Innovation in graduate training
A skills-focused graduate program in fisheries science

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MEMORIAL UNIVERSITY
MI MARINE INSTITUTE

It's hard to be a marine scientist

Being good at science is no longer enough

Modern fisheries and marine scientists are expected to be excellent writers and public speakers. They must be able to work with industry, NGO's, governments, and other sectors to mobilize knowledge. They have to be competent coders and data analysts, and keep abreast of fast-changing best-practices in data sharing and archiving.

If we expect students to gain these skills, we must be prepared to train them

Here, I introduce a new set of research-based graduate programs, where the course content is specifically designed to build **proficiency** in skill sets critical to the scientific enterprise.

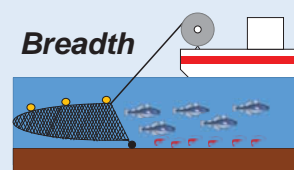## Core Program Courses

Materials available online:

https://mifisheries science.github.io/courses/

#SciComm

Science Communication for Fisheries

Breadth

Ecology, Management, and Practice of North Atlantic Fisheries

Data literacy

Data Collection, Management, and Display

Stats in R

$$CatchRate \sim Poisson (\mu_{ij})$$
$$E(CatchRate) = \mu_{ij}$$
$$Log(\mu_{ij}) = GearType_{ij} + Temperature_{ij} + FleetDeployment,$$
$$FleetDeployment_j \sim N(0, \sigma^2)$$
Using lme4:
$$m <- glmer(CatchRate \sim GearType + Temperature + (1 \mid FleetDeployment), family = poisson)$$

Statistics and Study Design for Fisheries

Also: two courses in statistical stock assessment

What is the Marine Institute?

The Marine Institute (MI) is a polytechnic institute located in St. John's, Newfoundland and Labrador (NL), Canada. Established in 1964, MI is mandated to advance the **economic interests** of NL's marine sector. In 1992, MI joined Memorial University. In 2017, the graduate programs described here were approved by the University Senate, representing the first time MI has offered a Ph.D program.

MI has deep institutional ties to industry, local NGO's, government, and communities across the province.

Semester:	1 (fall)	2	3	4	5	6	7	8	9	10	11	12
M.Sc Fisheries Science	Sci Comm	Stats				Exam	*S.A. = Stock Assessment					
M.Sc Stock Assessment		S.A.1*		S.A.2		Exam	†Ph.D students do either generalist stats or the S.A. courses					
	Data											
Ph.D Fisheries Science		Stats†		S.A.2		Comps						Defense
	Breadth											

Principles:

- Evidence underpins everything
- Scientific integrity built into all activities
- Respect everyone's time: no busywork
- Publishing matters – but is not the only thing that matters
- Support science communication, outreach, and engagement

Contact a research supervisor to apply:
https://www.mi.mun.ca/researchsupervisors/

Call to action: Could your institution benefit from this type of training?

Let's talk!