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By Edward F. Ricketts

Investigator Blames Industry, Nature for shortage

Recent sardine activities, or perhaps I should say the lack of them, have done very little to change the picture presented in these columns last year. But it is perhaps worthwhile to point up a few ideas, which last year's article failed to emphasize. One is that the decrease isn't sudden; the current trend started clear back in 1936.

Another is that we mustn't regard over-fishing as being the sole factor in the present disaster, although it's the only one over, which we have any control. And a third is to stress the fact that some of the unfortunate practices of the past still are being continued - to the detriment of the whole industry.

Unpopular Theory

A large waterfront element continues to advance explanations for the increasing scarcity of sardines. The two most fantastic involve the dumping of munitions and the effects of the atom bomb, although obviously neither of these were in operation twelve years ago when the total landings started their downward slide. But most likely explanation (and still by far the most unpopular!) is that the sardines we are searching for have already been canned and reduced. In other words, that the total number HAS decreased.

At the same time a plausible theory is being entertained that the sardine population center has moved south, and I understand that at present Dr. Clark is investigating that phase. Whatever her investigation discloses, the unpleasant fact stares us in the face that the industry is over - expanded. For many years we have been increasing the numbers of our canneries and reduction plants, while at the same time the sardine population, if not actually decreasing, certainly can't have been increasing. Even if the fish were to come back every year from now on in their greatest recorded numbers, as in the peak season twelve years ago, still there wouldn't be enough to keep all our plants running at capacity

Not Sudden

A chart is being reproduced to show, total landings for the whole industry including floating reduction plants (floaters). This shows quite clearly that our banner year was clear back in 1936. No figures are available on the Mexican canneries at Ensenada, Cedros Island and perhaps elsewhere. And no estimates have been included to show the rather large amounts of young sardines taken as live bait off the Lower California coast by tuna boats fishing the more southern waters. Figures previously issued by the Division of Fish and Game have been misleading in that tonnages unloaded at the offshore reduction plants weren't included. Fish Bulletin 67 (dated Sept. 1947 but only received this month) is the first in which detailed figures have been shown for the floaters. The attached chart, which was first made over a year ago, carries estimated figures to cover this tonnage. These estimates are some what low, but the differences are slight, and no corrections have been made. In any case, now it can be established that the decrease which makes us so unhappy isn't sudden at all but started years back.

Nature Shares Blame

Whatever the situation may be in Southern California, Monterey operators in general seem to be willing to accept the fact of depletion. And some at least are willing to accept Monterey's share in the process (now that the horse has been stolen; ten years ago [it was] different). The industry however mustn't take the entire blame. Natural conditions certainly are involved also, but just how much weight should be attached to the various natural causes and to overfishing cannot be determined. Students aren't even yet certain, where the blame lies in the French sardine crisis, and this occurred more than a generation ago.

Probably we couldn't exterminate the sardine even if we tried. Humans have been trying to eradicate the rat, the mouse, the bedbug, the body louse and the cockroach for a thousand years or more, and the best we have been able to do is to keep their numbers in control. It's true that within the past two centuries the Dodo, the

Great Auk, the Passenger Pigeon, the Carolina Parakeet and the aborigines of Tasmania and the Aleutians have been extincted. And the American Bison and the Sea Otter almost followed suit. But all we can hope to do with the sea-going forms as the whale and the sardine is to reduce their numbers to the point of commercial extinction, so as to make the industries unprofitable.

By continuing to take undersized specimens and by concentrating our fishing activities in the areas where the animals gather preparatory to spawning in Southern California we can come pretty close to accomplishing this objective. How wonderful it would be, in this connection, if only Southern California and Baja California could be scared as thoroughly as we have been in Monterey, and as the operators have been in San Francisco, Oregon, Washington and Vancouver Island! Perhaps then we could count on the sardine making a quick come-back.

Specialists Ignored

In the meantime, I have been listening to waterfront gossip. It is being complained along the row, that the Division of Fish and Game should have awakened to the danger long ago, that at least they should have prevented the taking of undersized specimens. But I reason this way: Suppose they should try (as I believe actually they did). A suave lobbyist says to the individual legislators: "Don't pay any attention to these scientists - Good fellows of course: but their heads are in the clouds. Let's listen to the hard-headed down-to-earth businessman. There's no chance of depletion. There's just as good fish in the sea as any ever's been caught. Both the fishermen and the cannerymen are agreed on that. And they know. They've had years of actual experience. Let's not have any professional new-dealing in our fisheries. So, the legislators refuse to listen to the Fish and Game Division scientists. Sometimes even the division itself refuses to support its own specialists.

And the sardine populations DO decrease (although not necessarily only through overfishing). Until finally the cannerymen themselves (of Northern California for instance)- these down-to-earth hard-headed businessmen - get concerned over the scarcity. Their profits fade, their business decreases. In desperation they appeal to the division for protection, for a statewide regulation to prevent the taking of small

sardines. What happens! There 's a meeting. The canners of Southern California scream their heads off. They say: "In this region we get only mixed sardines. The proportion of small ones is often high. Don 't take away OUR business too, just because the unfortunate operators in the north are suffering." Again the Division fails to act, confronted with disagreement. And in the meantime still more of the vital and decreasing breeding stock is being wiped out.

Mexico Next?

Next year or the year after even the southern operators will plead for protection (unless in the meantime natural conditions improve, conservation is forgotten, and the cycle of drought and plenty repeats itself). And then some of the sharper ones will make a dicker with Mexico so as to tap the remaining stocks running off Ensenada, Cedros and Magdalena Bay. And another natural resource will be gone.

In the meantime there is the rumor that the main body of sardines has moved south. This may in fact be happening, but if so it will be only one added factor in a large total complex. Fishermen furthermore have reported schools of small fish, presumably sardines, in the Galapagos region. If actually these are sardines, probably they represent an unusual northward extension of the sardine of Peru and Chile which never has been known to contact the California sardine by two thousand miles or more.

A friend in Carmel last fall sailed along the west coast of South America in a Norwegian freighter. He reports that in southern Peru and northern Chile day after day their path was through a belt of sardines which he estimated to be from several hundred yards to several miles in width and which extended unbrokenly up and down the coast 5 to 10 miles offshore. This needn't surprise us here. An upset balance of rainfall or plankton or sardines in one region easily may relate to a compensatory imbalance before or after that tune in the same region, or in some other part of this great and unified world.

Two Races

With reference to our own California species, it seems to be pretty well established that two races occur. The northern feeds into a fairly separate southern race along Central and Southern Lower California. My own (but unproven) inference is that while the southern race always, or at least often, recruits FROM the north, it never or rarely feeds back INTO the north. I think of it pretty much as a dead end, lacking issue, and in the Gulf of California at least, rarely attaining full maturity. However, it's conceivable that if something happened to the northern race, say if it should be depleted by a combination of natural causes and overfishing, the southern race very easily might increase to the point where it would infiltrate back into the depopulated north.

More detailed information on the essential food of the sardine, the marine plankton, will be available shortly in the form of an account of planktonic production on the Pacific coast. This is being published in the second edition of the Ricketts and Calvin "Between Pacific Tides " which will be issued this month by Stanford Press. There will be found also tables and charts on seawater temperatures, on diatoms, on dinoflagellates and other floating organisms, some of them quite applicable to the sardine problem.

If this civilization of ours ever gets to the point where definite predictions are possible for the sardine - a point which has been reached already for the salmon and the halibut - it will be through continued and intensive scientific research. But long before that time, if we hope even to have an industry to worry about, we shall have to establish a program of conservation involving Canada, the United States and Mexico.

When warnings were first sounded fifteen or more years ago, if such a program had been put into effect, the industry perhaps could have been standardized at 400,000 tons per season. Instead, once we hit nearly 800, 000. The 1947 - 48 landings were less than 100,000. If conservation had been adopted early enough, a smaller but streamlined cannery row in all likelihood this month could be winding up a fairly successful season, in stead of dipping, as they must be now, deeply into the red ink of failure.