nor so destructive as in northern localities, nor are the vicissitudes of seasons so apparent, causing destruction by freezing, ground ice, and severe storms, often entailing great losses upon those investing in the industry. The climatic conditions of the South are in favor of the speedy maturity of the oyster by promoting the culture of the diatoms and infusoria upon which they subsist. In fact, but one serious objection exists to the propagation of good oysters in all localities, and that is the extreme density of the water in which they abound, on the one hand, and a periodical drowning out by a superabundance of fresh water by excessive rain-falls in certain localities, on the other hand. Were these two extremes so modified, either by natural or artificial means, the coastwise territory of the Southern States would exceed in productiveness the output of the North, producing larger and finer-flavored oysters in the same space of time without the attendant suffering from the rigors of a northern winter.

Briefly stated, this can only be accomplished by utilizing our vast salt marshes and reducing the density, wherever required, by the use of surface water elevated by mechanical means, or the advantages obtained, if practical, by artesian wells to perform the same functions. Whether the sulphureted hydrogen usually present would prove detrimental, I am unable to state. I have been experimenting on that line for some time, but I can not say positively that it would prove injurious to the oyster in the quantities necessary to bring the salt water to the density required for its successful

culture. I am satisfied that the oyster will live even when exposed to undiluted artesian water, at half tide, but whether the propagation of the animalculæ which constitute the food of the oyster would be retarded, can only be decided after great experience and by extended research, and I therefore suggest that this feature be made the subject of experiments by experts of the U. S. Fish Commission.

I have during the past year been taking observations relating to the salinity of the water near the New Smyrna Inlet with a set of salinometers kindly loaned by the United States Fish Commission. These observations, recorded daily with few omissions, have been submitted to Washington, and from them we hope to ascertain the necessity of utilizing fresh water in artificial ponds or trenches to reduce the salinity. I have under construction at present an experimental area of about 1,000 square yards where the salt water can be diluted to any desired degree of density by the use of surface water, elevated into a tank of 10,000 gallons' capacity and shut off by a drain from the river. Personally, I believe this method to be the key to artificial oyster-culture, utilizing the coon oyster, everywhere present, for the purpose of planting. Though comparatively a novice in this important branch of food production, observation, experiment, and a diligent research into the practical experience of others have impressed upon my mind most forcibly that the field for further investigation is a wide one and prolific of good and profitable results to those who persistently and diligently labor therein.

PROPAGATION OF THE SOFT CLAM.

Nowhere in the South do we find the soft clam, as known to the residents of the New England States. Among the Puritan fathers the clambake was an institution that brought into social relations the members of a community, and the waters bordering on the coast furnished the necessary products for these festive occasions. Down through succeeding generations the clambake has been and is now a time-honored institution, and is enjoyed by the residents of the coast and interior towns in near proximity to the ocean. The soft clam as an edible is far superior to the hard clam or quahog, and is also used for bait in the fishing industries of the section where it abounds. It is more fixed locally than the round clam and is much more prolific. On the southernmost shores of the Atlantic if at all present it is comparatively rare, and then occurs possibly only by being transplanted from its northern habitat. Our Florida lagoons and rivers, by reason of their shallow nature, abound in numbers of sand flats, exposed more or less at the various conditions of the tide. These could be profitably utilized for the culture of this desirable variety, which would prove a valuable acquisition to the locality, as well as a support to the inhabitants when once satisfactorily introduced. A preliminary consideration would be the necessity of protecting them from the depredations of parties having nothing but the present in view.

The soft clam has been introduced into the waters of the Pacific coast with the oyster, and has proved prolific and a desirable accession to the resources of that region. In referring to this branch of the shellfish industry it might be well to state to those having in charge these important problems of introducing the different varieties of fish, clams, etc., into new localities, that private enterprise is apt to labor under an immense disadvantage, by reason of unnecessary delay and carelessness on the part of the railroad companies during transit, and in many instances discouragement and disappointment follow. Were it not presuming unnecessarily, I would offer to plant and care for, to a certain extent, any consignment of soft clams for experi-

mental purposes and distribute them to suitable localities, if provision be made for their protection.

There is also a species of mussel that is indigenous to the salt marshes in the vicinity of New Smyrna Inlet. This mussel is not edible, but at times has been utilized for bait. The taste is of an astringent coppery nature and unfitted for consumption for the above reason. The edible mussel also might become a valuable acquisition to this section if it could be satisfactorily propagated.

PROTECTION OF FISHERY INTERESTS.

The disadvantages that the State of Florida now labors under, by the reduced temperature experienced annually and the destruction of her valuable timber interests, without provision for renewal by the Government, necessitate the utilization of all available methods to develop her resources for the support of her inhabitants, and no better work can be done in this direction than to protect, to the fullest extent, the food-fishes and the oyster and turtle industries, including both the green and loggerhead varieties. The malicious slaughter of the female loggerhead should be punished to the fullest extent of the law, as well as the wanton destruction of fish by drag seines and gill nets. Since the law protecting the fish by preventing seining has gone into effect, the catch of sheepshead by hook and line has been greater than ever before, which makes the fishing-grounds about New Smyrna especially desirable for those who desire legitimate sport or those who rely on fishing for a livelihood. Heretofore the sheepshead were taken by hundreds in a drag net at night, which entirely eradicated in a short time the leading game fish in this vicinity. The same was largely true of the bass and trout. In these cases one or two persons monopolized the fishing business with drag or gill nets, and not infrequently the entire catch was wasted by no market or from lack of ice to ship. Nowhere in this section of the State is the fishing as good by line and rod as at this place at this time. Therefore, the protective clause in the fish laws of the east coast of Volusia County, Fla., has been productive of great good and should be continued, notwithstanding the efforts made to repeal it.

Of other prospective industries which might prove profitable, the propagation of the diamond-back terrapin, which abounds to a certain extent in the southern coast country, is suggested. The dissemination of knowledge by which the blue crab could be kept alive, in both the soft and hard shell condition, to enable it to stand transportation to a distant market, as well as practical information relative to the propagation of the stone crab (the lobster of southern waters), are subjects which deserve consideration. In the interior of the State are many ponds and lakes in which desirable fresh-water fishes could be successfully introduced, thus enhancing the value of those bodies of water and furnishing food and sport for many who are unable to visit the coast country for their supply of fish. A due consideration of these important subjects, resulting in effective effort, would greatly increase our food products and better the condition of the interior and coast country embraced in the waters of the Halifax and North Indian rivers of Volusia County, Florida.

NEW SMYRNA, FLORIDA.