

**Appendix C8: Protected Resource Economics  
- The Canadian Experience**



## Protected Resource Economics: The Canadian Experience

NOAA Economics of Protected Resources Workshop  
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## Outline

- Key regulatory responsibilities for species at risk (SAR)
- Economic analysis in support of SAR
  - Regulatory
  - Non-regulatory
  - Policy instruments examined
- Challenges



Photo by Scott Eckart

## Fisheries and Oceans Canada Regions



## Regulatory Responsibilities

- **Cabinet Directive on Regulatory Management (CDRM 2012)**
  - Government-wide for all regulatory actions
  - Regulatory Impact Analysis Statement (RIAS) must include an assessment of costs and benefits
  - Cost Benefit Analysis triaged on preliminary costs estimates:
    - <\$1 million per year → qualitative analyses
    - >\$1 million per year → quantitative analysis
  - New in 2012:
    - Small Business Lens – RFA for medium/high cost proposals
    - One-for-one Rule – remove regulations to offset increases in administrative burden

## Regulatory Responsibilities

- **Fisheries Act (1985)**
  - Fish includes shellfish, crustaceans and marine animals, including marine mammals
  - Amendments in 2012 and 2013
  - “No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery.” (section 35(1))
    - “Serious harm to fish is the death of fish or any permanent alteration to, or destruction of, fish habitat.” (Section 2(2))
  - Marine Mammal Regulations (1993)
    - “No person shall disturb a marine mammal ...” (Section 7).

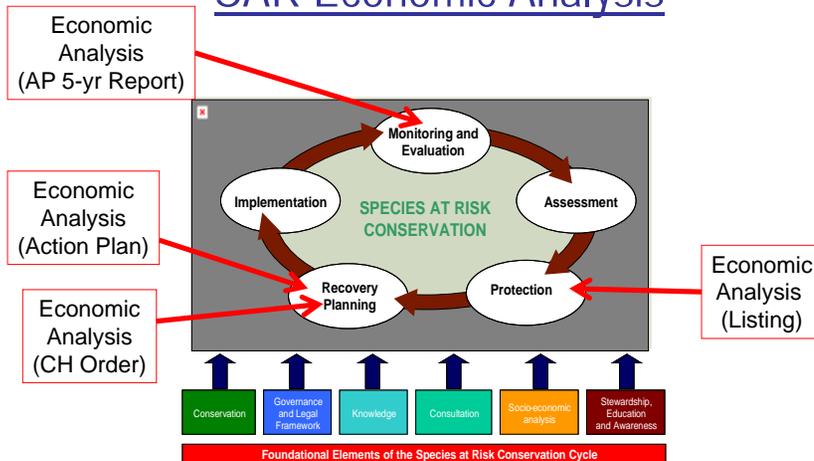
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## Regulatory Responsibilities

- **Species at Risk Act (SARA 2002)**
  - Passed 2002, fully into force June 1, 2004
  - Scientific assessment of risk classification with 10 year review
  - Senior government officials (i.e. Cabinet) determine whether to add a species to the list of wildlife species at risk (Schedule I)
  - Protections for extirpated, endangered and threatened species:
    - Automatic prohibitions :
      - No person shall kill, harm, harass, capture or take an individual
      - No person shall possess, collect, buy, sell or trade an individual or any part or derivative
      - No person shall damage or destroy the residence of one or more individuals
    - Protection of critical habitat from destruction
  - For all species legal timelines for production of recovery documents (recovery strategies, management plans)

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## SAR Economic Analysis



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## SAR Economic Analysis - Regulatory

- Listing:
  - Government is not obligated to list a species
  - Adding a species to SARA Schedule I (i.e. extirpated, endangered, threatened or special concern) is a regulatory change
  - Regulatory Impact Analysis Statement (RIAS) is required and must include information on costs and benefits
  - Many analyses are low impact and qualitative, but species interacting with commercial fisheries are more quantitative

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## SAR Economic Analysis - Regulatory

- Listing (examples)

Marine & Anadromous	Freshwater
Quillback Rockfish (2013) – consultations	Lake Sturgeon (2013, 6DUs) – consultations
Yellowmouth Rockfish (2012) – consultations	Misty Lake Sticklebacks (2009, 2DUs) – listed
Bocaccio Rockfish (2009) – not listed	White Sturgeon (6 DUs, 2005) – 4 listed, 2 not (consultant)
Canary Rockfish (2009) – not listed (consultant)	
Cultus Lake Sockeye (2009) – not listed (consultant)	
Sakinev Sockeye (2009) – not listed (consultant)	
Okanagan Chinook (2009) – not listed (consultant)	
Winter Skate (2008, 3 DUs) – not listed	
Porbeagle Shark (2006) – not listed	
Interior Fraser Coho (2005) – not listed (consultant)	
Atlantic Cod (2005, 3 DUs) – not listed	

DU = Designatable Unit; EN = Endangered; TH = Threatened

## SAR Economic Analysis - Regulatory

- Critical Habitat Protection:

- Critical habitat is identified at recovery planning, then have 180 days to ensure protection from destruction
- May use a regulatory Order to provide legal protection, or issue a Statement indicating how it is legally protected
- Use of Protection Order is a regulatory process (i.e. RIAS)
- One Order to date (Resident Killer Whales, 2009) with qualitative statement of costs and benefits

## SAR Economic Analysis – Non-Regulatory

- Action Plans

- Act requires an evaluation of costs of the Plan and benefits from its implementation
- Act calls for 5-year report on the Plan to include assessment of socio-economic impacts
- As well, recovery team could request assistance to assess cost-effectiveness of actions during development of Action Plan

## SAR Economic Analysis – Non-Regulatory

- Action Plans

Final	In Various Stages of Public Consultation
Northern Abalone (2012)	Large Whales (Blue, Fin, Sei, North Pacific Right)
	Resident Killer Whales (Northern & Southern)
	Cultus Pygmy Sculpin (freshwater)
	Nooksack Dace & Salish Sucker (freshwater)
	Paxton Lake & Vananda Creek Stickleback Pairs (freshwater)



## SAR Economic Analysis – Non-Regulatory

- Critical Habitat identification
  - Option exists to use economic analysis prior to identification to develop cost-effective configurations (if there is more habitat than required to meet the survival/recovery objectives)



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## SAR Economic Analysis – Policy Instruments

- Listing analysis is primarily focused on prohibitions (harm; buy/sell), Action Plans often focus on research, monitoring and stewardship
- Primarily fishery related changes examined; examples include:
  - No buy/sell (all commercial species - Rockfish, Salmon, Atlantic Cod)
  - Fishery closures (Atlantic Cod, Rockfish)
  - Changes to fishery open times and areas (Salmon, Atlantic Cod)
  - Bycatch ITQs (Rockfish)
  - Recreational changes
    - catch/release only (Salmon)
    - species specific permit (White Sturgeon)
- Some habitat measures examined; examples include:
  - Expand ecological reserve (Misty Lake Stickleback)
  - Hydroelectric flow modifications (White Sturgeon)

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## Challenges

- Data.
- Linking with Science
  - How to ensure output is appropriate for economic analysis (e.g. projections beyond 10 years for rockfish)
- Listing analysis - management scenarios
  - Providing support to development without being the lead
  - Getting the necessary detail for analysis
  - Describing expected changes in recreational and Aboriginal (FSC) fisheries
- Characterizing cultural values and possible changes (non-food)
- Identifying benefits (i.e. linking management to changes; WTP acceptance)
- Accounting costs verses economic costs

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## Questions?



Photo credit: Jared Towers

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## Appendices

- DFO Past SAR Economic Research
- SARA Schedule I Species (EX, EN)
- SARA Schedule I Species (TH)
- SARA Schedule I Species (SC)

## DFO Past SAR Economic Research

- Non-market valuation surveys
  - Marine Mammals in St. Lawrence (2009)
  - Survey of Southern Ontario residents (2010, C&A)
    - Single species (3), guilds (2), ecosystems and species (2)
  - 2011 National Survey (2011, NHQ)
    - Single species (2, one matching regional survey)
- Methods to assess impacts to Aboriginal Food, Social and Ceremonial fishing (2011, Gulf)
- (Freshwater) Habitat restoration cost guide (2011, Pacific)

## SARA Schedule I Species (EX, EN) - Marine

Common name	Population (DU)	SARA Status
Striped Bass	St. Lawrence River population	Extirpated
Atlantic Walrus	Northwest Atlantic population	Extirpated
Grey Whale	Atlantic population	Extirpated
Atlantic Salmon	Inner Bay of Fundy population	Endangered
Basking Shark	Pacific population	Endangered
White Shark	Atlantic population	Endangered
Blue Whale	Atlantic population	Endangered
Blue Whale	Pacific population	Endangered
Killer Whale	Northeast Pacific southern resident population	Endangered
North Atlantic Right Whale		Endangered
North Pacific Right Whale		Endangered
Northern Bottlenose Whale	Scotian Shelf population	Endangered
Sei Whale	Pacific population	Endangered
Northern Abalone		Endangered
Leatherback Sea Turtle		Endangered

## SARA Schedule I Species (TH) - Marine

Common name	Population (DU)	SARA Status
Northern Wolffish		Threatened
Spotted Wolffish		Threatened
Beluga Whale	St. Lawrence Estuary population	Threatened
Fin Whale	Pacific population	Threatened
Humpback Whale	North Pacific population	Threatened
Killer Whale	Northeast Pacific transient population	Threatened
Killer Whale	Northeast Pacific northern resident population	Threatened
Killer Whale	Northeast Pacific offshore population	Threatened

## SARA Schedule I Species (SC) - Marine

Common name	Population (DU)	SARA Status
Atlantic Wolffish		Special Concern
Bluntnose Sixgill Shark		Special Concern
Green Sturgeon		Special Concern
Longspine Thornyhead		Special Concern
Rougheye Rockfish type I		Special Concern
Rougheye Rockfish type II		Special Concern
Tope		Special Concern
Yelloweye Rockfish	Pacific Ocean outside waters population	Special Concern
Yelloweye Rockfish	Pacific Ocean inside waters population	Special Concern
Bowhead Whale	Bering-Chukchi-Beaufort population	Special Concern
Fin Whale	Atlantic population	Special Concern
Grey Whale	Eastern North Pacific population	Special Concern
Harbour Porpoise	Pacific Ocean population	Special Concern
Sea Otter		Special Concern
Sowerby's Beaked Whale		Special Concern
Steller Sea Lion		Special Concern
Olympia Oyster		Special Concern