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Cultchless Seed Oysters

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Exciting New Hatchery Technique

CULTCHLESS SEED OYSTERS

The development of "free" or "cultchless" spat is exciting to oyster culturists. It may lead to greatly improved oyster culture in the United States and the rest of the world. Spat are separated from artificial substrates at a very early age and grown in trays and tanks without cultch until large enough to plant on beds.

The process was pioneered by W.W. Budge and his associates at Pacific Mariculture, Inc., Pigeon Point, California, in 1967. Their success stimulated other hatcheries to develop their own methods for obtaining "free" spat.

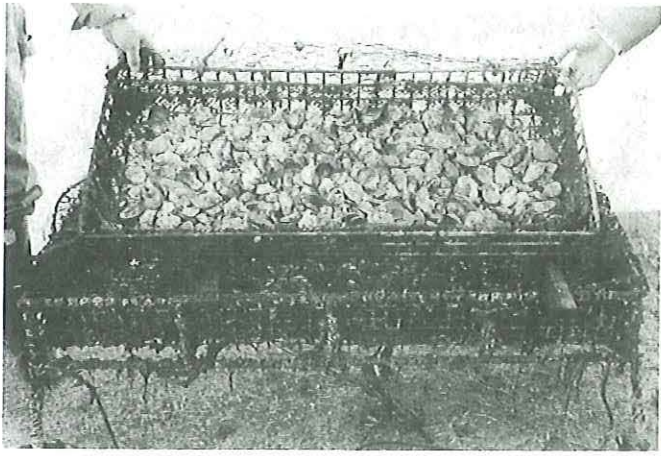
The Virginia Institute of Marine Science (VIMS) at Gloucester Point and also the Windmill Point Oyster Company near Urbanna have developed and are improving methods for producing "free" spat.

After about two weeks of larval life, oysters attach themselves to a substrate such as an oyster shell. At VIMS larvae placed within fine plastic netting or screens are forced to set on threads of the net from which they are easily washed off with jets of water. Sand grains or fine particles of shell are also acceptable to the larvae. Young "free" spat are grown in containers about two weeks on cultured food or centrifuged river water then moved to trays in ponds or rivers.

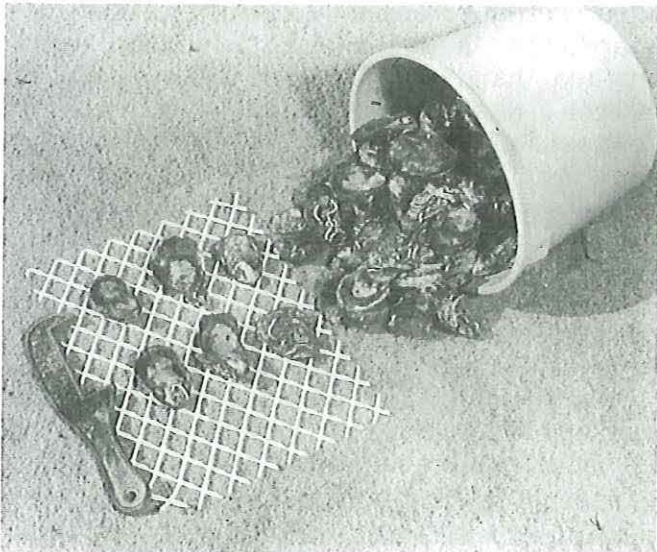
Commercial hatcheries, financed by

public and private funds, have been struggling to compete in costs with wild spatfalls. A major cost has been washing and handling bulky shells used as cultch. Now this step can be eliminated. Commercial shellfish hatcheries have been built in Canada, England, France, California, Connecticut, Massachusetts, New York, Oregon and Virginia. Many are rapidly shifting to production of "free" spat. Methods are in a state of flux as each laboratory and hatchery tries to adapt the process to its needs.

Many potential benefits and problems are associated with "free" spat. Some of the consequences are startling. Millions of spat from one pair of oysters of any species can be shipped anywhere on earth cheaply and efficiently. This increases the urgency for genetic studies of oysters and the necessity to develop fast-growing, disease-resistant strains. Introduction of unwanted species of oysters and their diseases may become critical and difficult to control. The French oysterman, who now offers a choice of European, Portuguese and Japanese oysters, may decide to offer also Chilean and Australian oysters, for example. The Frenchman now pays from one-tenth to one cent apiece for seed oysters, depending upon a wild set that fluctuates annually. Mr. Budge hopes to sell his spat for a penny apiece, or less, depending upon number bought.



Experimental 18 x 40 inch plastic-coated tray with five square feet of bottom contains 265 cultchless oysters (1/5 bushel) without crowding. The larger legged tray contains more free spat and permits experimentation on natural oyster beds. Simpler open-mesh containers could be designed for suspension from floats or set on stringers to hold 50 to 100 oysters per square foot through the first year.



Free spat grown into single oysters at one year of age. The oysters grown in trays in York River from May through November (1968 yearclass) are ready to plant on natural bottom. The five-quart bucket contained 120 relatively thick-shelled oysters weighing about one ounce each. Average length is about 2 1/2 inches as shown by the three-inch culling iron and one-inch plastic mesh for lining trays. The oysters are well shaped and will be marketable in one more growing season. A count of 1200 per Virginia bushel excels James River stock in which 1000 mixed one to four-year old oysters is rated good quality seed.

Nursery techniques or methods of growing "free" spat to sizes resistant to predators such as crabs, fish, drills, and starfish are a serious problem for hatchery seed. Oyster spat, unlike clams, are not able to reattach or dig into the substratum, hence are easily washed away or covered by silt. The challenge now is to grow "free" spat in trays or ponds to a size suitable for planting on oyster beds.

The hobbyist, who wishes to grow oysters in trays suspended from floats or his front yard pier, may benefit from "free" spat sooner than the commercial oysterman in Virginia. Half-grown wild seed oysters can be bought at the rate of about 10 for a penny. The hobbyist who buys a million "free" spat (1/4 to 1/3 inch) with a volume of perhaps one quart should be prepared for rapid expansion of his tray space. Without losses, which will occur, one-inch oysters grown to 3 1/2 inches will increase in volume 25 times. In Virginia, "free" spat should be obtained in May to take full advantage of spring and summer growth the first year. Average conditions should permit marketing or eating tray-grown oysters in two years in Virginia.

VIMS is calling attention to "cultchless" spat now because of many possible developments and implications. Chesapeake Bay has a relatively large supply of wild oysters for harvesting and transplanting, hence hatcheries and "free" spat are probably not competitive here but may be in places such as Long Island, N.Y. Interest is high, as shown by the successful hatchery at Urbanna operated by Mr. Edwin H. Powell, who worked with the VIMS culture program for three years. Also, Mr. Paul Chanley, recent shellfish culturist at VIMS, has moved to Florida to build and operate a commercial hatchery.

VIMS efforts on new hatchery techniques and nursery problems of shellfish are being guided by Dr. John L. Dupuy and Dr. Jay D. Andrews at Gloucester Point and by Mr. Michael Castagna at the Eastern Shore branch laboratory.

Further information on methods for producing "cultch-free spat" may be obtained by writing the Institute.

Prepared by
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