

Striped Bass Tagging in Bouctouche River



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INTRODUCTION

In the past decade, climate change has become more and more of a concern. Many freshwater fish species, such as Atlantic salmon, require cooler temperatures to survive and reproduce. As water temperature rises, some fish spawning sites become inaccessible due to unsuitable conditions, affecting general fish populations, behavior and adaptation. Another fish species that is fairly common on the East coast of New Brunswick is the Striped Bass (*Morone saxatilis*). This species uses a wide variety of habitats depending on its life stage. While spawning usually occurs in fresh or slightly brackish waters, juveniles and adults use coastal, estuarine and saltwater environments. Spawning commences as water temperatures rise above 10°C and may extend to 19°C in May and June. Young-of-the-year progress downstream and into saltwater over the summer, and spread along the coasts. Striped Bass spend the winter in estuaries or freshwater habitats. Wintering and spawning sites do not necessarily overlap in distribution or occur in the same drainage. In the spring, Striped Bass return to their spawning sites. Although the closest known spawning site is located in the Miramichi River, Striped Bass have been present in the Bouctouche River.

The idea of this study is to insert acoustic tags in Striped Bass and release them, allowing us to monitor their general movement patterns. With this information and information on river health parameters (water temperature in particular), it should be possible to determine if a correlation exists between the two. We also have a water quality monitoring program (separate study) which will give us the necessary information to complete the analysis. This data could help link fish behavior and effects of water quality and/or climate change. The Department of Fisheries and Oceans (DFO) has already tried tagging Striped Bass in the past few years in various parts of New Brunswick but not yet in the south portion of Kent County (where SAA operates). We want to try this method in one of our monitored watersheds, namely the Bouctouche River. This would allow us to see if the fish go up this river and give us an idea of how fish populations respond to changes in river habitats. It is believed this species could also be used as a bio-indicator of temperature changes in local rivers.

METHODOLOGY

Our goal is to put acoustic tags (V16 model, VEMCO) in 15 Striped Bass. To do so, we are working with the Bouctouche First Nation (BFN) and DFO. The fish are to be caught by BFN fishermen via two of their trap nets set up on the river. Once 15 Striped Bass of suitable size are caught, a DFO biologist will make a small incision in the fish and insert the tag inside it. This is done in a way that minimizes potential harm to the fish. They must be big enough so that the tags don't impede their movement or endanger their lives. Since the tags are fairly big (16 mm diameter, 65 mm length), the selected fish size need to be considered suitable by the DFO biologist. Ideally, the fish would be within the legal catch size (50 to 65 cm). Once the tag is properly inserted and the incision is stitched, the fish left in a recovery basin for several minutes

and then released back into the river. An acoustic receiver (VR2Tx model, VEMCO) is set up at a certain point in the river. Knowing where we release the fish in relation to the receiver, we can determine in which direction the fish is heading (up or down the river). Ultimately, in the future, we want to know if Striped Bass go up the river or not.

RESULTS

There are no conclusive results available at this time for the Striped bass tagged in Bouctouche. The reason being, that we weren't able to catch enough suitable fish. Only juvenile fish were caught and they were too small to be tagged. They were therefore released without being tagged. These fish were caught in the fall during the time when adult Striped bass should be in the watershed according to Energy and Resource Development (ERD). And according to local fishermen, they caught some adult size fish with their fishing rods in the upstream of the trap nets. BFN has confirmed that they will get the license to fish with their trap net in the spring 2018 and we hope will improve our chances to get ideal size Striped bass for tagging. SAA will try another year or two to help better understand how far in the Bouctouche watershed they travel to and if they spawn in this watershed or elsewhere.



Figure 1: Striped Bass being measured (2016)

The tags have a certain shelf life which reduces every year we try to find suitable fish. In order to use them for this project at large without losing their capacity, DFO has suggested tagging some Striped bass from other parts of the Northumberland straight watersheds until we get good size fish in the Bouctouche watershed. This way, it still contributes to the project since the Striped bass can still travel in the Bouctouche area while feeding and migrating. Approaching near the end of the fishing season, ten fish were caught with a trap net and tagged in Miramichi this fall (October 27, 2017). These fish ranged approximately from 2 to 6 years old.

Date	Location	Fork_Length (mm)	Sex	Total_Age	Tag ID	Anesthetic			Surgery			Recovery		
						Start	End	Total	Start	End	Total	Start	End	Total
27-Oct-17	Southwest Miramichi Millerton	635	M	-	16529	10:34:28	10:38:48	00:04:20	10:38:48	10:44:16	00:05:28	10:44:16	10:51:55	00:07:39
27-Oct-17	Southwest Miramichi Millerton	489	M	-	16530	10:43:27	10:47:48	00:04:21	10:47:48	10:52:47	00:04:59	10:52:47	10:58:24	00:05:37
27-Oct-17	Southwest Miramichi Millerton	531	F	-	16531	10:51:41	10:55:49	00:04:08	10:55:49	11:00:00	00:04:11	11:00:00	11:07:24	00:07:24
27-Oct-17	Southwest Miramichi Millerton	486	F	-	16532	10:59:43	11:04:13	00:04:30	11:04:13	11:08:56	00:04:43	11:08:56	11:13:52	00:04:56
27-Oct-17	Southwest Miramichi Millerton	463	M	-	16533	11:08:52	11:13:40	00:04:48	11:13:40	11:18:27	00:04:47	11:18:27	11:22:56	00:04:29
27-Oct-17	Southwest Miramichi Millerton	521	M	-	16534	11:17:29	11:21:45	00:04:16	11:21:45	11:26:15	00:04:30	11:26:15	11:29:45	00:03:30
27-Oct-17	Southwest Miramichi Millerton	529	M	-	16535	11:24:39	11:29:21	00:04:42	11:29:21	11:33:57	00:04:36	11:33:57	11:41:32	00:07:35
27-Oct-17	Southwest Miramichi Millerton	604	F	-	16536	11:32:10	11:37:00	00:04:50	11:37:00	11:41:34	00:04:34	11:41:34	11:44:33	00:02:59
27-Oct-17	Southwest Miramichi Millerton	557	M	-	16537	11:40:26	11:43:43	00:03:17	11:43:43	11:48:40	00:04:57	11:48:40	11:52:35	00:03:55
27-Oct-17	Southwest Miramichi Millerton	533	F	-	16538	11:46:41	11:51:11	00:04:30	11:51:11	11:55:34	00:04:23	11:55:34	12:00:17	00:04:43

Figure 2: Striped Bass tagging information (2017)



Figure 2: Tag being place in a Striped Bass (2017)

CONCLUSION

This study depends on many factors that are out of our control, such as the amount and size of the fish caught in the trap nets. As previously stated, we were unable to reach our goal of tagging Striped Bass in Bouctouche due to the limited amount of fish caught. Since this is a trial for our association, it is likely that we have overlooked some important aspects in our methodology. One of those aspects would be the time at which we tried to catch the fish. The trap nets were only set up from about September-October. It is possible that at this time of year, most Striped Bass are already done migrating to their wintering sites. We have been unlucky in 2016 and 2017 but we will try again in 2018. Since SAA is now equipped with some tags and acoustic receivers, we will retry to catch the fish earlier in the season to increase our chances of finding suitable candidates for tagging. During May or June might be a better time to catch them since they tend to spawn during this period in the Miramichi River. We might have better luck catching the bigger, mature fish while they are migrating out of the Bouctouche River to their spawn sites. It is also possible that the trap net locations are not optimal. We will consider moving them if we think a different spot will increase our chances of catching the fish. According to BFN, there seemed to be less fish caught in general in 2016. In 2017, they caught higher numbers of Striped bass, but only school of juveniles.

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REFERENCES

COSEWIC. 2012. COSEWIC assessment and status report on the Striped Bass *Morone saxatilis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. iv + 79 pp.