



St. Lawrence Beluga Whale Monitoring Program

by

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Background

In 2004, the St. Lawrence Estuary (SLE) beluga population was designated as "threatened" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). At the end of the 19th century, the population was estimated at 7,800-10,000 individuals and was subjected to intensive hunting during the first half of the 20th century. Population assessments conducted in the 1970's estimated the number of individuals at a few hundred. Since 1979, SLE belugas have been protected from any hunting and a recovery plan was developed in 1996. In addition to proposing research priorities and actions aimed at reducing threats to the population, the plan also recommends that the population be monitored to determine the long term success of recovery measures.

Program Description

The program, conducted by the Department of Fisheries and Oceans (DFO), includes two components: population abundance and monitoring of reported beluga carcasses that have washed up along the shores of the Estuary.

Overview of the situation

Population abundance is determined by the use of photographic aerial surveys based on a systematic design developed in 1988 (Figure 1). These surveys estimate the number of beluga visible on the surface. Seven abundance estimates were provided between 1988 and 2003 using this method.

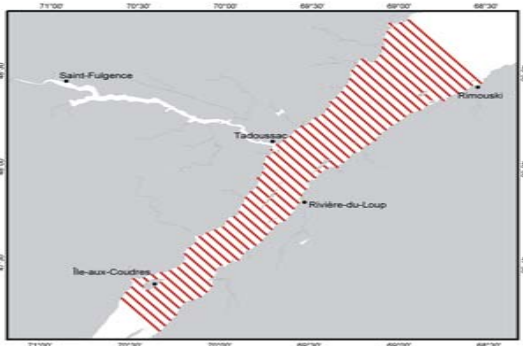


Figure 1. Map of the St. Lawrence Estuary, with transect lines flown during photographic aerial surveys of the St. Lawrence Estuary beluga population conducted in 2003.

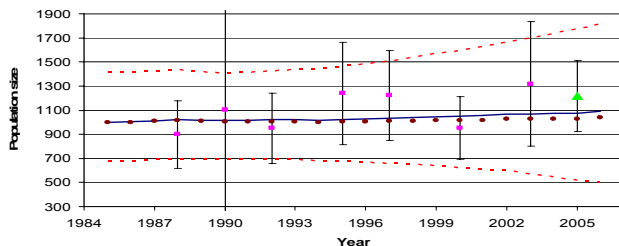


Figure 2. Population trend assessments are made using an adjusted population model based on aerial survey numbers and corrected to account for submerged animals. The St. Lawrence Estuary beluga population is estimated at around 1,100 individuals and has been stable for the last 20 years.

The beluga carcass monitoring program has continued since 1982. Carcasses have been reported to the DFO via the Group for Research and Education on Marine Mammals (GREMM) since 2003. When a dead beluga meets the selection criteria (good condition, access to the site), the carcass is transported by the St. Lawrence National Institute of Ecotoxicology (SLNIE) to the University of Montreal Faculty of Veterinary Medicine, in St. Hyacinthe, where a complete necropsy is conducted to determine the cause of death.

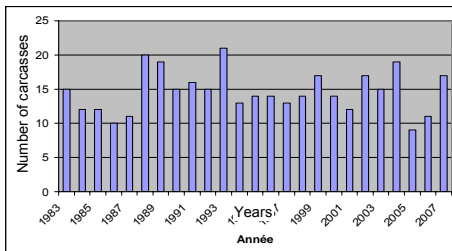


Figure 3. Number of beluga carcasses documented from 1983 to 2007 in the Estuary and Gulf of St. Lawrence.

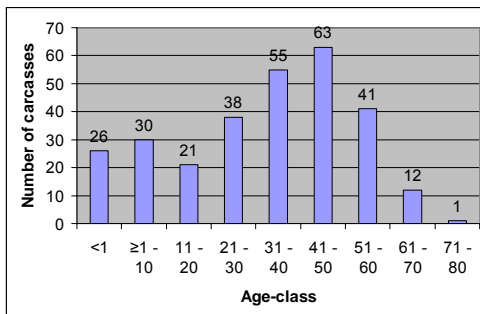


Figure 4. The mean age of stranded beluga carcasses from 1983 to 2005 was 34 years with a maximum in the 41-50 age-class.

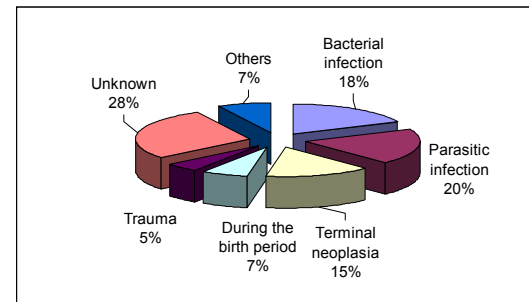


Figure 5. With the collaboration of University of Montreal veterinary pathologists, the cause of mortality has been determined for 148 beluga carcasses stranded between 1983 and 2002. Infectious diseases were responsible for 38% of beluga deaths.

Chemical analyses of fatty tissue samples from beluga carcasses have helped determine the temporal trends of contaminants.

Trends in polychlorinated biphenyl (PCB) levels have been dropping by 3-4% per year since the late 1980's. Similar trends have been reported for other compounds, including DDT, while contamination by other compounds such as Mirex, has not decreased.

Complementary work on emerging chemical compounds has shown increases. Levels of polybrominated diphenyl ether (PBDE) double every 3-4 years in this population. PBDE are flame-retardant compounds increasingly used by industry throughout North America.

Conclusions

The SLE beluga recovery plan must have a long-term perspective. Population monitoring must continue in order to assess periodically its status, which will help evaluate the effectiveness of the management measures put in place.

The DFO beluga carcass monitoring program will contribute by documenting the number and causes of mortalities as well as the presence of certain diseases including new pathogens, emerging contaminants and other threats to this population.