Using US and Canadian Atlantic research trawl surveys to lead development of a standards based ocean observing system

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Remotely observed data is only as good its ground truthing. We propose that stratified random research trawl surveys, widely used throughout the world for estimating distribution and abundance of bottom dwelling fish and invertebrate species could provide a rich collection of in-situ measurements for that purpose. Since 1963, the Canadian Department of Fisheries and Oceans and USA National Marine Fisheries Service fisheries laboratories have conducted standardized trawl surveys along the east coast of North America from Cape Hatteras North Carolina to Cape Chidely Labrador. From their inception, these surveys were intended to be the most comprehensive set of fishery-independent data in this area and as such have been fundamental to resource management activities of the two countries. Depending on the observations made for a given species, data from these surveys can be used to track fish weight at length (condition), length at age (growth), length and/or age at maturity as well as estimate total mortality. Furthermore, hydrographic observations made at the actual fishing locations can be used to quantify species preference for oceanographic conditions such as depth, temperature, and salinity. Although the underlying experimental design of these surveys has not changed, the frequency of the various surveys has increased and the scope of observations and collections has evolved in many ways. Equipment used to collect and manage the data is constantly being upgraded, thus improving the accuracy and precision of the observations. In the last two years, the Bedford Institute of Oceanography (BIO) has, as part of the International Census of Marine Life (ICoML) developed web-enabled data products (maps, graphs and tables) to facilitate exchange and integration of survey results between the various laboratories. Building on these highly visual products, BIO is now proceeding to present these surveys as ANSI/NISO Z39.50 metadata and datasets following ICoML Darwin Core standards thus superceding the US National Oceanographic and Atmospheric Agency's East Coast North America Strategic Assessment (ECNASAP) website. Current expectations are that these surveys will play a lead role in the development of an international multi-faceted standards based ocean observing system for the study of environmental issues like marine biodiversity and climate change.