

# Engaging Fishermen in Right Whale Stewardship in Southwestern New Brunswick

A project by Fundy North Fishermen's Association in collaboration with LFA 36 Fishermen  
 Project # 2010 HSP5510 completed with support from the Habitat Stewardship Program for Species at Risk  
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## Abstract

The "Recovery Strategy for the North Atlantic Right Whale (*Eubalaena glacialis*) in Atlantic Canadian Waters" was completed in 2009. The strategy identified a number of gaps in our knowledge about the Endangered Right whale and includes a list of eight priority actions to address these knowledge gaps. Listed as fourth in priority, is a recommendation that an action plan be implemented which will study Right whale entanglement in various fishing gear. The action reads "Evaluate the overlap in space and time of North Atlantic right whales and fishing gear to help design potential mitigation.". The vertical lines on lobster gear are considered to put Right whales at risk for entanglement.

This project by Fundy North Fishermen's Association (FNFA) in partnership with local lobster fishermen from Lobster fishing Area 36 identified temporal and spatial co-occurrences of lobster gear and Right whales during their seasonal residence in the Bay of Fundy. Commercial landing data and Right whale sighting records were incorporated with fishermen's data retrieved via a survey focused on lobster gear, distribution of lobster traps, length of vertical line and right whale information. Maps were created with the above data, evaluated and presented in an overlay manner.

Results from the study assessment of fishing gear (especially vertical lines) did not indicate a high amount of overlap within LFA 36. All co-occurrences of lobster traps and Right whales took place in November of 2006 and 2007. Correlation testing did not show a relationship, suggesting the two variables are not dependent upon one another. The maps and data are available as baseline knowledge toward the two ultimate goals of the study: 1. Reducing and eliminating risk of entanglement of Right whales in Bay of Fundy waters and 2. Maintaining coastal communities and their viable local fisheries.



## Introduction

Fundy North Fishermen's Association (FNFA) recently conducted a project funded through the Habitat Stewardship Program (HSP) under the Species at Risk Act (SARA). The study examined fishing sites where lobster traps and vertical lines occur along with North Right whales (*Eubalaena glacialis*) in Lobster Fishing Area (LFA) 36. The ultimate goal is to reduce mortality and injury to Right whales from fishing gear interactions, and to encourage stewardship in the community.

Historically, communities of southwestern New Brunswick have depended on commercial fisheries for their main source of income. The majority of fishing effort in LFA 36 is concentrated of lobster. Presently, there are 177 lobster licenses issued within LFA 36, with approximately 165 vessels fishing lobster. Today, the lobster sector generates more than \$800 million in NB sales.

Entanglement in fishing gear is the major cause of death and injury for Right whales. Right whales are very susceptible to entanglement in fixed fishing gear because they filter feed with their mouths open. The Right whale was listed as an Endangered Species under the Species at Risk Act in January 2005. Currently there are believed to be 350-400 remaining Right whales. The southwestern region of the Bay of Fundy is classified as critical habitat for the Right whales, with historical sightings in LFA 36.

Other gear types and species were also examined. Co-occurrences of gill nets, longlines, trap nets, and fixed gear traps with Humpback (*Megaptera novaeangliae*), Minke (*Balaenoptera acutorostrata*), and Fin (*Balaenoptera physalus*) whales. Fin whales are listed as special concern by SARA.

## Objectives

1. To gather fishing effort and whale sighting locations,
2. To assess areas in LFA 36 with potential overlap and therefore highest risk of entanglement,
3. To promote communication and participation with the fishing community,
4. Coordinate and evaluate potential options leading to practical solutions for the reduction of Right whale injury or mortality due to fishing gear while maintaining a sustainable fishery.

## Methods

A confidential survey with 20 fishermen belonging to the Fundy North Fishermen's Association was performed, focusing on gathering information about location and effort of fishing gear as well as location of whale sightings. Also, fishing effort and whale sighting data was collected from the Department of Fisheries and Oceans.

Local knowledge fostered with cooperation, collaboration and communication among fishermen and FNFA was essential in order to achieve our stated goals and objectives.

## Temporal Separation

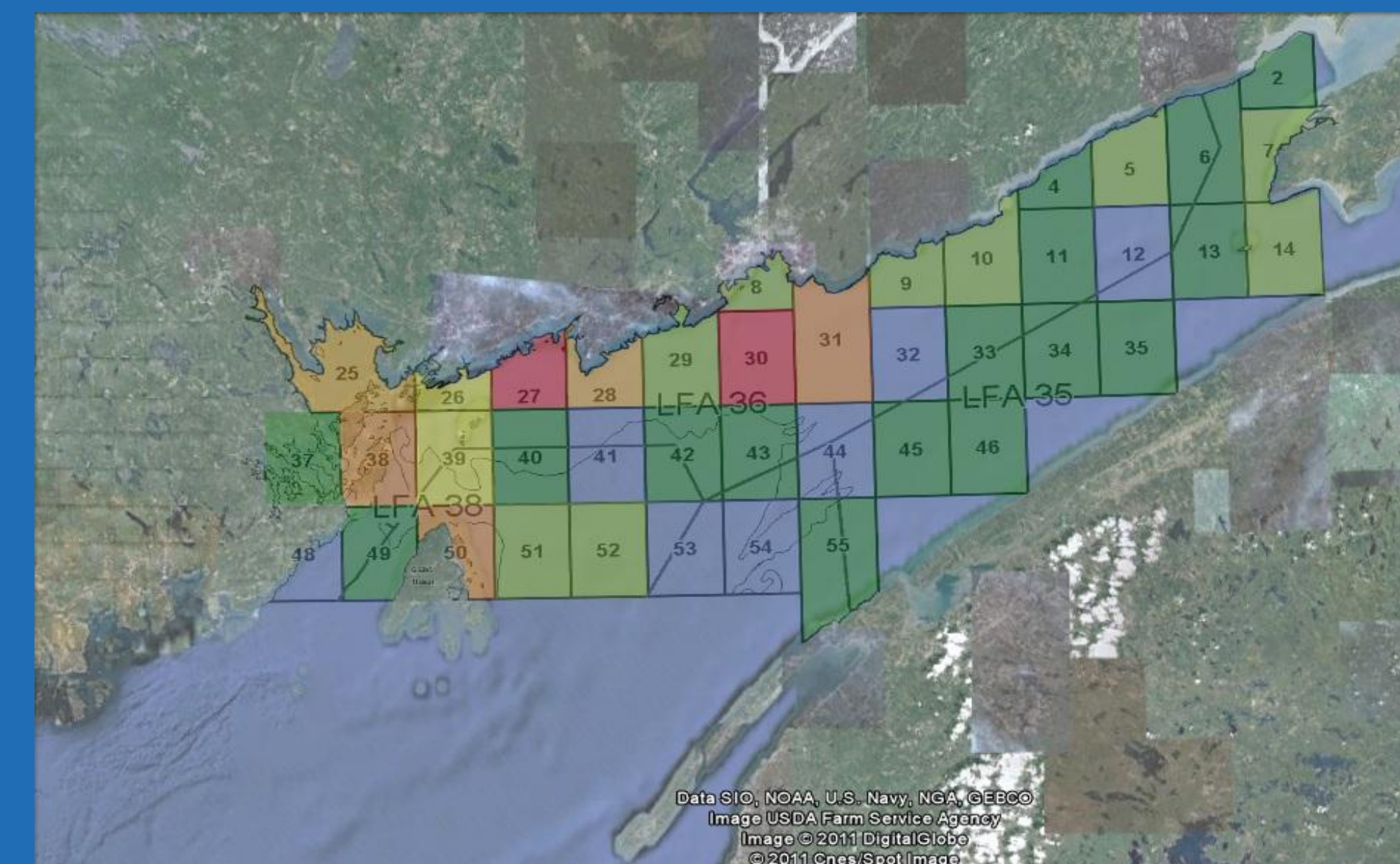


Figure 1. High lobster trap fishing effort during June of 2008.

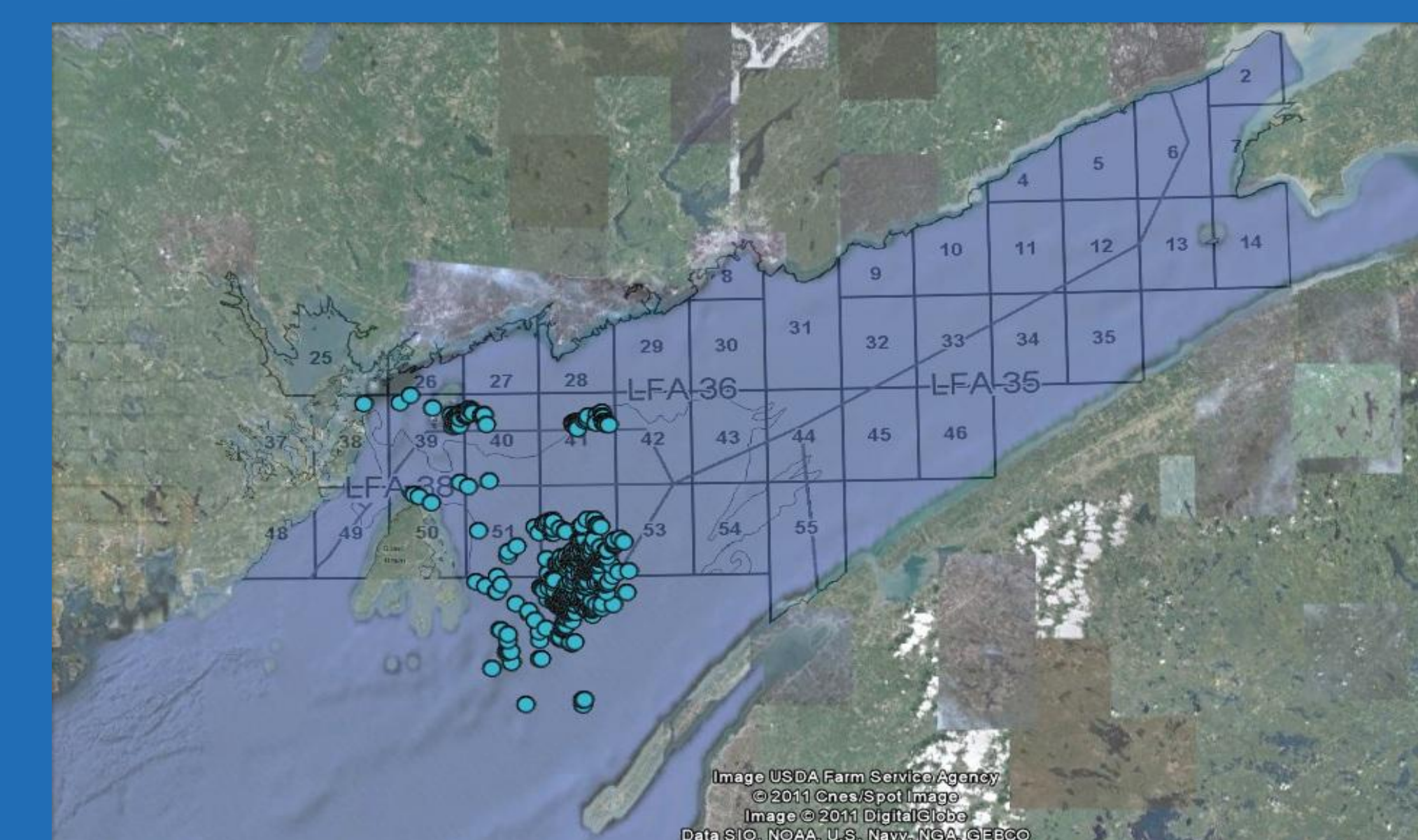


Figure 2. Lobster trap fishing effort removed from waters with peak Right whale sightings during September of 2009.

## Co-occurrences with potential interactions

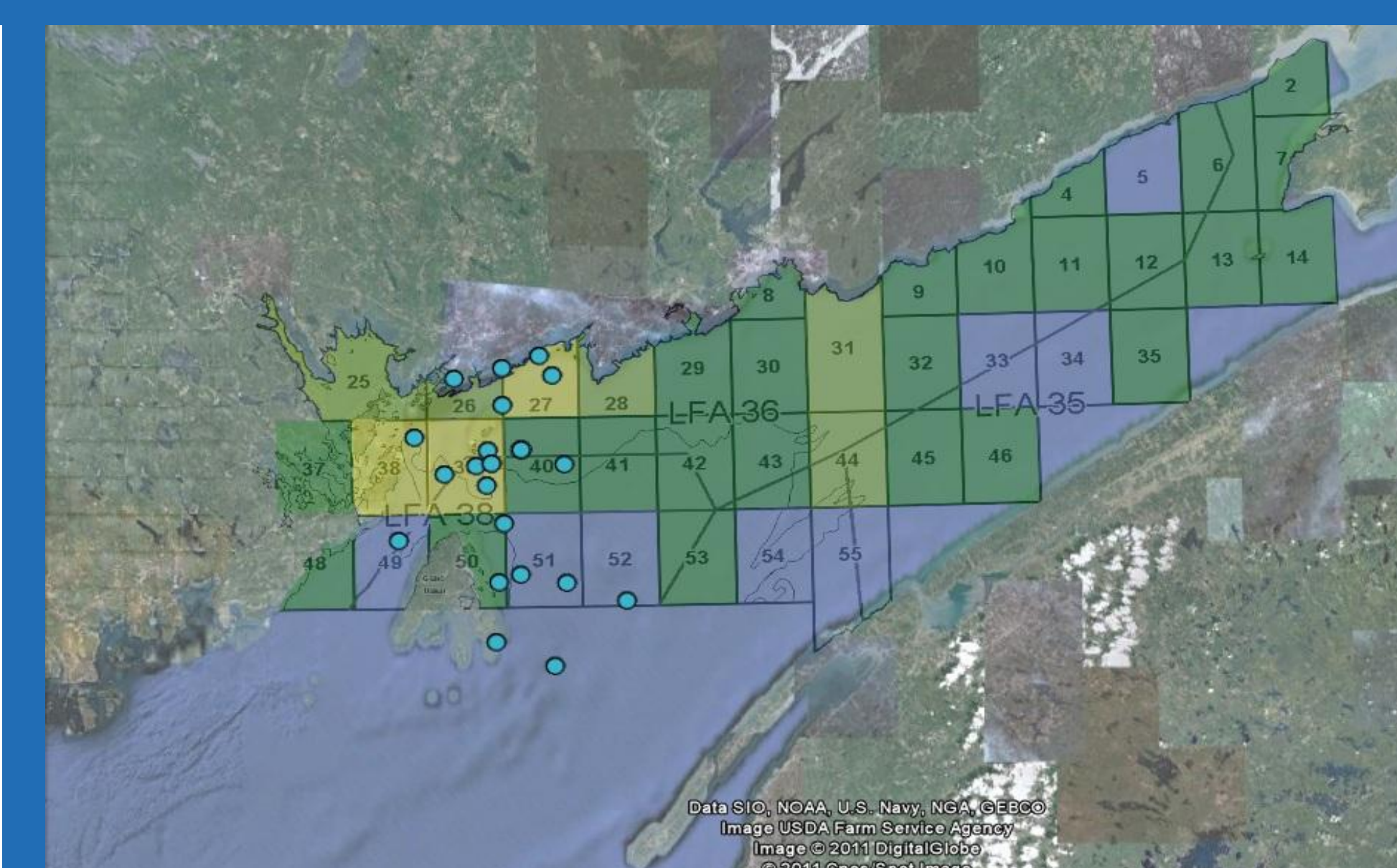


Figure 3. Co-occurrence of lobster trap fishing effort and Right whale sightings during November of 2006.

## Spatial Separation

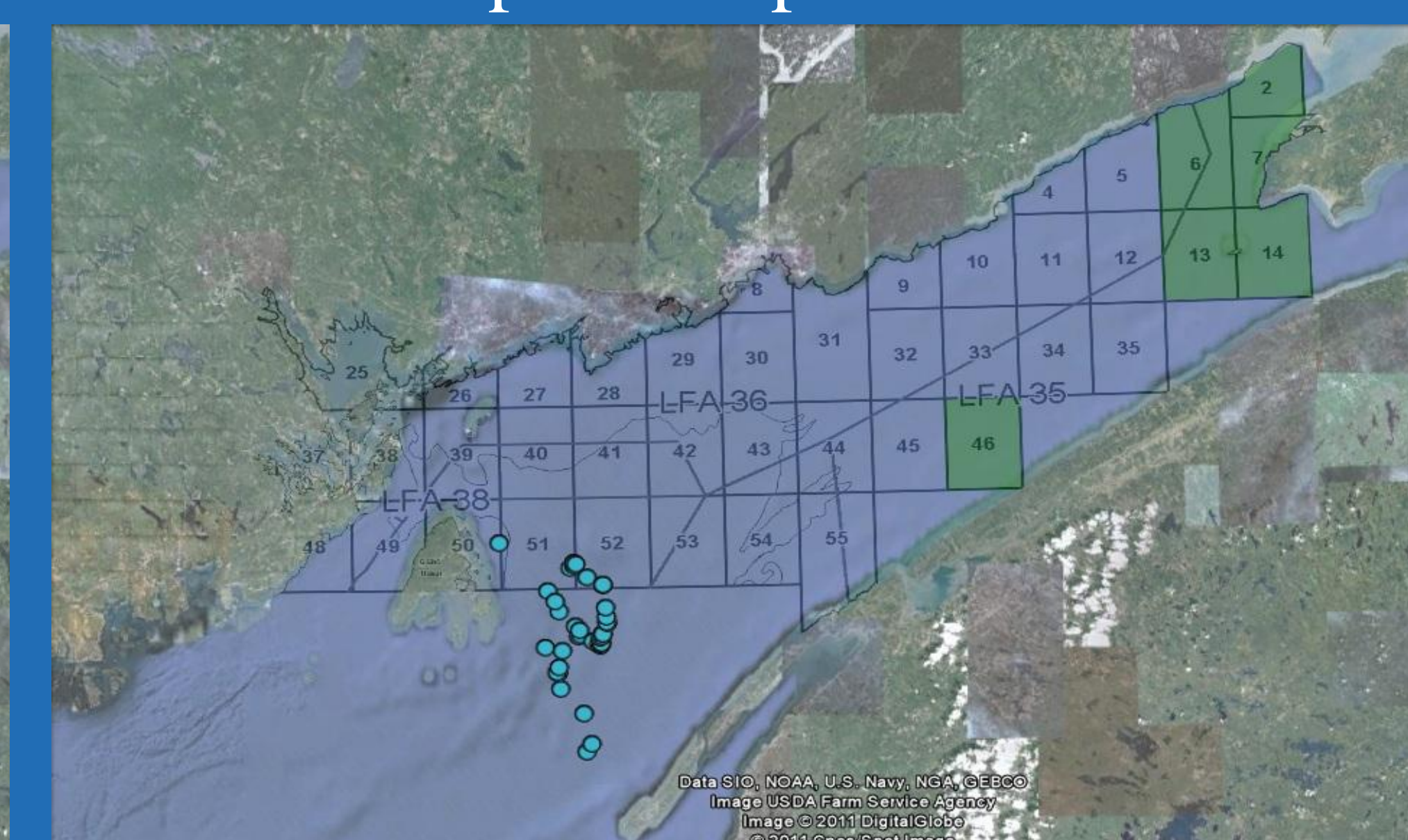
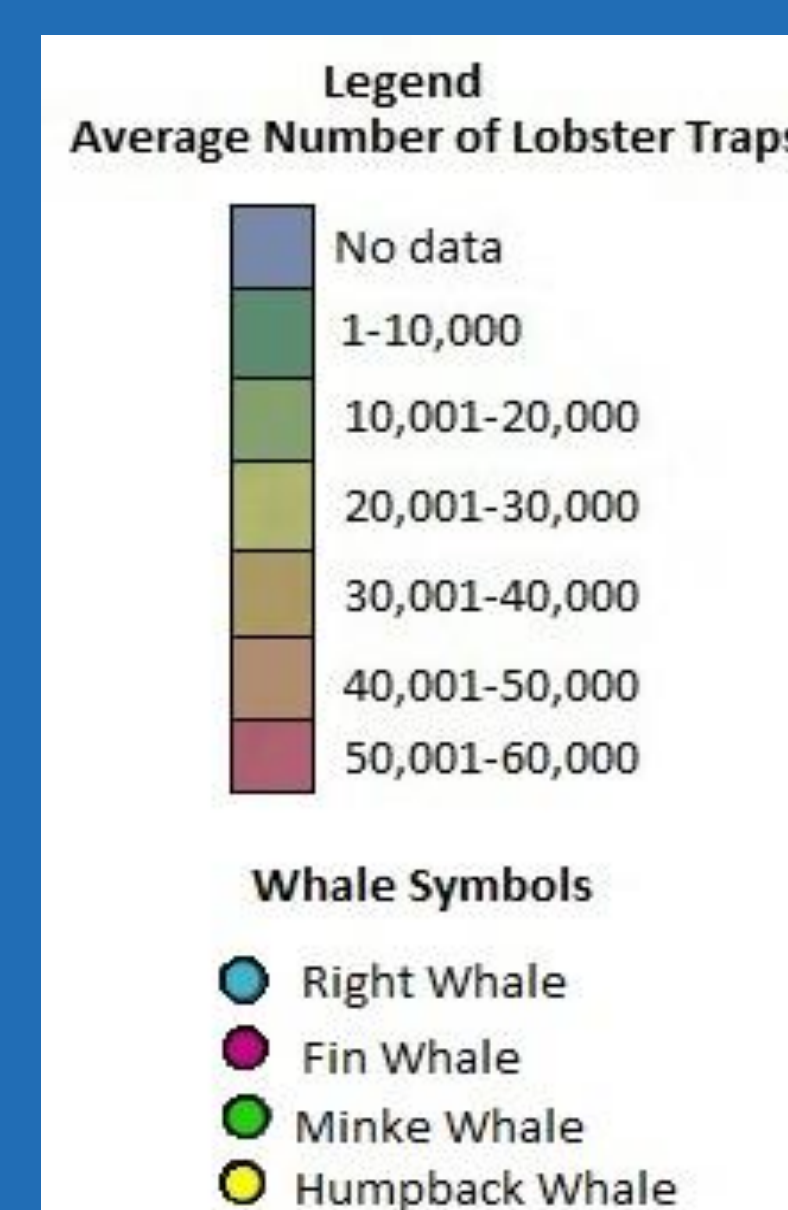


Figure 4. Lobster trap fishing effort spatially removed from Right whale sightings during October of 2005.

Table 1 – Number of co-occurrences revealing spatial entanglement hot spots for three gear types (lobster traps, gill nets, and fixed gear traps), and four whale species (Right, Humpback, Minke, Fin) within LFA 36 and surrounding grids. GN= Gill Net, LT = Lobster Trap, FGT = Fixed Gear Trap

Grid	Gear	Right			Humpback			Minke			Fin			Total
		GN	LT	FGT	GN	LT	FGT	GN	LT	FGT	GN	LT	FGT	
25							1						1	3
26			1									1		2
27			1											1
38			1				1					3	2	7
39			1			1					1			3
40			1											1
41			1											1
50			2											2
51			1											1
52			1			1							1	3
<b>Total</b>		<b>1</b>	<b>9</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>24</b>



## Conclusion

- Temporally, co-occurrences were highest in August for both gill nets and fixed gear traps, September for fixed gear traps, and November for lobster traps.
- Spatially, the entanglement hot spots as grouped in the southwestern area of LFA 36 and surrounding grids. Grid number 38 had the highest number of co-occurrences (1 with lobster traps and Right whales, 6 with fixed gear traps and Humpback, Minke, and Fin whales).
- Entanglement hot spots of decreasing threat were found surrounding grid number 38 (25, 39, and 52 had three co-occurrences, 26 and 50 had two, and 27, 40, 41, and 51 had one co-occurrence).

## References

- Blue Ocean Institute, 2005. Code of Practice for Reducing Whale Entanglements.
- Brilliant, S.W., and Trippel, E.A., 2010. Elevations of lobster fishery groundlines in relation to their potential to entangle endangered North Atlantic Right Whales in the Bay of Fundy, Canada. International Council for the Exploration of the Sea Journal of Marine Science 67: 355-364.
- Desjardins, P.-M., 2010. Economic Impact Assessment Lobster, Herring, Shrimp, and Snow Crab. Province of New Brunswick Economist: 1-26.
- Department of Fisheries and Oceans, 2010. Lobster Management Plan.
- Fisheries Resource Conservation Council, 2007. Sustainability Framework for Atlantic Lobster. A Report prepared for the Minister of Fisheries and Oceans: 1-68.
- Johnson, T.L., Smedbol, R.K., Serdynska, A., Vanderlaan, A., Gelcl, N., Harris, L., and Taggart, C.T., 2007. Patterns of Fishing Gear in the Areas of the Bay of Fundy and Southwest Scotian Shelf Frequented by North Atlantic Right Whales. Canadian Technical Report of Fisheries and Aquatic Sciences 2745.
- North Atlantic Right Whale Recovery Strategy, 2009. Recovery Strategy for the North Atlantic Right Whale (*Eubalaena glacialis*) in Atlantic Canadian Waters. Species at Risk Act Recovery Strategy Series.
- Species At Risk Act (SARA), 2011. Species at Risk Public Registry.

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