

# PENDILLS/SULLIVAN CREEK

## NFH NEWSLETTER

### Our Mission

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The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.

A vision of Fisheries Program that hatcheries directly address is to conserve aquatic species through recovery programs for threatened and endangered fish and mussel species, maintenance of fish health, restoration of native inter-jurisdictional species and management of aquatic nuisance species.

### Our Facilities

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Pendills Creek National Fish Hatchery (NFH) is located along Lake Superior, approximately 17 minutes west from Brimley, Michigan. Pendills Creek NFH is a lake trout production facility and was established in 1951 to stock the Great Lakes. Lake trout are raised from eggs, and are reared for approximately 14 months, then are released into Lake Michigan. Currently, Pendills Creek is able to raise approximately 1 million lake trout each year.

Sullivan Creek National Fish Hatchery (NFH) is 15 miles west of Brimley, located south of M-28, on US Forest Service Road 3134, which is branched off of US Forest Service Road 3131. Sullivan Creek NFH was established in 1934 and is a lake trout brood stock facility. The brood stock at Sullivan Creek are from wild parents, and are maintained to provide approximately 5-7 million eggs each year for hatcheries to continue the restoration efforts.

Our complex is located in the Midwest Region of the U.S. Fish and Wildlife Service (US FWS) within the Department of Interior. There are 6 hatcheries within our Region that play a valuable role in restoration/rehabilitation of native fish, mussels and other aquatic species around the Great Lakes.

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## Visiting our Facilities

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Pendills Creek NFH is open for tours during business hours (7 am to 3 pm). For group tours, please call for an appointment, by calling (906) 437-5231 to schedule an appointment.

Sullivan Creek NFH provides tours by appointment only. Please call Pendills Creek to schedule an appointment.

## Sullivan Creek NFH Effluent System Enhancements

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Several years ago a new incubation building was constructed at Sullivan Creek National Fish Hatchery. With this new building came newer technology, specifically regarding variable speed pumps within the effluent sump pit. Instead of having one, single pump; there now are two sump pumps. Having two sump pumps allow for better control and a more efficient system. If one were to fail, the other would allow continuation of operation. During the design phase, a potential hazard regarding the effluent system was missed, the possibility of these sump pumps to become damaged from foreign materials coming in the effluent drain line.

The hatchery designed a custom-made basket to fit the effluent drain line that would prevent debris from encroaching towards the sump pumps. A local metal fabrication company made the basket from the hatchery personnel designs. The effluent basket is made of stainless steel, and includes a hinged lid to clean out the basket.



Figure 1 Image of Sullivan Creek National Fish Hatchery's effluent drain line basket, to prevent debris from damaging the sump pumps. Photo Credit: US FWS

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Sullivan Creek NFH is a lake trout brood stock facility located in Brimley, Michigan. Sullivan Creek was established in 1934. The brood stock at Sullivan Creek are from wild parents and are maintained to spawn each fall to collect approximately 6-8 million eggs each year for hatcheries to continue the restoration efforts in the Great Lakes.

*- Curt Friez  
Hatchery Manager*

## **Pendills Creek NFH Water Inflow Treatment System**

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Fish hatcheries are typically placed in locations where the water resources meet quality and quantity needs and are readily available. Unfortunately, from the time of original placement of a hatchery to the present, multiple detrimental changes in most hatchery water supplies typically have occurred at many of the Fish and Wildlife Service Hatcheries. These changes affect the facilities ability to produce healthy fish consistently. So because the water quality changes in just about every case have a negative affect with regard to fish rearing or production, facilities have had to look at other ways to remediate for these adverse changes.

In the case of Pendills Creek National Fish Hatchery which produces lake trout for the Great Lakes Restoration Program, several changes in water quality and quantity have occurred over the years. These affects have mostly been caused by human activities in the area which include; logging, road development and to some degree changes in the surrounding forest with regard to global warming.

Fish hatchery's objective is to produce the highest quality fish possible with regard to overall vitality, it became apparent that the hatchery needed to incorporate some modern technology into the treatment of hatchery water inflow. The water quality for the facility was never good, and over the years fine silt and debris from the Viddian Creek water source has increased. This is an issue especially for young fish that are forced to live in these silty water conditions. You could equate it to humans breathing dusty air all the time. Eventually, it causes health issues with us and with the fish in the form of bacterial gill disease. This disease is hard to treat and losses can be extremely high and chronic. Secondly, although Viddian Creek is a spring fed water source, there are a series of shallow beaver ponds along the drainage that allow the water to warm up into temperatures that nearly exceed what cold water fish tolerate. These higher water temperatures also cause undue stress upon the lake trout at certain times of the year, because with the warmer water temperatures, the water has less capability to hold dissolved oxygen. The hatchery has incorporated an oxygen supplementation system that artificially raises the dissolved oxygen levels in the water helping to keep the fish happier during these extremely warmer water periods. The oxygen supplementation system also plays a role when water quantity is low. It allows the hatchery to bolster or raise dissolved oxygen levels even though the total flow going across the fish is reduced, also reducing the stress upon the fish. Thirdly, the Viddian Creek water source is open and also has a native brook trout population and various avian predators (vectors) that can land on this open water source and potentially bring in various other fish disease from other areas, especially from Lake Superior which is very close to the water sources. To combat this bombardment of

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potentially lethal diseases that the hatchery lake trout could pick up from the water source the hatchery has also installed an Ultra Violet light disinfection system that all the incoming water must pass through before passing over the fish. This system is strong enough to kill bacteria, viruses and even some parasites that potentially could have inoculated the lake trout with disease.



Figure 2 Pendills Creek National Fish Hatchery's Viddian Creek intake. Photo Credit: US FWS

Before these hatchery enhancements work, the hatchery had to depopulate due to an associated fish disease and the poor overall quality of fish. Since these enhancements have been completed the hatchery has not suffered any major setbacks with regard to fish health (knock on wood) and the hatchery products produced at our facility are of extremely high quality. These technological advances have helped reduce the negative impacts of the deteriorating water supply and help make the lake trout restoration program here at Pendills Creek NFH a success.

In the following labeled photos, you will see the traveling screen that removes larger debris from the Viddian Creek water supply, the drum filters in the water filtration building that remove smaller debris down to 90 micron particle size, the open channel Ultra Violet light system that senses water clarity and only runs the number of UV bulbs needed to kill bacteria, viruses and parasites and the low head oxygenators (LHO's) that can boost dissolved oxygen levels up to 130% supersaturated levels during extremely warm water and low flow water periods. All of these enhancements reduce the stressors upon these fish allowing them to live and grow in a healthier environment successfully, which is exactly what the Service desires for a Restoration Program to succeed.

*- Curt Friez  
Hatchery Manager*

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Figure 3 Traveling Screen at Pendills Creek National Fish Hatchery. The screen removes large debris from the creek water supply. Photo Credit: US FWS



Figure 4 Drum filter at Pendills Creek National Fish Hatchery. Removes particulate down to 90 microns. Photo Credit: US FWS

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Figure 5 Green glow from the Ultra Violet light disinfection system at Pendills Creek National Fish Hatchery. Photo Credit: US FWS



Figure 6 Perforated aluminum top screens on the Low Head Oxygenators, allow water to enter and gasses to exchange. The system uses the gas laws to artificially boost oxygen levels since the dissolved gasses in water want to be in equilibrium to the environment or atmosphere it is in, so in this case, it is in a very oxygen rich environment, so the water takes up Oxygen and releases Nitrogen gas. Photo Credit: US FWS

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## Belated Welcome to Staff Member Christopher Dean

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My name is Christopher Dean and I have been occupying the position of the Fisheries Biologist with the U.S. Fish and Wildlife at Pendills Creek National Fish Hatchery for approximately nine months now.

I grew up in a big farming family in Luther, Michigan that resided on the headwaters of the Little Manistee River. I attended high school at Pine River Area Schools in Leroy, Michigan and moved to Escanaba, Michigan shortly after. I attended college at Lake Superior State University in Sault Ste. Marie, Michigan graduating with a degree in Fisheries Management with a Senior Thesis titled: *“Characteristics of Wild Steelhead (Oncorhynchus mykiss) to Hatchery-Raised Steelhead Returning to the Little Manistee River Weir, Michigan.”*

My previous career started off working with the U.S. Geological Survey for sea lamprey control dealing with sea lamprey pheromone studies in Millersburg, Michigan. In the following season I worked as a Fisheries and Aquatics Technician for the Little River Band of Ottawa Indians located in Manistee, Michigan. At the Little River Band of Ottawa Indians I gained extensive experience working with sturgeon restoration, inland fisheries, and water quality. I moved to Coos Bay, Oregon shortly after to work as a Marine Fisheries Biologist dealing with the regulation of the commercial fishing industry for the National Oceanic and Atmospheric Administration. During my two years in Oregon I worked in Washington, Oregon, and California aboard a variety of different commercial fishing vessels in the Pacific Ocean. Fishing trips lasted anywhere from one day deployments on nearshore fishing vessels to offshore trips lasting over a month in length. I have over three hundred days of at-sea experience while having lived in Oregon for two years. In the spring of 2014 I move to Ashland, Wisconsin and assumed the role as the Fisheries Specialist for the Bad River Tribe. While working for Bad River I overseen and supervised a walleye and yellow perch hatchery and also assisted in the regulating of the Lake Superior Commercial Fishery.

My hobbies include steelhead and walleye fishing year round, along with many outdoor activities and spending time with my family.

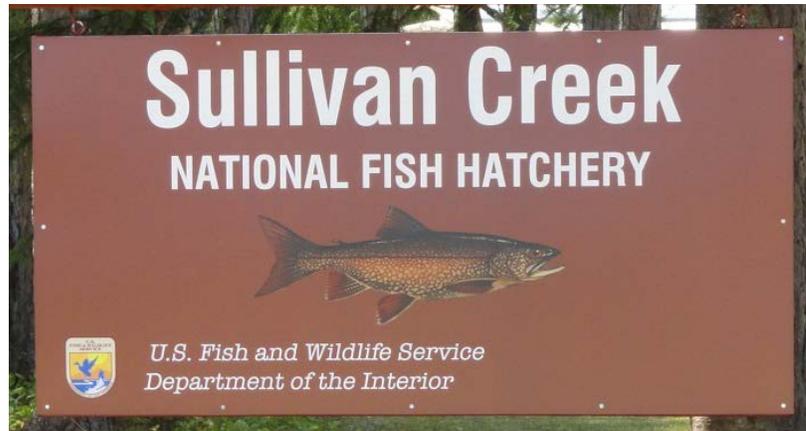
*- Christopher Dean  
Fish Biologist*

## News/Updates from Hatcheries

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- Sullivan Creek National Fish Hatchery recently received a new sign at their entrance.

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- Several staff members attended the 2016 Brimley Science Fair to judge the submissions. One student was selected from kindergarten to eighth grade. They were chosen based on their project's efforts to the environment and conservation. The Friends of Pendills Creek Hatchery will provide a rod and reel to each winner, as well as an Environment Award certificate. Congrats to all the contestants on your efforts. Keep up the great work!

*- Julie Timmer  
Administrative Officer*

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