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Did the rules work? An assessment on the effectiveness of federal vessel regulations for Southern Resident killer whales

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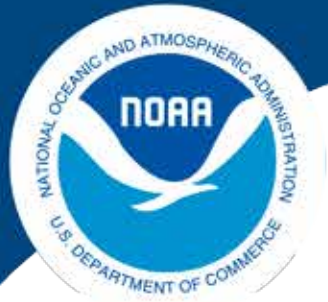


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NOAA
FISHERIES

West Coast
Region

Did the Rules Work?

An Assessment on the Effectiveness of Federal Vessel Regulations for Southern Resident Killer Whales

Grace Ferrara, Teresa Mongillo*, Lynne Barre
2018 Salish Sea Ecosystem Conference

April 6, 2018

*presenter

INTRODUCTION

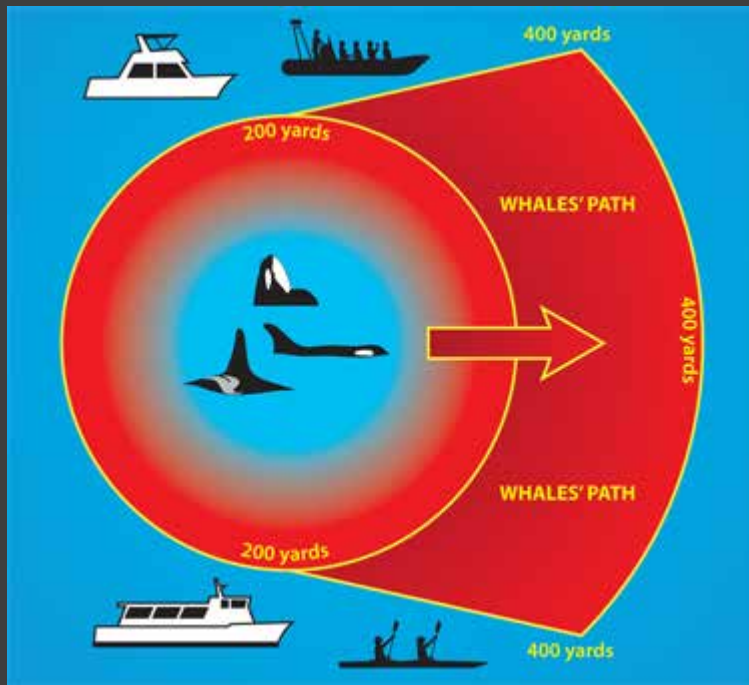
- SRKWs are target species for whale watching in the Salish Sea
- Since the 1990s, transboundary effort to develop voluntary guidelines: vessels remain 100 yards from whales



- Despite guidelines, concern remained about level of disturbance and harmful effects

INTRODUCTION

In 2011, NOAA Fisheries issued federal vessel regulation to reduce disturbance from vessels to SRKWs:



- Prohibits vessels from approaching killer whales within 200 yards
- Prohibits vessels from parking in the path within 400 yards

NOAA committed to assessing effectiveness and impact

INTRODUCTION

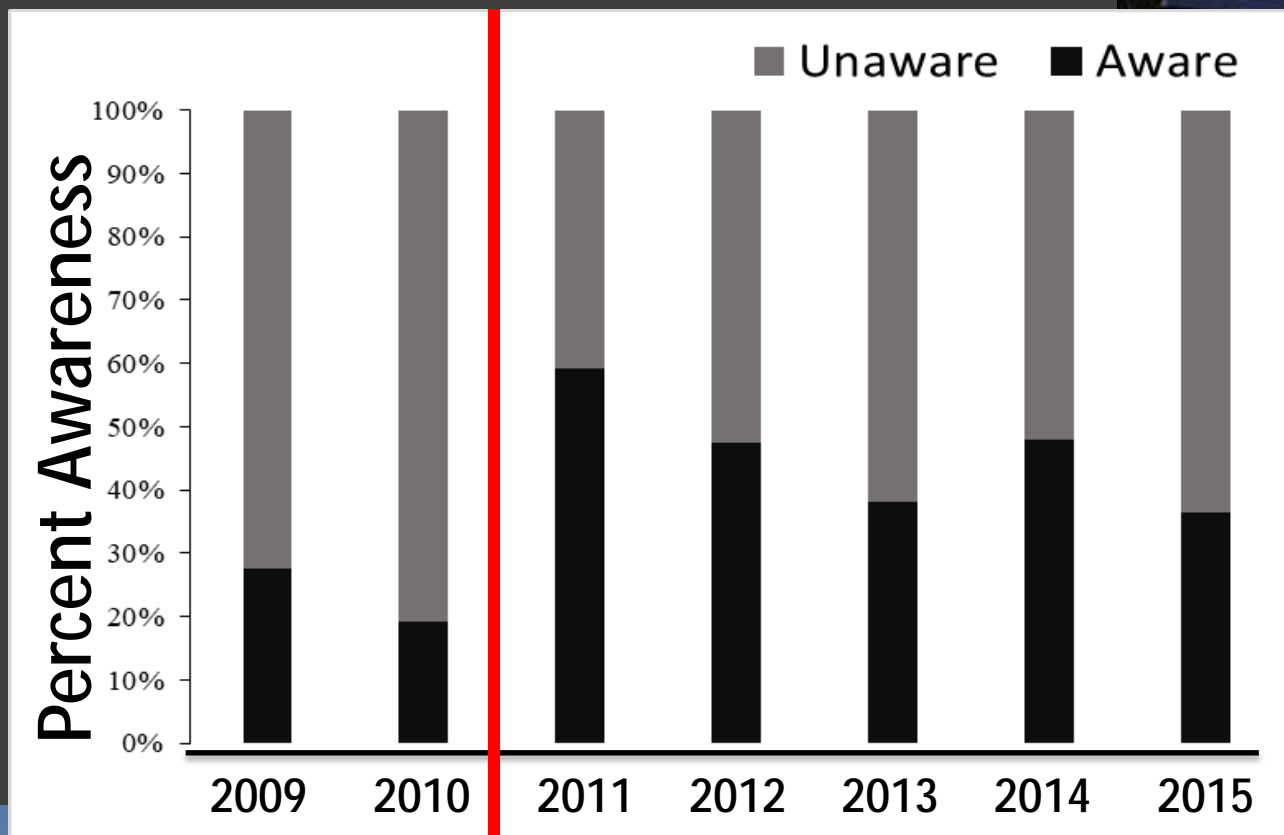
Assessment Includes 5 Measures:

1. Education and Outreach
2. Enforcement
3. Vessel Compliance
4. Biological Impact
5. Economic Impacts



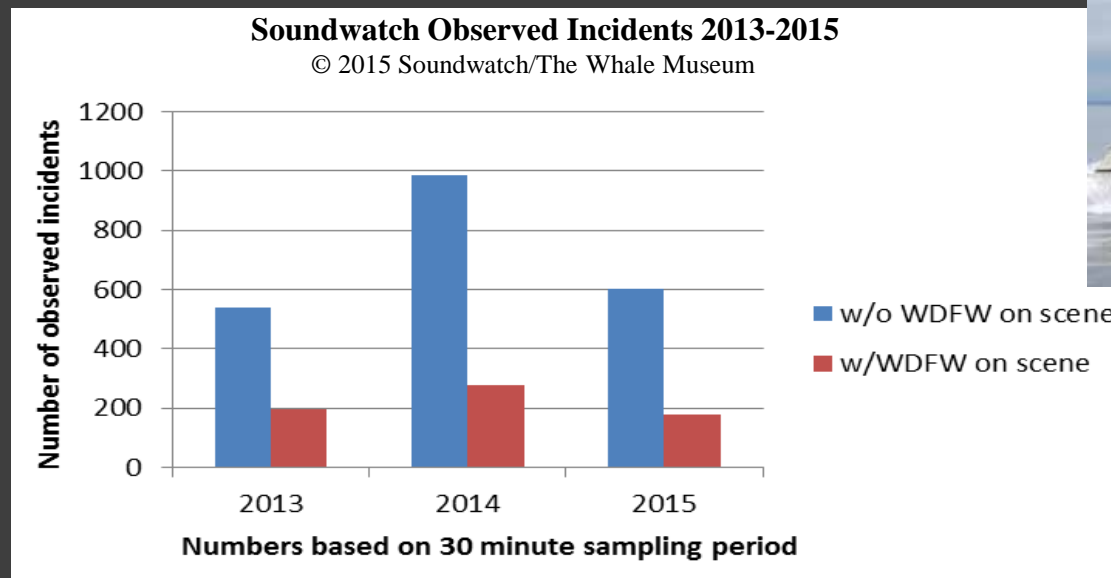
For each measure, we focused on 5 years prior (2006-2010) and 5 years post (2011-2015) and compared trends.

EDUCATION AND OUTREACH



ENFORCEMENT

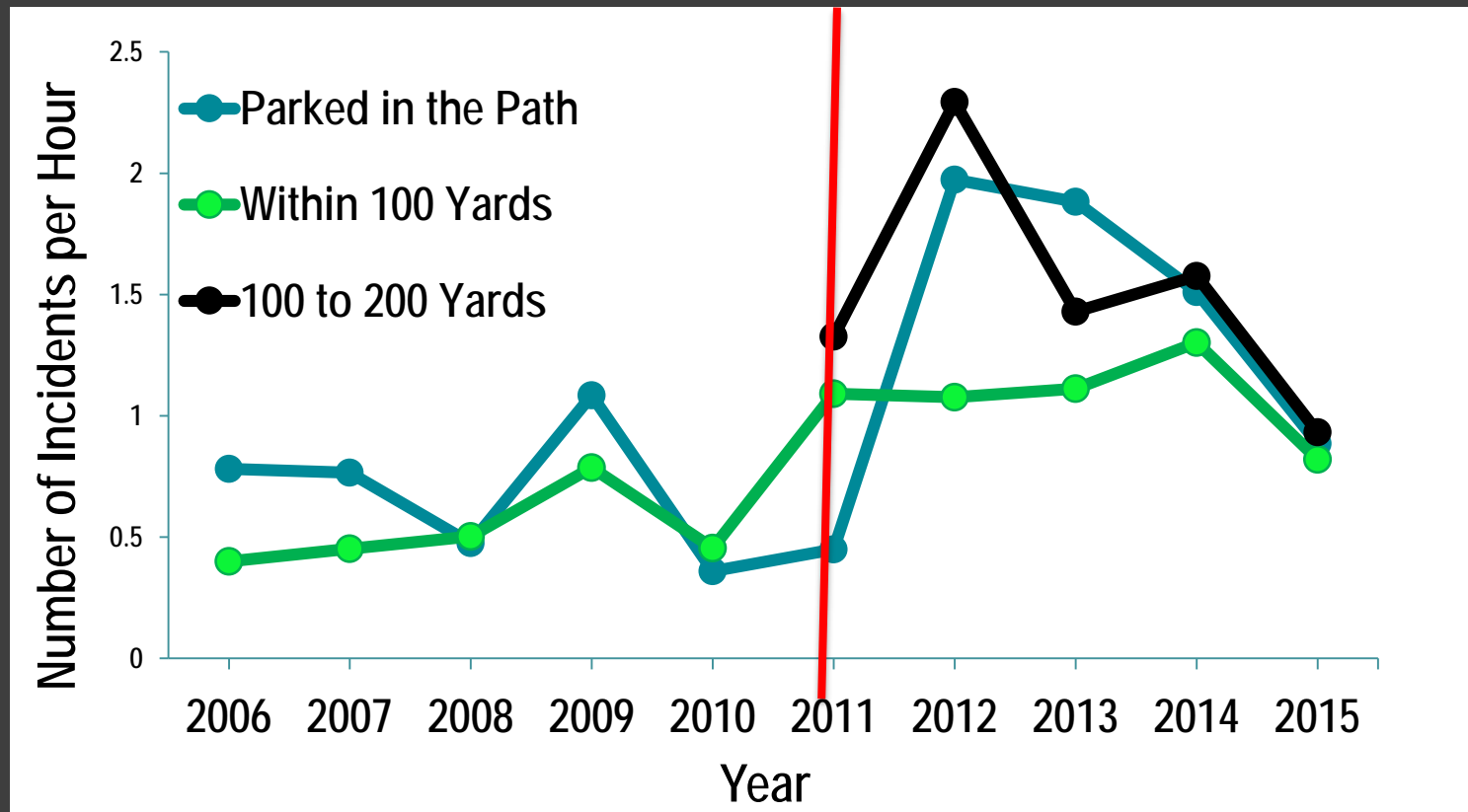
- Adequate enforcement is essential in promoting compliance
- Vessel incidents- inconsistent with regulations or guidelines



Boater behavior and compliance – strongly influenced by presence or absence of patrol vessel

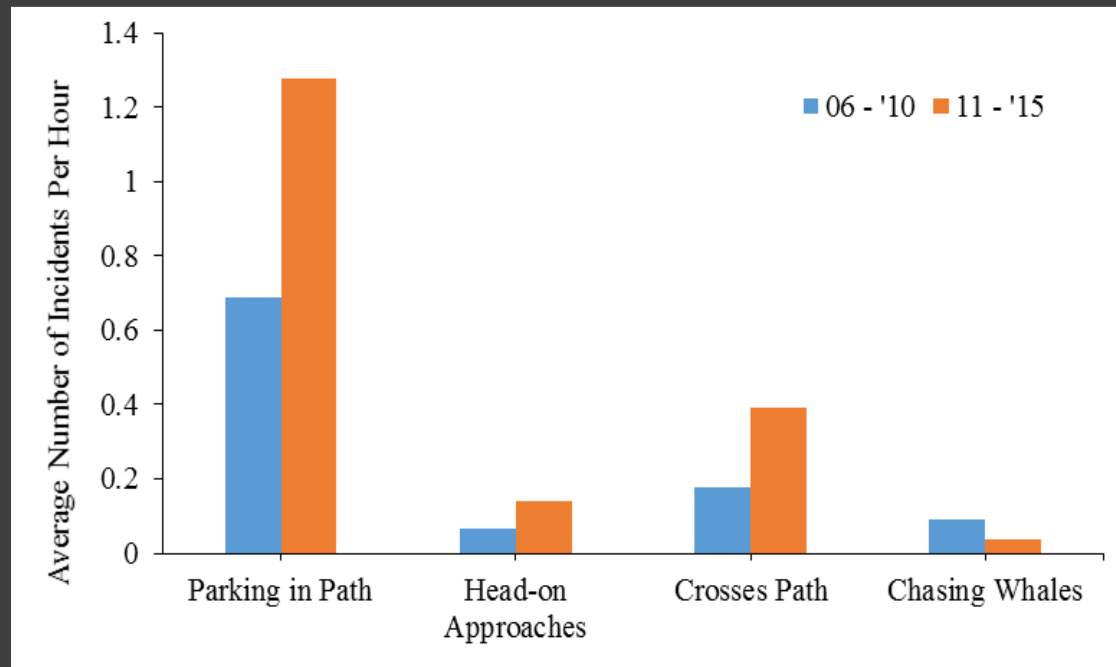
VESSEL COMPLIANCE

Most frequent violators – recreational boaters, followed by CA commercial whale watching operators, then U.S. commercial



VESSEL COMPLIANCE

Rate of Risky Behaviors Over Time



Results- higher rates of incident rates if risky behavior for most categories.

BIOLOGICAL IMPACT

Short-term behavioral responses include:

- ↑ in swim speeds
- ↑ surface active behaviors
- ↑ time traveling
- ↑ vocal effort
- ↓ time foraging



Observed
behavior



Energy
requirements

Noren et al. (2012, 2013); Holt et al. 2015

BIOLOGICAL IMPACT

Short-term behavioral responses include:

- ↑ in swim speeds
- ↑ surface active behaviors
- ↑ time traveling
- ↑ vocal effort
- ↓ time foraging



It is unclear what the cost of reduced time foraging- but it is likely a higher cost

BIOLOGICAL IMPACT

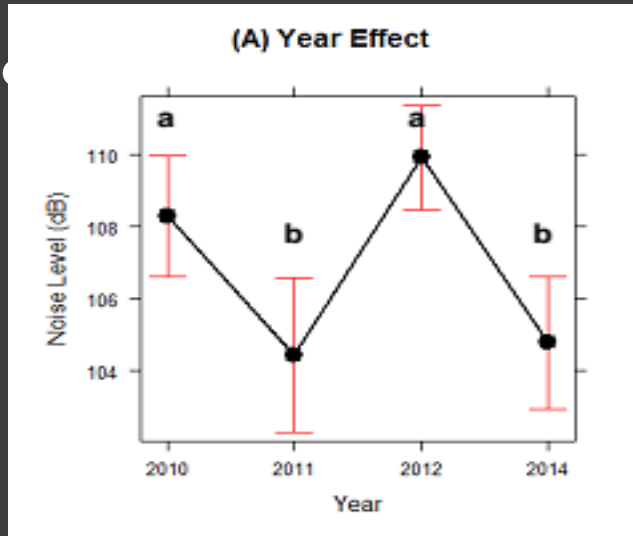


Photo: NOAA Fisheries



- Holt et al. 2017- measured received levels (RLs)
- Compared RLs before and after regulations
- However, RLs were not significantly different before and after....implementation of regulations doesn't appear to have had an overall impact on RLs
- Speed was a predictor

ECONOMIC IMPACT

- Whale watch and tourism- experienced growth
- Regulations have not hindered growth
- Total number of whale watch boats increased

Industrial Economics, Inc. (2016)



Photo: NOAA Fisheries

CONCLUSIONS



- 5 measure provide some insight
- Some indicators suggest improved conditions, others indicate continued risk

- Evidence that shows there is value
- Support regulations, future consideration to additional measures

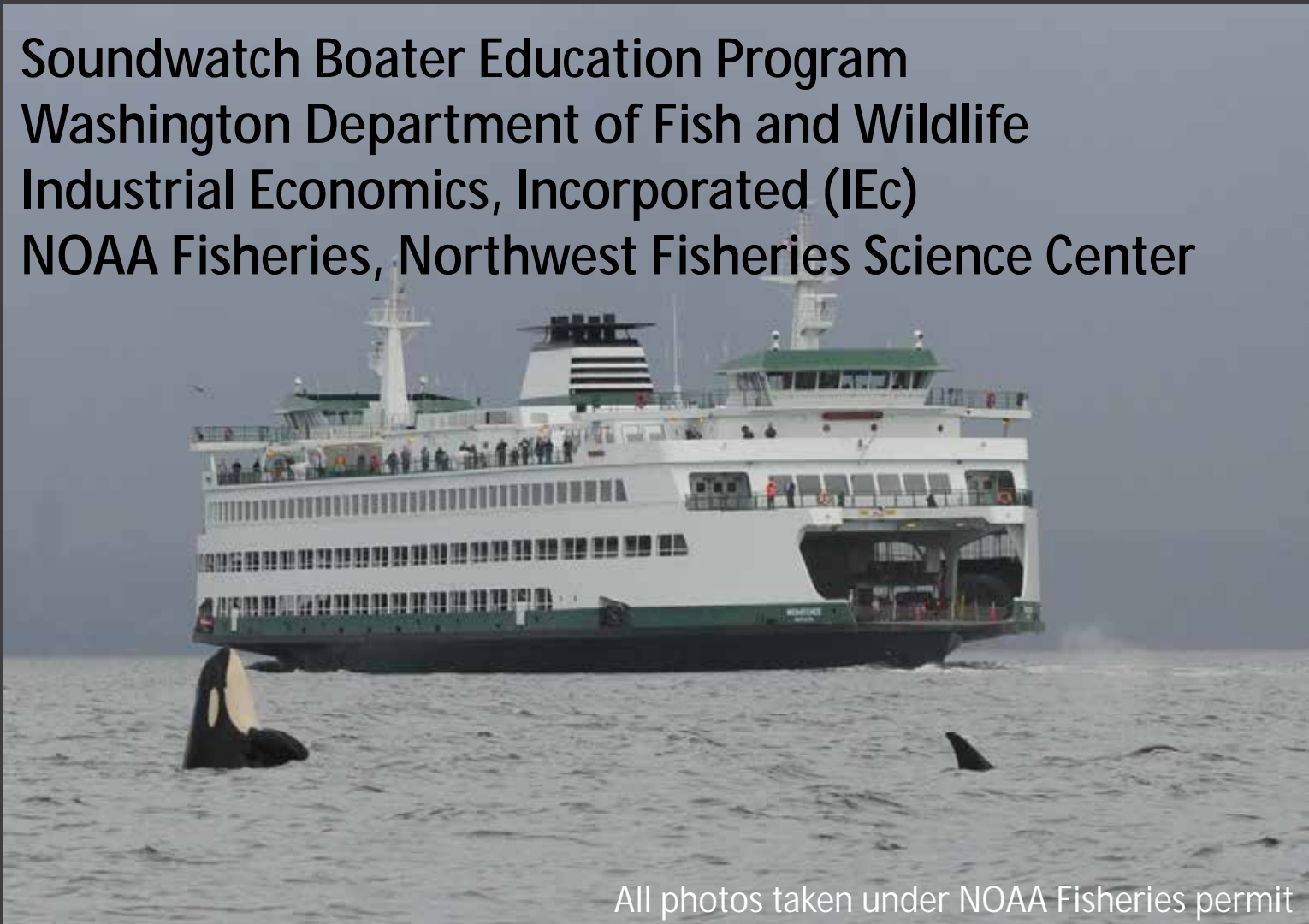


RECOMMENDATIONS

- Continued and expanded enforcement presence, and Soundwatch/Straitwatch
- Compare the behavioral and acoustic effects of different boat activity patterns to determine the vessel behaviors with the highest impact
- Improve estimates of the energetic cost of reduced foraging opportunities
- And we support Canada's commitment to establish similar vessel regulations

ACKNOWLEDGMENTS

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