



Boyne River at Dam Road- 2012 Fisheries Survey

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Introduction:

The Boyne River is part of the Lake Michigan watershed and located in the west part of the central Lower Peninsula about 30 miles south of Petoskey. The river flows into the far eastern end of Lake Charlevoix. The Boyne River has approximately 22 miles of mainstem (North and South branches) and drains 40,320 acres. The North Branch of the Boyne River originates in the southeast portion of Charlevoix County and the South Branch originates in the northwest portion of Otsego County. The two branches converge in Charlevoix County approximately one mile north of Boyne Falls. The mainstem flows northwesterly for approximately six miles, through Boyne City, and into Lake Charlevoix. There are two major dams on the Boyne River. The Boyne USA (Kircher Dam) dam is a hydroelectric dam operated by Boyne USA and is located approximately four miles upstream of Lake Charlevoix on the mainstem. The dam is maintained at run-of-the river status, is located approximately ¼ mile upstream from Dam Road. This dam restricts upstream migration of anadromous species from Lake Michigan and Lake Charlevoix. The Boyne Falls dam is located in the city of Boyne Falls on the South Branch. The Boyne River can be accessed through numerous road crossings and adjacent State Forest land on the South Branch. There are also park areas within Boyne City and Boyne Falls that provide access.

In the summer of 2012 the Springbrook Road crossing on the North Branch of the Boyne River was removed and replaced with a timber bridge. Through a project led by the Conservation Resource Alliance, two 36" culverts perched nearly 5 feet above the streambed were removed and replaced by a bridge with a 28' span. This project restored a wide sandy stream that had been impounded since the early 1960's to a narrower, deeper, and gravel bottomed channel. This culvert removal reconnected 13 miles of the Boyne River and its tributaries downstream for five miles until the next impoundment.

The entire Boyne River is classified as coldwater stream by the Michigan Valley Segment Ecological Classification system. The entire Boyne River is classified as designated trout stream by the Michigan Department of Natural Resources (MDNR). The mainstem of the Boyne River from the Kircher Dam downstream to the mouth is classified a Type 4 trout stream. Therefore, the fishing season is open year-round, but the possession season for Atlantic salmon, brown trout, and brook trout is from the last Saturday in April to September 30. It is also unlawful to use any hook other than one single-pointed un-weighted hook measuring 3/8 inch or less from point to shank in the mainstem from the Kircher Dam to the mouth. The daily possession limit is 5/3 (five fish with no more than three fish 15 inches or larger). Brook trout must be eight inches to possess, and brown trout, coho salmon, Atlantic salmon, Chinook salmon, and rainbow trout (steelhead) must be 10 inches in length to possess in the Type 4 section. Upstream of the Boyne USA dam, the river is a Type 1 trout stream. The open and possession season is the last Saturday in April through September 30. The daily possession limit is 5/3, brook and brown trout must be eight inches to possess, and rainbow trout must be 10 inches to possess.



Stocking History

The mainstem of the Boyne River has a long and diverse stocking history. The MDNR Fisheries Division has stocked the river with Atlantic salmon, steelhead, and brown trout. Fisheries Division stocked the river with Atlantic salmon in the early 1970s to develop a fishery in Lake Charlevoix and the river. This stocking program was discontinued in the late 1970s due to poor survival rates.

Fisheries Division has stocked steelhead at Dam Road from 1980-present and currently stocks 8,000 yearlings at Dam Road each year. Adult steelhead migrating from Lake Michigan provide a fishery downstream of the Kircher Dam in the spring and fall. Fisheries Division also stocked brown trout at Dam Road from 1988-present, and currently stocks 3,000 yearlings at Dam Road each year. The brown trout stocking program was initiated because spawning habitat is limited downstream of the Kircher Dam and angler use is high in this section of the river.

Survey History

The Boyne River has an extensive survey history. The mainstem, North and South branches were surveyed numerous times in the 1950s, 60s, and 70s. These surveys were mainly conducted to assess the fish community using back pack electroshocking equipment. Upstream of the Kircher Dam, brown trout were the most abundant species collected, followed by brook and rainbow trout. Downstream of Kircher Dam, in the south and north branches of the river, the most abundant species (in decreasing order of abundance) were rainbow trout (steelhead), brown trout, Chinook salmon, brook trout, Atlantic salmon, and coho salmon. Species collected in lower abundance were common white suckers, large and smallmouth bass, rockbass, bluegills, creek chubs, and yellow perch.

Recent surveys of the mainstem downstream of Kircher Dam occurred in 1998 and 2004. The purpose of the August 1998 survey was to evaluate the brown trout stocking program at Dam Road. The survey section extended 1,000 feet downstream of the Dam Road Bridge, and 1,266 feet upstream of the bridge. The survey crew collected 613 rainbow trout (steelhead), 216 brown trout, 49 Chinook salmon, and two brook trout.

The June 2004 survey was a discretionary survey designed to evaluate the fish community of the Boyne River downstream of Kircher Dam. A 1,000 foot stretch of river downstream of the Dam Road Bridge was surveyed. The survey crew collected one white sucker, one northern redbelly dace, six rock bass, 11 creek chub, 12 Chinook salmon, 31 sculpin, 37 blacknose dace, 53 coho salmon, 60 brown trout, 105 longnose dace, and 151 rainbow trout. These recent surveys indicate that the Boyne River has a predominately cold water fish community in this location, with some cool water species influence.

Methods & Materials:

On July 31, 2012 the fish community of the mainstem of the Boyne River was sampled using a barge electrofishing unit from the Dam Road Bridge crossing upstream to the plunge pool below



the Kircher Dam (Figure 1). The goal of this survey was to measure relative fish abundance to determine if changes have occurred over the past ten years. Air temperature at the site was

73.1°F, water temperature at the Dam Road culverts was 66.0°F, and water temperature immediately below the Kircher Dam was 61.7°F.

Results:

See Table 1 for results of the survey.

Discussion:

Overall the results of this discretionary survey were good, and did not indicate any significant change to the fish community since the stream was last surveyed. Naturally reproduced rainbow trout, brook trout, brown trout, coho salmon, and Chinook salmon were all collected, along with some stocked brown trout, and two stray Skamania strain steelhead. There is obviously coolwater fishery influence found here although it's difficult to say whether this is the result of the Kircher Dam's influence or the proximity of this stretch to Lake Charlevoix. Most likely the presence of cool water species is a result of the degradation of the coldwater resources due to warming effects of the dam.

The Boyne River is a high quality trout stream. However, this river is fragmented by small dams and poor road stream crossings and thus fish passage is limited and coldwater features may be degraded. The majority of the angling effort on the Boyne River is concentrated between the mouth and the Kircher Dam as this is the only reach of the river that is available to anadromous fish. Spawning habitat in this reach is limited, and while natural reproduction is occurring, it is not sufficient to sustain the fishery. The Boyne River from the Kircher Dam down to the mouth is a very popular fishery, and continuation of the current stocking protocol will supplement the naturally reproducing population to provide for a good brown trout and steelhead fishery.

Recommendations:

1. Since the Boyne River is stocked annually by the MDNR, and has a naturally reproducing population of both trout and salmon, it should be protected from uncontrolled development and land-use practices by working with MDEQ Water Resources Division to evaluate permit applications.
2. This stretch of river should be surveyed every five to ten years to gauge fish population levels and stocking success.
3. Continue to work with the Conservation Resource Alliance, the Charlevoix County Road Commission, the Antrim County Road Commission, Friends of the Boyne, and other entities to protect and enhance the Boyne River, particularly through the improvement of road/stream crossings, installation of in stream woody habitat, and dam removals.
4. Conduct appropriate water temperature and discharge evaluations to determine the effects of the dams



Figure 1. Location of the 2012 Boyne River MDNR fisheries survey.

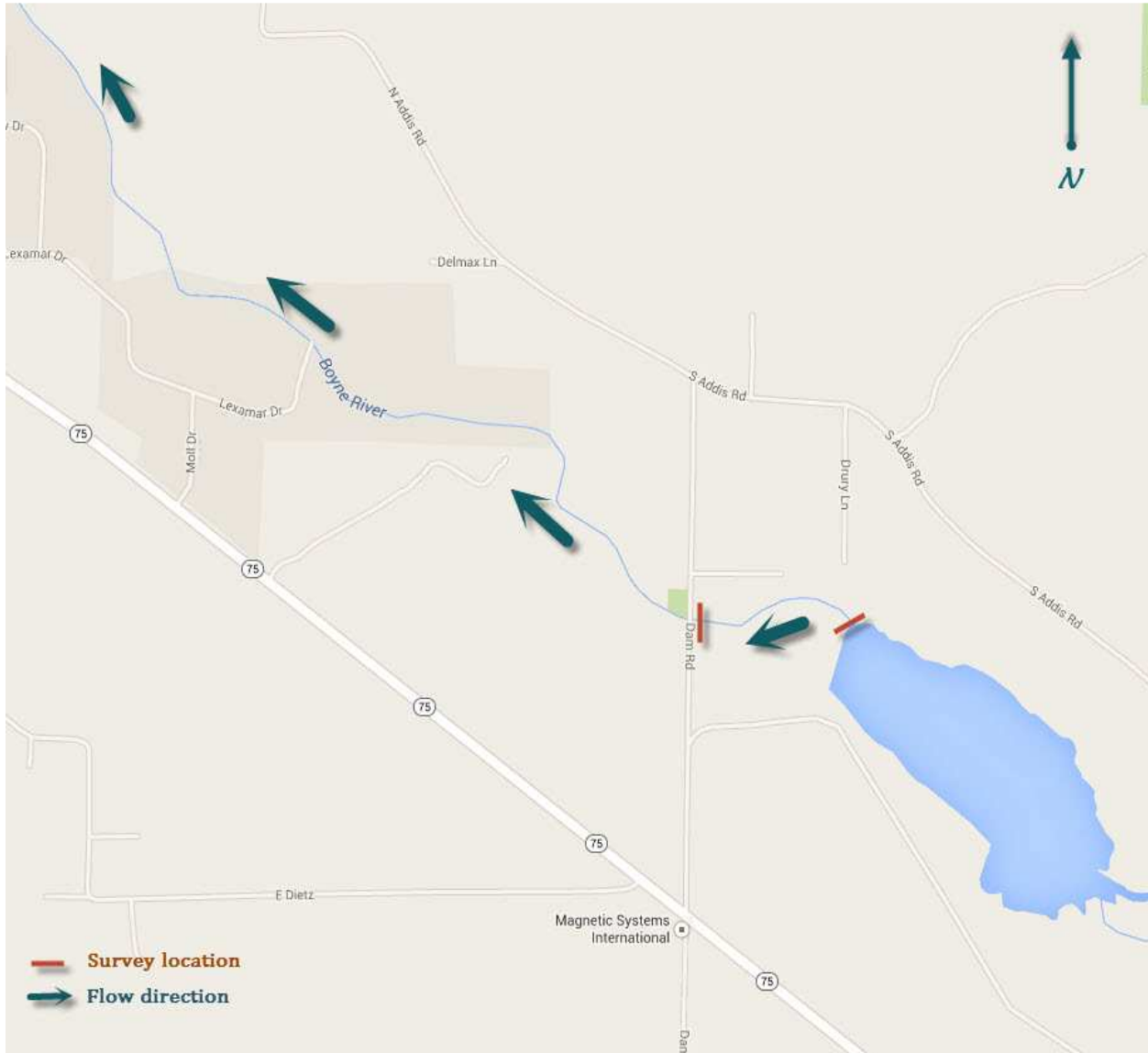




Table 1. Fish collected with a barge electrofishing unit in the Boyne River, July 31, 2012.

Species	Number collected	Percent by number	Weight (lb.)	Percent by weight	Length range (in.)	Percent legal size
Brook trout	2	0.5	0.2	0.4	5-6	0
Black bullhead	1	0.3	0.1	0.2	5-5	0
Bluegill	14	3.7	0.7	1.7	2-4	0
Blacknose dace	1	0.3	0	0.1	3-3	0
Brown trout	72	18.9	13.1	33.5	2-14	21%
Brown bullhead	1	0.3	0.2	0.5	7-7	100%
Chinook salmon	27	7.1	0.3	0.9	2-4	0
Coho salmon	53	13.9	0.4	1	2-4	0
Creek chub	29	7.6	0.9	2.3	2-5	0
Common shiner	4	1	0.1	0.3	3-5	0
White sucker	18	4.7	4.1	10.5	5-10	100%
Green sunfish	2	0.5	0.1	0.2	3-4	100%
Longnose dace	36	9.4	0.7	1.8	2-5	0
Logperch	1	0.3	0	0	3-3	0
Pumpkinseed	5	1.3	0.2	0.6	3-4	100%
Rainbow trout	61	16	3.7	9.5	1-11	11%
Steelhead (Skamania)	2	0.5	12	30.6	25-25	100%
Rockbass	22	5.8	1.6	4.2	2-7	100%
Sculpin	25	6.6	0.6	1.4	2-4	0
Smallmouth bass	5	1.3	0.1	0.3	2-5	0
Totals:	381		39.1			