



# PEI Seafood Sector Climate Change Risk Assessment & Adaptation Strategy

Michelle Hewitt

Climate Action Policy Coordinator

# Overview

- Project Methods
- Risks
- Opportunities
- ICF Recommendations for the Adaptation Strategy
- Focused Actions



Russell, N. (2022, December 8). Fiona damage to mussel leases creates tangled mess on P.E.I.'s south shore. CBC News. (Province of Prince Edward Island/Department of Fisheries and Communities)



# Methods

## ISO 31000



# Criteria used for Adaption Actions

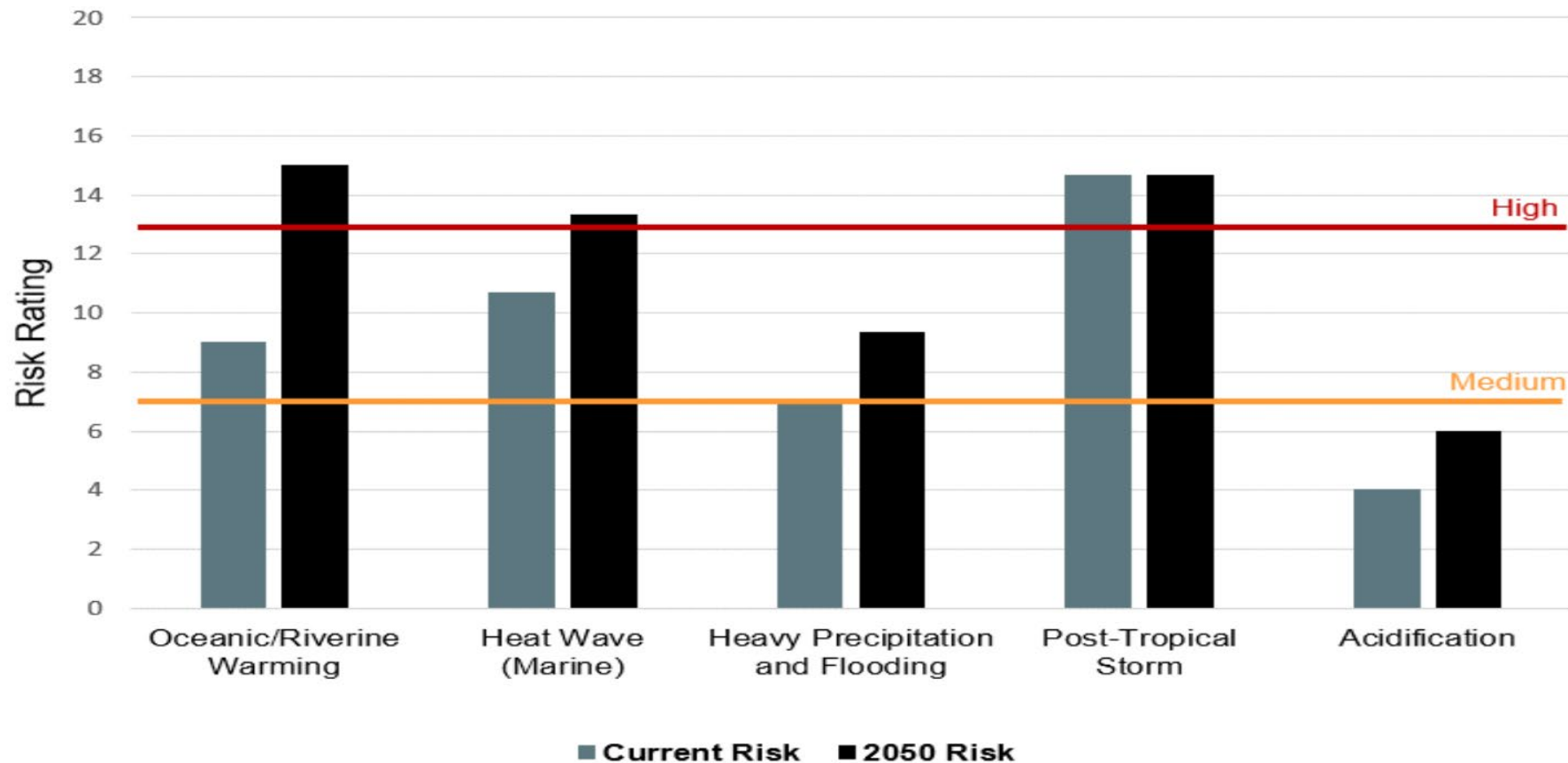
- Adaptation Actions
  - Relevance
  - Effectiveness
  - Cost
  - Fundability
  - Barriers to Implementation
  - Unintended Consequences
  - Acceptance
  - Timeframe



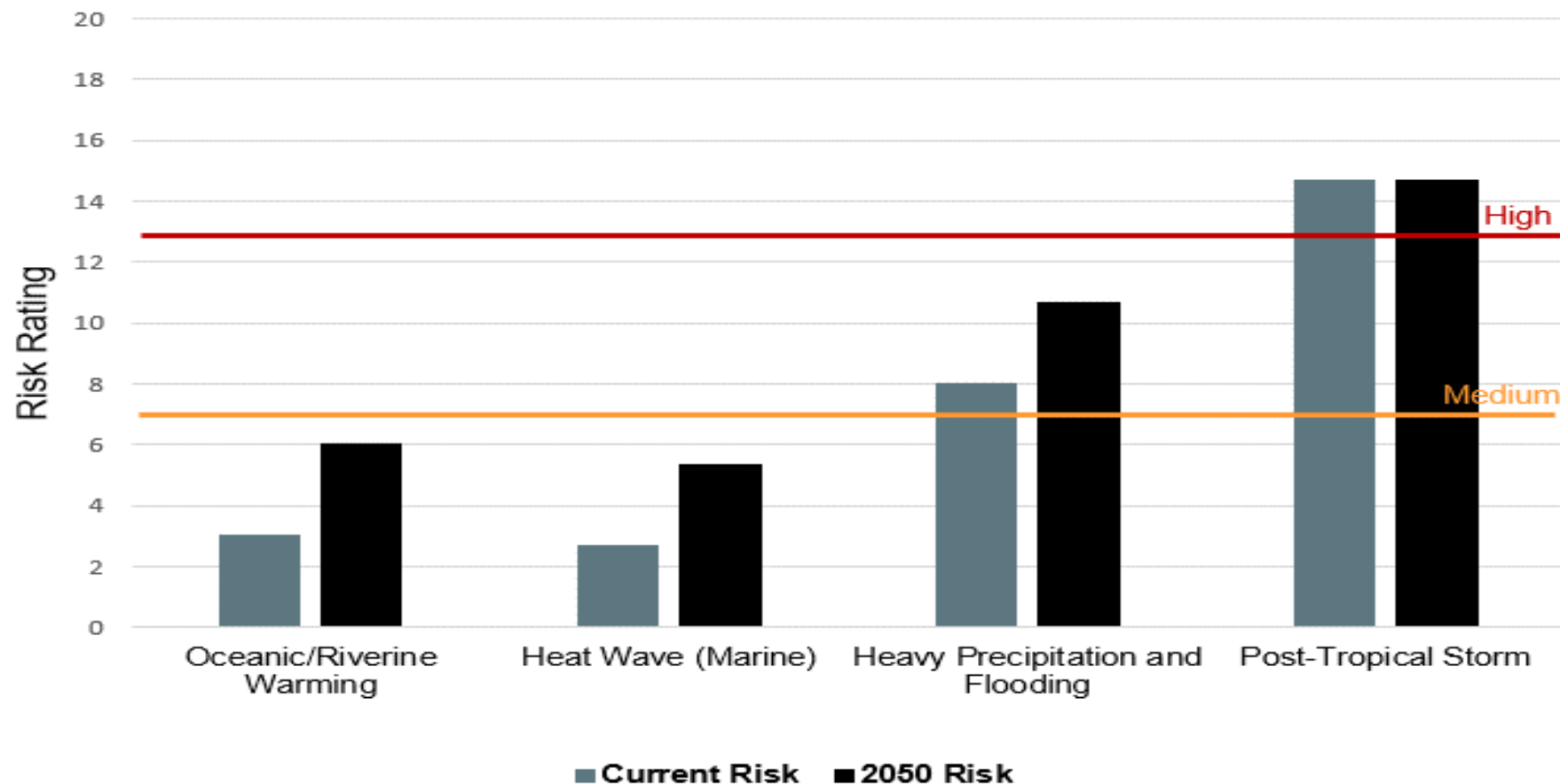
Russell, N. (2022, December 8). Fiona damage to mussel leases creates tangled mess on P.E.I.'s south shore. CBC News. (Submitted by Andrew Bryanton)

Hazard	Scenario	Focus per Sector		
		Aquaculture	Commercial	Processing
<b>Oceanic/ riverine warming</b>	Average water temperature rises above a species-specific threshold for adults that results in reduced growth, reduced recruitment, or some other indicated non-lethal limit threshold.	X	X	
<b>Heat wave</b>	Marine: More frequent occurrence of water temperatures above a species-specific lethal limit for adults for mature specimens (if available).	X	X	
	Atmospheric: Three consecutive days with temperatures above 29°C.	X		X
<b>Heavy precipitation and flooding</b>	100mm of rain in 24 hours.	X		X
<b>Post-tropical storm</b>	A multi-day post-tropical storm, comparable to the 2022 Post-Tropical Storm Fiona	X	X	X
<b>Acidification</b>	Acidification reaches a species-specific threshold (if available).	X	X	
<b>Hypoxia</b>	More frequent hypoxic conditions.		X	
<b>Coastal erosion</b>	Acceleration of the historic rate of erosion (28 cm/year).			X
<b>Ice storm/ freezing rain</b>	Multi-day severe ice storm/freezing rain event in winter.			X

## Climate Hazard Risk to Mussel



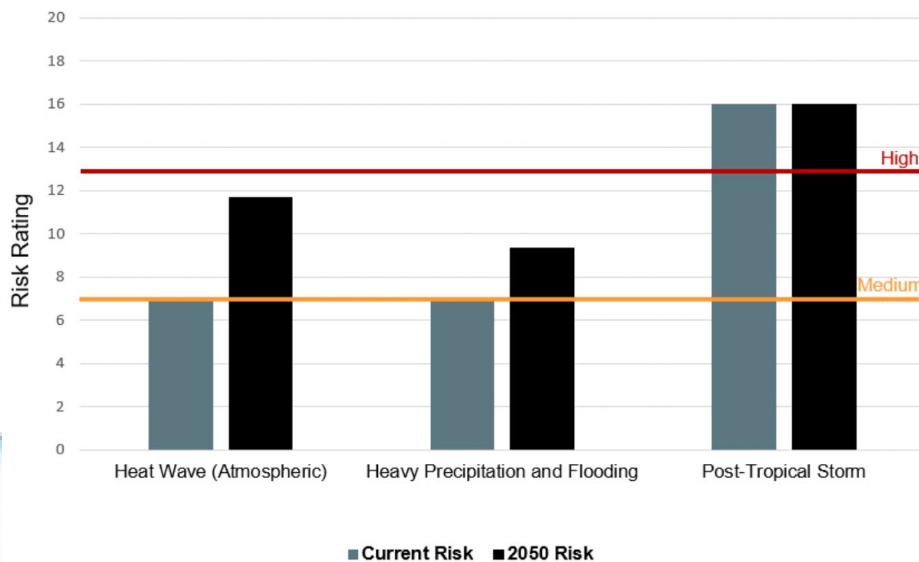
# Climate Hazard Risk to Oyster Aquaculture



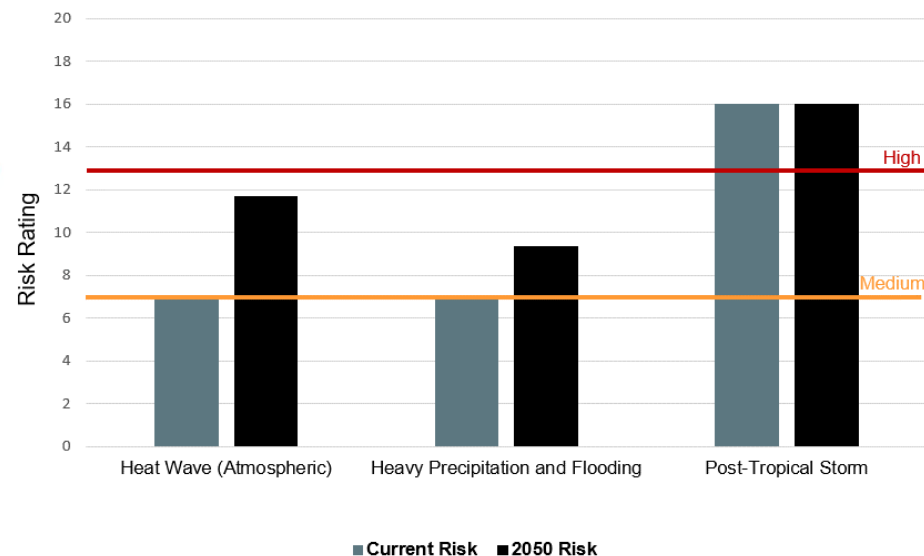
# Atlantic Salmon and Rainbow Trout



Climate Hazard Risk to Atlantic Salmon



Climate Hazard Risk to Rainbow Trout

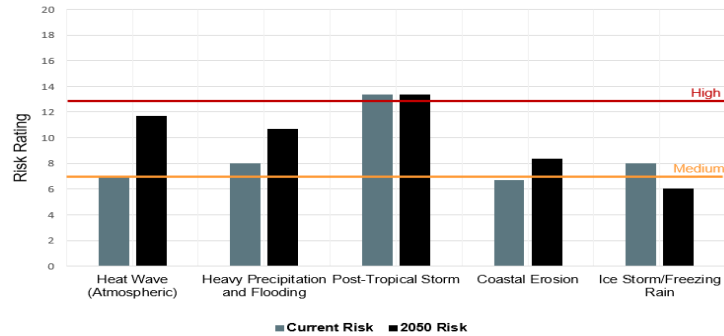




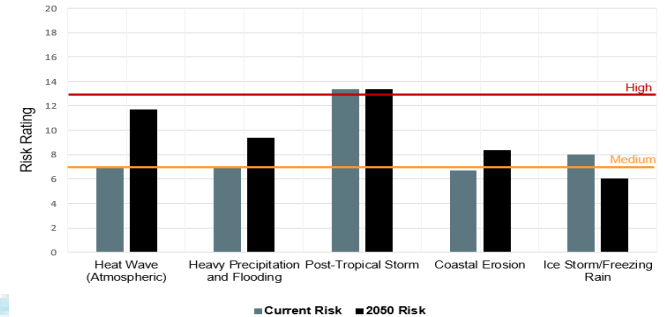


# Risks to Seafood Processing Sector

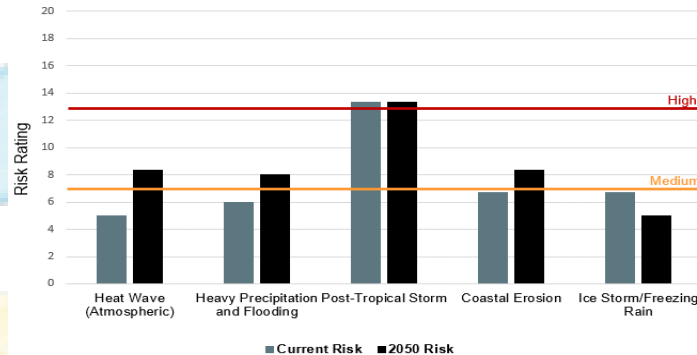
Climate Hazard Risk to Processing Facilities



Climate Hazard Risk to Storage Facilities



Climate Hazard Risk to Inbound/Outbound Transportation





# Opportunities



- Mussel:
  - Potential for earlier seeding and ice-free harvesting
  - Extended growing season
- Oyster:
  - Increased growth rates due to warming temperatures
    - ▶ The potential for faster harvests to reach the market
  - Extended growing season
- Processing:
  - Rising average temperatures may decrease severe ice storms and freezing rain, affecting operations.
  - Longer growing or fishing seasons may result in more product.
  - Warming temperatures may benefiting maritime shipping operations.



# Overview of ICF Recommendations



## Short-Term

- Hold climate readiness trainings and presentations
- Establish a climate impact monitoring program/database
- Establish a seafood industry resilience fund
- Collaborate with researchers on innovative design solutions and gear guidelines

## Medium-Term

- Prepare species-specific adaptation plans
- Collaborate with researchers on climate-related biological threats
- Continue to support broodstock programs

## Long-Term

- Promote diversification to adapt to increased variability
- Continue to assess the feasibility and applicability of managed retreat
- Optimize shellfish operations



# Climate Resilience Training Program



- Develop a comprehensive training program focused on climate readiness for harvesters, growers and processors.
- Include the results of this assessment, presentations, workshops, and resources to educate the seafood sector on climate change impacts and adaptation strategies.



Workshop on climate risks to the seafood processing sector in August 2023. Image from ICF

# Seafood Industry Resilience Program

- Create a financial support program to assist the seafood industry in adapting to climate change.
- Provide grants or low-interest loans to support sustainable practices, technology adoption, and resilience measures.



Storm surge at Acadian Supreme during Post-Tropical Storm Fiona. Image from Acadian Supreme

# Collaborate with Researchers on Innovation Design Solutions and Gear Guidelines

- Identifying at-risk infrastructure and gear and developing design solutions to reduce risk.
- Gear guidelines and best practices, such as minimum tensile strength for oyster cages and material robustness for mussel socks.



Dean-Simmons, B. (n.d.). Aquaculture: Oyster and mussel growers on Prince Edward Island calculating losses from Fiona | SaltWire. Retrieved March 18, 2024.



# Collaborate with Researchers on Climate-related Biological Threats



- Collaborate with researchers to understand and address climate-related biological threats.
- Identify and prioritize threats through gap analysis and existing research.
- Collaborate with industry stakeholders for adaptation strategies and policy recommendations.





# Continue to Support Broodstock Programs



- Identifies traits for responding to changing ecosystem.
- Supports existing mussel broodstock programs and explores research opportunities.
- Provides insights for cost-efficient, sustainable broodstock use.
- Advocacy for selective breeding programs to enhance specific traits.







# Optimize Shellfish Operations



- Collaborate with private lease holders.
- Monitor lease responses to climate-related events.
- Focus on key factors contributing to successful harvests: water flow, temperature, and infrastructure type.





# Questions?



Michelle Hewitt  
Climate Action Policy Coordinator  
PEI Dept. Fisheries, Tourism, Sport and Culture  
[mahewitt@gov.pe.ca](mailto:mahewitt@gov.pe.ca)