

Description of both bays environmental sciences essay



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Abstract:

Estuaries play a key role in providing organisms a place to live. As for the humans, the estuaries help provide them with food. This paper would not focus on any specific estuary, just two bays that may be of importance: Kachemak Bay that is located in Alaska and Chesapeake Bay in the East Coast in between Maryland and Delaware. These bays house many estuaries and are important environmentally and economically as well as good for general research. The resource that this paper is going to focus on is chitin. This important compound that is common in nature is starting to deplete in Kachemak Bay. One issue is the infamous shell disease syndrome, which would be explained later on. There is a management plan suggested in here that would help the crustaceans survive the shell diseases that can infect any arthropod that is harmed or molting. The management plan was created in hopes that it would help relieve the stress that the crabs (and other arthropods) are going through as well as helping prevent further damage to

the environment. There are also suggestions for who may help with the management plan as well.

Estuaries and Resources

Kachemak Bay is one of the best-known estuaries in the U. S. The bay is located in the lower southeast part of the Cook Inlet. The area around the bay resembles the characteristics of flood land. The rivers contain fresh water and the currents coming in from the ocean are salt water. Chesapeake Bay is the largest estuary in the United States, making it a main attraction along the shores of Delaware, Maryland, Pennsylvania, and Virginia (Walker, 2003). This big body of water is rimmed with marshland. Like many estuaries, it would either have wetlands such as marshes, bogs, swamps or flood lands surrounding the Bay. Also, Chesapeake Bay has many freshwater rivers flowing into a salty bay. The estuary is defined as a body of freshwater flows into a body of saltwater, which Chesapeake Bay satisfies. The two have the similarities in physical appearance: both are low lands, where water would be able to flood. Algae, diatoms, dinoflagellates are similar organism that live in wet or moist places. They are not plants, animals, or fungi, but they are a group of organisms called protists (Walker, 2003). Estuaries are often called ' bays' (Merriam-Webster, 2012). Notice that both have ' bay' in them, Chesapeake Bay and Kachemak Bay. The reason why is because the term ' bay' was originated from the Anglo-French bai, which in turn was originated from baer which meant " wide open". The animals that live in Kachemak Bay are birds, fish, protists, cnidarians (jelly fish), fleas, and crab. Both bays have variable weather. One second it's nice and hot next thing you notice it is cold and stormy. Mentioned earlier in the paper, crabs were

one of the animals found in estuaries. Crabs are in the phylum Arthropodia, which contain shelled organisms and insects. Their shells contain chitin, which help with the durability of the shell. Every arthropod has this layer found in their shell and other parts of the body. Throughout the paper, the bays, (Chesapeake and Kachemak Bay), will be described as well as the uses, the cultural affects, and the history of chitin.

Description of Both Bays

This paper would compare and contrast as well explain and describe Kachemak and Chesapeake Bay. Much like it's counterpart, Jakolof Bay, Kachemak can support a robust sub tidal macroinvertebrate community known in south central Alaska. Most of the macroinvertebrates are sedentary filter feeders, such as clams. Grazers, such as sea urchins, are abundant as well. While the Bays in Alaska are colder than the ones of Chesapeake, the predation rates are about the same, considering each the same species, in taxonomic level terms. Both estuaries bare rocky substrates. These substrates help support and protect some organisms by providing cover. Since seaweeds are largely absent, detritus forms the base of the food web, which is in the sand and mud regions of outer Kachemak Bay. Much of the detritus is comprised of plant material that is carried by currents from rocky habitats in Kennedy Entrance and the southern Kachemak Bay. Plant materials range from floating seaweed to small pond grasses found around the rivers that lead into the bays. Chesapeake Bay has mudflats, which has greater species richness, biomass and diversity of perennial species than sand beaches and consequently attract the highest numbers of shorebirds and ducks. The same goes for Kachemak Bay, since it has the Fox River Salt

Flats. This is a feeding ground to many migratory birds that have a flight path crossing Kachemak Bay. Fish and shellfish can be found in most parts of the ocean. These two resources are also a food staple as well as abundant, which depends on the health of the environment they are living in. The historical abundance and diversity of fish and shellfish in Kachemak Bay is the product of nutrient rich environment critical habitat for numerous species during various life phases. While the bay historically supported king crab, tanner crab and shrimp fisheries, these fisheries are no longer commercially viable since the late 1980's and 1990's, primarily due to over harvest. It is unknown as to why after so many years of closure the populations have not rebounded. Currently, the most heavily commercially harvested invertebrates are octopus and little neck clams, with a shift from shrimp to these species and ground fish, such as pacific cod. Crabs are also found in both Bays. Historically, there were three species of crab found in Kachemak Bay. King, Dungeness and tanner Dungeness crabs inhabit the bay at the intertidal zone. These crabs can be found 76 meters (250 feet) deep. While adults are found in shallow shore waters along the north shore, the younger, smaller crabs are found in the shallow intertidal areas along the southern shore. Although population numbers are currently depressed, king crabs have been historically common south of Anchor Point. Tanner crabs are usually found in deeper water in the fall and winter, and in shallow water for mating and spawning in spring and summer. Chesapeake Bay has the same problem Kachemak has, which is a small population of crabs. Seeing as both bays

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have the same animals, it wouldn't be surprising to see that both have clams. Kachemak Bay has subtitle population of clams, including pacific little necks, butter clams, surf clams, various cockles, razor clams and several Macoma (Baltic, stain, chalky, oblique and bent nosed). Hard-shelled clams can be found in the lower intertidal areas of mixed sand and mud and gravel. Chesapeake Bay, however, contains different species of clams seeing it is warmer than its colder counterpart. These creatures all play a vital role in the Bay. If one of these important food sources were to be removed, the ecosystem would wobble and there would be a chance for it fall down and shatter.

Chitin Management Plan

To start, oysters, or the likeness of oyster, are found near many shores of the planet. These creatures are covered with protective casings known as a shell. The shell helps protect the organisms' soft and squishy internal organs. This shell is a mixture of proteins, such as keratin. This helps stop anything that is harder than the shell penetrating and harming the oyster, such as fish's teeth. The secret to the oysters' defense is a polysaccharide layer covering the protein. This layer is known as chitin. The chitin is by far more durable and flexible than that of keratin, which is a protein that makes up the alligators or crocodile scales, beaks and talons of birds, and finally, the fingernails of humans. Since arthropods are covered in hard and durable organisms need to grow in quick stages (Arbia, 2011), which is unlike most animals that normally grow gradually throughout their life span. This concludes that the arthropods molt, meaning that they outgrow their shell and sheds the shell off. It would take less than an hour before it grows a new

shell. This process may repeat several times until the arthropod reaches its maximum size or until it dies. Arthropods, despite their protective case, are a food source near bays and beaches. This proves true to the fact that oysters are a culinary art. Other than humans preying upon the oyster, or lobster, clams, or shrimp, there are animals that can eat them. Take the seagull, for instance. The seagull can rip open the reluctant oyster/clam, or tear apart a crab or lobster. Then, after opening the shell, the seagull resumes to eat the oyster. There are other animals that eat them too, such as the otter. It, the otter, puts the clam/oyster on his/her belly and cracks it open with a shell. Oysters and clams are also a food staple in Japan, North and South Korea, China and other coastal countries. This proves that oysters have a great economic value. It also implies the fact that these, including clams (where chitin is rarely found-source is: (Snidermann, 1989)), shrimps (a shellfish), and clams and lobsters, are all-important to both humans and the environment they effect. The oyster also creates pearls, which is very valuable by human standards when really it is multiple layers of nacre, which lines the inside of the shell. The shell also provides shelter for crustaceans and a substrate for kelp. The shell also helps crabs that scavenge the shells. As for other animals, such as the crab/lobster, their uses vary. The crab and lobster are mostly seen as a side dish and used with vegetables. Their more important task is to survive. By doing so, they help keep the number of mussels, sea urchins, fish and, sometimes, themselves, in check. What makes the chitin important though, besides helping protect the arthropod? Well, chitin is extremely versatile, making it very valuable. Because of its positive charge, the chitin would be able to bond with negatively charged surfaces or materials, such as the human skin, metals and macromolecules

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(proteins). One example is that the chitin can serve medical purposes as well (Arbia, 2011). It is found in the creams that you put on burns. Despite being once thought of as a harmful product on the human body, it has proved very beneficial. Leave the chitin in its liquid state and put it in a cloth, then leave it on a third degree burn for about 3 days, it would completely heal! Chitin is also found in cosmetic supplies and any medicinal unit that is used for the skin. Its derivatives (chitosan, for example) also help. Chitosan forms a tensor film on the skin that helps fix other active principles on the skin. Both chitin and chitosan help form a tensor film that place active skin principles be placed in close contact with the skin, thus making a tensor film and still hydrates. Because of this property, this makes both chitosan and chitin very valuable to cosmetics. Seeds that are treated with chitin tend to yield up to 50% more than seeds that were not treated with chitin (Horseshoe Crab Chitin Research). The reason why is because, as explained before, hydrates the seed and protects it from drying out. Seeing as crabs need a sufficient place to live, it would be reasonable to describe the region of Kachemak Bay, since arthropods can be found there as well as many flora and fauna. This bay has an "unpredictable" weather pattern. As stated earlier in the paper, the weather can change quite dramatically. One reason why this happens is because the northern region of the Gulf of Alaska is determined by the relative position of the Siberian high-pressure in winter and the position the east Pacific high in summer (Bader& al, 2003). Another could be whether or not the high-pressure ridge over the Gulf and the Pacific that blocks the normal progression of storms most of the time it is there. Even though the climate of the bay was described earlier, the relatively moderate seasonal range of temperatures, the high humidity and abundance of rain and snow

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would characterize a more specific climate of the Kachemak Bay watershed maritime. Because of this and the information obtained by the National Oceanic and Atmospheric Administration (also known as NOAA), along with the Climate Diagnostic Center, which states that the Bay and the Pacific Ocean can minimize the large extremes in air temperature that results in the relatively mild winters and cool summers that residents around the Kachemak area are used to. Take Homer for example, the mean temperatures in Fahrenheit differs by about 30 degrees, from the low 60s in the summer and the 30s in the winter (Bader & al, 2003). Since wind strength and direction are also part of the climate as well as major factors in creating waves, it would be simply put that during the winter, the wind is violent. Katabatic winds are to blame for the 50 m/s or more winds in winter. These types of winds are caused by cold air masses moving down a slope due to gravity. The velocity of katabatic winds can be intensified by large and/or scale-pressure gradients, as well as the topography of straits and fjords. A major source to the cold winds is the Harding Ice Field, which caps the mountains to the south of Kachemak Bay. While in the summer, small katabatic bursts are common in the smaller south coast of Kachemak Bay. When the wind brushes across the water surface, a ripple would form and follow the wind then goes back down when the ripple does not have enough acceleration to move the energy further. This ripple is commonly known as a wave. The waves are usually used to tell whether the tide is rising or not, not for telling where the current is going. So, in order to find out a hypothesis that the bay had various gyres as well as eddies at the entrance and in the bay as part of the Outer Continental Shelf Environmental Assessment

Program (OCSEAP) research that was done in the late 1970s, leading to <https://assignbuster.com/description-of-both-bays-environmental-sciences-essay/>

studies that show that general circulation patterns in lower Cook Inlet and was concluded that the currents are complex and reflects that they are influenced by diurnal and monthly lunar inequalities in tidal forcing, meteorological effects and fresh water forcing seasonal changes in the tidal regime (Bader & al, 2003). Currents also bring along food for filter feeders. Planktons are free floating animals/plants that help the ocean and the fish as well as supplying oxygen. Currents can also take them away. The process of these two are called, in respective order, upwelling and downwelling. When water is upwelled, the nutrient rich water is pulled down and cold nutrientless water is pulled up. Downwelling is the complete opposite. It pulls the nutrient rich warm water is pulled towards the coast and the cold nutrientless waters is pulled down towards the bottom. Water is affected by wind, but that only happens on the surface. Underneath, the water goes in one constant, if not slightly changing, flow. If the wind pulls the warm water easterly, making the water irregular if cold water wasn't there. So, in order to even out, the cold waters from the bottom to the top where warm waters used to be. The cold water would then rise up gently then start to move away from the shore. This makes sure that the water surface is normal. However, the wind makes the water look like it's going in a direction, let's say the wind is going south, but the current underneath the surface is mildly affected, but still upwelling (Wright, 2011). Also, keep in mind, the water current would tend to move away from the shore, like the cold water is being pulled up then tugged. There are opposites for everything, so the opposite of upwelling is downwelling. This takes place after upwelling, where water would be pulled up and go towards the shore. Before, the warm water would spread, going in the direction of the wind, or going towards the bottom. Then <https://assignbuster.com/description-of-both-bays-environmental-sciences-essay/>

it goes up. Upwelling and downwelling affects the life of the shore. Usually, this occurrence happens naturally and can cause some problems; such as the effects that upwelling has along coral reefs. The nutrient rich water that the reef was in is now cold and does not have as much nutrients as before. Estuaries are fragile, so any small change would deeply affect it. Because of this, the animals can easily adapt. This helps ensure of survival. Of such changes, the salinity is important, as salinity and density change together. One thing was over looked though: human interaction. Everything a human does usually affects the natural world. One example would be the Exxon Valdez Oil Spill² of March 24, 1989 in the Prince William Sound. ExxonMobil's supertanker had run aground and lost about 110 barrels of oil in a short period of time, there would have been more if the personnel hadn't taken action as quickly as they had done. It had taken about 3 years for the massive cleanup to be taken care of. Up to 11, 000 Alaskan residents, along with the U. S Coast Guard and thousands of Exxon's and contractors personnel had lend a hand to try and bring back the Sound to its former glory. In the year 1992, the Coast Guard had declared the clean up a success. This was " one of the lowest points in ExxonMobil's 125-year history," as said by the Exxon website (Mobil, 1989). Luckily, the spill did not cause any long-term problems to Prince William Sound. Shortly after the spill, scientists and biologists, as well environmentalists went and studied the water as well as the animals that were in distress as well as in need of medical attention. The animals were soon brought back to health, as well as the waters that had contained oil. Looking at the oil spill, it is clear that the human presence has a big impact on the environment. When a new building is needed, some natural life is taken away. When a park is being built,

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natural life would be welcomed. The life of a bay is the same. All the motors and the gases found in the air have let the animals found in the bay adapted to the presence they see as dangerous. Any accident, event, legal action, or anything that deals with human interaction and the coast that is mentioned in the paper would be described and examined, but not really revolving around the subject. Human interaction with wildlife can cause positive outcomes too. One instance is the Environmental Protection Agency and many others like it. The purpose of these companies or industries is to help protect or clean up the environment. Other than the EPA is the National Ocean and Atmospheric Administration and Alaska Department of Fish and Game. These companies were made to help try to recognize meteorological patterns and the environment to help prevent any damage and recover quickly if anything unsuspected happens. Even with these organizations helping, this does not seem to stop the depletion of the chitin in Kachemak Bay. The main reason is because of the shell disease syndrome (Snidermann, 1989). This disease degrades chitin. Also, the shell disease syndrome makes the shell of the crab, lobster, shrimp, or prawn soft to the touch, as reported by NOAA, the U. S Department of Commerce and the National Marine Fisheries Service circa 1989. The shell disease syndrome comes in many forms. To name one common disease, or disease syndrome, is the "brown spot" disease found in arthropods. The disease affects the coloration (may be present as brown or dark brown) and create lesions on the shell. This infestation of bacteria might have been possible from fungal invasion too. When molting, the shell is shed and leaves the arthropod, especially the shrimp found along the Gulf of Mexico, defenseless against predators and pathogens as well fungus. The bacterial species, *Vibrio*, would

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enter stressed or damaged individual and start to absorb and utilize the chitin. Brown spot disease is ubiquitous (Snidermann, 1989). Just as the brown spot disease is ubiquitous, just like the fungal shell disease syndrome that is associated with the "black gill" found in prawn. The disease is associated with the fungus species *Fusarium* spp. In rare cases, the species *Haliphthoros* sp. and *Atkinsiella dubia* may be present. All three of these fungi also can kill the host. So far, these diseases syndromes could be found around the world. Thankfully, these diseases do not occur on a daily basis. The requirements for these world known diseases, such as temperature extremes, inadequate nutrition, or the onset of ecdysis, which is the molting of the shell (Snidermann, 1989). These stressors are usually due to environmental changes that humans can change what they can. Not only do the temperatures regard to the shell disease syndrome, but the geographical location does too. Such example of one shell disease, called "shell disease" in Nova Scotia. The disease affects the American lobster. It degrades the shell and kills the animal. The prevalence of the shell disease syndrome in the natural habitat is rare, occurring only about less than 2% of the population. As for degraded or impounded areas, the frequency ranges from a low 10% to a high 90% of the population would be infected (Snidermann, 1989). One reason why the species in natural habitat has a lower percentage is because any infected animal would have a hard time to spread the disease and the conditions aren't as fragile as a tank. The temperature of the tank and degraded habitats change dramatically. Another reason is the nutrition of the food they get and the water. Sometimes, crabs would attack each other, making them easier for the disease to get to them. Other times, by the time the crabs are caught, they don't have any shell, making them an

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easy target to the bacteria and fungi. The signs that the crab does have the disease is the casual erosion of the shell as well as the brown focal spots that can be seen. Sometimes, the underlying tissue can be affected as well.

Another physical effect of the diseases is the path the eroded exoskeleton has, which allows an invasion of facultative pathogens. Also, the disease syndrome would destroy the respiratory system by destroying the gills of the arthropod. The adhesion of the shell may also prevent ecdysis

(Snidermann, 1989). While the mortality of the arthropod is low in the natural area, the impounded habitat has a higher chance of mortality due to gill damage, secondary infection, or the failure of ecdysis. All these mostly happen to crabs and lobsters since they are left in tanks for a long time if the water salinity, water temperature, pH levels, turbidity, murkiness and oxygen supply are not watched. If the waters are not kept well, the shell disease syndrome would create major losses, both in profit and the amount of crabs or lobsters the tank held. If a crabbing vessel decides to take care of the crabs from autumn to middle of winter, the crew must keep a watchful eye on the tank and the lobsters as well as the water. If there is so much overfeeding, the water quality would drop and kill the lobsters/crabs, but their appetite varies because of the amount of heat (they eat more when it is warmer) and the time of year. In winter and early spring, the lobsters/crabs hardly eat at all. Another thing to avoid is the lobsters/crabs attacking each other. So, the crew of the crabbing vessel need to be able to prevent this. To do so, the crabs' claws must become nicked and the lobster claw banded.

Though, when being nicked, the crab must be out of the water to avoid any disease from entering. When it comes to putting the animals into the tank,

what a "greenhorn" needs to know that if the crab/lobster feels soft, it is
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best to throw it away (HowstuffWorks, 1998- 2012). The reason why is so that their soft bodies won't cause any damage to a crabbing vessels progress. The softness is due to the fact that they are molting. When the crab is starting to grow, the shells would gradually fall off since the crab is growing bigger. In order for this to happen is for the crab to soften the shell. So, the plan here is to try and make sure that a clean tank is needed and required for the ship. That way, the animals wouldn't need to be thrown into the ocean. This would create even more problems with the arthropods that are not affected by the shell disease syndrome. To prevent this, there would need to be a sort of processor for the shells of the dead crabs (some crabs tend to discard their organs in the tank, which would need to be cleaned up to keep the tank clean) on the ship away from water or put in a waterproof casing. This way, the shells won't be discarded. In order to create chitin, all a person needs is some organic acids (sodium chloride [10%, mixed with tap water], hydrochloric acid [1%, mixed with tap water] and deionized water). The process would take about 30 minutes. (Griffin, 2012)As for the " Where's the wastebasket going to be question," it would be near where the tank opening on the deck. This way, the guts would be easier to transport the guts away from the water that the tank holds. There would be a cover too, preventing the guts to go away. Also, the basket would need to be tied down or nailed to the ship to prevent any loss of the infamous guts. In order to improve the break down process, then carbon would help a lot. That way, it would keep the organs from staying preserved as well as preventing smell. Once done, the packages of ground chitin and the guts would be sold. This would raise the workers' pay by about \$1 all the way to \$1, 000. The price depends on how fine the chitin was produced. Either way, the chitin would be

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able to help get the workers more money, more or less. With the higher end of the problem gone (remember the mortality rate was from 10-90% in impoundment or storage tanks), the spread of the shell disease would be able to be kept at bay for a bit. Also, the crabbing business would be not only able to get some more money, but also more work. As a saying goes, "The more, the merrier."

Prioritizing the Management Plan

This management plan is about stopping the shell disease from spreading around on crabs, and possibly other sea animals in the area. The shell disease is a bit too abundant in the impoundment tanks found on ships. Chitin is important to us in a few ways, speeding up the healing process is one of them. Chitin is also important in economical values, people sell it in cosmetic uses, and many other ways we can use chitin. The goal is to stop the degrading of shells that contain chitin. There are many companies, corporations, departments, and people who can manage this management plan. It would be great if a large number of people managed this plan. For example, there is the ADF&G (Alaska Department of Fish and Game), and the NOAA (National Ocean and Atmospheric Administration), they both can manage and monitor this plan well. The residents of Homer can help too by reporting where the shell disease is as well as being able to notify the biologists about anything wrong with the crab population or any other animal population that contain chitin in their shells. Also, the government can put up notices telling crab fishers to report to NOAA or ADF&G where the diseased crabs are if they catch any. NOAA or ADF&G needs can pay the expenses of the chemicals and research if they wanted to pay for the expenses. If not,

the government in Alaska can be asked if they wanted to pay for it. If the biologists already have the equipment needed then it is suspected that it wouldn't take much money for the research. However, if they do not have the equipment needed and the equipment needed is expensive, then it would take a large amount of money for the research and equipment. Now, in order to know what the scientists need to know what to monitor is an estimated guess of mortality rates of the lobsters in impoundment tanks (or storage tanks) as well as the temperature, salinity, turbidity. Research is the key to help prevent any higher mortality rates happening. This would help prevent the erosion of the population of the bay as well as keeping the Bay healthy. They need to research how fast the shell diseases can spread, how it affects the chitin and the crabs, and if and how to get rid of the shell diseases. They need to monitor the crab population; if the population is decreasing or staying the same amount when the shell diseases are in action. The overall costs of this researching and monitoring estimated will probably be around a few thousand dollars for all of the equipment needed and other things needed. Since the management plan says that a week of crab fishing will be cut off from a season, the crab fishers would be able to go back with a little less than the year before the management plan would be implemented. The small week off would help reduce stress on the crabs, lobsters and possible oyster. Of course, some crabbers would find this a bit useless, but the bright side is that they won't have to worry about being stranded or blocked by ice. Since the goal is trying to get the shell diseased crabs away from the healthy crabs this is a good thing for the crabbers because there will be less shell diseased crabs running around in the fishing areas, this makes for a little more crabs in the bucket. Another good thing is <https://assignbuster.com/description-of-both-bays-environmental-sciences-essay/>

that the goal is trying to raise the crab population to keep the chitin at a sustainable and adequate amount enough for to have a steady intake flow, this way there is more money made from chitin. The Alaska Department of Fish and Game can enforce the regulation and pay for monitoring efforts, the NOAA can monitor the effects the management plan would do. It is important to have real time data as a few unknown factors would come into play. If something goes awry, the plan would change some of its priorities. This way, the plan would be flexible as it is effective. The way to carry out the plan is to make sure that there are some sea faring vessels that have grinders that can grind crab shells; there should also be some big wastebaskets for crab guts too. The reason why there should be grinders and wastebaskets is because there are some crabs that tend to spew their guts out when too tired or too scared. Instead of throwing the guts and shells in to the water and ruining the pH balance, salinity balance, and turbidity balance it is better to throw the crab shells into the grinder for use (think of the water plants), and throwing the guts for the gulls later on instead of ruining the balances in the ocean or sea or any other body of water that sustains life. So, put simply, there should be a big wastebasket for the disposable parts of the crab/lobster or oyster and a grinder to grind the arthropods shells for some boats that go crabbing or hunting for oysters. This way, when compared to those that do not have the waste bin or the grinders would be drawn. If there were two ships named Ship A and Ship B, but Ship A has the required grinder and wastebasket and Ship B was not required to have the grinder and wastebasket. Since Ship A has the grinder and the wastebasket, this ship would produce more than Ship B because chitin is in the shells of crab.

Therefore Ship A is making more money because chitin is useful in economic
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value. Also since Ship A has the wastebasket, they help nature out a little by not degrading the water balances in the ocean. Ship B, having no grinder and wastebasket makes produces less than Ship A because they don't save the crab shells that contain the chitin. Also, Ship B doesn't help nature because they are throwing the guts in the ocean and ruining the water balances in the ocean. So it is better to have a grinder and wastebasket onboard crabbing ships. So it is the NOAA and ADF&G who should monitor and manage the management plan. These departments have the money for the expenses, the equipment and the right people to pull off this management plan and make it work. The government in Alaska also can help with the expenses for the equipment and enforcing the small experiment that was portrayed earlier in the paper.

A Drawing Conclusion of Both Bays

Chesapeake Bay's estuary is the largest estuary in the United States. About half of the water is salty because it came from the sea, and the other half is fresh water that comes from the mountains. From the mixture of salt and fresh water the salinity increases when you go from north to south.

Chesapeake's surface area is 3, 830 square miles. And contains more than 1, 500 square miles of wetlands. (85, 800) Cubic feet of water enter the estuary per day (Program, 2012). Also Chesapeake's estuary was formed long time ago during the Ice Age as the years past the glacier melted and tons of water created Chesapeake's estuary. The Chesapeake Bay is the largest of more than 100 estuaries in the United States. The area surrounding the Bay is called the Chesapeake Bay watershed. A watershed is an area that has water that ultimately drains into a bay. The estuary and its network of streams,

creeks and rivers hold tremendous ecological, cultural, economic, historic, and recreational value for the region. The Chesapeake watershed is a complex network of wetlands, forests, fields, streams, underwater grasses, and mudflats that provide thousands of species of plants, fish, and wildlife with the places they need to find food, shelter, reproduce, and rear their young (Program, 2012). Much like Chesapeake Bay, Kachemak Bay also is a large estuary. Kachemak Bay is the second largest estuary in the United States. Kachemak Bay is over 360,000 acres of estuaries and upland habitats. And it is one of the most productive, diverse and intensively used estuaries in Alaska. Also Kachemak Bay is 40 miles long and 24 miles wide (Bader & al, 2003). Based on oceanographic studies, Kachemak Bay may be one of the most biologically productive ecosystems in the world. Upwelling and a semi-permanent gyre system in the outer bay contribute to the intense spring and summer productivity, as do the mild maritime climate and many transitions in ecological habitat. The difference between Chesapeake Bay and Kachemak Bay is that they are different in size and shape. They both have different climates, animal species, fish, and plants. Also one of these two estuaries are used more than the other and Kachemak Bay is one of the most productive intensively used estuary. Chesapeake Bay and Kachemak Bay have different locations. And Chesapeake Bay is larger than Kachemak Bay. They both provide creatures with shelter and food by nurturing them with the bounty of life. They both provide food for people if the officials allow fishing and hunting in the area. These are the similarities and differences between the estuaries. Now, when taking a look at what attempt the scientists had done to try and manage the ecosystem, it becomes clear that they had tried to prevent any further problems. Just this <https://assignbuster.com/description-of-both-bays-environmental-sciences-essay/>

one thing that people is that they leave their trash lying all around the bay and when it rains it brings all those chemicals down into the bay. So people should dispose of their trash appropriately so all those chemicals wouldn't go down and into the bay. The differences cast, as well as similarities shown, of the Bays would allow both of the reserves to learn from one another. Since Chesapeake Bay is having a more troubling time (because of more people interacting), KBRR (Kachemak Bay Research Reserve) would be able to learn what stress factor would do to the bay they are protecting and then find plausible solutions to the problems. In return, the information can be shared with Chesapeake Bay Reserve to see if it would help or inspire any ideas that would help bring Chesapeake to a healthier state. This way, any method applied to these two differently similar bays would help others out of any problem they are currently having with.