Beyond the Implementation Gap:
A Narrative Analysis of Nova Scotia's *Endangered Species Act*

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Abstract

Many species continue to decline in numbers in Canada, despite a complex tangle of laws related to the conservation and protection of biodiversity. Nova Scotia's standalone legislation, the *Endangered Species Act* (*ESA*) has been in place since 1998, with an overarching goal to protect at-risk wildlife across the province. However, for reasons that have not yet been documented in academic literature, key recovery activities under this Act have been delayed in their delivery or remain altogether absent. Through the first known systematic content analysis of both the *ESA* itself as well as related government and public media publications, this research seeks to provide insight into why this legislation has not produced its intended results. Findings suggest less than half (46%) of the actions prescribed by the *ESA* are discretionary, meaning that no guarantee exists to ensure the actions will take place, undermining the overall efficacy of the Act. Furthermore, relative to public media narratives pertaining to the *ESA*, government narratives tend to offer a much more positive, less nuanced representation of the Act which disproportionately emphasizes the listing process. Thus, this study highlights the need for a critical and observant public media, capable not only of advocating for more stringent implementation of the Act, but also of enhancing public scrutiny aimed at the underlying ambition of this legislation. In reversing the negative trends in biodiversity observable in Nova Scotia, I recommend that (1) discretionary language in the *ESA* be removed in favour of enforceable standards, (2) public media increasingly continue to offer critical perspectives related to the implementation of the *ESA* as well as its conservation outcomes, and (3) both government and public news media augment their coverage of other, non-listing actions taken under the *ESA.* In this way, important mechanisms of public accountability for government-mandated species at risk protection can be strengthened, ultimately increasing the capacity of Nova Scotia to effectively address the biodiversity crisis at hand.

Key words: *Endangered Species Act,* Nova Scotia, *Species at Risk Act,* biodiversity, conservation, narrative analysis, media, sentiment, environmental legislation, discretionary language

Acknowledgments

Chapter 1: Introduction

1.1 Background

Canada is home to an incredible diversity of wildlife, containing some of the world's most iconic species (WWFC, 2020). However, a steady decline in the overall variety of species and their populations has meant that in Canada, "Biodiversity […] is at risk, with thousands of species in danger of disappearing" (Commissioner of the Environment and Sustainable Development, 2022). From 1970 to 2016, species assessed as at risk by the national Committee on the Status of Endangered Wildlife in Canada (COSEWIC) declined by an average of 59% (WWFC, 2020; Ray et al., 2021). This reality points to an overall trend in the inefficacy of the Canadian policy response to species at risk and the biodiversity crisis at large (Bankes et al., 2014; Turcotte et al., 2021). Indeed, in the decade following species' listing under the federal *Species at Risk Act* (*SARA,* 2002), populations continued to decline by an average of 28% (WFFC, 2017). Thus, it does not seem that the complex tangle of laws directly related to biodiversity, present in every jurisdiction across the country, has been successful in halting species loss (Ray et al., 2021).

In this context, a key challenge to effective conservation action has been the jurisdictional fragmentation which exists both between federal and provincial governments and public and private landowners (Illical & Harrison, 2007; Parrott et al., 2020). For instance, except in rare emergency scenarios, *SARA*'s critical habitat protection orders apply exclusively on federally owned Crown land in the provinces (Environment Canada, 2007). Given that the distribution of federal lands varies greatly province to province, so too does the applicability of *SARA* (Environment Canada, 2007). In Nova Scotia, federal Crown land amounts to approximately 3% of the province's land mass (Nova Scotia Department of Natural Resources and Renewables, 2021a; Treasury Board of Canada Secretariat, 2022). The resulting gap in coverage illustrates the need for provincial species at risk legislation, which in Nova Scotia, exists under the form of the *Endangered Species Act* (*ESA,* 1998). The purpose of this legislation is to "provide for the protection, designation, recovery and other relevant aspects of

conservation of species at risk" on provincial land – private and public areas included (*ESA,* 1998; Nova Scotia Department of Natural Resources, n.d.).

While the broader application of this Act might seem sufficient to achieve its goal of "preventing any species in the Province from becoming extirpated or extinct as a consequence of human activities," in practice, Nova Scotia's high rate of private land ownership – over 70%, the highest in the country – complicates the matter (*ESA,* 1998; Nova Scotia Nature Trust, n.d.). This is because key recovery activities under the Nova Scotian *ESA,* like the identification of core habitat, defined under section 3 of the Act as "specific areas of habitat essential for the long-term survival and recovery of endangered or threatened species, may be designated on private land "only where the Minister is satisfied that […] public lands [are] not sufficient to meet the recovery needs of the species" (*ESA,* 1998, s. 16(4)). This effectively leaves the identification of core habitat in over 70% of Nova Scotia up to the discretion of the Minister, who may (but is not legally required to) enter into voluntary stewardship agreements with private landowners whose lands have been identified as core habitat (Nova Scotia Nature Trust, n.d., *ESA,* 1998). The propensity for the Nova Scotian *ESA* to rely on voluntary stewardship as an alternative to regulation, combined with a high private land ownership makes public participation and buy-in particularly important in the Nova Scotian context (Illical & Harrison, 2007; Nova Scotia Nature Trust, n.d.).

Generating this support, essential to the overall success of the *ESA,* then becomes critically important. Here, it is useful to consider the role of the public media and its capacity to trigger accountability mechanisms among government entities (Jacobs & Schillemans, 2016). For example, media coverage was quick to report findings from the province's auditor general that the Minister of Natural Resources and Renewables, responsible for the implementation of the *ESA*, was "not carrying out planning and completing species recovery activities satisfactorily" (Office of the Auditor General of Nova Scotia, 2016, p. 1; Chisholm, 2021). Media reports critiquing the province's approach to the conservation of Mainland Moose, an endangered species whose population has declined by at least 20% over the past 30 years have

also proven popular, often suggesting that the provincial listing of species and subsequent creation of recovery plans or actions have failed to reverse species population decline (McGregor, 2019; Campbell, 2021; Lycan-Lang, 2021; Nova Scotia Department of Natural Resources and Renewables, 2021b). These reports do not represent the first critiques leveraged against the Nova Scotian government over its lackluster implementation of the *ESA*, nor the last.

In effect, many of these tensions came to a head on May 29th, 2020, when a highly publicized provincial supreme court judgment with regards to species at risk in Nova Scotia was delivered by Justice Christa Brothers (*Bancroft v Nova Scotia*, 2020). In her analysis, Justice Brothers found that Nova Scotia had failed to fulfil its legal obligations under the provincial *Endangered Species Act* (*ESA*, 1998) with regards to the case's six representative species, all experiencing significant population decline: Mainland Moose (*Alces alces americana*, or tia'm - uk in the L'nui (Mi'kmaq) language), Ram's-head Lady Slipper (*Cypripedium arietinum)*, Canada Warbler *(Cardellina canadensis)*, Black Ash (*Fraxinus nigra,* or wisqoq*)*, Wood Turtle (*Clemmys insculpta)*, and Eastern Wood Pewee (*Contopus virens)* (*Bancroft v Nova Scotia*, 2020). In response, East Coast Environmental Law (ECE Law) called this judgment a "resounding victory for species at risk in Nova Scotia" and all those that felt that the provincial government had been neglecting its legislated responsibilities (ECE Law, 2021, p. 4).

1.2 Significance of the Study

Gaining a better understanding of how the provincial government has been able to continually neglect its legal obligations under the *ESA* is critical because, like Justice Brothers wrote in the introduction of her *Bancroft v Nova Scotia (Lands and Forests)* decision, "When government is entrusted, through legislation, with duties and responsibilities, but fails to discharge them, there must be recourse" (*Bancroft v Nova Scotia*, p. 2). Further, according to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), failure to counter rapid declines in biodiversity poses serious threats to the sustainability of our planet (2019). Continued biodiversity loss has already, and will continue to, contribute to

significant global economic loss (IPBES, 2019). Given the high stakes of this ongoing species loss, it is clear that governments must act to improve biodiversity outcomes (ECE Law, 2021).

The federal *SARA* has been heavily critiqued in academic literature, but far less attention has been paid directly to the Nova Scotian *ESA* (Illical & Harrison, 2007; Elgie, 2008; Bankes et al., 2014; Turcotte et al., 2021; Ray et al., 2021). Meeting international societal and environmental goals for sustainability, like the Aichi Biodiversity Targets, the 2030 Agenda for Sustainable Development, or even the Paris Agreement adopted under the United Nations Framework Convention on Climate Change, is dependent upon a coordinated effort, including federal and provincial governments, to reverse these negative trends in biodiversity and ecosystem functions (IBPES, 2019). By understanding how the Nova Scotian *ESA* itself is structured as well as how its impacts are being discussed and perceived by implicated stakeholders, more insight can be provided into how processes of public accountability operate in the province as well as how species conservation outcomes might be improved, leaving way for a more sustainable future in the process (Jacobs & Schillemans, 2016; IPBES, 2019).

1.3 Purpose and Objectives of the Study

This research provides an examination of Nova Scotia's *ESA* and its implementation to inform recommendations for improving conservation outcomes through an interdisciplinary approach which draws on legal frameworks, public policy evaluation and social and environmental sciences. Systemic content analyses allowed for the identification of dominant narratives from both the public and the government of Nova Scotia with regards to the province's ongoing struggle to fulfill its legal obligations under the *ESA.* This will provide valuable insight into not only the Nova Scotian *ESA* itself, but also how public perceptions can affect policy implementation and ultimately, conservation outcomes.

Specifically, the objectives are to:

1. Determine the extent to which discretionary language is present in Nova Scotia's *ESA* and explore the impact of this discretion on the ability of the *ESA* to achieve its intended goals.

2. Analyze the provincial government's public-facing narrative using governmental news releases to better understand how it might be justifying or otherwise explaining its actions taken with respect to the Act.

3. Analyze the public media's narrative using news media to better understand the perspectives of implicated stakeholders and what accountability measures they have put forth for stronger implementation of the act.

4. Compare the sentiments and proposed actions found in government and non-government narratives to further investigate the implementation gap and inform potential remedies.

Chapter 2: Literature Review

Looking to pertinent academic and grey literature can help further contextualize the importance of this study. The value provided by these sources differs from that of media articles or governmental press releases in that they offer a comprehensive overview of what is known about the status of species at risk and relevant legislation in Nova Scotia rather than focusing on outlining public and governmental narratives related to this same topic. The ways in which both the public and the provincial government account for the *ESA*'s imperfect results will be the principal subject of this study's research and will consequently be discussed in greater detail in subsequent chapters. First however, a better understanding of the state of research when it comes to species at risk legislation in Canada is needed.

2.1 Nova Scotia's *Endangered Species Act*

To obtain a more rigorous understanding of the existing literature related to Nova Scotia's *ESA,* a Boolean search of Scopus (n.d.) and Novanet (n.d.) was conducted in November of 2022. Articles written in English, related to an evaluation, positive or negative, of Nova Scotia's *ESA* and its subsequent conservation outcomes were targeted. In Scopus, the search string "*Endangered Species Act*" AND "Nova Scotia" brought up four results, none of which were relevant since each referred only to American legislation of the same name. In Novanet, the same search string provided 37 results, of which only one was relevant: East Coast Environmental (ECE) Law's 2015 report, "Protected on Paper Only: Evaluation of Nova Scotia's legal obligations to protect and recover mainland moose and other species-at-risk." This report, the precursor to ECE Law's 2019 and 2021 updates by the same name seems to be one of the only collections of independent literature focused exclusively on evaluating the implementation of Nova Scotia's *ESA*. In an effort to uncover further resources, another search string, "species" AND "risk" AND "list*" AND "Nova Scotia" was used. In both Scopus and Novanet, only one relevant article which critiqued the "lack of adequate protection" for species at risk both regionally and nationally in Canada was found (Dorey & Walker, 2018). Beyond these two critical assessments, Nova Scotia's Auditor General also evaluated the progress of the provincial department responsible for the Act, the Ministry of Natural Resources and Renewables, in successfully implementing the *ESA* in 2016 and provided an update in 2021 (Office of the Auditor General of Nova Scotia, 2016 & 2021).

All of these sources endeavour to quantify the provincial government's failure to adequately fulfill its legal obligations under the *ESA.* In 2019, ECE Law found that the Minister of Natural Resources and Renewables had met their legal obligations under the *ESA* "for just 23 of the 63 species that are listed as endangered, threatened, or vulnerable under the *ESA*" (ECE Law, 2021, p. 3). ECE Law's 2021 update found that two years later, only one additional species had been adequately protected under the act, raising the total of adequately protected species to 24 (ECE Law, 2021). In the same year, Nova Scotia's Auditor General found that the government had still not implemented two out of five of its 2016 audit recommendations

(Office of the Auditor General of Nova Scotia, 2021). As written by the Auditor General, these uncompleted recommendations for the Minister of Natural Resources and Renewables to implement with regards to the *ESA* were to (1) "establish recovery teams, and develop and review recovery and management plans for species at risk, as required under the *Endangered Species Act*" and to (2) "review all species listed in the Endangered Species Regulations and amend or develop appropriate practices, as guided by recovery plans to protect their habitat" (Office of the Auditor General of Nova Scotia, 2021, p. 14). Similarly, Dorey & Walker (2018) found that only three of the 37 endangered or threatened species listed under Nova Scotia's *ESA* had provincially developed recovery plans and that they were all published three to four years after their legislated timelines had expired. The limited literature which pertains directly to Nova Scotia's *ESA* is clear in its evaluation that the Department of Natural Resources and Renewables has failed to fulfill the breadth of its legally obligated responsibilities under the Act.

2.2 Canada's *Species at Risk Act*

In the absence of further literature specifically related to Nova Scotia's *ESA*, attention was turned to its federal equivalent*, SARA.* Given the structural similarities between these two pieces of legislation, it is plausible that many of the critiques applied to the federal *SARA* will also be relevant to the provincial *ESA.* This is because of the striking resemblances that the framework for species at risk conservation in both the federal and provincial contexts bear. In both cases, the dominant approach has been to implement a two-stage process where an independent scientific advisory body proposes species for listing to the relevant Minister, who then uses them to make a final listing decision or recommendation before recovery or management activities are planned and implemented (Government of Canada, 2016; Nova Scotia Department of Natural Resources and Renewables, 2021c).

Further, much like under *SARA*, under Nova Scotia's *ESA,* species can be listed as endangered, threatened, or vulnerable (*ESA*, 1998, *SARA*, 2002). Section 13 of the provincial Act prohibits the killing or disturbing of any endangered or threatened species, selling or trading them or any product thereof, and destroying or disturbing their residences, (*ESA*, 1998).

Penalties are set out for individuals and corporations who contravene these prohibitions (s. 22) and legislated timelines for preparing and reviewing recovery plans for species at risk are established for the Minister to abide by (s. 15) (*ESA*, 1998). Nearly identical prohibitions exist under different section headers (s. 32, 33, & 42) in the federal equivalent (*SARA*, 2002).

Unlike Nova Scotia's *ESA*, however, much has been said about *SARA* in grey and academic literature, and finding relevant articles which evaluated the federal Act in part or in whole proved to be no issue. In Scopus, the search string "Species at Risk Act" AND "Canada" yielded 181 results, 25 of which were directly related to evaluating SARA and its implementation as a whole. The broader search string "species" AND "risk" AND "list*" AND "Canada" brought up 300 results. Overwhelmingly, authors of relevant literature have taken issue with *SARA's* taxonomic biases in protection, lack of meaningful involvement of Indigenous peoples, "legislative and policy inconsistencies among responsible federal agencies," long listing and protection delays, and use of discretionary language in the legislation (Illical & Harrison, 2007; Dorey & Walker, 2018; Westwood et al., 2019; Turcotte et al., 2021, p. 1474).

A study by Bird & Hodges (2017) found that under *SARA,* "clear taxonomic biases in Critical Habitat designation," a key recovery activity, exist (p. 3). Plants and mosses were nearly five times more likely to have a full critical habitat designated in their recovery strategies than terrestrial mammals were (20.7%, 18.2% and 4.4%, respectively) (Bird & Hodges, 2017). Other critics have also pointed to the fact that "despite the government's legal duty to consult with Indigenous peoples when they may be affected by decisions or actions," a vague stipulation under *SARA* that affected Indigenous groups are to be involved "to the extent possible" has resulted in 52% of all recovery documents having "no detectable involvement of Indigenous people" (*SARA,* 2002; Hill et al., 2019, p. 220 & 223). These findings are consistent with a broader Canadian approach which "perpetuate[s] the exclusionary colonial model of conservation and wilderness" (Zurba et al., 2019, p. 5). Thus, this literature pertaining to *SARA* and federal species conservation efforts provides a helpful starting point in understanding some of the issues such a framework is prone to.

2.3 Legislative Critiques

The critiques made against both *SARA* and Nova Scotia's *ESA* do not challenge the underlying assumption that stringent implementation of the legislation would automatically lead to species recovery. Indeed, the limited literature related to Nova Scotia's *ESA* is overwhelmingly related to what Bankes et al. (2014) refer to as the "implementation gap", or the "gap between the ambition of […] statutes and their actual implementation" (p. 6026; Dorey & Walker, 2018; ECE Law, 2021; Office of the Auditor General of Nova Scotia, 2021). In these analyses, the focus remains on the extent to which the provincial government is able to fulfill its legal obligations under the act, leaving the ambition of the Act itself unquestioned. Questions of implementation stand to lose a great deal of their relevance if the species decline which we are currently witnessing is not due to poor implementation of relevant legislation so much as it to issues inherent to the legislation itself (WWFC, 2020). In the absence of such an analysis specifically catered to the Nova Scotian context, this study aims to shed further light on the ability of the *ESA* to achieve its intended goals.

Here, careful attention must be paid to avoid undue assumptions about the *ESA* based on assessments of federal legislation. Critiques of *SARA* must be weighed against the Nova Scotian *ESA* so as to determine their relevance and to not draw false equivalencies. Given the objectives of this research, two particular critiques often made of the federal Act merit further examination: delays and discretionary language. The importance of these two themes is compounded by the fact that they are intimately related and that they cut across other critiques; for example, taxonomic biases can lead to delays in the implementation of adequate protection activities, and the inclusion of discretionary language can lead to limited Indigenous involvement (Bird & Hodges, 2017; Hill et al., 2019).

2.3.1 Delays

In the view of producing positive conservation outcomes, the legislative text of both *SARA* and the *ESA* contain legally mandated timelines for listing and protection activities (*ESA*, 1998; *SARA*, 2002). These timelines are often not respected, however, because of delays

related to extended consultation periods, difficulties in identifying species' critical or core habitat, or legal "loop-hole[s]" (Illical & Harrison, 2007, p. 391; Turcotte et al. 2019). The limited literature pertaining directly to the *ESA* does in fact establish that delays under this legislation exist, but the extent to which similar critiques of the federal Act are directly applicable to this provincial legislation remains to be seen (Dorey & Walker, 2018). In order to understand exactly which equivalencies can be drawn, a better understanding of viewpoints critical to the frequent delays in listing species, designating their critical habitat, and implementing recovery actions under *SARA* must first be uncovered (Elgie, 2008; Westwood et al., 2019).

While delays under the *ESA* exist, it should be noted that the listing-specific legal loophole under *SARA*, which Illical and Harrison (2007) acknowledge where timelines for final listing decisions are extended on the basis of ambiguity, is not present in the Nova Scotian context (ECE Law, 2021). The federal legislation stipulates under section 27(1.1) that a nine-month limit to list a species begins only once the Minister has forwarded the assessment from its independent scientific advisory body, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), to the Cabinet, rather than when the Minister initially receives the scientific assessment (*SARA*, 2002; Illical and Harrison, 2007). The time between when COSEWIC's assessment is delivered to the Minister and when the Minister forwards this same document to the Cabinet can result in a sort of "legal limbo" for species waiting to be listed (Mooers, 2004).

This kind of delay is not present when it comes to Nova Scotia simply because the *ESA* is premised on a scientific listing model, rather than a constrained discretion approach, like *SARA* is (Elgie, 2008). Scientific listing means that listing decisions are "made by a scientific committee rather than by politicians" (Elgie, 2008, p. 19). Instead of leaving the final decision to the Cabinet, leaving open the possibility of non-listing even if COSEWIC recommends otherwise, the Minister of Natural Resources and Renewables will approve the species listed as at risk by its independent scientific advisory body, the Nova Scotia Species at Risk Working Group (*ESA*, 1998). Other than Ontario, Nova Scotia is the only jurisdiction in Canada to employ this

approach (Elgie, 2008). In this way, the critiques of delayed listing processes which are so often made against *SARA* do not hold for the *ESA.*

Under both *SARA* and the *ESA*, only once a species has been listed can protection activities like the creation and implementation of recovery or management documents occur (*ESA*, 1998; *SARA*, 2002). While critiques of *SARA*'s lengthy listing process might not apply to Nova Scotia's *ESA*, the assessment that delays exist at the subsequent protection stage holds for both this provincial legislation and its federal counterpart (Dorey & Walker, 2018). Indeed, even though both acts impose strict timelines on the publication of recovery documents (referred to as "recovery plans" in Nova Scotia and "recovery strategies" federally), the literature widely critiques the failure of both governments to abide by these legislative rules (*ESA*, 1998; *SARA*, 2002; Dorey & Walker, 2018; Westwood et al., 2019). Westwood et al. (2019) found that federally, "As of 2017, the average time for Recovery Strategy completion exceeded six years (J. Whitton, personal communication, 2018), double the legally-mandated time limit" (p. 146).

In Nova Scotia, a similar trend exists, where, as of 2021, the provincial government had "failed to meet its legal obligation to prepare or adopt appropriate recovery and management plans for 39 of [...] 63 endangered, threatened, and vulnerable species" within its legislated timeframes (ECE Law, 2021, p. 7). Though "encouraging" improvements have more recently taken place within the Nova Scotian context (e.g., provincially developed recovery plans or the adoption of federal strategies which identify species' core habitat in the province), *SARA* related literature still represents a valuable addition to this research. This is because of the many parallels that do exist among the recovery delays present under these two acts (ECE Law, 2021, p. 9).

2.3.2 Discretionary Language

Delays can also be impacted by the presence of discretionary language in legislative text (Illical & Harrison, 2007; Turcotte et al., 2019). In the federally focussed literature, there is a

sentiment that "remov[ing] discretionary language would reduce inconsistencies and delays in SARA's application" (Turcotte et al. 2019, p. 1488). In this view, Turcotte et al. (2019) have called for a "complete analysis of SARA to identify where all discretionary wording is used" (p. 1475). The call to review *SARA* and remove its discretionary language is indicative of a broader need to systematically review the discretion embedded in all legislation intended to protect species at risk. Further, because of the structural resemblances of *SARA* and Nova Scotia's *ESA*, it is equally as important to conduct such an analysis in Nova Scotia. A systematic content analysis of Nova Scotia's *ESA* itself will be employed to achieve this end. This method will be further elaborated upon in the following chapter. Since this approach can help identify previously unnoticed patterns and can justify claims numerically, it has been hypothesized to be "highly beneficial to legal scholarship" (Salejiham, 2018, p. 35). This method would be also directly applicable to future research concerning the textual analysis of *SARA*, adding to the overall value of this study.

While upon first glance, protections offered to listed species under both *SARA* and the *ESA* might seem sufficient to achieve their intended conservation outcomes, discretionary language, like "to the extent possible," "may," or "in the opinion of the Minister" undermine the legislative force of these acts (*ESA*, 1998; *SARA,* 2002; Elgie, 2008; Turcotte et al., 2019, Westwood et al., 2019). This kind of discretionary language exists in both *SARA* and the *ESA* and effectively makes it more "difficult for [the courts] to play a constructive role in the face of broad discretionary powers" and therefore to hold governmental powers accountable (*ESA* 1998; *SARA,* 2002; Bankes et al., 2014, p. 6026). The result has been litigation as the "exception to the rule in Canadian environmental policy" (Illical & Harrison, 2007, p. 370). Indeed, the relatively limited amount of case law related to reprimanding governmental failures to adequately protect species at risk in Canada, including the recent ruling in Nova Scotia, *Bancroft v. Nova Scotia (Lands and Forests)*, have been successful on the basis of legal questions pertaining to sections of *SARA* or Nova Scotia's *ESA* which are decidedly *non*-discretionary (Bankes et al., 2014; ECE Law, 2021). The literature makes clear that under both *SARA* and Nova Scotia's *ESA,* conservation ambition and implementation are not aligned (Bankes et al., 2014;

Turcotte et al. 2019; ECE Law, 2021). While Turcotte et al. (2019) maintain that under *SARA*, this is because of excessive discretionary language, the same has yet to be investigated in Nova Scotia.

2.4 Understanding Public and Governmental Narratives

While determining the extent to which discretionary language is present in Nova Scotia's *ESA* is certainly a part of understanding how and why the Act comes up short with regards to its species conservation goals, so too is analyzing the sentiment of related public and governmental media narratives (Jacob & Schillemans, 2016; ECE Law, 2021). This is because of the critical role played by media in generating in public accountability, especially in political contexts, where decision-makers are highly media sensitive (McCombs, 2004; Jacobs & Schillemans, 2016). Like Westwood et al. (2019) explain, wildlife conservation legislation is "more likely to succeed if the Government […] is held accountable for achievements and failures to protect […] species" (p. 150). It should also be noted that the power of the media as a tool for communication goes both ways, providing governments with the opportunity to reiterate the rationale for various policy and legislative developments to the public (Qaiser, 2022). By focussing on the sentiment of narratives related to Nova Scotia's *ESA* from both the provincial government and the general public, this research builds off of an existing body of literature which emphasizes the importance of communication in processes of public accountability (Jacob & Schillemans, 2016; Qaiser, 2022). Further, no known research pertaining to this particular subject matter exists.

Authors like Salejiham (2018) underline the value of systematic content analyses in their ability to evaluate legislative texts and establish how such analyses help set the stage for subsequent normative discussions. Indeed, only by understanding how the implementation of Nova Scotia's *ESA* is justified by the provincial government and received by the public can we be equipped to propose appropriate and effective remedies to the province's continued species decline. This research will therefore employ a second systematic content analysis in the form of a narrative analysis aimed at gauging the content and sentiment of publicly available news

media and governmental press releases. Sentiment analyses, which are known to be helpful in evaluating people's opinions and ensuing attitudes towards particular issues, are relevant here in that they have a "profound impact on management sciences, political science, economics, and social sciences," areas which are all affected by public opinion (Liu, 2012, p. 2). The *ESA*, with its political footing and natural resource management aims, will also then clearly be impacted in its application by public opinion. Thus, a careful analysis of sentiment words included in relevant media coverage can be seen as not only an appropriate way of unpacking related public and governmental narratives, but also as a particularly useful tool in the context of this research (Liu, 2012).

Chapter 3: Methods

3.1 Approach Rationale

Informed by a post-positivist paradigm, I employed primarily qualitative research methods. The theoretical paradigm of post-positivism stipulates that reality is not wholly discoverable or knowable and that it is subjective, with results being dependent on the values of researchers (Krauss, 2005, p. 761). Post-positivism, and more specifically its movement of critical realism, is valuable to this research precisely because it acknowledges that one's "knowledge of reality is a result of social conditioning and, thus, cannot be understood independently of the social actors involved in the knowledge derivation process" (Dobson, 2002). In order to establish dependability, methods under this paradigm should be "systematic, well-documented and designed to include subjectivities" (RePrac, 2016). Through this lens, I sought to unpack the subjective narratives of different stakeholder parties based on the same set of events: actions or perceived inactions as related to the *Endangered Species Act (ESA).*

3.2 Research Design

The comprehensive and structured nature of a systematic content analysis makes it an appropriate methodological approach for post-positivistic research more generally, and in achieving the objectives of this study specifically (Salejiham, 2018). Under this framework, I selected two varieties of systematic content analyses: a textual analysis and a narrative analysis

aimed at unpacking the sentiment contained within relevant media. The textual analysis was chosen because of its suitability for this study's first research goal, which was to determine the extent to which discretionary language is present in Nova Scotia's *ESA* and to subsequently explore the impact of this discretion on the ability of the Act to achieve its intended goals. The narrative analysis was chosen since it was the most appropriate method to gauge the perspectives necessary to complete research goal number two and three, which were to analyze both the provincial government and the public media's narratives related to the *ESA* and its implementation. This work is intended to lay the foundation for the fourth research objective, a comparative discussion of sentiments and proposed actions found in government and non-government narratives, meant to inform potential remedies to the negative biodiversity outcomes in Nova Scotia (ECE Law, 2021).

3.2.1 Textual Analysis

A further exploration of the impact of permissive language on the ability of the Act to achieve its intended goals can be had by systematically coding the *ESA* for instances of discretionary language. Thus, actions that were either mandated or suggested by the Nova Scotian *ESA* were the subject of this first textual analysis. To accomplish this end, an *a priori* (deductive) codebook was first developed (Appendix A). Given that this was intended to be an iterative process, however, the selected framework also allowed for new themes and sub-themes (e.g., instances of these language themes or actors responsible for listed actions) to be developed *a posteriori* (inductively) as the Act was manually coded (Orphanidou & Kadianaki, 2020).

For consistency, targeted actions were counted on the basis of clearly demarcated verbs, rather than an individual section of subsection of the act. Once an action under the Act was identified, the assigned actor and the type of language used was recorded in a Microsoft Excel workbook (Appendix D). Under this codebook, actions under the Act were grouped according to three broad themes – actions presented by discretionary language, legally obligatory language, or ambiguous language (Table 1).

Table 1: Discretionary language analysis codebook

Code	Definition
Discretionary Language	Language which allows for an actor to undertake or complete (or not) a specific action under the *ESA.*
Legally Obligatory Language	Language which legally obligates an actor to undertake or complete an action under the Act.
Ambiguous Language	Language which might suggest discretion or legal obligation but does not in its actual meaning refer to an actor undertaking or completing an action under the Act.

Additional columns in the Excel document were created to note the frequency of the occurrence of each individual instance of action-oriented language as well as the context in which it appeared. This was done to account for the reality that not all discretionary language carries the same weight in legal texts and therefore to provide for a richer analysis and subsequent discussion (J. Simpson, personal communication, November 27, 2022). For more details, code definitions, and a step-by-step walkthrough of the coding process undertaken, see again Appendix A.

3.2.2 Narrative Analyses

The second phase of this study looked to published news media content to construct narrative analyses and understand the sentiment of stakeholders impacted by or otherwise implicated in the implementation of the Nova Scotian *ESA* and its subsequent conservation outcomes. Systematically coding written news articles to derive dominant themes in public and governmental narratives about actions or perceived inactions taken as relating the *ESA* allowed for a more comprehensive examination of the Act in its broader social context.

Selecting Articles for Government Narrative Analysis

In first discerning the Nova Scotian government's public-facing narrative relating to the implementation of the *ESA,* governmental news releases were utilized. With the search string

"Nova Scotia" AND "Endangered Species Act", I searched news releases available on the provincial government's official website that were published after 1998 (the year that the Act received Royal Assent), and selected those that pertained specifically to actions or perceived inactions taken under the Act for subsequent coding (*ESA,* 1998). Selected articles made specific mention of the *ESA* or conservation strategies included in the Act and were written in English. Out of a total of 31,355 government news releases published in this time frame, 77 results were generated, 36 of which were retained according to my search criteria and were subsequently assigned an identification number for coding. These selected 36 articles represented only 0.001% of all news releases published by the provincial government of Nova Scotia within this time frame. See Table C-1 in Appendix C for a more detailed overview.

Selecting Articles for Public Narrative Analysis

In order to explore equivalent narratives from the public, articles were assembled from Eureka, a news database available through the Dalhousie University Library (Eureka, n.d.). Using the same search string; "Nova Scotia" AND "Endangered Species Act", 756 relevant articles published between November 5th, 1998, (the date of the *ESA*'s first reading in Nova Scotia legislature) and February 1st (the date the search was conducted) were found. I then applied the same eligibility criteria – choosing only news articles which related to actions or perceived inactions taken under the *ESA*, eliminating duplicates, counting only pieces which were written in English and were accessible – to find a total of 212 articles eligible for retention and coding. Due to the time constraints of this project, I next developed a strategy to systematically select a sample of 36 public media articles so that my sample size was equivalent to the 36 government news releases.

To sample representatively across political agendas and relevant events, I developed a set of four 'political eras' across which the sampling was stratified (Figure 1). The first era, from 1998 to 2008, spans the act's implementation, initial reactions and first enforcement activities. The second era is marked by the election of Nova Scotia's first ever NDP provincial government in 2009 (Nova Scotia Legislature, n.d). The third era begins at the end of the NDP forming government and the Liberal party regaining control in 2013 (Nova Scotia Legislature, n.d.).

Finally, the fourth era is marked by the 2019 judicial review filed by Jamie Simpson on behalf of Bob Bancroft, the Federation of Nova Scotia Naturalists, Blomidon Naturalists Society and Halifax Field Naturalists (Bogan, n.d.).
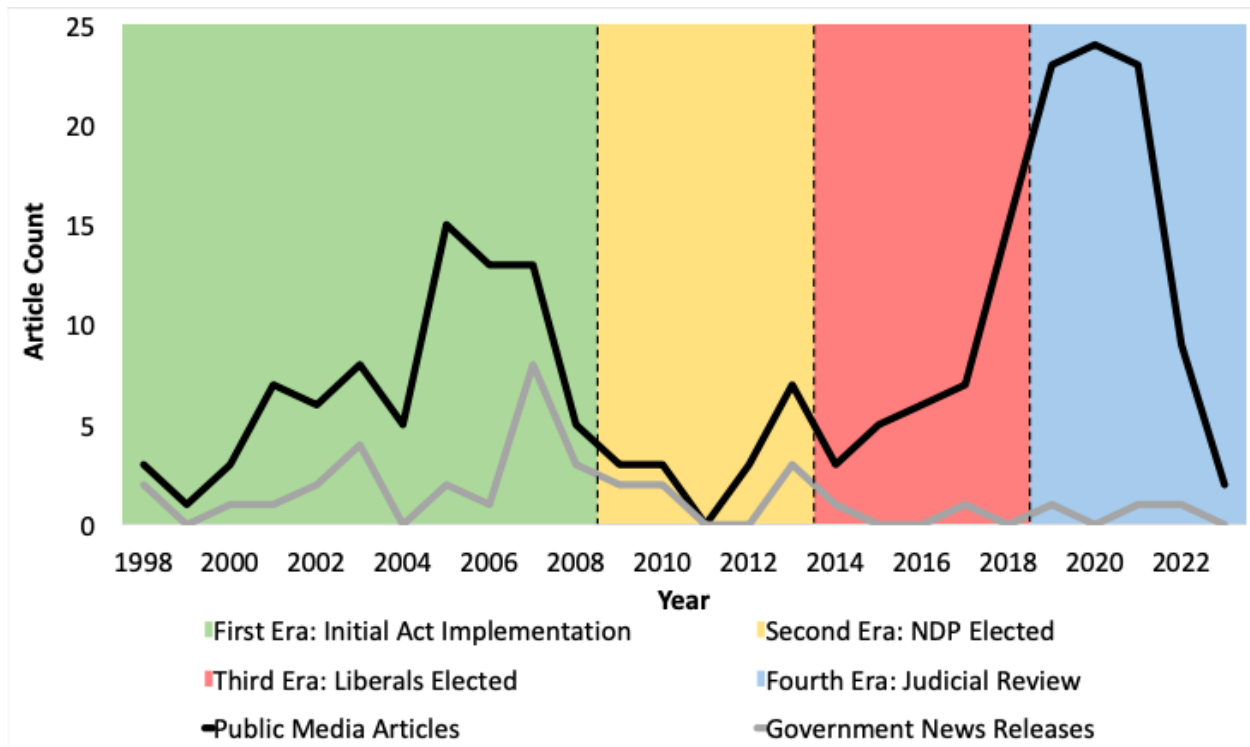
Figure 1: Articles related to actions or perceived inactions under the ESA by publication type and year of publication

Through this approach, I was able to determine a representative sample of articles to select with which to make up my 36 articles. For example, in era one, I had originally retained 79 articles, representing 37% of the total 212 relevant articles. Using a random generator, I then applied the same percentage of 37% to my desired goal of 36 articles to select 13 articles out of the 79 retained articles published in this first era so as to maintain the equivalent ratio (GIGAcalculator, n.d.). I repeated this process for each of the four eras selecting three articles for era two, five articles for era three, and 15 articles for era four.

Coding Selected Articles

Once selected, each set of 36 articles was manually coded through the use of a Microsoft form (Appendix B). This form was designed specifically to capture the hierarchical relationship between various elements of each data point (Figure 2). The form employed was created both deductively (by establishing *a priori* codes) and inductively (by capturing emerging codes), so as to ensure that "all areas of interest were covered while allowing for the emergence of novel areas" (Orphanidou & Kadianaki, 2020). Given that here, the central data point was actions or perceived inactions taken under the *ESA* (rather than each individual article coded), the number of data points came out at 190, far greater than the total of 72 articles coded. To arrive at this number, each article was manually scanned for actions related to the *ESA* it may have contained and the relevant information recorded as a new response to the Microsoft form (again, see Appendix B).
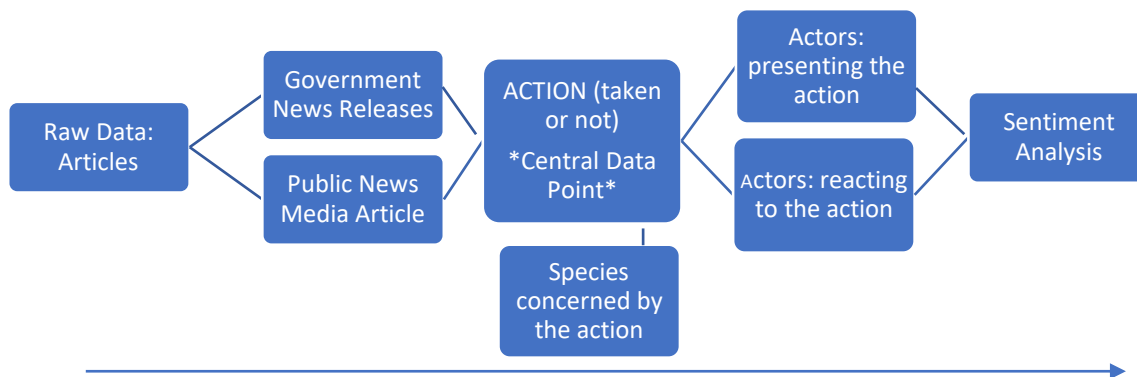
Figure 2: Data point hierarchy used in coding process

While coding, the actor position of "Minister" was given the title of Minister of Natural Resources and Renewables, since this is the department currently tasked with the *ESA's* implementation. However, it should be noted that between 1998, when the Act was first introduced, and today, the name of this Minister has changed several times. Captured in this research, such name changes include the Minister of Natural Resources and the Minister of Lands and Forestry. These name changes are the result of occasional departmental consolidation and the shuffling of ministerial responsibilities as elected governments have

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themselves changed over the last three decades. Overall, this was a relatively straightforward process of data collection, complicated only by this inconsistency and the sentiment analysis involved. The definitions of the codes used in this sentiment analysis are presented in Table 2.

Table 2: Sentiment analysis codes

Code	Definition
Positive	Portrays the action in a positive light. Indicator words could include terms such as "help," "success," "pleased," or "excited".
Negative	Portrays the action in a negative light. Indicator words could include terms such as "disappointed," "failure," or "insufficient".
Neutral	Portrays the action in a straightforward, matter of fact manner with no indication of emotion.
Mixed	Portrays the action in a manner which combines both positive and negative elements or some form of caveat.

Chapter 4: Results

A textual analysis of the *ESA* itself was first conducted to determine the extent to which discretionary language was present in the Act, raw data for which is available in Appendix D. Within the *ESA,* 122 actions were identified, 52% of which were mandatory (n = 63), 46% of which were discretionary (n = 56) and 2% of which (n = 3) were ambiguous. Then, a narrative analysis which considered both governmental news releases (n = 36) and public news media articles (n = 36) was completed so as to systematically observe the ways in which public narratives relating to the Act's implementation were being constructed by implicated stakeholders. Of the 190 actions or perceived inactions taken under the *ESA* identified in these two publication types, 63% pertained to listing actions (n = 121) and 18% referenced the Mainland Moose (n = 38). Here, there also existed a marked difference in tone - most actions in government publications being presented in a positive tone (n = 51, 47%) while most actions in public media being presented in a neutral tone (n = 45, 55%). Further, a significant imbalance in

reporting was observed among government publications, with 90% of actions presented not including an associated response (n = 97).

4.1 Results of Textual Analysis

Of the 63 actions described using mandatory language, by far, "shall" was the most frequently used term, constituting 89% of legally obligatory actions and 46% of all actions contained within the *ESA* (n = 56)*.* The most frequently used term from of discretionary language was "may," making up for 77% of discretionary actions and 35% of all actions contained within the *ESA* (n = 43)*.* Throughout the Act, all other instances of language which spoke to the nature of a particular action, be they legally obligatory, discretionary, or ambiguous, were each employed five or less times.

Attention was also paid to the kind of language used to present the actions of specific actors. When looking at the actors implicated by the Act (Table 3), by a wide margin, the Minister was responsible for the most actions within the *ESA* (n = 64, equivalent to 52% of all actions found in the act). Fifty-three percent, just over half of the actions assigned to the Minister, were discretionary (n = 34) while the other 47% of their actions were mandatory (n = 30). The "actor" responsible for the next most actions was coded under the category of "unspecified or unclear" (n = 16, 13% of all actions). This means that through a simple reading of the Act, no one actor could be said to be responsible for these actions. The court was responsible for 9% of actions described within the *ESA*'s text (n = 11), and all of these (100%) were discretionary. Contrastingly, 90% of the actions assigned to species at risk working groups were mandatory (n = 9, out of a total of 10 actions) as were 100% of the actions assigned to legal interpreters (n = 8, out of a total of 8 actions).

Table 3: ESA action distribution by actor and action type

Actor	Total Actions	Action Type					
		Discretionary		Legally Obligatory		Ambiguous	
		#	%	#	%	#	%
Minister of Natural Resources and Renewables	64	34	53	30	47	0	0
Unspecified or Unclear	16	5	31	8	50	3	19
The Court	11	11	100	0	0	0	0
Species at Risk Working Group	10	1	10	9	90	0	0
Legal Interpreter	8	0	0	8	100	0	0
Contravener of the Act	5	0	0	5	100	0	0
Governor in Council	3	3	100	0	0	0	0
Permit Holder	1	0	0	1	100	0	0
Landowner	1	1	100	0	0	0	0
Dept. of Natural Resources and Renewables	1	0	0	1	100	0	0
Recovery Team	1	0	0	1	100	0	0
Conservation Officer or Employee of the Dept.	1	1	100	0	0	0	0
Total:	**122**	**56**		**63**		**3**	

4.2 Results of Narrative Analysis

After data cleaning, the sample of both media publication types included in the narrative analysis (n = 72) collectively revealed a total of 190 actions or perceived inactions taken under the *ESA.* Notably, the distribution of these actions, stratified by publication type (Figure 3) increases markedly among government news releases in 2007 and then among public media news articles in 2019.
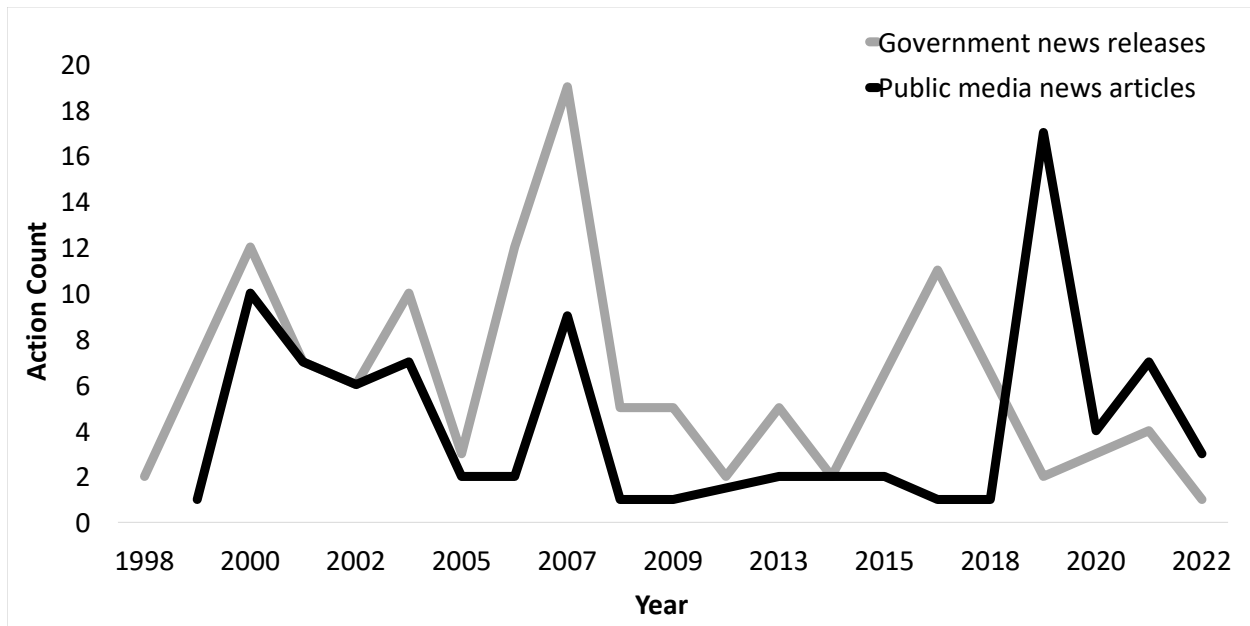
Figure 3: Annual action count by publication type

Despite the even sample size of each publication type (n = 36 articles), 57% (n = 108) of the actions recorded originated from government news releases while the other 43% (n = 82) originated from public news media articles.

4.2.1. Action Type

By far, the most commonly mentioned action was listing of species at risk under the Act, representing 63% of all actions across publication types (n = 121). Government news releases and public media news articles both mentioned this action type more frequently than any other. Notably, unfulfilled legal obligations represented the second most frequently mentioned action type in public media news articles (n = 21, 25% of all public media news articles), but were not mentioned a single time in government news releases. All other action types were mentioned less than 10 times in across each publication type.

The coding method utilized allowed for a further distinction between specific listing types, the results of which are shown below (Figure 4). Through the use of this approach, I determined that across both publication types, the listing type most frequently mentioned was endangered listings (n = 70, 60% of total listing actions). Government news releases mentioned

species listed as special concern very rarely (n = 2) while public media news articles made no such mentions (n = 0). Below, Figure 4 represents the data collected pertaining to the count of specific listing types according to publication type.
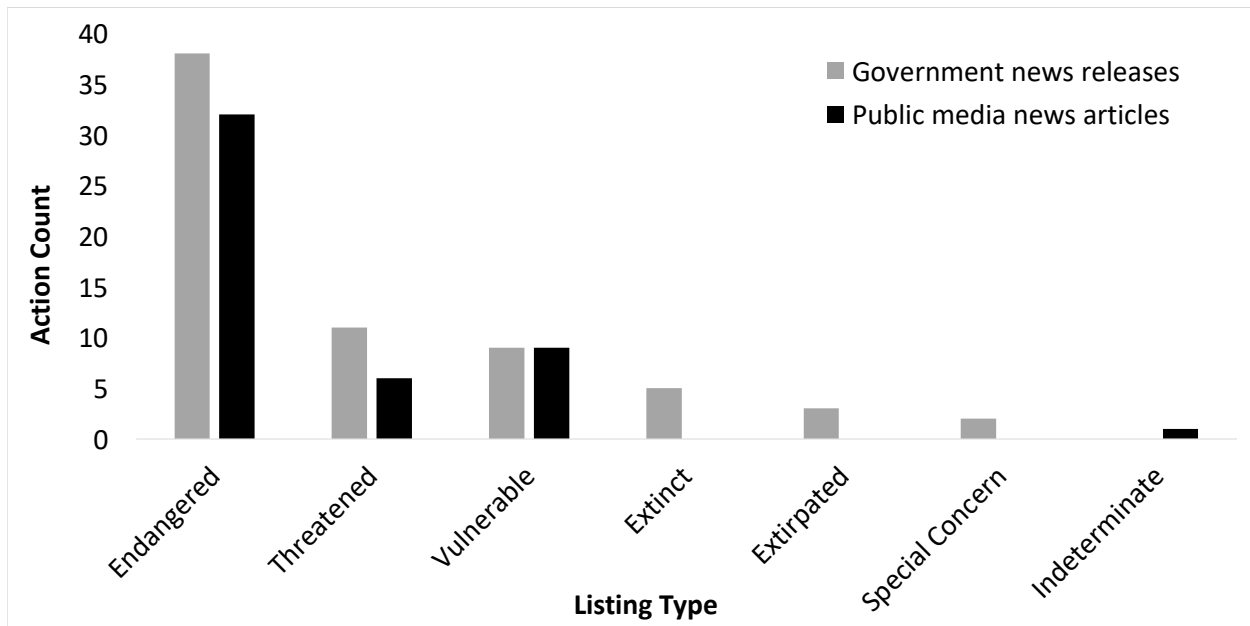
Figure 4: Count of listing action type as reported in government news releases and public media news articles

Implicated Species

The media scan identified a total of 65 species mentioned in relation to actions or perceived inactions under the *ESA*. However, only 9% of these (n = 6) were mentioned more than five times across all articles coded. These species types included: Bats (Little Brown Myotis, the Northern Myotis, and the Tri-Coloured Bat), Blanding's Turtle, Mainland Moose, Piping Plover, Ram's-Head Lady Slipper and Unspecified (i.e., a reference to species at risk broadly which did not target a specific species type) (Figure 5). For ease of analysis, here attention will be paid only to these species, though a detailed breakdown of action counts per at-risk species is in Appendix C (Figure C-3).
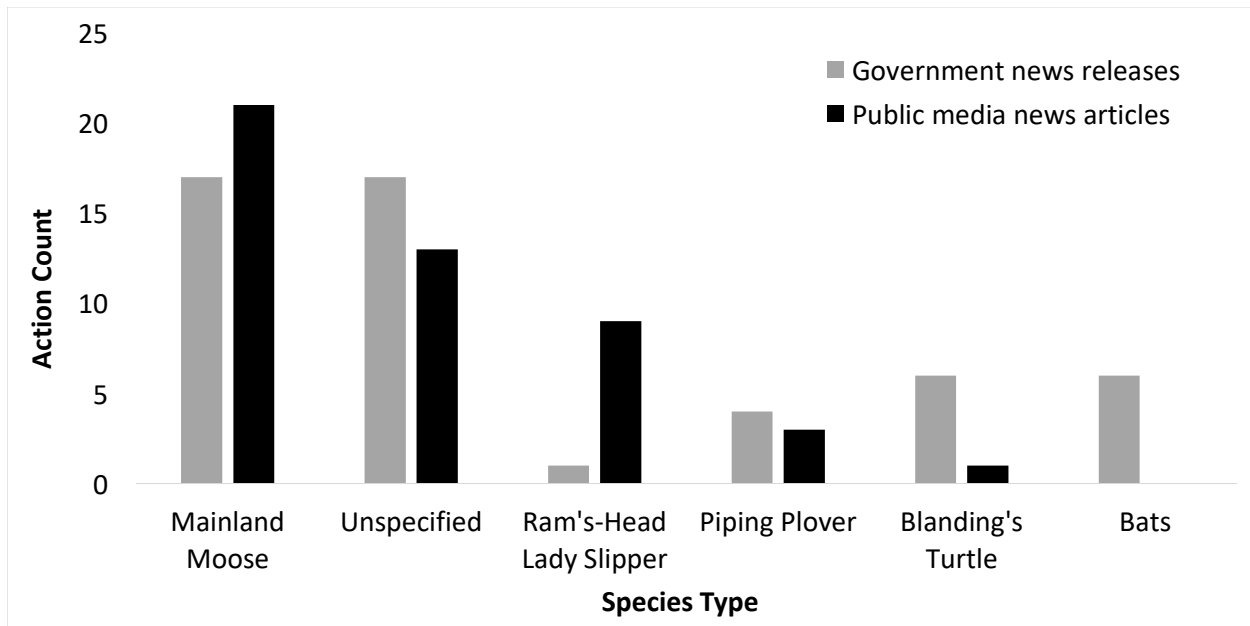
Figure 5: Total action count by frequently (5+ times) mentioned species type

Representing 18% of all species mentioned across the publications coded, the Mainland Moose was the most frequently referenced species. Fifty-five percent of these mentions originated from public media news articles (n = 21) while the other 45% originated from government news releases (n = 17). Interestingly, the Ram's-Head Lady Slipper represented 9% (n = 9) of species mentioned in public media news articles, but only 1% of species mentioned in government news releases. Contrastingly, Bats represented 5% of species mentioned in government news releases and 0% of species mentioned in public media news articles. These findings establish a clear discrepancy between the coverage offered to certain species according to publication type.

Assessing the temporal element of these mentions can offer further insight. In the case of the Mainland Moose, for example, a marked increase in mentions across government news releases, which was echoed to a lesser extent by popular news media articles, can be noted in 2007 (Figure 6). Further, an increase in 2019 in public media news article coverage related to the Mainland Moose was reflected back by government news releases two years later in 2021 .
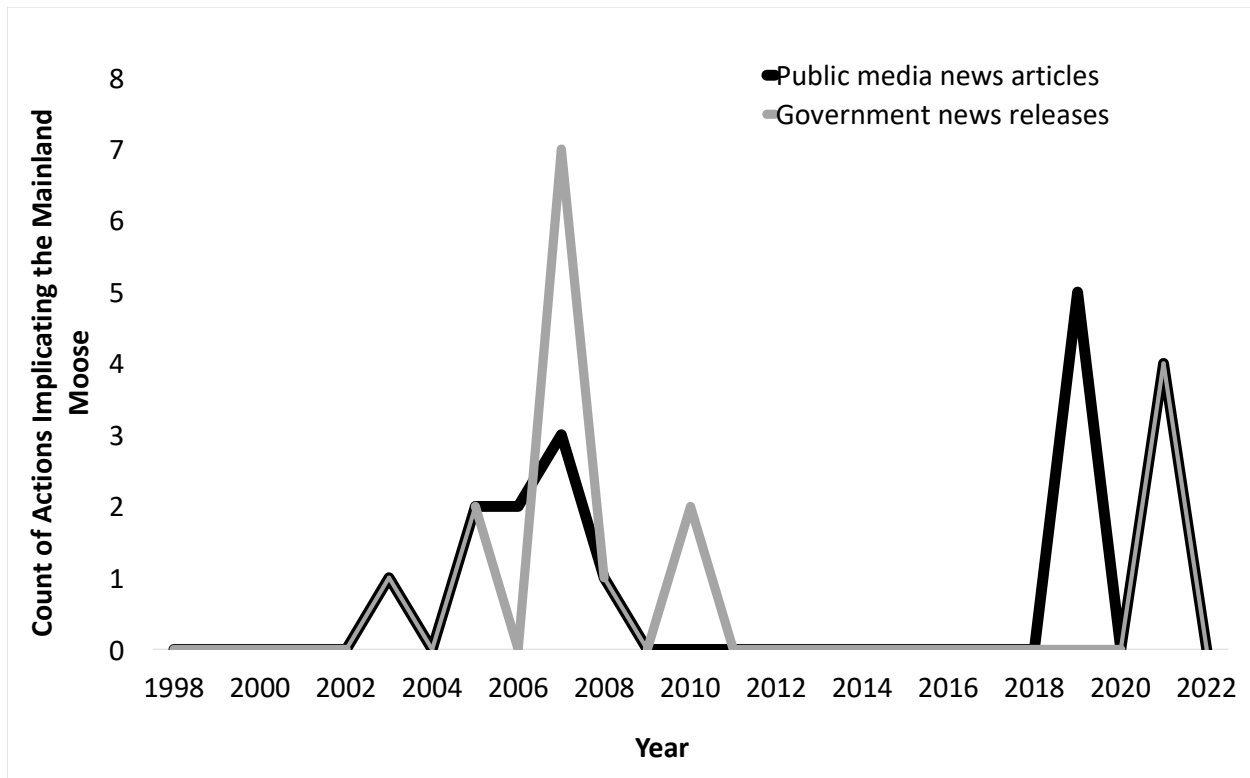
Figure 6: Count of actions implicating the Mainland Moose over the years by publication type

4.2.2 Actor Type

All actions were coded according to the actor ultimately responsible for ensuring their undertaking or completion. Constituting 94% of all mentions, the actor most frequently referred to was the Nova Scotian provincial government (n = 182). Government news releases represented 58% of these mentions (n = 105) while public media news articles represented 42% of these mentions (n = 77). All other actors were mentioned less than five times each. Given that such an overwhelming majority of actions were attributed to the Nova Scotian provincial government, a further breakdown of the specific government actors implicated was warranted (Table 4). By a very wide margin, the most frequently implicated actor was the Minister responsible for the *ESA* (n = 172, 95% of all actor mentions).

Table 4: Total action count by provincial government actor type

Actor	Total Actions	Publication Type			
		Government News Releases		Public Media News Articles	
		#	%	#	%
Minister of Natural Resources and Renewables	172	95	55	77	45
Conservation Officer	5	5	100	0	0
Recovery Team	3	3	100	0	0
Species at Risk Working Group	2	2	100	0	0
Total:	**182**	**105**		**77**	

(Re)actor Type

In these articles, where an actor reacting to each individual action was mentioned, the actor's identity was recorded. Since not every action had an associated reaction contained within the article in which it was found, only 73 such responses were observed. Of these, 85% originated from public media news articles (n = 62) and the other 15% from government news releases (n = 11) (Table 5). A higher frequency and broader diversity of reacting organizations and individuals was found in public media news articles as compared to government news releases.

Table 5: Total reaction count by actor type

Actor	Total Actions	Publication Type			
		Government News Releases		Public Media News Articles	
		#	%	#	%
Non-profit	36	4	11	32	89
Academic	15	3	20	12	80
Journalist	10	0	0	10	100
NS provincial government	7	3	43	4	57
The Judiciary	2	0	0	2	100
Local public	1	0	0	1	100
Industry	1	0	0	1	100
Federal Government	1	1	100	0	0
Total:	**73**	**11**		**62**	

The (re)actor type most frequently mentioned were non-profit groups, making up 49% of all reactions across publication types (n = 36). Eighty-nine percent (n = 32) of these originated in public media news articles. At 21%, reactions from academics also made up a large percentage of all reactions across publication types (n = 15). The bulk of these reactions (n = 12, or 80%) originated from public media news articles.

4.2.3 Sentiment Analysis

Responding to the goals stipulated by this study required a comparative sentiment analysis of the presentation of actions or perceived inactions taken under the *ESA.* As shown below (Figure 7), most actions were presented in a neutral tone (n = 88, 46% of all actions across publication types) while the next most significant number of actions were presented in a positive way (n = 76, 40% of all actions across publication types). Few actions were presented in a mixed tone (n = 25, 13% of all actions across publication types) and even fewer in a negative tone (n = 1, 1% of all actions across publication types).
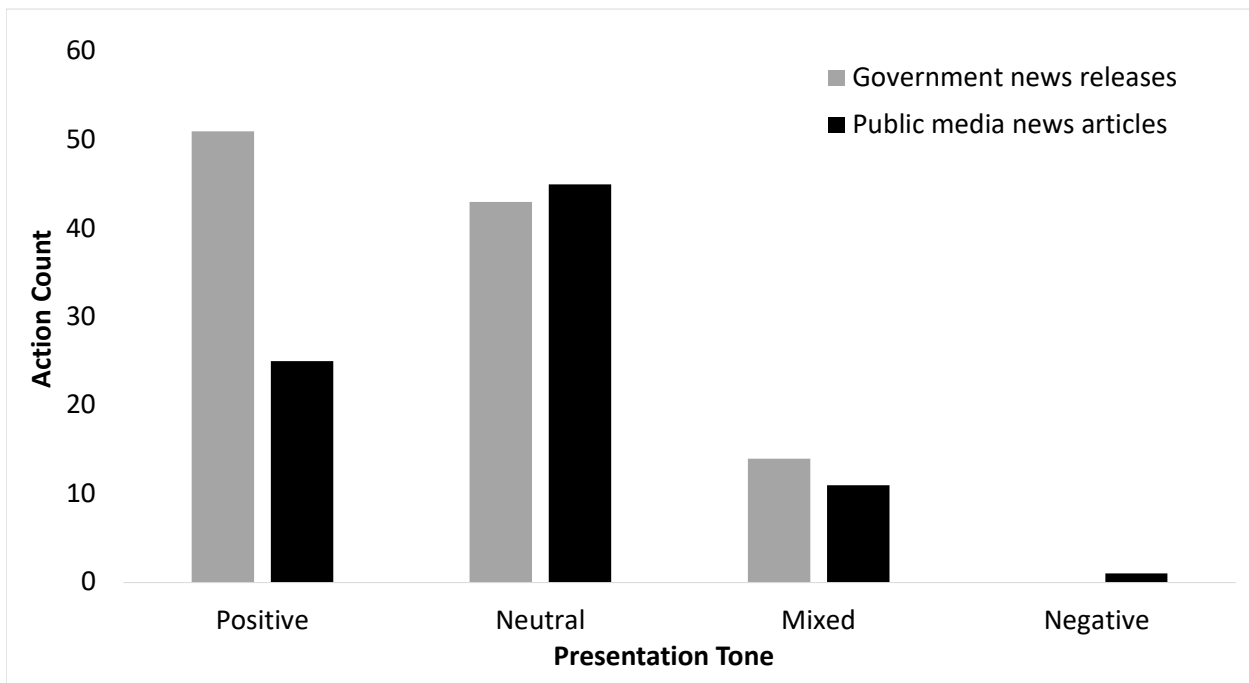
Figure 7: Action presentation sentiment by publication type

While generally speaking, similar trends in sentiment of action presentation do exist, this figure does succeed in showing a distinction between the presentation tone most frequently utilized in each publication type – most actions found in government news release articles were presented in a positive tone (n = 51, 47% of all actions across government news releases) while most actions found in popular news media articles were presented in a neutral tone (n = 45, 55% of all actions across popular news media articles).

Response sentiment by publication type

A sentiment analysis was also conducted on the responses collected (Figure 8). Notably, 90% of the "responses" provided in government news releases were non-responses (n = 97), meaning that these news releases did not present any opinion in reaction to the relevant action presented. Actions for which there were no responses were excluded from this figure but were nonetheless categorized and recorded as "no response" since this study took interest in the frequency and diversity of all reactions presented in each publication type.
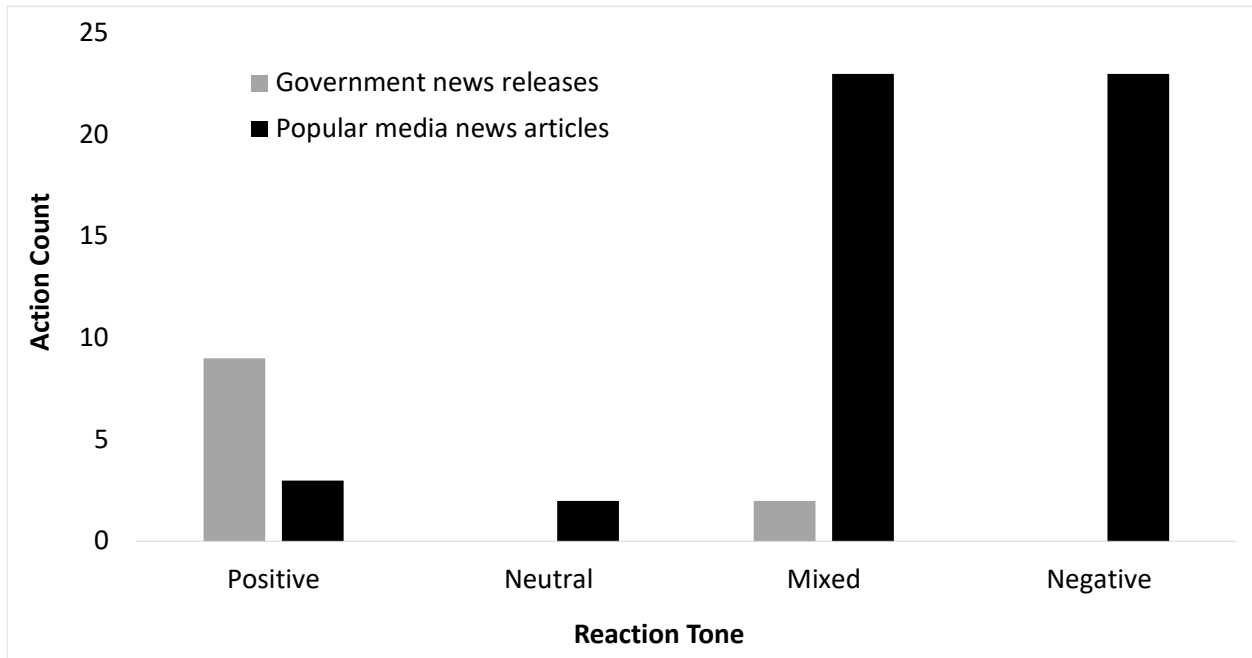
Figure 8: Response sentiment by publication type, excluding "no response" (n = 128, out of a total of 190)

The remaining 10% of reactions presented in government releases were split; 8% of reactions were positive (n = 9) and 2% were mixed (n = 2). Not a single negative reaction was

included in the government news releases. Contrastingly, responses in presented in popular media news articles were more equally distributed. While 38% of these were non-responses (n =31), 28% (n = 23) of reactions were mixed, with the same proportion being negative. In this same publication type, only 4% (n = 3) and 2% (n =2) of reactions were positive and neutral, respectively.

Response sentiment by action

Attention was also paid to the specific reactions elicited by various action types according to publication type. In public media news articles, listing actions primarily elicited non-responses (n = 27, or 53% of listing reactions) or mixed responses (n = 20, or 39% of listing reactions) (Figure 9). All other action types generated fewer than five reactions. Overwhelmingly, reactions towards unfulfilled legal obligations were negative (n = 18, 86% of unfulfilled legal obligation reactions).
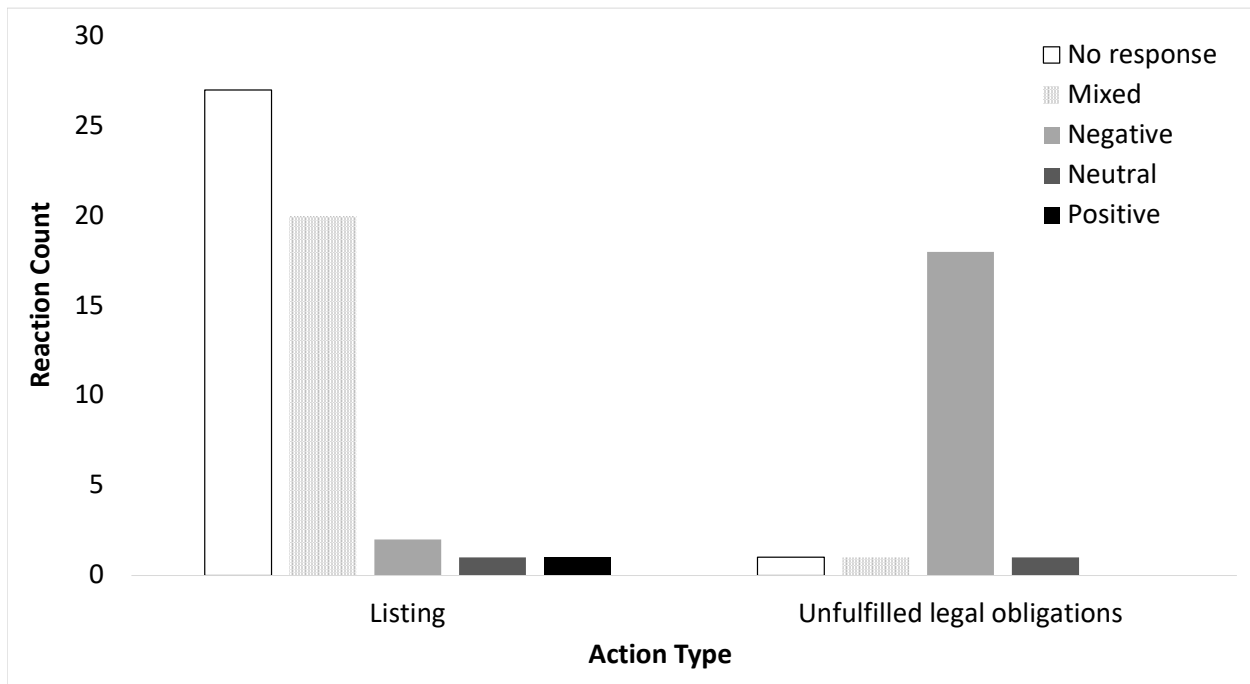
Figure 9: Sentiment of most frequently responded to actions in public news media articles (listing, n = 51, unfulfilled legal obligations, n = 21)

On the other hand, responses presented in government news releases, especially actions reacted to at least five times, looked very different. Here, listing actions by far elicited the most non-responses (n = 68, or 97% of listing reactions). Not a single negative or neutral reaction was presented in this media type, and only two mixed responses were recorded, one in reaction to a monitoring action and the other to an awareness raising action. Where responses were recorded (i.e., excluding non-responses), positive responses made up 82% of all reactions (n = 9, out of 11 responses).

Evolution in sentiment

In both public media news articles and government news releases, the ways in which actions related to the *ESA* were reacted to changed over time. In public media news articles, while positive responses remained consistently rare, after 2017, responses became increasingly negative (n = 8) (Figure 10). Further, mixed responses peaked in 2000, right after the Act's implementation (n = 10) and have only recently begun to make somewhat of a resurgence.

Figure 10: Response sentiment over time in public media news articles

Meanwhile, it becomes clear that responses located in government news releases have consistently indicated a much less nuanced, one-sided narrative. Indeed, over the years, when included, responses in this publication type have been almost all positive (81%, n = 9, out of 11 responses, excluding "no response"). These findings stand in stark contrast to that represented in public news media articles and thus, merit further examination.
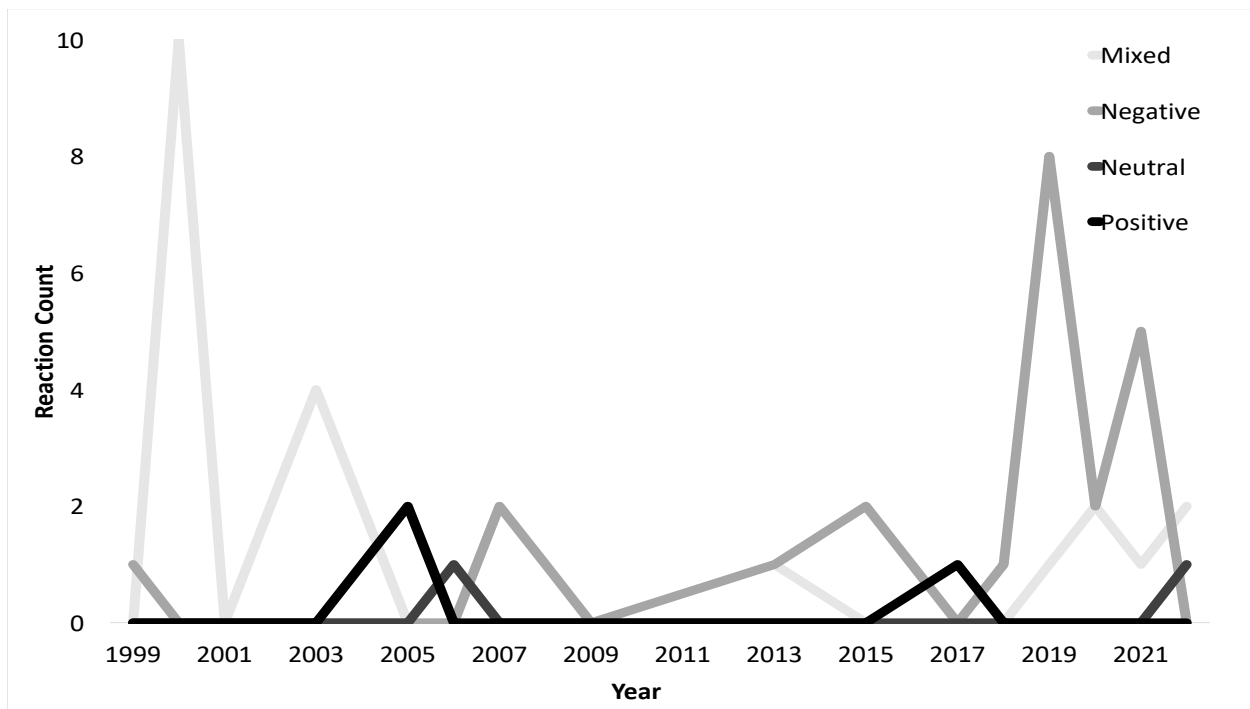
Chapter 5: Discussion

As a whole, the results reveal valuable insight into the *ESA* itself as well as the Act in its broader social context. In responding to the first objective of this research, to determine the extent to which discretionary language is present in Nova Scotia's *ESA,* I conclude that the Act's ability to achieve its intended goals is significantly limited by the large proportion of discretionary language embedded in the legislative text, especially in relation to actions planned after the initial listing process. Therefore, to rectify the negative trends in biodiversity witnessed across the province, rather than simply continuing to list more species, changes to the *ESA* itself should take place (Ray et al., 2021).

Particularly useful here are the results generated by the second and third research objectives of this study, aimed at analyzing media to gauge the provincial government's public-facing narrative with respect to the *ESA* as well as the public media's related narrative. Indeed, in the absence of the above suggested legislative amendments, what my findings also make clear is that the way in which actions or perceived inactions are received by the public media has an important role to play in challenging the provincial government to deliver upon its conservation promises more successfully. The data collected to accomplish these research objectives then lays the necessary groundwork to engage in the fourth and final goal of this study – comparing the sentiments and proposed actions found within these narratives to further investigate the implementation gap and inform potential remedies.

5.1 Implications of Broad Discretionary Language

The Nova Scotia *ESA* is structured in a way where language has a strong influence over not only the distribution of actions among responsible actors, but also on their associated degree of obligation. Just under half of all actions contained within the text of the *ESA* are effectively discretionary, meaning that in these instances, the responsible actor (typically the Minister) is able to execute a *choice* to engage in the prescribed activity. The direct implication of this is that there is no guarantee that all of the actions described in the *ESA* will be completed or even undertaken, thus undermining the overall efficacy of the Act. For example, while section 15(1) of the *ESA* a legal obligation on the Minister to appoint a recovery team and prepare a recovery plan for endangered and threatened species within a specified time frame, the implementation of these plans is ultimately left to the discretion of the Minster. In effect, section 15(12) of the *ESA* reads: "The Minister shall ensure the implementation of the *portions* of the recovery or management plan which are provincial responsibility *and which, in the Minister's discretion, are considered feasible*" (*ESA*, 1998, emphasis added). Similarly, section 16(2) of the *ESA* stipulates that "*where the Minister considers it necessary* for the purpose of implementing a recovery plan, the Minister *may* designate specific physical areas or landforms of the Province as core habitat" (*ESA*, 1998, emphasis added). So, while the designation of core habitat areas for endangered or threatened species is permitted by this Act, the wording here means that once again, no legal obligation is placed upon the Minister.

The real world impact of the discretion so often manifest in the *ESA's* legislative text becomes clear when considering the body of case law pertaining to the Act which has emerged in recent years. Indeed, the most prominent such case, *Bancroft v Nova Scotia* (2020), was deemed justiciable only on the grounds that the government could be tried over the question of having failed to fulfill actions deemed mandatory by the legislation, not those that were left to the discretion of the Minister. As a result, the heavily publicized case principally revolved around section 15 of the Act, which imposed a legal obligation upon the Minister to prepare recovery plans for the case's six representative species (*Bancroft v Nova Scotia*, 2020). In ensuring the full implementation of the Nova Scotian *ESA,* the role of the courts is significantly

limited by this broad use of discretionary language. Such an observation is consistent with findings from Illical & Harrison (2007), who write that nondiscretionary duties for the executive are "a necessary precondition for citizens or firms to sue the government" (p. 382-3). Thus, in keeping governments accountable to the promises offered by environmental legislation like the *ESA*, a valuable opportunity to make use of the facilitative role of the courts is lost (Bankes et al., 2014).

5.2 Contextualizing Media Coverage of the Act

In the view of improving the conservation outcomes generated by the *ESA,* the trends which become evident by way of this study provide critical insight. For instance, understanding that listing actions targeted at certain specific species were disproportionately represented across both publication types might incentivize a shift towards coverage of other key conservation actions included in the *ESA*. Similarly, the finding that government news releases tended to present a much more positive, less nuanced representation of events, while not altogether surprising, provides further justification for the active involvement of a critical and observant public media (Bankes et al., 2014). Here, it is also important to consider the fact that such a minute percentage, only 0.001%, of government news releases made mention of the *ESA* in a way that was relevant to the parameters of this study (see Table C-1 in Appendix C). This seems to suggest that for the provincial government, keeping Nova Scotians informed of the latest progress made under the *ESA* has not been as prioritized as information sharing about other issues.

Balancing the Narrative

Generally speaking, the results produced by this study's sentiment analysis aligned with what had been expected. The government's narrative largely focused on the positive impact of its actions, primarily considering its own view, whereas the public media's narrative tended to first present actions neutrally before then offering a more nuanced, critical perspective. The adherence of the public media to common journalistic standards is evidenced by the fact that among public media news articles, most actions pertaining to the *ESA* (55%, n = 45) were

presented in a neutral tone (Ojala, 2021). A greater balance in reporting, defined as giving "equal voice to those competing for the interpretation of events" can also be observed across this publication type (Boudana, 2016, p. 603). Indeed, 62% of actions presented in public media news articles included a response from an implicated actor (n = 51), while only 10% of government news releases did the same (n = 11). Moreover, as demonstrated in Table 5, responses found in public media news articles were distributed more equally among different actor types, predominantly including reactions from non-profits, academics, and journalists (n = 32, 12, and 10, respectively). This consideration for expert, non-governmental perspectives is indicative of a reporting style well suited to telling complex policy stories, and thus, to balancing the narrative surrounding the *ESA.*

The lack of negative action presentation among public media news articles (n = 1) may similarly be explained by journalists' obligation to report impartially before applying a critical lens of analysis or considering dissenting opinions (Jacobs & Schillemans, 2016; Ojala, 2021). For example, an article by Leefe (1999), typical to the public media news articles sampled, first presented actions in relation to the *ESA* in a straightforward manner, here explaining that "I asked the Minister of Natural Resources, who is responsible for the legislation, if he would […] consider Nova Scotia salmon stocks as a potential candidate for species-at-risk". Only after establishing the basic set of facts did Leefe (1999) present a critical perspective, writing that "The minister was evasive, refusing to give any undertaking to do so. This is unacceptable. […] it is simply wrong for the Nova Scotia Liberal government to refuse to apply the very law it created". This pattern of neutral action presentation, followed in turn by a critical response, was the most consistent approach employed by journalists in public media news articles.

In considering the corresponding narrative presented in government news releases, it is important to recall that 90% of "responses" among this publication type were actually coded as non-responses, meaning that no response or reaction to the action in question was included in the given article. Given that government news releases often function as a one-way broadcast of information, this finding is not particularly surprising, though it does lend significant support

to the notion that the narrative drawn by the province is unidimensional in nature (Jacobs & Schillemans, 2016). Within government news releases, this approach would typically manifest itself in a manner similar to the following example: an action taken under the *ESA*, say the carrying out of a baseline survey of Moose population size and distribution, would be presented positively, in this case as a sure-fire way to "generate new data and help guide the recovery plan's ongoing implementation" (Nova Scotia Department of Natural Resources and Renewables, 2021d) These approaches, however, paid little consideration to how the action in question might be received by the broader public.

This tendency to include only elements which reflect positively upon the government was particularly evident when it came to reporting on both the listing process and unfulfilled legal obligations. Listing actions, for example, which by far constituted the largest proportion of actions found in government news releases (64%, n = 69), were never presented, nor reacted to, in a negative light. Similarly, unfulfilled legal obligations, which, in public media news articles, were the second most frequently mentioned action (n = 21, 26%), were not mentioned once in government news releases. While it may not be reasonable to expect government to present a balanced narrative as to its own actions, it nonetheless remains vital that the public be informed of not only the successes of the *ESA,* but also of its failures. Indeed, by centring such a large portion of its narrative primarily on listing, a select facet of the reality faced by species at risk in Nova Scotia, the provincial government contributes to a continued overemphasis on the implementation gap, undermining the conservation aims of the Act (*ESA,* 1998; Bankes et al., 2014). Thus, the importance of the role played public media in transmitting accurate information as to the implementation and subsequent impacts of the *ESA* is compounded.

Moving Beyond the Implementation Gap

The emphasis on species listing as a focus when compared to other kinds of actions (as demonstrated in section 4.2.1) is reflected in the tone and content of both government news releases and public media news articles. At 63% (n = 121), well over half of the actions or

perceived inactions across these two publication types pertained exclusively to listing, meaning that actions related to species monitoring or recovery were much less covered. Listing actions, while central in enabling the planning and eventual completion of essential monitoring and recovery activities under the *ESA,* cannot in and of themselves achieve Nova Scotia's conservation ambitions (Dorey & Walker, 2018). Like Nova Scotians have seen in practice, this is due to the fact that beyond triggering basic prohibitions not to kill or sell a listed specimen or destroy its residence, the listing process alone has not been a guarantee of the timely or appropriate delivery of further conservation action (Dorey & Walker, 2018; *Bancroft v Nova Scotia,* 2020; ECE Law, 2021). In this, the risks inherent to the stubborn refusal to look beyond the implementation gap become apparent.

While the *ESA's* scientific listing model effectively removes any Ministerial discretion from the decision to list a species, the data suggests that this mechanism has resulted in this disproportionate emphasis on listing. This has, in turn, reinforced the notion that stringent implementation of the Act, beginning with the legally mandated listing process, would necessarily achieve the recovery of species at risk in Nova Scotia (Bankes et al., 2014). Indeed, the provincial government's unidimensional and self-congratulatory approach to media coverage of the *ESA,* which has so heavily emphasized listing actions, does not appear to have significantly halted species decline (Ray et al., 2021). However, given findings from the Nature Conservancy of Canada (2022) that nine in 10 Canadians believe that all of society, government included, must work together to prevent further biodiversity loss, it is plausible that this governmental approach continues to be employed in response to electoral interests (Illical & Harrison, 2007). Contrastingly, the approach employed by the public media sphere, increasingly critical in nature, has marked an important shift in the wider discussion surrounding the *ESA* and has heightened existing public pressure mounted on the province. These public media news stories, attentive to the flaws inherent to Nova Scotia's policy response then serve as an important accountability forum, triggering formal accountability processes in government (Jacobs & Schillemans, 2016).

Unpacking Endangered Species Bias

In both publication types, a significant proportion (60%) of listing actions pertained to species being categorized as endangered. As defined in the *ESA* (1998), an endangered species is any species facing "imminent extinction or extirpation," meaning that, without human intervention, it risks ceasing to exist, either altogether or across Nova Scotia. This media representation is consistent with the self-dubbed "emergency room" nature of legislation like the *ESA*, aimed at "preventing any species in the Province from becoming extirpated or extinct as a consequence of human activities" (*ESA,* 1998; Bankes et al., 2014). The reactive nature of such legislation, fully engaged only when a species is confronted with imminent danger, is "something that good environmental laws should avoid or at least minimize" (Bankes et al., 2014, p. 6030). Turcotte et al. (2014) are similarly critical of this bias towards the listing of endangered species and instead advocate for a species at risk legislation framework which works to proactively monitor species to help catch their declines early on.

In Nova Scotia, nowhere has this bias towards endangered species been more apparent than in the case of the Mainland Moose. Across all media publications analyzed in this study, the endangered Mainland Moose was the species most frequently mentioned (18%, n = 38). These higher rates of media representation likely come as a result of the convergence of two important factors – the once-abundant Mainland Moose populations dwindling down to only 700 specimens, and the judgment delivered in 2020 over *Bancroft v Nova Scotia* (Nova Scotia Department of Natural Resources and Renewables, 2021d). This case, brought before the courts in 2019 by a group of concerned naturalists, represented the culmination of the frustrations of many Nova Scotians over the consistently declining numbers of this iconic species (Bogan, n.d; Figure 6). In the ensuing judicial review, Justice Brothers ultimately ruled that the Minister had unreasonably omitted core habitat from the Mainland Moose's 2003 recovery plan and that there had also been a failure to complete the legally mandated 5 year review of the document (*Bancroft v Nova Scotia,* 2020; ECE Law, 2021). The following year, in 2021, when the province released (and reported on) a new recovery plan for the Mainland Moose which did include core habitat, they cited the importance of the animal in Nova Scotia's

"natural and cultural identity" (Nova Scotia Department of Natural Resources and Renewables, 2021d). In response to growing public pressures then, we see what could very well be characterized as a (re)construction of a governmental narrative which has, until very recently, centred its efforts primarily on reactive conservation mechanisms.

5.3 Recommendations

In this context, I recommend that the discretionary language used in Nova Scotia's *ESA* be removed in favour of enforceable standards. This echoes Turcotte et al.'s (2021) recommendation that the same be done for the federal *SARA.* Such an undertaking would reduce ambiguities in the implementation of the *ESA,* especially those sections pertaining to conservation activities intended to occur after the initial listing process (Illical & Harrison, 2007; Turcotte et al., 2021). In this way, the likelihood of positive conservation outcomes might be increased (Turcotte et al., 2021). As was exemplified by *Bancroft v Nova Scotia* (2020), however, in order for these commanding changes in legislative language to bring about their intended results, a matching preparedness to abide by the ensuing responsibilities must also exist (Turcotte et al. 2021). Understanding the important function of news media in generating the public pressure necessary to bring about this action from government is then essential.

This is because in addressing the provincial government's unfulfilled legal obligations under the *ESA* – where the narratives presented by government actors and the public have markedly differed in their content and tone – there exists considerable potential to exercise mechanisms of public accountability and ultimately, improve conservation outcomes (Jacobs & Schillemans, 2016; Westwood et al., 2019). While the public might not reasonably be able to expect a balance of perspectives from government reporting, striking the needed equilibrium in the narrative might first be achieved through the use of the public media. Indeed, public media has long served as an effective tool in monitoring government activity (Jacobs & Schillemans, 2016). Thus, I also recommend that public media increasingly continue to offer critical perspectives related not only to the implementation of the *ESA,* but also to its resulting conservation outcomes. This anticipation of likely media scrutiny would, in turn, bring about

accountability demands from government actors (Jacobs & Schillemans, 2016). This very trend is directly observable in the case of the Mainland Moose (Figure 6), where a marked increase in negative public media reporting in 2019 preceded a subsequent upturn in related government reporting.

Finally, I recommend that media coverage from both publication types augment their coverage of other, non-listing actions under the *ESA.* Reversing the negative trends in biodiversity in Nova Scotia will require an accompanying willingness, both among public and government entities, to extend the narrative framing the Act beyond just the listing process (Ray et al., 2014). Here, both publication types could reasonably be expected to engage in reporting related to other key conservation activities prescribed by the *ESA,* though this undertaking becomes especially important for government actors responsible for implementing the Act. In effect, formal mechanisms for consistent governmental reporting on actions (or inactions) taken under the *ESA* could lead to more effective, proactive conservation initiatives (Westwood et al., 2019). Such an approach must include honest and transparent reporting from responsible authorities detailing both the successes and failures in using legislation as a tool to protect species at risk (Westwood et al., 2019). In this way, the public, to whom the government is accountable, can be more accurately informed as to exactly which conservation actions are being undertaken by government and as a result, be better equipped to exercise the necessary political pressure to ensure that these efforts are actually capable of achieving their stated objectives (Jacobs & Schillemans, 2016; Turcotte et al., 2021).

5.4 Limitations and Future Opportunities

Public narratives are inherently subjective, which complicates the work involved in concretely defining them (Liu, 2012). Nonetheless, this reality was embraced by this study's design and its underlying theoretical framework of post-positivism (Krauss, 2005). Indeed, only in comparing the sentiments and proposed actions found within different stakeholder narratives could the above discussion of potential remedies to Nova Scotia's biodiversity trends be completed. Given this reality, however, the results generated by this study might have been

strengthened through the inclusion of a second coder, which would have permitted for the establishment of intercoder reliability (Orphanidou & Kadianaki, 2020). This is because the coding process undertaken involved frequent decision-making, for which there existed no mechanism against which to confirm the validity of the selected choice. Especially in the context of a sentiment analysis, where the coding process entailed the subjective application of *a priori* and *a posteriori* codes, results generated could very well have been influenced my own positionality and biases as a researcher.

Relatedly, since the sample of articles coded was limited due to the capacity concerns of a single coder operating within a constrained time frame, another opportunity to improve upon this work would be to repeat the coding process with a larger sample of public media news articles. While the sample of government news releases coded (n = 36) could not have been increased since it represented all of the available and relevant publications, being able to code all 212 eligible public media news articles would have permitted to draw more confident conclusions. This view is justified in light of the broad range of actions, perspectives, and stakeholders which were included even among the small sample of public media articles coded (n = 36). Further, because many of the articles in question were relatively short, this comprehensive approach would not impose an unreasonable burden on a team of future coders. In this way, data which accounts for all perspectives published in public media news articles – and not just those that were randomly selected according to the methods described in section 3.2.2 – might be generated.

There also exist avenues through which to provide additional nuance to the simple sentiment analysis employed by this study. This could include a more extensive range of sentiment codes, or a more thorough analysis of shifts in related sentiment over time. For example, a tone for the eras described in section 3.2.2 could be determined according to the sentiments coded for each relevant article. This could be achieved by assigning a numerical value to each sentiment (e.g., positive = 1, neutral = 0, negative = -1) and then calculating numerical averages. This approach would then permit for the comparison of individual

sentiments to the tone of the overall narrative, allowing future researchers to gauge whether or not perspectives related to the implementation of the *ESA* act as outliers or are consistent with broader views.

Finally, the scope of this research is limited in that it only treats written news media in its narrative and sentiment analyses, excluding other potentially informative resources like television, radio, or social media. Especially today, where the popularity of social media has resulted in the existence of a rapidly growing body of freely available, nearly instantaneous data on the opinions of implicated stakeholders, it is conceivable that not all actors, actions, or sentiments were captured by this study design (Liu, 2012). Further, subtle or even sarcastic indications of tone or sentiment, available only through the auditory formats of television or radio may have been lost in this work. However, research has indicated that overall, media agendas run quite parallel, indicating that this study's exclusion of television news or social media not to be of substantial issue (Jacob & Schillemans, 2016, p. 29, referencing McCombs, 2005).

Chapter 6: Conclusion

By conducting the first known systemic content analysis of the Nova Scotian *ESA* and its related media publications*,* this research offers a new perspective into not only the structure of the Act itself, but also its progress in achieving its intended conservation goals. In responding to this study's first research objective, which sought to determine the extent of the presence of discretionary language in the *ESA,* I found that just under half (46%, n = 56) of actions prescribed by the Act were discretionary. The second and third research objectives of this study, aimed at analyzing written news articles to gauge the narratives of both provincial government and the public media with respect to the *ESA*, establish several important findings. First, actions presented in government news releases made frequent use of positive tones, and often included only government perspectives. Additionally, there existed a tendency to focus on listing actions in public news media articles and government news releases alike, especially

when it came to endangered species like the Mainland Moose. In this light, it was possible synthesize these findings to further investigate the implementation gap and inform potential remedies, thus achieving this study's fourth and final research objective.

Indeed, having established that nearly half of the conservation actions prescribed by the *ESA* are discretionary and consequently, unenforceable before the courts, it becomes evident that legislative amendments to the Act must occur to reduce broad discretionary powers. Moreover, given the tendency, especially among governmental narratives, to place disproportionate emphasis on the strict implementation of the *ESA* without consideration for the Act's fundamental ambitions or the broader reception of these conservation efforts, it remains essential that public media news articles continue to lend a critical eye to actions (or inactions) taken under the Act (Bankes et al., 2014). In this way, government can be incentivized to engage in more transparent decision-making and thus, improve conservation outcomes in Nova Scotia. Through these efforts, important mechanisms of public accountability might be strengthened, ultimately increasing the capacity of the Nova Scotian policy response to effectively address the biodiversity crisis (Jacobs & Schillemans, 2016; Ray et al., 2021).

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Appendix A
Instructions for Data Extraction Form and Codebook

RESEARCH GOAL 1: TEXT ANALYSIS

Actions that were either mandated or suggested in the text of the Nova Scotian *Endangered Species Act (ESA)* were analysed. For consistency, targeted actions were counted on the basis of clearly demarcated verbs, rather than an individual section of subsection of the Act (*ESA*, 1998).

Note that synonymous uses of discretionary or legally obligatory language should not be double counted within an individual action and its associated verb. For example, the following subsection of the *ESA,* ss. 15(5) should be counted as two actions, not three:

> "A recovery plan **may** include provisions respecting one or more endangered or threatened species and **may**, *where the Minister considers it appropriate*, include ecosystem management"

One for the first action, "include provisions" and another for the second action, "include ecosystem management". This is because in the second action, "may" and "where the Minister considers it appropriate" effectively serve the same purpose.

Each time a verb was encountered, data related to that action was recorded in an Excel workbook in the following categories:

1. **Section of the *ESA* in question**

Note the relevant section of the *ESA* in which the action is found.

2. **Actor responsible for the action in question**

Note the provincial government actor responsible for the action in question. Actor types and examples of their use in text are given below.

Table A-1: Actor type codes

Code	Example
Minister of Natural Resources and Renewables	The **Minister** *may* expend […] money from the Fund
Department of Natural Resources and Renewables	The **Department** *shall* appoint an employee of the Department to act as secretary of the Group
Species at Risk Working Group	The (**Species at Risk Working**) **Group** *shall* advise the Minister annually of any addition or deletion of a species to or from the list

Code	Example
Legal Interpreter	(No **person** *shall*) kill, injure, possess, disturb, take or interfere with or attempt to kill, injure, possess, disturb, take or interfere with an endangered or threatened species or any part or product thereof
Permit Holder	The **holder of a permit** *shall* comply with the terms and conditions of the permit
Landowner	Where the Minister and the owner cannot agree on the value of compensation, the question of value *may*, at the option of the **owner**, be referred to the Utility and Review Board
Contravener of the Act	Every **person who contravenes** this Act or the regulations is guilty of an offence and is *liable* on summary conviction of…
Governor in Council	The **Governor in Council** *may* make regulations
Unspecified or Unclear	…including activities that *may* adversely affect the core habitat of the endangered or threatened species
Recovery Team	The **recovery team** *shall* assist the Minister in developing and implementing the recovery plan
Conservation Officer or Employee of the Department	A **conservation officer or employee of the Department** […] *may* enter upon any lands without being liable for trespass
The Court	The **court** *may* […] make an order containing one or more of the following prohibitions

In instances resembling that presented below, (ie where no specific mention of an actor exists), the action in question should be attributed to the Minister, since they bear ultimate responsibility for the *ESA*:

"Recovery plans and management plans shall be reviewed every five years to determine the progress of the recovery of the species and whether any changes or modifications are required"

3. Context for action in question
Include the context for the action in question by copying the text of relevant section or subsection of the *ESA* into this column.

4. Type of action
Categorize the action as 'Discretionary', 'Legally Obligatory', or 'Ambiguous'. Examples of each type of language are given in the table below.

Table A-2: Language codes

Code	Example
Discretionary Language Defined as any language which allows an actor discretion to undertake or complete (or not) an action under the act.	
"In X's opinion"	where**, in the opinion of the Minister**, there is threat to the survival of the species.
"May"	the Minister **may** on a precautionary basis, regardless of whether the scientific information is available, list endangered or threatened species
"Should"	The Group shall, during the time a listing made by the Minister is in effect, make a determination as to whether the species listed by the Minister **should** be added to the list
"Considers to be"	The Minister may appoint to a recovery team any person whom **the Minister considers to be interested** in the recovery of the particular species for which the recovery team is appointed
"In X's discretion"	which, **in the Minister's discretion**, are considered feasible
"Where X is satisfied"	**where the Minister is satisfied** that the core habitat of the endangered or threatened species on public lands is not sufficient to meet the recovery needs of the species.
"Deemed"	The Governor in Council may make regulations respecting any other matter **deemed** necessary or advisable to carry out effectively the intent and purpose of this Act.
Legally Obligatory Language Defined as any language which legally obligates an actor to undertake or complete an action under the act.	
"May not"	The Minister **may not** designate a person or class or persons employed by the Government of Canada unless the Government of Canada agrees
"Shall not"	The Minister **shall not** designate core habitat until after the expiry of the time referred to in clause (2)(c).

Code	Example
"Is liable"	Where a corporation commits an offence under this Act or the regulations, any officer, director or agent of the corporation who directed, authorized, assented to, acquiesced in or participated in the violation of this Act or the regulations is guilty of the offence and **is liable** to the punishment provided for the offence, whether or not the corporation has been prosecuted.
"Shall"	The Department **shall** appoint an employee of the Department to act as secretary of the Group

Ambiguous Language (excluded)

Defined as any term included in this codebook that does not in its actual meaning refer to an actor undertaking or completing an action under the act.

	…including activities that **may** adversely affect the core habitat of the endangered or threatened species.

Note that the code "Must" was deductively included, but inductively removed since no instances of the term were found within the text of the *ESA*

RESEARCH GOALS 2 AND 3: NARRATIVE ANALYSIS

Here, actions or perceived inactions taken under the Nova Scotia *ESA* were targeted as the central data point of interest.

Through the use of a Microsoft form (available in Appendix B), data from each media item retained for analysis was recorded in the following categories:

1. Document ID in which data point (action) appears

Write the assigned document number (G-X for government releases, or P-X for public media articles) in which the action in question appears.

2. Document title in which data point (action) appears

Write the document title in which the action in question appears.

3. Year of publication of document in which data point (action) appears

Write the year of publication of the document in which the action in question appears.

4. Document type of data point (action)

Note the type of document in which the action in question appears.

Table A-3: Publication type codes

Code	Definition
Government News Release	A news release published by the Nova Scotian provincial government and made available through their website's news search function.
Public News Media Article	A news article intended for broad public consumption and published by any actor other than the Nova Scotian Provincial government.

5. Data point (sentence with action verb)
Copy and paste the sentence in which the action appears (action or perceived inaction under the *ESA*).

6. Action Type
Categorize the kind of action in question according to the following codes.

Code	Definition
Appointing members to a Species at Risk Working Group	Any action which relates to the appointment of new members to the Species at Risk Working Group.
Enforcement	Any action relating to the enforcement of mechanisms or prohibitions under the *ESA.*
Establishing a new conservation mechanism	Any action relating to the establishment of a new conservation mechanism under the *ESA*. Examples include the creation of the Species at Risk Fund or recovery forums.
Establishing the Endangered Species Act	Any action related to the drafting, reading, and passing of the *ESA.*
Funding	Any action which serves to provide funding to conservation efforts under the *ESA.*
Judicial order	Any action pertaining to the handing down of a judicial order.
Listing*	Any action which serves to add a species to the Endangered Species List of Nova Scotia.
Monitoring	Any action related to monitoring or evaluating the status of endangered species populations.
Partnerships	Any action related to the creation of a partnership aimed at improving outcomes for endangered species under the *ESA.*

Code	Definition
Prohibition	Any action related to the prohibitions listed under the *ESA.*
Publishing a recovery or management plan	Any action pertaining to the publication of a recovery or management plan as mandated by the *ESA.*
Raising awareness	Any action specifically aimed at raising awareness of endangered species under the *ESA.*
Recommendation	Any action pertaining to the *ESA* made to provide a recommendation aimed at improving the status of endangered species in Nova Scotia.
Request for help from the public	Any action which specifically requests help from the public in order to achieve or further the goals of the *ESA.*
Unfulfilled legal obligations	Any action pertaining to an unfulfilled legal obligation under the *ESA.*

* If the action is question is a listing action, ensure to respond to question 8 of the data extraction form.

7. If applicable: Which species does the action concern?
If the action pertains to a specific species, note the name of the species.

8. If applicable: Type of Listing*
If the action is a listing action, note the kind of listing in question.

Table A-4: Listing type codes

Code	Definition
Endangered	A species facing imminent extirpation or extinction.
Extinct	A species that no longer exists.
Extirpated	A species that no longer exists in the wild in the Province but exists in the wild outside the Province.
Indeterminate	Insufficient information to determine status.
Special Concern	Formerly "vulnerable".
Threatened	A species likely to become endangered if limiting factors are not reversed.
Vulnerable	A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events.

Note: definitions taken from the *ESA* (1998)

9. Actor (principal action instigator - who performed the action in question?)
Note the kind of party responsible for performing or undertaking the action.

Table A-5: Actor type code

Code	Definition
Industry	Any actor employed by or otherwise working in private industry.
Judiciary	Any legal actor representing the judiciary.
Non-profit	Any actor employed by or otherwise working in the non-profit sector.
Nova Scotia provincial government	Any actor employed by or otherwise working for the Nova Scotian provincial government.
Scientist	Any actor working as a scientist and acting from a position of scientific expertise.
Local public	Any actor from the local public that is not otherwise identified by another profession.
Academic	Any actor employed by or otherwise working for an academic institution.
Journalist	Any actor working as a journalist and acting in this capacity.

10. If applicable: which NS Provincial Government Actor?
If the actor is the NS provincial government, note the specific provincial government actor. Where provincial government actor is unspecified, check off Minister of Natural Resources and Renewables.

11. If applicable: If there's a quote presenting the action, what is it?
If there's a quote presenting the action, copy and paste it into the answer box to this question.

12. If there's an associated reaction - who is it coming from?
If a reaction to the primary action is presented within the same article, note the kind of party it's coming from. Refer to the actor code table under point 9 for a full list of possible codes.

13. If applicable: which NS Provincial Government reactor/respondent?
If the reaction is coming from the NS provincial government, note the specific provincial government (re)actor it's coming from. Refer to the provincial government actor code table under point 10 for a full list of possible codes.

14. If there's a quote in response/reaction to the action in question, what is it?
If there's a quote presenting the reaction, copy and paste it into the answer box to this question.

15. Sentiment with which the principal action presented.
Note the tone of the presentation of the action.

Table A-6: Presentation sentiment codes

Code	Definition
Positive	Paints the action positively. Indicator words could include terms such as "help," "success," "pleased," or "excited".
Negative	Paints the action negatively. Indicator words could include terms such as "disappointed," "failure," or "insufficient".
Neutral	Paints the action in a straightforward, matter of fact manner with no indication of emotion/sentiment.
Mixed	Paints the action in a manner which combines both positive and negative elements or some form of caveat.

16. What is the sentiment of the response to the action?
Note the tone of the reaction to the action.

Table A-7: Response sentiment codes

Code	Definition
Positive	Reacts to the action positively. Indicator words could include terms such as "help," "success," "pleased," or "excited".
Negative	Paints the action negatively. Indicator words could include terms such as "disappointed," "failure," or "insufficient".
Neutral	Paints the action in a straightforward, matter of fact manner with no indication of emotion.

Code	Definition
Mixed	Paints the action in a manner which combines both positive and negative elements or some form of caveat.
No Response	Use this code if no response or reaction to the action is presented.

Appendix B
Data Extraction Form

HONS: Gov and Media ESA Analysis ⅛

1. Document ID in which data point (action) appears

2. Document title in which data point (action) appears

3. Year of publication of document in which data point (action) appears

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4. Document type of data point (action)

○ Government news release

○ Popular news media - news article

○ Popular news media - blogpost

5. Data point (sentence with action verb)

[   ]

6. Action type

○ Funding

○ Partnerships

○ Raising awareness

○ Listing

○ Enacting part of a recovery/management plan

○ Monitoring

○ Prohibitions

○ Raising awareness

○ Recommendation

○ Voluntary stewardship

○   Other

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7. Which species does the action concern?

[   ]

8. If applicable: Type of Listing

○ Endangered

○ Threatened

○ Vulnerable

○ Special Concern

○ Extinct

○ Extirpated

○ Indeterminate

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9. Actor (principal action instigator - who performed the action in question?)

☐ Academic

☐ Federal Government

☐ Non-profit

☐ Industry

☐ Local public

☐ Nova Scotia provincial government

☐ Other

10. If applicable: which NS Provincial Government Actor?

◯ Enforcement officer

◯ Minister of Natural Resources

◯ Nova Scotia Species at Risk Working Group

◯ Government scientist

◯ Other

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11. If there's a quote presenting the action, what is it?

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12. If it's there's an associated reaction - who is it coming from?

○ Academic

○ Federal Government

○ Non-profit

○ Industry

○ Local public

○ Nova Scotia provincial government

○ The Judiciary

○   Other

13. If applicable: which NS Provincial Government reactor/respondent?

○ Enforcement officer

○ Minister of Natural Resources

○ Nova Scotia Species at Risk Working Group

○ Government scientist

○   Other

14. If there's a quote in response/reaction to the action in question, what is it?

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15. How is the principal action presented (ie tone)

  ◯ positive

  ◯ negative

  ◯ neutral

  ◯ mixed

16. How is the action being responded to

  ◯ positive

  ◯ negative

  ◯ neutral

  ◯ mixed

  ◯ no response

Appendix C

Additional Results

Figures
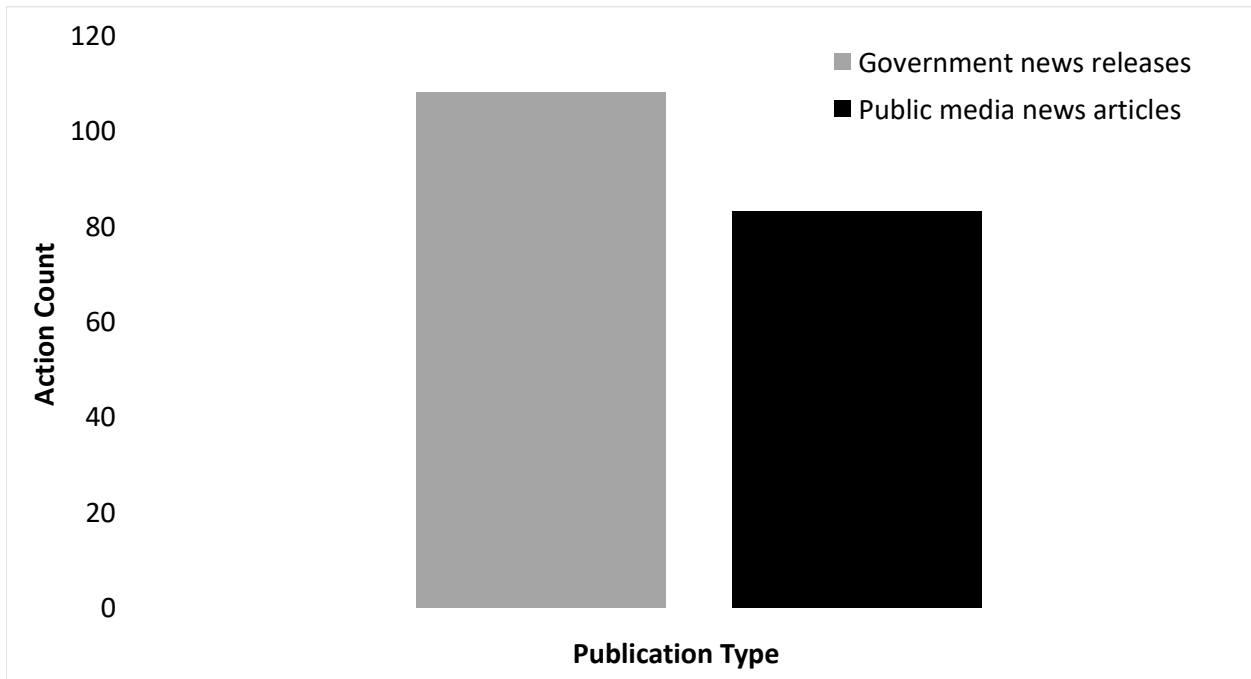
Figure C-1: Total action count by publication type
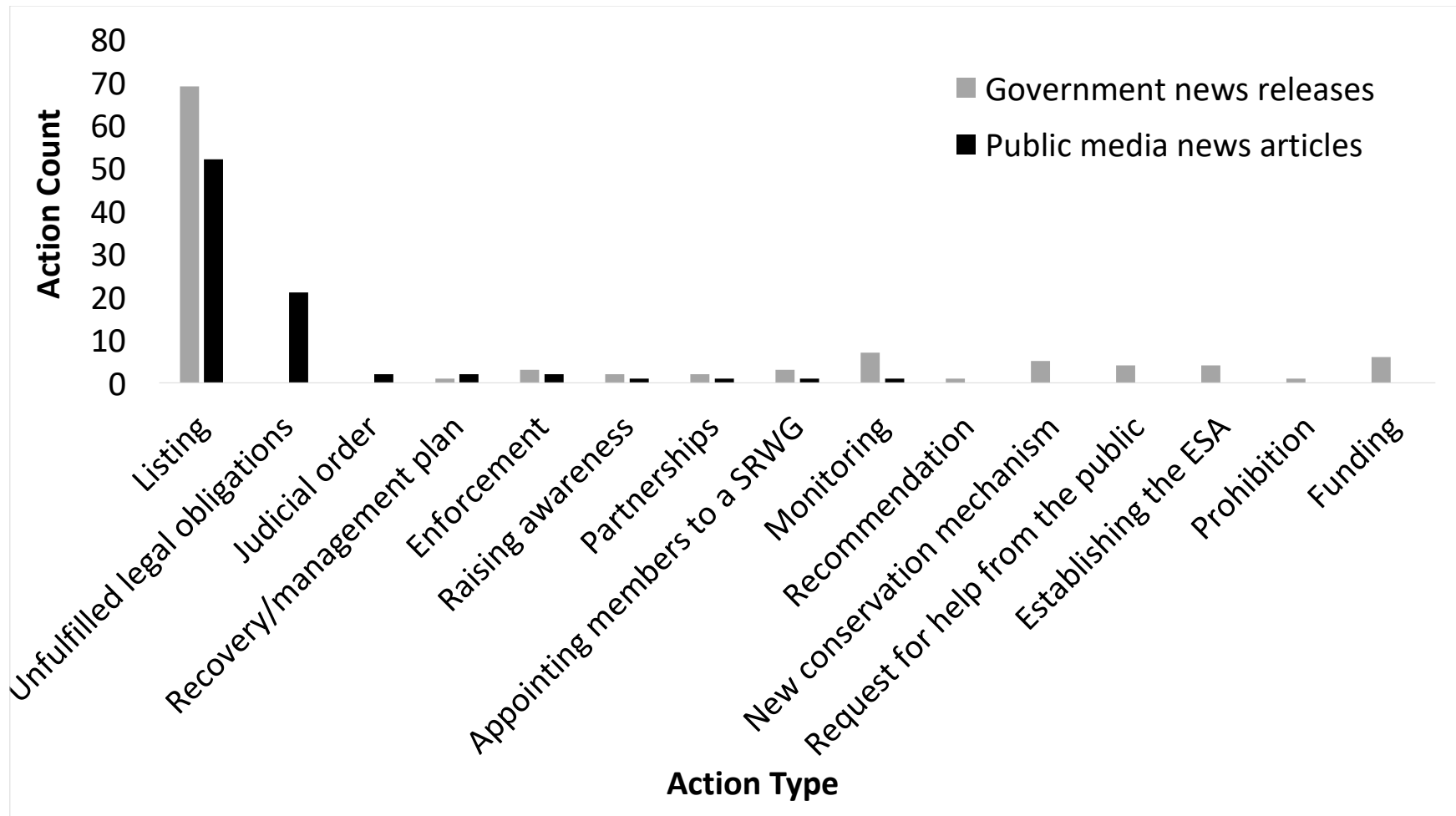
Figure C-2: Action type count by publication type
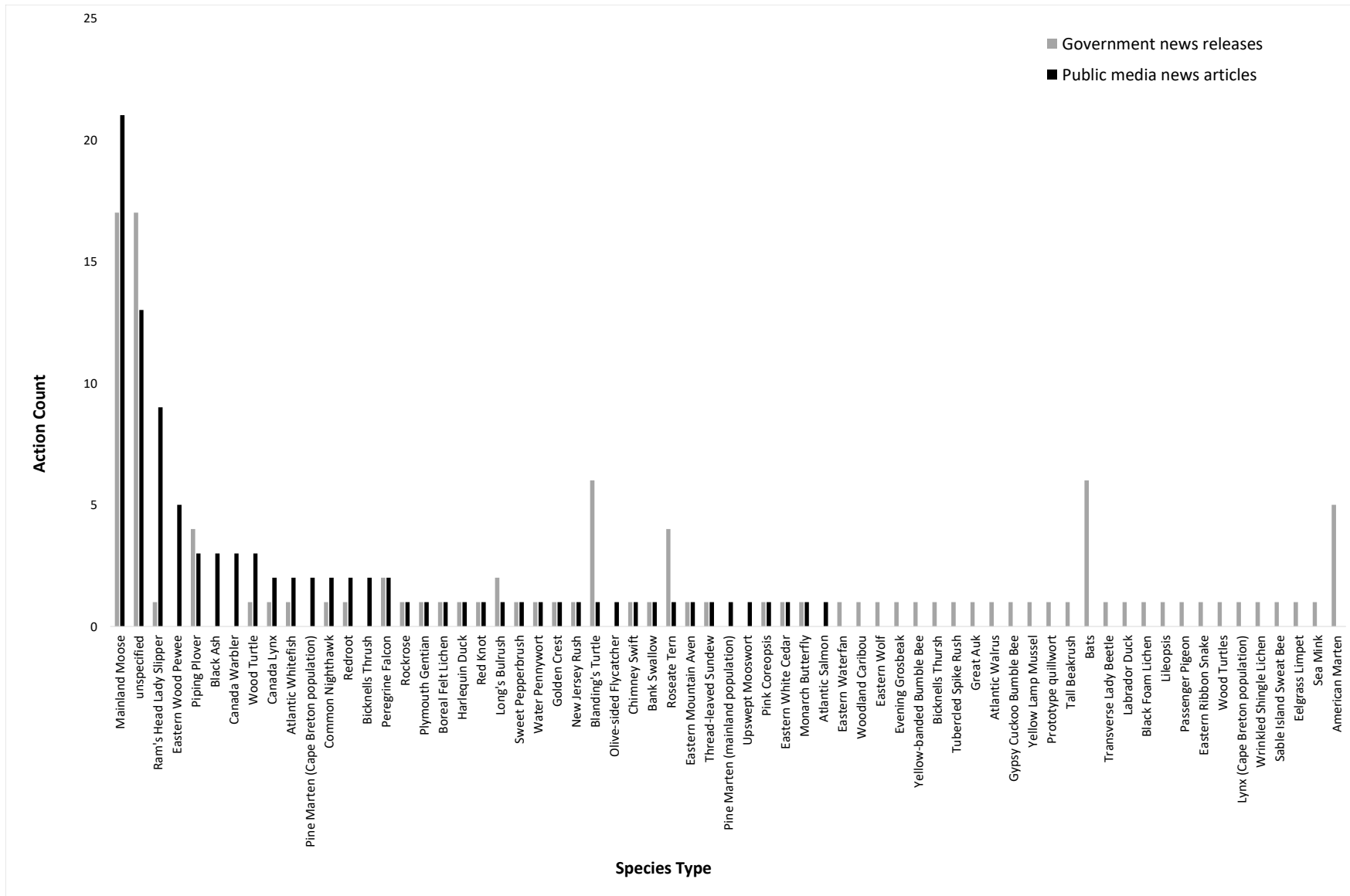
Figure C-3: Total action count by mentioned species type
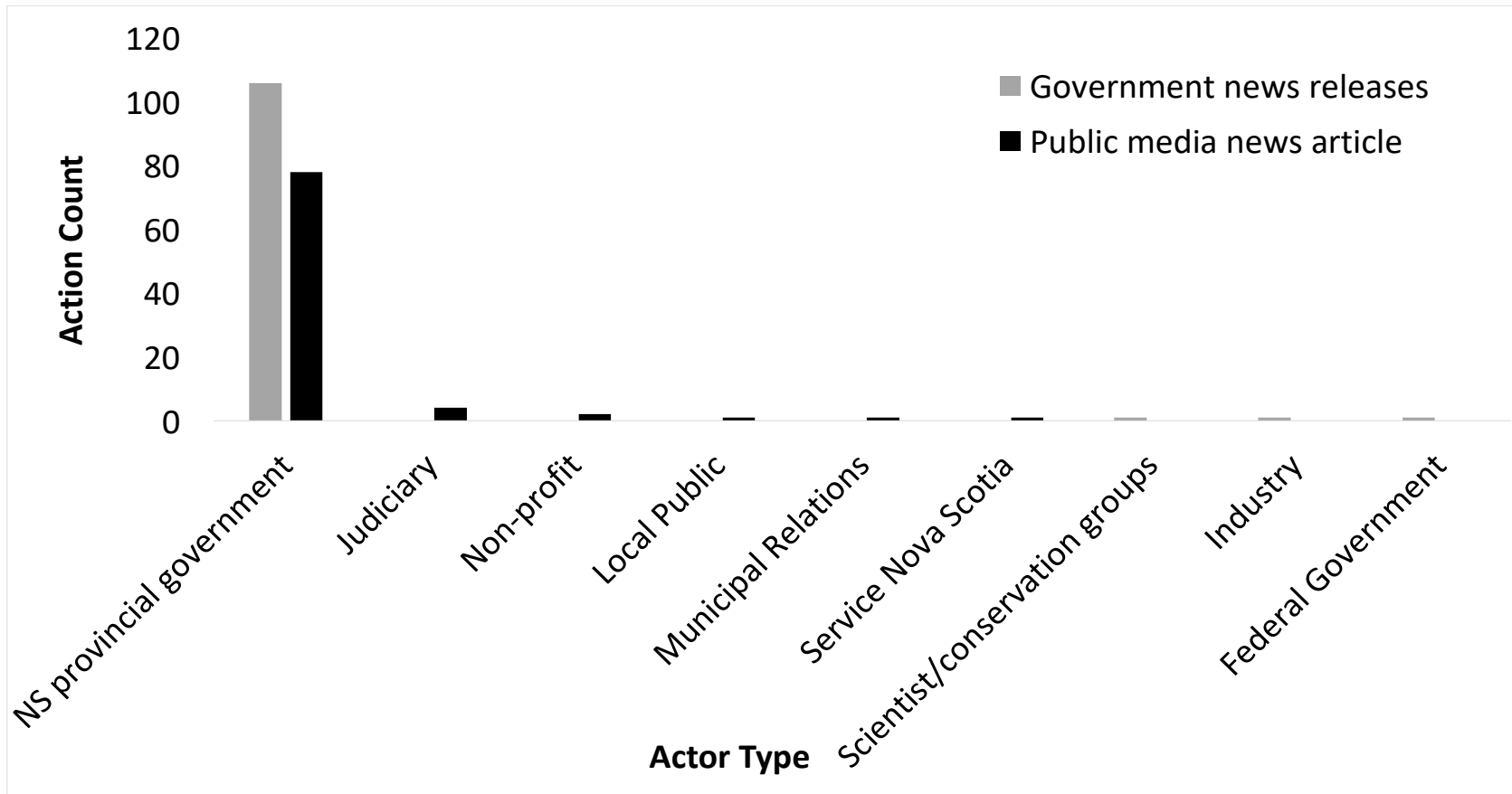
Figure C-4: Total action count by actor type
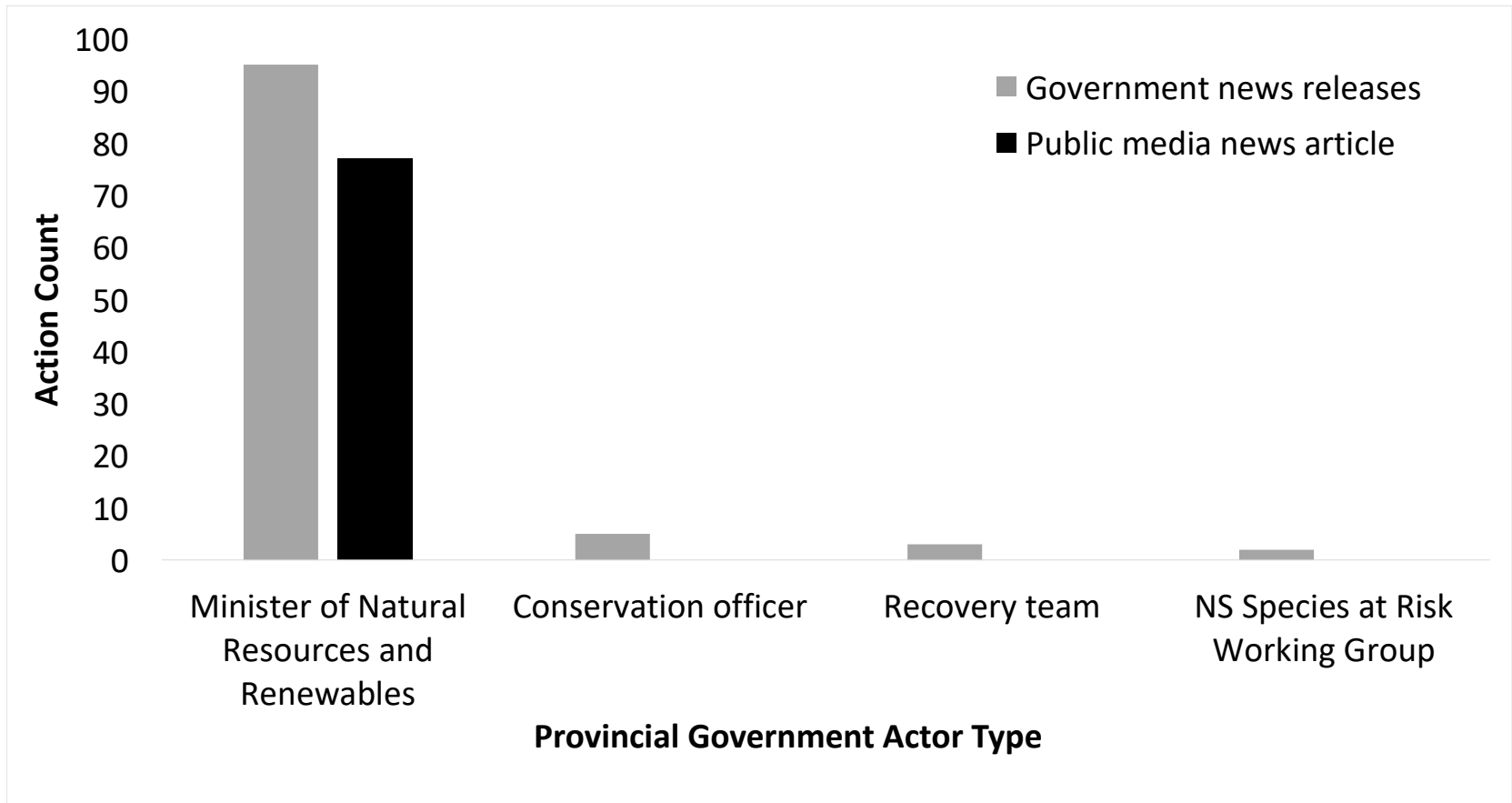
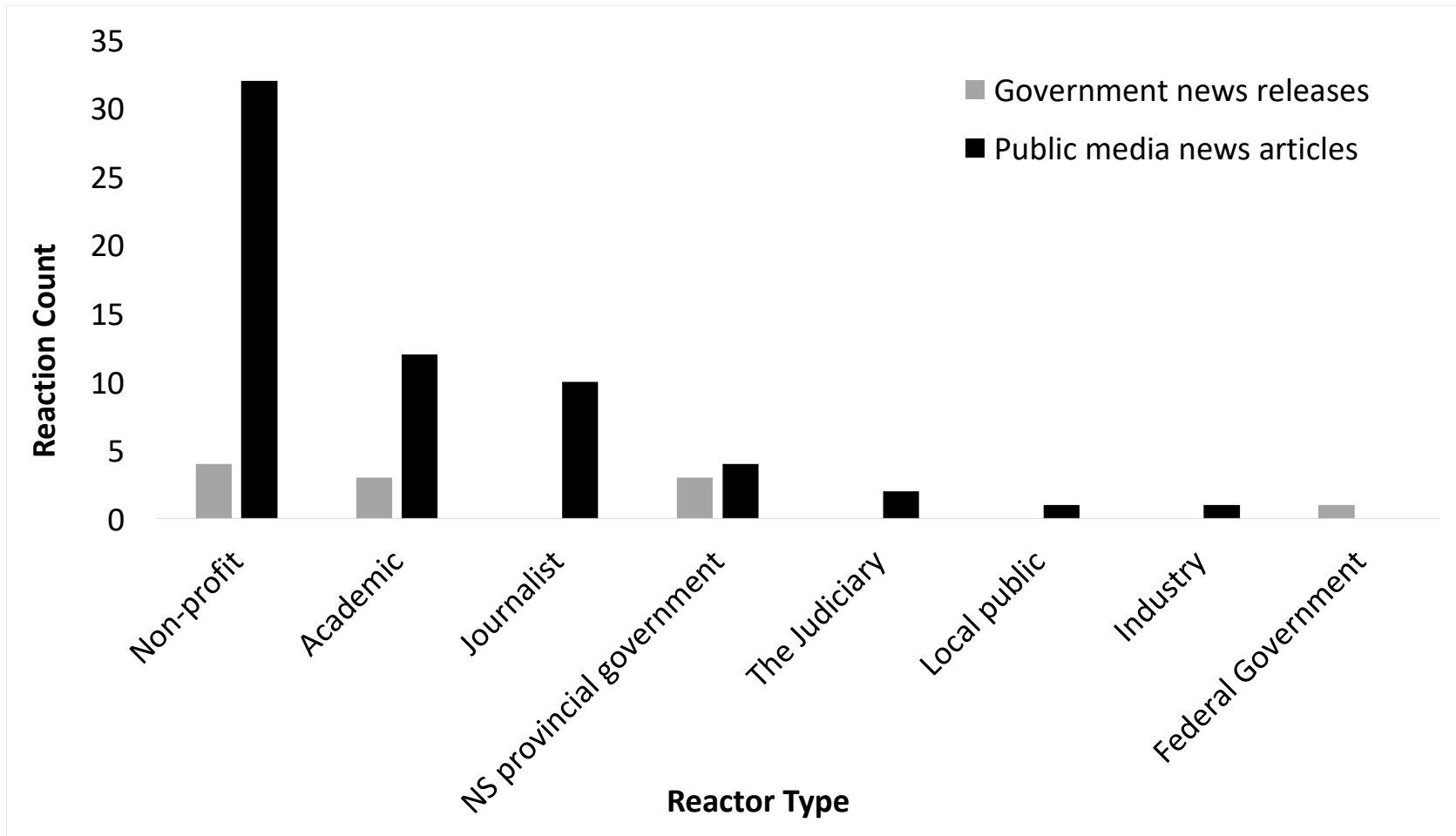*Figure C-5: Total action count by provincial government actor type*

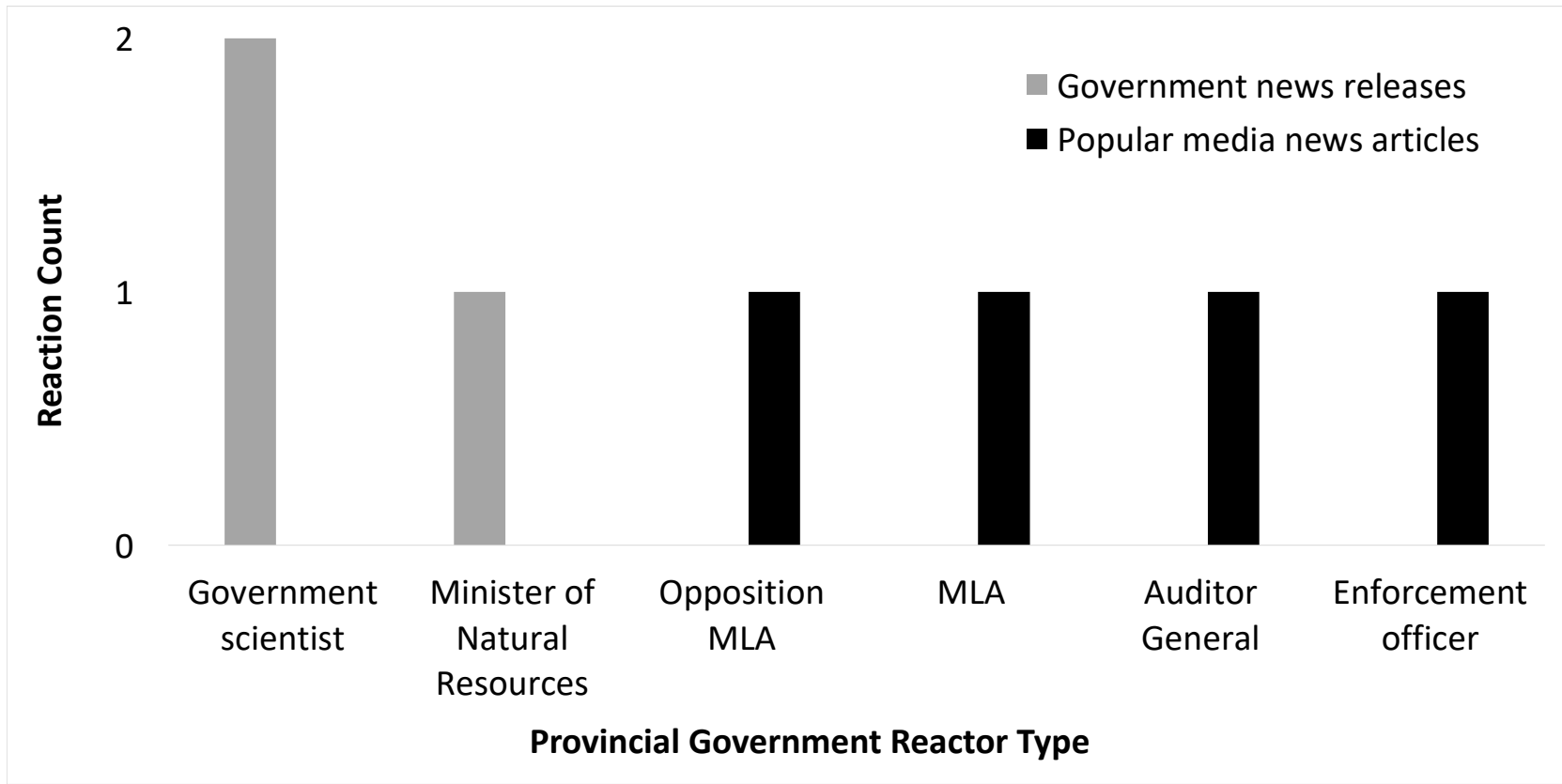*Figure C-6: Reaction type by reactor type*

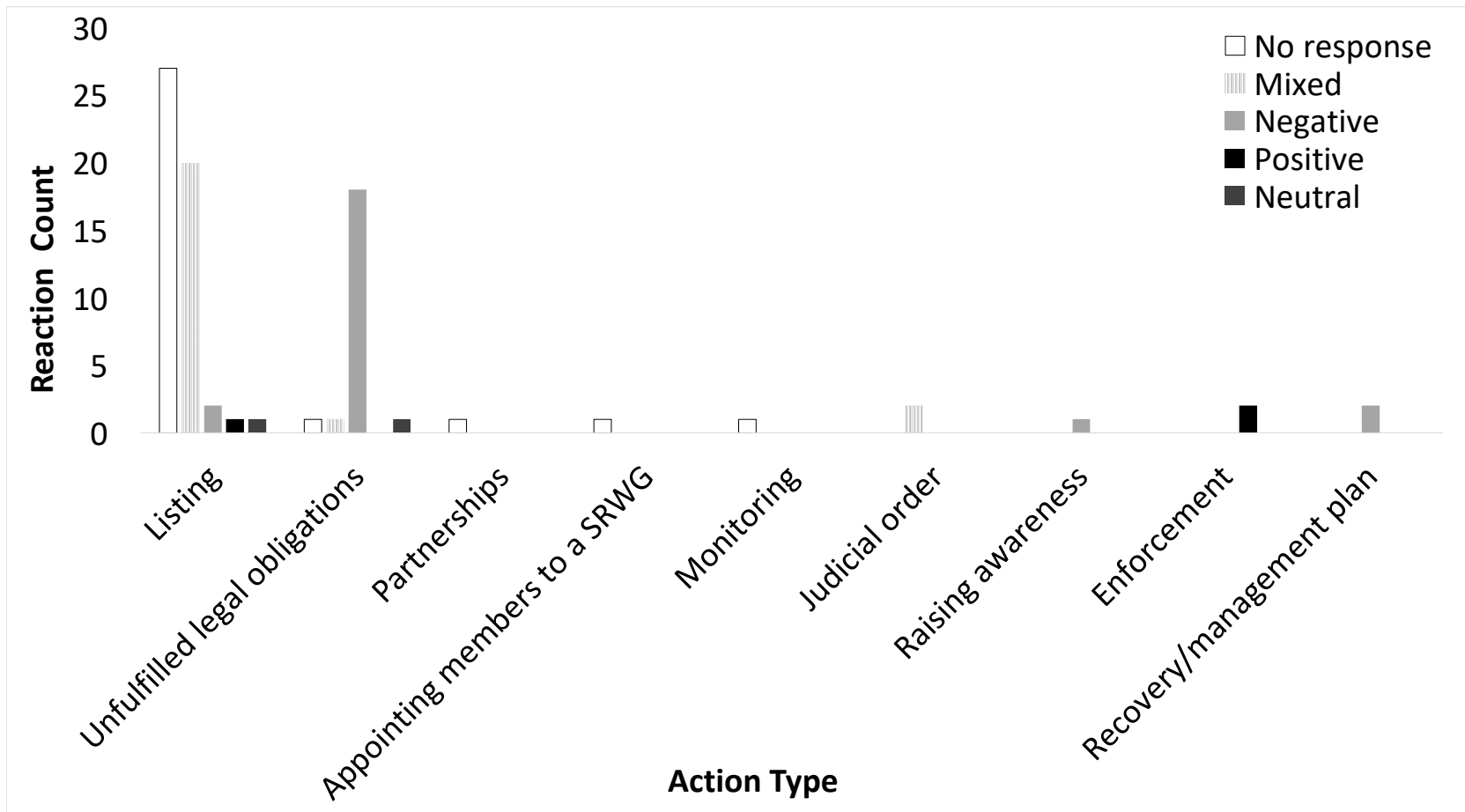*Figure C-7: Reaction count by provincial government reactor type*

Figure C-8: Reaction sentiment analysis by action type presented in public media articles
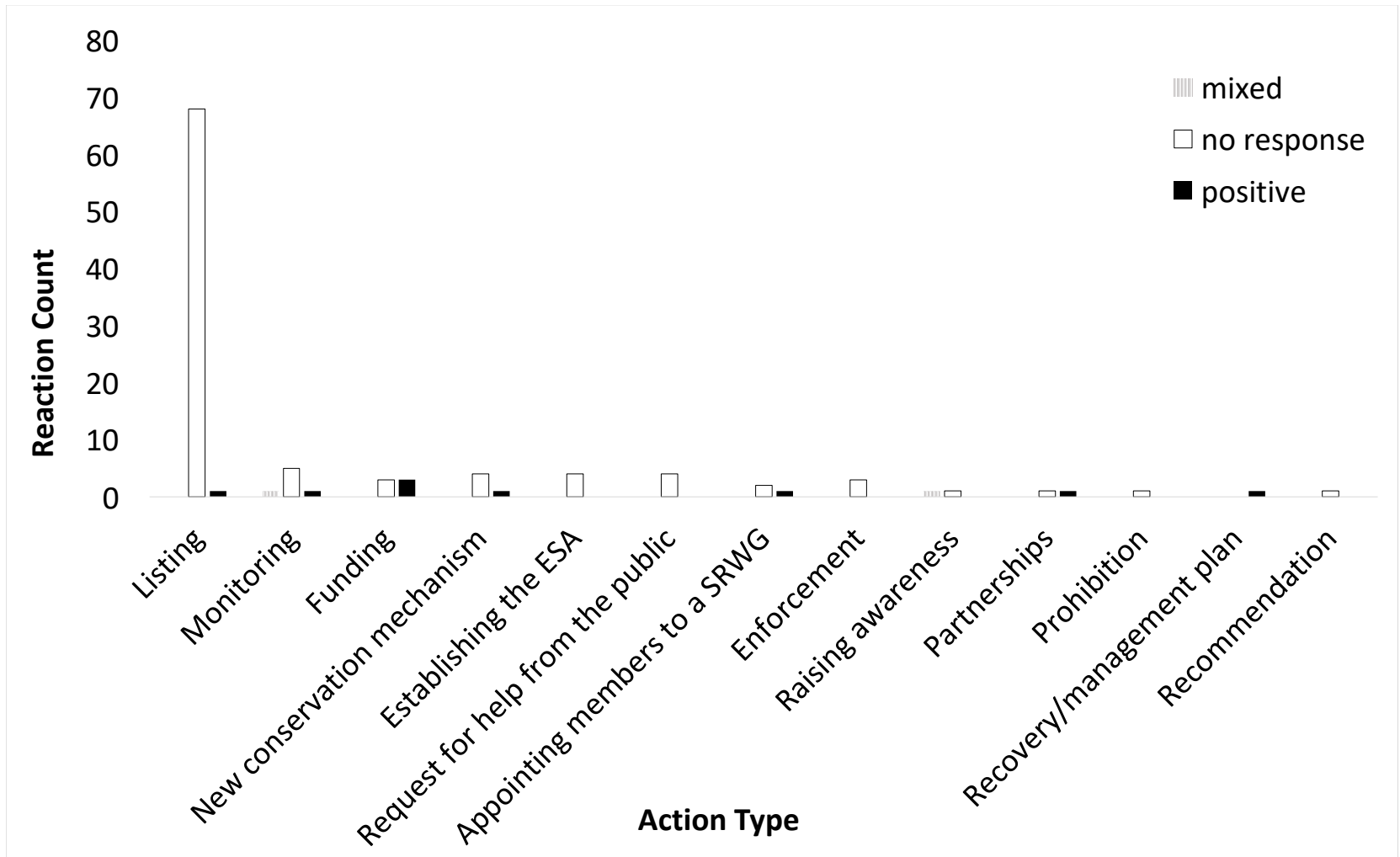
Figure C-9: Reaction sentiment analysis by action type presented in government news releases
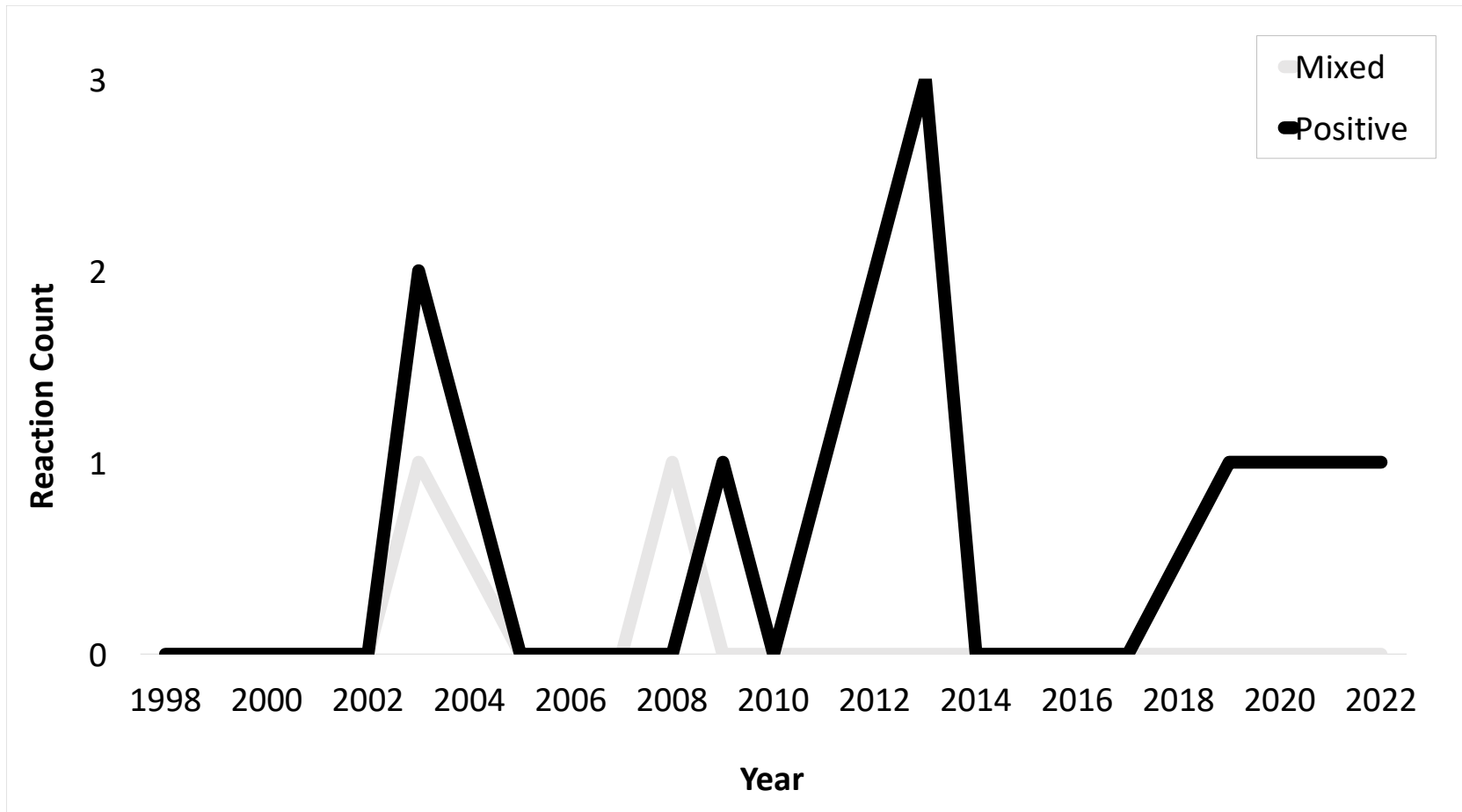
Figure C-10: Reaction sentiment analysis over time in government news releases

Table C-1: Government news release search and retention

Year	Results	Results retained	Total releases/year
1998	9	2	1042
1999	0	0	1116
2000	3	1	943
2001	1	1	1140
2002	3	2	1231
2003	7	4	1252
2004	1	0	1262
2005	2	2	1485
2006	4	1	1290
2007	13	8	1475
2008	5	3	1515
2009	5	2	1482
2010	3	2	1647
2011	1	0	1603
2012	2	0	1472
2013	5	3	1428
2014	3	1	1268
2015	3	0	1056
2016	1	0	1133
2017	1	1	936
2018	0	0	870
2019	2	1	818
2020	0	0	1302
2021	1	1	1586
2022	2	1	983
2023	0	0	0
Total	**77**	**36**	**31335**

Appendix D
Clean Excel data

Link to Excel workbook: [Clean data](#)