

Tough Growing-Up Is Seen For Aquaculture

Legal Aspects Complicated And Arduous

By Anthony J. Novotny

It would be interesting to speculate about what the status of marine aquaculture would be like in this country today if we had started with the same fervor 100 or more years ago that turned this country into an agricultural giant.

It is hard to imagine a "sea rush" to stake the most desirable claims for water ownership the way we did in the great Oklahoma "land rush." It is also hard to imagine a "spread" of one million acres — of water — being owned by one conglomerate such as the famous King Ranch of Texas.

In fact, it is difficult to comprehend the idea of anyone owning a portion of the sea, large or small.

THIS ARTICLE

first appeared in "Northwest Mariculture Laws," a publication of the Oregon State University Sea Grant Program. The article, "Legal Aspects of Marine Farming Operations — A Game of Tournament Chess," is reprinted here by permission.

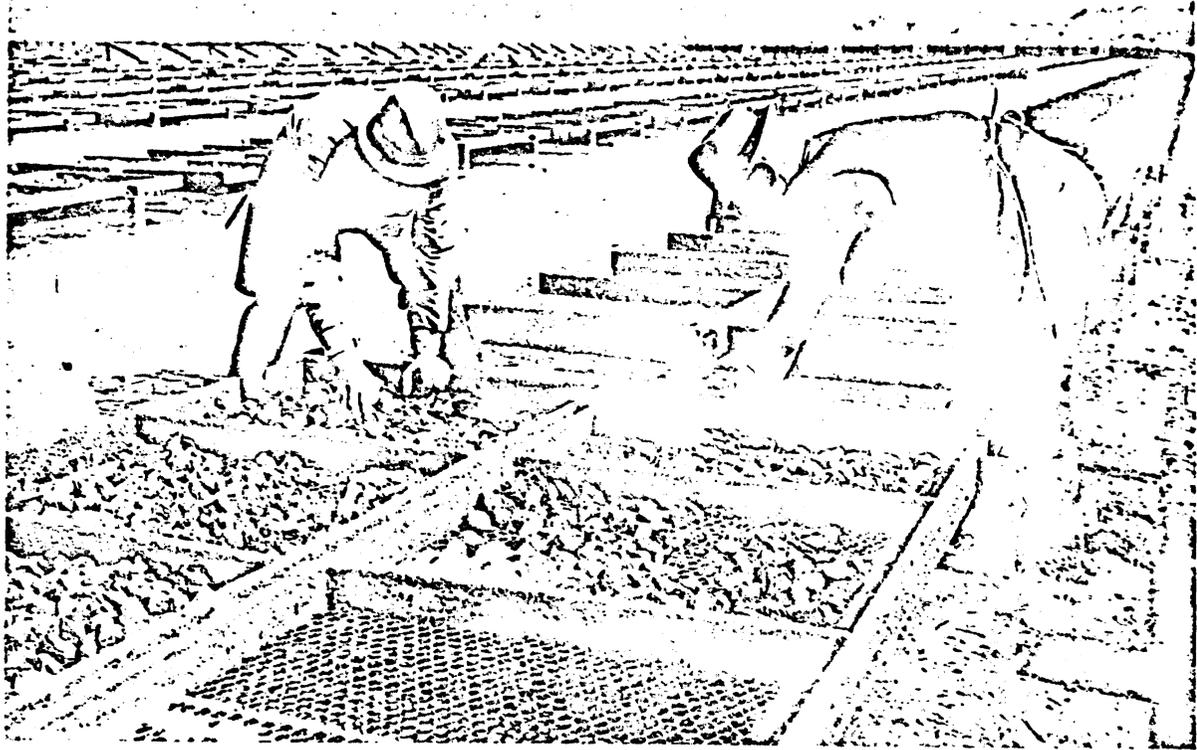
The ownership and use of land for agricultural purposes in the United States is based largely on historical precedents. After all, isn't the right to own land a part of the founding documents of this country? The right to inherit land is established by law.

With some exceptions, we can do with land as we please. We can cut trees or plant trees, plow or let land lie fallow, or even rent land out to a tenant farmer. Until recently, you could even get paid by the government if you promised not to make land productive.

If you do not know what to do with your land, there is a large government organization that can muster field forces from Key West to Anchorage to help you get the most productive crops from your land. There are soil bank programs, irrigation programs, inspection services, and even storage services. You can lease certain grazing rights on public lands, or bid on harvestable timber. You can even go out and drive a few stakes in the ground and start extracting any minerals that you might find beneath it.

But water, especially the sea, is a different story. The historical precedents are few. There are many people who own freshwater ponds, man-made and natural, and even some who own entire lakes. But these are usually self-contained.

Woe be to the man who uses moving water and then allows it to run into another body of water or across other land. He suffers restrictions and comes under the new regulations that talk about "point sources" and "receiving bodies."



In the sea, our earliest historical precedents deal with shellfish culture. I distinctly remember seeing a chart of Long Island Sound that was neatly divided into plats for oystering. It predated the American Revolution!

On the West Coast, subtidal rights for shellfish farming in Washington were declared prior to statehood.

In the 18th and 19th centuries, shellfish farming in this country was still "semi-fishing." It has only been in this century that shellfish farms have advanced to the point of having complete control of the organisms, from spawning to market. However, setting the early precedents was a definite asset.

Shellfish farms are bought and sold, along with the rights to certain tidal zones for culture purposes, and rights of inheritance are legally respected.

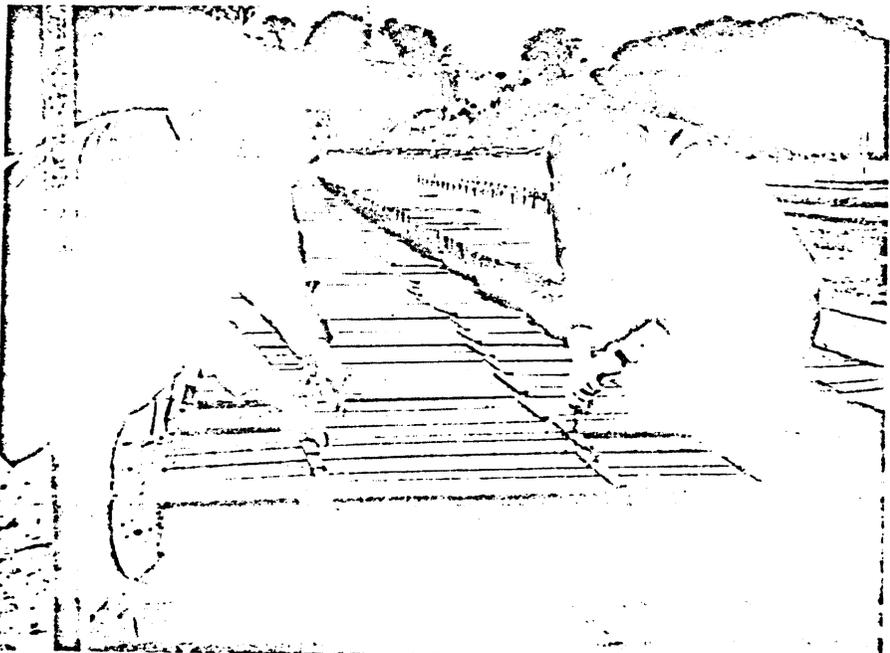
In some real estate transactions, the surface land can be sold for any use, and the original title holder can retain the rights to the minerals that lie beneath the soil. A parallel exists in shellfish farming, where a person may buy a piece of waterfront property for a summer home or residence, etc., but the transaction may only include that property above the mean high tide level. The rights to the tidelands could very well belong to an oyster farmer.

By virtue of legal precedent again, there are areas where the cultivation of intertidal and subtidal shellfish grounds have precedent over any other type of activity. In other words, you cannot interfere with an oyster farmer's work simply because you want to water-ski.

Many of the laws regarding

IN A MAJOR EFFORT to promote oyster farming, the New Zealand government in the 1960s and early '70s began developing the techniques for raising rock oysters. Above, oysters are sorted in the huge rack complex at the Marine Department's farm at Coromandel. Below, is a spat-catching installation at Te Kapa Bay. The wood slats are covered with water from mid to high tide and serve as spat-catchers. The close government cooperation with private growers has resulted in the establishment of well over a hundred oyster farms in recent years.

—Photos courtesy of N.Z. Information Service



shellfish farming in our estuaries were enacted in the days when everyone was busy trying to eke out a living from the land or the water, one way or another. I am certain that the judicial branches of government would not have believed that someday there would be fierce competition for our water resources because there was plenty of wilderness and

unexplored water to go around for everyone.

Now we are entering a new era of aquaculture. There is new technology, and previously unfarmed species of marine organisms are being looked at and produced. New precedents will be set (and are being set) for the future.

But the rules of the game have changed with time, as there are

more divergent uses of our marine wastes now than in the time of our forefathers. The competition for water use will become fierce. From now on, the marine farmer will play a game of tournament chess — with a changing rule book.

I classify marine water use into four categories:

1. Commercial transportation
(Continued on Page 128)



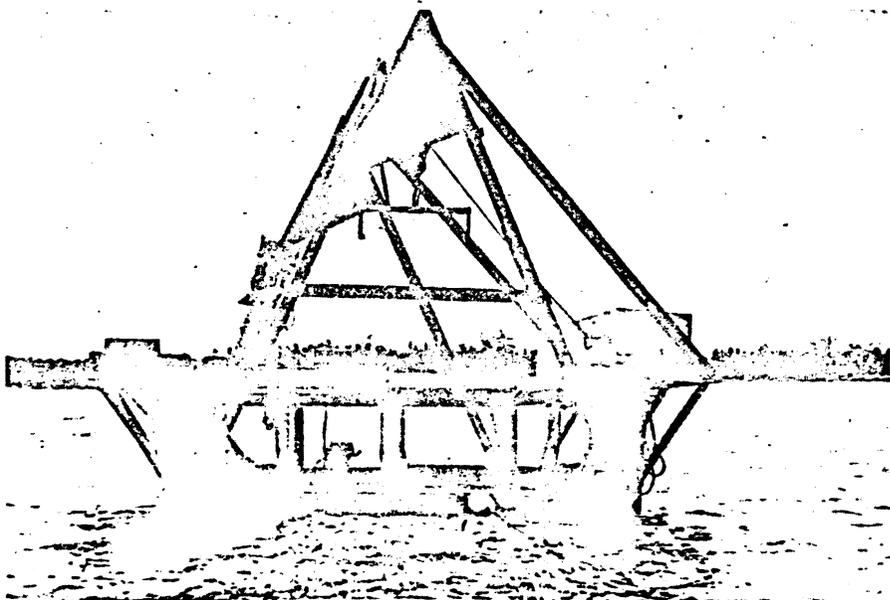
PART OF THE OYSTER-GROWING OPERATION of the Richmond Brothers' Maine Coast Oyster Corp. Principals of the company are Mark Richmond, 28, and his 34-year-old brother, Deane. Shown here are the tops of seven of the firm's 100 growing rafts.

—Photos by Steven Saft

A Maine Oyster Farm Sees The Light



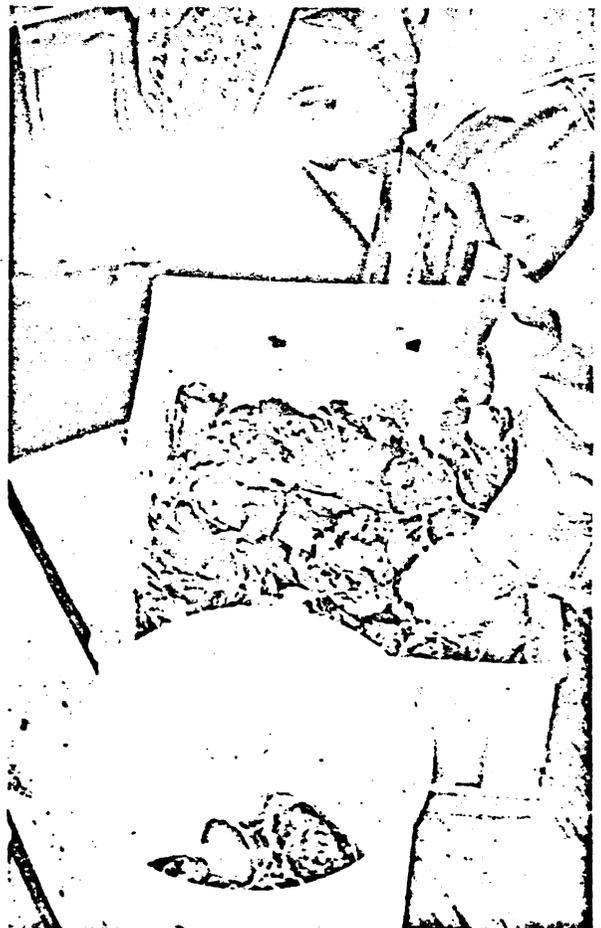
Market-Size Maine Coast Oysters.



THE SERVICE RAFT is used in the cleaning of the 1000-plus trays it has dispersed among the rafts. A raft is hoisted by a winch in the top of the A-frame. Then each of the 10 or 11 trays, stacked on top of the other, is removed and the oysters inside are cleaned of parasites and growths. The service raft is outboard powered.



MARK RICHMOND holds one of the 2' square trays he uses to grow oysters in Blue Hill's Salt Pond. The trays are divided into stacks 10 or 11 high and are filled with growing European oysters. After five years of profitless effort, the Richmonds' fledgling company suddenly found itself with nearly 300,000 market-size oysters to sell last summer. Best customer is the Grand Central Oyster Bar in New York City. Below, Mark packs oysters for market.



2. Industry, including fishing and marine aquaculture

3. Recreation

4. Esthetics

Of these four types of use, I consider the last to be in greatest conflict with aquaculture.

Let us examine, briefly, the future of the marine aquaculture for the next 25 years. I will not

speculate on anything beyond that.

There is no question in my mind that without a massive infusion of federal research funds, farming the open sea is out of the question. Even if the federal government were to infuse \$100 million today, it would take 10 years to develop

anything that could be measured economically.

That leaves the protected waters of the coastal zones — the same areas that have the highest competitive use.

One cannot question the use of our coastal zones for transportation. Ample room must be allowed for vessel traffic, which undoubtedly will increase. This is the life blood of our nation, for both intra- and international commerce.

In regards to commercial industry, I would prefer that a new precedent be set. I would like to see a legal course of action that would make it mandatory that a commercial sea farm be established as close as possible to every large seaside industry, especially oil refineries, nuclear power plants and pulp mills.

A marine farm places a dollar value on the water that we never had before. The threat of a possible lawsuit is the best

possible policeman that I can think of. What a distinct advantage we would have with a virtual 365 day bioassay!

Commercial fishing is usually restricted to specific historic zones, and these can be avoided when selecting sites for culture purposes.

Recreational use is heavy in most areas, and is primarily oriented toward boating and sport fishing. I have a collection of Japanese books that pictorially demonstrate the use of their inland seas for aquaculture. I doubt if there is sufficient room in any sheltered water in Japan for a dinghy race!

Here again precedent dictates. Recreational boating and sport fishing are almost non-existent in Japan, and marine aquaculture is a reasonably long-standing industry.

In our inland seas, the precedents are reversed. We would not possibly expand our

use of marine coastal areas for aquaculture to the extent that Japan has, without creating a serious conflict with the recreational users. Only a national food crisis could reverse this position.

High Esthetic Value

We place an extremely high esthetic value on our coastal zones. People who own shoreline property regard their unobstructed views as assets, and are a most powerful force. This is especially true in Puget Sound, where we have the recent commercial development of floating salmon farms. Amongst the many permits required to start a salmon farm is one from the U.S. Corps of Engineers. The permit request for a site location, with a complete description of the proposed construction, must be posted for at least 45 days in order to allow area residents to voice objections.

In Kitsap County we had one case, which I will call "the Harper Dock," that was stopped dead on the first move. In this situation, a group of people unfamiliar with the county, obtained a lease on an existing dock and drew up extensive plans for its development into a marine salmon farm.

The local residents, frightened by the threat of an extensive activity in their serene atmosphere, voiced their disapproval and the project was killed.

If the developers had gone first to the county commissioners with their plan, they would have been advised to make alterations which would be less objectionable to local residents, and they would have been closer to obtaining a permit.

A wise man learns from the mistakes of others. In a second case, a permit was requested to use another existing dock in Kitsap County for a salmon farm. The proposed developers (well informed of the Harper Dock problem) began with an 18-month time schedule in mind.

They went first to the county agricultural extension agent. The extension agent helped them through the offices of the various county planners. In this way, all

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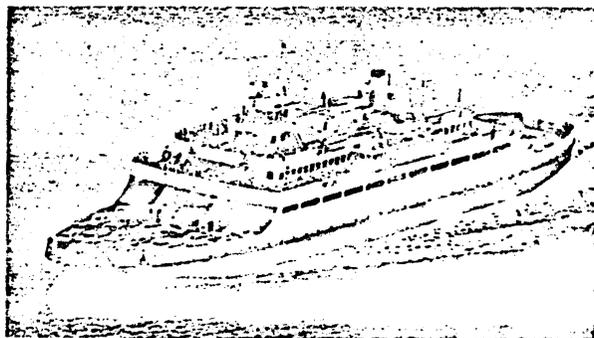
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rties were well aware of the eds of the proposed farm and e best way to develop the farm d still satisfy the desires of the unty planners.

The developers moved in rogressive stages, obtaining air permits from the various gencies in sequential steps. owever, somewhere in the final tages of this arduous process, he development was in check. he county health authorities iscovered an illegal raw sewage isposal within 1000' of the roposed farm. The sewage was rom a collection of less than a dozen residences.

In spite of the fact that the sewer was illegal, the fish farm developers had to prove that the bacteria levels were not above permissible numbers before they could obtain a Dept. of Ecology permit. This has since been accomplished, all permits have been approved, and construction has begun.

Permits Galore

In the Puget Sound area, I believe that it takes at least 17 permits to operate a salmon farm, not including a fresh-water facility. I have heard that in California the number of permits needed is over 50 (including fresh water facilities.) The number of legal routes that must be followed is so great, that any individual or group that wants to start a fish farm, fresh or salt water, had best look for help and not try to do it alone.

In most cases, starting at the county level is probably the best bet. The problem becomes even more complex when you want to develop a fish farm with a "point-source" discharge, either fresh water or salt. There are stringent U.S. Environmental Protection Agency (EPA) requirements for any effluents discharged into a "receiving body."

My point is this: one should not only be aware of the legal restrictions to aquaculture, and

where to seek help, but also that the rules can be changed. This applies to established shellfish farms as well as new types of mariculture.

Survival After Success

If we can assume that a proposed farm has obtained all of the necessary permits, and is licensed to operate, what are the next legal problems to arise?

If you are operating a shellfish or seaweed hatchery and nursery, coupled with a "growing out" farm, there should be no problems except a cautious attitude toward the purity of the crop prior to marketing. The most extreme treatment of mollusks might be fresh water, heavy saline or copper sulfate baths to rid the crop of fouling organisms. The U.S. Food and Drug Administration (FDA) is interested in chemical residues, and State Health Authorities are interested in bacterial levels.

Since most shellfish or seaweed farmers just "take their lumps" and never treat with anything, any problems of residues or bacterial loads are due to a poor natural environment. Concentrations of microorganisms in shellfish that are pathogenic to man have been a serious problem in the upper reaches of Chesapeake Bay and a large segment of oyster-growing area there is closed to harvesting. In this case, the oyster grower is an innocent victim of our own wretched technology in human waste disposal.

The most serious problem comes to the fish farmer. Every fish farm will be hit by disease. Most of the diseases are caused by pathogenic bacteria, and mortalities can be reduced by the oral administration of antibiotics.

Legal Clearance

How is legal clearance obtained on new drugs? Quite frankly, not easily. All drugs must be cleared against specific

diseases by the FDA for licensing. The type of investigation that is required to obtain FDA approval for a drug is of a complexity that is beyond the capacities of the fish farmer.

The people who stand to gain the most from drug clearance are the drug manufacturers. The U.S. Fish and Wildlife Service spends years of time working with drug manufacturers, other research groups and their own staff to demonstrate drug efficacy for specific diseases. In addition to demonstrating drug efficacy, analyses of drug

residues or metabolites in the product tissue must be reported.

It would seem obvious then, that the legal clearance of new drugs for therapy is going to be the responsibility of federal agencies and drug manufacturers, for those are the only people who have sufficient staff and technical facilities to do the job. Yet I know of no formal federal programs that are organized (or funded) to systematically screen and test drugs for therapeutic use in cultured fish.

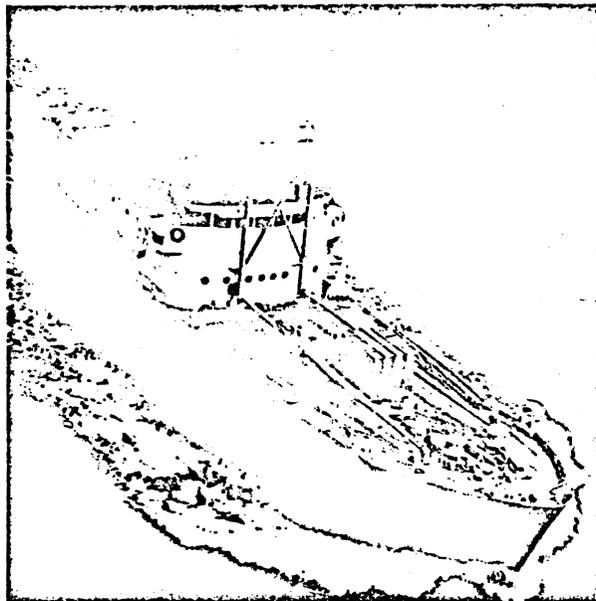
I distinctly remember that the

federal government screened over 4000 chemicals to find a selective larvicide for eradicating the sea lamprey in the Great Lakes, with excellent success. It would seem to me that the present and future value of cultured fish in this country are sufficient to justify similar efforts to combat diseases.

Vaccine Sought

More recently, many of us in research have been working actively on the development of vaccines to prevent specific

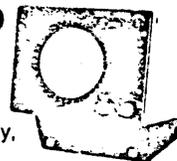
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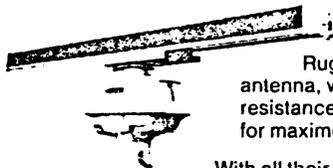
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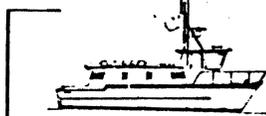
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diseases. The vaccine for vibriosis is extremely important in preventative medicine in marine aquaculture.

In its simplest form, the bacterium that causes the disease is grown in the laboratory, killed with mild heat and fed to the fish. All that we have done is to render harmless the same "bug" that the fish faces almost every day in sea water culture.

Nothing could be simpler, and yet such a vaccine is termed a "biological product" and falls into the legal category of the 1913 Serum-Toxin Act. This bit of federal legislation places all nonhuman vaccines under the control of the U.S. Department of Agriculture (USDA).

To be very brief and explicit, the law states that the producer of the vaccine who intends to sell it commercially must obtain a USDA license. The procedures that a producer must go through to obtain that license are enough to make the fainthearted go on to other endeavors. Only the anticipation of large-volume sales will induce a commercial firm to apply for that license.

This means that unless salt water fish production expands, the people in business now will have to do without, or produce their own vaccines and request an experimental waiver. Fortunately, in the case of vibriosis vaccine, several firms are moving to obtain licenses. Once a vaccine is licensed for sale, the

farmer may use it without regulation.

Harvesting The Crop

If we can assume that the marine fish farmer or shellfish farmer has safely (and legally) brought his crop to harvest size — what next? Everyone wants a top quality product.

In the case of fish, I would prefer to use an anesthetic (except that a 21-day waiting period after use on live fish is required, and thus makes it illegal), drop the fish into an ice bath, and bleed them on the spot before processing. The latter act is illegal unless you can dispose of the blood in some way other than dumping it in the water.

The next best thing is to drop

the fish into an ice bath (which cools them down), wait until they die, and then ship to the processing plant. The longer that you wait to process, the greater the chance of bacterial buildup. We have isolated a few bacteria from the kidneys and gut of processed fish that are pathogenic to fish. We have also found kidney diseases in processed fish.

Of course, the longer the fish sit before processing, the greater is the chance of finding spoilage bacteria. The former is of interest because of H.R. 6397, a bill that was first introduced to the 93rd session of the U.S. Congress, and the latter because of H.R. 887 which was introduced recently. H.R. 6397 would

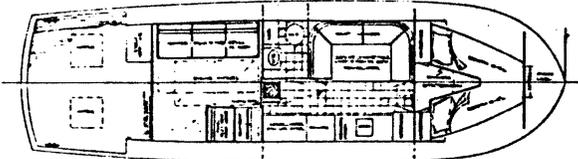
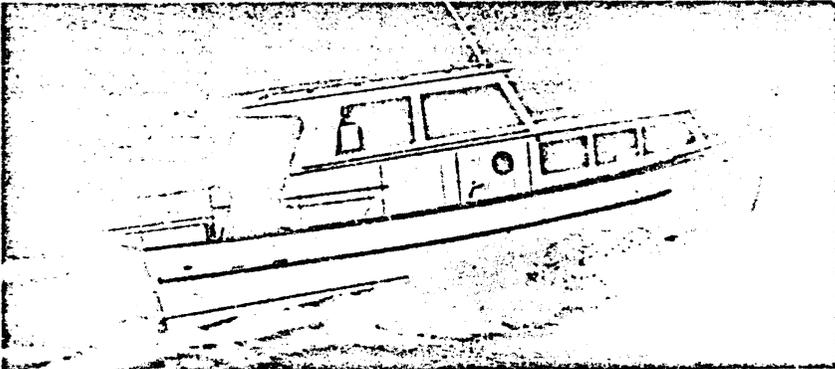
authorize the Secretary of the Interior to establish regulations for the protection of U.S. fishery resources, including marine culture industries, against the dissemination of serious diseases of fish and shellfish. Article 3 of Section 4a of this bill would give the Secretary the power to issue regulations to prohibit the movement in interstate commerce of fish infected with (or contaminated with) any fish diseases that pose a major threat to the U.S. fish resources.

This bill, formerly known as the "Fish Disease Control Act of 1973," and now known as the "Fish Disease Control Act of 1974" would be (in my estimation) the beginning of some type of federal fish

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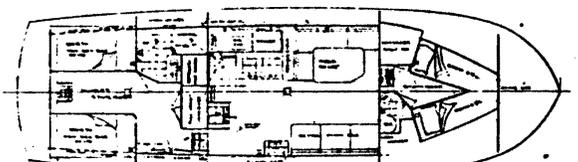
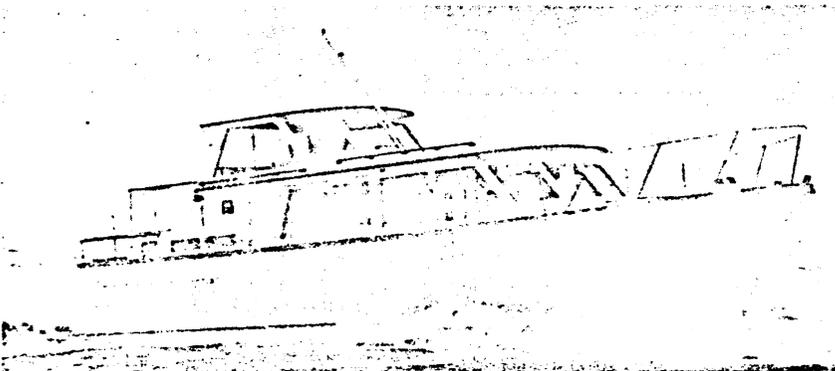


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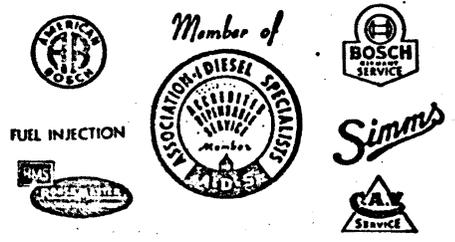
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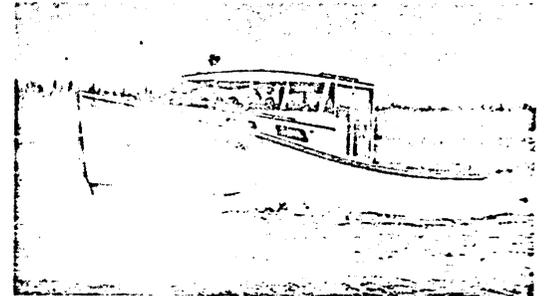
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Exporters of processed, cultured fish going to Canada are familiar with a minimal control act, as they must provide a certificate that has been signed by a qualified pathologist. The processed fish must be certified to be free of fish pathogens.

My most recent knowledge of H.R. 6397 is that it is back in committee. If H.R. 6397 does not become law, I am sure that sooner or later a revised bill will be passed.

Anyone who is in the legal profession and interested in fisheries should become familiar with H.R. 6397. I say this because this legislation covers all fish products, alive or dead, wild caught or cultured, including those coming from the high seas. It includes fresh water and marine fish and shellfish, reptiles, amphibians, eggs, offal and even shipping containers.

Perhaps I am overreacting to this bill. However, I do not think that I am alone, as virtually all of the trade journals (at least in aquaculture) have published articles or editorials on this bill.

The agricultural meat producers have had inspection programs regulated by the USDA for years. Perhaps this type of action is now upon the fish industry because H.R. 887 is

intended to fill this function and H.R. 583 and H.R. 10150 are intended to regulate and license through inspection. The jurisdictional agency would be the USDA.

No matter how we may feel about fish product regulations, in my estimation it is inevitable. Thus, we will have regulations to protect both the fish and the consumer of the fish. My question is: can we not streamline this under one agency?

Unless you have a family farm, you will have to hire people to conduct the daily operations. There will be the usual state regulations concerning sanitary facilities, health regulations and the never-ending forms dealing with labor in general.

Fish farming involves a great deal of physical labor, and the natural tendency is to hire men. However, in this day of women's liberation, I would hesitate to select only men, as the possibility of a sex discrimination suit is always there.

I would also be cautious of hiring "token" women and installing them in "token" jobs.

The farmer must also be conscious of the fact that his employees may wish to be

represented by a union, an option that cannot be denied. I would suggest to any prospective new farmer that some legal advice be obtained on the latest rulings regarding hiring practices and the rights of employees.

Safety is another problem that must be confronted on the fish farm. Legal advice concerning accident insurance, etc., should be accompanied (or perhaps preceded) by advice from state or private safety experts. This is especially true where diving is involved.

If I have painted a picture of a fish farm ensnared in legal webbing, and a farm manager who lives on a mixed diet of aspirin and tranquilizers, I will not apologize. Any aquaculture company that finds itself in this position has probably jumped into business in blind haste, or has not done its homework.

Marine aquaculture is a new industry, but deserves the same legal consideration as any other new industry. The question is, how much legal restriction can a new industry such as this absorb? The amount of dollar revenue generated is still small, and lobbies have yet to be organized.²

As an example, let's look at the industry that manufactures outboard motors. The EPA estimates of the number of gallons of leaked or dripped fuel from outboard motors is in the millions of gallons per year. And yet, if restrictions were placed

on the outboard motor industry that would be severe enough to make it unprofitable to produce them, a large recreational industry would collapse. Boat and trailer manufacturers, resort owners and producers of accessory products, as well as wholesalers and retailers would be wiped out.

No one wants this to happen, as the industry supplies an economic need as well as a psychological need.

This is one dollar value of our water that cannot be ignored. How then, can the marine aquaculture industry operate legally and survive economically? I believe that it will have to be a slow process of growing up. And, the industry will have to suffer its own "growing pains."

However, I think that the amount of suffering can be reduced if the industry members can join forces through regional and national associations.

Through associations, the marine farmer can express his pooled needs and problems to the proper agencies that can respond. Associations can provide advice on laws that will restrict or aid the farmer, and advancements in technology. Associations will also provide an outlet for concerted voices where those voices need to be heard.

Therefore, if I could offer one last bit of advice: Join hands! You won't regret it, and you are going to need it.

Footnotes

¹ See "Coho Salmon Farming in Puget Sound", U.S.D.A. Extension Bulletin 647 (August, 1973) by Curtis W. Nyegaards. This bulletin provides an excellent scenario for establishing a farm.

² Shortly after this talk was given the American Salmon Growers Association was organized.



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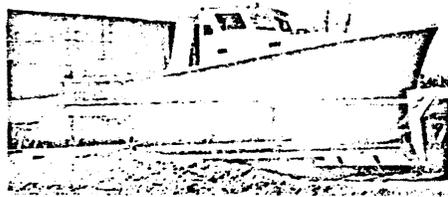
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