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Mariculture--Step Child of the Law of the Sea

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I. INTRODUCTION

There is a growing body of law affecting mariculture.[1] Much of it, unfortunately, appears to have been developed through inadvertence. Thus, this infant industry is very much like the stepchild of classic literature and legend—Cinderella, and others—as decision makers make decisions affecting its future without consideration of its special needs. This unconscious law-making has occurred in state, national, and international law forums.

The neglect of mariculture as a subject of law in its own right may be justified by comparing the urgency of development of a law of mariculture with the pressing concerns which led to the United Nations Law of the Sea Conferences: the breadth of the territorial sea, passage through straits, fisheries, the sea bed, marine pollution, and scientific research.[2]

It is said that serious legal consideration of mariculture on the open seas will not come until its technology is further developed.[3] If so, a quandary is presented, wherein laws and agreements impacting on mariculture will continue to be developed without consideration of that impact, and growth of its technology could be thwarted or deterred thereby.

If serious legal consideration must await development of the industry, mariculture could best be served in the interim by protection of the oceanic environment from pollution, and from the establishment of local, national, regional, and international regimes for exploitation of natural resources in general. Yet, "[a]pplication of statutes obviously not intended to regulate . . . mariculture, combined with uncertain economic factors, may deter growth of this potentially im-

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1. Mariculture is the husbandry of aquatic animals and plants in a marine environment.

2. Knott, *Who Owns the Oceans?*, U.S. NAVAL INSTITUTE PROCEEDINGS, 65, 67 (March 1973).

3. Smith and Marshall, *Mariculture: A New Ocean Use*, 4 GA. J. INT'L & COMP. L. 307 (1974).

portant new industry and defeat the ultimate objective of natural fisheries laws, maintenance of the quality and quantity of the fish resources . . . ."[4]

The absence of law poses an additional threat. "Mariculture requires the exclusive use of ocean space, a financial investment and legal protection for that investment. The security of any financial investment in the use of the sea for mariculture depends upon the legal status of such activity."[5]

Regarding U.S. mariculture interests, the question of who is to confer the legal status is only partially resolved,[6] even within the three mile territorial sea of the United States, where international claims are minimum.[7] National and international competences further offshore have been the subject of intense debate in the current United Nations Law of the Sea Conferences (UNCLOS III).[8] This Comment is designed to demonstrate the neglect of the science and industry of mariculture in current law by examples from international, national, and state law.

II. The Growth of Mariculture

Although little noticed in the general press, the science of mariculture, or aquaculture in a marine environment, has developed into a small, but growing industry.

> What was once fanciful speculation about the potential riches to be won from lakes and oceans of the world has given way to investment in the development of industries and professions capable of realizing those riches, . . . application of existing technology to aquaculture has augmented protein supplies in China for over a thousand years, has rendered delicacies . . . available as a staple of

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4. Bochrath and Wheeler, *Closed-Cycle Mariculture in Maryland, Virginia, and Delaware: An Examination of the Adaptability of Existing Fishery Laws to New Technology*, 17 Wm. & Mary L. Rev. 85 (1975).

5. Smith and Marshall, *supra* note 3, at 308.

6. United States v. Maine, 420 U.S. 515, (1975).

7. Convention on the Territorial Sea and the Contiguous Zone, *done* April 29, 1958 (1964), 516 U.N.T.S. 205, 15 U.S.T. 1606, T.I.A.S. No. 5639 [hereinafter cited as Territorial Sea Convention].

8. University of N.H. *Major Issues of the Law of the Sea* (1976). *See also*, Informal Composite Negotiating Text, Third United Nations Conference on the Law of the Sea (1977) A/Conf. 62/WP. 10 and Add. 1., at Part II, and the Memorandum of the President of the Conference at Add. 1, [hereinafter cited as ICNT].

> the middle class diet in Japan, and has replaced declining natural harvests with domestically reared harvest of predictable quality, supply and size in Norway.[9]

Sir Alister Hardy, eminent zoologist oceanographer, has described experiments in the transplanting of plaice in the North Sea by Danish and English pioneers prior to 1908. A project designed to return from one hundred to two hundred percent on investment was not undertaken (in the 1930's) because "no single country or association . . . [would] finance such an undertaking, when boats of all other nations and associations [would] benefit equally from the results."[10] Although Hardy's vision of pressure-proof atomic-powered submarine tractors cultivating and harvesting the sea floor[11] has not yet come to be, the industry is growing, as indicated in reports of successful ventures in raising anchovies at La Jolla, California, salmon in Pugent Sound, State of Washington and near Volvograd, U.S.S.R.; and shrimp in many locations ranging from Angleton, Texas to Abidjan, Republic of Ivory Coast.[12] Japan, the world leader in this industry derives better than six percent of total fish production from mariculture-aquaculture. Other successful ventures include cultivation of prawns, lobsters and crayfish in several areas of France; and high seas mariculture experiments off the coast of Hawaii under the Sea Grant Program.[13] "Encouraging results have been obtained with ambulatory basins for tuna, but in this instance efforts will be slowed down until an international agreement is reached guaranteeing to the producer the harvest of his crop."[14] Mariculture in the open ocean will be feasible in the near future, providing certain problems, including legal ones, can be solved. A fairly recent book[15] by "a group of experts at the Oceanic Institute in Hawaii . . . examines and correlates such topics as biology, economics, oceanography, sociology, marketing, technology and law and politics. It includes a chapter of 'Legal and Political Perspectives' and is thorough, well documented and imaginative."[16]

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9. McCutcheon, *Aquaculture: Problems of Implementation Under Existing Law* 10 BRIT. COLUM. L. REV. 289 (1976).

10. A. Hardy, *The Open Sea: Its Natural History, Part II: Fish and Fisheries*, Circa 1958 171, 174 (one vol. ed. 1970).

11. *Id.* at 303.

12. Charlier and Vigeaux, *Towards a Rational Use of the Oceans*, U.S. NAVAL INSTITUTE PROCEEDINGS 27, 32 (April, 1974).

13. *Id.* at 32.

14. *Id.*

15. J. HANSON, OPEN SEA MARICULTURE (1974).

16. Jacobson, *Future Fishing Technology and Its Impact on the Law of the Sea* in F. Christy, T. Clingan, J. Gamble, H. Knight & B. Miles, Law of the Sea: Caracas

Pending further development and funding of the technology described by Hanson et al., and creation of a favorable, or at least a passive legal climate, offshore mariculture is being conducted by both "ranching" tuna in floating pens, using a technique similar to a feed lot for cattle,[17] and "ranching" ocean salmon by imprinting them during adolescence in holding ponds, so that, as adults, they will return to the same area for recapture and marketing.[18] Another product of open ocean farming is kelp, "an especially efficient capturer of the sun's energy," which is being cultivated as a possible source of fuel and food.[19]

III. Legal Problems

A. *General*

As stated, this Comment is limited to sampling the law of the sea regarding mariculture in order to sketch the outlines of the problems generated by legislating and negotiating without conscious regard to this particular subject matter. Although examples abound, it would appear that an extensive treatment would be merely cumulative.[20] Examples of the lack of specific laws governing mariculture and examples of laws limiting the development of the industry exist in international law, in national law, and in state law.

B. *International Law*

The four conventions developed during the 1958 Geneva Conference on the Law of the Sea (UNCLOS I) contain a significant portion of the international law affecting mariculture. These conventions codified the customary law in some areas, and created new law in others.[21]

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and Beyond (Proceedings of the Ninth Annual Meeting of the Law of the Sea Institute held January 6-9, 1975), 237, 246.

17. Buchanan, *Ranching Atlantic Bluefin*, Sea Frontiers 172 (May-June 1977).

18. Dygert, *Ranching Ocean Salmon*, Sea Frontiers 258 (October 1978).

19. Wood, *Farming Giant Kelp*, Sea Frontiers 159 (May-June 1977).

20. More complete treatment of laws relating to mariculture at the international, national, and state levels, as that law existed prior to the current United Nations Conference on the Law of the Sea may be found in the Smith and Marshall article, *supra*, note 3.

21. N. Leech, C. Oliver & J. Sweeney, Cases and Materials on the International Legal System 152 (1973).

Convention on the Territorial Sea and the Contiguous Zone[22]

This Convention recognizes the coastal state's authority and jurisdiction over the sea adjacent to its coast, subject to certain rights of passage long recognized in customary international law. This is of particular interest to the mariculturist in that it establishes the primary law affecting his activity.

Substantive portions of this Convention appear to require that a mariculture facility, to be licensed, could not be located upon or too near a customary shipping lane, and could be required to invest in various light, sound, and other displays identifying it as a hazard to navigation.[23] On the other hand, the sanitary regulations of the coastal state, enforceable in the contiguous zone, would, in some measure, protect the installation from pollution.[24]

Convention on the High Seas[25]

Recognized as generally declaratory of established principles of international law, this Convention includes articles directly applicable to a mariculture installation. Indirectly, other articles are germane by interpretation of the term "ship" to include such a facility.[26]

Under Article 2, a state could not license a mariculture activity on the high seas (an exercise in sovereignty).[27] Nor could it recog-

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22. *See generally* note 7, *supra*.

23. Article 15. 1. The coastal State must not hamper innocent passage through the territorial sea. 2. The coastal State is required to give appropriate publicity to any dangers to navigation, of which it has knowledge, within its territorial sea.

24. Territorial Sea Convention, Article 24. 1. In a zone of the high seas contiguous to its territorial sea, the coastal State may exercise the control necessary to: (a) Prevent infringement of its customs, fiscal, immigration, or sanitary regulations within its territory or territorial sea; (b) Punish infringement of the above regulations. . . .

25. Convention on the High Seas, *done* April 29, 1958 (1962) 450 U.N.T.S. 82, 13 U.S.T. 2312, T.I.A.S. No. 5200 [hereinafter cited as Convention of the High Seas].

26. Such an interpretation could be an interim solution for governance and protection of a mariculture installation in the high seas. In the Outer Continental Shelf Area, such an interpretation would conflict with the OCS Lands Act of 1953, 43 U.S.C. § 1333 (1970).

27. Convention on High Seas Art. 2 [N]o state may validly purport to subject any part of [the high seas] to its sovereignty. Freedom of the high seas . . . compromises, *inter alia* . . .: (1) Freedom of navigation; (2) Freedom of fishing; (3) Freedom to lay submarine cables and pipelines; (4) Freedom to fly over the high seas. These freedoms, and others which are recognized by the general principles of international law, shall be exercised by all states with reasonable regard to the interests of other states in their exercise of freedom of the high seas.

nize exclusive rights, which might interfere with the freedom of the high seas. This effectively inhibits establishment of a mariculture facility outside a zone of national competence, since, as noted earlier, such a facility requires the exclusive use of ocean space, and legal protection for the investment involved.

In view of the discussion under the Convention on Fishing,[28] below, it would appear that mariculture has a strong claim to be recognized as a "freedom of the seas." Other Articles, not dependent on the definition of "ships" include Article 15 regarding piracy, since piracy consists of "any illegal acts . . . directed . . . against a ship, aircraft, persons or property in a place outside the jurisdiction of any state." The pollution Articles 24, 25 would, upon implementation, similarly protect the mariculture facility.

Pending development of more specific laws, directly applicable to mariculture facilities on the high seas, inclusion of mariculture installations within the definition of "ship" would make many of the remaining Articles applicable. Specifically it appears that the following apply: Article 4 (ships of landlocked states), Article 5 (nationality of ships), Article 6 (flag state jurisdiction), Article 10 (safety at sea), Article 11 (penal and disciplinary proceedings), Article 12 (assistance, search, and rescue).

Convention on the Continental Shelf[29]

By limiting the definition of natural resources as used in this convention to "the mineral and other non-living resources . . . [and] living organisms belonging to the sedentary species . . . which at the harvestable stage, either are immobile on or . . . are unable to move except in constant physical contact with the seabed or the subsoil," the parties restricted its applicability to some forms of mariculture.[30]

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28. *See* note 32 and accompanying text.

29. Convention on the Continental Shelf, *done* April 29, 1958 (1964), 499 U.N.T.S. 311, 15 U.S.T. 471, T.I.A.S. No. 5578.

30. This has given rise to an amusing if acrimonious dispute between Japan and the United States. We claim that the Alaskan king crab is a resource of the Alaskan continental shelf and, since it is a bottom crawler, is exclusively our resource. The Japanese claim that they can produce divers who can testify that they have seen the animal swimming. Goldie, *International Law of the Sea, A Review of States Offshore Claims and Competences,* U.S. NAVAL WAR COLLEGE REVIEW 43, 49 (February 1972) The debate still rages—*see* Clingan, *The Changing Global Pattern of Fisheries Management,* 10 LAW AM 658 (1978).

Absent a shallow continental shelf or a guyot,[31] it would appear that most mariculture of bottom organisms would take place, at least for the foreseeable future in the ocean areas currently under national jurisdiction. Excerpts from Article 5, however, demonstrate such applicability as exists:

> 1. [Exploration and exploitation] must not result in any unjustifiable interference with navigation, fishing or the conservation of the living resources of the sea [nor research].
>
> 2. [T]he coastal State is entitled to construct and maintain or operate on the continental shelf installations and other devices necessary [for exploration and exploitation] and to establish safety zones around such installations. . .(3 through 8 amplify and clarify the above provisions).

This convention thus allows the construction and operation of a mariculture facility, but only for sessile or bottom-dwelling organisms. It does not address mariculture of fin fish which would inhabit the superjacent waters.

Convention on Fishing and Conservation of the Living Resources of the High Seas[32]

This convention amplifies the concept of freedom of fishing as one of the freedoms of the high seas discussed under that Convention. Since the term "fishing" can be and often is construed to include "taking" or "harvesting" of fish,[33] this convention has direct application to mariculture.

Article 1 reiterates the right of fishing on the high seas, subject (a) to treaty obligations, (b) to the interests and rights of coastal states as provided for in this Convention, and (c) conservation measures described in the Convention.

The thrust of the Convention, as stated in Article 2 is to promote "the optimum sustainable yield from the living resources of the high seas so as to secure a maximum supply of food and other marine

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31. Seamounts are isolated sea floor elevations rising 3000 feet or more above their surroundings. If these underwater mountains have flat tops they are usually referred to as guyots or tablemounts. H. KNIGHT, THE LAW OF THE SEA: CASES, DOCUMENTS, AND READINGS 645 (1975).

32. Convention on Fishing and Conservation of the Living Resources of the High Seas, *done* April 29, 1958 (1966), 559 U.N.T.S. 285, 17 U.S.T. 138, T.I.A.S. No. 5969.

33. *E.g.*, 16 U.S.C. § 1811 (1976) in text at note 40, *infra* as applied to National Law.

products"—a goal in common with the science and industry of mariculture.

This Convention recognizes the duty of states whose nationals are engaged in fishing in international water to adopt measures necessary for the conservation of resources, either unilaterally where no other national is involved, or jointly with any other states represented in the fishery area.

In general, the Articles of this Convention provide guidelines, broad basic goals to be incorporated into treaties between and among nations, and suggestions of reasonable periods for the negotiation required before a nation may take unilateral action with regard to conservation of resources. In such a document, as opposed to those agreements concluded thereunder, one would not expect to find a specific reference to a particular mode of fishing; however, it appears that primitive, long duration forms of mariculture are recognized in Article 13.[34]

This appears to be the most specific reference to mariculture in any of the above four Conventions, and stipulates a long usage prerequisite for regulation by the Coastal State.

The Informal Composite Negotiating Text[35]

From the mariculturists point of view, the significant changes in International Law proposed in the ICNT are both the extension of rights, jurisdiction, and duties of the Coastal State to an exclusive economic zone extending 200 nautical miles from the shoreline,[36] and a major emphasis on pollution control.[37]

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34. ICNT art. 13. 1. The regulation of fisheries conducted by means of equipment embedded in the floor of the sea in areas of the high seas adjacent to the territorial sea of a State may be undertaken by that State where such fisheries have long been maintained and are conducted by its nationals, provided that non-nationals are permitted to participate in such activities on an equal footing with nationals except in areas where such fisheries have by long usage been exclusively enjoyed by such nationals. Such regulations will not, however, affect the general status of the area as high seas.

35. *See* note 8 *supra*. The ICNT is the latest primary negotiating document produced by the current Law of the Sea Conference.

36. ICNT, art. 56 is titled "Rights, Jurisdiction and Duties of the Coastal State in the Exclusive Economic Zone." Article 57—"Breadth of the Exclusive Economic Zone," provides that it "shall not extend beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured."

37. The mariculturist's interest in pollution control is deemed so patent as to obviate discussion; however, the author contends that in this case, the mariculturist is, once again, only a serendipitous beneficiary of the proposed articles. Other arti-

> Article 56 reserves to the Coastal State:
> 1. (a) sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the seabed and subsoil and the superjacent waters. . . .
> (b) jurisdiction. . .with regard to: (i) the establishment and use of artificial islands, installations and structures. . . .

Article 60 amplifies this latter phrase, making the right to construct and regulate installations and structures for Article 56 purposes exclusive with the Coastal State.[38]

Thus, it would appear that, upon conclusion of a treaty containing these Articles, or their acceptance as a new norm of International Law by consensus, the mariculturist can expect his activities to be governed by national or state law since exclusive economic zones will include the thirty-six percent of the sea closest to land,[39] or practically all of the area suitable for development.

C. *National Law*

The lack of consideration of possible effects on mariculture may again be demonstrated by examination of the latests in the series[40] of fisheries management and conservation acts of the United States, that of 1976.[41]

> §1802 Definitions (10) The term "fishing" means
> (A) the catching, taking or *harvesting* of fish. . .
> (B) [attempts]
> (C) *any other activity* which can reasonably be expected to result in the catching, taking, or harvesting of fish, or
> (D) *any operations at sea* in support of, or in preparation for . . .

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cles in the ICNT amplify those portions of the 1958 Convention discussed above, *e.g.* freedom of the high seas (art. 87), fishing on the high seas (art. 166), and since such changes as are proposed have little effect on the mariculturist, they will not be discussed.

38. ICNT, art. 60 also includes the strictures against interferences with sea lanes, requirements for due notice and other measures to insure safety of navigation and of the structures, essentially carried forward from the 1958 Conventions.

39. "The proposed 200-mile economic zone . . . would include . . . 35.86 percent of the total area of the sea, or 37,750,000 square nautical miles, with only 67,517,000 square nautical miles left in the international area." Glassner, *The Illusory Treasure of Davy Jones' Locker*, 13 SAN DIEGO L. REV. 533, 540 (1976).

40. Starting with the Coasting and Fishing Act of 1793. Fidell, *The Coast Guard and Fisheries Law Enforcement*, U.S. NAVAL INSTITUTE PROCEEDINGS, 71 (March 1976).

41. 16 U.S.C. §§ 1811-1857 (1976).

§1812 Exclusive Fishing Management Authority [extends authority over *all fish* within the zone, which extends 200 n.m. seaward of the baseline]
§1853 [provides that fishery management plans submitted as prospective regulations thereunder]
§1853 (b) (1) may require a permit
(2) designate zones where and *periods when*. . .
(3) establish specific limitations on the catch of fish (based on area, species, *size*, number, *weight*. . .)
§1857 [makes it unlawful for any person]
(1) (A) to violate any provision of this Act or any regulation or permit issued pursuant to this Act. . .
(6) to ship, transport, offer for sale, sell, purchase import, export, have custody, control or possession of any fish taken or retained in violation of this Act or any permit or [international] agreement. . .

It is suggested that statutory construction of this Act would be quite strained in order to find it not applicable to mariculture, or to exempt the mariculturist from violations thereof.[42] Obviously, either an amendment or a general exemption law for mariculture will be necessary.

D. *State Law*

"The Submerged Lands Act [43 U.S.C. §§ 1301-43 (1970)] permits the states to license mariculturists within the limits of territorial waters . . . and pursuant to its general welfare policy powers, a state may regulate who shall receive a lease and upon what terms."[43]

In considering who may be licensed and under what conditions, the State would necessarily consider its existing law which, in many cases, would be detrimental to the growth of mariculture.

> To make a mariculture facility maximally profitable, the product must be grown to marketable size as rapidly as possible, with minimum mortality. To this end, new and faster-growing hybrids might be developed. In addition, the threat or presence of disease may necessitate the use of anti-biotics. Food and drug laws that

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42. There is precedent for such construction in People v. Buffalo Fish Co., 164 N.Y. 93, 58 N.E. 34 (1900) cited in Bockrath and Wheeler, *supra* note 4, at 96.
43. Smith and Marshall, *supra* note 3, at 321-22.

> forbid the sale of mollusks treated with anti-biotics may discourage entrepreneurs from venturing into mariculture because they cannot risk the possibility of an entire crop of healthy animals becoming unsalable.[44]

Another source of frustration to the prospective mariculturist can be found in court interpretations of conflicting state law. Bockrath and Wheeler, in their survey of the laws of Maryland, Virginia, and Delaware, cited a Massachusetts case where the court applied a penalty for selling trout out of season to the sale of artificially propagated fish, notwithstanding a statute permitting their culture, because these fish could not be distinguished from other fish illegally caught.

Bockrath and Wheeler concluded that mariculture fit only awkwardly into existing law designed to regulate natural fishing. "The applicability of these laws to new situations is largely a function of chance wording, foibles of drafting, or peculiarities of the subject of the law."[45] That such laws serve to deter development of mariculture is reflected in an assessment by a California mariculturist: "Some of the most time-consuming [challenges] are those posed by state and local government agencies. [O]ne company was required to obtain the approval of 15 regulatory agencies before its operations could commence."[46]

CONCLUSION

> A new area of technological changes which may challenge the traditional international law of marine fisheries exists with respect to maricultural fisheries. . . . Reform [of the law] must represent a change in mankind's attitude towards the living resources of the sea from that of the primitive hunter to that of the farmer who accepts responsibility for the resources he exploits.[47]

It would appear that an increased awareness of the potentials and problems of mariculture would be basic to such a change in attitude. As shown, some of these problems stem from inadvertence and inertia. While some States, such as Delaware, have fortuitously drafted fisheries laws that will accomodate certain forms of mariculture, many have not.[48]

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44. Bockrath and Wheeler, *supra* note 4.
45. *Id.* at 107.
46. Rutherford, *Oysters in Hot Water*, SEA FRONTIERS, 278 (Sept.-Oct. 1975).
47. A. KOERS, INTERNATIONAL REGULATION OF MARINE FISHERIES 28, 329 (1973).
48. Bockrath and Wheeler, *supra* note 4, at 107.

If development of mariculture is not to be deterred or thwarted, it would appear that U.S. mariculturists, and others interested, should accelerate their efforts toward enlightenment of the legislatures of the several States, the Congress,[49] and the various Delegations to the Third United Nations Law of the Sea Conference. Otherwise, mariculture is almost certain to continue to be a stepchild of the Law of the Sea.

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49. Reaction to President Carter's pocket veto of the 1978 Aquaculture Bill indicates interest and commitment on the part of certain Congressmen and Congressional staffs.