

Independent project: The New Zealand Mud Snail: Invasive Species to Washington

Summary

Invasive species are a common problem with most ecosystems around the world. These various plants, animals and living organisms can cause loss to the natural environment. In this report I will be mainly talking about the New Zealand Mud Snail, which is currently infesting fresh water lakes and rivers around Washington. It has been shown over the years that The New Zealand Mud Snail is not nearly as destructive as the lion fish or the zebra mussels. However these mini mollusks are rapid producers cloning themselves at a fast rate.

New Zealand Mud snails were first discovered in Washington in 2009 and have continued to spread (*W.D.F.W, 2016*). They were initially brought to America through a New Zealand fish stock. This happened back during a time when they exported their fish alive. Since then the Mud Snails have dominated some ecosystems in Washington, Colorado and states surrounding the Great Lakes. With having this nuisance going around some of the largest freshwater supplies is very concerning for our futures sake.

With having an invasive species in your community it is important to be a participating community member in helping the species to not spread. It is ideal that you learn what they look like and what the cause and effects of the Invasive species can do. Also it is useful to learn if they

are barring you from using public spaces such as lakes, bridges, etc. Throughout this report I will be discussing the effects Mud Snails have on humans, the political aspect of invasive species and how this affects you and me.



A sign at Capitol Lake in Olympia indicating it is closed due to the New Zealand Mud Snail

Introduction

When thinking about the environment and all the current issues, invasive species are at the bottom of the list sometimes. This is understandable compared to a lot of modern day environmental problems. However invasive species cause a great deal of destruction to an ecosystem, costing you, me and all the rest of the taxpayers millions of dollars of damage to lakes, rivers, dams, you name it. In this paper I will be focusing more on The New Zealand Mud Snail, a current issue facing local Washington communities. I will mainly spotlight the cause and

effects of The New Zealand Mud Snails on the environment and humans. Due to aquatic invasive species such as the New Zealand Mud Snail, freshwater lakes in Washington and around the country suffer the consequences of environmental change and degradation.

History of the Mud Snails and First Appearance

New Zealand Mud Snails were first spotted in the Snake River in Idaho during 1987 (*W.S.R.C, 2009*). The origins of how they invaded Washington are unknown. They were first noted in part of the Columbia River during 2002. How they ended up in the P.N.W is blamed on commercial fisherman transporting the snails due to the snail's accessibility with traveling out of water. Due to the Snails being an operculate Snail meaning it can seal its shell from the outside world. Making the New Zealand Mud Snail capable of surviving out of water for days. Initially the Mud Snails were brought by the ballast of ships that were contaminated with the species. With the Mud Snails being invasive they have no known predators. While the snails can consume they cannot be consumed. They have no nutritional content. They are having an effect on the food chain and natural cycle.

Description of Mud Snails

New Zealand Mud Snails are quite small. Only being about four to six millimeters for a full grown adult to reaching lengths of 12 millimeters in their natural habitat. Their shells are a light or dark brown hue with about five to six swirls around the shell. Mud Snails tend to consume food sources at nighttime, usually feeding on plant matter, algae and sediments (*W.S.R.C, 2009*).

Learning what The New Zealand Mud Snail looks like is the best thing you can do to help with the ongoing problem of environmental loss. In this case size doesn't matter.



The Infamous New Zealand Mud Snail tends to be 4-6mm

Rapid Growth Rate of Mud Snails

The ongoing problem with any invasive species is its being introduced to a completely new environment. Time and time again this has the same effect. The invasive species has no known predators, allowing the species to just reproduce and reproduce. A single female Mud Snail can produce up to 40 million in just a year, The New Zealand Mud Snail can produce densities of half a million per square meter, completely decimating other biomass (A.N.S, 2015). With aquatic invasive species it's next to impossible to cleanly remove the invader without some

innocent casualties. With population numbers like that, the species can completely transform rivers, sometimes making them not even recognizable.

Effects on the natural environment

The Mud snails eat the same matter that native snails and shellfish eat causing a large disturbance in the food chain. The worst part of the food shortages is the effect it has on young trout and juvenile salmon, forcing large amounts of juvenile fish death. I mentioned earlier how Mud snails have no nutritional value. They can be consumed by fish and travel through them and still survive, potentially causing harm to the fish (*Brown, 2006*). With salmon already fighting for its future, they don't need this nuisance affecting the beginning processes of life for these fish. Studies have been done to see the impacts of fish native to Washington and how they react with a diet consisting of Mud Snails. The study finds that these fish end up losing weight. This can be a future problem for the top of the food web, aquatic species not having enough nutrients for all the native fish (*Pleus, 2016*). These snails are consumed in their native habitats by whales and various whitefish (*Brown, 2006*).

Mud Snails Effects on economy

Due to the Mud Snails affecting fish populations in lakes and rivers it can lead to social degradation. Causing hobbies like fishing to decline, due to the shortages in fish. Salmon is one of the Pacific Northwest food staple providing a lean and tasty protein source. Without Salmon what would some of the big fish markets in Seattle look like? Sales would probably go down and

prices would likely go up. With disturbances already in the food chain caused by the Mud Snails losing Salmon could completely 180 the food web.

Washington State being one of the more outdoor recreational states can't afford to lose one of the key elements of nature. What will happen to swimming in the lakes during the summer; will it be a thing of the past because of these pests? What about the Snails reshaping the rivers making it unusable for kayakers or canoers. With Olympia's center piece "Capital Lake" being closed due to the Snails, will summer time ever be the same in Olympia? Possibly you can swim in the Sound. However the Mud Snails will have direct impacts on outdoor tourism. By the snails being easily attachable they can destroy infrastructure around the water source and in the water source. Making rivers or lakes easily able to become closed after infestations.



An empty Park table at the currently closed Capitol Lake

Political side of Invasive Species and Further action to remove Invasive species

When it has come to Invasive species in the past it has tended to be an underfunded section. Many states have different measures and processes for obtaining money. But in the

state of Washington most of the invasive species control money is from boating permits- (Pleus, 2016). This has always been a very controversial topic due to different sides having different opinions.

Many staff in Washington for the Department of Fish and Wildlife are trying to remove the species from the natural habitat. Their results have been very grim, not showing much positive results (Pleus, 2016). Procedures of handling aquatic invasive species are not well developed you would say. A method of removing Mud Snails that has worked in other parts of the country is to freeze them out. Draining the lake exposing the Mud Snails on the rim of the lake and let them be in direct contact with freezing temperatures for about three to five days. This method has shown to work however this climate is a little bit different for the preferred conditions. Another method that the Department of Fish and Wildlife uses is called a Saline Shock, exposing the snails to salt water at a moment's notice (Pleus, 2016). However the snails are very intrusive and close their shell before salt water is injected. It has also been shown that this has made Mud Snails more resilient to salt water which is the complete opposite of the objective.

What you can do to help!

One of the positives about invasive species like the Mud Snail is you probably had no role in bringing them here. But it is your role to make sure they don't spread. This is quite an easy task. When facing invasive species, aquatic or not, in your community you should first do a little research about the species. Then once you have familiarized yourself with their size, color and habitat, find some local resources like, people who work in this department such as the fish and

wildlife Department. Learning the invasive species hotline is helpful being 1-877-9-INFEST. Alerting the right authorities when coming upon an invasive species is very important to not disturb them. Lots of invasive species can attach onto you or gear while in the area, transporting themselves to other locations that have not been invaded (*A.N.S, 2015*).

In order for all of us to have positive impacts on our community, we must know that the number one way aquatic invasive species spread is from not cleaning our gear, boats, etc. Species like the Zebra mussel, New Zealand Mud Snail or the Quagga Mussel can easily attach themselves to surfaces like boats and waders. But on the bright side, properly cleaning waders and other equipment that could be contaminated with aquatic invasive species is simple. Just wash everything touched by water with warm soapy water and let dry in the fresh air. Boat owners; after every visit to a local lake you are to make sure to hose off the hull and engine, making sure there are no aquatic hitch hikers. The same applies to kayaks and canoes.

Further Knowledge of other Invasive Species

There are lots of invasive species in this world. They are not only aquatic. Invasive species come in many different shapes, sizes, and colors. They can even be plants. Surprisingly not all invasive species are bad. For example tulips, the flowers households around America have in their gardens are actually an invasive species. Some just produce and consume faster than others, making them more of a disturbance. The trend usually over time is that these species that have invaded from other parts of the world adapt to the new ecosystem, becoming a functioning part of the ecosystem (*Arnold, 2011*). However most of the native plants we have in our backyards are invasive. Roy Von Driesche an expert on invasive species at the University of

Massachusetts estimated that out of 100 invasive species in the area of 5 to 15 species succeed in establishing themselves in a foreign environment (*Kolbert, Pg202*). Now one of two things happen when a specie moves environments. First the climate isn't suitable for their needs or they have predators already or the species establishes itself and spawns generations to come.

The problem with most invasive species is that when they are brought here they are a foreign substance to the ecosystem. Most of the time the species that invaded has no known predators, and if they produce at a rapid rate that can destroy biodiversity. One of the main causes of species being spread to other parts of the planet is caused from careless dumping of ballast water from large cargo boats. A funnier incident occurred in Florida when the popular exotic pet was a Burmese Python, which turned bad becoming another invasive species to Florida, making Florida the number one state in America for invasive species (*Parry, 2011*).

Some invasive species are tastier than others. The New Zealand Mud Snail is inedible. However the ever so dangerous and intimidating lion fish has a good taste giving locals to that area an incentive for spear fishing them (*Johnson, 2014*). People around the great lakes hold contests to see who can net the most Asian Carp. Places all around the world find ways to lower these species population size. We just need to figure out what Olympias solution will be. Will the department of fish and wildlife hold a contest at Capitol Lake to see you can collect the most Mud Snails? Realistically this wouldn't work but something along those lines. On the Brightside engineers and innovators are creating technological advancements to fight these species.

Being an Active Community Member

So all in all the main priority of an active community member is to familiarize oneself and others with what the specific species looks like, in this case New Zealand Mud Snail. Also share with neighbors and friends about ongoing problems with certain species (A.N.S, 2015). Talk to your a fish and wildlife department about local invasive species and what you can do as a positive role. Usually the best thing to do with these problems is leave the species alone and contact the proper authorities. In this environmental situation you cannot play the hero.

Conclusion

In the near future hopefully we can lower the number of Invasive species in Washington and around the World. We can do this by creating new regulations and laws for shipping goods from overseas or what pets we can and cannot own. By having the people take more careful precautions and enforcing new regulations we can be more cautious of our environment. Our real challenge will be how to extract these invasive species without destroying the natural habitat they invaded. With our modern world transforming from such factors as greenhouse gas emissions or ocean acidification. We really don't need the nuisance of invasive species disturbing our progress.

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