

Letter to Nova Scotia Energy Minister

May 8, 2015



Minister Samson,

I am writing as President of the Striped Bass Association. Our membership is extremely concerned about the current and proposed lack of monitoring of fish mortality at the FORCE tidal energy test site, in the Minas Passage, and proposed commercialization of this area for turbine power generation. When fish interact with turbines, mortality can occur through direct blade strike, changes in pressure, shear forces, and cavitation. Fish do not have to necessarily transit through a turbine to be affected. Our concerns are based on scientifically well-documented instances of fish mortality at the Annapolis River tidal energy facility, which ultimately contributed to the extirpation of the striped bass population in that river and contributed to spawning and recruitment declines of other species such as American shad and American eel. While there are differences between barrage turbine systems and open water turbines, the fundamental issues remain: if a fish – turbine interaction occurs, fish mortality occurs. Simply stating that open-water turbines are different and fish may avoid them is naïve.

Current research by Dr. Anna Redden, Acadia Centre for Estuarine Research, using acoustic telemetry indicates that striped bass are present at the FORCE test site, and in the Minas Passage, year round.

This factual, persistent residency makes the fish especially vulnerable to turbine interactions and increases the probability of such interactions. The uncertainty is only with how many and how they use the passage. Other fish species such as alewife, herring, shad, sturgeon, Atlantic salmon, and American eel, are also known to at least migrate through this passage and also in great numbers. These species are highly important for the ecosystem (e.g. food fish for striped bass), and are commercially harvested in food and bait fisheries (e.g. bait to support the lucrative Maritime lobster fishery). As well, striped bass, sturgeon, Atlantic salmon, and American eel are all COSEWIC designated at-risk species for populations in this area. Absolutely nothing is known about how most of these species use the passage (sturgeon and American eel have also be shown to use the area).

Dr. Redden's work has also established that acoustic detections are limited to only a portion of the tidal cycle (higher flow speeds are noisy making detections impossible); therefore, there is a great unknown in striped bass residency at higher flows. Even these relatively large fish cannot swim faster than the water flows through this area, therefore, there is increased concern for striped bass. Hoping fish are 'gone' during high flows, and that they will not interact with turbines is just that, hope. Trading these fish resources for energy is short-sighted and disregards the current state of recreational and commercial fisheries in this highly important corridor and ecosystem.

During the summer months, a large migratory population of striped bass originating from the east coast of the United States migrates to the Minas Basin following food fish species, and ultimately mixes with Canadian populations. These populations are genetically distinct with only one remaining known-good

striped bass spawning ground in the Shubenacadie River system for the Bay of Fundy designated unit; the Annapolis River population is extirpated, and the St. John River population is only seen as a weak genetic signature. Tides operate twice daily, every day; therefore, all fish moving through the passage are subjected to potential turbine interactions, and a proportion of fish are subjected to repeated movement through the test site, and ultimately through proposed commercialization sites. Both residency and migration place many fish species in the way of harm. Repeated movements through the turbine area and an inability to 'swim free' due to high flows increases the probability of a fish – turbine interaction. The potential for high fish mortality exists both for the resident Canadian population and for the United States population of striped bass as well as any other species that reside or use this corridor.

We further fully understand the differences between a barrage turbine system such as at Annapolis Royal, and an open-water turbine system such as those slated for the FORCE test site. Replies to fish passage concerns expressed to various Ministers state in a basic form that environmental monitoring will be done. We find these replies inadequate, inconsiderate and inconsistent. For example, current statements and protocols for environmental monitoring, such as those stated on the FORCE website, are broadly stated and apply more-or-less to monitoring the effects of turbines on the environment. They do not specifically address monitoring the effects of turbines on fish species or other biota in the ecosystem, what measures will be taken if or when high rates of fish mortality occur, or avenues for mitigation. Speculation on how fish use this area is only speculation; more needs to be done.

Striped bass are a very valuable recreational sport fish in Nova Scotia and New Brunswick, and also in the United States, where over 3 million anglers along the Atlantic coast enjoy the sport and contribute to local economies. Because of these issues and the importance of this fish, the Striped Bass Association is calling for effective mitigation methods and formal monitoring of fish movements and mortality at the FORCE tidal energy test site immediately, and for fish monitoring measures to be added to any roadmap for commercialization of this resource. We feel that formal monitoring of fish of many species is a necessary requirement of the proposed regulatory system outlined in Bill 110, The Marine Renewable-energy Act.

Because American populations of striped bass and many other species use this area, we will be lobbying our American colleagues and other stakeholders to join us in this regard.

Sincerely,

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