



The risk prevention of falling overboard in the lobster fishery activity: criteria and co-design of the hauler and traps support devices work stations



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Background: falling overboard

- ▶ Eastern USA, from 2000–2009 :18 deaths while lobstering which 11 = falls overboard.
- ▶ Causes: fall and slide, loss of balance and a fishing gear entanglement.
- ▶ Few, if any, studies on the health and safety of the commercial fishers in Quebec despite the fact that it is one of the activities most at risk, according to international statistics.
- ▶ Triggers of this research program.
 - Death of 2 fishermen on lobster boats by falls overboard (2010 and 2011).

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Reminder Phase 1.5

- ▶ 1) A photographic inventory of equipment and deck arrangements on r 500 lobster boats for the Gaspé Peninsula—Magdalen Islands has been integrated into a database
- ▶ 2) A detailed analysis of activities and risks to the hauler and trap supports working stations:
 - 2013: 12 new lobster boat (5 in the MÎ and 7 in the Gaspé Peninsula)
 - 2014: 1 last lobster boat in the Gaspé Peninsula; use of the software "OBSERVER" to differentiate the activities at risk and determine their frequency and duration, including postural constraints

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Research project objectives—phase 2.0

- ▶ 1) Highlight the benefits of efficiency, safety and ergonomics of certain adjustments to hauler and trap support devices
- ▶ 2) State on design criteria's for these working stations and document the feasibility of their implementation
- ▶ 3) Demonstrate the feasibility achieving three at-sea trials
- ▶ 4) Collect the information along the co-conception process with lobstermen.



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Methodology-phase 2.0

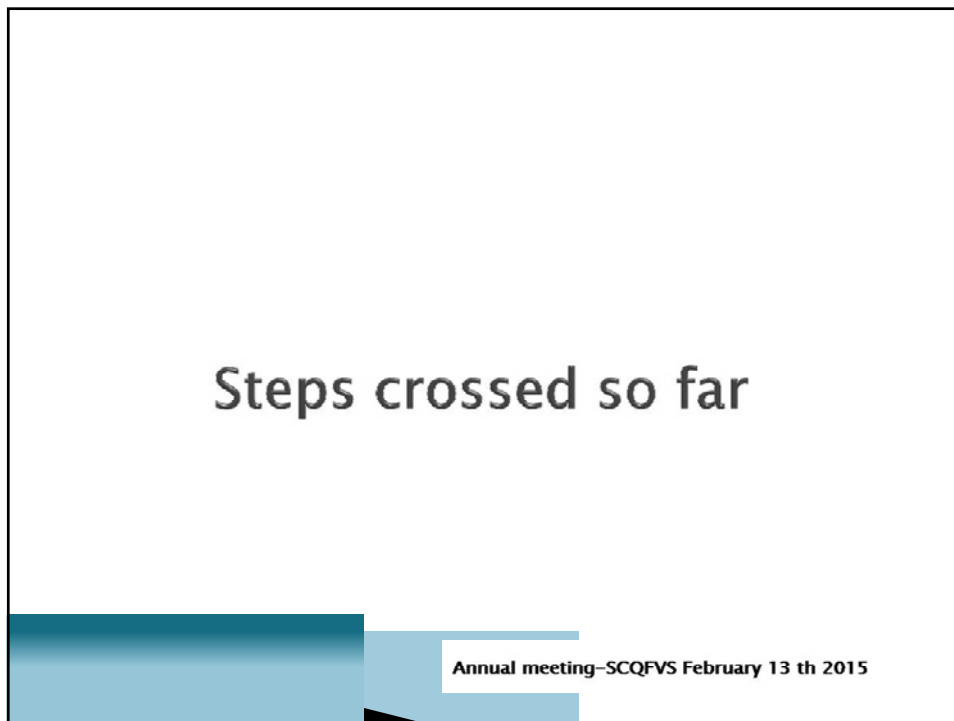
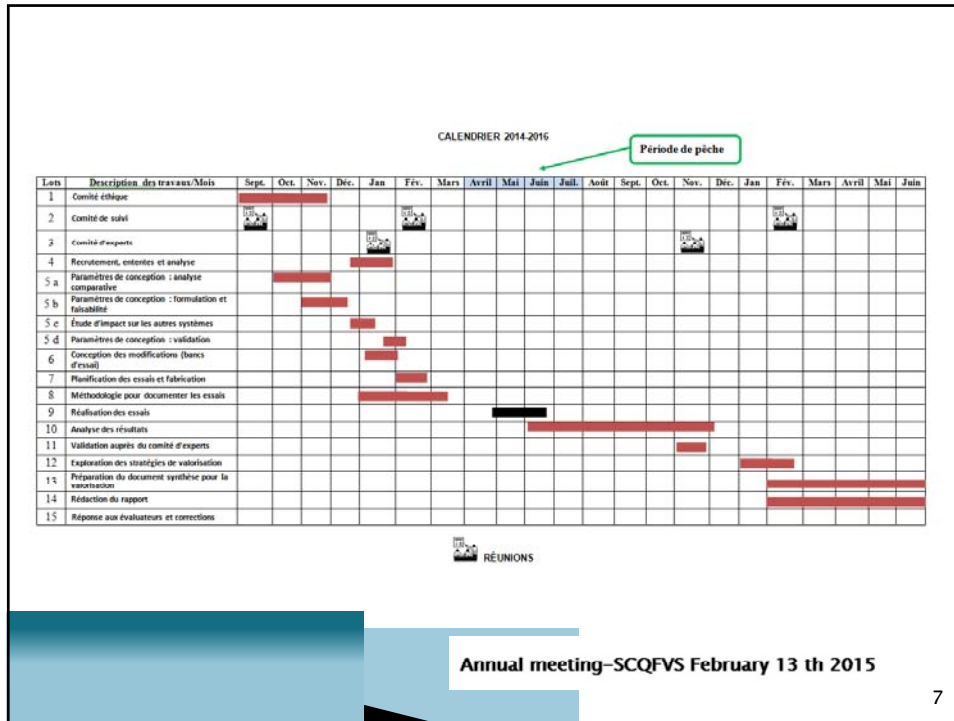
- ▶ This research involves three types of competences, i.e. those:
 - fishermen and organizations involved in prevention
 - fishing technology and fishing vessel design of ship
 - Laval University experts in risks analysis, prevention and ergonomics concepts e.
- ▶ The approach proposed to fishermen is participatory: knowledge of experience sharing and innovation observed from 2012 to 2014)
- ▶ Adaptation of equipment and at-sea trial during the fishing season (aboard 3 lobster vessels)
- ▶ The design and implementation process will be documented in order to understand the constraints (real or perceived) relied upon by the participants.

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Conduct planned project

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Ethical committee

- ▶ 1) Approval obtained on October 30, 2014
- ▶ 2) A main document to which is annexed 17 documents
 - fact sheets on the conduct of research and participation of fishermen
 - Consent forms (prefeasibility; perception of impacts, observations at sea; machine shops involvement; dissemination of images)
- ▶ 3) Benefits, risks or potential disadvantages associated with their participation explained
- ▶ 4) Voluntary participation and withdrawal rights
- ▶ 5) Shared responsibility agreement between MERINOV and the master of each of the selected lobster boat

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Design parameters

- ▶ 1) Analysis --safety, ergonomics and efficiency to the working stations haulers and trap support devices-- is based on the 20 lobster vessels visited by the research team crew
- ▶ 2) Six lobster fishing boats preselected
- ▶ 3) Late November 2014, meeting of the design team to engage specific toward producing lobster boat specific modifications which aims to hold individual meetings of prefeasibility
- ▶ 4) Preparation of a lobster-specific folder: current situation vs. projected status
- ▶ 5) Designers drew these changes in 3D models using CAD - CAM software

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Prefeasability meeting

- ▶ 1) 4 of 6 crews have been encountered to date
- ▶ 2) The last two crews of the Gaspé Peninsula: February 17–19
- ▶ 3) Analysis and selection of the three participating lobster at-sea testing
- ▶ 4) Customise agreement with each ones until the end of February
- ▶ 5) Tentative agreement

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Experts committee

- ▶ 1) Composed of 3 crews (2 from Gaspé Peninsula and one from Magdalen Islands, two expert lobstermen (Magdalen Islands) and the research team
- ▶ 2) Two meetings on the agenda; the first should be between the middle and the end of March 2015 & the second one, in fall 2015
- ▶ 3) First meeting: fishermen collaborate on the validation of the design parameters; assistance to the development of the methodology about estimation of operational impacts
- ▶ 4) Second meeting: contribute to analyses of gains and the applicability to the fleet

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Devices manufacturing

- ▶ 1) Machine shops for the Gaspésie — îles-de-la-Madeleine come into play
- ▶ 2) Regular and rigorous exchanges between each crew and the research team, this is the master who makes the final decision on the basic concept
- ▶ 3) Manufacturing of equipment COSTS are totally supported by the project funding's and, if applicable, the retrofitting costs of usual hauler and traps supporting devices.

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At-sea trials

- ▶ 1) The installation of the new equipment will be realized after the crews fished a minimal number of weeks (the "premium")
- ▶ 2) It will be minimizing interference (Sunday or returning from a day of fishing)
- ▶ 3) Observers will come aboard at 5 times:
 - One day where usual facilities are used by; to evaluate the functioning (the «BEFORE»)
 - After the installation of the equipment: 3 times during the first week (the «AFTER»)
 - If the crew agreed, after 3 weeks, one time to observe the impacts after the habituation phase (FINAL EVALUATION)

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