AN ECONOMIC AND SOCIAL EVALUATION OF AN OYSTER MARICULTURE TRAINING PROGRAM FOR LONG ISLAND COMMERCIAL FISHERMAN

Submitted to: East End Economic and Environmental Institute, Inc.

By Steven Lang

AN ECONOMIC AND SOCIAL EVALUATION OF AN OYSTER MARICULTURE TRAINING PROGRAM FOR LONG ISLAND COMMERCIAL FISHERMAN

Table of Contents

Page

INTRODUCTION.....1

METHODOLOGY.....13

SHELLFISH MARICULTURE ON LONG ISLAND.....14

THE OCCUPATIONAL IDENTITY OF THE BAYMEN AND ITS COMPATIBILITY WITH MARICULTURE.....17
- The Independent baymen of Long Island.....17
- Full Timers versus Part Timers.....21
- From Gatherers to Planters.....23
- Baymen and the Community: Insiders and Outsiders.....25
- Scientific Knowledge versus Local Knowledge.....27
- Rugged Individualism and Cooperation and Market Opportunities.....28
- Baymen, government, and Natural Resource Managers.....32
- Multiple Use Conflicts: Baymen and Recreational Users.....38

INDEPENDENT BAYMEN AND THE WATERY COMMONS.....39
- The Enclosure of the Common.....40
- Colonial Patents, Baymen and the Modern Commons.....43
- The Commons, Natural Areas, and Mariculture.....47
- Baymen and the Tragedy of the Commons.....52
- Informal Rules, Territorial Etiquette and Indigenous Management in the Long Island Commons.....57
- The Tragedy of the Commoners: Big Fellows versus Small Fellows.....62

OYSTER MARICULTURE AND THE ENVIRONMENT.....69

PRESERVATION, NOSTALGIA AND THE IMAGE OF BAYMEN.....70

SUMMARY.....77

LITERATURE CITED.....79

APPENDIX I – Persons Interviewed.....84

TABLE I – Evaluation of Success.....86

TABLE II – Marketing Success.....88

ECONOMIC AND SOCIAL EVALUATION OF AN OYSTER MARICULTURE TRAINING PROGRAM FOR LONG ISLAND COMMERCIAL FISHERMAN

Despite a long history of shellfish mariculture, numerous public shellfish enhancement programs, and large tracts of available and potentially productive underwater land, New York's mariculture industry remains stagnant. Despite the proven success of mariculture and numerous attempts to promote it, it remains a marginal almost hidden enterprise on Long Island. The constraints on shellfish mariculture are social, political and economic rather than environmental or technological. According to Anderson, (1997 27) "If constraints could be lifted, and the business climate in Long Island improved, aquaculture production could potentially provide the region with an observable contribution to its economic viability." For that potential to be realized, attitudes will have to change so that mariculture is viewed as a legitimate marine activity.

In the 1980's, several reports accessing the opportunities and constraints for private mariculture in New York concluded that the growth of private mariculture will require a change in attitudes by government and public alike as well as management plans that assure equitable access to common property marine resources. By far one of the major obstacles hindering the development of mariculture has been the antagonistic attitude of commercial fisherman who have a long history of being opposed to the private use of public underwater land. The history of shellfishing in Long Island, like the history of shellfishing in the United States at large, has been filled with struggles and conflicts between small scale, commercial fisherman who harvest wild shellfish from the public resources and shellfish farmers who plant and cultivate shellfish and are dependent upon a system of exclusive property rights. A strong anti-leasing stance is an important part of the baymen's occupational identity. Attempts to restrict easy access to public resources or

to privatize shellfishing through the development of mariculture fuel opposition and resistance.

In 1984, amidst a growing concern that fishery opportunities were entering a period of irreversible decline, the New York State Urban Development Corporation (UDC) attempted to set up baymen in mariculture businesses. Using state and private-controlled underwater lands, and approximately one million dollars in start up grants and loans, the UDC put their plan before baymen. Local baymen were outraged and did not want anything to do with mariculture, fearing that it would threaten their way of life. At public meetings and in the local press baymen voiced their opposition to mariculture in their waters.

> We are opposed to aquaculture in public waters. We feel it is highly questionable to turn over public resources to private interest for rapid expansion of an uncertain and possibly dangerous activity. With aquaculture we have the death knell of commercial fishing as a free way of life- an unnecessary death caused by interests that are too eager to turn the seacoast into a factory.
>
> If you create small farms, it is just a matter of time before the big money comes in and sucks them up. That way you will be putting baymen out of work. And who is to decide who is to get the leases and which don't.
>
> In their studies and policy reports, the natural resource managers and scientist take a lot of liberties with history. I see history from a baymen's point of view, not from a managers point of view. The negative attitude of baymen toward leasing is drawn from experience.
>
> The contention that enclosure by leasing, franchise or grant poses no threat to free baymen is not born out by history or present day reality. The suggestion that to be against leasing is to be against free enterprise and capitalist endeavor is flawed. We are not dealing with the manufacturing of a product in a factory. We are dealing with the use of a public resource. To understand the conflict between baymen and leaseholders it is necessary to understand the concept of the enclosure of the commons. In England this practice gained legal sanction in 1235. The intent was that the barren land would be enclosed so that it might be cultivated. The land grabbing which ensued left thousands of peasants dispossessed. Much of the land that had been enclosed was not barren at all; It was productive common land that had supported peasants for centuries. The enclosure of underwater lands in Holland had, by 1879, resulted in the displacement of Dutch shellfisherman; many of those fisherman made their way to Long Island. There is no doubt that their

experience with enclosure has had a profound effect on New York Shellfisheries.

Many local baymen regarded UDC officials as urban "outsiders" representing the interest of alien big business. It did not help that UDC personnel spent most of their time in Manhattan and were not in touch with local traditions or the history of oppostion and angry feelings associated with the leasing of puplic lands..

Even though there were ominous signs of impending decline by the mid-eighties, many fisherman were still confident that the resources would rebound. Although the UDC painted a bleak economic scenario, species like striped bass, bay scallops and groundfish still enabled baymen to earn a living. At the present time, fisherman are much less confident about making a living on the water. Indeed, a majority of baymen have been forced off the water and have turned to other types of work. Amidst a steady decline in the natural stock and shrinking opportunities, many of the remaining baymen have begun to reconsider their negative attitude towards mariculture. Indeed, a few are beginning to think that some type of mariculture will be necessary if they are to survive as working fisherman.

In 1995, Cornell Cooperative Extension with funding from the East End Economic and Environmental Institute of Riverhead New York, an organization dedicated to promoting environmental sustainable development in Eastern Long Island, developed a program to help endangered Long Island fisherman by training them and getting them started in small-scale oyster growout businesses that would supplement their declining incomes. The program consisted of two phases. In each phase, approximately 20 fisherman who decided to participate in the program were given oyster seed, culture gear, and informal training on oyster culture technique. The

program was designed to help fisherman who were familiar with the marine environment and had their own boats and gear.

A major objective of the oyster mariculture training program is to encourage small-scale mariculture development by changing attitudes on the part of baymen and other people in the region who have traditionally been opposed to it. The operating logic of the pilot program was to create opportunities for a few baymen to become successful so that then other baymen would become interested and pursue mariculture on their own. Other fishermenan making money is the best publicity for mariculture. In many cases, changes in the fisheries are initiated by a small group of "highliners"-fishermen who are highly successful. Typically, fishermen are skeptical about making major innovations until they see concrete examples of success among fellow fishermen. This is surely the case with mariculture in the Chesapeake region and in Florida. According to Leslie Sturmer, a researcher from Florida's Harbor Branch Oceanographic Institution, when the graduates of a mariculture training program achieved a degree of success and started driving new pickup trucks, other fishermen became very interested and started inquiring about getting involved in mariculture. For watermen, seeing is believing and change from the bottom up or from inside the community soon followed. Mariculture skeptics and opponents soon became enthusiastic converts and supporters.

The Long Island pilot mariculture training program is having a similar effect and favorable attitudes towards mariculture on the part of baymen and others are evolving slowly. Despite difficulties and failures, several of the participants are optimistic about mariculture and feel that it is the way of the future on Long Island. A participant from Southold remarked that "Baymen have a wait and see attitude about oyster farming. If it starts to work then others will jump on the

bandwagon." Another participant from Southampton made a similar comment. "If oyster mariculture works, the word will get out that this is a good thing. When you work on the water the word gets out fast."

Several participants in the mariculture training program as well as others in the New York natural resource management systems point out that the collapse of the wild harvest fishery is one of the major reasons for changing attitudes toward mariculture. According to Larry Cantwell, the East Hampton Village Administrator and former appointee to the Atlantic States Marine Fisheries Commission, "Attitudes towards leasing underwater lands for small-scale shellfish farming have changed in the last 5 years because baymen are finding it more and more difficult to survive as fisherman. There is support for mariculture on the part of baymen today mainly because many baymen have left the water and been phased out because of the decline in the natural stocks." According to Robert Rheault, a marine biologist and small-scale mariculturist from Rhode Island, "I hate to say it, but mariculture moves forward when independent baymen or waterman are forced out of business..Until all baymen are pushed out of the industry and they are all painting houses and driving buses so they can no longer fight you then you can succeed in aquaculture. Until then you can't. It is sad but true." Several participants in the program made similar comments:

"Since baymen have fallen on hard times they are more receptive to mariculture"

"Baymen like to take advantage of the bounty when it is there-but those days are over."

"Some baymen keep saying mother nature will fix things up and the scallops are coming back and the fish returning. They won't face reality. Their heads are in the sand".

At the heart of the oyster mariculture training program is the notion that top-down development and management schemes initiated from distant external authorities or outsiders will

not change attitudes on the part of baymen and will probably be counterproductive and hinder development of mariculture. Even though change has to emerge from within, it must be facilitated in non-threatening ways that encourage active participation on the part of baymen. In 1985, a report of a study by the Coastal Ocean Science and Management Alternatives Program (COSMA) of the Marine Science Research Center of the State Unversity of Stony Brook, which focused on ways that mariculture might help to preserve the commercial baymen of Long Island concluded that:

> Economic feasibility is unlikely to be demonstrated until someone gains exclusive access to a segment of bay bottom, resolves these technical barriers and makes money raising clams.. Until then, clam culture remains a risky enterprise. Very few people are willing to take the financial risk required to develop a new industry especially in the face of local opposition to leases and assignments of baybottom. At the same time, opposition is unlikely to moderate in favor of an unproven activity. The result is an impasse to development. (XX-15)

The same conclusions could be applied to the development of small-scale oyster mariculture at the present time. Success ultimately depends on the ability to transform the pilot program into a long-term institutionalized activity. For this to come about, baymen will have to have continued access to underwater lands. The fact that many participants feel uncertain about this possibility is a major barrier to project success in terms of morale level. Some baymen have pointed out that it is hard to be enthusiastic and positive given the sense that they will not be able to continue to cultivate oysters after the pilot program time period is up. Quite a few are pessimistic and have a why bother attitude."What is the point of getting involved and putting in a lot of time and work into this if they're going to kick us out." A participant from Southampton echoed similar complaints: *"Why spend time trying to learn something new and develop new skills if we can't put them into practice."*An East Hampton baymen, who was very bitter, remarked that, *"I think mariculture is*

a great thing. Why bother to see if something works-and it does work- if they aren't going continue leasing us areas. Even If I am successful with the pilot program, I won't invest my time and money in state waters which aren't any good." A grower from Southampton who felt that the program was a success that should be continued argued that, "*It is like teaching someone how to drive a car and not giving them a license."*

What will help bring about opportunities that will foster success? In an intrinsically uncertain and risky environment, meager institutional support on the part of development agencies could result in negative and defeatist attitude among the very people the project is encouraging to think in new ways. The result could be a self-fulfilling prophecy whereby institutional inertia ensures the status quo in terms of attitudes and does nothing to weaken the impasse to development that continues to stifle private mariculture in the region. In terms of promoting the development of mariculture cottage industries, it is important to emphasize that changing attitudes on the part of individual baymen, while extremely important, is not enough. Even though some baymen have achieved a degree of economic and technical success and are supportive and enthusiastic about mariculture, their individual experiences and attitudes have to be backed by favorable institutional change. Changing attitudes is necessary but not sufficient.

Government agencies have to take a role in fostering development by helping to overcome institutional barriers. The long and difficult process of institutionalizing mariculture as a way of life has to based on some type of co-management arrangement between baymen and government agencies. Development schemes have to incorporate attitudes and concerns of baymen and include them in project designs and management arrangements. It is important to remember that fishery management involves much more than biology. It is a human concern that involves people

managing people. According to William Wise, Associate Director of the Marine Science Research Center of the State University of Stony Brook:

> While the primary goal of fisheries management is the continued existence of fish stocks in some reasonable abundance, fishery managers of late are increasingly involved in such issues as allocating portions of the allowable catch to competing user groups or determining whether and how the economic livelihood of fishing communities or individual fisherman can be preserved. These issues take fishery managers far from the relatively familiar arena of fish biology and population dynamics into the alien and complex world of law, socioeconomics, anthropology, political philosophy, and political intrigue.

In a similar vein, Lee Koppleman, a Suffolk County planner who has been very much involved in promoting mariculture in Suffolk County, has pointed out that fishery management is intrinsically a political and economic affair. "Environmental discussions are hence, ineluctably political.... and, thus whoever wishes to pursue the achievement of a sound environment must be prepared to deal with the relevant political factors." (Koppelman 1991:89)) As such, the human and social concerns of people being management have to part in parcel of management schemes from start to finish. At the present time on Long Island, there are several existing institutional arrangements which can help to foster private small-scale mariculture in a sustainable and equitable fashion.

The oyster mariculture training program has been very successful. Underlying its goal of helping endangered baymen is the notion that, mariculture, if developed rationally and in ways that are socially acceptable, could help to preserve the traditional baymen and enable them to follow the waters in their customary ways.

Unlike 1984, there are several signs that contemporary baymen are viewing small-scale mariculture in a more favorable light.

1. Since 1982, New York State temporary assignments for small off-bottom shellfish mariculture sites have become an avenue for baymen to practice some type of mariculture. It has become an acceptable practice to many of the baymen who are violently opposed to leasing the public water to private companies. In 1998, 15 people applied for temporary assignments to engage in small-scale off-bottom shellfish mariculture. There seems to be no evidence that these prospective growers were influenced by the oyster mariculture training pilot program although, upon learning about it, wished that they had been.

2. There is a major difference between the off-bottom containerized oyster mariculture advocated by the training program and traditional on-bottom hard clam mariculture advocated by the UDC in 1984. If sites are carefully chosen to insure that areas are not naturally productive, then off bottom transient gear oyster mariculture is compatible with traditional in-shore fishery practices and will not intrude on wild harvest baymen.The baymen's criticisms and fears of mariculture apply more to large-scale on-bottom systems than to the more flexible transient gear, off -bottom systems. The later system is an appropriate technology that is socially and environmentally sustainable.

Many baymen have developed a sense of respect for shellfish culture. Much of the criticism directed at mariculture in the past applied to larger extensive systems that used mechanical dredges to harvest natural shellfish. Baymen were at a disadvantage and felt the "oyster barons" were taking from the public natural bounty. Cultivating shellfish and turning unproductive areas into productive ones involves constant work and effort.

3.. Baymen aren't against all entrepreneurial activity per se but are against large-scale

companies who make it difficult for the little guy to compete economically. While many of the regions large-scale capital intensive shellfishing companies have declined and gone out of business due to a combination of factors, many feel that small-scale labor intensive cottage industries owned and operated by baymen might have a better chance to succeed. According to a participant, "*LIOF went out of business because of mismanagement. They blamed it on brown tide but they didn't run the company well. It was owned by a corporate Manhattan firm who ran the company to the ground. Farming isn't a business. On paper it looks fine but in reality it takes a lot of work by people who are dedicated and love the work. It isn't a corporate thing, it is a way of life.*"

4. At the present time, unlike the past, baymen exert a strong influence in management affairs and are in the position to make sure that history doesn't repeat itself. Institutional arrangements which give baymen a say in management affairs should be vigorously maintained and strengthened and laws could be enforced that ensure the vitality of the indigenous fishers. Throughout the region, baymen play a large role in marine advisory committees which help to shape shellfishing policies. At the present time, many of the fears of mariculture development are no longer valid since baymen are in a strong position to shape and direct mariculture development policies, unlike in the past when mariculture policies and legislation reflected the interests of large-scale shellfish companies. For example, they are in strong positions to make sure that laws could be institutionalized to protect the traditional lifestyles and folkways of the Long Island baymen.

5. According to an observer of a March 27, 1986 UDC meeting on mariculture, baymen suggested that "New York should let other states experiment with maricuture and then take

advantage of their results in the future." Since that time, successful mariculture business are emerging in other regions, which in many cases are owned and operated by waterman and fisherman. This is further convincing evidence that traditional baymen have much to gain and little to lose from small-scale shellfish mariculture.

6. There is a growing emphasis on regional agricultural and fishery products on the part of local communities. Locally produced shellfish is seen as an economic asset to an area's tourist economy.

7. Environmental concerns about sustainable development and water quality not directly related to commercial fishing are playing a larger role in fishery management. Proponents of commercial fishing should be concerned because many environmental groups and their constituents regard aquaculture as destructive. Off-bottom shellfish mariculture is for the most part regarded as a favorable activity that enhances water quality and contributes to the integrity of the estuarine system. In recent years, baymen in trying to preserve their traditional heritage have had to enlist support from environmentalists and others who feel strongly that baymen are a vital aspect of the rural character of the region. Small-scale shellfish mariculture does not threaten the rural character of the region and will help to preserve the traditional lifestyles of the Long Island baymen.

The success of the training program ultimately rests upon the ability of participants to transform their knowledge and experience into long-term action. The fact that some participants plan to invest their own time and money in mariculture after the pilot program period is over means that the program has been successful. In the words of a Long Island

official who was instrumental in the 1984 mariculture battles, "Even if the just one person makes it, then the project is a success. If two or three succeed then the project will have been worth the money, time and effort. It is a way of muddling through until mariculture becomes entrenched and institutionalized. Every little bit helps."

METHODOLOGY

This report focuses on attitudes and social perceptions of most of the active program participants as well as significant people involved in mariculture development issues in the region. While it utilizes historical and biological data, the main focus is on the meanings and interpretation that individuals attach to such data. Since shellfish management is intrinsically a social and political affair, values, attitudes, and perceptions of the mangers and the managed play a large role in way the fishery is structured and organized.

The baymen's attitudes toward private mariculture are not homogenous nor internally consistent. Despite the fact that they hold diverse and complex viewpoints, stereotypical and exaggerated social imagery is constantly used in the local political arena.

Since many of the baymen are very sensitive when talking about money I tried to obtain information in non-obtrusive ways. It became apparent to the investigator early on that speaking about their experiences was a sensitive issue for many of the people being interviewed and they did not want their names to be used in public. As a result, I refrain from using names in this report unless permission to do so was granted. However, a list of informants is provided in Appendix 1. Some participants refused to be interviewed and I learned from other participants that they were not very satisfied with the program. All interview tapes are located at Cornell Cooperative Extension office in Riverhead.

In this document, quotes from participants in the program who were interviewed are placed in italics while quotes from non-particpants and secondary secondary sources are not.

SHELLFISH MARICULTURE IN LONG ISLAND

While oystering along with other types of shellfish gathering and fishing was always a subsistence pursuit for the first settlers of the region, in the early 1800's it developed into a major commercial activity. In the 1840's with the steady depletion of natural beds, oysterman began experimenting with oyster planting in an attempt to revive the dying industry. Local towns bordering on the Great South Bay began leasing bay bottom for oyster planting, and by the late 1800's much of the bay was leased to private oyster growers.

It is important to distinguish between extensive and intensive oyster mariculture. Extensive systems involved transplanting and bedding shellfish. The early phase of oyster farming was characterized by transplanting small young oysters called spat from the original beds to new grounds where they were left to grow to marketable size, usually from two to four years. Bedding involved moving mature oysters from one area to another. Intensive mariculture on the other hand involves artificial breeding, hatching and the growing out of oysters. While people in many parts of the world have been improving oysters by raising them in other than their native waters for at least two thousand years, raising seed was another matter. At its peak, the Long Island oyster industry never developed sophisticated intensive culture techniques.

There has been a long history of oystering in the Peconic Estuary and Eastern Long Island. Beginning in the 1890's oyster companies planted seed oysters from Connecticut in Gardiners and Peconic Bays which were grown to maturity or later transplanted in the Great South Bay.

By 1900 these waters gained distinction as bedding or maturing ground for Long Island Sound

oysters. At the turn of the century, Long Island Sound oyster meat production was estimated at over 10,000 metric tons annually, with aproximately 1,000 men utilizing 450 vessels (Koppelman, 1979) . In the 1930' s and 1940's, oyster beds in New York, Connecticut, and Rhode Island became unproductive, and there is still uncertainity surrounding the exact cause. Production reached a low in the 1950's and 1960's, and by 1965, total New York oyster production was valued at less than $500,000.

The decline in natural seed generated an interest in artificial propagation. The first successful attempt at large scale artificial propagation of the oyster in New York was carried out by F. Wells and Glancey in 1921 at the Blue Points facility in West Sayville. Except in the laboratory, nothing came of the successful research for about 40 years. A modified version of this technique, the Milford method, is still used today.(Anderson, 1997)

Long Island Oyster Farms (LIOF) was the largest shellfish producer in the East End region. In 1979 it had control of approximately 8,000 acres of underwater land in Gardiners and Peconic Bays. In mid 1980's most of these lands had reverted to state control after the company declared bankruptcy. There is uncertainty surrounding the exact cause of LIOF's demise. As we shall see, when baymen and others talk about the risk and uncertainty associated with mariculture many point to the failure of LIOF. "If a large company like that can't make it how do you expect of bunch of baymen to make it."

At the present time two large companies in Western Long Island, Blue Points and Flowers Oyster Company, dominate the local shellfish mariculture business.

Shellfish relaying, which involves the transplanting of shellfish from uncertified waters into clean waters for depuration, accounts for approximately a third of New York's hard clam

production. The transplant program is an activity that relies on off-bottom temporary assignments and technology that is very similar to the gear used by participants in the oyster mariculture training program. In terms of this report, transplanting is important because it is a version of mariculture that is practiced and accepted by some baymen.

There are several hatcheries, both public and private. The towns of Southold, East Hampton and Islip have their own marine hatcheries and are currently producting oysters, hard clams, and bay scallops for stock enhancement programs. Southampton, East Hampton, Southhold as well as other towns in Suffolk County practice both shellfish transplant and enhacement. For the most part, the relationship between the commercial and municipal shellfish programs is one of mutual benefit.

THE OCCUPATIONAL IDENTITY OF THE BAYMEN AND ITS COMPATIBILITY WITH MARICULTURE

Attempts to legitimize and institutionalize private mariculture on Long Island must address the issue of its compatability with the baymen's lifestyle. For many proponents of mariculture, the social and political obstacles to the development of mariculture in Long Island can be reduced to one word-baymen. While advocates of mariculture see it as a means for baymen to diversify and to exert a degree of control over the unpredictable forces of both nature and the market, many baymen see it as the continuation of the longstanding conflict between shellfish farmers and independent baymen. Baymen are fiercely opposed to private mariculture because they feel it will encroach on their traditional way of making a living. They are fearful that the leasing of underwater lands to individuals would displace them and turn the bay's bounty over to a privileged few.

The Independent Baymen of Long Island

The baymen of Long Island are independently employed workers who own their own boats and equipment. Unlike their offshore counterparts, who travel far out into the ocean in larger vessels for days, weeks and sometimes months at a time, baymen work close to shore, often within sight of land, from small boats on a daily basis.

Gaining entry in the occupation is relatively easy and inexpensive. The baymen's tools and equipment are quite simple and especially unique, although they reflect local conditions. While baymen are far from wealthy, they are free from time clocks, bosses and routine work. Being a baymen is attractive to those who value personal freedom and independence more highly than making a large amount of money.

highly than making a large amount of money.

Being one's own boss, even if it is on a part-time basis is key. In the 1988 documentary film entitled *Troubled Waters*, directed by Peter Wetherell, baymen Vincent Daley stresses emphatically:"No matter what you're doing-whether if be potting eels, trap fishing or digging clams, I think the word baymen and independence have to go hand in hand." Typically baymen claim that their work involves more than economics. According to a particpant from Southhold, "*Being a baymen is more than a job, it's a way of life. Its deeper, it's in your blood.*" It is precisely because fishermen regard their livelihood as a way of life instead of a rational choice of economic activity that many continue to work despite declining yields, dwindling stocks, and substandard incomes. According to McGoodwin, (1990:46) It is precisely because small scale fishing is "..both a business enterprise and a social and cultural enterprise-a way of life" that fishermen will often continue to work in a fishery even when it no longer provides them any economic return. While the fact that fisherman don't behave soley as rational economic actors has bestowed upon them a noble and romantic status, it is viewed by many fishery scientists and experts as one of the main fetters to rational resource management.

In their occupational narratives, baymen typically emphasize cherished aspects of their work-their fierce independence, their love of nature, and their hatred of rules and regulations-by contrasting it with the time-bound, subordinate indoor life of the factory worker. A bayman who left a higher paying job to work on the water remarked," *We are not company men. They don't call us independents for nothing. We are free spirits who work when and where we want to, not when some bureaucrat blows a whistle.*" According to a retired conservation officer who worked for the DEC,"Most of the followers of the bay are the salt of the earth. They

come from old stock and they're fiercely independent and proud of the freedom that's associated with their work." Peter Matthiessen, author of *Men's Lives*, a book which has helped to galvanize support for the vanishing baymen describes the East End baymen in the following way:

> They value their independence over security, preferring to work on their own schedule, responsible only to their own families. They are protective of their freedom to the point of stubbornness, wishing only to be left alone...They are rough, resourceful, self-respecting, and also (some say) hidebound and cranky, too independent to organize for their own survival. Yet even their critics must acknowledge a gritty spirit that was once more highly valued in this country than it is today.

This spirit of independence has taken on a mythical status in the local cultural imagination and become a source of symbolic power for baymen in their struggles to preserve their way of life.

Following the water as a bayman requires versatility. Baymen are constantly adapting to a changing social-natural environment. They have an intimate knowledge of the constantly shifting rhythms and cycles of the inshore waters. They are occupational pluralists-jack-of-all-trades workers who engage in a wide variety of fishery activities depending on the season, law, and optimal combinations of ecological and market conditions. Their occupational identity extends beyond the species caught and the gear type used. Baymen are more than clam diggers, scallopers or bass fisherman. According to McCay, (1983:20)

> Pluralism, opportunism, and a preference for "following the bays" rather than going to distant offshore waters continue to mark the work style of the baymen. In the statistics of landings and effort, each of the species and gear-types has its own history. To treat them separately, however, is to misrepresent the meaning of baying for which it is the bundle of possible things to do and the right to do them that count the most.

To follow the water is to follow the seasons.. Baymen do everything says an East

Hampton bayman. "*You are your own boss, on your own time to come and go as you want, but you must work as the season changes to make a living a fisherman has to do something everyday.*" According to a participant from Southhold:

> *Being a fisherman is more than a job, its a lifestyle. It's not something you leave at the office and don't think about. It's much different than a 9-5 job. It's your personal life. It's all encompassing. In the rest of the world people are not being paid for producing. You show up and you get paid. And as a fisherman you can work all day and not get a penny. I believe in producing, in hard work. In a sense, being a fisherman represents that.*
>
> *I also feel that physical work can be very satisfying. A fisherman has to be very much in touch with the environment and what's happening with the seasons. There's more to it, but you have to have a certain amount of patience.. and you have to stick to it. All the time even when things aren't going right you're gaining experience. And you have to be very versatile.*

According to East Hampton town supervisor Cathy Lester, an ex-baywoman who supports baymen in their struggles to maintain their way of life, "The main attitude problem with oyster farming is that baymen might get bored with it too easily. They don't want to be tied in to one location day in day out 365 a days a year. They are vagabonds who like to engage in different types of fishing. It is the way they were brought up. They are individualists who don't like being tied down to one thing."

A bayman from East Hampton who is very enthusiastic about the project and is trying to get his friends involved remarked that small-scale mariculture might be the only thing that will help baymen to keep working on the water because, "*Every little bit helps these days. You can't specialize and just do one thing anymore. You have to be flexible and constantly adapt in this business. It's just one more activity among many that just might make the crucial difference and keep a bayman afloat. Its not much money but every little bit helps.*"

For the most part, the baymen's catch, which is sold fresh to a wide variety of markets,

doesn't require any special processing or handling. In many respects, the 19th century baymen were similar to the baymen of today. According to Gabriel (1921:91) they were a:

> A rugged type of men who braved the weather at all seasons in open boats. For nine months they lived off the profits derived from the oyster beds, and depended for the other three upon clamming and fishing. There were poor for the most part, but independent master of their own time and tools.

Full-Timers versus Part-Timers

Many baymen have had experience with various of types of work and make a distinction between working on the water and "real jobs." The distinction between part-time and full-time is becoming blurred as more and more baymen pursue non-fishery related jobs to supplement their income. There is a constant shifting back and forth between being independent and working for others. Some of the baymen were members of haulseining crews and/or worked part of the time as crew members on draggers. Increasingly, as fishery opportunities decline, baymen have begun to work in the ever expanding second-home and service economy which dominates the region. Nevertheless, even though their income from fishing is marginal and they must work at other pursuits to earn a living, their hearts and minds are still on the water. It is important to keep these distinctions in mind, since the oyster mariculture training program was designed to preserve commercial fishing as a way of life. (See table 1 for the number of full-time and part-timer baymen)

On several occasions, participants remarked during interviews that some of the more successful growers in the program were not "real baymen." Many were resentful that "outsiders" were benefiting from the program designed to help "true baymen." A bayman from Southold, a town on the North fork of eastern Long Island, mentioned that some of his fellow

baymen were bad mouthing the project because of the fact that he was a plumber who worked on the water part-time. *"One guy complained that the program was for real fisherman not people with steady jobs. I have been a baymen all my life and took up plumbing after the brown tide destroyed everything. The guys who complain are the same ones who complain that cultivating oysters is too much work and not worth the effort"* Such criticism should be taken very seriously because several baymen and others in the region who were skeptical about the mariculture training program stressed this issue..

A participant who dropped out after his oysters were destroyed by mud crabs remarked that, " *mariculture is a business, and I work on the bay to get away from that."* Like so many baymen in the program, he earns most of his income by working in the second-home service economy. The prospect of becoming involved with establishing customers which direct marketing entails doesn't appeal to him. *"I do carpentry work and landscaping and deal with city folks all the time. Working on the bay as an escape from that...it is therapy to me. With mariculture, working on the bay would change and become more like any other business out here."* For this bayman, working on the water involves more than economics and is intrinsically rewarding.

Some participants felt that being able to earn decent money in jobs such as landscaping or construction was an asset in terms of mariculture. A participant who hasn't been successful remarked, that, *"some of the guys have jobs with flexible schedules which enable them to tend to their gear on a steady basis."*

A major objective of the program was to train baymen so that they could supplement their incomes with another fishery activity that might enable them to continue working on the

water. Given the baymen's flexibility, small-scale oyster mariculture could become a part in their pluralistic fishery strategy. Roughly speaking, a bayman who works approximately one day a week from May until November could earn between five and eight thousand dollars a year. The idea was to enable baymen to experiment with mariculture so that they could work out a system that works for them. Some of the participants have achieved that goal. It is important to emphasize that a mariculture strategy that works for one particular bayman, might not necessarily work for another. It all depends on a particular bayman's work style and goals. For some baymen mariculture as a supplemental activity that might lead to other possibilities down the road, makes sense, while for others it doesn't.

From Gatherers to Planters

The vast majority of participants stressed emphatically that growing oysters entails much more work than they anticipated. For some, cultivating shellfish involves too much labor for the meager economic return. Most participants acknowledged that success as a grower is related to the amount of time and effort people put into it. The feeling that growing oysters entails constant labor was unanimous. According to a participant from East Hampton:

> *It takes a lot of work and commitment. Oysters are not like grass where you throw some seed out and it grows. Some people are more successful because they spend a lot of time and work at it. You have to be there all the time. They grow quickly and have to be thinned on a regular basis. When the guys get caught up in their fishing season they let it go.*

A lobsterman in the program voiced similar remarks. "*During the busy season it is impossible to look after oysters.*" In a similar vein, a participant from East Hampton remarked that, "*When the bluefish show up baymen don't want to be messing around with oysters.*" A bayman from Southampton pointed out that:

I think only a limited amount of baymen would be interested. It is never going to be an easy way to make money. You always have to worry about diseases. It is going to be hard and a lot of the traditional fishermen will not want to do it. It will never be a lot of money. I think it requires a different mentality and a lot of work. It is very labor intensive. I don't think there will be a rush to become involved in mariculture even if it is successful.

Most participants stressed that being a grower was completely different from fishing. According to a participant from East Hampton, *"Most baymen have a fisheries mentality-that is a form of hunting and gathering. It is different from being a cultivator."* A participant from Amagansett mentioned that baymen have to experiment and try new things. "*A lot of the guys are from the old school. They don't have the ambition and versatility. You have to be open to different things. In my opinion, a lot of the baymen spend too much time focusing on bass. We have to start focusing on new and different things."* According to a successful participant from Southampton:

Baymen are too independent and used to getting a quick return for their effort. People who get paid every day have a hard time going long periods without getting paid. Traditional baymen think in the short term. This isn't like being a bayman...it is farming. The average fisherman goes out in the morning and gets paid at night. We farm and don't get paid for a least a year.

A successful participant who works in the Peconic Bay stressed the need to constantly watch the oysters and clean the cages.

You can't let the oysters go. A lot of the baymen saw this as a we got the stuff for free so we'll put it out and maybe make a few bucks for it. If it doesn't work it's no big loss.

According to Steve Malinowski, a marine biologist who owns a small-scale shellfish farm on Fishers Island, New York, "although following the water as a bayman and shellfish farming are different they have much in common."

> As a small scale-aquaculturist, I have realized that my livelihood resembles that of the Long Island baymen more than any other occupation. Many of us have chosen our livelihoods for the same reasons, and even spend our time doing many of the same things. The predefined antagonistic relationship between these two livelihoods- livelihoods that should be closely allied has been a source of frustration to me. This conflict should not exist.

In a similar vein, a bayman from East Hampton who didn't participate in the program argued that baymen are "..already farmers and that we don't need to turn the bay into a farm because we already have a farm."

There is a strong relationship between attitudes toward mariculture and beliefs about the resource. Participants who think the natural stocks are likely to recover are less interested in mariculture while those who feel that the natural stocks have been permanently devastated tend to feel that some type of culture is necessary. There is also a strong correlation between individual success and the ability to view mariculture as a long-term activity. Several of the program participants who have invested their own money in seed and equipment didn't have a high survival rate with the initial seed supplied by the program sponsors. The ability to learn from their mistakes and experiences and keep their eye on the big picture is the main factor underlying their success. Despite the fact that most of the program's "highliners" experienced tremendous loses, they were still positive about mariculture. After learning from experience, becoming more efficient and improving the survival rate, they have come to view mariculture as economically viable. (See table 1) .

Baymen and the Community:Insiders and Outsiders

The boundaries of the baymen's occupation community is constantly shifting. Baymen are entangled in a web of group affiliations. Baymen are members of multiple associations and alliances both formal and informal. While there is a distinctive occupational identity and ethos

which characterizes baymen throughout Long Island, there are traditions within traditions and variations of baymen culture rooted in the peculiarities of place.

The several towns of Long Island each have their own baymen's associations. While baymen have sporadically organized and banded together to fight specific issues and threats, there are rivalries and division within and between communities. For example during the 1984 UDC mariculture debacle, many local baymen from east end towns were opposed to the concept of bringing in "outsiders" to their waters. East end baymen didn't approve of baymen who were displaced by the decline in Great South Bay stocks coming to their waters. Several participants pointed out that being a town resident doesn't necessarily mean that one will be accepted into the baymen community. A few mentioned that they felt like outsiders even though they have spent most of their life working on the water. *"People from the west don't count. East End baymen are the only true fisherman. What about the highliners who drag who orginally came from "upisland."*

One particpant claimed that he had to be careful that he didn't upset the "good old boys." A particpant from Southampton mentioned that the local baymen aren't neccessarily the best fisherman and feel threatened by newcomers:

> *Look at the some of the guys in East Hampton that were really successful. They are super nice guys, hardworking, smart and real hustlers-But they are not part of the good old boys.*

In a similar vein, a particpant from Riverhead remarked that he was sick and tired of all the attention being paid to the east end fisherman.

> *How come the rich people and the celebrities in the Hamptons like the baymen? What about the rest of us.*

Scientific Knowledge versus Local Knowledge

Since mariculturists draw on many of the same skills as fishermen, baymen could easily make the transition to some form of small-scale mariculture. In the past and at the present time, several Long Island mariculture firms employed baymen because they had some of the knowledge and experience that is required for mariculture. According to a successful shellfish mariculturist, "Baymen are naturals and would make excellent shellfish farmers given their skills in vessel operation, their ability to engage in physical labor, and their intimate knowledge of the marine environment." A enthusiastic participant who is a lobsterman remarked that, *"You have to know the water. A baymen's chances of success are probably 80% greater than a person without experience working on the water. But you have to work."* According to a bayman from Southhold, *"Being a bayman can work both ways. Their independent attitudes makes it difficult to stick with something day in and day out. You have to think of the big picture with farming and that is hard for a lot of the guys."* According to Steve Malinowski, "I think baymen would be better farmers than scientists but most of the Northeast growers are scientists...It takes a certain kind of scientist though-one who is willing to get muddy and isn't afraid of physical labor."

Several of the participants have degrees in marine biology or related fields and/or experience working with mariculture. (See table 1) According to a participant from Southold, *"My degree in marine biology has helped me and I think it is necessary but not sufficient."* Another particpant from Southhold remarked that, *"I can't really say that my degree in biology makes me a better fisherman but it helps a little. I am a member of the fishery council and it comes in handy there. People respect me a little more."* A participant from Riverhead

mentioned that his degree in marine biology was an asset for the program and that people without some type of academic background in marine biology or mariculture might have a hard time getting involved with oyster cultivation.

Rugged Individualism, Cooperation and Marketing

Besides mastering technical skills, being a baymen involves learning how to manipulate social relations on the water. Baymen are caught up in a thick and complex web of social relationships and find themselves continuously walking a tightrope between the values of cooperation and competition, secrecy with openness, sharing with self-interest. Fishermen are simultaneously rugged individualists and members of an occupational community with its own set of values, meanings and codes of conduct, rituals and myths.

Many participants suggested that their feeling for independence is a major obstacle when it comes to organizing for a common cause. Several participants expressed the need for better marketing opportunities to accompany the mariculture project, feeling that some type of marketing cooperative or organization would enable them to concentrate on growing the oysters more effectively. According to a participant from Southhold, even though the potential to produce oysters is unlimited, marketing poses a major problem.

> *Some kind of cooperative is needed with a professional salesman and marketing expert that would sell our oysters at a high price.*

Another successful grower mentioned that mariculture is a good thing for baymen but some type of organization is necessary to make it work economically.

> *Once we have an established marketing structure it will work. You can't do on an individual level. We need professional promotion and support. After it gets established baymen will be able to stay small or become big. If we get organized the potential is unlimited. In a sense the Cornell people let us down.*

> *Education and information isn't enough. We need someone to step in and build a coop. We need more asssistance in terms of making connections with experience and knowledge of marketing. You have to have an economy of scale.*

Parodoxically, while many participants expressed similar concerns about the need for some type of marketing cooperative, they also stressed that baymen are too independent for their own good and can't stick together. The same bayman who felt that the potential for mariculture is unlimited on Long Island if there was a marketing cooperative that could promote high quality local oysters mentioned that, *"I m afraid that some of the guys will sit on their asses and not do any work. What if some of them put their uncultivated oysters in to the coop and knock the quality down?"* A bayman from East Hampton mentioned that:

> *For this thing to work it would take take a large cooperative. I don't think it would work because baymen wouldn't go for it. We started a cooperative in 1976 and it fell apart. It wasn't created by outsiders and it created a lot of hard feelings among friends and neighbors. It wasn't a fun time but we have overcome it by now. A cooperative has to be the most difficult proposition on earth. There are little jealousies that come to play. People start to get upset that people aren't doing the work or are getting more than others. People have to cooperate and the fact of the matter is that they don't.*

A marketing cooperative which was to patterned after the classical agricultural marketing cooperative was a key aspect of the 1984 UDC mariculture plan which didn't receive much attention amidst the controversy. A UDC project proposal refered to the marketing cooperative as "the glue which binds together the otherwise diverse elements of the project."

There have been numerous attempts on the part of baymen from different regions to form cooperatives. According to Jeffrey Kassner, (1991:68) "The Great South Bay Farmers Cooperative formed in 1968, failed through lack of participation, attesting to the independent nature of the baymen." In 1976, East Hampton baymen formed a cooperative, which despite

sincere efforts of many baymen, collapsed in a few years from debt, bad management and general unwillingness of baymen to cooperate. According to Peter Mattheiessen (1985 156), "An ornery, opportunistic attitude is the destructive side of the fisherman's hard-nosed independence, and most baymen recognize today that the failure of the co-op, which attracted, then lost, the strong support of many people in the town, was a self-inflicted wound that lessened their long-term chances of survival." He quotes bayman Milton Miller as saying that what the upstreeters (city folk) never realized was that a lot of baymen, myself included, never believed in the co-op and never joined, and we never approved of the way is was managed, neither. But to the public it was all hooked up with the baymen's association and that did us a lot of damage." After the co-op fell apart, the baymen recovered some of their prestige with the establishment of a volunteer dory rescue squad for beach emergencies and a clam-seeding program. Close attention to environmental issues has made the baymen a strong and respected force in the politics of the town.

A successful particpant from Southampton changed his attitude towards his fellow baymen after a series of negative experiences trying to organize a small marketing cooperative. After spending a great deal of time engaged in politics to protect baymen and the environment, he now feels disenchanted and burned out.

> *Most baymen are too independent and selfish to form a cooperative because too many of them want something for nothing. You can't get anyone involved in a cooperative enterprise. Baymen are greedy and think only of themselves. They don't have the big picture in mind. Some are crooks. A cooperative will never work in a million years. Remember the Green Seal program. I did all the work and put in the initial time. I established accounts and gave them a quality product. I made fliers and tried to spread the idea around. It was working but we couldn't stick together...Making it as a fisherman depends on the person. These guys want something for nothing. I got frustrated with the mentality of the baymen. It was a pull on my family life and there was no support to keep*

baymen on the water. The Guys weren't willing to do the festivals which are so important for publicity. We always had the same handful of guys.

Several other participants expressed similar views about the need for baymen to cooperate and the conviction that they are unable to do so.

Anybody who wants to get involved in mariculture can do it. You need help- especially marketing and watching the crops from theft. My experience as a baymen has added to my chance for success. But we need a coop or a good salesmen with organizational skills and contacts. It is a lot of work to get a coop organized. We could then get every bayman on Long Island involved. I feel that mariculture will enable every bayman to continue to work on the water and make a good living. But we have to get together and it is too darn hard to organize. It is hard to trust others.

I can't depend on other baymen. Sometimes they are very secretive about their business. You need a system of trust available for a cooperative. We tried a small marketing coop to sell these oysters and it didn't work. Everyone wasn't putting their effort into it.

You can't get the guys to work together. There was a coop. We had a good thing going and people went behind each others back. Our stupid mentality killed it. When people get a chance for quick money in hand they don't give a damn about the group.

For the most part, successful participants in the project didn't see marketing the product as a major barrier to sustained oyster farming. Selling the product was not as much of a problem as conflicts with other users of the resource and gaining access to underwater lands. According to Steve Malinowski:

> Selling the oysters is the easy part. It doesn't happen automatically and it takes some time to establish markets and customer base, nevertheless marketing is much easier than growing an oyster under present conditions. I laugh when I hear about projects and grants that focus on marketing farmed shellfish. We have never produced an oyster that wasn't easy to sell. It is a lot easier to get rid of them than it is to grow them under present conditions.

The overall economic climate is good for selling local oysters and shellfish but if the

production increases, some type of marketing and promotion might be necessary. A cooperative needs a certain level of productivity, which hasn't been achieved by the growers of Long Island. At this point, increased production on a reliable basis is more important than formal marketing strategies. Given the current level of productivity, an informal arrangement between the more successful growers is more feasible than a formal cooperative. Once production levels increase and become more consistent, some type of cooperative structure might be necessary. If ten growers were each producing aproximately 100,000-150,000 marketable oysters a year, some type of professional marketing cooperative would make sense.

A majority of the successful growers in the program felt that there was a need for some type of government or quasi-government agency to promote and market Long Island oysters. Eventually local growers are going to face competition from out-of-state mariculturists. The success of Florida's Harbor Branch mariculture training program is a case in point. Approximately 300 small-scale shellfish farmers are having a major impact on local shellfish markets to the dismay of many large-scale operations. (Relyea: personal communication). While at this point the demand for locally produced high quality local oysters outwieghs the supply, eventually some type of formalized niche marketing strategies might be neccessary. Growers should continue to emphasize quality over quantity.

Baymen, Government, and Natural Resource Managers

In their occupational narratives baymen often contrast their independent spirits with reference to a passionate hatred of rules and regulations. Baymen do not appreciate what they see as interference from knowledge they feel is based upon "theory" removed from the test of day-to-day experience. As Kassner has pointed out, baymen are "..skeptical of the studies

managers use to justify their actions, feeling that, after all, since they work on the bay and how could an outsider understand what is happening."(Kassner 1991:72) At times they take considerable pride and glee in finding creative ways to circumvent the rules and outwitting regulations and those that enforce them. "Baymen are fatalistic about nature but distrustful of government" writes Kassner. "They fear the concept of management taking away their living more than the loss of employment through declining catch. This distrust possibly arises because most management schemes would require major changes in the fishery, causing loss of valued freedoms. In the end, while management practices are continually improving, progress is made against a gradient of baymen's opinions and mutual distrust." (Ibid:71)

Many of the participants are skeptical of government and feel they are legislating them out of business. "I bought a $10,000 net and now they pass laws making the mesh size illegal." Another participant remarked," One year in business and the next year out. I know it would make sense to get involved in politics and lobbying but who has the time."The sense of bitterness and distrust is very strong among many baymen. One participant claimed that the training program was an attempt to pacify baymen and divert their attention from the real fight. *"This program is a way to pacify baymen and fisherman who should spend their time attacking the DEC so we could get our fishing rights back again. It seemed like a little thing to calm us down. It takes us away from the real problem."* This echos a similar remark made by an east end bayman during a public meeting on the 1984 UDC mariculture plan:"Managers, bureaucrats, the state throws us out of business with the bass bill. Now you bureaucrats throw us a bone."

Several participants spoke of how baymen are being used by resource managers and

government scientists to pave the way for the rationalization and reorganization of fishing work.

> *We are the scapegoats and the guinea pigs. If we do well, then everyone will jump on the bandwagon. They are just sitting back and letting us do all the dirty work and make all the mistakes.*
>
> *Cornell and the scientific researchers are doing the dirty work and paving the way for the big corporate people. They are perfecting oyster cultivation and letting all the little guys make the mistakes and preparing the way for the big guys. Only the big guys can afford to wait a long time in order to make a profit and take the necessary risk and lay out money. Once the big guys become successful they will buy and influence the government and get laws passed in their favor.*
>
> *They are pumping a lot of government money into the fluke mariculture project at Plum Island. It poses a threat to the wild harvesters because if it works they can kick us out of business- they don't need us anymore.*

Several people in the fisheries community viewed the project as a government subsidy, not a real economic endeavor.

> The project is going in the wrong direction. The goal should be to create incentive for people to work in unproductive water. That incentive ought to be the profit motive. The government shouldn't subsidize economic activity. If something is more efficient and isn't environmentally harmful, it will eventually win out."
>
> Mariculture won't work because it is uneconomical. It will work in areas where waterfront property isn't so expensive. The baymen are being subsidized and supported by government funds. They have nothing to lose except their time. We will have to see if some of them will invest their own money in something that is uneconomical? I doubt it. They are not stupid."

While champions of the baymen's plight like Peter Matthiessen eloquently point out that independent baymen "..wish only to be left alone and never have asked for and never received direct subsidies from town or county, state or federal government," others paint a different portrait of the so-called independent baymen. A proponent of private mariculture

frustrated by the baymen's political clout has pointed out that:

> The baymen can demand government intervention in the form of augmentation programs. In many areas on Long Island the local government will grow shellfish in taxpayer supported hatcheries and throw them into the bay for the baymen to dig up and sell. Cultural mores, lobbying, and legislation has turned rugged independent rugged individualists into welfare recipients.

In a similar vein, another avid proponent of private mariculture who is vehemently opposed to government funding of any sort, claimed that:

> Public hatcheries on public bottom are a tax subsidized farce-a glorified easter egg hunt. We use taxpayer money to grow shellfish and then release them in public waters so baymen can dig them up. We are using advanced technology to engage in work that is utterly anachronistic. The baymen boast that they never rely on welfare. What is this. They aren't rugged individualists-they are welfare recipients.

While baymen are distrustful of management, they have benefited from policies that are supportive of baymen. In fact, on Long Island, baymen are involved in and influence fishery management policy. As Kassner (1991:67) has pointed out:

> Local officials have in many instances sanctioned the representatives of the baymen, concluding that the baymen know what is best.. Their requests were generally acceded to, giving baymen a sense of political power.

Increasingly, conflicts between baymen and managers takes place in formalized and institutionalized settings with established rules of procedure. As they have become integrated into an evolving bureaucratic system, modern baymen have adapted and learned to use it to their advantage. In the local political area, baymen have become politically astute and bureaucratically savvy. They have become skilled in the realm of law, public relations and politics, and become competent players in the policy process game. While on the one hand their interests are opposed to one another, beneath the rhetoric of conflict, baymen and

managers share a common discourse. Both are embedded on a legal, rational framework- both complain that politics always takes precedent over biology, overlooking the reality that politics has always play a role in managing the inshore fisheries.

In the controversy surrounding the 1984 UDC mariculture proposal many baymen did not like the attitude of UDC officials who they felt regarded them as a bunch of poor people needing economic assistance. A county official who was involved in the 1984 UDC episode remarked that, "baymen complain about government interference but they take the seed and the money when it is available." One participant complained that "..some of the East Hampton people complain about the government but they are a bunch of lazy people who live off the state-independent my ass." Another participant complained that a lot of the baymen "*bite the hand that feeds them. It is hypocritical.*"

The baymen's attitudes toward fishery management are not, however, homogenous. When baymen complain about unnecessary government interference, it is important to remember that there are multiple levels of government involved in fishery management. As we shall see when we examine the trustee system, in many cases, anti-government attitudes refers to the government interference from federal and state officials, not local government. In fact, some of the baymen interviewed who complained about getting the government off their backs, are actively involved in local government. A few hold or have held offiice, while others ran unsuccessfully for local office. Thus, in many cases the baymen's anti-government stance refers to outsider government, not local government.

While many baymen are strongly against the leasing of public underwater lands to private interests, they are for the most part supportive of public mariculture programs such as

stock enhancement and seeding programs. When it comes to public hatcheries not everyone agrees that it is money well spent. For both participants in the program and others in the fishery community there is strong relationship between attitude toward the oyster mariculture program and public hatcheries. Those who feel that a hatchery has helped the public resource are more optimistic about mariculture while those who feel that a hatchery hasn't done much to improve the resource are more skeptical about mariculture. According to a particpant from East Hampton, "*The trustees are negative about the hatchery in the same way that they are negative about the pilot project. I think there are more shellfish out there because of the hatchery. People just like to complain about everything. If they took the hatchery away they would complain. At least the hatchery is trying to work on something.*" A baymen from Southampton feels strongly that hatcheries have helped a great deal, pointed out that, "*We should let oysters go on public bottom land and let the public have a go at it. If the hatchery could increase the survival I think that is the way to go. I'm in favor of the public hatchery. It's public money being spend on a public resource for the pubic.*"

Another participant who is skepitcal about mariculture remarked that, *I don't think the hatchery is productive and seems like a waste of money. That money could have been better spent buying seed and putting them down on the public waters. Southampton had a good scallop season and they don't have a hatchery.*" According to an East Hampton baymen who was involved in local town politics, "*I* don't think the hatchery is worth the money we spend on it. That's a lot of tax money that could have bought a lot of seed from somewhere else or been used for habitat restoration. We bought a while elephant. It doesn't generate more than we pay for it." In a similar vein, a natural resource manager from the town of East Hampton doesn't

think mariculture is the answer for the baymen's problems and that government should focus more on habitat restoration. "Aquaculture will not go very far-we have neglected the habitat. It has all gone to hell. Eel grass, water quality is bad throughout the estuary system. I think baymen would prefer to make a living harvesting natural stuff...I used to believe in the hatchery but now I think focusing on mariculture and hatcheries distracts us from the major issue of restoring the habitat. It gives us false hopes."

Multiple Use Conflicts:Baymen and Recreational Users

There is a long history of conflict between commercial fisherman and recreation users of the marine resources of Long Island. Baymen and culturists have a mutual interest in making sure that commercial fishermen aren't marginalized and displaced by recreational and other non-commercial fishing interests.

Several participants mentioned that the oyster cages are good for the environment and attract fish around them that recreational fisherman can catch. While many felt that it was possible to coexist with recreational fishermen, wealthy homeowners who cherished their waterfront views were viewed as a major threat to mariculture.

> *Mariculture has to compete with the money people who don't want their view ruined by oyster farmers. In many cases wealthy landowners who don't want to look at buoys, uses environmental arguments. They don't want to look at a mariculture operation, and since they know they can't win on aesthetic grounds, they claim that it poses a negative environmental impact. It is bullshit but dangerous to the fisherman.*

> *Historically Greenport was a fishing village. The waterfront historic houses were built by fishermen. Now stock brokers come out and buy a waterfront condo and don't like their waterfront view destroyed by fishing boats and equipment. These are the people who are against the development of mariculture. They claim that there are negative environmental impacts. I don't believe it.*

INDEPENDENT BAYMEN AND THE WATERY COMMONS

The baymen of Long Island are commoners. Their occupational ethos and identity is very much bound up with the fact that the marine environment which they depend upon is a "commmons." The commons is an institutional framework rooted in longstanding tradition that stresses that natural resources are the common property to be shared by members of the community. The commons, which is based on use and custom, more than statue, structures all aspects of the baymen's work and is the foundation of their occupational culture. According to Crowe:

> The commons is a fundamental social institution that has a history going back through our own colonial experience to a body of English common law which antedates the Roman conquest. That law recognized that in societies there are some environmental objects which have never been, and should never be, exclusively appropriated by an individual or group of individuals."

While the commons has a long and complex history, baymen regard the opportunities to follow the bays and earn a living from its resources as an inalienable right and vital aspect of their heritage. Historically, the commons has been viewed by many members of the community as a refuge for the poor, enabling people to eke out a modest living during lean times. Many baymen regard the free bay commons as a refuge, a place to turn to in times of need. According to (Van Poppering :1947) "People from all vocations turned to the clam tongs when work was slack in their lives. It has often been said that no able bodied man in this vicinity would ever starve if he was willing to work on the bay."

The marine commons of Long Island has always been a contested and ambiguous terrain. Conflicts over the use and meanings of the commons have played an important role in

the social geography of the region from colonial times until the present. Multiple use conflicts abound and have intensified and become more complex with greater coastal development and increased economic and cultural differentiation of the region.

Enclosure of the Commons

Mariculture requires some form of territorial security. It is almost inconceivable that anyone would do the difficult labor required of cultivation without some form of exclusive control over the cultivated area. Such a notion conflicts with philosophy of the commons. From a technical standpoint, mariculture's efficiency and productive capacity is a great advance, from a social point of view, modernization through mariculture poses several problems. The history of shellfishing on Long Island, like the history of shellfishing in the United States at large, has been filled with struggles and conflicts between small-scale commercial fishermen who harvest wild shellfish from the marine commons and shellfish farmers who plant and cultivate shellfish and are dependent upon a system of exclusive property rights. According to Squires (1983:70) "The upheaval which transformed the land is now taking place on the seas. As the introduction of agriculture fenced, with strife, the wild west, so too much aquaculture "fence" the fishery commons." For many fishery managers, the baymen's traditional practices rooted in the philosophy of the commons is a fetter to progress and rational management of natural resources.

A strong anti-enclosure stance is an important part of the baymen's occupational identity. According to Larry Penny, an East Hampton natural resources manager who writes a column in the East Hampton Star, a local weekly newspaper that deals frequently with issues confronting local baymen:

> To think that a baymen could be constrained by this or that complicated set of metes and bounds, by a gridwork of buoys and off-limit areas installed over a wide expanse where now there is only a flat sheet of navigable waters, is to misunderstand the very concept of the species! In the long run, a few of them, assuming they have the means, may become farmers, but most would be driven out. As a student of the Plains Indians recently told me, it wasn't the rancher that ultimately destroyed the spirit and sustenance of the buffalo-hunters-it was his fences. (East Hampton Star, 1/28/1980 pg.2)

Historically, shellfish mariculture tends toward a concentration of capital which increasingly limits entry and advancement unless prevented from doing so by government regulation. The political tradition of Long Island's baymen developed as a response to these conditions. Proponents of mariculture decry the luddite-like "social legislation" that protects "independent baymen." At the present time, a complex bundle of institutional and legal arrangements keeps shellfishing technologically simple and in the hands of small-scale independently employed baymen by restricting the use of harvesting technology to simple hand tools. While these regulations are ostensibly conservation measures, their main intent is social and political-to prevent the enclosure of the marine commons by large-scale companies so that large numbers of people with little capital can earn a living working on the water. For baymen, the conservation of resources cannot be separated from issues of social equity. According to Jeff Kassner (1987):

> The reasons why rakes and tongs are still used today when more efficient mechanical gear is available is because of the longstanding tradition that only hand operated gear can used to harvest shellfish. This enforce inefficiency is seen by some as a means of conserving the shellfish population. It is also a form of job security since mechanical gear can out-harvest baymen and would easily replace them.

In a similar vein, McHugh (1972) has argued that restrictions on harvesting have no evident conservations measures and are utilized to distribute the catch among a greater number of

baymen because:

> The small entrepreneur who works the public grounds with backbreaking hand labor does not welcome the development of large-scale private planting industry, for he sees it as a threat to his "independence."

According to McCay (1998 Pg.182) shellfishing in the U.S. is characterized by social legislation which supports:

> "...certain ways of life or social relationships to production that are seen as depending on access and restriction on competition from firms with large amounts of capital. The Luddite-like rules of the fisheries and the public trust doctrine thus give constitutional support to the fundamental conditions of the baymen and the waterman way of life, including open access to the natural resources of the sea. Thereby they help create the imperfections that have made the shellfisheries so anomalous in a capitalist economy..."

To many baymen, attempts to dismantle or curb common use rights are regarded as an attack on their local community and heritage by outsiders. On Long Island, the historical experience of the enclosure of the marine commons by private shellfishing companies and the upheaval which ensued has become part of the collective memory of baymen in the region and plays a large role in contemporary fishery politics. Attempts to restrict easy access to the resource or to privatize the pursuit through the development of mariculture fuel opposition and resistance. When experts argue that the bays should be run more like a farm than a wilderness, baymen claim that following the water is part of their birthright and natural heritage and rally for the preservation of a "free bay." At the present time, since baymen have a great deal of political clout in local politics, their views have prevailed. Although large numbers of people take pride in the baymen's independent spirit, without a poltically sanctioned "free bay" and its accompanying reduced efficiency laws, there would be no independent baymen. Without public efforts to preserve his traditionalism though legislation, he would have most likely faded away.

While baymen often say that they don't like resource laws and managers telling them what to do, it is the resource management structure which has thwarted modernization and privitization of the commons.

Colonial Patents, Baymen and the Modern Commons

Much of the common lands on the east end, and to a lesser extent in western Long Island towns, are controlled and managed by group of elected trustees whose authority is rooted in colonial patents, or grants given settlers by the King of England in the 17th century. While an analysis of the historical evolution of the trustee system and the colonial patents from which it stems is beyond the scope of this report, suffice it to say it is an ambiguous and highly contested legal anomaly which is regarded as law of the land. Despite numerous court cases and questions about the trustees claim of ownership of town fishing and shellfish lands, they are regarded by many as the sole and legitimate management authority. In New York, managing the commons involved a great deal of conflict between different governmental agencies. Although the Department of Environmental Conservation manages the state's public resources for the benefit of the people and protects them from would-be despoilers, the trustees regard them illegitimate interlopers and "outsiders." In the words of a particpant who ran unsuccesfully for a trustee seat, "*The DEC and the trustees are like oil and water. They hate each other.*" There is even a great deal of conflict between local town government officials and the trustees, despite the fact that they are all locals with strong ties to the community.

While as the controllers of the bay bottom and protector of the public's right to use it, the trustees have generally been supportive of local baymen, the relationship between the two

groups is complex and at times conflictual. Despite the fact that some of the trustees are baymen with a long history of working on the water, many of the participants expressed anger towards them for not being more supportive of the pilot program.

> *In terms of attitudes, the trustees aren't supportive and don't want us doing this in their waters. They were all for it in the beginning but not now. But then again they aren't waterman anymore. These guys were fisherman all their life but now some of them care about more about the wetlands than they do about helping their fellow baymen. They forgot where they came from. His old man, grandfather and greatgrand father were fisherman and he cares more about the summer resort community and how they feel-not fishing people anymore.*

> *They are good people but sometimes they forget about the baymen and listen to the money folks who want to preserve the environment by getting rid of baymen and fisherman.*

A participant from South Hampton argued that the trustee system and the Dongan Patent from which it stems is an anachronism.

One local resident who writes frequently in the local paper and has been following the relationship between the trustees and the baymen for several years, suggested that the mariculture training project went in the wrong direction. "Instead of trying to get the trustees to change they should have focused on finding other available lands for baymen to use. The trustees aren't going to change their minds and it was stupid to think they would."

While for the most part the trustees are against leasing public lands to private individuals, even local baymen, some are willing to experiment. At a public meeting between East Hampton town trustees and program participants, someone pointed out that since the idea behind the oyster mariculture pilot program was to create alternative livelihoods for struggling baymen, it is important to be "broad-minded."

The attitude of the trustees regarding the mariculture project differs from town to

town. While in East Hampton, the trustees were willing to go ahead with a pilot program with the caveat that baymen should not expect to establish oyster farms of trustee bottom once the pilot project is over, their counterparts in Southampton would not even allow the pilot program to use their underwater lands. In terms of evaluating the overall project, much can be learned by comparing the experiences of the participants from the two towns. Since the goal of the pilot program was to train baymen to become part-time oyster farmers, success ultimately depends on the ability of participants to make the shift from training and demonstration to sustained shellfish farming. In Southampton, despite the lack of support from the trustees, some participants are moving in that direction and will continue to pursue mariculture on their own after the pilot program ends. The participants from East Hampton on the other hand are facing an uphill battle with the result that many have become disenchanted and developed a fatalistic attitude about their ability to become part-time mariculturist. Many of the East Hampton participants feel bitter about being given a short term opportunity without the institutional support that would enable them to become long-term culturists. According to a baymen from East Hampton:

> *It's hard to be enthusiastic about learning something new when you know that you won't be able to apply it. After I use up the free oysters I'm not going to continue. Maybe attitudes will change if the brown tide comes back and there are no scallops. Maybe the fisherman who are still hoping for a natural set will change their minds and get more involved in mariculture.*

Several participants feel very ambivalent about the trustees. While they felt they were looking out for the public interest, they wished they could be more supportive of the local baymen. According to a bayman from East Hampton,

> *The trustees are not proactive. They are sitting around waiting for the pilot project to die while pretending to be supportive. The project is for baymen and*

the trustees are in the position to make sure that it doesn't pose a threat to the long term survival of the baymen.

Politics in East Hampton is arcane. The trustees are ambivalent. On the one hand the trustees just want this issue to disappear. They are afraid that if it works then they will be forced to support it. In the last election the incumbents used this in their campaign literature by saying that they were cooperating in this pilot oyster project. They don't know where they stand.

The trustees just wish the issue would go away. But they have to deal with the fact that some of the baymen want to become involved in growing oysters.

It remains to be seen if this experience will be counterproductive in terms of promoting favorable attitudes towards mariculture.

In a comparative analysis of two shellfish mariculture training programs in Florida, Priscilla Weeks and Leslie Sturmer (1995) point out that a training program failed to achieve its ultimate goal of transforming wild harvesters into cultivators because managerial authorities were pro- mariculture and anti-leasing. Despite the fact that watermen learned how to cultivate oysters and wanted to pursue mariculture on a long term basis, their inability to acquire secure access to underwater lands, resulted in a decline in morale and a lack of support for mariculture. On the other hand, another program proved to be successful because it's pro-mariculture promotional rhetoric was backed by institutional support which enabled watermen to put their training and knowledge of cultivation to use on a long-term basis.

The very fact the East Hampton trustees supported a pilot program shows that they are not a homogenous group whose attitudes and positions are etched in stone. Attitudes are changing but they are changing slowly. Although it remains to be seen how the trustees will respond to requests by baymen to use their waters for mariculture in the future, there can be no

doubt that they are a pivotal force that could alter attitudes and policies toward mariculture in the region. If program participants, especially "insiders" whose opinions carry clout in the community express a strong desire to grow oysters after the pilot program ends, it is likely that the trustees will continue to support them in some way. Since local baymen would rather see oyster farms managed by the trustees rather than the state, it may come to pass that the trustees might institutionalize a temporary assignment policy similar to that of the state.This will enable them to proceed slowly while they continue to weigh the pros and cons of small-scale, part-time shellfish farming before they commit to a permanent policy. Flexibility is key. The words of a East Hampton grower should be kept in mind.*"Many of us are afraid of mariculture because it poses an economic threat. If it goes to far and becomes economically successful, then it would threaten the baymen's way of life. The trustees are in a position to manage mariculture so that it doesn't threaten baymen."*

The Commons, Natural Areas and Mariculture

Historically, the legitimacy of mariculture has rested upon the fact that it wasn't replacing or interfering with the natural productivity of the marine commons. Baymen have always objected to anyone having exclusive rights to sections of bay bottom which are naturally productive. The sentiment expressed by angry baymen during the Long Island oyster wars of the last century "that the oyster barons had no legal or moral rights to lease beds where oysters grew naturally" (Gabriel: 1921) strikes a sympathetic chord with many contemporary baymen. Much of the hostility aimed at private companies stems from the fact that independent fisherman have never accepted the legitimacy of the private appropriation of nature's common

bounty. Any attempt to promote mariculture must recognize this longstanding sacred rule of the shellfisheries.

In the early years of oyster planting on Long Island laws were passed which prohibited the leasing of oyster beds where oyster grew naturally. Typically, before any ground could be leased, the oyster commissioner would tong oysters from the designated area. If the taking of oysters could not be profitable as a business, the lease was issued, otherwise the application was rejected. Many abused the laws meant to protect the commoners. In many cases, planters would stake out an area that was temporarily depleted and claim that it wasn't a natural bed. For this reason the definition of a natural bed was a constantly debated in town public oyster meetings since baymen held a powerful conviction that naturally productive areas would forever remain a "free bay."

The meaning of a free and natural bay has always been a controversial and politicized issue. In 1985, a New York Sea Grant report, entitled "Aquaculture Development in New York State" (1985:45) pointed out that:

> Culturists note that not all underwater areas are productive in the wild and not all are used by shellfishermen; they note these areas could be set aside for the culturist. Baymen believe, however, that all areas are for public use and all are potentially productive. No area is abandoned, for it may be productive in the future.

For the most part, baymen aren't against the cultivation of barren areas, but feel that in many cases large companies who were able to use mechanical dredges depleted large areas of naturally productive public resources. A baymen who used to work near the now defunct Long Island Oyster Farms said that they were not cultivating shellfish but using mechanical dredges to harvest the natural stocks. *"Those were public waters, what gave them the right to do that. It was unfair."* In the Great South Bay, the common practice on the part of Islip Town of

leasing to private shellfish companies, was discontinued because of continued protest from independent baymen. To this day, many baymen place the blame for the decline of the clamming industry in the Great South Bay on the large companies who "raped the bay" while they were left to harvest depleted waters with hand rakes and tongs. According to a participant who used to work along side the Flowers Oyster Company:

> *They are corrupt because they relied on harvesting natural shellfish- the town law and custom is against leasing naturally productive areas. Even though they did a lot for the bay- they fought against development of the waterfront and lobbied to clean the waters, they planted seed that benefitted baymen- it was wrong to harvest the natural stuff the belonged to the public.*

In 1990, *On the Water*, a local fisherman's newsletter, printed a letter from Robert M. Wemyss, the secretary of the Northport Baymens Association, which stressed the importance of protecting the natural areas from private mariculture companies.

> Traditional harvesting methods have stood the test of time which fishing effort controlled by the use of inefficient hand tools...Baymen are not prepared to yield productive underwater land so that aquaculturist can gain exclusive access to public resources, and in fact harvest those resources in a manner which is inconsistent with the public fishery. for that attitude to change, the present reality must change. Would be mariculturist must focus on techniques that do not require large tracts of underwater lands and which do not utilize natural stocks or harvesting methods which are inconsistent with existing public fisheries."

In a 1987 edition of *On The Water*, Steve Malinowksi, a shellfish farmer and marine biologist who feels strongly that small-scale mariculture would help to perserve the independent baymen and their way of life wrote that:

> There have been instances in the past where leased land had been used exclusively for the harvest of naturally occurring shellfish. this was wrong. The objectives of a leasing program should be to promote aquaculture rather than enable private control of naturally productive bottom for the purpose of gaining exclusive rights to abundant naturally occurring shellfish. Leased bottom should be cultivated and restricted to areas that have historically been unproductive or

> marginally productive. Rather than allow private control of naturally productive areas, a leasing program should require aquaculturist to turn historically unproductive areas into significant shellfish producers.

In order to prevent abuses from occuring management authorities could take several measures to protect the baymen. Malinowski suggest the following preventive measures.

> Resource surveys should be an integral part of any leasing program...Only areas that fall below a particular index of productivity should be considered for leasing.
>
> No land should be held privately that is not actively cultivated. Potential leases should be required to present a detailed prospectus identifying how the leased bottom will be used. A combination of annual reporting by the aquaculturist and site inspections by DEC(or some other managing authority) could assure that private holdings were actually being cultivated. Leased bottom land allowed to go fallow should revert back to the public domain.

The current policy in New York regarding temporary assignments for off-bottom mariculture is very much in tune with and supportive of the "sacred law of the shellfisheries." It is a mariculture program which is supported by many of the same baymen who are vehemently oppossed to the leasing of the public underwater lands to private individuals. According to an official in the DEC, "We were able to sell the idea of temporary assignments to baymen. Mention leasing and its all over."

When a prospective mariculturist applies for an assignment he must undergo an elaborate review process which contains a public comment period. Typically, before the DEC issues a temporary assignment, they make sure the site will not pose threats to other users. If there is a significant hand harvest or any type of commercial or recreational activity in the area then the DEC doesn't issue the assignment. Baymen's associations, town trustees, members of the shellfish advisory committee and other resource users are notified and invited to comment

on the proposed mariculture site. If baymen feel the proposed site would interfere with their traditional harvesting activities the assignment is denied. Debra Barnes of the DEC,

> We get certain letters who object to all applications no matter where it is. We are tying up less than one percent of public lands for private use. We listen to legitimate comments. We try to research the area to minimize potential conflicts. We try to make sure there is no resources there..Baymen are able to make comments and in many cases they are very reasonable and rational. Sometimes they suggest an alternative area where nothing is going on. For example, one grower was getting pounded out in Gardiners and applied for an assignment that would be better and easier to work. The Southold baymen's association felt the site would interfere with scalloping and suggested another area. They did not want to deprive anyone of the right to do aquaculture as long as they do it in areas where baymen don't work. Some of the baymen see aquaculture as just another fishery. Many of the people who were outspoken against mariculture are now on the assignment bandwagon. Attitudes are changing but they are changing very slowly.

A participant who is the President of the Southhold baymen's association said that the type of mariculture being promoted by the program is a small-scale flexible system that doesn't disrupt the traditional ways of working on the water. *We didn't want to take large areas away from other fishermen. This project is small-scale and non-disruptive to other fishermen. The baymen's association could easily move cages. At first baymen were hesitant because it might close off waters but we realized that these cages can be moved easily. If a set of scallops come back we can move the cages. I moved mine three or four times.*

Baymen have a strong say in the management process because of this institutionalized arrangement which enables them to become involved in mariculture development decisions. Co-management practices such as the review process which encourage participation on the part of baymen should be promoted and strengthened. Since conflicts with other users of the commons is a major obstacle to mariculture development, measures which help to minimize

them can only help. Co-management schemes which incorporate the concerns of baymen are a way to make sure that past abuses associated with uncontrolled leasing won't occur again.

Baymen and the Tragedy of the Commons

A general theme that runs throughout the literature on the fishery management is that natural resource abuse and decline is almost inevitable under a system of common property tenure. Since natural resources which are held in common are not owned and protected by anyone there is an inexorable economic logic which dooms them to over-exploitation. Many regard the commons as the enemy of sustainable resource management because it encourages ruggedly individualistic fisherman to enact a "tragedy of the commons" which results almost inevitably in resource depletion and economic decline. Since the sea isn't owned by anyone and can be exploited by everyone, no one has any interest in maintaining the resource. Why should one fisher reduce his effort in order to conserve the fishery? The fish he does not catch today will be caught by someone else tomorrow.

The notion of the tragedy of the commons originated with Garrett Hardin, who in a widely quoted 1968 essay by the same title, compared the world ecosystem to a common pasture, where each individual, guided by a desire for personal gain, increases his herd until the pasture is ruined for all. Common ownership of resources spells disaster given the competitive nature of the people who use them. Thus, according to Hardin's pessimistic message (1998:7) freedom of the commons becomes tragic because:

> "...the rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another. But his is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit-in a world that is limited. Ruin is the destination

> toward which all men rush, each pursuing his own best interest in a society that believes in the feedom of the commons. Freedom in a commons brings ruin to all."

Hardin argued in favor of some form of "mutual coercion mutually agreed upon by all" to keep people from destroying the commons, whether it be a fishery or the entire planet. Tragic outcomes are inevitable unless some form of external authority intervenes in the workings of the commons or the commons is privatized and transformed into private property. In short, for Hardin and his followers the best way to end the tragedy is to end the commons. Many theorists drawing on Hardin's ideas assume a necessary connection between common use rights and inefficient or destructive use of natural resources on the one hand, and individual property rights and the efficient use of such resources on the other. The privatization of the commons would internalize cost and benefits, reduce uncertainty, and thereby increase individual responsibility for the environment and the rational use of natural resources. According to Gordon, (1954:122)in the fisheries, the combination of market forces and a limited entry regime as opposed to a common property one would tend to reward ecologically prudent fisherman and thus work to conserve the resource. Imposing such a regime on a fishery necessitates making it private property or public property, in either case subjecting it to a unified directing power able to exclude outsiders and adjust harvesting to maximum advantage. Although he focused on the fisheries, Gordon thought his conclusions could be applied to "all cases where natural resources are owned in common but exploited under individualistic competition."

The tragedy of the commons parable has become an inclusive symbol in environmental discourse. In the field of fishery science and management, Hardin's parable has attained the

status of conventional wisdom, and is used by some as if it were a scientific law. Indeed, it has become known as "the fisherman's problem." In a similar vein, McCay points out that the analytical model used by fishery economist, assumes that all fisherman behave as anarchic villains in a tragedy of the commons which leads inexorably to resource depletion and economic waste..Participants are believed to lack self regulating mechanisms and motivation"(McCay 1978)

At the present time, amidst a steadily dwindling natural harvest and a rising demand for shellfish, mariculture is being hailed as a solution to the perrenial tragedy of the commons. Scientific opinion has always favored some form of exclusive control over shellfish arguing that the commons worked against conservation. In 1881, George Goode suggested that in the interest of scientifi conservation:

> The oyster industry should be transferred from the improvident fisherman to the care taking oyster culturist....Since shellfish are embedded in the soil and had more in common with agricultural crops than with migratory fish, it is the general belief that shellfish must be cultivated as carefully as garden beds, and that this can only be done by leasing them to individuals. There is difficulty however, in carrying out this policy in the case of the natural beds, to which fisherman have had continued access for centuries."(Goode:1881)

In 1893, Liet. Francis Winslow remarked that "one cause ran like a thread through the destruction of oyster fisheries from Europe to New England: The fishery has been common property, it preservation everybody's business-that is nobody's." For over a century, U.S. scientist and natural resource managers involved with shellfishing have been wrestling with the question first posed in 1891 by William K. Brooks, an influential scientist and leading advocate for the scientific management and the privatization of the commons.

> "How can the people of the State be brought to perceive that private enterprise in oyster culture is to their advantage, and what can be done to develop a sentiment of respect for private property in oysters?

While Brooks, a champion of science, progress, and the inherent value of private property had and continues to have many ardent supporters, to this day his provocative question remains an unanswered source of controversy. Despite several economic studies which have shown that private oyster beds are more productive, the philosophy of the commons prevails.(Angello and Donnelley 1975, Alford 1975; Christy 1964; Power 1970; Quitmeyer 1955; Van Ginkle 1990 and Santopietro 1990.)

Hardin's narrative of the evils of the commons is alive and well in the Long Island coastal zone. It has become a folk model which is shared by all and shapes the discourse in the fishery management decision making process. The story is easily understood and retold. In many accounts and interviews people offerd an almost exact rendering of Hardin's way of explaining the tragedy of the commons. At a recent conference on the Public Trust Doctrine on Long Island, William Wise of the Marine Sciences Research Center at the State University of Stony Brook, pointed out that, "the fisheries have been undone by a near text-textbook example of Garret Hardin't tragedy of the commons." Fish stocks are at an all time low because "fish are the property of everyone, the property of no one." He pointed out that, "If our hunter gathering instincts could not be controlled, then perhaps it was time to turn to fish farming to provide food fish."

At a 1983 conference focusing on the decline of the Long Island shellfish industry, resource economist Jon Conrad pointed out that:

> "Fisherman are sensitive only to short-term harvesting cost.. They feel helpless on an individual basis, to preserve an appropriate portion of the stock for

> spawning, growth and recruitment. An individual fisherman has little incentive to leave a fish or shellfish for reproduction and growth if he cannot trust other fisherman to do the same. Individually, fisherman have no incentive to take into account the future cost , which "users" today impose on would-be harvesters tomorrow.(Conrad 1993)

In a letter to a local paper, a professor of public administration from Stony Brook argued that:

> The shellfish industry suffers because most of the baybottom is public property owned by the towns that border it. The economic incentive for individual clammers is to harvest as many calms as quickly as possible before the next clammer gets them. since no clammer has the right to harvest clams in specific areas , there is no economic incentive to ensure future clam populations. No rational clammer will privately undertake expensive seeding programs or other mariculture programs when someone else can reap the harvest...A preferred solution is leasing-providing individuals with the exclusive right to a portion of the bay bottom, thereby creating the economic incentive for effective management.

A particpant from East Hampton who felt strongly that small scale mariculture will save the common resources pointed out:

> *Look what happens with the scallops. There are too many boats chasing after too few scallops. After a few days its all over and everybody loses.*

A successful participant from the North Fork who feels that the days of relying on the natural stocks are over pointed out that:

> *Baymen are in a no win situation. They are forced to go after the little resources that are left because if they don't get them someone else will. It is a no win situation. They are dammed if they do and dammed it they don't. Baymen are their own worst enemy but what else can they do on common property.*

According to Steve Malinowski, a shellfish farmer and marine scientist:

> I liken the public fishery to putting a big bowl of cookies in the middle of the table in front of my five kids... They rush to grab them and create their own little piles before they even eat them. In fishing, if one individual doesn't get some fish, someone else will. I can't blame baymen for having that kind of mentality. The whole issue of having all these private individuals working the

> public waters that creates that mentality. The sad thing is that guidelines that could prevent the resource from being depleted are never accepted by the industry until the resource has collapsed.

Informal Rules, Territorial Etiquette and Indigenous Management in the Long Island Commons

It is important to remember that Hardin's tragedy of the commons parable is an abstract model that does not incorporate important contextual factors such as historical, social and cultural conditions that play a role in the way people use natural resources. The model's individualistic bias and underlying ahistorical assumptions about human behavior underestimates the ability of people who share resources to cooperate. It is based on the classical economic model which views individual fisherman as self seeking, essentially unconnected individual maximizers who selfishly pursue their own interest to the detriment of other fisherman and the resource which they are dependent upon. Despite the fact that the logic of the tragedy of the commons model argues that a sense of community on the water is virtually impossible, there are numerous social scientific studies which show that fisherman do in fact form communities on the water.

In abstract discussions about the tragedy of the commons, people fail to distinguish between a commons in which a number of owners are co-equal in their rights and duties to a resource, from an open access system, in which there are no features of exclusion. Such distinctions are crucial because as a general rule common property isn't treated as everybody's property. In many cases common property is structured by institutional arrangements that provide for exclusion and regulation of use. Groups of people who depend upon and share fisheries and other common resources, typically control access and use through a variety of

locally based cultural means. In many fisheries, the commoners who use and depend on them have developed a rich variety of institutions and community sanctions which regulate and restrain the use of the public resource. The baymen of Long Island are no exception.

The social scientific literature on the fishery commons clearly depicts a wide range of customary rights and claims in the sea, many of which, officially, were never thought to exist. Although commercial fisherman are officially managed and regulated by various governmental agencies, in a wide variety of context and settings, communities of fisherman have developed informal self-management practices with elaborate norms, rules, and codes of conduct which alter the common property open access nature of marine resources. In some cases, their informal territorial etiquette and self policing practices produce good conservation results since they mitigate against overfishing and resource depletion. Acheson has shown that in the ocean commons of Maine, lobsterman have carved out territorial work zones and have enacted informal regulations on the number of traps used and other sources of fishing pressure on the stocks, resulting in biological and economic benefits. In the Long Island coastal zone, lobsterman engage in similar practices.

A 1985, Coastal Ocean Science and Management Alternatives (COSMA) report on managing the shellfisheries emphasized the importance of focusing on intermediate forms of self management on the part of Long Island baymen. "The unofficial claim to more or less well-defined territories on the part of baymen ..may involve not only the prevention of outsiders from fishing within such territories, but also the regulation of fishing behavior by "insiders." Such group sanctions range from verbal warnings to destruction of gear and boats. The

continuance of such systems attest to their local legitimacy (as opposed to legality)." A project participant from Southampton talked about the baymen's informal system of enforcement.

> *Even though most baymen respect other people's gear, theft can be a problem. You have to keep an eye on things. That why it would be a good thing for a few of us to chip in a hire a guard to watch our stuff. Maybe a school kid or a retired person- whatever. I saw this guy-not a local, checking out my stuff. I told him that if wants some oysters I'll give them to him but just don't steal any. He just ignored me. When I caught the creep stealing the next week I took care of him. I put a hole in his boat. He won't be taking my oysters again.*

According a natural resource manager from the town of East Hampton,"Baymen have a culture on the water based on implicit understandings and informal customs that have been worked out over hundreds of years. The local baymen keep their distance and respect each others space. Of course, if a baymen from Connecticut showed up and started working that would be taboo."

The critical problem posed by the existence of such informal management systems on the part of fishermen as far is the present report is concerned, is to determine the extent to which designating small parcels for small-scale off-bottom mariculture would interfere with traditional territorial practices of local fisherman. The existence of informal property rights suggest that mariculture would not completely alter the traditional work style and occupational culture of the "independent" baymen as much as critics contend.

The trustees have the means to manage the commons so that small-scale oyster mariculture does not disrupt existing work patterns. In fact, off-bottom oyster mariculture has much in common with traditional fishing practices in the trustee "commons." The trustees claim that their no leasing policy is a precautionary measure. "What would happen if the scallops come back and there were a bunch of oyster plots out there? All hell would break

loose" Since growers are able to move their mariculture operations, such conflict could be avoided. According to Anderson , possible remedies to some of the potential problems of user conflicts "..., include judicious citing, adoption of practices with low visual impact such as off-bottom culture which is not exposed at low tide, and transient gear aquaculture." By placing hatchery reared shellfish in cages that resemble lobster pots, conflicts could be minimized. "Since transient gear does not require exclusive use of one area for more than a short period of time, it should not require a controversial exclusive use lease." (Anderson 1997:26) According to Rheault, (1995:26): "transient-gear aquaculture has the potential to alleviate traditional user conflicts without the need for conventional exclusionary fixed leases." The use of transient gear would be following in the longstanding tradition of restricting the type of harvesting gear in order to protect baymen. Thus, off-bottom mariculture technology would help to preserve the independent baymen or commoners. Several participants mentioned over and over again that arguments against setting aside areas for off-bottom oyster culture are ridiculous considering the existing fishery practices that are considered legitimate and condoned by the trustees.

> *There is not too much difference between a lobster pot and a oyster cage but I wouldn't start working an area that is being used by lobsterman...There is no difference between staking off areas for lobstering and these off-bottom cages. But it is opening a can of worms that people don't want to get into so they leave it alone. It is too controversial.*

> *There is no difference between a fish trap and a oyster cage. My oyster cages are good for environment. They make the areas more productive and filter the water. I am pissed because the same trustee who claims that oyster cages are an exclusive use that pose hazards to navigation has a bunch of fish traps. A fish trap causes more hazards to navigation than a oyster cage. They don't like to talk about this issue because they can't come up with a rational explanation. They just avoid the issue. It's discrimination.*

What is the difference between a floating dock and an oyster cage? What about marinas? What is the difference between leasing a small parcel for shellfish culture and a dock? The trustees let people build docks but are against using their bottom land for private shellfish culture. The trustees just set aside an area for a water ski course which is exclusively used for skiing. It blocks traffic and keeps the area off limits to other users. Trustees in East Hampton and Southampton don't want to deal with the question. They just disconnect and avoid the issue.

There is no difference between my oyster cages and a lobster pot..For someone to say that raping the ocean and stealing all the wild lobsters is better and more noble than growing food is crazy.

There is no difference whatsoever between a fish trap, and eel pot, a conch pot and oyster cage.I could move my gear at a moments notice. There is no logical explanation to be against oyster cages. Look at all the fish traps out there. I have nothing against fish traps, but what is more obstructive, a 1000 foot fish trap or a submerged oyster cage? I go scalloping every year. Scallops are always piled up against the fish traps. They obstruct my ability to scallop but the trustees say it's okay. It only goes one way. It is unfair.

The trustees allow floating docks and they are supported by pilings. What they don't want to hear is that we can use the same laws regarding pots. The lobster pot and the fish trap and the eel trap is down there for a limited period of time, and they are pulled out. We can do the same with oyster cages but they don't want to hear it or don't believe it.

Transient gear for oyster mariculture would be a continuation of already existing informal management practices on the part of fisherman. *I designed some of my gear. The guys that used to fish around me didn't know I was growing oysters. Why would they? I don't think they would care even if they knew what I was doing. There isn't much difference in the way we worked the water. I worked a spot but it didn't bother any of the guys working in the area."* Another participant mentioned that he would occasionally work outside his assigned area. *"I was working in an area that was out of the way. I kept a low profile. I didn't bother anyone and no one bothered me. The stuff is pretty inconspicuous. Given the small scale of this project it really doesn't make a difference."* According to Rheault, "The buoyed "oyster pots"

pose no more of a threat to navigation or shellfishing than do lobster pots or eel pots. Since the gear is periodically located, even the wild shellfish resource directly underneath the "oyster pots" becomes accessible to the wild-harvest digger periodically." Another participant remarked that he has gear in different locations in deep water to cut down on poaching. *"I don't use buoys and no one even knows where my cages are."*

Although no one formally owns the water, there are informal codes of territoriality which individual fishermen practice. Even though lobster pots are in public waters, lobstermen exercise an informal form of "property rights" which enables them to exert some form of control over the area they work. Even though it is common property, people don't treat a fisherman's lobster pot as "everybody's property" free for the taking. In short, the use of transient gear oyster mariculture technology is not so much a break as much as a continuation of traditional informal common-use fishery practices.

The Tragedy of the Commoners:Big Fellows Versus Small Fellows

On Long Island, as in other areas, the conflict between efficiency and social equity plays a large role in debates regarding the privatization of the marine commons. Hardin and others in the "tragedy of the commons school" are aware of the social implications of the privatization of common use rights and how it often displaces and marginalizes those who depended on them. For, Hardin, although the enclosure of the English commons was clearly unjust and led to the immisseration and pauperization of those human communities who depended upon them, such brutality was painful but necessary.

> The focus on issues of justice instead of ecological necessity, has created a climate of opinion in which the search for justice has been preeminent. Such a concern is admirable, but the consistent emphasis on justice has probably

> contributed to widespread insensitivity to the evils of the commons...Injustice is preferable to total ruin.

In a similar vein, fishery economists Christy and Scott (1965)who are against the commons and in favor of some type of limited entry structure, have pointed out that "In an economic sense, society may be better off because of improved efficiency, but politically or socially, the imposition of such hardships, even of a transitional nature, may be difficult to bear."

There are meanings and values attached to the commons which cannot be evaluated according to the logic of economic efficiency and productivity. While they are not efficient according to a narrow "bio-economic" logic, they are a social arrangement which offers considerable non-economic social, cultural,and ecological values to its users. Laws which govern natural resource management, particularly of coastal and wetland areas, stand in the tradition of child labor laws, food and drug laws and health and safety legislation etc. in that they restrict efficiency in market transactions. In discussing cultural meanings attached common use rights in the United States, Bromley has argued that:

> The proper perspective on access to, and control of the public lands would start with our European heritage wherein only a very few could avail themselves of hunting and fishing activities. Advocates who call for the privatization of the commons and decry its inefficiencies, forget that "it was with a particular social welfare function in mind that our founders determined that certain resources would remain the common property of the many, and not the fortunate few.

In the world of fishing, the founders decision has been a source of perennial conflict and contestation.

Despite the criticism of the tragedy of the commons parable on the part of many fishery social scientist, it is widely accepted that tragedies are likely to occur when access to fishing grounds is entirely open and when marine resources are not managed in some way or another

by fishermen, external authorities or by a combination of both. In response to thehat current crisis in the exploitation of the commons, there is a growing awareness for the need to develop modes of sustainable resource use. It is becoming commonplace in the literature on fishery management that it is easier to support regulations that fisherman support as opposed to top-down management schemes which encourage rule breaking. Increasingly, in a wide variety of settings, management regimes are trying to develop co-operative management strategies which incorporate and build upon the fisherman's indigenous management practices. Management policies that are both equitable and socially acceptable is one of the best ways to prevent tragedies from occurring in the marine commons.

It has been pointed out that many baymen percieve private commercial aquaculture as an outside force, representing the motives of alien "big business" to potentially control all public resources for personal gain. The baymen's fears of monopolization are grounded in historical reality and must be incorporated into any management plan and made a priority issue.

In the early aquaculture industry, individual oysterman obtained leases of land on which to cultivate seed oysters transplanted from other waters. But these practices began to require greater financial backing, and soon conflicts began to emerge. According to Jeffrey Kassner 1991:46)

> Because of the declining catch of seed oysters in the Great South Bay, which required that seed be brought in from out of state, the individual planter gradually gave way to the large corporations which had the necessary capital... These corporations acquired the leases of others thereby circumventing the law which said that an individual could only have one lease. The planters became increasingly powerful, leasing large areas of the Bay and alos controlling the marketing of oysters. The baymen who worked the unleased bay were in danger of being pushed off the bay.

While oyster mariculture generated class inequality and conflict in the commons, it is important to remember that many of the entrepreneurs who became corporate farmers emerged from the ranks of local baymen not outside capitialist. The baymen who became involved with leasing in the early 19th century did not think of themselves as sacrificing a "traditional way of life" to become businessmen. According to Taylor, (1985)

> Well into the twentieth century many baymen who defended a free bay. were anxious to leased grounds for their own oysters as well. Such baymen entrepreneurs also were members of baymen's associations which fought for the preservation of the "commons," ... because they felt that the larger companies were the only ones likely to profit from an extensive privitization of bay bottom. These baymen complain of the degree to which markets were controlled by the large companies, preventing their own advancement in the industry.

Much of the baymen's hostility toward the large companies and corporations is not so much rooted in an oppostion to all entrepreneurial enterprises but rather in the perception that no real opportunities are available to the little guy. Thus, in the perennial battle between the big fellows and the small fellows, baymen are opposed to monopolization because it stifles opportunities, not entrepreneurial activity as such. A Southold participant's fears of mariculture stem from his conviction that:

> *It's a corporate business. Only the big guys can wait long periods before making a profit and take the necessary risk. The little guys are going to get out competed and chewed up by the big guys. The project should be kept small. You have to look at the long term. What will happen to the little guys when the bays are all parcelled? Cornell is doing the dirty work for the big corporate people to come in and take over and squash the little guys.*

Several particpants suggested that the management agencies have to place restrictions on mariculture so that it doesn't displace the baymen. A particpant from Greenport remarked that:

> *They should not let outside investors come in and take over the fishery. It should be restricted to fisherman. No bankers and lawyers and doctors, that's how the federal government screwed up the fishery.*

In a similar vein, a particpant from Southold remarked that:

> *We need laws that will prevent monopolies from putting us out of business. If mariculture gets too big we're finished. If they create laws and limits that have to be enforced.*

Shellfishing has not followed a uniform path towards modernization, taking different forms in different places. Given the variation in shellfish styles and practices, it is important to focus on the particular constellation of environmental, socio-political, economic, and technical factors that exist within a given region. Historically, the social and cultural character of a particular locale and of the shellfishermen who work in them has had a distinctive effect on the development and structure of the industry. A fishery is social arrangement governed by law and legislation as much as it is by biology. Managing the shellfish commons involves people managing people. Managing natural resources involves choices-people can decide on what type of industry they want. According to a participant from East Hampton:

> *The trustees own and control the bottom. They could take preventitive measures to curb monopolization or they could just enforce the laws the already exist. The reason that monopolies developed was because the laws weren't enforced in the past. The trustees are in a good position to enforce rules and laws. They just don't want to take the resposibility.*

Two particpants from Southampton expressed similar sentiments and suggested that managers have to be more proactive in terms of protecting the intererst of local baymen.

> *The trustees own the bottom land so they could control the threat of monopolization-they control everything. They could make rules over how much space you have- they could have yearly leases- it would involve a little bit of progressive thinking and a little bit of time. They are not at the mercy of forces beyond their control- they are in control and decide on how the resource should be used.*

> *What is needed is control over the natural resources. The trustees could control monopolization. The responsibility is in their hands and they don't want to get involved. They argue against leasing, but they are the ones who could ensure that the industry remains open to the many instead of in the hands of the few. If they would manage the resource properly, baymen would have nothing to fear from mariculture..*

In discussing ways to keep the fishery equitable and to prevent abuses from occuring, Steve Malinowksi suggested that:

> The trustees should decide upon things that don't want to happen and things they do want to happen to the public resource. They are in the postiion to be proactive instead of reactive. There are all sorts of safeguards and measures that could be developed that would keep the industry small-scale. The trustees could make sure that people don't take the bounty from the public fishery and that they actively cultivate the area and make it more productive.

One particpant suggested "*spreading the wealth around and giving all the baymen a chance to grow oysters by-rotating participants. I'd like to see everybody get a feel for it. Especially the older guys.*"

Several particpants suggested that management authorities should develop a system of site rotation whereby individual baymen would periodically set aside a plot for the benifit of the wild harvest baymen. One particpant complained that, *the trustees are in the postion to make sure this stays simple and doesn't disrupt other users of the resource but they don't want to get involved. They could make this project work for the community but they refuse."*

While the vast majority of particpants discussed the need for imposing limits and restrictions on mariculture, a few of the baymen didn't like the idea of regulation and imposing limits and restrictions. According to a participant from Riverhead,

> *I am against any regulation in any shape or form in the fishing industry...They should let anyone who has money or interest to invest because this is America.*

> *I put time and effort into and had that entrepreneurial experience....I am against limiting licenses and restricting entry because someone wasn't lucky enough to born "a good old boy."*

In a similar vein, a lobsterman in the program argued that "the government is communism in the name of conservation."

> *I think limiting opportunity goes against the American Dream. Limits. It is a tough question. If some people took the opportunity and took the shot they we should limit and restrict them even though they make it harder for the newcomers. Regulations try to put a cap on things so that everyone get's an equal shot. But the guys who are making it now will never give others an equal shot.*

Another participant expressed similar objections to limits and regulations.

> *What type of limits. Some people say it is a way to preserve the traditional fishery. But who is a traditional fisherman? I've been working on the water most of my life but to some of the good old boys I don't count. I'm not a true fisherman. I afraid of people deciding who stays and who doesn't.*

Another participant mentioned that, "*The notion of imposing limits on the size of the enterprise smacked of social engineering.*" It must be added that all of these particpants did not think it was necessary to limit the size of mariculture given the recent decline in the big companies.*"Big business isn't rushing to come in here. Most of big companies have gone out of business. Nature imposes limits.*

The question is not whether the government or some type of management authority should impose social legislation and regulate the fishery. Since colonial times the fisheries have always been managed by a myriad patchwork of laws and regulations- the question is how the fishery should be regulated and who should benifit from that regulation. At the present time, there are institutional arrangements in place which give baymen a say in management decisions.

Attempts to promote small-scale mariculture business for baymen should utilize these traditional management mechanisms.

OYSTER MARICULTURE AND THE ENVIRONMENT

The small-scale off bottom oyster mariculture advocated by the pilot program is sustainable and consistent with environmental values that are coming to play a large role in fishery politics. According to a Suffolk County planning official who has a long involvment with mariculture development issues , "These days you have to look at the whole picture. Oyster mariculture is just one activity in a multiple use public commons. Increasingly newer environmental concerns are coming to play a large role in fishery management issues. A key question is whether this type of mariculture is consistent with other uses in the Peconic Estuary system as a whole." While there are serious questions and concerns about hazards associated with various types of finfish mariculture, the small scale shellfish mariculture advocated by the pilot program is environmentally friendly by any measure. There seems to be wide agreement by participants and others in the natural resource management system that oyster mariculture enhances water quality and benifits to the estuary system. By becoming planters of the sea instead of plunderers, baymen can become stewards of the natural environment.

While water quality management is a major environmental concern the potential benefits for oyster harvesters comes less from their efforts than from the efforts of other interest groups, e.g. recreationalist, environmentalist, and resort owners. According to (Santiopetro 1990} in the Chesapeake Bay region "the oyster industry is now a free rider on the political resources devoted to water quality improvement, yet restoring the oyster industry

has taken on a symbolic value as a measure of success of the Bay restoration program. Hence, management of the oyster fishery remains a priority even as its relative economic importance has declined." Thus the symbolic value attached to waterman enables them to exert a significant influence on the design of the oyser management program.

Many of the participants stressed various ways that mariculture would help to promote the area and enhance water quality. According to a participant from Southampton, *"It will promote the area just like the vineyards. Local oysters are a good symbol that can help to sell the place. Oyster cultivation enhances water quality and is good for the environment. Things that are viewed as environmental are good for the tourist economy which drives everything in the Hamptons."*

PRESERVATION , NOSTALGIA, AND THE IMAGE OF THE BAYMEN

Despite their declining numbers and economic importance, baymen wield a great deal of cultural clout. As development and coastal gentrification make it harder and harder for fisherman to survive, nostalgic images of baymen and their vanishing heritage have become a powerful force in symbolic struggles over the marine environment in general and mariculture development in particular. According to a local fishery manager who is very supportive of baymen:

> Fisherman represent more than economics. They symbolize a certain image or way of life. Rural and natural. They have the market cornered in that area. They represent the appearance of a sentimental past, sentimental value, nostalgia, simplicity etc. Mariculture would not be consistent with the image of the lone baymen working close to nature and the elements.

A 1992 documentary entitled *The Baymen* stresses the symbolic appeal of baymen which resonates with many people in the area.

> The baymen represent what America was built on: Independence, hard work, strong spirit, tradition and community. The loss of this way of life is not only about the loss of men's lives, it is about the loss of identity, tradition and our own Long Island heritage.

As their way of life has become threatened, baymen have become local folk heroes. According to McHugh, (1975:1). a leading marine scientist from the area who writes frequently on shellfishing , the baymen's work is, "mainly a picturesque individualistic 19th century folk art in a time of increasing sophisticated marine science and oceanography, biochemistry, genetics and environmental science." In a similar vein, Jeff Kassner (1991:66) points out that:

> Baymen are a political force on Long Island not because of their numbers, now small in comparison to the high tech engineers, and businessmen commuting to New York City, but rather because baymen and their lifestyle represent the dream many cherish of a simpler existence when independence was a virtue and man-against-the-elements was a virtue and man-against the elements a desired and attainable image.

Despite continuous advances in fishery science and technology, public sentiment favors the preservation of the baymen and their primitive style of work at the expense of economic and technological rationality. While many fishery managers and experts regard the baymen's traditional practices and local knowledge rooted in the philosophy of the commons as a fetter to progress and rational resource management, many in the field of heritage preservation feel otherwise. According to Kassner (1991:66)"While the baymen of Long Island have been the subject of eloquent prose their romantic image doesn't fit too well with the role as environmental predators." The technologically primitive aspects of baymen culture which are deplored by many in the various fishery scientific communities are highly valued by people involved in heritage preservation. In the press and in local television and video, baymen are often depicted as a vanishing way of life, or a threatened heritage. At maritime festivals and

assorted cultural events community leaders, local politicians, folklorists, and assorted concerned citizens and "friends of the baymen" talk about the need to save an ancient way of life, a three hundred year old family tradition. In the words of a local baymen, "we are a vital part of the community because we are living history." At a recent maritime festival a celebrity and chamption of the baymen remarked that "baymen are the true islanders and we can't let them go the way of the Indian and the Buffalo."

On Long Island's "East End" the fight to save its few remaining baymen from vanishing is at the forefront of struggles over the meaning of place, tradition, and development. In the minds of many who live and vacation there, the "East End" has come to represent the last holdout against the forces which have turned the rest of Long Island into a crowded suburban sprawl and destroyed cultural and natural resources. In recent years, as many East Enders have come to feel that everything that is special and unique to the place is being threatened by uncontrollable and relentless outside forces, the image of the baymen and their vanishing way of life has come to play large role in the fight to preserve the rural character and sense of place on the "East End." Baymen are very much a part of the discourse on place and regional identity and have come to symbolize an aspect of the region's unique heritage and sense of tradition.. For many local residents, newcomers as well as people with deep ties to the area, the fight to save the baymen from vanishing and the fight to preserve the traditional culture and character of area is one and the same.

> If the baymen go, a vital part of South Fork will be gone-a sense of the place will be missing. For me it will be a very sad day when there are no baymen dories on the beach.
>
> Baymen are part of the fabric of the place. You always knew your were entering a seacoast town when you saw trucks trailering dory's laden

> with nets driving down main street. Now this is being threatened. They are a vanishing breed, a vanishing heritage about to pass away.
>
> What little integrity of place which still exist on Long Island's East End is held in the calloused hands of the regions fisherman and farmers, what few there are.
>
> I'm helping to support the baymen because they are a bulwark of the community. They actually define what this area is. They symbolize and represent a lot of what made Long Island great..
> If the baymen go, we won't have a community anymore. We'll have a lot of separate home owners and some merchants. The area won't have a soul anymore. That's what the local fisherman and farmers who preserve the integrity of the land and water represent.
>
> If the baymen's way of life disappears, a lot of history disappears, and so goes Long Island.
>
> We're not just fighting for here for a small number of people who are living in old communities that would be nice and quaint to preserve. We're fighting for our soul. What we're attempting to do is keep a particular thread going in the fabric which is in danger of being cut off here in this century after three centuries of existence.
>
> If the baymen's way of life goes, the genius loci of the South Fork will vanish with it.

While many lament the fact that "New Yorkers have brought New York to the East End," it is hard to deny the fact that it is city money which keeps the local economy alive.

> While farming, fishing and vineyards are the most visible industry of the area, there is no other area in New York State which has benefitted from such a huge capital investment devoted to recreational and leisure purposes. If the beaches of the East End became polluted, if agriculture and fishing vanished, these second homeowners would have no reason to maintain their investment on the East End. They would choose to relocated to a less spoiled second-home area. If that should occur, the East End economy would crash.

According to Helen Rattray, the publisher and editor of the East Hampton Star and fervent supporter of local heritage and tradition, "Without the kind of influence (rich outsiders) have had, It would have been much harder to preserve what we have." (East Hampton Star, Aug 1992) Many of the supporters and "friends of the baymen" are "city slickers" who have helped to bestow a privileged status on a dying industry. Over the years, many residents have befriended the baymen and taken up the cause to preserve their endangered way of life. According to Henry Horn, executive director of Guild Hall, a cultural center in East Hampton:

> In certain ways, the East End is just an appendage of Manhattan. What balances that is the grit and integrity of the baymen and farmers, to the extent which they are respected, and they've got the summer people feeling very much on the defensive. (East Hampton Star, Dec 1992)

For many city weary urbanites, baymen have come to symbolize the very essence of the country place they have escaped to. A celebrity and friend of the baymen has wrtitten in the local press:

> The baymen appeal to anyone with pride in Long Island's heritage and who cares about its future. To ignore that heritage is to ignore much of the devastation that has destroyed the island in the last 40 years. With farms disappearing- and when the commercial fisherman disappear-this island will be no different from Manhattan island, Staten Island or Coney Island. I will no longer want to live here. This true for anyone who cares or has ever cared about this place.

According to Ralph Carpentier, artist, teacher, ex part-time fisherman and ex-director of the marine museum dedicated to preserving the East End's fishing heritage,

> The loss of East Hamptons commercial fishery and the lifestyle of it's people wouldn't particularly effect one's tennis game or real estate investments but I suspect it would be the end of an aspect of East Hampton life that attracted all of us "non locals in the first place. Some things should never change.

Preserving the baymen and their traditional way of life has become a key aspect of tourism in the region. Environmental quality and the embellishment of place, tradition and nature are at the core of modern coastal or "eco-tourism." With more and more people viewing the island's environmental quality as a marketable commodity and preservation as a source of economic growth, there is a growing emphasis on identifying, interpreting and enhancing the area's natural and cultural artifacts. Since tourist are attracted by what is distinctive and different, traditional lifestyles and local culture has become a major economic resource in the area. A 1993 preliminary report by the East End Environmental and Economic Task Force which later became the East End Institute, stressed the need to focus on the areas unique geographical and cultural assets. "Our unique sense of place is our major cultural commodity... It is after all the heritage, culture and natural beauty of a community or a region that attracts tourist."(pg.143)

Coastal tourism and natural resource management have developed hand in hand. Assorted environmental planing and cultural resource management programs have become an important part of the infrastructure of coastal tourism. In Long Island, the implementation of local Waterfront Revitalization Plans has become an important part of the process of developing waterfront areas in ways that are both supportive of local character and tradition as well as being environmentally and economically sustainable.

In recent years the marketing of the farm lifestyle through agri-tourism is being promoted as a way foster economic growth and preserve farmland on the East End. One promoter argued that agriculture is important to tourism as it provides the landscape and destination tourist seek."You are a romance and a fantasy to people who live in the cities and

we all need that fantasy fulfilled...You can spiff up your farm, charm it up, bring in tourists by the bus loads and generate a lot of business. Visitors are coming out here for the complete East End experience."

The image of the traditional baymen plying the water in their tiny boats is very much a part of the sense of the place that tourists seek. While there is a widespread sentiment that supports efforts to preserve the baymen and their way of life, for some, mariculture technology is inconsistent with the impulse to preserve the baymen's tradition and rural character. Small-scale oyster mariculture practiced as a cottage industry by baymen with an emphasis on the niche marketing of high quality locally produced shellfish would help to maintain fishing as a traditional pursuit. Small scale mariculture would enable baymen to tap into the growing consumer demand for traditionally produced local products that has created a cottage industry in organic and boutique farming in the region. Small-scale mariculture involves individual baymen working close to nature from small boats. The type of small-scale shellfish mariculture advocated by the pilot program wouldn't conflict with the romanticized image fostered on the baymen by the urban imagination that has come to play a large role in the tourist economy on the east end. Small-scale mariculture will help to preserve the traditional character of the region by supporting the local economy in an environmentally sustainable way. According to a participant in the program, "*This type of business is something that is renewable, green and good for the tourist economy.*" One grower remarked that ,"*Farming and cultivating shellfish involves working every day in all kinds of weather. You have to stay on top of it. I have earned the respect of the some of the fisherman near me because they see me working every day of the year.*

Small-scale mariculture will help to maintain the interest of commercial fisherman at a time when marine recreational interests are drastically changing the character of the coastal zone. At a time when traditional lifestyles of many coastal communities are under assault from the growth of pleasure boating and assorted marine leisure industries small scale mariculture could be an important way to protect commercial fishing as a traditional way of life.

SUMMARY

As a research and demonstration project, the training program has been invaluable. Far more importantly, a major goal of the project was to use knowledge to bring about concrete economic results that benefit Long Island baymen. The real measure of success is the fact that a significant number of participants are deeply committed to mariculture and are investing their own time and money in it. Several are beginning to make money and are becoming role models for other baymen in the region. In the words of a veteran of the 1984 UDC mariculture development failure, " If two or three baymen become successful and change their attitudes towards mariculture then the program is a success. It probally wouldn't have happened in the 1980's"

According a participant who is one of the "highliners" in the program,"*The program is absolute successful. Maybe the next phase should try to focus on how to secure access for baymen so they could put the knowledge to work.*

It is important to emphasize that most of the participants who were not successful have changed their attitudes and developed a sense of respect for those who can tranform barren unproductive areas into productive areas. While many of these baymen once felt threatened and regarded the mariculturist as having a privileged and unfair advantage, they now realize

that mariculture involves more than throwing some seed out and coming back after a few years and going to the bank. The realization that mariculture isn't an easy way to make money and involves a great deal of work and risk taking is slowly helping to break down the longstanding animosity between the independent bayman and the mariculturist.

LITERATURE CITED

Documents

Aquaculture Development in New York State Final Report New York. Sea Grant Institute State University of New York and Cornell University

The Public Trust Doctrine on Long Island:Public and Private Rights in Coastal Areas 1994

East Hampton Star

On The Water

Suffolk County's Hard Clam Industry:An Overview and an Analysis of Managment Alternatives. 1985 Report of a Study by the Coastal Ocean and Science Managment Alternatives (COSMA) Program of the Marine Sciences Research Center State University of New York

Proceedings of a Management Perspective on the Hard Clam Resource in Great South Bay

Proceedings of the Symposium Mariculture in New York State 1997

Proceedings of a Workshop on the Shellfish Management Program inNew York State

Strategies and Recommendations For Revitalizing the Hard Clam Fisheries in Suffolk County New York. 1987

Peconic Estuary Program Comprehenisve Conservation and Mangement.Plan Habitat and Living Resources Module Draft 1997

Peconic Estuary Program Water Dependent Use and Underwater Land Ownership Inventory. 1997. Suffolk County Department of Planning

East Hampton Trustees Minutes

Southampton Trustees code book

Other References

Acheson, James, M. 1988. The Lobster Gangs of Maine. Hanover: Univeristy Press of New England.

Anderson, James L. and Mark J. Spatz. 1997 Peconic Bay System Aquaculture

Agnello, R.J. and L.P.Donelley. 1976 "Externalities and Property Rights in the Fisheries." *Journal of Law and Economics* 52:518-529.

Alford, John J. 1975. "The Chesapeake Bay Oyster Fishery." Annals of the Associaton of American Geographers. 65:229-239

Baden, John and Noonan Douglass S. 1996. *Managing the Commons*. Bloomington:Indiania University Press

Breen, Timothy, H. 1989 *Imagining The Past:East Hampton Histories*. New York:Addison-Wesley Publishing Company, Inc.

Brooks, William 1891. *The Oyster*. Baltimore: John Hopkins University Press

Bromley, Daniel, W. 1982 "Land and Water Problems in an Institutional Perpsective." *American Journal of Agricultural Economics* 64:834-44.

Christy, F. T 1964 The Exploitation of a Common Property Natural Rresource:The Maryland Oyster Industry." Ph.D. Dissertation, U of Michigan.

Christy, F. T Jr and Anthony Scott 1965 The Common Wealth in Ocean Fisheries:Some Problems of Growth and Economic Allocation. Resources for the Future. Baltimore:John Hopkins University Press.

Conrad, Jon 1983 "Economics and the Management of the Hard Clam in Great South Bay Proceedings of a Management Perspective on the Hard Clam Resource in Great South Bay pg 55-66

Crowe, Beryl L. 1969 "The Tragedy of the Commons Revisted" *Science* 28:1103-1107

Gabriel, Ralph Henry. 1921. The Evolution of Long Island:A Study of Land and Sea. Port Washington, N.Y: Ira J.Friedman,

Gatewood John B. and McCay Bonnie, J. 1990 "Comparison of Job Satisfaction in Six New Jersey Fisheries:Implications for Management. Human Organization Vol. 49, no 1.

Gordon, H. Scott 1954."The Economic Theory of a Common Property Resource:The Fishery."*Journal of Political Economy* 62:124-42)

Hardin, Garrett. 1968. "The Tragedy of the Commons." Science 162 1243-48

Horton, Tom.1991 Turning the Tide:Saving the Chesapeake Bay. Washington D.C.: Island Press

Horton, Tom. 1987. *Bay Country*. New York:Ticknor & Fields

Kassner, Jeffrey. 1988. "The Consequences of Baymen:The Hard Clam (Mercenaria Mercenaria Linne')Management Situation in Great South Bay, New York. Journal of Shellfish Research, Vol 7, No. 2, 289-293.

Kassner, Jeffrey 1990.Suburbanization and the Decline of the Shellfish Industry" in Kelly Barbara.*Long Island the Suburban Experience*. Interlaken, Heart of the Lakes Publishing.

Kaplan, Milton. 1984 Access to Waters and Underwater Lands for Aquaculture in New York, Coastal Law Series no 84-1. Sea Grant Law Program, Jaeckle Center for State and Local Government Law Faculty of Law and Jurisprudence, State University of New York at Buffalo.

Kavenaugh, Keith. W. 1980. *Vanishing Tidelands:Land Use and the Law Suffolk County, NY 1650-1979*. New York Sea Grant Institute

Kochiss, John M. 1974. Oystering From New York to Boston. Middledtown, Conn: Wesleyen University Press for MysticSeaport.

Koppelman, Lee. 1979 Assesment of Existing Mariculture Activities in the Long Island Coastal Zone and Potential For Future Growth. Long Island Regional Planning Board, Happauge, N.Y.Task 3.4(c)

Lang, Steven. 1995. *The Heritage Industries of the Long Island Seacoast*

Malinowski, Steve. 1986 Small-Scale Farming of the Hard Clam on Long Island New York. Pamphlet prepared for the New York Development Corporation.

Malinowksi, Steve 1986. *On The Water*

Matthiessen, Peter. 1986. *Mens's Lives:The Surfmen and Baymen of the South Fork*. New York: Random House.

McCay, Bonnie J. 1978 "Systems Ecology, People Ecology, and the Anthroplogy of Fishing Communities," *Human Ecology* 6(4) 397-422)

McCay, Bonnie J. and James M. Acheson, eds. 1987 *The Question of the Commons: The Culture and Ecology of Communal Resources*. Tucson:University of Arizona Press

McCay, Bonnie J. 1998. *Oyster Wars and the Public Trust:Property, Law, and Ecology in New Jersey History.* Tucson: The University of Arizona Press

McGoodwin, James R. 1990. *Crisis in the World's Fisheries:People, Problems, and Policies.* Stanford, Stanford University Press.

McHugh, J.L. 1972 "Jeffersonian Democracy and the Fisheries Public Policy Issues in Resource Management. James Crutchfield and Robert H. Pealy (eds). Seattle:University of Washington Press.

O'Brien, Tim. 1984 "The L.I. Oyster Industry From Greedy Gathering To Modern Mariculture

Penny, Larry 1980 "The Perennial Baymen"East Hampton Star. Jan 28,1982 pg.2

Power, G. 1970.:More about Oysters than You Wanted to Know." *Maryland Law Review* 30:199-225

Quittmeyer,C. 1955 "The Seafood Industry of the Chesapeake States of Maryland and Virginia." Ph,D. Dissertation, Colombia University

Rhuelt, Robert, B Rice, Michael, A. 1995. "Transient Gear Shellfish Aquaculture. World Acquaculture 26(1) 26-31

Santiopetro, George D 1990. Common Property Rights in Fish and Water Quality:The Oyster Fishery of the Chesapeake Bay.

Smith, Leah J. and Susan Peterson. 1982 Aquaculture Development in Less Developend Countries:Social, Economic and Political Problems. Boulder, Westveiw Press.

Solomon, Nancy. 1998 "Historic Shellfishing In the Peconic Estuary 1945-1985. Long Island Traditions

Taylor, Lawrence J. 1983 Dutchmen on the Bay:The Ethnohistory of a Contractural Community. Philadelphia:University of Pennsylvania Press

Van Ginkel, Rob. 1990 "Farming the Edge of the Sea:The Sustainable Development of Dutch Mussel Fishery, *Maritime Anthroplogical Studies* vol.3, no.2 49-67

Weeks, Priscilla and Sturmer, Leslie. 1995 "The Political and Social Contexts of technology Transfer:An Analysis of Two Aquaculture Projects". Harbor Branch Oceangraphic Institution publication

Wasserman, David and Mick Womersley. 1997 "Preserving the Waterman's Way of Life" Philosophy and Public Policy. Vol 17 no.4 15-20

Wise, William. 1994. "The State of Thing in Marine Fisheries" Government Law Center, pg.87-94

APPENDIX 1

PERSONS INTERVIEWED

Participants in the Oyster Mariculture Pilot Program

1. Clark, Ed
2. Pickerell, Howard
3. Groethe, Wayne
4. Lessard, Dave
5. Lessard, Tom
6. Havens, Nick
7. Lester, Mitch
8. Miller, Mickey
9. Mangano Jim
10. Botinni, Mike
11. Salter, Rick
12. Bielawski, Joe
13. Parrino, Rob
14. Cantwell Dick
15. Krauss, Jeff
16. Krauss,
17. Hamilton, Robert
18. Hamilton, Jeremy
19. Carrera, Mario
20. Berry George
21. Reimer, Bill
22. Dinizio, John
24. Colonna, Alex
25. Lester, Jens
26. Havens, Fred
27 Dewall, Barry
29. Dewall, Barry

Dropped out of the program early

Warren Lukacs
John, Kotula
Ken Poliwada

Management and Government

Kathy Lester East Hampton Town Supervisor
Larry Penny East Hampton Department of Natural Resources
Dewitt Davis Suffolk County Planning Department involved with the 1984UDC mariculture plan
Debra Barnes New York State Department of Environmental Conservation
Lee Koppelman- Stony Brook-involved with the 1984 mariculture plan
Sturner, Leslie Harbor Branch, Florida- Involved with mariculture training program for displaced fisherman and waterman
Dr Vaughn-Director of Harbor Branch
Jeff Flimlin New Jersey Sea Grant
Ken Gall-Consumer specialist -New York Sea Grant
Larry Cantwell-East Hampton Town
Steve Tettlebach Professor of Marine Biology at Southampton College
JohnVolk Connecticut Department of Natural Resources

Shellfish Industry and Seafood Business

Steve Malinowski- The Clam Farm Inc Fishers Island, New York
Craig Strong-Blue Points
Dave Relyea Flowers Oyster Company
Roger Tollefsen Long Island Seafood Council
Sea Food Shop-owner
Braun Oysters-manager
Rheault, Rob-Rhode Island Mariculturist active in fishery politics

Community

Russel Drum East Hampton Star
Tom Knoebel-East Hampton Bayman involved in local politics
Brad Lowen-East Hampton Bayman involved in local politics
Arnold Leo Secretary of the East Hampton Baymen Association
Stuart Vorphal-East Hampton Bayman

TABLE ONE - Evaluation of Success

Variables of Columns

Ph=Phase of the program
Will Continue =Participants plan to continue with mariculture after the pilot program is over Is the participants baymen
Part-Time=Does the participant have a part-time job off the water which he depends on
Ed/exp= Does the participant have an educational background or previous experience with mariculture
Exper= Did the participant experiment with different types of gear or technique
Access= Will the participant have continued access to underwater land after the termination of the program
Success= Were the participants successful? This is defined as a long-term commitment which they are willing to invest time and money in.
Invest=Did participants invest their own money in more seed or equipment

TABLE ONE

P	PH	Will Continue	Baymen	Part-time	Ed/exp	Exper	Access	Success	Invest
1	1	no	no	yes	no	no	no	no	no
2	1	yes	no	yes	yes	yes	yes	yes	yes
3	1	yes	no	yes	yes	yes	yes	yes	yes
4	1	yes	yes	no	no	yes	yes	yes	yes
5	1	yes	no	yes	yes	yes	yes	yes	no
6	1	yes	no	yes	yes	yes	yes	yes	no
7	1	no	yes	no	no	no	no	no	no
8	1	no	yes	no	no	no	no	no	no
9	1	yes	yes	no	no	no	yes	no	no
10	1	no	yes	no	no	no	no	no	no
11	1	no	yes	no	yes	no	no	no	no
12	1	no	no	yes	yes	yes	no	yes	no
13	1	no	no	yes	yes	yes	no	yes	no
14	1	yes	yes	yes	no	yes	yes	yes	yes
15	2	yes	no	yes	yes	yes	yes	yes	yes
16	2	yes	no	yes	yes	yes	yes	yes	yes
17	2	yes	yes	yes	yes	no	yes	yes	no
18	2	yes	yes	yes	yes	no	yes	yes	no
19	2	yes	yes	no	yes	yes	yes	yes	yes
20	2	yes	yes	no	yes	yes	yes	yes	yes
21	2	yes	yes	yes	yes	yes	yes	yes	yes
22	2	yes	yes	yes	yes	no	yes	yes	no
23	2	no	yes	no	no	no	yes	no	no
24	2	yes	yes	yes	no	no	no	no	no
25	2	no	no	yes	yes	no	no	no	no
26	2	no	yes	yes	no	no	no	no	no
27	2	no	yes	no	no	no	no	no	no
28	2	no	no	yes	no	no	no	no	no
29	2	yes	yes	yes	no	no	no	no	no
30	2	no	no	yes	no	no	no	no	no
Y/N		17/13	18/12	20/10	16/14	13/17	16/14	16/14	9/21

TABLE TWO - Marketing Success

30 Growers each recieved 100,000 seed

Grower	Sale as of 10/15/98	In water	Marketing Problems
1	12,000	40,000	no
2	65,000	0	yes
3	65,000	0	yes
4	65,000	0	yes
5	20,000	10,000	no
6	20,000	10,000	no
7	20,000	20,000	yes
8	25,000	20,000	yes
9	25,000	20,000	no
10	25,000	20,000	no
11	20,000	0	no
12	65,000	20,000	no
13	X	X	X
14	20,000	10,000	yes
15	20,000	40,000	no
16	70,000		yes
17	15,000	40,000	no
18	15,000	40,000	no
19	15,000	40,000	no
20	15,000	40,000	no
21	40,000		no
22	5000	40,000	no
23	o	o	no
24	5000	40,000	no
25	0	0	no
26	20,000	20,000	no
27	20,000	20,000	no
28	0	0	
29	10,000	50,000	no
30	0	0	no
Total	697.000	540.000	