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The Swordfish fishery of the Halifax Area.

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Introduction

The swordfish, Xiphias gladius L. is easily identified by its long, flattened but sharp-edged, pointed sword which is a prolongation of its upper jaw. Roughly speaking, the sword, from its tip to the eye which is located close to its base, is usually about one-third the total length of the fish. The lower jaw is also somewhat pointed but not long and the mouth is large. The fish is stoutest just behind the head and tapers rapidly to a very small caudal peduncle which has a longitudinal keel on each side. The tail is very broad and a deeply lunate margin extends between the tips which may be almost half the body length of the fish apart. There are no ventral fins. The most striking thing is the fact that when this fish is swimming at the surface, the first dorsal fin which is much higher than long, sticks up above the surface as does the dorsal tip of the tail. The swordfish fishery is based on the fact that these fish do swim at the surface a great deal and can be spotted a long distance away because of the fact that the tips of the dorsal and caudal fins extend above the surface at such times. As a rule these fish are dark coloured above and whitish below. The dark upper part when in the water seems to possess a blackish blue sheen with occasional purplish flashes.

Horizontal Distribution

This fish is very widely known for it is common to both sides of the Atlantic from about latitude 35° south to northern Norway. It also occurs in the Mediterranean and Red seas as well as the Indian and Pacific oceans.

On the American side of the Atlantic they seem to be found most abundantly over the outer part of the continental shelf with Georges bank and the Nantucket shoals perhaps the favourite grounds. From these regions they extend inshore in greater or less numbers depending on the year. As a rule they are found in the gulf of Maine in fair numbers each year and occasionally in the bay of Fundy. From these regions they also seem to work eastward in the offshore waters of Nova Scotia principally, (according to Bigelow) although numbers are captured inshore along the outer coast of Nova Scotia.

In chart I the landings of swordfish in the Halifax area, which comprises most of Lunenburg and Halifax counties, are shown plotted out for the year 1915. In most respects this is considered to have been a fairly good year and for this reason, as well as the fact that the landings are recorded for smaller subdivisions than during the succeeding years, it has been used. Here it is seen that some five thousand hundredweight was landed about Lunenburg. Since the boats in this region usually fish over a wider area than do most of the boats to eastward, no attempt has been made to locate the landings on the grounds where the fish were caught. Many of these boats fish fifty to a hundred miles offshore and any distance up and down the shore. In fact, quite a number of boats from the Lunenburg, Tancook region go down to Cape Breton every year to fish for swordfish, operating out of such places as Louisburg, since this fishery seems to be of more importance there than it is in the Halifax area. Because of this it is possible that these boats on their return trip bring into their home ports swordfish that were caught long distances east of Lunenburg and Tancook.

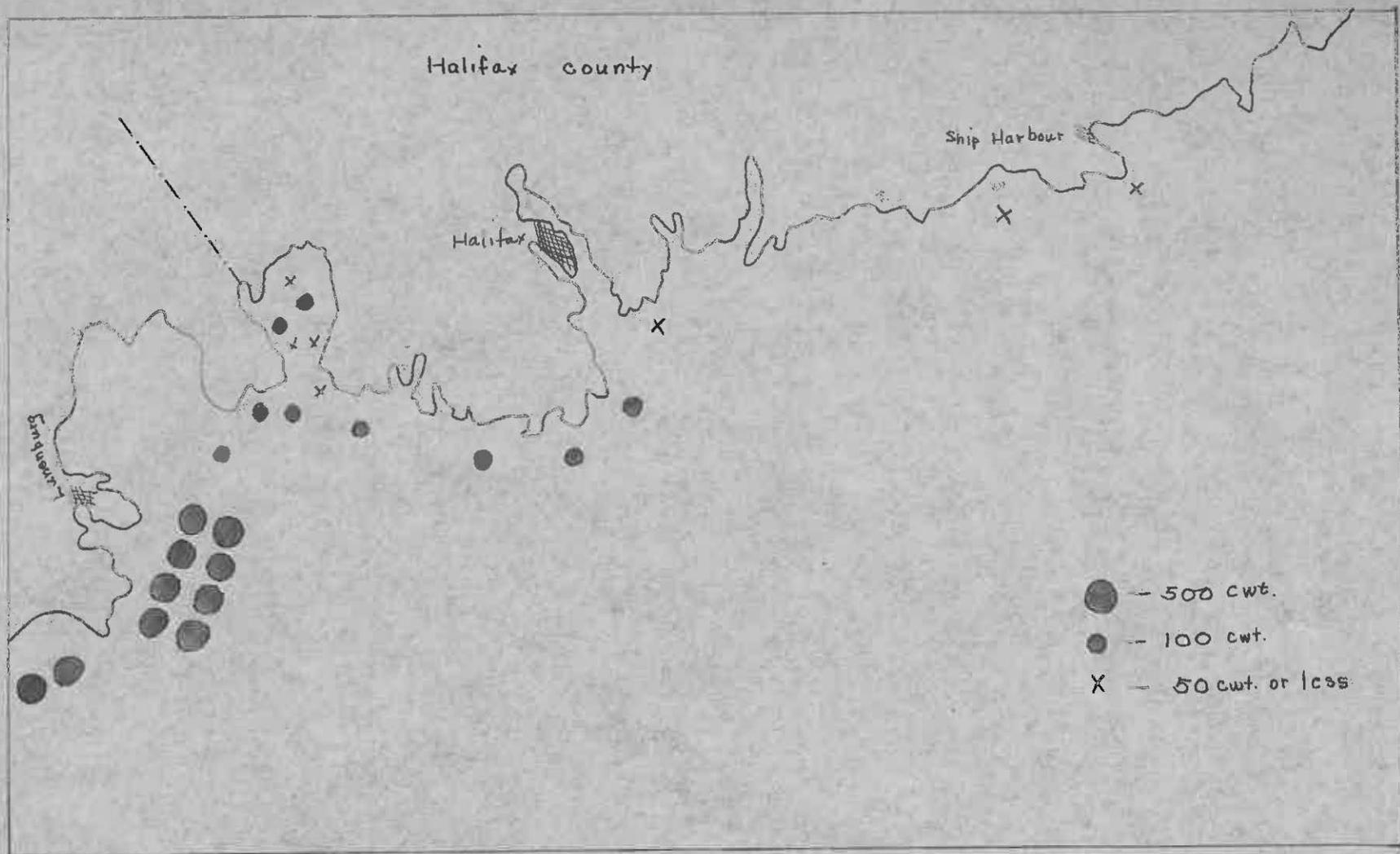


Chart I. Shows the regional distribution of the swordfish landings in Halifax and Lunenburg counties in 1915.

From this chart I it is easily seen that by far the greatest landings were made in the last discussed district. The sub-divisions of the peninsula between Mahone and St. Margaret bay show about equal landings and the other side of St. Margaret bay has about the same amounts recorded for it. No doubt a fair number of these fish were caught in the bay itself, but it is believed that most of them were captured in the outer half of the bay and some no doubt at the mouth or even outside of the bay some little distance. About the same number or somewhat less was captured by the fishermen of the outer Sambro peninsula shore, but these were spread over a greater area. A few were captured also, off the mouth of Halifax harbour, but from there eastward to the county line the landings were very few and far between, and, according to both the reports and the statistics there has never been very many landed in this region.

In recent years the landings in this Halifax to Ecum Secum district have been even less, and in 1930 the record showed zero. In talking with the fishermen it was learned that there is "only the odd swordfish" seen in this region and that for this reason there is "not enough in it for anyone to fit out for them". Another idea is that these fish stay too far offshore for them to capture them. No doubt there is something in this statement for their boats are small and thus they are limited to the inshore waters. That the fish are offshore was demonstrated this past summer (1932) when in carrying on survey work off Ship Harbour from fifteen to twenty-five miles, six swordfish were sighted inside of two hours and only about half of this time was spent in sailing. Thus it seems that there really are more offshore than near the shore within reach of the small boats, for none were sighted closer to shore or off the western part of the Halifax district.

In the western part of the Halifax area the swordfish landings have gone down also in the past few years and although the number of boats actually fitted out for swordfish is smaller, still almost all the boats do carry a harpoon aboard. This decrease in the landings has been greater in the Lunenburg region than in Halifax county west, for, since 1917 generally speaking the landings in this last mentioned district have exceeded those in the former. Most of these landings, reduced as they have been, have been made in the St. Margaret bay and western Sambro region. Here too, the fishermen have the opinion that in recent years these fish have been keeping farther offshore than formerly and as a reason for this they claim that the water, especially in the St. Margaret bay region, has been too warm for them.

Economic Importance

Years ago, the catching of a swordfish meant something to the men who caught it, but recently the price has gone so low that it hardly pays to bother with preparing much for this fishery when the chances are that they'll only pick up several fish in a season. Of course those that have the necessary gear in good repair usually put it aboard, but where repairs and replacements are necessary they hesitate to make the outlay unless they intend to go down to Cape Breton on purpose for this fishery.

In 1930 the value of the landings in this area was so small that it hardly ranked as a fishery. According to the statistics only six hundred and seventy-five dollars worth of swordfish was landed in Halifax county and two hundred and twenty-five in Lunenburg county. Thus it is seen that this fishery is not very important now-a-days compared to the years when the total fishery was valued at about thirty thousand dollars. It is believed that this tremendous drop is due chiefly to a decrease in the number of fish but the low prices certainly have some effect, through reducing the stimulus

towards prosecuting this fishery.

Gear.

Generally speaking the harpoon is the chief instrument used in capturing swordfish, although a number are caught in trap nets in certain localities.

A number of years ago during the summer months, almost every boat large enough to do so, carried a swordfish stand on the bow and a harpoon within easy reach, while they were engaged in other fisheries, for few boats go out for swordfish only. Now-a-days, the numbers of such boats are greatly reduced.

Since swordfish seem to have a habit of more or less basking at the surface, it is possible to approach close enough to hit them with a harpoon. This is greatly facilitated if the harpooner can get out as far as possible in front of the bow, for the fish frequently remain still until the shadow or wash of the bow of the boat disturbs them. Thus being able to stand ten feet or so in front of the bow is a great advantage.

In a sailing vessel the stand is usually a modified bowsprit on which the harpooner may stand firmly and have a railing about himself to assist in steadying him at all times, so that all his attention may be devoted towards making a perfect throw. In motor driven boats the same sort of stand is employed but it is supported more from the sides and underneath.

The harpoon is really composed of two different units. The one consists of a long wooden shaft with an iron rod projecting from one end of it. The free end of the rod is made to fit into the socket of a dart. A line some six to ten fathoms long is fastened to the other end of the shaft and to something on the bow of the boat. Thus the shaft may be thrown and then pulled in by means of the line attached to the end of it. The dart fits onto

the end of the iron rod and also has a line attached to it. This line passes up along the shaft of the harpoon and eventually back onto the deck, where there is a coil of it with a keg attached to the other end. When a swordfish is struck the dart remains in the fish while the wooden shaft and iron rod pulls free and can be brought back aboard speedily and outfitted with another dart. The dart itself being firmly fixed in the fish moves off at a great rate pulling the line overboard from the coil on deck. Long before the last of this line leaves the deck the keg is dropped overboard. When the line between the fish and the keg comes taught, the keg is then towed over the surface of the water (Occasionally it is pulled under) until the fish becomes tired out. Then it is picked up by a man in a dory usually, unless the boat is too small to carry one, and the line gradually pulled it. Frequently this new strain on the line sets the fish off again and away the keg goes again. However, finally the fish can be hauled up to the boat and brought aboard.

In certain parts of the Halifax area swordfish are captured in traps, especially in the St. Margaret bay region. These traps are not set out for swordfish but take them incidently to the main purpose for setting them out. At such ports as Boutilier Cove, French Village, Queensland and Mill Cove it is not unusual to capture swordfish in the regular traps common to St. Margaret bay, which have been described in the report on tuna. Unlike some other fish, they may be captured using only the bowl of the trap (which is the inner chamber) with no head gear out at all. This ease of capture seems strangely at variance with Bigelow's statement in his "Fishes of the Gulf of Maine", to the effect that he had never heard of them being captured in a net or seine and that it was unlikely that a net would hold a large one.

Seasons

This fish is only a visitor in the waters of the Halifax area, as pointed out previously, coming sometime about June or July and remaining into October and November sometimes, depending on the locality and the year.

The general belief is that these fish come in to the coastal waters from the open sea. However, there is the opinion that they work eastward from the banks and mouth of the Gulf of Maine which would cause them to enter the Halifax area more or less from the westward.

In figure 1 the average monthly landings of swordfish in Lunenburg and Halifax counties from 1921-1930, 1923 and '24 excluded, are plotted out. Here it is seen that the earliest landing, small though it was, was recorded in June for Halifax county east. However, this only occurred in one year, 1921. Usually the landings all begin in the same month with nothing to indicate which part of the area they came into first, for they do not move in large schools but seem rather to congregate in a certain region for awhile scattered singly here and there maybe miles or only hundreds of yards apart. Because of this slight tendency to come into the area from the eastward, as well as the fact that there is no definite evidence to show that they migrate in from the westward (on the July cruise swordfish were seen only in the eastern part of the area, none off Lunenburg county), one is led to suspect that they come into the inshore zone at least, from considerable distances offshore, but this may mean that they have moved eastward over the far offshore banks from the west and then worked in towards shore, but if such is the case it would seem reasonable to expect them to work inshore to the western limits of the area first. However, there is no definite evidence to prove that they either do move as indicated above or that they come directly in from the open sea.

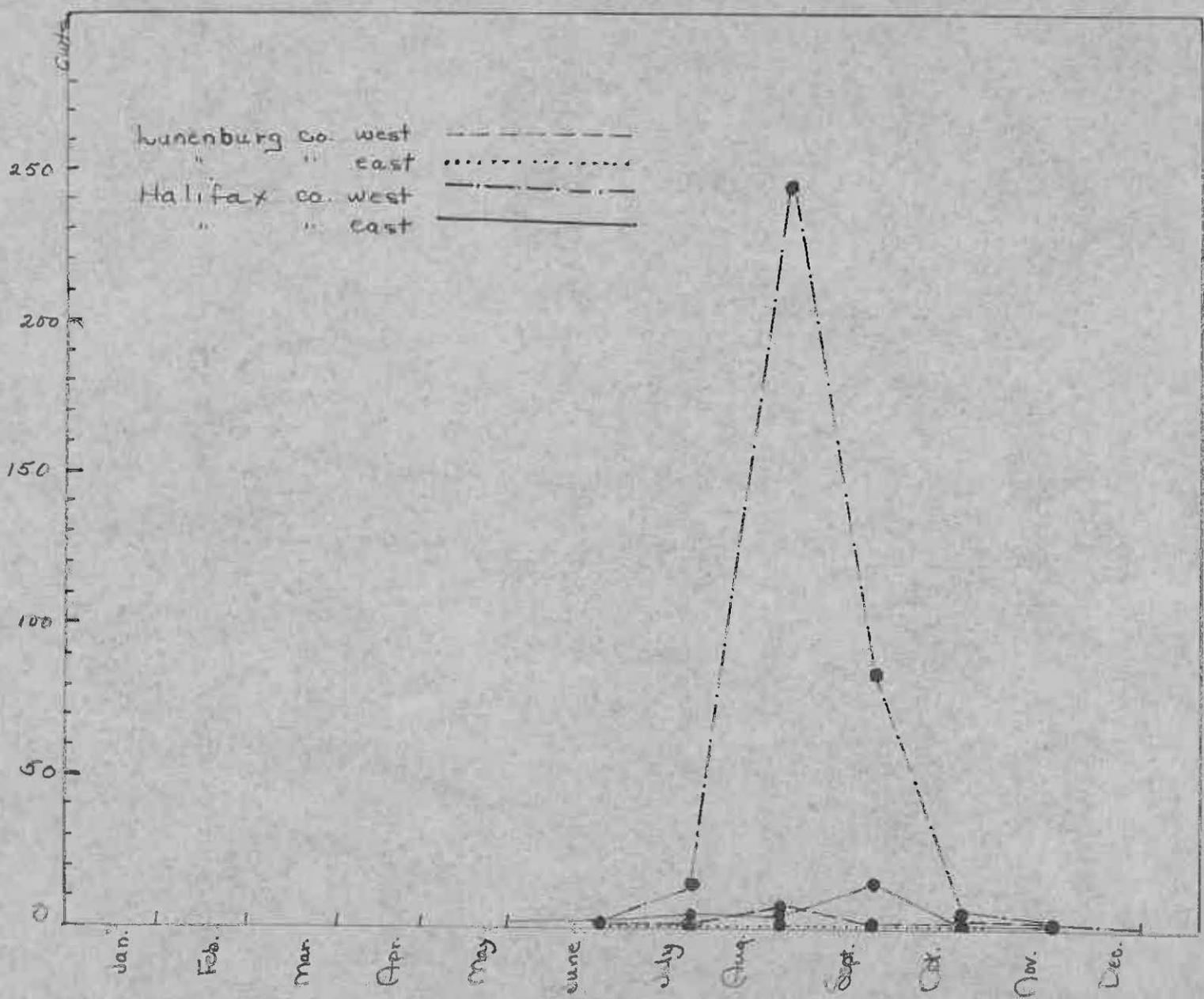


FIG. 1. Shows the average monthly swordfish landings in Halifax and Lunenburg counties for the nine years 1921 to 1931, 1923 and 1924 excluded.

In figure 1 it is seen that the other three regions record their first landings in July. Oddly enough the year's peak in Lunenburg west seems to be in August, while in Lunenburg east and Halifax west it is in July and in Halifax east the peak in the landings seems to have been in September. The final landings of the year seem to be made in November in Halifax west, in October in Halifax east and Lunenburg west and in August in Lunenburg east. Thus in St. Margaret bay they seem to remain later in the season than anywhere else in the area, while right next door in Mahone bay, which makes up most of Lunenburg east, the last landings are usually made in August, while at the extremes of the area the latest landings are recorded in October. Thus it is concluded that until more definite information is at hand nothing very definite may be said about the movements of the swordfish in and about the Halifax area at least from the statistical standpoint.

However, the fishermen themselves have some quite definite ideas on the subject which, as pointed out just previously, do not seem to be borne out by statistical evidence. The common idea expressed by quite a number was that they move along the shore to the eastward in July and back in September and October towards the west. The landings for Lunenburg west show zero in September and then again a small amount of fish landed in October. This might indicate a movement as described above, but if such occurred, why are there no landings in the fall, and why also do the landings in Halifax east hang on as long as those do in Lunenburg west?

Size and State of Maturity of Fish.

Generally speaking the largest of these fish go about 400 lbs. when dressed and the smallest about 60-85 lbs. Usually the smallest run about 90-100 lbs., but this past summer (1932), brought

smaller swordfish into the St. Margaret bay region than they'd ever seen before. These small fish are not as valuable as the larger ones, for they claim to obtain a better price for fish weighing over 112 lbs. than they do for fish whose weight is below this figure.

Thus it appears that the young fish never visit this area or possibly the American coast, for the smallest recorded for this side of the Atlantic weighed about 7.3/8 lbs. However, the younger stages of this fish do occur on the European coast of the Atlantic and in the Mediterranean young fry as small as half a pound are often brought to the market according to Bigelow.

As far as sexual maturity goes, the usual answer from the fishermen was that they had never seen spawn in them. However, one man said that while fishing off Ingonish, Cape Breton in August he caught a female with spawn in it.

Swordfish are supposed to spawn in the spring and early summer, but judging by the condition of the gonads and thinness of the fish, Bigelow is of the opinion that they must spawn during the time they are absent from the American coast, i.e. the late winter and spring. Nothing definite is known about the rate of growth of these fish either.

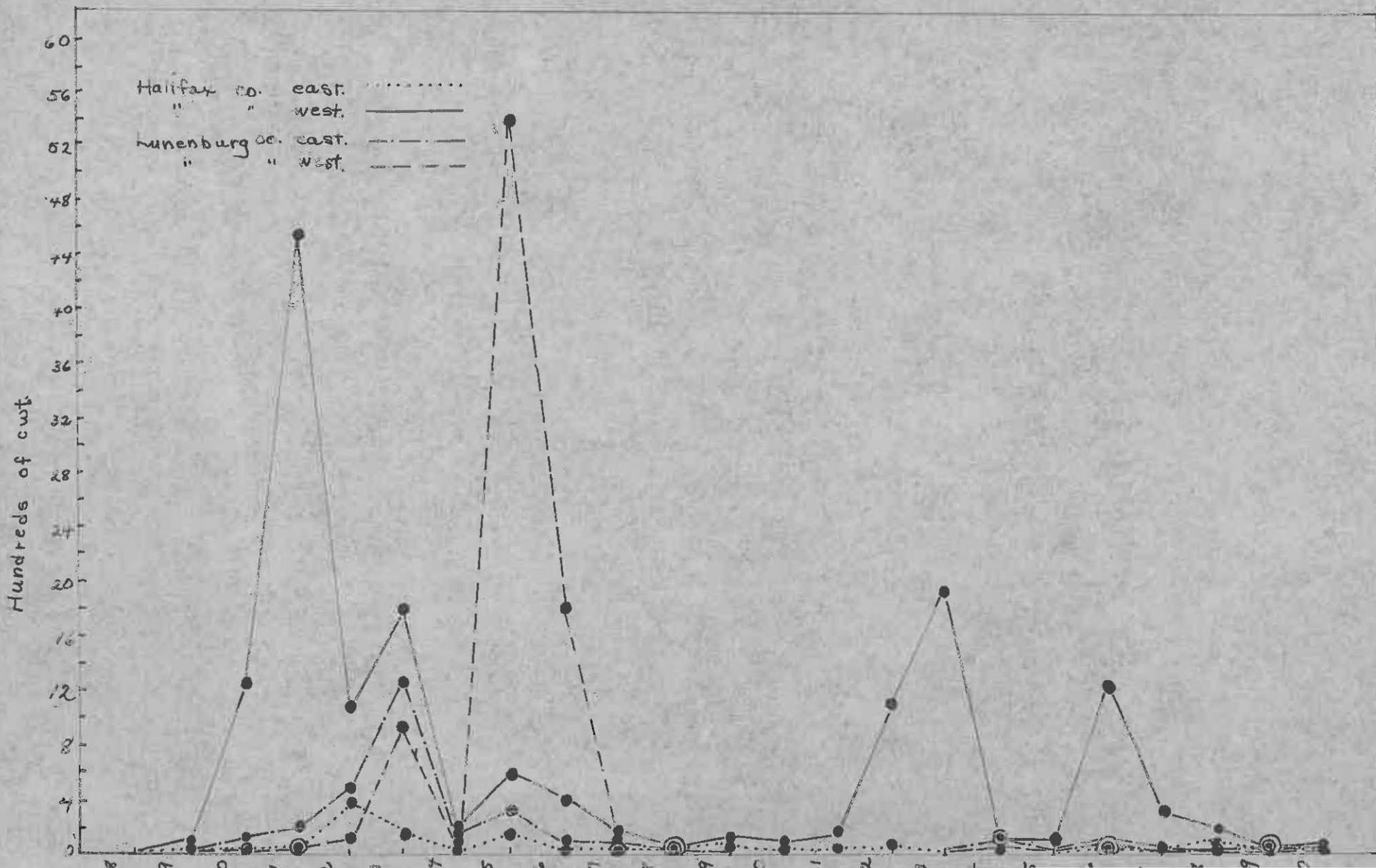
Fluctuations

In figure 2, the landings in the four different sections of the area have been plotted out since swordfish landings first appeared in the statistical records, that is about 1909. Here it is seen that swordfish were landed in both sections of Halifax county a year before the fishery was apparently prosecuted off Lunenburg county where the first landing records were made in 1910. By 1911 the landings in Halifax west had increased to a great peak while in the other three regions they were increasing but very very slowly.

In 1912 these three districts showed a still further increase while there was a great drop in the Halifax west landings. In 1913 Halifax west showed a slight recovery comparatively, Lunenburg east and west showed greater gains than for any year previous, while curiously enough Halifax east dropped off in its landings. In 1914, the year of the beginning of the war all sections dropped to an almost equally low level. However, in 1915 Halifax east showed a small increase, Lunenburg east about twice as much, Halifax west about three times and Lunenburg west about twenty-seven times as much. In 1916 they all showed decreases with Lunenburg west showing the most. In 1917 still further decreases occurred and the Lunenburg west landings were comparable with the others again. A still further decrease occurred in 1918 and in 1919 to 1923 inclusive there were no landings at all in Lunenburg county. Up to 1921 the Halifax landings remained low, but in '22 and '23 the fishery in the western section of the county increased greatly only to fall back to the level of the others in 1924. In 1925 this section of the area was the only one to record swordfish landings and in 1926 it showed a great increase while the other three regions all recorded equally low catches. Even Halifax east showed no landing records in 1923, '24, and '25. In 1927 the landings in Halifax east were poor, in the western section fair and in Lunenburg county nil. From that date to 1930 inclusive all the landing records were low with none at all in 1928 in Lunenburg west, none in Lunenburg east in 1929, and none in 1930 in Halifax east and Lunenburg west.

In figure 3 these landings for the individual sections have been all added together and plotted out as the total landings in Halifax and Lunenburg counties. Here it is seen that the landings increased rapidly to a peak in 1911, fluctuated greatly for the next few years and reached the maximum peak for the fishery in 1915. It

Fig. 2. Shows the fluctuations in swordfish landings in Halifax and Lunenburg counties since this fish assumed commercial importance.



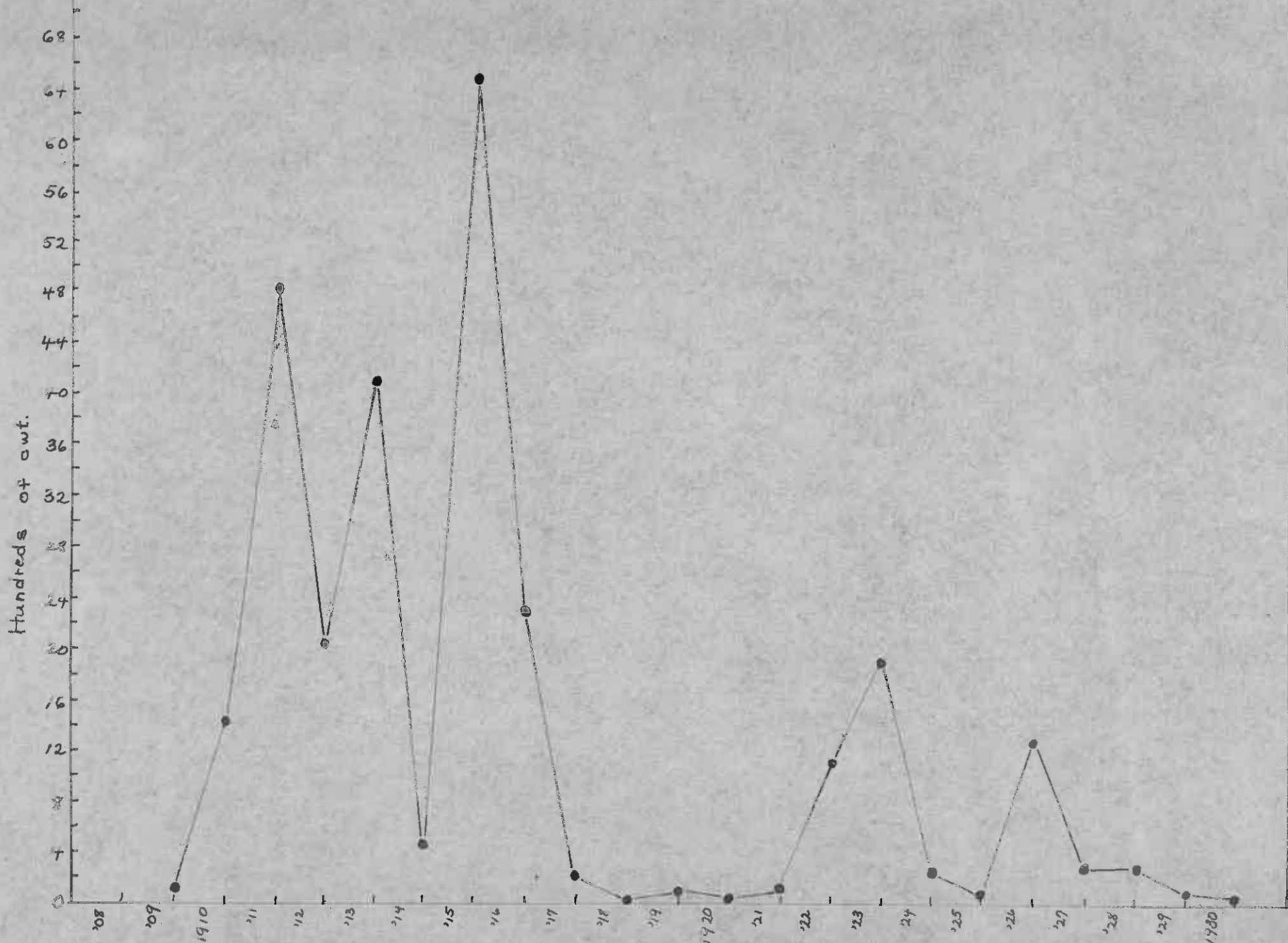


Fig. 3. Shows the total landings of swordfish in Halifax and Lunenburg counties from the time this species first assumed commercial importance up to 1930.

dropped very rapidly in 1916, still farther in 1917 and almost to zero in 1918. From then until 1921 the landings remained low but in 1922 and '23 they increased considerably only to fall off to about the previous level in 1924 and '25. In 1926 the landings increased again but not quite as high as in 1923, and then fell off to a very low level in 1929 and '30.

This curve seems to correspond very well with the fishermen's reports of the years when swordfish were plentiful or scarce. At the same time one concludes from these reports that, up until the last year or so, the price has been sufficiently good to stimulate the fishermen to capture swordfish. Thus, it is believed that, when there were enough fish around to make it at all worthwhile, the fishery has been fairly well prosecuted at all times except possibly during the years of the war and even then the maximum for the whole fishery was reached in 1915. From this, one might reasonably assume that the curve shown in figure 3 represents the abundance of the fish.

During this past year (1932) swordfish were scarce in the Halifax area. As mentioned before quite a number were seen and reported in the eastern part of the area while a few traps in St. Margaret bay reported one or two catches of about fifty, but the general report dwelt on their scarcity. At Prospect they said that only the odd swordfish was caught this year, at Bayswater they reported only two and at North West Cove only one, while all the time they talked ~~with~~ ^{of} the good catches made about ten years ago, which corresponds with the good years shown for Halifax west in 1923 and '24. In the eastern part of the area, where there seemed to be a few swordfish a little way offshore, most of the fishing was done by fishermen from the westward. Taking this year as an example, it seems likely that these fishermen from the westward

catch quite a number of the fish they land in the western region, in the eastern Halifax division. This has no doubt been going on for years, since there has always been more schooners and offshore boats to the westward than to the eastward. Thus possibly a fairly large proportion of the landings recorded for Halifax west and Tancook etc. should be ascribed to Halifax east grounds, and hence the Halifax east landings should no doubt be regularly higher than the actual records show.

When the history of the fishery as a whole is considered it is found that there have been no years in Halifax west with no swordfish landings, four years with none in Halifax east, seven in Lunenburg east and ten in Lunenburg west. Thus it is seen, using figure 2, that in years when the landings were not so good the region where the landings dropped to zero was the western part. In other words, even in poor years there always seemed to be a few fish in the eastern district, that is, Halifax county, and especially in Halifax west. This western part of the county, seems to have the most attraction for these fish since, at least a few, always come to St. Margaret bay.

Thus, when one considers that these fish move into the area every year, and possibly along the same route each year, it seems reasonable to expect that during a year when their numbers are reduced, they will not possibly migrate so far as when they are stimulated to go farther and farther by those behind seeking for new and richer feeding grounds possibly. Since their food consists mainly of schooling pelagic fishes it may be that the off years correspond to poor years for their food fishes in the Halifax area, but the statistics for such fishes as herring and mackerel during this period have not been obtained.

From the preceding discussion there seems to be a little more evidence pointing to the idea that these fish may possibly move into the area from the southward or eastward, or at least it throws more doubt on the generally accepted view that they move up along the coast from the gulf of Maine region in the summer and back in the fall and during the apparently poor years they may not migrate into the area so far as to the Lunenburg county region.

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