

Introduction and Case Overview Handout

PART I – Perry Raso, Oyster Farmer

Perry Raso stood in a corner of the main floor of his busy waterfront restaurant taking it all in: the noises made by happy customers as they chat, drink, eat and laugh, the rhythmic motion of servers flowing in and out of the kitchen from where complex mouthwatering aromas escape as beautiful plates of seafood are brought out, one after another. The 30-something-year-old could not help but to get emotional at the realization of his endeavors' success, the outcome of decades of hard work.

Before Perry opened this oyster bar, he was an oyster farmer. He started digging littlenecks (clams) in Point Judith Pond when he was 12 years old and grew up wild- harvesting shellfish, eel trapping, bull-raking clams and scuba diving for steamers (clams). With help from his division-2 wrestling coach, Perry managed to get into college, and while there considered becoming a medical doctor- a proven way to make enough money to buy a house. But he soon realized that medicine was not for him. He realized that if he embraced the fact that oysters were his world, then the world would be his oyster. Perry earned degrees in aquaculture and fisheries technology and then ventured into the real world to build a livelihood on the knowledge he started to acquire when he was not yet a teenage. He started his first oyster farm on a one-acre aquaculture lease and slowly expanded that to seven acres. Years later, he opened this restaurant where he now stands and most recently, bought land and started farming organic vegetables to serve with the seafood. Perry has much to be proud of, especially when considering the long journey from where he started, facing what at the time must have felt like insurmountable difficulties and opposition, to where he is now, watching the fruits of his efforts satisfy local consumers, creating numerous local jobs and promoting environmentally sustainable business practices. While we would all like to believe his story could serve as a blueprint for others looking for ways to do the same, the reality is that unfortunately, in spite of all the progress achieved in the last twenty years in the field of marine aquaculture technology and science, there are still many scientific, political, economic and social hurdles. To this day, few folks are actually able to succeed farming seafood in a successful and sustainable way, as Perry did. His story proves that is doable, but certainly not as easy as it should be.

Watch Perry Raso's TEDex Providence talk: <https://www.youtube.com/watch?v=oSdEQNY1mkA>
Visit his website here: <http://www.rhodyoysters.com/matunuck-oyster-farm/>

PART II – Case Overview

aquaculture as defined by dictionary.com

“[ak-wuh-kuhl-cher, ah-kwuh-] noun

1. the cultivation of aquatic animals and plants, especially fish, shellfish, and seaweed, in natural or controlled marine or freshwater environments; underwater agriculture.”

Aquaculture is the fastest growing form of food production in the world. It is also a significant source of protein for people in many countries, including the United States. Supporters of this industry often argue that aquaculture can serve as a solution for the worldwide decline of ocean fisheries stocks, and as an answer for the inevitable increase in demand for seafood as global human population continues to expand.

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Aquaculture advocates also claim that the benefits of aquaculture are not limited to those associated with growing seafood: that it can be a tool to help recover ecosystems as a whole by creating substrate for habitat recovery and to support projects aimed at preventing the extinction of endangered species. In addition, the farming of organisms that consume phytoplankton directly from the environment (i.e. filter feeders such as oysters, clams and other shellfish) alone or in combination with the farming of other species (known as polyculture) can improve water quality. Furthermore, farmed fish are generally free from environmental contaminants such as mercury and heavy metals, which is certainly a convincing human health advantage for those choosing between wild and farmed seafood.

On the other hand, many in opposition to aquaculture have reservations regarding possible negative impacts of the industry. Farming carnivorous species requires large inputs of wild fish for feed, a practice that wastes energy and protein in the process. Fish like salmon, for instance, depend on fishmeal and oil in feed made from wild caught forage fish like herring and anchovies, which are often captured from overexploited wild fisheries. Other possible negative ecological impacts from unsustainable aquaculture practices include the reduction of wild fish supplies through habitat modification, wild seedstock collection, accidental introductions of non-native invasive species, and effluent/ nutrient buildup, which can lead to eutrophication and harmful algal blooms, disease and parasite outbreaks. These are unquestionably valid concerns that if not prevented and addressed render aquaculture farming unsustainable.

In addition to ensuring their activities are in fact sustainable, proponents of sustainable aquaculture expansion- and specifically of marine aquaculture in the United States- face a number of hurdles related to regulatory policies and social acceptance of aquaculture as a valid farming practice. Studies rank the United States as one of the top countries in terms of marine aquaculture potential; however, the US produces relatively little seafood from aquaculture. Although a small industry compared with its potential, U.S. marine aquaculture is an economically important sector regionally. In many fishing and coastal communities, aquaculture creates significant jobs and supports other sectors such as seafood processing, feed and equipment manufacturing, and food service.

Experts say that in much of the country, opposition to marine aquaculture by local and national interest groups and restrictive local, state, tribal, or national policies have limited marine aquaculture to a scale far below its potential. Experts note several reasons for this: (1) marine aquaculture is relatively small, diverse, and (with some notable exceptions) unproven; (2) marine waters are public resources; (3) some Americans perceive potential negative effects of marine aquaculture as not sufficiently offsetting positive effects; (4) aquaculture faces significant social opposition; and (5) the governance system for leasing and regulation hinders the development of U.S. marine aquaculture.

Decisions regarding proper use of coastal resources are rarely simple and straightforward. Over half of all Americans live in coastal states, which creates great pressure for more development, and greater need for scrutiny in the decision making processes that authorize new projects that can place pressure on the environment, potentially diminishing the ecological, aesthetic and economic values of coastal areas. Balancing the use of resources in coastal areas with their protection requires good tools, information and the participation of multiple stakeholders, which often

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represent divergent opinions if not competing interests. Governmental organizations from various levels are expected to play significant roles as moderators, stewards of public resources and interests and regulatory bodies. However, lacking federal, state and regional leasing, permitting and regulatory policies that apply for different aspects of aquaculture practices may be in disharmony with local interests, creating further difficulties for those involved in this complex decision-making process.

Introductory Videos:

- NOAA National Ocean Service Ocean Facts: Aquaculture - <http://oceanservice.noaa.gov/facts/aquaculture.html>
- NOAA Fisheries - <https://www.youtube.com/watch?v=3Oi9GARr-Xc>
- Chesapeake Bay Program, Bay 101: Oysters (optional) - http://www.chesapeakebay.net/videos/clip/bay_101_oysters

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Negotiation Background and Role Bios for Mock Negotiation

Format – All participants receive the Negotiation Background and one role bio from this doc.

Negotiation Background:

Jo from Low Coast Oyster has submitted a proposal to the Department of Coastal and Ocean Activities, Sustainability, and Technology (DCOAST) for additional sites to be added to their existing oyster farm. Jo has included three possible sites in their application, but notes that the preferred site is an intertidal area just south of the current farm. Jo is aware that horseshoe crab spawning at the current and preferred farm locations require additional oversight over farming practices between April and June to ensure aquaculture does not harm the horseshoe crabs or migrating birds; however, the farming is ideal at this site. Conservation groups have expressed concern over Jo's current farm and the potential ecological impacts and are extremely fearful that expansion at this site would cause irreversible affects to key species. DCOAST staff must determine if the expansion can occur at the preferred location without harm to horseshoe crabs and migratory birds, or if another site will allow Jo to expand operations while protecting critical habitat.

Staff with the DCOAST Division of Coastal Permitting are holding a public meeting to discuss this proposal and at the end of the meeting, must make a recommendation to their Commissioner based on the consensus of the group. The Commissioner will automatically approve any proposal that includes four of the five meeting participants (majority approval), but would rather receive a proposal that all five agree to (consensus agreement). If only three members come to agreement, staff know that the Commissioner will request another meeting to ensure a wide majority in support of any site selection. Participants can select any proposed site noted below, sites with specific lease conditions, may suggest alternative options or conditions to how a site may be used, or can also recommend no expansion.

Site Descriptions:

- Site 1 – Intertidal: Just south of Jo's existing farm, this site requires the least travel time for Jo and is the most similar to the existing sites so Jo thinks the oysters will grow just as well here. This is also a key area for horseshoe crabs to transit during spawning events in April through June. The oysters would be exposed at low tide increasing the risk of pathogenic bacteria establishing themselves, but Jo follows the State's harvest procedures to reduce any potential harm from these bacteria (*vibrio* species).
- Site 2 – Subtidal A: One mile east of Jo's existing farm, this site is not frequented by horseshoe crabs, but is within the at risk zone should there be a spill at the local wastewater treatment plant. Although this is highly unlikely given the recent upgrade of the facility, Jo is concerned about marketing oysters from this spot. Jo would need to use different gear for this site- this is subtidal and he currently has intertidal gear. The cost estimates for gear to expand Jo's farm subtidally versus intertidally are almost the same, but Jo would need a boat to access this site.
- Site 3 – Subtidal B: One mile north of Jo's existing farm, this site is not frequented by horseshoe crabs. It has a faster current and the water is slightly cooler than Jo's farm so Jo is worried the oysters will grow more slowly and take longer to get to market size. Jo would need to use different gear for this site- this is subtidal and he currently has intertidal gear. The cost estimates for gear to expand Jo's farm subtidally versus intertidally are almost the same, but Jo would need a boat to access this site.

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Negotiation participants:

- Oyster Farmer: Jo from Low Coast Oysters
- State Decision Maker (facilitator): Mel from the Department of Coastal and Ocean Activities, Sustainability, and Technology (DCOAST)
- Environmental NGO: Addison from Building Improved Rivers Down South (BIRDS)
- Adjacent property owner: Morgan from Bayside Lane Homeowners Association
- Local chef: Taylor from “Local Leads”

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Negotiation Preparation Background for Jo Low Coast Oysters

Jo worked in an office in the city for nearly 10 years. Jo could see the river out the office window and was reminded each day how much they missed being out in nature and being on the water. About three years ago, Jo heard a story on the radio about oyster farming and decided that was the life. Jo has been running an oyster farm – Low Coast Oysters– for the past two and a half years and after tending to them as they slowly grow, the company just brought the first oysters to market a few months ago. After making a good profit, Jo decides to expand the business. To set more oysters, Jo needs more space. Jo also has two young kids and wants to be sure that the business is sustainable from an economic perspective as well as from an environmental perspective. Jo plans to hire additional help to run the farm if the expansion is approved.

Jo’s initial applications for the farm three years ago were approved quickly because they were designed to use an area used by another farmer until recently (that farmer decided to retire after a rough season of storms and personal health issues).

Jo used to be a member of the Birds of America Society and loves watching birds. Since starting the oyster farm, Jo has had no time to go birding and has let their membership in the Society lapse. Jo thinks birds are interesting, but also sometimes wonders if too much attention is paid to birds and not the overall ecosystem.

Jo recently reconnected with a high school friend who is the head chef at a local farm to table restaurant called “Local Leads.” Taylor and Jo didn’t get along very well in high school, but have a lot in common these days and Taylor has been experimenting with new oyster dishes based on the product coming from Jo’s oyster farm.

Resources to review:

1. Opinion/Blog on the need for aquaculture in the US:
<http://advocate.gaalliance.org/opinion-america-needs-another-revolution/>
2. East Coast Shellfish Growers Association, a source of grower information and support:
ECSGA, <http://www.ecsga.org/>
3. Fat Dog Shell Fish Company: <http://fatdogshellfish.com/>; <http://nhpr.org/post/video-oyster-farming-fat-dog>
4. Dumbauld et al. (2009) The ecological role of bivalve shellfish aquaculture in the estuarine environment: A review with application to oyster and clam culture in West Coast (USA) estuaries. *Aquaculture*. 290:196-223. doi:10.1016/j.aquaculture.2009.02.033
5. Review the general categories and types of data available through these data portals:
<http://midatlanticocean.org/data-portal/> and <http://www.northeastoceandata.org/>.

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Negotiation Preparation Background for Mel from the Department of Coastal and Ocean Activities, Sustainability, and Technology (DCOAST)

Mel has worked for the Department of Coastal and Ocean Activities, Sustainability, and Technology (DCOAST) for the last fifteen years. A skilled facilitator, Mel has been put in charge of collecting input on all lease and permit applications submitted to DCOAST. Mel has a background in marine ecology, but has spent most of their career supporting DCOAST in communications, outreach, and stakeholder engagement efforts. Mel must remain objective and represent DCOAST interests. The DCOAST mission is to ensure “safe, resilient, economically and ecologically sound coastal areas.” DCOAST is the state agency responsible for implementation of a number of laws, including but not limited to the Endangered Species Act, the Coastal Zone Management Act, the Magnuson-Stevens Fishery Conservation and Management Act, and the Clean Water Act. They are also required to coordinate with other state agencies for example on health and safety issues. They are required by law to consider both human and natural systems and seek solutions that benefit all parties to the extent possible in their decisions. As such, Mel cannot accept any agreement that ignores the endangered birds in the bay, unduly damages the local economy overall, or that puts customers at undue risk for eating contaminated seafood.

Mel knows that the Commissioner will accept agreement from just four of the participants (yourself included), but if only three agree, a new hearing will not be scheduled again for a year. Delaying by a year will also impact Mel’s workload, but Mel would prefer that the group not be aware that they are taking that into consideration.

Mel has lived in the area for more than 20 years and is a bit of a foodie. Mel has been known to eat at Local Leads, but has never really understood the appeal of eating oysters.

Mel takes the role of facilitator very seriously and always focuses on making sure everyone has a chance to speak and that they follow the agenda.

Basic Meeting Agenda

- 1) Introductions (2 min each)
- 2) Meeting Purpose (2 min)
 - a. Mel likes to remind the group of the goal: Consider all parties interests and seek a solution based on the case presented in the overview.
- 3) Discussion of interests (20 min)
- 4) Brainstorming options (20 min)
- 5) Discussion of concerns and final views (10 min)
- 6) Reaching Final agreement (10 min)

Optional – if needed, the group may take a five-minute break at any point (useful if meeting is getting heated, if participants need time to think through their options, or if participants want to have side meetings).

Resources to review:

1. FDA Aquaculture, <http://www.fda.gov/Food/PopularTopics/ucm518782.htm>

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2. Interstate Shellfish Sanitation Conference, information on oysters:
<http://www.issc.org/ConsumerInfo/Oysters.aspx>
3. Dumbauld et al. (2009) The ecological role of bivalve shellfish aquaculture in the estuarine environment: A review with application to oyster and clam culture in West Coast (USA) estuaries. *Aquaculture*. 290:196-223. doi:10.1016/j.aquaculture.2009.02.033
4. Example of current situation where balance is trying to be achieved with lease location:
<http://newfoodeconomy.com/red-knots-and-oysters-cape-may/>
5. Review the general categories and types of data available through these data portals:
<http://midatlanticocean.org/data-portal/> and <http://www.northeastoceandata.org/>.

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Negotiation Preparation Background for Addison from Building Improved Rivers Down South (BIRDS)

Addison has worked for Building Improved Rivers Down South (BIRDS) for nearly twenty years. BIRDS was founded in 1920 as a nature group focused on birdwatching, but as members noticed habitat disappearing and other problems in pollution, they changed the focus in 1970 to become advocates for conservation of bird habitat and reduction in pollution in areas frequented by birds. Many members credit Rachel Carson and her book *Silent Spring* for that shift. BIRDS has been focused most recently on improving the prospects for migratory birds that use the local area as a stopover on their annual migrations north and south. They have become concerned that the areas of interest to oyster aquaculture are similar to the areas needed for horseshoe crabs to lay their eggs (the primary local food source for migratory birds).

BIRDS has been doing research on other possible locations for oyster aquaculture in the area. So far they haven't found anything quite as good as the intertidal area that Jo is proposing, but they think either of the subtidal areas would be better choices. As part of their research they did find one other site much further away, but have yet to discuss this option with other interested parties and Jo to see if a more distant intertidal location would work for aquaculture.

BIRDS has also sued DCOAST several times for failure to consider birds in their management decisions, but has never won a case. Addison feels strongly that using the courts is effective to get their point across, but recognizes that doing so has damaged relationships in the past.

Resources to review:

1. News article regarding recent outbreak of harmful algal blooms and shellfish recall: <http://www.pressherald.com/2016/10/06/unusual-toxic-algae-bloom-shutters-downeast-shellfish-industry/>
2. Dumbauld et al. (2009) The ecological role of bivalve shellfish aquaculture in the estuarine environment: A review with application to oyster and clam culture in West Coast (USA) estuaries. *Aquaculture*. 290:196-223. doi:10.1016/j.aquaculture.2009.02.033
3. US Fish and Wildlife Service, Why Save Species: <https://www.fws.gov/endangered/species/why-save-species.html>
4. USFWS, Critical Habitat; <https://www.fws.gov/endangered/what-we-do/critical-habitats.html>
5. USFWS, Home Page: <https://www.fws.gov/endangered/index.html> (suggest student review website for additional endangered species, habitat, regulation information)
6. Review the general categories and types of data available through these data portals: <http://midatlanticocean.org/data-portal/> and <http://www.northeastoceandata.org/>.

Negotiation Preparation Background for Morgan from Bayside Lane Homeowners Association

Morgan has lived on Bayside Lane for the last fifteen years and is concerned about development in the area. Morgan has gone for walks up near Jo's current farm and has seen Jo and others out working to clean cages and harvest oysters. Morgan admits that it's not very loud work, but is frustrated that the view at their house might now include seeing oyster cages at low-tide and that there might be people using the end of their road to access the nearest boat ramp. Morgan is worried that the expanded farm will impact home values in the area. Morgan has heard that some neighbors like the farms because they can go to the landing and buy fresh oysters.

Morgan really wishes that Jo would have proposed a different site two miles south of the existing farm. Morgan isn't sure why Jo didn't include this in the proposal, but thinks that it is perhaps due to costs and a limited understanding of the circulation patterns in the bay. Morgan is pretty sure there are no horseshoe crabs at the other site and thinks that BIRDS has done some research on the topic. Morgan doesn't have the greatest relationship with BIRDS though since the group opposed Morgan's proposal to add a small wind turbine to the property. Morgan is willing to help fund a new boat ramp that Jo and others could use to access this other site but would want others to contribute something else as well. Morgan would rather not incur any additional expenses if possible.

Resources to review:

1. News article regarding recent outbreak of harmful algal blooms and shellfish recall: <http://www.pressherald.com/2016/10/06/unusual-toxic-algae-bloom-shutters-downeast-shellfish-industry/>
2. News article on concerns over changing property values with installation of a shellfish aquaculture farm in the nearshore: <http://weeklyphacket.com/news/2013/jun/27/proposed-surry-oyster-farm-will-change-property-va/#.WD8p2blrKpo>
3. Dumbauld et al. (2009) The ecological role of bivalve shellfish aquaculture in the estuarine environment: A review with application to oyster and clam culture in West Coast (USA) estuaries. *Aquaculture*. 290:196-223. doi:10.1016/j.aquaculture.2009.02.033
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Negotiation Preparation Background for Taylor from “Local Leads”

Taylor recently moved back to the area after attending culinary school and opened “Local Leads” to focus on bringing fresh, local products from small scale operators to restaurant customers. Taylor hosts a farmer’s market in the parking lot each Saturday morning and is also a member of the local “Restaurant Supported Fishery” (RSF). RSF’s are a modification of the idea behind Community Supported Agriculture (CSA) that focus on connecting small scale fishermen with restaurants to reduce barriers to market.

Taylor spent some time in college studying marine biology and oceanography, but decided that restaurants were more interesting and left to pursue that dream. The restaurant has been doing well lately, in part because they have been using the local angle to market themselves, including by hosting farm and fishermen dinners, where the person who produces the food attends and gives a talk to diners that night. It’s been a good money-maker for Taylor and has helped create stronger relationships with customers and the producers. Jo has participated in two of these dinners, bringing oysters and telling diners about the process to grow them.

Taylor doesn’t really care where the farm is located, but wants to continue to have fresh and safe oysters to sell. Taylor likes being able to say exactly where the oysters are from, but if the site is closer to the waste water treatment plant, Taylor thinks that might impact sales.

Resources to review:

1. Huffington Post Eating Well Blog (07/20/2011)
http://www.huffingtonpost.com/eatingwell/best-and-worst-proteins-health-environment_b_903613.html
2. In a Half Shell Oyster Blog; <http://www.inahalfshell.com/>
3. Interstate Shellfish Sanitation Conference, information on oysters:
<http://www.issc.org/ConsumerInfo/Oysters.aspx>
4. [Dumbauld et al. \(2009\) The ecological role of bivalve shellfish aquaculture in the estuarine environment: A review with application to oyster and clam culture in West Coast \(USA\) estuaries. Aquaculture. 290:196-223.](#)