

DEVELOPMENT OF A FISHERY RESOURCE

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How is a fishery resource discovered, evaluated and developed? Perhaps it is most easily discussed by reviewing a checklist. We could be talking about the anchovy fishery in California or the sea cucumber fishery in Palau; both have potential, perhaps of a different order of magnitude, but nevertheless the evaluation process is the same.

1) *Magnitude of the Resource*

A study of the resource size involves a compilation and review of existing information of a scientific nature and of any exploratory fishing or preliminary commercial fishing on the species. A comparison with fisheries on the same or related species in other areas may also be useful. Of course, if the resource study is not favorable, we don't need to proceed further.

2) *Political Climate*

The concept of checking out the political climate is easily understood if the fishery is from a foreign base. However, political problems may be just as important in the development of a United States fishery. We must, in both cases, examine the impact of the development on the natives and the economy of the area.

3) *Economic Climate*

It is necessary to examine the type of vessels needed, the expected catch rates, operating costs of vessel and crew wages. The crew must receive a return commensurate with the type of work and shore wages. At the same time, the vessel must operate profitably. Where will the raw material be processed? Costs of handling, freezing, storage, and shipping must be calculated if the material is not to be processed at the site of the fishery. What are the potential dangers of government take-over of your operation? What are the potential losses through currency devaluation or a runaway inflation? Local legislation may restrict your operations. Tax increases may increase costs.

In conjunction with this preliminary study, it is necessary to have a marketing plan. With an established product, tuna, shrimp, etc., this presents no serious problem as there is a world demand for the commodity in its raw form.

We then take all this and other information and balance the risks involved against the return on investment. The major development is done by companies who must constantly ask this question: Is the return worth the risk and effort involved? There has

been a considerable change in the complexion of the fishing industry in recent years. Companies are larger. There is pressure for expansion of sales of present products and the development of new profit areas. New sources for raw material are constantly being sought. If there are latent resources in fisheries, they will be noticed, studied and if promising, developed.

Government and University research people generally measure the potential of fishery resources by magnitude of the population and minimize the political and economic problems associated with its development.

For example, let us consider the development of a fish meal and oil industry from the California northern anchovy or Pacific hake populations. The products flow freely in world trade and the geographic advantage is worth \$25-30 per ton at most for meal and less for oil. The development of the area then depends, to a large extent, on the world trends in prices of meal and oil.

Fish meal is used largely as the animal protein portion of the ration used to feed chickens and turkeys. Chow formulation is now done by least cost methods on computers. All factors of cost and value are entered in the program and the nutritional package is compounded at least cost. Under this system the usage of fish meal is closely tied to its price and plant protein prices.

In Peru, where plant protein is scarce and fish meal abundant, the ration may contain as much as ten-twelve percent fish meal. In the United States, the ready availability of soybean meal and the higher costs of fish meal (transportation of imports) restrict the fish meal usage to less than half the level used in Peru.

The major producers of fish meal in the world are:

	metric tons
Peru	1,725,000
Norway	480,000
South Africa	350,000
United States	200,000
Iceland	130,000
Chile	130,000

The major users are:

	metric tons
United States	850,000
West Germany	530,000
Great Britain	460,000
Holland	195,000
France	125,000

Neither Japan or the Soviet Union have been included in these lists as their production is used internally and their operations do not affect the supply-demand situation in fish meal and the basic costs of production.

An 11-year series of fish meal prices in the United States market shows a major low in 1960 and another in 1967. The major highs were in 1958 and 1965. Prices are currently in a two year downtrend and may go lower. Production in Peru is at record levels for the second straight year. Cost of production there is lower than anywhere in the world. We figure the breakeven point in Peru is in the 40-45 ton per fishing day level. That's tough competition for any developing fishery, either here in California with our restrictions or elsewhere in the world.

The long term picture is not so dismal for development of an industry in California. Peru has had two exceptionally good year classes back to back. Their production will most certainly decline. The Norwegian herring fishery is phasing out a very successful year class with no immediate replacement in sight. The mackerel fishery there is thought to be at maximum, as is the capelin. The world production of fish meal during 1968 will not increase over 1967 and may well be down fractionally. Usage is high so we can expect price improvements in the meal market during 1968.

Development of the anchovy resource in California is presently hampered by political and economic problems. Although the resource is large, I do not believe that the industry is passing up a great opportunity under the present climate.