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# ANALYZING THE DIFFERENTIAL NEWS COVERAGE OF THE NORTH ATLANTIC AND NORTH PACIFIC RIGHT WHALES: A CASE STUDY OF AGENDA SETTING, FRAMING, AND TONE IN ENDANGERED SPECIES COMMUNICATION

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ANALYZING THE DIFFERENTIAL NEWS COVERAGE  
OF THE NORTH ATLANTIC AND NORTH PACIFIC  
RIGHT WHALES:  
A CASE STUDY OF AGENDA SETTING, FRAMING,  
AND TONE IN ENDANGERED SPECIES  
COMMUNICATION  
BY  
COLETTE SOULIER

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IN  
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MASTER OF ARTS IN MARINE AFFAIRS THESIS

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## **ABSTRACT**

Mixed methods analysis was used to evaluate policy protections and media coverage of the less endangered North Atlantic Right Whale (NARW) compared to the more endangered North Pacific Right Whale (NPRW) from 2008-2020. The NARW and NPRW represent an interesting case study of mismatched conservation action and threat status, due to their highly similar appearance and membership in a traditionally highly prioritized group for conservation action. This study establishes large differences in policy creation between the species and uses media content analysis of news coverage of both whales to understand trends in framing, tone, and content between articles focusing on each of the species. High rates of policy creation and media coverage were found for the NARW, compared to low policy creation and media coverage for the NPRW over the 12-year frame of study. The majority of articles discussing NARWs were neutrally or negatively toned and used solutions-oriented and environmental frames. Lack of media attention on the NPRW led to low sample size and only loose trends in frames, tone, and content. Increased policy creation was correlated with higher media coverage of NARWs, reinforcing agenda-setting theory. This study aims to provide an example to the emerging literature on marine conservation and endangered species communication to further understanding of communication strategies that are associated with increased public engagement and policy creation.

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## **PREFACE**

Standard format has been used in the preparation of this document.

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# CHAPTER 1

## INTRODUCTION

As society grapples with Earth's 6<sup>th</sup> extinction event, an agenda of which species to prioritize for conservation must be forged. Many such agendas have been developed using the number of individuals, threats, or cultural importance as metrics to create hierarchies of species conservation to ensure efforts are directed towards species most at risk of extinction. However, even within modern political and scientific systems, there exist many cases of species, specifically marine species, that are deemed more "at-risk" by these hierarchies, still receiving less conservation action and awareness than species less at risk of extinction (Shiffman et al., 2020; Cummings et al., 2018). With limited time and resources dedicated to conserving species during the current biodiversity crisis, avenues to explain and investigate how and why certain species have larger and more successful conservation campaigns must be explored to better conservation hierarchies and inform future species conservation action.

This study will examine a unique case of mismatched risk and conservation effort between the North Pacific Right Whale (NPRW) and North Atlantic Right Whale (NARW). The North Atlantic Right Whale and the North Pacific Right whale represent a particularly distinct case study because their types of threats, physical attributes, and baseline cultural importance, which commonly explain differences in conservation effort (Bowen-Jones &

Entwistle, 2002; Curtin and Papworth, 2018; Douglas & Verissimo, 2013), are nearly identical. However, the policy protections, research effort, and amount of advocacy for these two species remain drastically different. Further, the species that is more endangered, the NPRW, has experienced dramatically less conservation action than its less endangered evolutionary cousin, the NARW. Successful conservation action is not a function of strong science or conservation plans alone but largely functions under the successful engagement of the public, scientists, and policymakers together (Phillis et al., 2012). The amount of communication or knowledge about a species alone cannot predict positive conservation action for the species (Schultz, 2002), but rather the way in which it has been communicated about as well as its social construction of value in society may prove to be better predictors of conservation success (Ballejo et al., 2021; Kidd et al., 2019; Bull et al., 2021). By understanding how NARWs and NPRWs have been communicated about in mass media, this study hopes to provide a unique example to understand the complex pathway that has led to the conservation action, or lack thereof, for these species of endangered whales.

News media represents one of the most common and preferred mediums in which nonscientific audiences receive information about endangered species (Kim et al., 1997; Kolandai-Matchett et al., 2021). Media studies represent one avenue to understand the differential social, scientific, and political prioritization of these two species. Calls for increased study of examples of marine conservation communication have been emphasized in

literature to understand current trends in media coverage of ocean topics and effectiveness of various messaging techniques (Kolandai-Matchett & Armoudian, 2020). Mass media has the power to set agendas and frame the case for protection and conservation rhetoric that can spark advocacy, research, and policy creation (Scheufele & Tewksbury, 2007). Media can both reflect and assert political and social agendas (Shaw, 1979), and analysis of its content can prove to be a way to gauge public attitudes towards a species (Lassiter et al., 1997), making the study of its media components such as content, framing, and emotional tone a crucial tool to understand how political and social action may have been driven and public attitude towards the topic.

The following research will attempt to understand how mass media effects theories, such as agenda-setting and framing, as well as overall emotional tone of news articles, may have influenced observed disparities in the public's exposure to and collective conservation action towards the less endangered North Atlantic Right Whale as compared to the more endangered North Pacific Right Whale to better understand endangered species communication in general. Essential project research questions include:

**Overarching Research Question: How have policy protections and media coverage of the conservation stories of the NARW and NPRW differed in frequency, content, and context?**

1. What frames and tones in media coverage are associated with the more endangered North Pacific Right Whale and the less endangered North Pacific Right Whale?

2. What are the differences in policy rates of creation between North Atlantic Right Whales and North Pacific Right Whales?
3. What attributes/content of North Atlantic and North Pacific Right Whale conservation are chosen as media topics?

Based on past literature, the hypotheses for each research question respectively were:

1. Frames will be similar in media coverage of both species, with frames of solutions-oriented and conflict-oriented more frequently used in coverage of the North Atlantic species. Tones will be different in media coverage of the species, with more 'hopeful' and positive tones associated with the NARW and more negative and tones of 'hopelessness' associated with the NPRW.
2. Policy rates of creation will be significantly higher for the NARW as compared to the NPRW over the designated time period.
3. Endangered species' deaths, human-caused injuries, and threat status will be the highest frequency topics of coverage in major media outlets for both species.

## CHAPTER 2

### REVIEW OF LITERATURE

#### *Right Whales*

Both the NARW and the NPRW were subject to extensive whaling and were given their common names for being the 'right' whale to hunt during colonial commercial whaling in the 17<sup>th</sup>-19<sup>th</sup> centuries (Moore et al., 2021; Marques et al., 2011). Both whales were targeted because of their large size and slow speeds, making them ideal targets for whalers on both the East and West Coasts of North America (Moore et al., 2021; Marques et al., 2011). Before 2008, the NARW and the NPRW were thought to be one species, called the "Northern Right Whale" (Marques et al., 2011). Based on further scientific evidence, on March 6, 2008, NOAA listed the NARW and NPRW as distinct endangered species under the Endangered Species Act (ESA), representing their official split and requiring the protections afforded by the ESA, such as a recovery plan, to be put in place for each species (50 C.F.R. §224, 2008). Both species face similar threats to their survival including oil and gas exploration, entanglement in fishing gear, vessel strikes, pollution, climate change, and anthropogenic noise (Moore et al., 2021; Marques et al., 2011; NOAA, 2017)

From 2008 to 2022, there has been little conservation action for the NPRW, with controversy over the delay of the establishment of a recovery plan for it, causing multiple environmental non-governmental organizations

(NGOs) to threaten to sue the U.S. government in 2012 (Center for Biological Diversity, 2013). In 2013, the first recovery plan for the endangered species was finally established and research is ongoing but limited, to meet the goals of the goals according to the most recent 2017 5-year review. The NPRW exists in two populations, the East Pacific population, and the West Pacific population. The Eastern population ranges from Alaska to California, with most sightings occurring in the Western Gulf of Alaska and the Bering Sea (NMFS, 2017). The NPRW is the most endangered of the great whales, a group that makes up the 13 largest cetacean species (Marques et al., 2011). Most recent estimates of its abundance suggest that there are less than 200 individuals estimated to make up both its Eastern and Western Pacific populations (Marques et al., 2011). Due to low sighting data and minimal research effort, there is an overall lack of data on the species and its current population status and health. Although only classified as “endangered” by the ESA, this status is largely informed by a lack of data on individuals and risks to the population; further research would likely push the species to a “critically endangered” classification.

The North Atlantic Right Whale has received coverage by major media sources like the New York Times, large amounts of research funding, and sustained support from advocacy groups. Most recent efforts in monitoring NARW abundance in 2021 estimate that the population has 336 individuals (Pettis et al., 2021). Research efforts in recent years to track the population biology (ie. number of individuals, number of breeding individuals, the overall

health of individuals, etc) have been prioritized to the point where, despite their small population size and difficulty to be seen on the water (due to their color and subtle surfacing behavior), 93% of the population was still sighted and recorded in 2019 (Pettis et al., 2022). An “unusual mortality event,” a provision of the Marine Mammal Protection Act for species dying at high rates over short periods, was declared for the species starting in 2017 and has been going on since then, with 17 dead NARW individuals in 2017 alone in Canada and the U.S. and now totaling 34 dead individuals up to 2021 (Pettis et al., 2022). Since 1986, the New England Aquarium (NEaq) has maintained the photo-identification catalog for NARW that is used to identify individuals in the population across years and monitor population demographics over time. NEaq has collaborated with other NGOs such as the Center for Coastal Studies (CCS), Oceana, Whale and Dolphin Conservation, the Center for Biological Diversity, and State and Federal governments to share information and work to increase NARW conservation efforts.

Outside of research prioritization, the NARW has also received major policy protections in the past decade aimed specifically at reducing anthropogenic threats like ship strike and entanglement in its habitat. A major federal regulation in 2008 was established by NMFS to protect NARW from ship strike, where all vessels >65ft must reduce speeds to less than 10 knots when a right whale was spotted and in certain times of the year and places where NARW were commonly found (Right Whale Ship Strike Reduction, 2008). In 2006, based on successful changes in Canadian maritime routing to



protect the NARW, shipping lanes were altered off Jacksonville, FL, and Brunswick, GA. to reduce risk of NARW ship strike (Conn & Silber, 2013). That same year, a proposal for the alteration of shipping lanes into Boston was submitted to the International Maritime Organization (IMO) and the Coast Guard and was approved and marked on all nautical charts from 2009 onward to reduce NARW ship strike (Conn & Silber, 2013). Also in 2009, autonomous buoy systems were implemented throughout Boston Harbor shipping channels to monitor NARW presence through acoustic measurements to further mitigate vessel collisions (Spaulding et al., 2009).

Entanglement in fishing gear, another large threat for the NARW, has also been met with high research, advocacy, and policy creation. NARW's habitat overlaps with major fishing areas in the Northwest Atlantic and in particular highly used areas for the NW Atlantic lobster fishery (Moore et al., 2021). The lobster fishery poses a particularly lethal threat to the NARW because of the long lines that are used to anchor lobster traps that span from the seafloor to the surface that whales must navigate through. NARWs and other large whale species will transit or feed in areas of high lobster trap volume, becoming entangled in gear, which has the high potential to cause injury and death if not removed (Moore et al., 2021). In order to prevent such occurrences, seasonal closures of certain fishing areas where predictable NARW aggregations can be found, mandatory reductions in vertical lines, mandatory gear marking based on location, and implemented physical modifications of gear have been required by NOAA and other federal and state agencies along the U.S. East

coast (Moore et al., 2021). Many of these regulations have been met with pushback from fishing communities, who have expressed that the constant changes in gear requirements and closures of fishing areas have led to economic losses for their businesses (Bisack and Magnusson, 2021).

Due to the lack of information, research, and advocacy for the NPRW and the high research, advocacy, and political effort afforded to the NARW, it was postulated that the NARW would have greater rates of policy creation than the NPRW.

#### *Public Attitude and Behavior Towards Endangered Species*

Since ideas about species, their conservation, and political prioritization are socially constructed through public perceptions, attitudes, and subsequent behavior (Bull et al., 2020), the characteristics of species themselves must be considered in understanding media's emphasis on various attributes of endangered species conservation. Charismatic megafauna, or the large species (often mammals) that have features akin to our own, can draw high levels of human attention and empathy and are often the first prioritized in conservation efforts (Bowen-Jones and Evan, 2002). Charismatic megafauna are often classified as so because of their large size, forward-facing eyes, and mammalian traits (Curtain and Papworth, 2018). These physical features have been shown to increase conservation funding (Curtain and Papworth, 2018). In surveys of public valuation of endangered species in the U.S., birds, fish, and mammals were valued higher than other classifications of species (Czech

et al., 1998). Within mammals, the order Cetacea (ie. whales and dolphins) is considered to be among the top 20 'most charismatic' groups of species in the world (Albert et al., 2018), resulting in conservation prioritization. However, since conservation efforts are based on species, instead of groups of animals, there is often prioritization of whale species within the larger group; as seen in the NARW and NPRW.

Many different factors have been found to affect the attitude and behavior of donors in conservation activities outside of media effects. 'Flagship species' have been looked at in many different studies as ways in which NGOs and environmental interest groups can communicate about environmental issues and garner monetary support for conservation activities for specific species as well as the organization's work in general. They can be defined as "popular, charismatic species that serve as symbols and rallying points to stimulate conservation awareness and action" (Heywood, 1995). The NARW has become a flagship species through media attention and use by NGOs as a 'rallying point.' The use of flagship species has been found to increase engagement in conservation activities amongst the general public (Bowen-Jones & Entwistle, 2002), attract potential donors (Curtin and Papworth, 2018), draw attention to globally significant environmental issues (Barua et al., 2011), and serve as communication conduits to prioritize biodiversity in local regions (McGowan et al., 2020). Content analysis of environmental NGOs' use of flagship species in press releases has found that the term 'iconic species' is

often used to describe charismatic megafauna from regional locations that are used in reference to broader environmental issues (Horsely et al., 2020). Successful criteria for intentional selection of flagship species by organizations include local geographical distribution, traditionally high conservation status (but has been found to be successful in unthreatened species), important/central ecological role, strong recognition among the target audience, similar intended messaging if species is used by other organizations, high charisma, strong cultural significance, positive associations, traditional knowledge, and positively associated common names (Bowen-Jones & Entwistle, 2002). Between the NARW and the NPRW, many similarities exist in these criteria. However, the seemingly organic rise of the NARW as a flagship species provides a good case study to understand how the deployment in terms of communication and the final perception of flagship species works in practice, a topic that Barua et al. (2011) argue as a critically important avenue for future research.

Other factors that seem to play a role in the success of a species' conservation campaign are additional marketing (Verissimo et al., 2017), increased involvement of the species in broader socioeconomic conflict (Douglas & Verissimo, 2013), increased information provided about the species (Curtin and Papworth, 2018), larger presence on conservation websites (Verissimo et al., 2017), and framing (Kolandai-Matchett and Armoudian, 2020). Framing was specifically chosen as a topic of focus for study research questions due to its studied potential to influence conservation

success and general calls for more examples of framing trends in marine conservation communication in literature.

### *Mass Media Effects Theories*

#### *Agenda Setting*

There has been very little research that has looked at how media effects theories, specifically agenda setting, apply to discussion of marine environmental issues in mass media. Agenda setting began primarily as a political communications theory that was used as a framework to understand how media may influence the topics that are deemed politically salient to audiences (Lippmann & Curtis, 2017). The theory posits that coverage of a topic in mass media suggests to an audience that the topic is of political and social importance because it is receiving coverage by media, resulting in the topic's placement on the political "agenda" (Stacks et al., 2015). The theory was later developed to encompass two levels: first-level agenda setting and second-level agenda setting (Stacks et al., 2015). First-level agenda setting describes the salience of a certain issue or object in the media and therefore political agenda (ie. coverage of NARWs' deaths by media conveys to the audience that the issue is politically and socially salient), whereas second-level agenda setting describes the attributes of the issue that the audience should consider to be important (ie. NARWs getting entangled in fishing gear is an important attribute of the general issue of NARW mortality) (Stacks et al.,

2015). This study looks broadly at first-level agenda setting and its implications for conservation success for the two species of right whales examined, but mainly explores the attributes, or second-level agenda-setting, that are covered by media (and thus deemed important) to answer study research questions. The objective of the coding of content categories, as further explained in the methods section following this, was to study which attributes of each species' conservation were most frequently covered by media in order to describe and understand how the process of second-level agenda setting may have played a role in the emphasis of certain attributes of each species conservation in the political agenda.

Because the theory of agenda-setting is relatively new to the field of media studies, few studies have been done to test the application of this theory in environmental communication and endangered species communication specifically. One study done in Chile on marine environmental topics in mass media found that most newspaper publications focused on economic and business-related issues surrounding marine environmental topics (Thompson-Saud et al., 2018). Some research has suggested that “focusing events,” or events that spur media attention and provide an engaging hook for journalists, may increase a topic's coverage and thus political salience (Scheberle, 1994). A study done in 2021, found that news discussed proposals to list marine species on the Convention on International Trade in Endangered Species (CITES) more than proposals to list charismatic terrestrial species in English-speaking newspapers globally (Shiffman et al.,

2021). Ideas surrounding extinction and marine species as a food source were limited in discussion of CITES' list of endangered marine species, as well as perspectives from the fishing industry on issues of commercially exploited species (Shiffman et al., 2021). Coverage of shark conservation has been one area of marine environmental communication that has been focused on in recent research. A recent study on global media coverage of shark conservation found that solutions and threats were the most commonly discussed topics in news, but media's discussion and ranking of such were commonly inaccurate and focused on one threat or solution disproportionately (Shiffman et al., 2021). Population size and decline as well as sharks' ecological value was another large area of discussion but was frequently exaggerated compared to numbers from scientific research (Shiffman et al., 2021). Additionally, shark species that were most frequently covered in popular media were not the species that are understood to be the most threatened (as defined by IUCN status), with only 1.1% of articles in the sample covering the top ten most threatened shark species (Shiffman et al., 2021). Findings of inaccuracies in news coverage of endangered species and exaggerating of threats to species have been met with concerns from scientists, who believe that "crying wolf" may lead to lesser conservation action for species whose threats are not exaggerated (Ladle et al., 2004) and disregard from scientists who believe that coverage of the issue, however exaggerated/inaccurate, increases the species awareness to the public and is worth the perceived threats of crying wolf (Hannah & Phillips, 2004). Based on

media's tendency to cover pertinent events (ie. local whale deaths or injuries) to the geographical area that the outlet is mainly distributed to (Wakefield & Elliot, 2002) and findings that threats to endangered species are a main topic of coverage (Shiffman et al., 2021), main content categories were hypothesized to be human-caused injuries, threat status, and deaths.

### *Framing*

In addition to the content that is presented to an audience, the way in which this content is presented and packaged can have effects on audience attitudes and resulting behavior towards the topic (Scheufele & Tewksbury, 2007). Framing, or the context/lens in which a topic is presented to an audience, is a practice that is necessary in communication to make a topic easier to digest, but has implications for how the audience perceives, processes, and acts on the information (Scheufele & Tewksbury, 2007). Framing in environmental communication has largely focused on areas of climate change and resource management, with some focus on charismatic species (Kidd et al., 2019). Key frames for effective communication of marine conservation topics have been identified as problem/solution framing, outcome framing, value-based framing, reducing psychological distance (ie. how much the topic affects audiences' daily lives), and social norm framing (Kolandai-Matchett & Armoudian, 2020; Kusmanoff et al., 2020). Few studies of how endangered species have been framed in media have been published, with



the majority of current examples focusing on terrestrial species (see Jacobson et al., 2012). Increased examples of case studies on marine conservation framing in practice have been largely called for in literature (Kolandai-Matchett & Armoudian, 2020).

Due to its proposed effectiveness as a frame in marine conservation communication (Kolandai-Matchett & Armoudian, 2020) and its pervasiveness as a frame of study in environmental communication literature, conflict and solutions framing was chosen as a type of frame to be researched in this case study. Solutions-oriented versus conflict-oriented or “problem” framing are common frames used in media when discussing the environment and have been a regular focus of study in environmental communication literature (Bardwell, 1991; Lovell, 2004). Solutions-oriented framing in literature is focused on separately from “optimistic” or “hopeful” tones. Solutions-framing has largely been defined by literature to be rhetoric that give value to past, present, or future individual or group actions that can help to solve the issue at hand (Obermill, 1995; Kolandai-Matchett & Armoudian, 2020), while conflict-oriented framing focuses on a specific controversy or disagreement (Bardwell, 1991; Walker et al., 2019). Increased study on problem and solutions framing has been deemed a critical area of study in future marine communication research to understand the most effective message framing for ocean conservation action (Kolandai-Matchett & Armoudian, 2020). Conflict-oriented framing has been shown in some cases to effectively elevate awareness and concern for less salient environmental problems (Obermill, 1995), but this

concern may become overwhelming, when not presented with actions or solutions, which may ultimately lead to audience inaction (Jacobs et al., 2015). Solutions framing has been largely effective in environmental messaging (Obermiller, 1995; Van de Velde et al., 2010), especially when combined with language that elicits positive/hopeful feelings (Feldman & Hart, 2015; Jacobson et al., 2018; Staats et al., 1996), and descriptions of combining individual environmental actions with demonstrated positive collective outcomes (Dickinson et al., 2013; Veiga et al., 2016; Jacobs et al., 2015). Practitioners and researchers of environmental communication suggest that balanced use of both solutions and problem framing may be most effective in creating behavioral change in audiences (Day et al, 2014). Because of the NARW's involvement in major fisheries, political, and social conflicts as well as the demonstrated effectiveness of balanced (conflict and solutions) and solutions-oriented frames in environmental engagement (Obermiller, 1995; Van de Velde et al., 2010), NARW articles were postulated to have more solutions and conflict frames than NPRW articles.

Another frequent comparison for framing in environmental communication literature is environmental versus economic framing. Environmental framing has been defined by literature to include appeals that place value on nature and altruistic behavior in achieving positive environmental goals (Kusmanoff et al., 2016; Reddy et al., 2020), whereas economic framing centers on appeals to the monetary value of certain ecosystem services or conservation action

(Dean et al., 2019; Steinhorst & Klockner, 2018; Reddy et al., 2020).

Performance of environmental versus economic frames in promoting pro-environmental attitudes and behaviors has varied results in literature.

Environmental frames have been shown to have some effectiveness in increasing pro-environmental behaviors, attitudes, or intentions (Dean et al., 2019), compared to economic frames that have shown decreased pro-environmental attitudinal or behavioral shifts (Dean et al., 2019; Reddy et al., 2020) or no observable change at all (Steinhorst & Klockner, 2018). Because of the NARW's involvement in broader socioeconomic fishing conflicts as well as the demonstrated effectiveness of environmental frames in promoting pro-environmental behaviors, economic and environmental frames were chosen as primary frames of study for media content analysis.

### *Tone*

In this study, definitions of tone were developed from McCombs et al. (2011) to be defined as the emotional affect that is invoked by a piece of media on the audience. In media, tone is employed to increase engagement of the audience with the subject, persuade an audience of a certain argument, or appeal to a certain target audience (McCombs et al., 2011). The use of tone in news coverage has been widely studied in coverage of political campaigns to understand how the emotional affect that is presented with political information can affect voting behavior and attitudes (Marcus et al., 2011). However, there has been little evaluation in literature of how the tone of news coverage of

environmental topics, specifically endangered species, may affect conservation support (ie. pro-behavioral change and monetary support). Because of a gap in communication literature on the use of tone in coverage of endangered species as well as the pervasiveness of emotional appeals in communication about endangered and charismatic species (Merry, 2010; Kolandai-Matchett & Armoudian, 2020), this case study hopes to provide an example of how positive, negative, and neutral tones may be associated with communication about endangered species.

Climate change has been one topic of communication research that has been increasingly studied to understand how the tone of messaging in climate change narratives may influence the audience's resulting pro-environmental behavior. In particular, research has focused on how fearful versus hopeful tones affect pro-environmental behavior. Generally, positive/hopeful messaging has facilitated a higher rate of pro-environmental behavioral change than guilt or fear-based messaging (Merkel et al., 2020), but negative tones have also been found to predict and influence pro-environmental policy support and action (Brosch, 2021; Hornsey & Fielding, 2016). In a study by Hornsey & Fielding (2016), consistent optimistic, positively-toned messaging about climate change was found to decrease perceptions of risk and therefore decrease motivation for positive environmental behaviors.

“Doom and Gloom” versus “optimistic” messaging has been a recent focus in literature concerning effective marine conservation communication. Concerns that ocean conservation in media is often discussed with negative

tones or “doom and gloom” depictions have been expressed by marine scientists and communication practitioners, but a recent study found that negatively toned language was only in 10% of articles and 27% contained optimistic or positively toned language in a sample of U.S.-based news sources that covered ocean research (Johns & Jacquet, 2018). There is no consensus in literature about whether positively or negatively toned messaging is effective at pro-environmental attitudinal and behavioral shifts, mainly for lack of studied examples (Kidd et al., 2019). Positively toned messages have the potential to both increase hope and thus action, or decrease perception of risk and action, while negatively toned messaging may increase perception of risk and thus action, or increase feelings of hopelessness or fear, leading to inaction (see Figure 1 in Kidd et al., 2019). In general environmental communication that does not focus on conservation specifically, there is some evidence of the effectiveness of positive messaging (Schaffner et al., 2015; McAfee et al., 2019), causing some to call for emphasis on positively toned news to avoid pessimism and inaction, but must ensure balanced to evade perceptions that the topic is not an issue of concern (McAfee et al., 2019) and include direct facts with emotional appeals to ensure success (Schaffner et al., 2015; Kidd et al., 2019).

Few studies have looked at the presence and effectiveness of positively and negatively toned messaging in endangered species conservation communication. One study that looked at positively and negatively toned

videos of threatened species found that negative videos had more aggressive comments towards the threatened species and more views (Ballegjo et al., 2021). Another study that analyzed the tone of news articles about the endangered seabird, the Piping Plover, found that 48% of articles were positively toned, 46% neutrally toned, and only 6% were negatively toned (Dayer et al., 2017). One of the only studies that has examined the effects of tone on endangered whale conservation was Shelton and Rogers' 1981 study looking at fear and empathy appeals in whale conservation films to understand which may be more effective at attitudinal and behavioral change. Shelton and Rogers found that fear-based appeals were successful in promoting positive environmental behavior, with visuals of aid to endangered species shown to further increase resulting behavioral change. They found empathy-based appeals to be successful at promoting pro-environmental attitudinal shifts, but less effective at promoting behavioral change (Shelton and Rogers, 1981). Current literature suggests that emotions associated with an endangered species influence decisions related to the conservation support and funding for that species (Notaro & Grilli, 2022; Malecki et al., 2021). Since positive, negative, and neutral tones activate different emotional affects in audiences (Yegiyan & Lang., 2009), the resulting specific emotions that may be induced by toned narratives about the species are likely to have significant impacts on conservation support for that species. Since the NARW has had more conservation success, and positively toned messages have been found to be effective in environmental messaging in general (Schaffner et al., 2015;

McAfee et al., 2019), NARW articles were postulated to have greater positively toned articles than NPRW articles.

## CHAPTER 3

### METHODOLOGY

#### ***Policy Landscape***

In order to create a baseline understanding of the policy prioritization between the NARW and NPRW, an analysis of the rate of and count of federal policies proposed and enacted for each species was done. The Federal Register daily journal of the US government was used as the database in which notices of federal rules were searched. The Federal Register was chosen because of the requirement for notices of any and all federal proposed and enacted policies to be published in the register, ensuring that search results from the register would be exhaustive and complete. Using this database, “proposed rules” could be differentially searched from “rules.” A search for federal proposed rules between 3/01/2008-12/31/2020, that included the common name for the species was exported from the federal register. March 1<sup>st</sup>, 2008 was used as a starting point to ensure policy collection would only include policies after the split of the previous Northern Right Whale into the NARW and NPRW in March of 2008. Separate proposed policy results lists were exported for each species. This list was then sorted and only proposed rules that met all the following requirements were included for analysis:

- 1) Directly ecologically or biologically positively impacts the conservation of the certain species.
- 2) Directly positively changes the conservation plan for the certain species.



- 3) Directly alters/improves/changes allocation of resources to the species' conservation/survival/public awareness in a way advantageous to the survival/success of the species.
- 4) Was created because of or on behalf of conservation issues or research directly associated with the certain species.

All proposed policies that did not meet those requirements were excluded from analysis. To determine whether policies met these criteria, the entirety of the supplementary information provided (inclusive of the policy's background and context) was read to determine the motivation for the creation of the rule/proposed rule and the degree to which it would positively influence the conservation of the species. For the secondary search of enacted rules, the same process was followed, with 'rules' that were published in the federal register exported. Policies that were published in the register that were published only as a correction to a certain fact in a rule were not included in analysis. Rule lists for each species also had to meet the requirements outlined above to be included in final analysis. Proposed rule lists were then validated against enacted rule lists and regulations.gov to ensure that only rules that were proposed and not enacted before 2020 were included in counts of proposed rules. This is to ensure that analysis would reveal trends and differences between proposed and enacted rules to keep proposed and enacted metrics separate.

***Media Query:***

Articles for each species were queried from Lexis-Nexis, an online media database and search engine. Only articles from newspapers,

magazines, journals, or web-based publications (all as defined by Lexis-Nexis), published from Jan 01, 2008 to December 31<sup>st</sup>, 2020 from a US-based media publication were included in each species' population of articles. Articles were only queried from 2008 onwards to capture articles about NPRW and NARW separately after they were determined to be two separate species in March of 2008. All articles before the designation within the year 2008 were sorted and excluded from the query and analysis. In order to sample articles about each species, all articles that had at least 3 mentions of each of the following words were queried: "North" AND "Pacific AND "Right" AND "Whale." In LexisNexis the exact search phrase was " atleast3("North" AND "Atlantic" AND "Right" AND "Whale")." The use of the 'atleast3' in the search ensured that articles were focused on the species in particular, but also allowed for inclusion of other articles that focused on species-related political/economic conflicts or other aspects of conservation to be included in the population and sample. For the North Atlantic Right whale, the same phrasing was used except that "Pacific" was replaced with "Atlantic."

Once the search was finished, the complete list of articles from the search was exported into an excel document, where articles were sorted A-Z by Article title, then each assigned an ID number. Articles that were only published in only the Associated Press (AP), but not picked up and reprinted by local media outlets, were excluded from analysis in order to ensure that the sample represented only tones, frames, and content that would be consumed by the American public. The content of the AP is largely only read by

journalists, so inclusion of AP articles would not be representative of media coverage that non-journalists would see, which would not allow for agenda-setting and framing theories to be tested. The list was then sorted to ensure that there were no identical articles that were published by other media sources in the same list as those published by the original publisher (ie. 'duplicates'). Articles that were determined to be 'duplicates' were ones published by the same or other media sources within 2 weeks of each other that had the exact same headline, word count, and content. R code from the Cran Package, "LexisNexis tools," was then used to double-check the sample to ensure that there were no duplicates by scanning for articles published within a few days of each other that had >90% similarity of text. After duplicates were removed from each species' list, IDs that are being included for analysis (ie. not duplicates) were then copied into the computer program, R, to create a random sample of 100 unique article IDs to be used for media content analysis. Since only 6 unique articles were found to be written about the North Pacific species, no random sampling procedure was done because this sample captured the entire sample frame of articles for this species in this timeframe with these specifications. A count of articles that were found in the raw data search (excluding counts of duplicates) was done to give an idea of the total sample population of media articles for each species.

***Media Content Analysis:***

A codebook was created to define and describe each identified content category, frame, and tone by the researcher (CS) in collaboration with PI (ED). Articles were analyzed for tone (positive, negative, or neutral), as well as primary frames, secondary frames, and content categories (Figure A1, Appendix). Tone and primary frames were coded deductively once each for the entire article, whereas secondary frames and content categories were coded inductively each time they were used in the article. Primary frames and secondary frames were coded to understand the context in which endangered species, specifically NARWs and NPRWs, have been communicated in media to test framing theories associated with increased pro-environmental behavior and attitudes. Content categories were coded to understand what primary and secondary content objects and attributes were deemed important by media and covered in relation to whale conservation to test agenda-setting theory. All descriptive metadata, frames, and content categories were coded within the computer program NVivo 12 to record and analyze presence and frequency of codes.

After the development of the codebook, the researcher employed 2 peers to code a sample of the articles that would be used (ie. same 10 of 100 articles per peer) with the definitions and descriptions in the created codebook. The researcher also coded same 10 articles. Then, an intercoder reliability calculation was done to ensure that the developed coding scheme was reliable and reproducible before moving forward with coding all articles for tone. Percent agreement was chosen as the calculation of reliability in

this study because there is a low probability of chance agreement, there were not more than two coders, and the tonal categories represent nominal data (Nili et al., 2020).

***Tone:***

A positive, negative, or neutral tone was assigned to each article in both the Pacific and Atlantic samples. Tone was defined as the emotional affect or ‘tone’ that the author uses in the article to discuss the primary topic. Tones were described in-depth with examples in the codebook (Figure A1, Appendix). Generally, positive tones were coded for articles that had upbeat and hopeful language that was likely to make the reader feel joyful, humored, relaxed, excited, or happy. Negative tones were assigned to articles with the opposite emotional affect, using language that was argumentative, angry, or abrasive, making the reader likely to feel hopeless, sad, mad, or upset. Neutral tones were assigned to articles that used language that was not overly positive or negative but simply stated a story without any ascribed emotion. Articles were read through completely a minimum of 2 times by the coder before being assigned an overall tone of the article. Tones were saved as case classifications within NVivo to keep track of the discrete number of positive, negative, and neutral articles for each sample.

***Frames:***

Frames were organized into primary and secondary frames, with primary frames representing broad categories (ie. “environment”) and secondary frames describing more specific topics within the broad category (ie. “climate change”). Primary frames were coded deductively, using past literature as a reference to test previously identified large framing dyads in literature (environment vs. economy and conflict vs. solutions), while secondary frames were coded inductively, using article content and study research questions to guide what secondary frames were frequent and relevant to then be included in the codebook and coded (Hsieh & Shannon, 2005). A primary read through of articles, identified secondary frames that were frequently used amongst both samples that then were then defined and described in the study codebook. The same codebook was used for the species’ articles to ensure that direct comparisons could be made between frames about articles of each species. Two dyads, “Conflict-oriented” vs “Solutions-oriented” and “Environmental” vs “Economic” were used to describe the overall primary frame of the entire article. All articles were coded from both types of primary frame dyads. Articles that used one type of primary frame in each dyad more than 50% of the time would be assigned that overall frame (ie. if an article used environmental framing more than 50% of the time, it would be assigned the frame “environmental” for the entire article). If the article used each of the primary frames in a dyad equally (ie. used environmental and economic framing equally) then it would be assigned the frame of “both.” If neither of the frames in the primary dyad were used more

than 50% of the time in the article, then it was assigned the code of “neither.” Secondary frames within each category were coded incidentally in each article (ie. every time the frame was used in the article). Sentences that used a secondary frame of interest (and recorded in the codebook) would be highlighted NVivo until there was a change in frame or topic and that group of words would be assigned the appropriate frame. Not all words were coded throughout articles- only words/sentences/phrases that had frames of interest were coded. Throughout coding, if a frame was being used consistently throughout articles or coding a specific frame would aid in answering study research questions, the frame would be added to the codebook, defined, and all articles previously coded would be re-read to assign the code to words in previous articles. All primary and secondary frames are recorded and described in the Appendix.

***Content Categories:***

Content categories were created inductively, separately from frames. Content categories were created to observe the trends in specific attributes of each species’ conservation to understand relationships between topic attributes and trends in policy protections to test theories of agenda-setting. Content categories were used to complement frames in providing further insight into types of conflicts and solutions as well as to detail the dimensions of environmental and economic topics discussed in relationship to each spe-

cies. Content categories used news articles as the main driver of what categories were included in analysis. Content Categories were chosen according to the frequency of use in the initial read-through of articles in both samples. Categories with high frequency of use and high relevance to study research questions were defined and described in the study codebook. Following a similar structural organization to that of frames, content categories were organized into “parent,” “child,” and “grandchild” categories. Parent categories represented the broad category, while child categories represented more specific topics within the broad parent category, and grandchild categories represented highly specific topics of interest within child categories. Child and grandchild categories were coded incidentally throughout all articles, following the same coding practice of secondary framing (ie. only coding parts of sentences that are relevant to the category). If content categories of any type were added deductively to the codebook during the coding process, then all articles previously coded were re-read to code for the content category that was added part-way through. Parent categories were chosen because of their determined importance to the conservation stories of both species and include “whale mortality,” “policy,” “advocacy,” and “research.” All parent, child, and grandchild, categories and their definitions can be found in the Appendix.

## ***Analysis***



Qualitative and quantitative analysis was employed to understand trends in media coverage for both species. Small sample sizes in the NPRW sample ultimately did not allow for statistical comparisons to be made in quantitative analyses. Policies were analyzed quantitatively with metrics for proposed and enacted policies calculated as a count of policies per year for the entire 12-year period. Average rate of policy creation was calculated by summing the number of proposed and enacted policies for each species individually and dividing by the timeframe of the study (12 years) to get an average number of policies created per year for each species. Tones and primary frames (conflict/solutions and environmental/economic) were also analyzed quantitatively. Tones were coded once per article allowing for a sum of total number of articles within each tone category to be calculated for each species' sample of articles. Tonal categories were then standardized as percentages to allow for loose comparison between species. Due to limited sample sizes, a sum total of articles coded within each tone category for both species combined was also calculated and standardized as a percentage. The same quantitative analysis for tone was repeated for each primary frame dyad, with counts of articles in each category of frame calculated per species and for both species, then all counts standardized as percentages. Secondary frames and content categories were coded incidentally and summed per species and together. Content categories were further analyzed inductively, using frequent categories to build overall themes for each and both species.



## CHAPTER 4

### FINDINGS

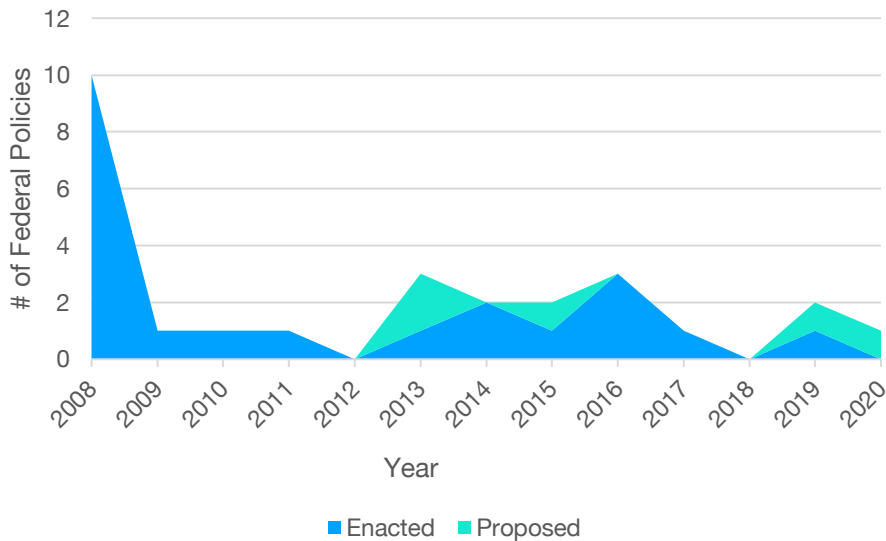
#### I. Policy Landscape

Stark differences in the number of federal policy protections were found between the NARW and NPRW. Notices of corrections to rules were included, while the previous notice associated with the correction was excluded from the study sample. Rules made in requirement to fulfill the Marine Mammal Protection Act for “incidental take” of marine mammals to construction, drilling, etc were excluded from the study.

##### *North Atlantic Right Whale Federal Policy Creation*

A total of 23 new federal policies (Table 1) were enacted from 2008-2020 that resulted in conservation action specifically for the NARW. Of these enacted policies, a little under half (n=10) represented temporary closures of fishing areas to protect groups of NARW known to be in the area at the time (Table A1). Policies that offered major protections and have been monumental in the conservation of the species include the October 2008 rule to implement speed restrictions for vessels in NARW’s critical habitat and the expansion of critical habitat and therefore protections for NARWs in January of 2016. Policy creation reached a peak in 2008 with many of the unique temporary rules for

fishery closures due to NARW presence being enacted this year (Figure 1). Policy activity from 2013-2017 remained steady with multiple policies enacted as well as 3 policies proposed including a highly debated 2013 proposed rule to reduce the number of vertical lines in NARW critical habitat in efforts to reduce whale entanglement, which was eventually withdrawn.



**Figure 1.** NARW policies enacted and proposed over study timeframe.

NARW overall average rate of policy creation was 2.25 policies per year (Table 1). Average policy rates of creation were calculated by adding the total number of enacted and proposed policies over the study timeframe and dividing by the number of years in study time frame to give an average policy creation rate per year.

**Table 1.** Number of proposed federal policies dictating species-specific conservation for the North Atlantic Right Whale (Atlantic) and the North Pacific Right Whale (Pacific) from 2008-2020. The “Total” represents the combined number of proposed and enacted policies, while the policy rate of creation represents the total divided by the number of years in the period of study (12 yrs).

<b>Species</b>	<b>Only Pro-posed</b>	<b>Enacted</b>	<b>Total</b>	<b>Average Policy Rate of Creation from 2008-2020</b>
Atlantic	4	23	27	2.25
Pacific	0	2	2	0.17

*North Pacific Right Whale Federal Policies*

The NPRW had drastically lower amounts of policy creation than its North Atlantic cousin with only 2 total enacted policies governing its federal conservation protections. These two policies were designating the NPRW as endangered under the Endangered Species Act in March of 2008 and designation of critical habitat for the NPRW in April of 2008. These enacted rules represent basic protections afforded to any endangered species in the U.S., which include the requirement for a recovery plan to be set in place for the listed species. Although not an enacted rule, the NPRW’s recovery plan was not created until 2013, 8 years after its Atlantic counterpart. This was only after a group of major conservation organizations sued the U.S. government for failure to provide a recovery plan for the whale, representing a major point in NPRW’s political action that is relevant to mention but was not included in the strict policy analysis. A notable finding for the NPRW policy landscape is that there were no proposed federal policies for the conservation of the NPRW, compared to the 9 proposed and 5 enacted from those proposed

policies for the NARW. The NPRW's two policies dictating its conservation, occurred directly after the determination of the NARW and the NPRW as distinct species in 2008, with no policy action or creation afterward. With 2 policies enacted over the 12-year time frame, the 0.17 average number of policies per year is small and only functions as a standardized metric to compare with the NARW average policy rate of creation, instead of giving true information about the policy creation over the time period. This is due to the fact that the 2 policies were enacted within a month of each other in the first year of the study time period.

#### *Inter-Species (Atlantic vs Pacific) Policy Comparison*

A striking difference in both total amount of enacted and proposed policies and average policy rate of creation can be seen between the NPRW and the NARW. The NPRW average rate of policy creation was 0.17 per year, a drastic 172% percent difference or 2.08 fewer policies on average per year from the NARW. Given the small sample size of policies for the NPRW (n=2) compared with the NARW (n= 27), no statistical calculations were attempted to compare the rates of creation between the species. However, based on both metrics used in this study, policy rate of creation and unique number of policies, there is a marked difference in political action afforded to each species with NARWs receiving significantly higher federal conservation protections.

## II. Media Content Analysis

### *Population & Sample of North Atlantic Right Whale Articles*

A total of 170 articles resulted from Lexis-Nexis database search for news articles published in the study period in U.S.-based newspapers, web-based publications, and magazines and journals that included the keywords “North,” “Atlantic,” “Right,” “Whale” at least 3 times. Duplicates and articles that did not meet minimum 50% topic-focus on the species requirements were taken out of the population for a total of 143 unique articles about the NARW. Each article was assigned an ID number and coding in R was used to create a random sample of 100 unique article IDs. In the random sample of articles, Brunswick News in Georgia published the most articles (n=19), followed by The Cape Cod Times (n=14), and the New York Times (n=13). Most articles in the NARW sample were published from 2017 onward, with 2019 (n=17), 2017 (n=13), and 2018 (n=11) representing the years with the most articles. On average, articles in the sample were 803 words.

### *Population & Sample of North Pacific Right Whale Articles*

Using the same search requirements in Lexis-Nexis for date range and news source type, 22 total articles were found with at least 3 mentions of each keyword, “North,” “Pacific,” “Right,” and “Whale.” Of these 22 articles, only 6 unique articles were found to be at least 50% about NPRW. Because of this small population size, random sampling was not used and the entire population of articles was analyzed in content analysis. This small sample size

allows for limited comparisons to be made to the larger sample of NARW articles. The 6 articles were somewhat spread out over the timeframe, with most articles being published from 2012-2019 (n=5). Anchorage Daily News was the most frequent news source for articles in the sample (n=3), followed by the Alaska Dispatch News (n=2). The average length of articles in the sample was 560 words.

## **Tone**

### *Inter-coder Reliability Results*

One researcher coded all articles for tones, frames, and content categories in Nvivo using definitions in a dedicated codebook that was developed deductively and inductively. Tones, frames, and content categories were described in detail, with examples, and reviewed with PI to ensure clarity and relevance. In order to assess strength and stability of tonal definitions specifically, 2 coders outside of the research team were given the definitions and examples for positive, neutral, and negative tones that are provided in the codebook. Coders were then given 10 articles and told to use definitions of tone to blindly code each article. The researcher also blindly coded these same ten articles. After 2 coders and researcher had assigned tones to each article, a calculation of percent agreement was done, resulting in an 80% agreement between coders. Percent agreement was calculated by number of articles where all 3 coders (including researcher) were assigned the same tone divided by the total number of articles.



### *Intra-Species (within species) Results for NARW and NPRW*

Tones for NPRW were equally distributed across positive (n=2), negative (n=2), and neutral (n=2) categories. The majority of NARW articles were neutral (n=43), which was closely followed by the amount of negatively toned articles (n=37), and positively toned articles (n=20). For both species, the majority of articles were neutrally toned (n=45), followed closely by the amount of negatively toned articles (n=39).

**Table 2.** Number of articles in the NARW (Atlantic) and NPRW (Pacific) that had positive, negative, and neutral tones. “Both” represents the combined number of Atlantic and Pacific articles that were in each category.

	<b>Positive</b>	<b>Negative</b>	<b>Neutral</b>
<b>Atlantic</b>	20	37	43
<b>Pacific</b>	2	2	2
<b>Both</b>	22	39	45

### *Inter-Species Comparison*

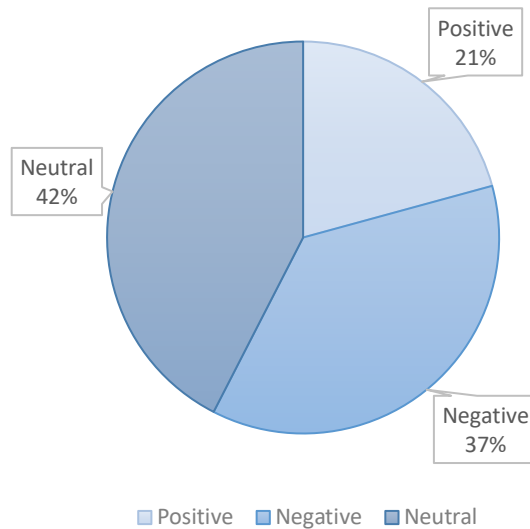
Because of the NPRW’s small population and therefore sample of articles, inter-species comparisons (ie. between species) are difficult to make. In an effort to make stronger comparisons between the two species’ samples, metrics for tones were standardized as percentages of the total sample of articles for the species (number of articles with that tone/total number of articles in species’ sample).

Given the skew of NPRW’s small sample size, statistical comparisons cannot be made. Additionally, all comparisons between the two species should be considered in light of the difference in population size. However, some

observable differences in the percentage of Atlantic articles that were neutral can be seen, with 33% of NPRW being neutral versus 43% of NARW being neutral. Positively toned articles seemed to represent more of the Pacific sample (33%) compared to the Atlantic sample (20%). The difference in the percentage of NARW articles with a negative tone (37%) compared to the negatively toned NPRW articles (33%) represents only a marginal difference between the species.

#### *Tone for Both Species Combined*

Results for the Atlantic and Pacific species combined were calculated in order to better understand how endangered whales are written about in general. Overall, most articles were neutrally toned, followed closely by negatively toned articles (Figure 2). Only 21% of all articles were positively toned (Figure 2).



**Figure 2.** Distribution of tone across articles for both species combined.

## **Frames**

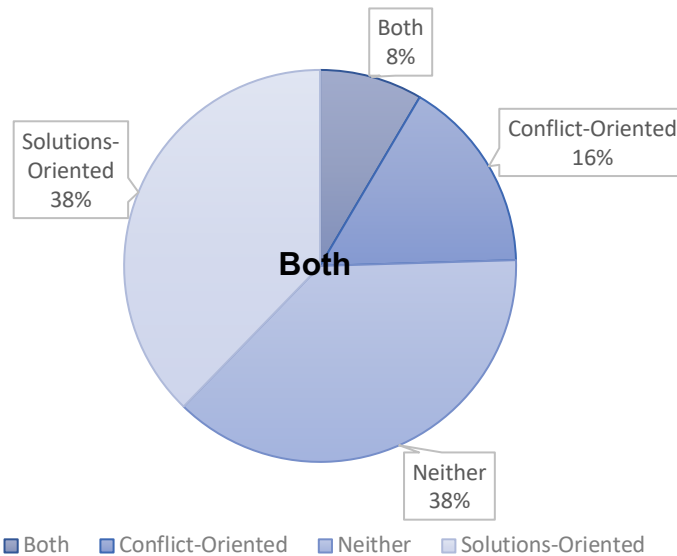
### *Conflict-Oriented vs Solutions-Oriented Framing*

Atlantic and Pacific samples were notably different in their distribution of articles with conflict-oriented and solutions-oriented framing. However, comparisons between the species can only be loosely made due to a lack of NPRW articles. Inter-species comparisons are still discussed below, but only represent insight into what the results would look like with proper distribution of articles amongst samples. Articles that used conflict and solution framing relatively evenly (around 50% for each) were coded as “both” and articles that did not discuss the topic in terms of solutions or conflicts were coded as “neither.” NARW articles were overall framed with more solutions-oriented framing, with 39% of articles in the sample using solutions framing or neither conflict nor solutions-focused framing (37%). Policy solutions were the most discussed across both species, followed by scientific and technological solutions (Figure 4). Only 17% of the Atlantic sample employed conflict-oriented framed articles, and 8% used both frames equally. For the NARW, fisheries conflicts were the most commonly mentioned (n=87), followed closely by U.S. political conflict (n=79).

North Pacific Right Whales on the other hand were often framed with neither solutions nor conflict-oriented framing, with half the sample lacking these frames. Conflict-oriented, solutions-oriented, and articles framed with

both were evenly distributed across the rest of the sample. U.S. political conflict was the most discussed conflict for NPRW (n=11), followed by fisheries conflict (Figure 4).

In loosely comparing the two species' samples of frames, it seems that most of NARW articles were framed with solutions-oriented framing, while NPRWs were mainly discussed with neither solutions nor conflict framing. When combining both species' samples, there is an exactly even distribution of solutions-oriented articles and articles with neither frame (Figure 3). Conflict-oriented framing represents the next largest category, while articles using both types of frames were the least commonly for both species (Figure 3).



**Figure 3.** Percentages of both NARW and NPRW articles that were coded as overall conflict-oriented, solutions-oriented, both solution and conflict-oriented, or neither.

### *Environmental vs Economic Frames*

Both NARWs and NPRWs were discussed using environmental framing vs economic framing in article samples. A large majority of Atlantic articles were framed environmentally (88%), while the rest of the articles in the sample used both environmental and economic frames equally. No articles used only economic framing or neither economic nor environmental framing for either species. NPRW articles had similar results with 83% of articles in the sample using most environmental framing and 17% using both economic and environmental frames equally.

For both species, population biology was the most common type of environmental framing that was used as well as the most common frame used across all frames and content categories (Figure 4). A large focus of both NARW and NPRW articles was the number of individuals in the population, the birth/death rate, and overall population health. Climate change represented the next largest environmental frame, closely followed by ecosystem framing (Figure 4). Economic loss framing was the most highly used frame amongst economic frames, followed by U.S. government spending, local economy, economic gain, and international economy (Figure 4).

### **Content Categories**

#### *North Pacific Right Whale Content Themes*

Despite a small sample size, there were a few major themes that were commonly discussed throughout the 6 articles. These themes were inaction

and unknown and elusive species. All themes are explained in further detail below.

*Theme #1: Inaction*

A highly discussed conflict in NPRW articles was the conservation inaction on behalf of the United States. Political conflict represented a highly discussed category within NPRW articles with 11 unique coded instances, representing the greatest number of instances for a category outside of whaling (n=24) and natural science research (n=24). As previously mentioned, the NPRW lacked a recovery plan, a set of steps required for any endangered species protected under the ESA to remove them from the list of endangered species, for 5 years after being listed as their own endangered species separate from the NARW. This delay resulted in major national and international NGOs threatening to sue the National Marine Fisheries Service for not establishing a recovery plan in accordance with the ESA, which was the main topic for 3 out of 6 of the articles in the NPRW sample. However, mentions of specific NGO involvement for the species were low within the sample with only 6 coded instances in the entire sample.

*Theme #2: Unknown and Elusive Species*

All articles in the NPRW sample mentioned, if not focused, on how little is known about NPRW as a species with many explaining them as an elusive or unknown species. This elusive nature was often

explained by whaling wiping out much of the population. Whaling was discussed in every article in the sample with a total of 15 unique instances. Whaling was the only explanation for discussions of whale death events. Threats to whales dying were vaguely mentioned in some articles (n=9), and when not discussed vaguely, were only attributed minimally to ship strike threats (n=2). Scientific research was often talked about as a solution to this issue with natural science research described frequently (n=24) and framing of scientific research as a solution to problems with NPRW conservation employed often (n=8).

#### *North Atlantic Right Whale Content Themes*

Inductive analysis was used to find common themes amongst all NARW articles using coding for content and frames. The four main themes from the NARW sample were: Ongoing Research, Anthropogenic Threats, Economic and Fisheries Conflicts, and Population Status, which are described in further detail below.

##### *Theme #1: Ongoing Research*

A common theme amongst articles in the NARW sample was the large amount of research being done on NARW, with many articles commonly describing field research on the species in depth. One article described the species “as the most studied whale in the world.” Natural

science research was a commonly referenced topic with 172 unique coded instances in the sample. Scientific and technological solutions were the second-most referenced type of solutions-framing (n=126), only superseded by policy solutions (n=149). Multiple articles, including those from popular media sources like the New York Times and The Atlantic, discussed cetacean research from the first-person point of view, giving the audience a detailed look at the conservation techniques and scientific solutions that researchers are employing. Many other articles used researchers as sources who were quoted in the article describing the research they were doing and how it would help to further NARW conservation goals. The NARW research program at the New England aquarium (NEaq), which keeps the only catalog of NARW individuals, was commonly referenced, with quoted NEaq Right Whale researchers describing the photo-identification and naming processes. Needing more research was a frequent call to action at the conclusion of articles, citing this as a major conservation goal.

### *Theme #2: Anthropogenic Threats*

A large focus of many articles was the types of anthropogenic threats and causes of death for the NARW. As identified in research and the articles, both ship strike and entanglement in fishing rope are large causes of death and injury for NARW. As a part of this study, threats to whale death and whale death events were coded and



categorized by the cause of the threat or event. Entanglement was the most common event that was discussed with 184 coded instances, followed by events with undefined causes (n=132). Only 85 instances of ship strike events were coded, followed by past whaling events (n=71), and stranding events (n=18). Threats were less frequently discussed than events, but the most common threat mentioned was entanglement threats (n=89), followed by ship strike (n=60), and undefined threats (n=36). Undefined threats often included mentions of ocean noise or climate change (n=49). Climate change was often referenced as impacting whales' distribution of prey, driving whales further North often into areas that were outside of current protected areas. Ecosystem considerations was a content category used to capture any mentions of whale conservation as it relates to the general functioning and well-being of the whale's ecosystem, which had almost the same number of mentions (n=44) as climate change. Threats to whale mortality were mentioned in almost every NARW article and often framed as the modern equivalent to the threats from whaling in the early 20<sup>th</sup> century. A few of the articles that were included in the sample were centered around a whale death or observed injury that was caused by ship strike or entanglement. These articles described injuries of whales that were dead and washed ashore or whales observed in research as examples of the harmful and gruesome effects of these human-caused events. In discussions surrounding anthropogenic threats and events, industry

interest was often pitted against whale conservation interests. Industries like the shipping industry and the fishing industry were discussed as both collaborators in solving these issues and as opponents to conservation.

### *Theme #3: Economic and Fisheries Conflicts*

A large majority of NARW articles were written to provide commentary and reporting on conflicts between the commercial fishing industry and conservationists/scientists. Many articles chose to focus on the conflict between lobster fishers and conservationists. Articles mainly chose to focus on the economic ramifications that certain policies and new fishery rules that protect right whales would have on individual lobster fishers and their livelihoods. In one article, the author described the sentiment of the fisheries regulation's conflicts saying, "they [the lobstermen] claim the regulation is overkill and could make lobstermen as endangered as the whales." Many of the articles focused on increasing efforts to protect certain areas from the lines that often entangle the whales through fisheries closures or limitations. The financial impact of the proposed regulations was also a consistent topic in discussing who, if anyone, is to blame for the issue of entanglement and therefore who should pay the price for mitigating it. A handful of articles described lobster fishers' collaboration in efforts to reduce entanglement in fishing gear, discussing technological solutions that

fishers were testing and fishers' participation in research cruises to increase collaborative capacity.

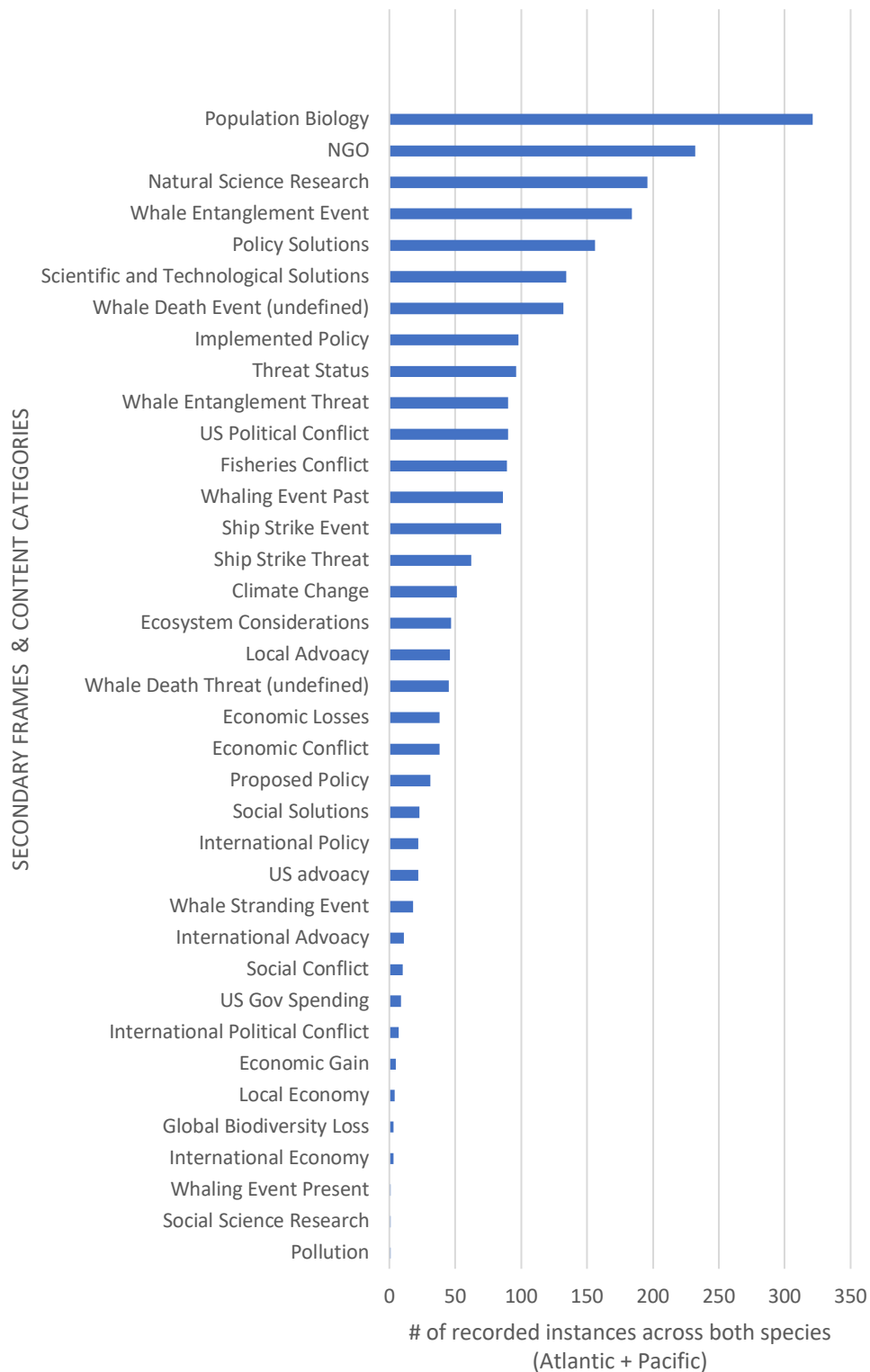
#### *Theme #4: Population Status*

Population biology was the most discussed (n=298) content category out of all categories and frames, representing a major focus of all articles in the sample. The current number of individuals in the population was used as both a primer for the audience to give perspective on the urgency of conservation efforts and as a call to action. Many articles discussed the number of calves that were being born with references to an individual birth or the search for new calves each season in some cases being the sole focus of the article. References to population biology in articles was often used in conjunction with mentions of threat status (n=89) giving greater context to the words "critically endangered." Threats to NARW were also often discussed with population biology, where several articles commented on how NARW mothers were not able to care for or birth calves due to anthropogenic threats.

#### *Themes for Both Species: Historic Whaling*

A major theme that was shared by articles about NARW and NPRW was that past whaling has been the cause of such population

decline and endangerment in current day. A large majority of articles in both samples would discuss an issue or piece of local news relevant to the species and use population biology and whaling themes as background information about the whale. Whaling was only discussed as a past event (n=71) and not as a current threat to the species or a threat in the past. The fact that right whales were considered the right whale to hunt and were the primary target for whalers was something that was mentioned highly frequently. In many cases, past whaling was used as support for the current emphasis on right whale conservation. In some cases, whaling was even used with moral implications to justify socioeconomic penalties that arise from legislative or scientific conservation efforts.



**Figure 4.** Number of recorded instances of each secondary frame and content category within each article across both species together.

## CHAPTER 5

### DISCUSSION

#### *Policy Prioritization*

Findings from the policy landscape supported hypotheses that the NARW would receive more policy creation and prioritization than the NPRW. Overall, legislation for the NARW was not only more frequent but more comprehensive in terms of whole legal protections for the species. Although a little less than half of the federal rules for the NARW represented individual fishery closures (n=10) to protect various aggregations of NARWs present at the time, this proliferation of policies that restricted fishery access to reduce threats to NARWs represents a stark example of the political effort afforded to the protection of this species. This example is compounded with findings that 172% more policies (inclusive of proposed only *and* enacted policies) were created for NARWs compared with NPRWs over the short 12-year period of study, further demonstrating the incredible difference in political action and prioritization between the two species. Because typical causes for mismatched conservation action and threat status, like physical features and types of threats, cannot explain differences in conservation effort between the species. Below represent potential explanations for the large difference in political effort for conservation of the two species.

i. Conservation Triage Practices

The NPRWs lack of policy creation may be a reflection of the U.S. federal government's practice of "conservation triage," where resources are allocated to species that are believed to have a better chance of full recovery, over other species that may be considered past the point of "no return" (Buckley, 2016). Conservation triage is harmful in its practice because if employed, it drives lower prioritization for conservation of species in general and fewer governmental resources assigned to the cause (Buckley, 2016). Prioritization of endangered species in legislation is influenced by multiple socioeconomic values (Redford et al., 2015) and cognitive factors (Martín-López et al., 2007). Lack of consistent and established decision framing for endangered species listings confounds policy decisions and results in inconsistent values and standards for policy prioritizations for threatened species (Wilson et al., 2009; Cummings et al., 2018), which have created inefficient and inconsistent endangered species legislation like the U.S.'s Endangered Species Act (ESA) (see critiques: Boyd et al., 2016; Harris et al., 2011; Stokstad et al., 2005). Legislation like the ESA defines certain overarching fundamental goals for the species that are listed but lacks any specific guidance or rules for implementing agencies to allocate resources (Gregory et al., 2018). The NPRW may be a victim to the lack of clear decision framing and resource allocation definitions within current U.S. federal conservation legislation, ultimately resulting in political apathy and disregard.

Although this research did not specifically study the policy process for endangered species in the U.S. government, the failure to create a recovery plan for the NPRW for 5 years may signal that decision-makers are practicing conservation triage methods, using resources for species like the NARW that are deemed to be more easily brought back from the brink of extinction. Future research should seek to understand overarching decision framing and values for endangered species prioritization at the federal level of U.S. government.

ii. Media Effects on Policy

Another likely explanation for disparate political effort between the two species may be explained due to the amount of media attention that was given to the NARW and the types of frames that have been used to construct the issue of its conservation. Mass media has the power to set the policy agenda and has a role in defining environmental problems within the social and political landscapes (Scheufele & Tewksbury, 2007). From 2008-2020, 170 articles (inclusive of articles that were published in more than one publication) were published just within U.S.-based journals, magazines, web-based publications, and newspapers about the NARW, compared to 11 articles (including duplicates) about the NPRW. Although no causal conclusions can be made between policy prioritization and increased media coverage for the NARW, the correlation between increased media coverage and increased policy action for the species supports agenda setting theory that coverage of a topic in media can spur more political attention and action (Shaw, 1979). This



correlation also reinforces Stone's (1989) idea that topics that are discussed in media as "causal stories," or stories that have a clear cause for the problem, achieve more prominent status on the political agenda. Stone asserts that the most pervasive issues on the policy agenda are ones that have a clearly defined anthropogenic cause or identified bad actor (Stone, 1989). A major theme in NARW coverage found in this study was anthropogenic threats. Ship strike and entanglement, both threats linked to human behaviors, were highly emphasized in NARW articles. The clear problem definition of NARW extinction constructed by media through clear anthropogenic causes may account for increased prominence on federal policy agendas and therefore more political action. Although the NPRW does have the same anthropogenic causes for its path to extinction, its lack of general themes of lack of action and data lacks an emphasis on human causes to the issue of its extinction, possibly accounting for its decreased policy effort.

### iii. Focusing Events

The lack of what Scheberle (1994) calls "focusing events" for the NPRW may also have contributed to lesser policy creation. Focusing events are crises that draw attention to a certain issue that may trigger policy creation and provides a consistent "hook" for sustained attention in mass media (Scheberle, 1994). The unusual mortality event (UME) that was seen for NARW in 2017 may have served as a collection of "focusing events," drawing attention from local and national media and triggering policy creation for the

species. This mortality event, although still occurring, involved many whale carcasses washing onto shore on the East Coast of the U.S. and Canada, which spurred attention from local actors and media outlets. The declaration of the UME from NOAA allocated federal resources through the Marine Mammal Protection Act to mitigate threats to the species' mortality. Coverage of death events was more frequently mentioned (n=491) than threats (n=185) in NARW articles. The lack of such events for the NPRW may have led to lesser local engagement and media attention. Using Down's (1972) issue-attention cycle, a media theory that explains the rising and falling of an issue in the public agenda, the sustained NARW death events that were covered explicitly in the media may have triggered the issue of NARW conservation to move through the cycle more than once, thus generating new public interest in the issue each time. Increased time and prominence of the issue on the public agenda, could increase prominence on the political agenda and generate greater policy over time.

#### iv. NGO Advocacy

Another possible explanation for the mismatched political effort between the two species may be the lesser advocacy by NGOs for NPRW conservation as compared to NARW conservation. NGOs represent powerful actors that can push an issue forward on the political agenda and spur action (Stroup & Wont, 2018; Betsill & Corell, 2007). Both the NARW and NPRW received advocacy from powerful national and international environmental

NGOs as evidenced by the mentions of NGOs in content analysis (Figure 4). However, the NARW has received more advocacy effort from local NGOs on the East coast. In some cases of endangered species conservation, local NGO involvement has been highly successful in creating conservation action. For example, one study found that the endangered pangolin, which has historically not been prioritized for conservation, likely gained prominence on the political agenda due to sustained efforts of local NGOs in promoting its conservation and guiding pangolin conservation efforts of international environmental NGOs (eNGOs) (Shibaike, 2022). A similar process may have been achieved for the NARW, where smaller local NGOs like the NEaq and Center for Coastal Studies maintained high advocacy for the NARW over time and guided international NGO efforts successfully to promote political action for the species. The NPRW has had involvement from international NGOs but has lacked any sustained action from local smaller eNGOs- a difference that may account for lack of political action. However, findings from this study only support a correlation between local NGO involvement and policy creation and cannot attribute cause to eNGO intervention in advocacy efforts.

#### *Origin and Frequency of Articles*

The NARW received significantly more media attention, with a total of 143 unique articles that were published in magazines/journals, web articles, and newspapers, compared with 6 unique articles for the NPRW. The lack of data about the NPRW may have played a role in its lesser presence as a topic

in mass media. Less information on the species may have made it harder for the media to employ engaging frames or hooks to talk about the issue. This is evidenced by the number of articles that were published in the associated press (a media outlet that was not considered in this study), but not picked up by local news outlets (n=11), compared to the number of articles published in mass media (n=6).

Both the NARW and the NPRW received most of their media attention from media outlets that were geographically located close to the issue. The NPRW's most frequent news sources were the Anchorage Daily News and the Alaska Dispatch, both local to the Gulf of Alaska, where NPRWs are commonly found (Marques et al., 2011). The NARW also received the most frequent coverage from news outlets local to its habitat, including the Cape Cod Times (in Massachusetts) and Brunswick News (in Georgia), local to their spring feeding grounds (Cape Cod) and calving grounds (Georgia) (Pettis et al., 2021). News media select environmental topics based on the relative importance to the intended geographic area of catchment for the media source (Wakefield & Elliot, 2002), which may explain why local news outlets were the most frequent media messengers for both species. A prominent outlier to this correlation is that the 3<sup>rd</sup> most frequent media source (n=13) for NARW articles was The New York Times, a publication with a catchment area that, although within the geographic distribution for the NARW, does not see great population presence (Pettis et al., 2021). The New York Times is a media source that is read widely nationally and internationally (George & Waldfoegel,

2006). Coverage of NARW as a topic in this media source demonstrates that the NARW has achieved prominence in the national public agenda. Coverage of the species in the New York Times may also signal to the American public and policymakers that the conservation of the species is an issue of national importance.

### *Article Tones*

Findings did not support hypotheses that NARW articles would have more positive tones and NPRW more negative tones. The small sample size (n=6) of articles for the NPRW makes comparison to the NARW sample and strong statistical conclusions difficult. Distribution of NPRW articles across positive, negative, and neutral tones was equal. However, this finding should be considered in light of the small sample size. Due to these limitations in NPRW sample size, only NARW articles were analyzed. Most NARW articles were found to be neutral (43%), which may reflect journalistic norms of objectivity (Boykoff & Boykoff, 2007; Bennett, 2010). Pervasiveness of negative articles in the NARW sample closely followed neutral articles, with 37% of articles receiving a negative tone. Similar findings for the overall tone of articles about Piping Plovers, an endangered North Atlantic Seabird, were found, with 46% having neutral tones, but differing in results of positive articles prevalence with 48% positive articles in their sample (Dayer et al., 2017). In coverage of ocean conservation in general, researchers and communicators have vocalized concerns over pervasive pessimism of coverage of current

ocean issues and the effects that this may have on audience feelings of hopelessness and inaction (Jacquet et al., 2015). However, a recent study found that most articles about ocean issues were neutral and that positive and optimistic language was more pervasive in stories than pessimistic language (Johns & Jacquet, 2018). Amongst the most commonly covered topics of marine conservation in media, articles that centered on issues of endangered species and/or population status used pessimistic “doom and gloom” language more frequently than other topic categories (Johns & Jacquet, 2018). NARWs may represent an anomaly in toned coverage of endangered species with significantly more negative articles than positive articles, but do reflect general trends in neutrality in the majority of the coverage of the species. There is debate in literature on whether optimistic or pessimistic coverage of biodiversity conservation is most successful in creating pro-environmental behavioral change, but little evidence has been seen for the effectiveness of optimistic messaging (Kidd et al., 2019). With a decline in environmental desks at major news organizations and pressure for “clicks” in an internet-dominated news space (Hansen & Cox, 2015), emphasis on bad news and a bias in negative tone in news can be seen in the news cycle (Arango-Kure et al., 2014; Soroka et al., 2019). A drive for “bad news” with pessimistic coverage of topics, may have led to increased use of negative tones in NARW articles.

### *Conflict and Solutions Frames*

Findings supported hypotheses that NARW articles would more conflict and solutions framing than NPRW articles. However, the ability to compare overall article frames between these species is limited due to the small sample size of NPRW articles. The majority of NPRW articles used neither conflict nor solutions framing, while conflict-oriented solutions-oriented and conflict-and-solutions-oriented articles were evenly distributed. NARW also had a high frequency of articles that used neither of these frames (37% of sample), but articles were most commonly employed solutions-oriented (39% of sample). Findings of frequent use of solutions frames support results from a review of media coverage of ocean science, where over 45% of all articles included some sort of solution and 62% of all articles focusing on species and/or population status specifically employed solutions framing (Johns & Jaquet, 2018). Policy solutions were the most common conservation solution mentioned for both species in articles, which is supported by the findings of Johns & Jaquet (2018), that found media coverage of marine species often mentioned policy interventions as conservation solutions. Media emphasis on policy solutions for the NARW may also reflect media attention on the high level of policy creation that has been afforded to the species. Implemented policies were the most frequently referenced policies (over proposed and international policies), suggesting that media coverage may be incidental to policy output and discussion for the species. Identifying solutions to environmental problems in media has been found to increase pro-environmental behaviors, attitudes, and engagement (Obermiller, 1995; Van

de Velde et al., 2010; Dickinson et al., 2013; Veiga et al., 2016; Jacobs et al., 2015). Future research should use experimental research designs to understand whether solutions frames may influence public support and engagement for endangered species conservation.

The lack of conflict and solutions framing in NPRW articles may be a result of a lack of information or identifiable solutions to issues of the species' conservation. It also may signal the absence of NPRW in major socioeconomic conflict, a factor that, when present, is shown to bolster conservation campaigns for endangered species (Douglas and Verissimo, 2013). Political conflict was the most frequently mentioned conflict for NPRW (n=11), with no mentions of social conflict or economic conflict in the species' media coverage. The NARW had greater discussion of social and economic conflict, with fisheries conflict being the most frequent (n=87). The NARW's involvement in the socioeconomic dimensions of fisheries on the East Coast and the resulting human-human conflicts that have arisen from such issues may increase psychological distance, or the social, temporal, or geographical distance of an audience to an issue (Kusmanoff et al., 2020). Reducing psychological distance and reframing a message to increase the proximity of an issue's effect on the perception of the audience's daily lives (ie. fisheries closures from right whales may increase the price of lobster for locals) has been shown to increase engagement in environmental issues (Jones et al., 2016). NARW's emphasis as a subject in fisheries conflicts, U.S. political conflict (n=79), economic conflict (n=38), social conflict (n=10), and



international political conflict (n=6) likely increased psychological distance to the issue, possibly increasing NARW conservation public engagement and action.

### *Environmental and Economic Frames*

Across both species, most articles had an overarching environmental frame. The large majority of NARW articles (88% of sample) and NPRW articles (83% of sample) were skewed towards articles that were generally framed with environmental themes, with the rest of the articles in both samples having both environmental and economic frames. The comparison of economic and environmental frames in endangered species communication has not been emphasized in literature. The pervasiveness of environmental frames in the media coverage of both species may suggest that preventing species from going extinct is a largely altruistic act in which only environmental frames and reasoning may apply. Population biology was the most common environmental frame for NARW (n=298) and NPRW (n=23) articles. Population biology frames included references to the number of individuals in the population, birth and death rates, and similar population demography information (Figure A1, Appendix). This finding supports that of a recent study that found that of the news that discusses ocean science, 39% of recent (2001-2015) articles focused on species or species' population status as the main topic (Johns & Jacquet, 2018). Although not yet studied in literature, the emphasis on population status that was found in this study and past studies

about endangered species media coverage may demonstrate reflect that this topic is politically salient, as suggested by the systematic governmental classifications in policies like the ESA, or that using statistics such as number of individuals and degree of threat may serve as an engaging hook or context in journalists' writing.

Despite being employed significantly less (n=51 across both species), climate change represented another common environmental frame. Climate change was often referred to in the context of the exponentially increasing mean temperature in the Gulf of Maine and Bay of Fundy that has driven prey populations and thus NARWs North into areas that are not fully protected, intensifying existing threats like ship strike and entanglement for the species. Framing whale extinction as an issue of climate change may have unintended consequences in "misdirecting audience segmentation," where unintentional feelings of skepticism or anger associated with audience perceptions of other issues like climate change may become associated with issues of whale conservation (Kusmanoff et al., 2020). Alternatively, emphasizing the role that climate change has had in the plight of the NARW may also create a more urgent context for conservation for the species, while also serving as a rallying point for pro-environmental policy and changes in behavior. Further, the role of climate change in exacerbating existing threats to whale mortality may function to increase the case for NARWs as a symbol or flagship for threats to cetaceans in general, like climate change.

Economic benefits to preventing species from going extinct are well documented (Naidoo & Adamowicz, 2005), and for whales particularly, who provide ecosystem services in their roles in supplying vital nutrients to ecosystems (Savoca et al., 2021) and as a critical carbon sink (Mills et al., 2010). Ecosystem services have been a topic in coverage of marine conservation issues that have been framed using economic themes (Dean et al., 2019). However, in NARW and NPRW articles, references to ecosystem services were related back to the benefits to other species or the ecosystem as a whole, rather than increasing the psychological distance and relating them back to socioeconomic issues. The majority of conflict-oriented articles in both samples used economic frames in reference to the fishing industry or developers (ie. offshore wind, oil, etc). Framing development as a conflict to endangered species conservation is not new and similar findings were seen in Smith's 1997 study of endangered species framing on network tv- finding that the majority of coverage framed pro-development as an opponent to species conservation (Smith, 1997). The large skew in environmentally-framed articles, although still lacking significant examples in communication literature, suggests that mass media constructs issues of species conservation as mainly an environmental issue, which is shown to have some positive impacts on pro-environmental attitudinal and behavioral shifts over economic framing (Dean et al., 2019; Reddy et al., 2020).

### *Content Themes and Agenda Setting*

Content was coded and organized into themes to understand what aspects of each species' conservation may be emphasized in media and signaled as important in public and policy agendas through the process of second-level agenda setting (Stacks et al., 2015). NPRW's content was coded and organized into the themes of 1) Inaction and 2) Unknown and elusive species. These two themes reiterate that the NPRW cannot be saved due to its lack of information and "elusiveness" making conservation efforts hard, translating into the second theme of inaction, and reinforcing the idea that conservation may be "futile" for the species, ultimately implying a lack of governability that can be applied to change the course of NPRW endangerment. Media's emphasis on these themes may reflect the treatment of the species in U.S. federal policy agenda and practices of conservation triage, well also asserting to audiences that the species is beyond saving.

NARW article themes included 1) ongoing research 2) anthropogenic threats 3) economic and fisheries conflicts, and 4) population status. High frequency of coverage of natural science research (n=172) may indicate to audiences that research on the species is of high importance and thus deserving of media attention. Research efforts were often described in detail from a first person's perspective, allowing for vivid depictions of conservation work being done to be demonstrated to audiences. The major anthropogenic threats that were emphasized in articles, ship strike, and entanglement, were reflected as priorities in policy solutions. Media emphasis on these threats may

reflect or assert policy action to mitigate these specific threats. Past research has found that the certain threats that are emphasized in media coverage of various ocean issues are the same threats that are identified by researchers as most critical to the issue, which moves conservation efforts in productive directions through public agenda-setting focused on critical threats (Johns & Jacquet, 2018). Coverage of economic conflicts, fisheries conflicts, and population status were all themes that media provided consistent updates on throughout time and media source. The state of the lobster fishery and the economic consequences for lobster fishers was a consistent hook for articles as was birth and deaths events of individual or groups of whales. High frequency of updates provided on these two themes may have worked to increase public salience and interest in the topics and NARW conservation in general.

Both species shared an emphasis on the main cause of their endangerment and namesake: historic whaling. This shared theme was mentioned less (n=86 across both species) than other causes of death and threats to species mortality but was consistently emphasized in its role in the path to extinction for both species. Whaling was primarily discussed in reference to colonial commercial whaling (17<sup>th</sup>-19<sup>th</sup> centuries) as the central cause for the current depleted state of each species' population.

Although not analyzed in this study, mentions of historic whaling may have been used as an attempt to morally frame the case for right whale conservation. The NARW specifically may act as a flagship or symbol of the

larger tragedy of commercial whaling on the East Coast, making the moral weight of its extinction heavier than that of the NPRW. This is compounded by the highly visible harms of entanglement and ship strike for the NARW specifically, which has been demonstrated through media attention. Ideas that the harms of whaling are persisting through current shipping and fishing practices have recently been argued by Michael Moore in his 2021 book, *We are all Whalers: the Plight of Whales and our Responsibility*, which uses the NARW as the main example of the suffering caused by entanglement and ship strike to whales in general and the moral responsibility to prevent such events. The NPRW was also a victim to commercial whaling (but on the opposite coast) in America and is subject to the same current anthropogenic threats. However, evidence from this content analysis demonstrates that it does not serve as a socio-cultural symbol for the anthropogenic harm to whales like the NARW does. Although, not evaluated in this study, increased moralistic framing of the extinction of the NARW, consistent emphasis on the morally inundated cause of its endangered status, as well as its standing as a larger symbol and flagship species for the threats to whales in general, may have led to its higher prioritization on policy agendas.

### *Study Limitations*

Limitations in the degree of conclusions that can be drawn from this research are a result of the comparably small sample size of unique articles about the NPRW and the lack of causal conclusions that can be drawn due to

study research design. The small sample size for the NPRW only allows for loose trends to be understood from 6 articles about the species and any comparison to NARW media coverage can only provide insight to what trends may be found in a larger sample size. Additionally, this study's research design only allows for correlations between policy and media coverage to be drawn rather than causal conclusions. Although, causality is particularly complicated to study in linking policy and media, future research should aim to provide further examples to strengthen trends found in this case study. Experimental research designs should also be employed to test how the various tones, primary frames, and secondary frames in this study may affect public conservation support for endangered species.

## CHAPTER 6

### CONCLUSION

This case study represents an example of how media may drive and reflect the public and political environmental agenda in the United States. Correlations between increased and sustained media attention and policy prioritization in the case of the NARW compared to the NPRW, generally reinforced agenda-setting theory and Down's issue-attention cycle. Loose evidence from this research supports the idea that media has constructed the issue of NARW conservation as an environmental problem, having social and political importance, whereas the conservation of the NPRW is constructed as mainly a scientific problem that has not reached high enough sociopolitical salience to be considered an "environmental" problem (Hansen, 1991). In summary and in no particular order, explanatory factors for the demonstrated differential conservation action between the NARW and NPRW shown in this case study are:

*Possible Explanatory Factors for Differential Conservation Action between the NARW and NPRW:*

- 1) More NGO involvement in NARW Conservation, driving advocacy efforts, and increased presence on the policy agenda.



- 2) NARW deaths served as focusing events- directing and increasing public attention.
- 3) Conservation triage practices by the U.S. government have allocated resources away from the NPRW.
- 4) The NARW may act as a socio-cultural symbol or flagship for the sustained harm to the whales in general.
- 5) NARW conservation is frequently featured as a topic in prominent national news outlets, signaling it is an issue of national importance to the public and policymakers.
- 6) More coverage of NARW conservation than NPRW conservation in mass media secures the NARW's prioritization on the policy agenda.
- 7) Increased use of solutions framing in coverage of the NARW may have spurred increased conservation action.
- 8) The NARW's involvement in greater sociopolitical conflict (ie. fisheries conflicts), may increase its salience as a topic on the public agenda.

Overall, this study highlights the need for more research into media's involvement in the prioritization of species for conservation. The case of the NARW and the NPRW represent a larger issue within U.S. prioritization of endangered species, that highlights the need for consistent assessment and reflection on drivers for conservation action in an age plagued with extinctions. Studies of media's attention and involvement in the conservation of different species allow for assessment of the effectiveness of various communication

techniques, such as framing and tone, in bolstering public support and securing prioritization on the policy agenda. Strategic communication of environmental topics in media represents a powerful tool to drive positive environmental change. Further examples of endangered species communication, in particular marine species, should be studied to better communication techniques for scientists, policymakers, and journalists and to improve conservation practices in general.

## APPENDICES

### **Figure A1.** Codebook for Frames, Tones, and Content Categories

#### **Level 1 analysis: Descriptive Codes/Article Attributes**

*These codes are to simply identify the article amongst the sample. They also offer some basic info about article source, body of text, and date of publication.*

#### **Article\_ID**

This is the number that has already been assigned to each article, as given by the spreadsheet of the sample of articles per species.

ie. "009"

#### **Media\_name**

This is the formal name of the media company/newspaper that produced the article

ie. "New\_York\_Times"

#### **Date\_Pub**

This is the date that the article was originally published in month\_date\_year format (MM\_DD\_YYYY).

ie. "03-\_2\_2011"

#### **Word\_Count**

This is the number of words in the body of the article. This count excludes the headline, byline, and any picture or graphic captions.

ie. 357

#### **Author**

Enter author's first and last name with an underscore between first and last names. If there are multiple authors, include only the author's whose name is written first.

ie. Colette\_soulier

#### **Headline**

Enter the headline of the article, with all words, separated by underscores.

ie. "Whale\_entangled\_in\_Massachusetts\_bay"

#### **Level 2 Analysis: Tone**

*These codes to identify the emotional affect or ‘tone’ that the author uses in the article to describe the topic in the article.*

### **Tone**

Enter the associated ‘tone’ of the ENTIRE article. Tones are defined below.

#### **Option #1 Positive Tone (Enter as “Positive”)**

A positive tone should be coded when the author of the article uses upbeat and hopeful language to describe the general topic. The author could describe the topic in a way that makes the reader feel joyful, humored, relaxed, excited, hopeful, happy, etc.

le. “Positive” could be coded for a body of text that says,

“Social media is a great way for people around the world to meet each other and share knowledge. Social media has grown exponentially in the last decade, leading to more international friendships than ever before.”

#### **Option #2: Negative Tone (Enter as “negative”)**

A negative tone should be coded when the author uses language that is argumentative, angry, or abrasive. The author could describe the topic in a way that makes the reader feel hopeless, sad, mad, upset, etc.

le. “Negative” could be coded for a body of text that says,

“Social media is the plague of the internet era. It has created a generation that cares more about their image online than about the people and events happening around them. Friendships and relationships are squandered because of Gen z’s obsession with the drug that is social media.”

#### **Option #3: Neutral Tone (Enter as “neutral”)**

A neutral tone should be coded for an article that does not use negative or positive language, but is simply stating the story without emotional affect.

le. “neutral” should be coded for a body of text that says,

“Social media has been a popular use of the internet since the Early 2000’s. Today, many people, young and old, use it to communicate and keep in touch with others.”

### **Primary Frames**

*This analysis is used to identify the primary frame, or general lens through which the topic is approached/talked about, of the article.*

## **Primary Frame Dyad A: Environment vs Economic (unit= whole article)**

### **Option #1: Environment:**

Any article that primarily frames the issues discussed with an environmental lens. This includes discussing the issue as one that is primarily related to environmental conservation, environmental health, biodiversity loss, protection of natural areas, or ecosystem-related concerns.

### **Option #2: Economy:**

Any article that primarily frames the issues as one that relates to economic losses, gains, job loss, job gains, expenditure, local economy, or international economy.

### **Option #3: Both:**

Equally frames the issues in terms of economic and environmental frames.

### **Option #4: Neither**

Does not frame the issue using defined environmental or economic framing.

## **Primary Frame Dyad B: Conflict-oriented vs Solutions-oriented (unit= whole article)**

### **Option #1: Solutions-oriented**

**Discusses** the topic by identifying solutions to issues, past positive/successful events, cooperation between groups/people to serve a greater goal, tools used or could be used to ensure species survival, or new research that seems promising to aid in species recovery.

### **Option #2: Conflict-oriented**

Discusses the topic through the lens of the societal conflict that it is entangled in. This could be fisheries conflict, political conflict, or social conflict. Often this frame includes coverage of two sides of opinion on the issue and how it is affecting both sides.

### **Option #3: Both**

Equally discusses conflicts between parties as it does provide solutions to such conflicts.

### **Option #4: Neither**

Does not discuss conflict or solutions.

## **Secondary Frames**

*This analysis is used to identify the secondary frames, or more specific attributes that are important to research questions within larger primary frame categories.*

### **Primary Frame #1: Environment**

#### **Secondary Frames**

**a. Global Biodiversity Loss**

Discusses the issue by identifying the species as one of many that we are losing due to the biodiversity crisis. Also, may identify the conservation of the specific species as important to sustain overall successful ecosystem functioning.

**b. Pollution**

Discusses the topic through the lens of pollution to the environment, including environmental destruction from fisheries gear, plastic pollution, or any other anthropogenic materials negatively affecting the environment.

**c. Ecosystem Considerations**

Discusses the topic through an ecosystem lens. This could include mentions of trophic levels, general ecosystem health, important species-species interactions, keystone species, ecosystem functioning, predator-prey relationships, etc.

**d. Population Biology**

Any discussion of births, deaths, number of individuals, population health etc.

**e. Climate Change**

Any mention of climate change or climate change related events.

### **Primary Frame #2: Economic**

#### **Secondary Frames:**

**a. Economic Gains**

Discussion of potential or marked increase in jobs, revenue, or business potential

**b. Economic Losses**

Discussion of potential or marked decrease in jobs, revenue, or business potential

**c. Local Economy**

Discussion of positive or negative impacts to town or state-wide job markets, local market growth or failure, etc.

**d. International Economy**

Discussion of positive or negative impacts to outside US borders/global job markets, local market growth or failure, etc.

**e. US Government Spending**

Mention of how much upholding a policy might cost, or a branch of the US government spending on conservation activities.

**3. Primary Frame #3: Solutions-oriented**

Secondary Frames:

**A. Scientific and Technological Solutions**

Any solutions that are based in natural sciences or technological sciences like engineering (ie. Creation of ropeless fishing gear to reduce number of entanglements, smart buoys to track whales, etc).

**b. Policy Solutions**

Any solutions that are based in federal, state, or local policy. (ie. Speed reductions policy implementation in areas where right whales feed). These are solutions to

**c. Social Solutions**

Any solutions that involve cooperation and/or conversation between organizations, nonpolitical entities, groups of people or individuals.

**4. Primary Frame #4: Conflict-oriented**

Secondary Frames:

**a. Social Conflict**

Discussion of conflict between different groups of people or individuals with different interests and/or opinions about the issue. This category only includes groups that are not employed by or fall under the jurisdiction of any branch of government. The conflict is also not politically motivated. (ie. recreational boaters are upset with right whale activists who suggest that they should not boat in certain areas)

**b. Political Conflict**

Discussion of conflict between politically affiliated groups or between persons that disagree specifically on political decisions and/or

policy-making. Also includes conflict between elected officials and different branches and levels of government. (ie. An elected representative for Massachusetts refuses to support a bill to create a marine protected area for right whales unless she obtain support for her energy bill)  
Also includes ngo-government conflict about policy.

**c. Economic Conflict**

Mention of an issue between two parties that is about monetary gain, losses, or concerns with jobs, or the market. (ie. Shipping companies take up issue with right whale activists because they have to alter shipping lanes due to the whale's presence)

**d. Fisheries Conflict**

Any conflict that involves recreational or commercial fisheries groups, companies, or individual fishers. (ie. Massachusetts DEM changes closes certain fisheries management areas due to right whale presence, causing commercial fishermen to be upset)

## Content Categories

### 1. Parent Category = Whale Mortality

#### Child Categories:

- **Child Category #1: Whale Mortality Threat**

*This Category represents all discussions of the threats of whale mortality/death. The type of death will be further categorized by the grandchild categories below.*

#### **Grandchild Category= Type of threat:**

- **Threat: Entanglement**= Mentions the threat of a specific entanglement scenario or the general threat of entanglement in general. This code should not be used to describe entanglement events that did in fact occur.
- **Threat: Ship Strike** = Mentions the threat of a specific ship strike scenario or the general threat of ship strike in general. This code should not be used to describe ship strike events that did in fact occur.



- **Threat: Whaling (present)** = Mentions the threat of modern-day whaling in general in relation to the NARW or the NPRW or whales as a group altogether.
- **Threat: Whale death (undefined/other)**= Mentions the threat of whale mortality/death in relation to another category that is not listed above and/or the threat of deaths and subsequent implications of whale death on the NARW and NPRW populations.
- **Child Category #2: Whale Mortality Event**  
*This Category represents all discussions of actual events of whale mortality/death specific to either NARW or NPRW individuals or groups. The cause of the death event will be further categorized by the grandchild categories below. "leading cause of death" can also be used as an event since it is talking about specific events that have happened and are attributed to a certain cause.*

**Grandchild Category= Type of Event:**

- **Event: Entanglement**= Mentions specific entanglement event related to NARW or NPRW individual or group.
- **Event: Ship Strike** = Mentions the threat of a specific ship strike scenario or the general threat of ship strike in general. This code should not be used to describe ship strike events that did in fact occur.
- **Event: Whaling (past)** = Mentions occurrences of historic (pre-1970) in general in relation to the NARW or the NPRW or whales as a group altogether.
- **Event: Whaling (present)** = Mentions modern-day whaling (post 1970) events specific in to the NARW or the NPRW or whales as a group altogether.
- **Event: Whale Stranding**= Mentions occurrences of NARW or NPRW stranding events.
- **Event: Whale death (undefined)**= Mentions the instances of whale mortality/death in relation to another category that is not listed above.

**2. Parent Category: Policy**

**Child Categories:**

- **International Policy**

Mention of international policy being proposed, implemented, or simply discussed. This includes mentions of federal and state/provincial policies in other countries and international agreements between countries.

- **Proposed Policy**  
Mention of a policy being proposed. This is different from federal or state 'pushes' for policy. Proposed policy refers to bills or a formal letter from an institution proposed a certain policy related to the species. Policies relating to the species include any policy that affects the conservation of the species. The policy does not necessarily have to be specifically focused on the species, but rather simply affects the species' conservation.
- **Implemented Policy**  
Mention of a policy being implemented. Policies relating to the species include any policy that affects the conservation of the species. The policy does not necessarily have to be specifically focused on the species, but rather simply affects the species' conservation.

### 3. **Parent Category= Advocacy**

#### **Child Categories:**

- **NGO**  
Any mention and/or description of a non-governmental organization.
- **Local Advocacy**  
Mention of small scale (community-based) efforts by organizations or individuals in communities to advocate for conservation/protection of the species. This only applies to advocacy for environmental causes/whale protection. This advocacy must be smaller than nation-wide advocacy. This only applies to advocacy for environmental causes/whale protection specific to the species.
- **Nation-wide Advocacy**  
Mention of larger scale (nationally emphasized) efforts by organizations or individuals in communities to advocate for conservation/protection of the species. This includes mentions of advocacy on the national (U.S.) stage that involves efforts coordinated across multiple states. This only applies to advocacy for environmental causes/whale protection specific to the species.
- **International advocacy**  
Mention of the largest scale (internationally emphasized) efforts by organizations or individuals in communities to advocate for conservation/protection of the species. This includes mentions of advocacy on the international (ie. more than one country) stage that

involves efforts coordinated across multiple countries. This only applies to advocacy for environmental causes/whale protection specific to the species.

#### **4. Parent Category= Research**

##### **Child Categories**

- **Natural Science Research**

Research related to biology, chemistry, ecology, geology, physiology, physics, or any combination of these.

- **Social Science Research**

Mention of research related to anthropology, archaeology, economics, geography, history, law, linguistics, politics, psychology, and sociology.

- **Threat Status**

Mention of the species threat status as determined by research, the IUCN, NOAA, or another institution.

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