



CHARLEVOIX FISHERIES RESEARCH STATION 2011 FIELD SEASON NEWSLETTER

Produced by Nathan Skop and Patrick O'Neill

The Charlevoix Fisheries Research Station (CFRS) staff and research vessels are employed to provide information, models and advice to make possible science-based management of Michigan's fishery resources. CFRS is responsible for MDNR Fisheries Division research needs for the Lake Michigan basin. This annual newsletter is designed to summarize the field and lab activities completed during the last year by the CFRS staff. *[Note: Sample processing and data analysis are incomplete for some 2011 sampling activities. In those cases, complete results for 2010 surveys are presented.]*

FEATURED STORY: S/V Steelhead



"Welcome Aboard" the Survey Vessel Steelhead, the first fisheries survey vessel of the Department of Natural Resources to operate on the Great Lakes.

The S/V *Steelhead* was commissioned in 1968 and since then has called Charlevoix, Michigan its home port, with its base of operations being the Charlevoix Fisheries Research Station. The S/V *Steelhead* – a 70-ton vessel with an overall length of 63 feet, a 16 foot beam and a draft of 6 feet – was constructed to sample offshore and deepwater habitats and to monitor the abundance and biological characteristics of important fish stocks in the Great Lakes.



She is powered by twin 380 horsepower turbo-charged diesel engines and has a cruising speed of 13 knots and a fuel range of 1,000 miles. The vessel is set up to conduct trawl, gill net and acoustics surveying. Accommodations include berths to sleep five crew members, an

onboard shower and head, and a galley complete with a refrigerator, range, microwave, sink, and dining area.



Located mid ship is a laboratory facility which is complete with the instruments needed to work up and analyze collected specimens.



Over the years the *Steelhead* has undergone a number of changes – both structural and cosmetic – to improve her abilities as a survey vessel. In the early years of vessel operations, the bow height was increased to reduce spray on the deck. In 2006 stabilization fins were added to the hull to reduce rolling in heavy seas. Also in 2006 the paint scheme was changed from the original green and gold to the current blue and gray due to discontinuation of the original paint.



In 2011 the *Steelhead* went into dry dock for inspections and maintenance. Work included ultra-sonic testing of hull plates, hull plate replacement, welding, sandblasting, and hull painting. As part of this work, rudders, wheels, shafts and bearings were removed, inspected, repaired or replaced, and reinstalled.



The *Steelhead* typically operates between the months of April and November on the open waters of Lake Michigan. Research conducted aboard the vessel includes gill net assessments

of adult lake trout, lake whitefish, yellow perch, and Chinook salmon; trawling to determine year class strength; and estimation of lakewide forage fish biomass.

Meet the crew of the S/V Steelhead:

Captain: Jerry Ranville



Assistant Captain: Eric Crissman



Fisheries Technician: Nathan Skop



Fisheries Assistant: Bryce Kucharek



LARGE VESSEL ACTIVITIES

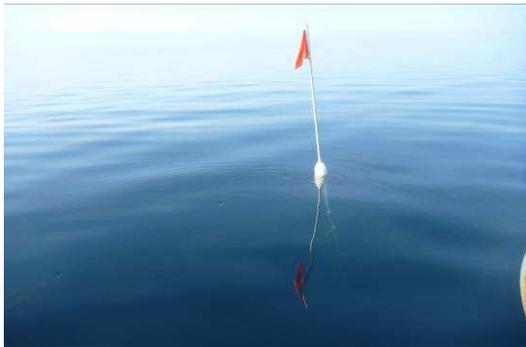


S/V Steelhead March 2011 Departure

Lake-wide Assessment Plan: Each spring, the CFRS vessel *S/V Steelhead* conducts a survey of the Lake Michigan fish community in a coordinated effort with other states and tribal agencies. The main goal is to determine relative abundance of lake trout, lake whitefish, burbot, and yellow perch. While achieving this goal, we also collect biological information on these species to determine growth and maturity, diet, and fish health and condition. In addition, samples from this survey are often provided to other agencies and universities for further analysis. Fish are collected from 6 locations: South Haven, Saugatuck, Grand Haven, Arcadia, Leland, and Charlevoix. Net locations at these ports are randomly selected with two days of netting required at each port.

Due to budget and time limitations, Charlevoix and Leland were not sampled in 2011.

Sampling gear used for this spring survey consists of 68,000 feet of 6 feet high bottom gill nets; that's nearly 13 miles of gill net used throughout the three months of spring sampling. The gill nets used range in size from 1.5 inch mesh size to 6 inch mesh size. These variations in mesh size give us the ability to sample the entire fish community – large or small, juveniles or adults.



The S/V *Steelhead* usually leaves Charlevoix the last week of March. We begin our surveys in southern Lake Michigan and work our way north.



S/V Steelhead leaving Charlevoix March 29th

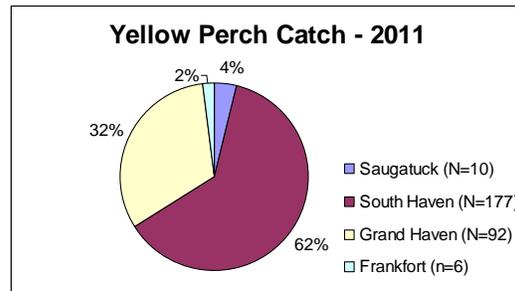
In 2011, we collected 532 lake trout, the majority of which were caught near South Haven (232) and Saugatuck (153). Lake whitefish catch was 170 fish and

over 60% of those were caught out of South Haven. We also caught 19 burbot during the 2011 spring survey; most of these (13) were caught near Frankfort.

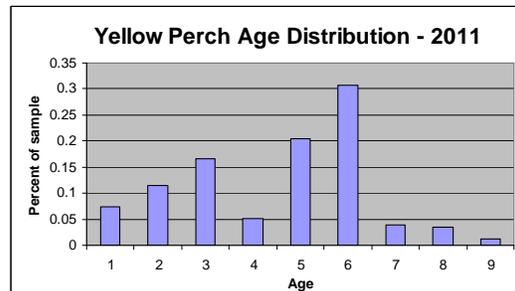


Lake Trout and Whitefish box

We had a decent catch of yellow perch (285) this year. As in past years, most of the perch were caught out of South Haven (177) and Grand Haven (92).

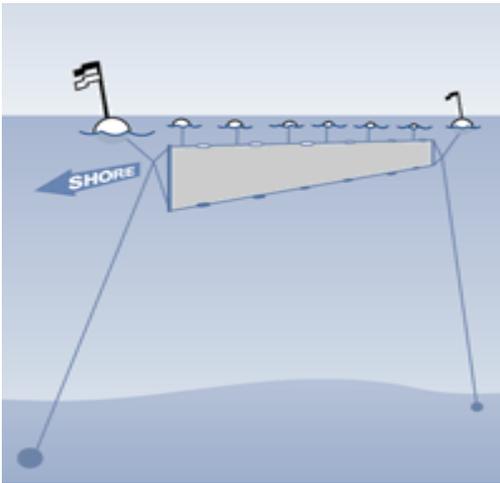


From our aging analysis we found that the majority of these perch were 5- and 6-year olds (hatched in 2005 and 2006). These 5- and 6-year old perch averaged a little over 9 inches in length, and should provide anglers with quality perch fishing in the next few years.



Chinook Salmon Natural Reproduction

Study: 2011 was the third and final year for a study measuring characteristics of naturally reproduced Chinook salmon in Lake Michigan. This was a companion study to the multi-agency assessment of wild salmon abundance in Lakes Michigan and Huron. Starting in 2006, every Chinook salmon that was stocked into Lake Michigan was fed an antibiotic (oxytetracycline; OTC) that leaves a fluorescent mark on bony structures. These marks can only be seen using a specially-equipped microscope. To determine the ratio of naturally reproduced fish to hatchery fish, we collected age-1 Chinook salmon during late spring using gill nets that are suspended high in the water column. The graphic below shows what our net would look like if viewed under water.



During this time of year, most young salmon are concentrated in the warmer waters in the southern end of the lake and that is where we put most of our effort. Many samples are also collected from fish captured during fishing tournaments. To determine whether the fish is a hatchery product or was spawned naturally, we collect tails from

each fish sampled and use UV light to look for a fluorescent mark. CFRS staff collected 55 samples from salmon captured during our vessel survey. Statewide, MDNR collected about 2,300 samples from various fishing tournaments. Samples are still being processed and results are pending. Analysis of samples from previous years indicates that almost 50% of the Lake Michigan Chinook salmon population is wild fish. Though the vessel gill netting portion of the Chinook salmon study is complete for now, tournament collection will still occur to monitor the salmon population.

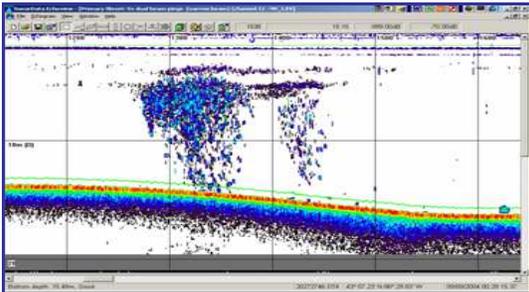
Acoustic Survey: A lake-wide prey fish survey is conducted each year (late summer/early fall) in collaboration with the US Geological Survey (USGS). Our research vessel collects data in the Michigan waters of Lake Michigan and the USGS collects data in Wisconsin/Illinois/Indiana waters. Sophisticated sonar equipment is used to collect information that is stored on a computer for later analysis. Data is collected on predetermined courses/transects and the number of prey fish are counted for that area.



Setting the mid-water trawl at sun set.

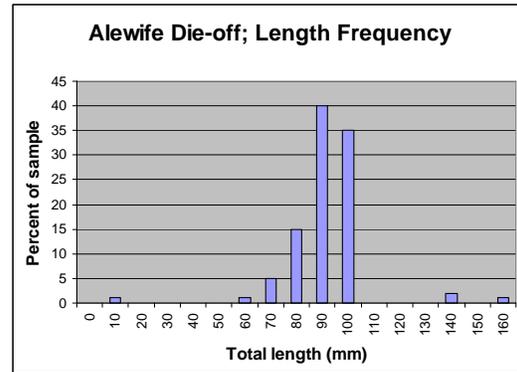
Trawls are used to verify the identification of fish “seen” using the sonar unit, and sensors attached to the

trawl let us know where the trawl is in the water column. This allows us to deploy the trawl at the depth we are seeing fish on the sonar unit. The number of fish seen on these transects is expanded out to get a lake-wide estimate of the number and weight of prey fish by species in Lake Michigan. This work is done at night when prey fish move up in the water column to feed on various forms of plankton and invertebrates.



Example of hydroacoustic data.

During the 2011 acoustic survey we conducted 10 transects totaling roughly 120 miles in length; these transects were accompanied by mid-water trawling and mysid (shrimp-like invertebrates) sampling at 7 offshore locations ranging from St. Joseph to Leland. This year we saw a drop in the overall prey fish biomass, which includes alewife, smelt, and bloater chubs. In 2010 the young-of-year alewife had a strong showing, with the second largest year class produced in over a decade. Though the 2010 year class still had a strong presence in 2011, it wasn't as abundant as biologists were expecting. This overall drop in the 2010 year class can be attributed to natural mortality and predation. In 2011 we observed a large alewife die-off, which typically is caused by spawning and environmental stresses. The following graph shows the lengths of alewives observed during the die-off; these were primarily age-1 fish (from the 2010 year class).



2011 Alewife die-off.

Results from the 2011 acoustic survey also indicate that bloater chub and smelt abundance remains low in Lake Michigan. With the decline of lake-wide prey fish biomass, the 2012 acoustics survey will be critical in determining future management of Lake Michigan – one of the goals of which is to prevent a “crash” of salmon fisheries on the lake.

Large Vessel Bottom Trawling: In September the *S/V Steelhead* headed back south to conduct bottom trawling assessment of Lake Michigan yellow perch populations. Due to time constraints, we were only able to sample two ports – Pentwater and Petoskey. Trawls were conducted at depths of 30, 40, 60, 80 and 100 feet. The bottom trawl used is 40 feet wide and has 5 foot

doors, so dragging that through the water does require a very large/powerful vessel. During the trawl sampling 266 yellow perch were captured, along with round goby, smelt, lake whitefish, round whitefish, white suckers, chubs, and alewife.

CODED WIRE TAGGING

In 2011, 100% of the Chinook salmon (approximately 2,966,000) released into Lakes Michigan and Huron were adipose fin clipped and marked with a coded-wire tag (CWT) using United States Fish and Wildlife Service (USFWS) mass marking trailers. In addition, almost 140,000 steelhead from Thompson Hatchery were marked by CFRS personnel with a CWT, along with 4,000 lake sturgeon from three streamside rearing facilities (Black River, Cedar River and Whitefish River).



Marking a large steelhead with a CWT.



Tagging lake sturgeon with CWT's at a streamside rearing facility.



CFRS staff and volunteers again managed to attend four tournaments in 2011; this allowed for observation of over 5,000 trout and salmon, from which 137 CWT samples were collected. Both the number of fish observed and the number of tags collected were down in 2011, primarily due to reductions in the number of registered tournament boats. However attending these tournaments is still the most efficient method of sampling tagged fish because a large number of fish can be observed in a short period of time.

In 2010/11, CWT samples were collected from the following sources: DNR/Tribal assessment samples (4%), sport fisheries (51%), and harvest weirs (45%). The total number of fish processed in 2010/11 (1,682) was lower than the average for the period 1990–2009. All CWT samples were checked for tags and when present, tags were removed, read, and recorded in a database. These data were then provided to other researchers and managers (both within and outside the MDNR) for additional analyses and modeling applications, as requested. Data is also posted for public access on the MDNR internet site...

http://www.michigan.gov/dnr/0,1607,7-153-10364_52259_10949_11238-171648--,00.html.

One interesting find this year...we recovered a tagged lake trout from the port of St. Joseph that was from the first group of fish coded-wire tagged by the USFWS. It was tagged in 1984, making the fish 27 years old!

CHARTER BOAT SURVEY

The objective of the state-wide Charter Boat Program is to obtain a continuous annual record of charter boat fishing effort, harvest, and harvest rate for the major sport fish in the Michigan waters of the Great Lakes.



In 2011, a total of 57,002 charter anglers participated in 14,067 excursions on the Michigan waters of Lakes Michigan, Huron, Erie, Superior, and the St. Clair system (including the major tributaries), and spent 325,459 angler hours fishing – a 12% increase compared to the 2010 charter season. Charter operators reported 145,744 fish harvested from the Michigan waters of the Great Lakes. Harvest by species (with comparison to 2010 harvest) was as follows: Chinook salmon (55,484-unchanged), lake trout (26,947-up 34%), yellow perch (22,073-up 24%), walleye (18,685-down 19%),

rainbow trout (9,838-up 21%), coho salmon (8,471-up 21%), and brown trout (506-up 31%). Detailed charter fishing results for the 2010 season are available on the MDNR internet site ...

http://www.michigan.gov/dnr/0,1607,7-153-10364_52261_47568-91504--,00.html). Detailed 2011 results will be available by mid-year 2012.

Also in 2011, CFRS personnel made presentations explaining charter survey results at Michigan Sea Grant workshops, Michigan Charter Boat Association meetings, fisheries workshops, DNR Citizen's Advisory Meetings, and other public and agency meetings.

MICHIGAN STATEWIDE ANGLER SURVEY PROGRAM

The objective of the Statewide Angler Survey Program (SASP) is to monitor trends in Michigan's sport-fishery through collecting continuous records of angler effort, catch and catch rates. In 2011, data was collected by 27 field clerks at all the major Great Lakes ports and various tributaries and inland lakes. During winter of 2011, the SASP conducted surveys of the major Great Lakes ice fisheries including Saginaw Bay and Little Bay de Noc, as well as of inland lakes such as Mullett Lake (northern Lower Peninsula) and Indian Lake (Upper Peninsula). During the summer, surveys were conducted on 48 major ports of Lakes Michigan, Huron, Erie and Superior, as well as the St. Mary's River. Inland creel surveys were conducted on the Pere Marquette River, Bankson Lake, and Round Lake.

Information collected during these surveys is used by fisheries managers

and researchers to monitor angling trends, identify potential management issues, supplement data on fish populations, and evaluate fishing regulations and stocking strategies. Great Lakes creel and Charter boat data are available online at...

<http://www.dnr.state.mi.us/chartercreel/>.

WEIR HARVEST

Every year the CFRS staff assists in the harvest, bio-sampling and evaluation of salmonid returns to weirs in Michigan's waters of the Great Lakes. The objective is to annually monitor and record returns of Chinook salmon, coho salmon, and steelhead trout to Michigan weir operation facilities, provide annual estimates of size-at-age, collect data and report on contracted salmon harvest operations and to provide annual data summaries of weir returns to be used in Management Unit reports, Great Lakes Fishery Commission (GLFC) reports, MDNR web site updates, and for distribution to interested researchers and the public.

Returns of Chinook and coho salmon to Lake Michigan and Lake Huron harvest facilities vary from year to year. In 2011, just over 30,000 Chinook salmon were harvested from four Michigan weirs, up slightly from the 23 year average of 29,949. Harvest at the Swan River weir (5,433 Chinook salmon in 2011) increased from that observed over the past few years, but is still well below (down 70%) the long term average of 18,357 fish. Return of coho salmon to Lake Michigan weirs in 2011 (25,607) was up substantially from the previous few years, largely because of the increased run at the Boardman weir. However, even with the large increase, the 2011 coho salmon harvest was still

well below the 25 year average of 49,258 fish (down 48%).



Fish harvest at the Medusa Creek weir in Charlevoix.

The Medusa Creek weir, which is managed by CFRS staff, is primarily a harvest-only weir (no egg collections) that is operated by the salmon harvest contractor (currently American Canadian Fisheries, Bellingham WA). Chinook and coho salmon found in the Great Lakes will die once becoming sexually mature. This is why it is vital to have a collection process that will utilize these thousands of salmon that will be dead within weeks. Typically during the salmon run, weir harvests are conducted every two to three days. All the while, fishermen converge on the Charlevoix area to participate in the great salmon fishing.

Fortunately, because of our proximity to the Medusa facility, CFRS staff can do much of the bio-sampling needed (e.g., recording length and weight, collecting CWT samples, and collecting OTC tail samples) right here in Charlevoix, saving staff time at the weir processing facility (see photo below). Also, area school groups make regular visits to tour the weir facility and learn about the life cycle of the Chinook salmon.



In addition to the fall harvest, the Medusa weir in Charlevoix plays a vital roll in the spring, when hundreds of thousands of four-inch Chinook salmon “smolts” are held in the weir pond for about three weeks to acclimate them to the lake system. This acclimation period has been shown to increase survival of both steelhead and salmon. Twice a day, staff head down to the weir to inspect and feed these fish. Just after Memorial Day, the fish are released at night and start their two to three year growth spree before returning as mature salmon.

SMALL VESSEL ACTIVITIES



R/V Pimephales

Spring Larval Sampling: The schedule for the CFRS small boat *R/V Pimephales* starts shortly after ice out. Larval neuston netting occurred in Elk Rapids in the nearshore zone (3 to 6 feet) from the first of April until the end of May.

For the past few years this data has been collected in a follow-up to the fall adult spawning with emphasis on the rare cisco (lake herring).



The neuston net is a 1 meter deep by 2 meter wide fine mesh net that is designed to be towed behind the boat and collect fish that could be as young as 1 day old.

As the spring progresses we move our larval sampling up to the Charlevoix area. For the past four years, CFRS staff has been trying to determine the potential contributions that drowned river-mouths such as Lake Charlevoix have had on the Lake Michigan yellow perch population. The objectives are to document peak hatching, which has occurred between mid and late June, and evaluate movement of larval fish between Lake Charlevoix and Lake Michigan. Information from this evaluation was recently presented in poster form at the 2011 American Fisheries Society annual meeting. The following figure compares the number of perch larvae captured in Lake Charlevoix, the transition channel, and Lake Michigan.

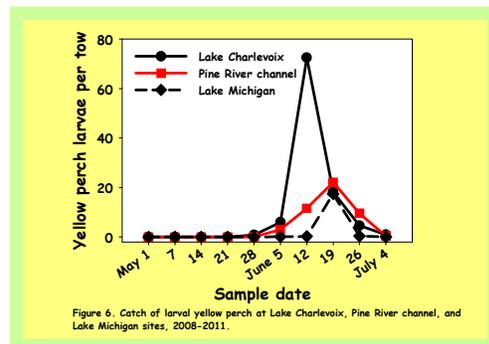


Figure 6. Catch of larval yellow perch at Lake Charlevoix, Pine River channel, and Lake Michigan sites, 2008-2011.

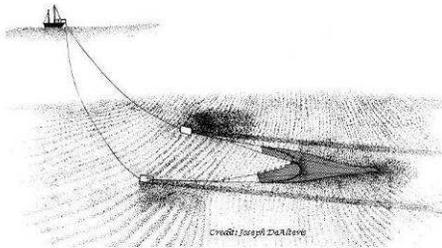
Juvenile Whitefish/Cisco Sampling:

From May through July, staff head down to Elk Rapids on a bi-monthly basis to sample juvenile lake whitefish and cisco (lake herring). The sampling gears / techniques used are mini-fyke nets and seines. At this time of year, the juvenile fish are growing at a rapid rate and are a significant component of the near shore fish community. The objectives of this sampling are to determine lake whitefish and cisco population numbers, and to evaluate interactions with other nearshore Lake Michigan fish, including predators.



Our beach seine in use on a not-so-nice day.

Small Boat Bottom Trawls: The CFRS staff, with assistance from area MDNR fisheries personnel, conducts annual yellow perch assessments according to established multi-agency lake-wide assessment protocols.

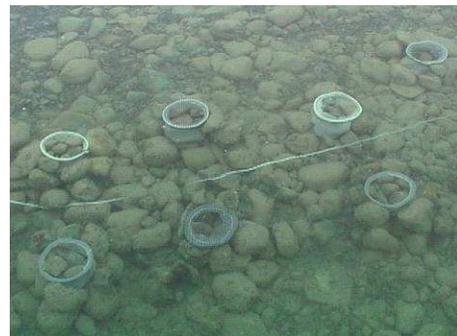


On an annual basis, we attempt to sample for two nights during dusk and

dark at the following ports: South Haven, Grand Haven, Pentwater and Charlevoix/Petoskey. The trawl we use is a 16' "otter" trawl, designed to stay open through the use of doors or otter boards which work much the same way as a planer board, except that the doors sink the net to the bottom. The fish that are not fast enough to escape the net, which is moving at about 3 mph, are then herded toward the back by the force of water. Once the trawl is retrieved to the boat, the back end of the net (which is called the "cod" end) is then opened and the fish are dumped out.

Preliminary analysis of 2011 age-0 bottom trawl data indicates a relatively poor yellow perch year class. However, the 2010 yellow perch year class was still abundant, with sizes ranging from 3 to 7 inches.

Lake Trout Egg Abundance Project: In the fall of 2000 the CFRS staff (MDNR), Little Traverse Bay Bands of Odawa Indians (LTBB), the Department of Fisheries and Oceans (Canada) and the University of Vermont were funded to study lake trout spawning behaviors on multiple spawning sites in Lakes Michigan, Champlain and Huron (Georgian Bay). This study documented things like adult spawner abundance, egg deposition, egg predator abundance, and substrate quality.

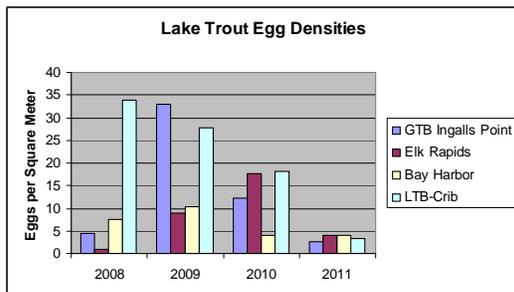


Buried egg nets set to collect lake trout eggs.



Adult lake trout observed over spawning habitat in northern Lake Michigan.

Since the completion of this project, CFRS, LTBB and Grand Traverse Bay Band staffs have continued to sample four near-shore lake trout spawning sites; Menonaqua and Bay Harbor in Little Traverse Bay, and Elk Rapids and Ingalls Point in Grand Traverse Bays. Thirty egg nets are buried annually at each site in September (prior to spawning activity) and then retrieved after spawning in mid-November. The work-up of the egg nets then occurs, keeping track of all eggs and egg predators (e.g., gobies and crayfish). In 2011, we saw a drop once again in the number of lake trout eggs present.



Although the exotic round goby still makes up the majority of the predators found in the egg nets, another exotic, the rusty crayfish, seemed to be present in higher numbers this year.



Exotic rusty crayfish

Environmental Protection Agency (EPA)

Project: The CFRS staff, along with other investigators (The Nature Conservancy, US Geological Survey, Central Michigan University and Grand Traverse Band of Ottawa and Chippewa Indians) have been granted a federal EPA grant to study “Invasive predator suppression on critical spawning reefs.” The fall of 2011 marked the initiation of this three-year project. Activities included gathering baseline data on adult species composition and egg and egg predator densities at six study sites. The goal of this study is to document invasive species densities on critical spawning habitat of Great Lakes coldwater fishes – including lake trout, lake whitefish, lake herring and round whitefish.

In the second phase of the study, traditional (e.g., nets and traps) or innovative (e.g., seismic guns) control methods will be used to reduce egg predator densities just prior to spawning. The goal is to increase egg and fry survival by control of egg predators. If successful, the next steps will be to identify critical spawning habitat within the Great Lakes and to try to manage egg predators on a larger scale to allow for increased survival of native reef-spawning fishes.



Coldwater spawning reef with a buried egg net and funnel, designed to collect eggs of reef-spawning Great Lakes fish.

Cisco Project, Elk Rapids: Over the past few years, CFRS staff have worked to document the intensive use by a number of Great Lakes fish species of the high-quality spawning grounds just outside the port of Elk Rapids in Grand Traverse Bay. This work, especially observations on the remnant stock of cisco (lake herring), prompted researchers from the CFRS to join a multi-agency project investigating cisco in Lakes Huron, Michigan and Superior.

The objectives are to examine annual variability in larval abundance and larval production per spawner, correlate larval densities with year-class strength, and test the hypothesis that growth potential at the larval stage and not predation is the dominant factor governing recruitment variability.

In the fall of 2011, staff at the CFRS were asked to extend the field sampling for one additional year. Monofilament gill nets were used every other week from the first week of October until mid-December. The data gathered has helped better document the relationship between adult spawner abundance and juvenile production for this important

Great Lakes cisco population on the Elk Rapids spawning reef.

Elk Lake Lake Trout Project: After a year of gathering preliminary data on lake trout in Elk Lake, this past fall we started a collaborative study with CMU. The project objectives are to obtain population estimates and better understand the characteristics of spawning populations of lake trout in Elk Lake. The first phase of the study will be to tag as many lake trout as possible and then to recapture tagged fish by partnering with anglers and through continued assessments. An additional goal will be to document where and on what substrate types these lake trout are spawning.





Sampling gears / techniques used have been trap nets and ½ hour gill net sets. In an ideal world, we would just use trap nets and tag and release all lake trout collected. However, our trap nets are not designed to be used in deep (100 to 170 feet) water. So far, that is the only place CFRS staff have collected these fish. We've resorted to the use of bottom gill nets but, because it's crucial to have healthy fish to tag and release, we have reduced gill net set time to the bare minimum.

The last time lake trout could freely move from Lake Michigan to Elk Lake was in the late 1800's and early 1900's. Since then, the only stocking of lake trout occurred for a few years in the 1980's. Preliminary genetic testing suggests the lake trout being sampled by CFRS staff are not related to the stocked fish, leading to the conclusion that they could be a remnant population from pre-1900.

Fisherman's Island Reef Complex Study: In 2011, a summer worker (Miriam Weiss) at the CFRS took on the responsibility to study the area south of Charlevoix known as Fisherman's Island. This particular area has been the subject of numerous past studies, ranging from examinations of fish species composition to studies of spawning habitat types to

assessment of the spread of exotics like the round goby.



The goals of Miriam's work were to consolidate all of the past data collected, fill in other missing information, and develop a comprehensive ecological picture of this very special Great Lakes ecosystem.



CFRS staff conducting a kick-net survey to document invertebrates found in the stream adjacent to Fisherman's Island.

OTHER ACTIVITIES

Tribal Coordination Unit, Inland Waterway: This spring CFRS staff assisted the MDNR Tribal Coordination Unit with an enormous tagging assessment that included over eight crews from the MDNR, Michigan State University (MSU) and Little Traverse Bay Bands of Odawa Indians. The waters that were sampled for walleye just after ice-out included Burt, Mullett, Crooked, and Pickerel Lakes, and Cheboygan, Crooked, and Indian Rivers. Over 7,800 walleye were caught and

released after data such as length, sex and age structure were collected. In addition, over 7,500 of these walleye were fitted with the latest fashion jewelry – also known as a “jaw tag”. Over half of these tags carry a reward, and anglers are encouraged to report the capture of any tagged fish to the CFRS.



Tagging walleye on the Inland Waterway.



Not everything that is caught is a fish.

State Wide Stocking Program: Every year, staff from the CFRS assist in the stocking of trout and salmon from state hatchery facilities to designated lakes

and rivers. In 2011, CFRS staff delivered adult rainbow and brown trout from the Oden Hatchery (near Petoskey) to the Huron River in Oakland County and Spring Mill Pond in Livingston County.



Burt Lake Sturgeon Sampling: CFRS staff assisted the Michigan DNR and MSU in conducting a large-mesh gillnet survey of Burt Lake during July, 2011. The purpose of the survey was to gain insight into sturgeon distribution and abundance within the lake. Overall, the number of sturgeon captured was low compared to similar survey efforts in Black Lake. The total number of unique fish captured was 108. This brings the total lake population estimate to just over 1,500 fish, the vast majority of which were small / immature fish.



Checking for a PIT tag, which contains an individual identification number.



Healthy Burt Lake lake sturgeon.

Beaver Island Smallmouth Bass Study:

CFRS staff once again assisted Central Michigan University (CMU) in conducting a smallmouth bass population and movement study in the waters around the Beaver Island Archipelago and Waugoshance Point. Three weeks of trap netting and fish movement tracking was conducted in early June and late July. Smallmouth bass collected in the trap nets were measured, age structure samples were taken, and fish were given a jaw tag before being released. Any recaptured fish – fish that were tagged in previous years – were measured for individual growth comparisons. Tag numbers of all fish captured were recorded to allow calculation of population size.

Net Repair: Each winter the S/V *Steelhead* crew works endlessly to maintain the various nets we use, and to build new nets for upcoming projects. This year CFRS staff repaired 40-foot and 15-foot bottom trawls to be used for yellow perch sampling. Gill net construction and repair included 20,500 feet (almost 3.9 miles) of the bottom gill nets used in a variety of Great Lakes research and assessment studies.

Fish aging: One of the most time consuming and important activities

occurring at the CFRS during winter months is determination of the age of fish sampled in our various lake surveys. Fish can be aged using almost any bony structure. Some of the most popular are scales, spines, otoliths, and opercles. Scales and spines are advantageous because the fish doesn't have to be killed to collect the aging structure.



Otoliths and opercles may be taken as well when fish will be sacrificed for other research purposes (e.g., contaminant sampling).

Fish are aged to provide us with important information about a fish population, including growth rates, age-at-maturity, age composition, mortality rates, or maybe even how many times certain fish spawn. This information can be used to make better management decisions for certain lakes or certain populations of fish. CFRS staff aged approximately 3,000 fish this past year, most of which required second reads (two separate agers age the same fish to increase aging accuracy).

Community involvement: Outside of our day-to-day fisheries work, we at CFRS strive to play a role in our community through involvement in activities such as the United Way's "Day of Caring", the MDNR golf scramble, and the Charlevoix Public Library's "Scarecrow Challenge" (for example). Once again the staff from CFRS held off the

competition at the golf scramble to defend their title at the Black Forest Golf Club in Gaylord. After winning 1st place in last year's "Scarecrow Challenge," the CFRS crew was awarded 2nd place in 2011 for our "Scuba Zombie" scarecrow.

Charlevoix Fisheries Research Station
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231-547-2914 (PHONE)
231-547-6031 (FAX)



Day of Caring at the Wagbo Farms in East Jordan.



Scarecrow Challenge – MDNR's "Scuba Zombie" took 2nd place.

Public presentations: During 2011, CFRS staff made numerous presentations to inform public groups concerning station, Division, and Department activities. These included presentations to local Kiwanis and Rotary clubs, Michigan Sea Grant workshops, and various area school groups. We also hosted groups at the station, providing tours of our facilities and of the Medusa Creek salmon harvest facility. Groups and individuals who are interested in learning more about what we do are encouraged to contact the station for information, a presentation to your group, or to arrange a tour.

Web page:

http://www.michigan.gov/dnr/0,1607,7-153-10364_52259_10951_11301---,00.html

Email:

clappd@michigan.gov