



BOYNE RIVER- 2017 FISHERIES SURVEY ANALYSIS REPORT

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Introduction:

The Boyne River is part of the Lake Michigan watershed and is in the northwest portion of the lower peninsula about 30 miles south of Petoskey. The Boyne River has approximately 22 miles of mainstem (North and South branches) that encompasses a drainage basin of 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. Both streams converge in Charlevoix County approximately one mile north of Boyne Falls. The mainstem flows northwest for approximately six miles, through Boyne City, and empties into Lake Charlevoix near the east end. There are some small private dams in the watershed, along with 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. Flow over the dam is maintained at run-of-the river status and the structure is located approximately ¼ mile upstream from Dam Road. The 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 by 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 the stream channel that had become wide and inundated by sand since being impounded in the early 1960’s to a narrower, deep, and gravel bottomed channel. The culvert replacement also reconnected 18 miles of the Boyne River and its tributaries above Kircher Dam.

The entire Boyne River is classified as coldwater stream by the Michigan Valley Segment Ecological Classification system. The entire Boyne River is also 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 regulated as a Type 4 trout stream. Therefore, the fishing season is open year-round, however the possession season for Atlantic salmon, brown trout, and brook trout is restricted to 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 1/2 inch or less from point to shank in the mainstem from the Kircher Dam to the mouth. The daily possession limit is five fish with no more than three trout 15 inches or greater. Brook trout must be seven 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. Above Kircher Dam the Boyne river is regulated as Type 1 trout stream. The stream is



open to fishing from the last Saturday in April through September 30. The daily possession limit is five fish with no more than three trout 15 inches or greater. Brook trout must be seven inches, brown trout must be eight inches 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 conducted to assess the fish community using backpack electrofishing 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 both the South Branch and North Branch 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, largemouth bass, smallmouth bass, rockbass, bluegills, creek chubs, and yellow perch.

Recent surveys of the mainstem downstream of Kircher Dam occurred in 1998, 2004, and 2012. 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 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. This survey indicated that the Boyne River supports a predominately coldwater fish community in this section of river with some cool water species also present. In July 2012 the fish community in 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. 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.

Methods & Materials:

In 2017 this same section of river was surveyed to update fish community data and inform discussions in the upcoming Federal Energy Regulatory Commission (FERC) Hydropower relicensing process. Boyne USA is the owner of the Boyne River (Kircher) Dam, and the hydropower license for this facility is set to expire on January 31st, 2022. A total of 600 feet of stream was sampled with a barge electrofishing unit from the Dam Road Bridge upstream to the plunge pool below the Kircher Dam.

Results:

Total fish collected can be seen in Table 1.

Discussion:

During this survey a total of 13 species of fish were collected. Game species include brook trout, brown trout, Chinook salmon, coho salmon, pumpkinseed, rainbow trout, rock bass, and smallmouth bass. Other species include creek chub, common shiner, white sucker, longnose dace, and mottled sculpin. Overall the results of this discretionary survey did not indicate any significant change to the fish community since the stream was surveyed in 2012. Naturally reproduced rainbow trout (steelhead), brook trout, brown trout, coho salmon, and Chinook salmon were all collected, along with one adult steelhead (a few others were observed but eluded capture). Cool-water species have consistently been documented in this section of stream and may originate from the Kircher Dam impoundment or the proximately of this stretch to Lake Charlevoix. Regardless of origin, the warming effects of the dam likely support the survival of these species at the detriment of cold-water species.

The Boyne River is a high-quality trout stream. However, this river is fragmented by small dams and poor road stream crossings which cause thermal pollution and impeded fish passage. Most of the angling effort on the Boyne River is concentrated from below Kircher Dam to where the river empties into Lake Charlevoix, 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 enough to sustain the fishery. The Boyne River from the Kircher Dam down to the mouth is a very popular fishery; stocked brown trout and steelhead supplement the naturally reproducing population to provide for a good brown trout and steelhead fishery.

Recommendations:

1. The Boyne River is stocked annually with brown trout and steelhead by the MDNR and supports naturally reproducing populations of both trout and salmon. This high-quality fishery should be protected from uncontrolled development and land-use



practices by working with MDEQ Water Resources Division to evaluate permit applications.

2. The stretch of river below Kircher Dam should be surveyed periodically to monitor the fish community and to evaluate stocking success.
3. MDNR Fisheries Division should continue to work with the Conservation Resource Alliance, the Charlevoix County Road Commission, the Antrim County Road Commission, Friends of the Boyne, Boyne USA, 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. Monitoring stream temperature and discharge flows in the stretch of stream influenced by the dam. This information is important to the FERC re-licensing of the Kircher Dam and should be included in discussions.

Table 1. Number, weight, and length of fish collected from Boyne River with electrofishing equipment on July 18, 2017.

Species	Number	Percent by number	Weight (Pounds)	Percent by weight	Length range (inches)
Brook trout	1	0.3%	0.3	0.8%	9
Brown trout	21	5.4%	10.6	27.3%	6-16
Chinook salmon	31	8.0%	0.4	0.9%	2-4
Coho salmon	63	16.2%	0.4	0.9%	2-4
Creek chub	14	3.6%	0.6	1.6%	3-6
Common shiner	4	1.0%	0.1	0.2%	3-4
White sucker	10	2.6%	0.0	0.0%	1-10
Longnose dace	18	4.6%	0.5	1.3%	2-4
Mottled sculpin	57	14.7%	1.0	2.5%	1-4
Pumpkinseed	1	0.3%	0.1	0.2%	4
Rainbow trout	124	31.9%	19.4	50.2%	1-24
Rock bass	42	10.8%	5.0	13.0%	2-8
Smallmouth Bass	3	0.8%	0.4	1.0%	3-8
Total	389	100.0%	38.8	100%	