Spawning cod research at the Fisheries Conservation Chair
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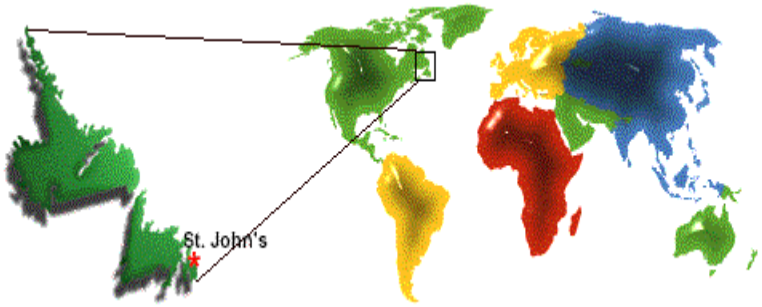
The Fisheries Conservation Chair was established at Memorial University (St. John's, Newfoundland, Canada) in 1996. The research program was developed to complement and scrutinize government programs and to provide an integrative focus for fisheries research at Memorial University. There is an emphasis on the collapse and rebuilding of groundfish stocks in Atlantic Canada, sea-going research, and the use of high-technology to measure the ocean and its fishes. The research typically takes an ecosystem approach to fisheries and management and works with fishers and industry. Much of this research is focused on the Atlantic cod, *Gadus morhua*. The cod is a very important fish in Newfoundland and Atlantic Canada, and in the past ten years cod stocks have been drastically depleted.



Two of the largest spawning components of Atlantic cod in Newfoundland waters have been studied using active acoustics for several years. Using active acoustics in surveys and sonar tagging studies we have learned a great deal about cod spawning aggregations and migratory behaviour. As spawning is the first step towards recruitment and rebuilding cod stocks, there is a continuing interest in spawning behaviour and the influence of population (age structure) and individual (age, growth) characteristics on reproductive potential. Laboratory studies have observed elaborate courtship behaviours of cod including sound production of male cod, which is thought to play an important role in spawning, such as attracting females and holding territories.

Present field studies will observe the acoustic properties of spawning aggregations over two spawning seasons. We are interested in both the production and reception of sound by cod and its role in spawning behaviour and also the influences of ambient noise in the

ocean environment on these behaviours. This study will attempt to document the sounds of cod made during spawning at sea and relate these to spawning behaviour. The work will attempt to link ongoing active acoustic research with passive acoustics, and to use real-time video to study cod spawning. From past acoustic research, we have learned about the state of cod stocks, spawning aggregations, migrations, and homing. With the addition of passive acoustic tools we hope to learn more about the spawning behaviour of individual cod.