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1972

Economic potential of clam operation

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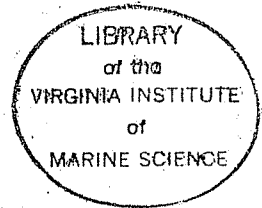
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ECONOMIC POTENTIAL OF CLAM OPERATION

The following estimates are based on the premise that the clam operation will be in an area where clam culture techniques will work. This means the seawater available to the hatchery is of suitable quality for this operation at least during the period that the clam larvae and juveniles are in that system. The food growing method (Glancy method) has been successfully used from Canada to Florida so should not be a problem.

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The planting area should also have water of sufficient quality and have physical properties adequate for clam growth.

Obviously, this requires a test brood, and some salinity samples during periods (after rain, etc.) when the water is at a suspected low quality. Bottom sampling should be carried out to find if wild clams are found in the area and if there is sufficient diversity of age groups to indicate successful annual recruitment. The wild stock will also indicate growth rates.

The estimate of costs for the hatchery are based on actual costs during 1969 and 1970 for construction and from 1969 to 1971 for the equipment. Equipment costs could be reduced. For instance, bag filters could be used instead of a clarifier.

Estimates of operating costs are based on our actual costs and on estimates by other commercial clam operations. Mr. L. L. Burton (Burton's Seafood) gave us harvesting costs and average wholesale price for clams.

Clam production (34,530,000) was based on production figures from January to June 1, 1972. During that 5 month period although several

people worked in the hatchery, the time involved was less than one technician full time. The forty percent survival figure used for each step in the clam production is lower than average. But since we have no experience with large groups, we felt this would be realistic.

If this method is used in a pretested area, assuming no unseen disaster strikes during the first 10 years (during which time loans are paid off), it appears that growing clams has some profit potential.

ECONOMIC SURVEY OF CLAM CULTURE OPERATION

Prices are obtained from actual invoices from 1969-1970 or from estimates obtained by contacting suppliers. Labor costs are based on average wages paid or from estimates taken from similar work or by contacting local tradesmen.

HATCHERY

Materials

1 Trox house (prefab complete)		\$1243.92
667 cinder blocks 8 x 8 x 16"	\$186.76	
19 bags of mortar	27.55	
1 bag cement	1.25	
1 load mortar sand	5.00	
	<u>\$220.56</u>	220.56
27 loads fill dirt (6 yds/\$4.50 ea)	\$123.50	
2 rolls reinforcing mesh	35.60	
33.5 cu. yds. concrete	653.25	
	<u>\$812.35</u>	812.35
1 lot assorted electrical	\$740.07	
1 lot assorted plumbing	761.92	
	<u>\$1501.99</u>	1501.99
1 lot lumber	ca \$ 60.00	
Misc. nails, hardware	50.00	
	<u>\$110.00</u>	110.00
		<u>\$3888.82</u>

Labor

Forms	1 man, 3 days at \$2.50 per hr.	\$ 60.00
Slab	4 men, 2 days at \$2.50 per hr.	170.00
Block	1 man, 4 days at \$3.50 per hr.	112.00
Building	2 men, 14 days at \$3.50 per hr.	748.00
Ventilating system	1 man, 2 days at \$3.50 per hr.	56.00
Electrical	1 man, 3 days at \$4.50 per hr.	108.00
Plumbing	3 days, 2 men at \$8.00 per hr.	384.00
	Total Labor Costs	<u>\$1638.00</u>

Hatchery equipment

2 pumps (extra seals, etc.)		\$ 787.20
4 algae mass culture tanks constructed on premises of plywood and fiberglass	\$120.00 ea.	480.00
50 culture tanks (plastic garbage cans 20 gal.)	3.20 ea.	160.00
6 12-liter plastic containers	13.20 ea.	79.20
1 compound microscope (cheaper or used models could be used, ca \$575.00)		1043.00
4 counting cells	11.00 ea.	44.00
1 Sharples clarifier (Bag filters could be used in place of this machine for: \$251.00 bag adapter heads \$7.50 ea. filters 2.03 ea.)		7670.00
50 troughs	40.00 ea.	2000.00
12 sieves constructed from 12" plastic tubes 9' @ \$10.82/ft. and a variety of Nitex	97.38 189.50	286.88
2 submersible transfer pumps	58.50 ea.	117.00
1 spawning table and sink constructed of wood and fiberglass		100.00
2 air blowers (condi type)		440.00
1 hot water heater		100.00
Misc. items		200.00
		<u>\$13,507.28</u>
Discharge permit application	100.00	
Water tests	600.00	700.00
		<u>\$14,207.28</u>

Field expenses

1 ea. boat and motor		\$1500.00
Survey costs		90.00
60 panels ea. \$7.09		425.40
lumber	\$.60	
bolts	.80	
rod	.75	
Vexar	1.54	
paint	.90	
	<u>\$4.59</u>	
1 hr/\$2.50 labor	2.50	
	<u>\$7.09</u>	

Note: This cost could be reduced by better fabrication and materials.

14 tons aggregate at \$7.50 per ton		105.00
Spreading aggregate		150.00
		<u>\$2270.40</u>

Operating Expenses

1st year	Salaries, 2 technicians/6 mo.	\$6,000.00
	Social Security, medical benefits, workmen's comp., etc.	750.00
	Leases (30 acres)	60.00
	Utilities - electricity, \$100 per mo/6 mo.	600.00
	fuel \$130	130.00
	Telephone, office supplies and misc.	1,000.00
	Transportation	1,000.00
	Boat operation	500.00
	Repair, replacement and additions to panels	200.00
		<u>\$10,240.00</u>
	Interest on \$40,000 loan	3,200.00
	Depreciation allowance	4,401.00
	TOTAL	<u>\$17,841.00</u>
2nd year	Salaries, 2 techs/6 mo.	\$6,000.00
	Social Security, etc.	750.00
	Leases	60.00
	Utilities - fuel	730.00
	Telephone, etc.	1,000.00
	Transportation	1,000.00
	Boat operation	500.00
	Repair, replacement, additions to panels	200.00
		<u>\$10,240.00</u>
	5% increase for inflation	512.00
		<u>\$10,752.00</u>
	Interest on \$40,000 loan	3,200.00
	Interest on \$30,000 loan	2,400.00
	Depreciation allowance	4,401.00
	TOTAL	<u>\$20,753.00</u>
3rd year	Same as 2nd year	\$10,752.00
	5% inflation	537.00
		<u>\$11,289.00</u>
	Interest on \$40,000 loan	3,200.00
	Interest on \$30,000 loan	2,400.00
	Depreciation	4,401.00
	TOTAL	<u>\$21,290.00</u>
4th year	Same as 3rd year	\$11,289.00
	5% inflation	565.00
		<u>\$11,854.00</u>
	Interest	3,200.00
	Interest	2,400.00
	Depreciation	4,401.00
	TOTAL	<u>\$21,855.00</u>
5th year	Same as 4th year	\$11,854.00
	5% inflation	594.00
		<u>\$12,448.00</u>
	Interest	3,200.00
	Interest	2,400.00
	Depreciation	4,401.00
	TOTAL	<u>\$22,449.00</u>

6th year	Same as 5th year 5% inflation	\$12,448.00 <u>622.00</u> \$13,070.00
	Interest	3,200.00
	Interest	2,400.00
	Depreciation	<u>4,401.00</u>
	TOTAL	\$23,071.00
7th year	Same as 6th year 5% inflation	\$13,070.00 <u>654.00</u> \$13,724.00
	Interest	3,200.00
	Interest	2,400.00
	Depreciation	<u>4,401.00</u>
	TOTAL	\$23,725.00
8th year	Same as 7th year 5% inflation	\$13,724.00 <u>686.00</u> \$14,410.00
	Interest	3,200.00
	Interest	2,400.00
	Depreciation	<u>4,401.00</u>
	TOTAL	\$24,411.00
9th year	Same as 8th year 5% inflation	\$14,410.00 <u>720.00</u> \$15,130.00
	Interest	3,200.00
	Interest	2,400.00
	Depreciation	<u>4,401.00</u>
	TOTAL	\$25,131.00
10th year	Same as 9th year 5% inflation	\$15,130.00 <u>757.00</u> \$15,887.00
	Interest	3,200.00
	Interest	2,400.00
	Depreciation	<u>4,401.00</u>
	TOTAL	\$25,888.00

No costs were assessed for taxes.
All figures to nearest dollar.

Depreciation - 20% of \$22,004 capital expenditure (five year replacement).
Operating expenses do not include taxes.

Estimate of Profit Potential

No. of clams spawned - 140
No. eggs - $2,797.721 \times 10^6$
No. clams set - 34.53×10^6
loss of 60%

(No. clams spawned, eggs and No. clams set are taken from actual production data from hatchery from January 1 to June 1, 1972.)

No. clams planted in nursery plots - 13.71×10^6
loss of 60%

No clams planted from nursery to growing areas - 5.2×10^6
loss of 60%

No. clams harvestable 18-24 months - 2.08×10^6

Profit estimate based on 2.08×10^6 clams harvested after 18 months and 12 months thereafter.

1st year	Clams harvested	0
	average price	<u>.03</u>
	gross	0
	harvest costs	<u>0</u>
	net	0
2nd year	Clams harvested	2,080,000
	average price	<u>.03</u>
	gross	\$62,400.00
	harvest costs @ \$2.00/1000	<u>6,240.00</u>
	net	\$56,160.00
3rd year	Clams harvested	2,080,000
	average price + 5% inflation	<u>.0315</u>
	gross	\$65,520.00
	harvest costs + 5% inflation	<u>6,552.00</u>
	net	\$58,968.00
4th year	Clams harvested	2,080,000
	average price + 5% inflation	<u>.033</u>
	gross	\$68,796.00
	harvest costs + 5% inflation	<u>6,880.00</u>
	net	\$61,916.00
5th year	Clams harvested	2,080,000
	average price + 5% inflation	<u>.035</u>
	gross	\$72,800.00
	harvest costs + 5% inflation	<u>7,224.00</u>
	net	\$65,576.00
6th year	Clams harvested	2,080,000
	average price + 5% inflation	<u>.037</u>
	gross	\$77,060.00
	harvest costs + 5% inflation	<u>7,585.00</u>
	net	\$69,475.00

7th year	Clams harvested	2,080,000
	average price + 5% inflation	<u>.039</u>
	gross	\$81,120.00
	harvest costs + 5% inflation	<u>7,964.00</u>
	net	\$73,156.00
8th year	Clams harvested	2,080,000
	average price + 5% inflation	<u>.041</u>
	gross	\$85,280.00
	harvest costs + 5% inflation	<u>8,362.00</u>
	net	\$76,918.00
9th year	Clams harvested	2,080,000
	average price + 5% inflation	<u>.043</u>
	gross	\$89,440.00
	harvest costs + 5% inflation	<u>8,780.00</u>
	net	\$80,660.00
10th year	Clams harvested	2,080,000
	average price + 5% inflation	<u>.045</u>
	gross	\$93,600.00
	harvest costs + 5% inflation	<u>9,219.00</u>
	net	\$84,381.00

Ten year total: \$627,210.

Money Flow

1st year	\$40,000 borrowed at 8%/10 yrs.	
	Building and equipment costs	\$ 22,004
	1st year operating costs	<u>17,841</u>
	deficit	\$ 39,845
	1st year gross income	0
	profits	<u>- \$ 39,845</u>
2nd year	\$30,000 borrowed at 8%/10 yrs. = \$70,000 total loans	
	1st year deficit	\$ 39,845
	2nd year operating costs	<u>20,753</u>
	deficit	\$ 60,598
	2nd year gross income	<u>56,160</u>
	profits	<u>- \$ 4,438</u>
3rd year	2nd year deficit	\$ 4,438
	3rd year operating costs	<u>21,290</u>
	deficit	\$ 25,728
	3rd year gross income	<u>58,968</u>
	profits	\$ 33,240
4th year	3rd year profit	\$ 33,240
	4th year operating costs	<u>21,855</u>
		\$ 11,385
	4th year gross income	<u>61,916</u>
	profits	\$ 73,301
5th year	4th year profit	\$ 73,301
	5th year operating costs	<u>22,449</u>
		\$ 50,852
	5th year gross income	<u>65,576</u>
	profits	\$116,428

At this point loans could be paid off and still leave some capital and operating costs for the 6th year.

Loans	\$ 70,000
Operating costs for 6th year	<u>23,014</u>
Total costs	\$ 93,014
Profit at 5th year	\$116,428
Total costs	<u>93,014</u>
Capital remaining	\$ 23,414

Summary

Initial costs (building, equipment, etc.)	\$ 22,004
Ten year operating costs	<u>226,414</u>
Total costs	<u>\$248,418</u>
Ten year gross profits	\$627,210
Gross profits	\$627,210
costs	<u>248,418</u>
net profits	<u>\$378,792</u>
minus loans	<u>70,000</u>
10 year total profits	<u>\$308,792</u>
Average annual profits	\$30,879

These do not include tax costs or managerial or entrepreneur costs.

Opportunity costs of management would probably be estimated at 15-20 thousand per year leaving an annual profit in excess of \$10,000 per year.

Operations Chart

Purchase or collect clams from areas where they are ready to spawn

1 day

spawn approximately 2-20 adults per week to 140 clams
1 day each spawning

fertilize eggs and raise larvae to setting
12 days each batch

grow post set to 2-5 mm
6 weeks in troughs

prepare nursery areas
1 day each plot

move out to nursery areas
1 day

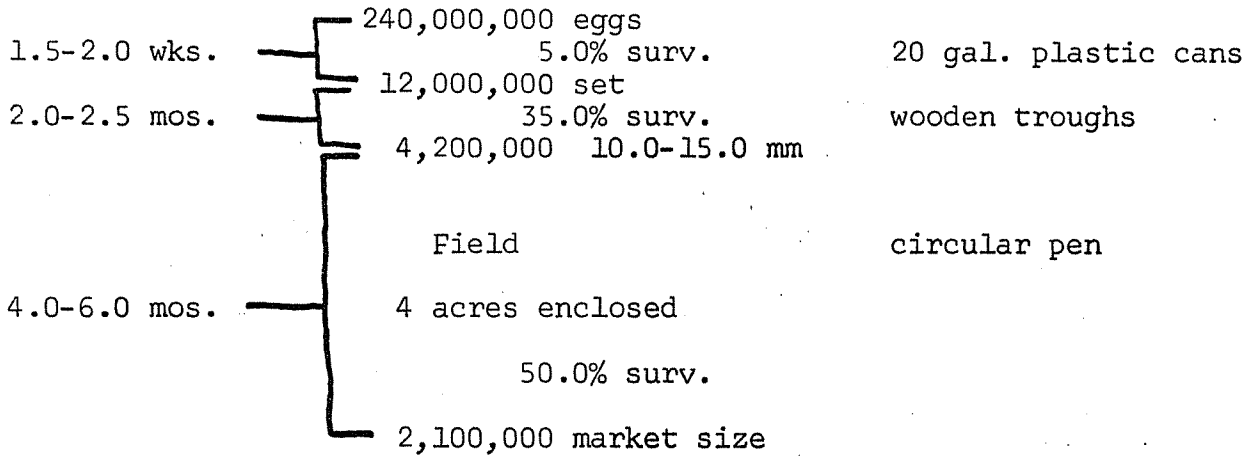
prepare grounds
1 day per 5 acres

move from nursery to growing ground
2 days per batch

harvest - 10,000 per man day
2,000,000 20 to 30 man days or \$2 per 1000

Economic Survey of
Scallop Operation

Fig. I
Operation Chart
Hatchery



6.5-9.0 mos. from egg to market size.

COST OF HATCHERY AND FIELD OPERATION, OPERATING
EXPENSES, ANNUAL EXPENSES

Hatchery

Cost of constructing and equipping \$19,734.00

Field

Boat and motor \$1,500.00

Survey costs 90.00

Panels to enclose 4 acres (297 @ \$12.00 ea.) 3,564.00

Misc. 500.00

Total

5,654.00

TOTAL COST OF HATCHERY AND FIELD OPERATION

\$25,388.00

Operating Expenses

Electricity \$100.00/mo. for 6 mo. \$ 600.00

Salaries

1 manager for 12 mos. 12,000.00

1 technician for 12 mos. 7,000.00

Harvesting 60.00

Lease (4 acres) 6.00

Medical Expenses 500.00

Social Security 250.00

Cost of shucking (\$2.00/gal) 4,000.00

Depreciation 5,078.00

Interest payment on \$65,000 2,964.00

Total Operating Expenses

\$32,458.00

Payment on principal

6,500.00

TOTAL ANNUAL EXPENSES

\$38,958.00

Money Flow

1st year	Money borrowed at 8% over 10 years	\$65,000.00
	Annual expenses + cost of setting up hatchery (covered by loan)	\$64,346.00
	Income = Gross Profit	\$45,000.00
2nd year	Capital carryover	\$45,000.00
	Annual expenses + 5% inflation	-40,886.00
	Available capital	<u>\$ 4,114.00</u>
	Income (Includes 5% increase in average price per scallop)	<u>47,200.00</u>
	Gross profit	\$51,314.00
3rd year	Capital carryover	\$51,314.00
	Annual expenses + 5% inflation	-42,939.00
	Available capital	<u>\$ 8,375.00</u>
	Income (Includes 5% increase)	<u>49,600.00</u>
	Gross profit	<u>\$57,975.00</u>
4th year	Capital carryover	\$57,975.00
	Annual expenses + 5% inflation	-45,086.00
	Available capital	<u>\$12,889.00</u>
	Income (Includes 5% increase)	<u>52,080.00</u>
	Gross profit	<u>\$64,969.00</u>
5th year	Capital carryover	\$64,969.00
	Annual expenses + 5% inflation	-47,340.00
	Available capital	<u>\$17,629.00</u>
	Income (Includes 5% increase)	<u>54,600.00</u>
	Gross profit	<u>\$72,229.00</u>
6th year	Capital carryover	\$72,229.00
	Annual expenses + 5% inflation	-49,707.00
	Available capital	<u>\$22,522.00</u>
	Income (Includes 5% increase)	<u>57,330.00</u>
	Gross profit	<u>\$79,852.00</u>
7th year	Capital carryover	\$79,852.00
	Annual expenses + 5% inflation	-52,192.00
	Available capital	<u>\$27,660.00</u>
	Income (Includes 5% increase)	<u>60,196.00</u>
	Gross profit	<u>\$87,856.00</u>
8th year	Capital carryover	\$87,856.00
	Annual expenses + 5% inflation	-54,802.00
	Available capital	<u>\$33,054.00</u>
	Income (Includes 5% increase)	<u>63,206.00</u>
	Gross profit	<u>\$96,260.00</u>

9th year	Capital carryover	\$96,260.00
	Annual expenses + 5% inflation	<u>-57,542.00</u>
	Available capital	\$38,718.00
	Income (Includes 5% increase)	<u>66,366.00</u>
	Gross profit	\$105,084.00
10th year	Capital carryover	\$105,084.00
	Annual expenses + 5% inflation	<u>- 60,419.00</u>
	Available capital	\$ 44,665.00
	Income (Includes 5% increase)	<u>69,684.00</u>
	Gross profit	\$114,349.00

At end of the 10th year the loan would have been paid off reducing operating expenses to \$50,955 plus inflation costs for the 11th year.

Summary

TOTAL GROSS PROFITS FOR TEN YEARS	\$565,262.00
TOTAL ANNUAL EXPENSES FOR TEN YEARS	<u>450,913.00</u>
TOTAL PROFITS	\$114,349.00
AVERAGE ANNUAL PROFIT	\$11,435.00

State and federal tax deductions have not been included.

The entire operation has been projected over a ten-year period at the end of which the \$65,000 loan would have been paid off and most equipment could have been replaced, if necessary.

The operation is based on two men working a full year. One would be trained in hatchery work and would manage the operation. The second would act as a technician.

Although the average annual profit is small (\$11,435), any reduction in annual expenses would increase profit. For instance, if the \$65,000 did not have to be borrowed, annual expenses would be reduced by the amount of the loan payment. Also if the individual interested in scallop culture was to learn the techniques involved and then manage the hatchery himself, the \$12,000 managerial fee would be his plus whatever profits were realized for the year.

A number of other ways probably exist in which expenses could be reduced without reducing production and ultimately profits.