# Mandatory Disclosure as Calculative Spaces: Public Sector Accountability on Restoring Species at Risk[*†]

**Dasha Smirnow**

Lancaster University Management School, Lancaster University

Bailrigg, Lancaster, LA1 4YX, United Kingdom

Email: d.smirnow@lancaster.ac.uk

**Claire Deng**[‡]

Ted Rogers School of Management,

Toronto Metropolitan University

350 Victoria St, Toronto, ON, M5B 2K3, Canada

Email: claire.deng@torontomu.ca

ORCID: 0000-0002-7675-316X

August 2023

[*] We thank Eija Vinnari, Jane Baxter, Wai Fong Chua, the participants at the Centre for Social and Environmental Accounting Research (CSEAR) Webinar Series (2022), and those at the "Accounting, Accountability and Animals" workshop in Tampere, Finland (2019) for comments on earlier drafts of this paper. We also thank the editors and the reviewers for their helpful feedback.

[†] We thank CPA Ontario (Post-Secondary Institutions Funding Program, Tier 2) for the financial support necessary to undertake this study.

[‡] Corresponding author.

**Mandatory Disclosure as Calculative Spaces:**
**Public Sector Accountability on Restoring Species at Risk**


## Abstract

While sustainability has been a subject of growing inquiry in the accounting literature, biodiversity loss, an issue of critical societal importance, has not received the same attention. Furthermore, despite corporations, non-governmental organizations (NGOs), and the public sector all having distinct influences on biodiversity loss, the role of the public sector remains largely unexamined. Mobilizing Cuckston's (2022) framework for analyzing disclosures as calculative spaces, our study examines the framing of public sector reporting on biodiversity conservation. Specifically, through discourse analysis, we scrutinize the mandatory annual reports prepared by the Canadian federal government under the 2002 Species at Risk Act (SARA), which is aimed at preventing species extinction. The disclosures within these reports present discussions on the government's administration of SARA, thereby offering insights into the government's efforts to discharge accountability over the protection of species at risk. Our findings examine the significance of public sector reporting in enabling accountability for species conservation, and discuss the ways in which mandatory disclosures contribute to this process.



**Keywords**: calculation, calculative space, accountability, mandatory disclosure, public sector, conservation, biodiversity loss

## 1. Introduction

The current rate of global biodiversity loss is estimated to be 100 to 10,000 times higher than the naturally occurring background extinction rate, and faster than at any other time in human history (Briggs 2017; Ceballos, Ehrlich, and Raven 2020; Le Roux et al. 2019). Such loss is largely attributed to human causes such as changes in land use, pollution, invasive species, overexploitation, and climate change (Bonebrake et al. 2019; Gray and Milne 2018; Mazor et al. 2018; Singh et al. 2021). The long-standing concerns of scientists and environmental organizations over biodiversity loss are now being increasingly recognized by industry organizations and policymakers at all levels. This is evident in the incorporation of biodiversity concerns in the United Nations (UN) Sustainable Development Goals, the discussions held by the Organisation for Economic Co-operation and Development (OECD) (e.g., OECD 2020; World Economic Forum n.d.), and the establishment of the Taskforce on Nature-Related Financial Disclosures (TNFD n.d.). To support and promote the achievement of biodiversity targets, the UN declared the 2010s as the Decade of Biodiversity (UN Educational, Scientific and Cultural Organization n.d.). The COVID-19 pandemic also added to the sense of urgency regarding biodiversity loss, as it highlighted how habitat destruction can lead to increased interactions between humans and other species, thereby increasing the probability of epidemics (Tollefson 2020).

Understanding the causes of biodiversity loss and taking steps to mitigate it is of paramount importance to the scientific community. Given the roles of various organizations and institutions in causing (and stopping) biodiversity loss, accounting research can play a significant role by examining the impacts of performance management, controlling, incentivizing, reporting, and so on. Within sustainability accounting research, studies have primarily focused on large corporations, with little attention paid to other actors (Ball 2007; Ball et al. 2009; Qian, Burritt, and Monroe 2011; Samkin and Schneider 2010; Thomson, Grubnic, and Georgakopoulos 2014). Accounting for biodiversity and conservation, as a subtopic in the area of sustainability accounting research, also exhibits such a tendency (Weir 2018). Although corporations undoubtedly have a significant impact on the environment, addressing the challenges of biodiversity loss requires a deeper understanding of the roles played by all major actors, including the public sector.

The public sector is a key actor when it comes to environmental conservation given its resources and legislative power (Beckwith and Moore 2001; Roux, Murray, and van Wyk 2008), its ability to promulgate policy and enforce laws (Ekoko 2000), to implement and regulate action plans (Murray et al. 2011), and to coordinate with the private sector (Brock, Ulrich-Schad, and Prokopy 2018). Moreover, in many countries, the public sector is arguably the most responsible actor because environmental protection, including conservation, is enshrined in their constitutions (Shelton 1991).[1] To better understand the role of the public sector in managing biodiversity loss, we examine Canada's federal government reporting on wildlife management. We do so by focusing on the reports that the federal government is required to produce annually under Canada's 2002 Species at Risk Act (Species at Risk Act, SC 2002, c 29 [SARA]). The disclosures in these reports discuss the government's administration of SARA and, thus, give us new insights into how the government attempts to discharge its accountability over the protection of species at risk. As Canada is the world's second-largest country and spans diverse ecosystems, the study of Canada's conservation efforts is important in its own right.[2] At the same time, the requirements of the legislation present a unique setting to study mandatory disclosures on wildlife conservation prepared at the highest government level.

To examine how SARA reports account for species at risk, we adopt Cuckston's (2022) conceptual framework for analyzing qualitative accounts,[3] which is drawn from Callon and Law's (2005) and Callon and Muniesa's (2005) work on calculations and framing. According to Cuckston (2022), looking at qualitative accounts through such a "calculative" lens helps us understand the nuances of disclosure and evaluate what is brought in and excluded to create a particular framing. For example, Cuckston (2022) examines how a non-governmental organization (NGO) utilized voluntary disclosures as calculative spaces to assert its agency in restoring wildlife. This framework of examining accounts as calculative spaces involves three stages: sorting out and identifying entities; manipulating and transforming entities; and extracting results. We apply Cuckston's framework to mandatory disclosures in the public sector

[1] Canada is a notable exception here along with many other British colonies (Boyd 2013).

[2] Canada is home to an estimated 80,000 species (excluding viruses and bacteria) (Wild Species Canada n.d.), with over 300 species, subspecies, and varietals endemic to Canada (Enns, Kraus, and Hebb 2020).

[3] According to Cuckston (2022, 83-84), while financial performance is typically quantified, social and ecological accounts tend to take the form of qualitative narratives. Nonetheless, qualitative accounts may contain numerical information.

and demonstrate how a particular form of calculation is achieved in this context. Through a discourse analysis of SARA reports, covering the period between 2003 and 2020, along with other government publications, we illustrate how these mandatory disclosures for species at risk are used as calculative spaces (Cuckston 2022; Callon and Muniesa 2005; Callon and Law 2005), and discuss the implications of these calculations.

By focusing on Canada's federal government, this paper extends our understanding of the roles that the state can play in accounting for biodiversity. Society can be conceptualized as comprised of the state (i.e., the public sector), the market (i.e., companies), and civil society (including individuals, communities, NGOs, etc.) (Gray, Adams, and Owen 2014; Hill, Abercrombie, and Turner 2006), with each sphere having its own "logic" (e.g., Alford and Friedland 1985). Thus, while accounting research in the area of conservation has focused on the market category (Gray, Adams, and Owen 2014), Cuckston (2022) argues that reporting of conservation NGOs should be evaluated on different merits given the essential differences in primary purposes and values between these NGOs and corporations. Similarly, as mentioned above, the public sector has distinct social and/or ecological responsibilities and abilities, which require separate examination.

Further, our study of SARA contributes to a better understanding of the ways in which mandatory disclosures can contribute to discharging accountability. While Cuckston (2022) focuses on voluntary disclosures, we seek to understand whether mandatory disclosures can also be examined as calculative spaces which aim to achieve a particular framing. This is important because there have been calls to substitute voluntary disclosures, which are often seen as unsatisfactory due to their self-puffery, with mandatory disclosures, which are often seen as more objective (Cowan and Gadenne 2005; Bonaimé 2015).

The remainder of this paper is organized as follows. Section 2 situates our study in the literature on social and environmental accountability and explains the theoretical framework. Section 3 provides a legislative background of SARA and describes the research methods. Section 4 examines SARA disclosures through the three stages of calculation. We discuss the implications of the findings and conclude in Section 5.

## 2. Literature review and theoretical framing

### *2.1 Accountability and sustainability disclosure*

Accounting literature has extensively explored the relationship between accountability and disclosure and has identified the importance of disclosures in promoting accountability (e.g., Macintosh 2002; Laine, Tregidga, and Unerman 2022). The general model of accountability consists of two parties, characterized as the "principal" and the "agent," who enter a contract where the principal requires the agent to act towards a particular end, and to render their performance visible by some form of account(ing) (Gray, Owen, and Maunders 1988; Power 1991). To say a person or an organization is accountable means that they are held to certain expectations and that they should be able and obliged to explain, justify, and take responsibility for particular events or actions (Cooper and Owen 2007; Messner 2009). Similarly, Roberts (2009, 959) defines accountability as "the condition of becoming a subject who might be able to give an account."

In our case, we view Canada's federal government as the "agent" which is accountable to the "principal," the Canadian public. The federal government is bound by Canada's legal framework and is responsible for representing the interests of Canadians and acting in accordance with the values and principles of Canadian democracy. At least theoretically, the government is accountable to Canadians through various means, including elections, parliamentary processes, and public scrutiny (Legislative Services Branch 2020). Information disclosure, as an essential component of accountability, is often achieved through government publications. These, in turn, can be used by stakeholders to evaluate the government's actions and decisions and to hold the government accountable.

Our study of SARA annual reports is situated in the literature on sustainability disclosure in the following four ways. Firstly, the analysis of SARA disclosure goes beyond the prevailing interpretations of sustainability disclosure by offering a more nuanced understanding. In studying sustainability disclosure, accounting literature mostly relies on legitimacy theory and signalling theory—two competing theoretical frameworks (Cho, Freedman, and Patten 2012; Gray, Kouhy, and Lavers 1995; Clarkson et al. 2008). Legitimacy theory predicts that discretionary disclosure only reflects aspects of environmental performance that organizations are willing to release, and thus serves as a legitimation device rather than an accountability mechanism (Gray and

Bebbington 2000). Several studies found evidence consistent with this theory (Wiseman 1982; Neu, Warsame, and Pedwell 1998). On the contrary, and consistent with signalling theory, Clarkson et al. (2008) found that sustainability reporting is used to signal better environmental performance. Notably, organizations are viewed as hypocritical and self-serving under both theories (Cho et al. 2015). Cho et al. (2015) argue that moving towards a richer and more nuanced theoretical lens will shed new light on the understanding of corporate sustainability reporting. For Cho et al. (2015), one step forward is to recognize and incorporate constraints that limit actions of individual organizations. Our study of federal government disclosures provides a more nuanced view by examining the main constraints that impact the framing of conservation reporting.

Secondly, research on sustainability disclosure has focused extensively on quantitative analysis. Clarkson et al. (2008) note that environmental reporting has been examined from the perspectives of company valuation, managerial decision making, and environmental performance. Yet, in these studies, qualitative environmental disclosures are often reduced to simple quantitative measurements, neglecting their inherent complexities. For example, Wiseman (1982) created an index that examined eighteen content items, rating them out of three depending on whether disclosures were general or specific, and qualitative or quantitative. Since then, many environmental disclosure studies have used similar indices to evaluate sustainability disclosures. Cuckston (2022, 84) notes, "whereas quantitative accounts of performance seek to systematically measure performance in terms of numbers, qualitative accounts of performance will use numbers in more ad hoc ways, as part of the narratives they convey." We examine SARA reports as qualitative accounts, with numbers and tabular data as part of the narrative.

Thirdly, it is noteworthy that while accounting scholars have investigated the facets of accountability pertaining to social and environmental concerns (Gray 2010; Gray, Adams, and Owen 2014), and there exists an abundance of research on sustainability reporting, the domain encompassing conservation, biodiversity, and wildlife remains relatively underexplored (Jones and Solomon 2013; Vinnari, Chua, and Baxter 2022; Vinnari and Vinnari 2022). It is important to recognize that the scientific knowledge and accounting technologies employed to measure and preserve biodiversity—and, in the context of our study, wildlife and their habitats—are distinct from other environmental and sustainability subjects, such as greenhouse gas emissions. As such, our emphasis on wildlife contributes to addressing this gap that has been historically overlooked

by the accounting community (Jones 1996, 284). Jones and Solomon (2013, 670) posit that social and environmental reporting holds the potential to influence and transform behaviour by raising stakeholder awareness. The argument is that by reporting on impacts and actions taken to enhance and protect biodiversity, organizations will become more self-reflexive and engaged with wildlife conservation. In the context of our study, governmental reporting provides information to stakeholders which may help hold the government accountable for its management of biodiversity.

Finally, the studies of accounting as an emancipatory device that enhances sustainability have largely concentrated on corporate accountability (e.g., Adler and Borys 1996; Clarkson et al. 2008; Cho et al. 2015; Henri and Journeault 2010; Van Liempd and Busch 2013) and less is known about how other actors, especially the public sector, report and account for their actions pertaining to biodiversity protection. Moreover, Cuckston (2022) argues that assumptions about corporate reporting often spill into other fields such as NGO reporting. For example, several studies argue that NGO reports serve signalling, legitimacy, and/or impression management purposes rather than discharging accountability (Conway, O'Keefe, and Hrasky 2015; Dhanani 2019; Dhanani and Connolly 2015). However, for Cuckston (2022), this analysis ignores the fundamental difference between corporate and NGO goals. Given the varied objectives of the NGOs, the link between their accounts and accountability may require a more nuanced analysis, such as by examining disclosures as calculative spaces (Callon and Law 2005; Callon and Muniesa 2005). Our study adopts this calculative lens (discussed below) and extends our understanding of sustainability accountability by examining the accounts of a specific public sector actor—the federal government. It is crucial to understand sustainability disclosures in the public sector as actions in this space are likely to have a profound impact on reversing or exacerbating biodiversity loss.

### *2.2 The calculative space*

We theorize SARA mandatory disclosures as calculative spaces (Cuckston 2022; Callon and Muniesa 2005; Callon and Law 2005). To understand what a calculative space is, it is necessary to define calculation first. Callon and Law (2005) argue, in their revised notion of calculation, that calculation often has nothing to do with quantification, such as performing mathematical or even numerical operations (Lave 1984). Rather, "calculation starts by

establishing distinctions between things or states of the world, and by imagining and estimating courses of action associated with those things or with those states as well as their consequences" (Callon and Muniesa 2005, 1231). Calculation is "a process in which entities are detached from other contexts, reworked, displayed, related, manipulated, transformed, and summed in a single space" (Callon and Law 2005, 730). Viewing calculation as a process that involves judgement, rather than simply quantitative calculation, is consistent with its etymology as "there is a close link between computing and assessing or estimating" (Callon and Muniesa 2005, 1231; Benveniste 1973). Callon and Law (2005) borrow Cochoy's (2002) term "qualculation" to capture both judgement and quantitative calculation in the same process. We follow Cuckston (2022) and Callon and Muniesa (2005) to use the term calculation in a broad sense that includes both the quantitative and qualitative elements of calculation and/or judgement.

Calculative space is where calculation takes place and where relevant entities are sorted out, detached, and displayed. Callon notes that "the space may come in a wide variety of forms or shapes" (Callon and Law 2005, 719), and how calculations are done is a function of material arrangements. Electoral systems, bank statements, an array of goods on a supermarket shelf, and football league tables are all examples of material arrangements that generate conformable spaces and the possibility of calculation (Callon and Law 2005, 731). In Cuckston (2022), the calculative space is the voluntary disclosures of the conservation NGO WWF-UK, and in our study, the mandatory disclosures in SARA reports is the calculative space.

Callon and Muniesa (2005) conceptualize calculation as a three-stage process based on Latour's (1987) notion of the centre of calculation. In the first stage, relevant entities are sorted out, detached, and displayed within a single space. Cuckston (2022) identifies the entity being sorted out as a performance object; in his case study these are specific wild animal populations in the WWF-UK's accounts. During the second stage, the detached entities are manipulated and transformed. New relations are created in the calculative space. In Cuckston (2022), this stage entails establishing relations that seemingly affect the performance object, which turn out to be threats to wild animal populations and actions to conserve these populations. In the third and final stage, a result is extracted, which can be a newly produced entity, a decision, a judgement, or a calculation (Callon and Law 2005, 719). In Cuckston (2022), this calculation is an attribution that the NGO has agency over the performance object, or, in other words, that WWF-UK is a strategic actor directing and coordinating wildlife restoration. One of the main

advantages of this conceptualization of the calculation process is that, by emphasizing the crucial role of material devices, it brings close attention to "the diversity of possible configurations" (Callon and Muniesa 2005, 1232) of relevant entities, which enables us to understand the processes and outcomes of calculation more concretely.

A calculative space is also a *frame* in the sense that it demarcates entities inside and outside the calculative space, or those entities included and excluded from the calculation. The relationships that are excluded from this frame are referred to as *overflows* (Callon and Muniesa 2005). Goffman's (1986; 1959) notion of framing refers to the process of establishing cognitive boundaries within which interactions take place. Callon (1998) builds upon Goffman's notion of framing by integrating the role of material objects in the process, thus offering conceptual tools for a more nuanced exploration of the calculative space. Overflows are an intrinsic aspect of framing since, by its nature, framing is unable to encompass every element, thereby rendering overflows as unintended consequences emerging from attempts to frame. Due to their characteristics, overflows have the potential to undermine the framing process and may give rise to disagreements or contradictions.

In addition to using the three stages of calculation framework to examine SARA reports as calculative spaces, we also follow Cuckston (2022) and Christensen and Skærbæk (2007) in identifying the overflows in each stage of the calculation process. This guides the critical evaluation of such calculation by identifying what has been excluded from any particular framed calculative space (Cuckston 2022, 7). By highlighting relations that are not taken into account in a given calculation, overflows threaten to challenge and undermine the calculation (Callon 1998). In identifying overflows, we make visible some of the relations which are excluded from the frame (intentionally or not), which, in turn, gives a more complete understanding of the frame itself. Thus, by examining what is left out of the reports, we can have a better understanding of how the reports frame the government efforts to manage species at risk.

## 3. Research background and methodology

### *3.1 SARA legislative background*

The 1992 UN Convention on Biological Diversity played a crucial role in recognizing the importance of biodiversity for human wellbeing (Cardinale et al. 2012). In Canada, it led to the

passage of the federal Species at Risk Act (SARA) in 2002, with the aim of protecting endangered species and their habitats. Key work on SARA began in 1996 (Hoffman 2018), shortly following the publication of the 1995 Canadian Biodiversity Strategy (Minister of Supply and Services Canada 1995). SARA was enacted in 2002 and came fully into force in June 2004. Once enacted, SARA became one of the three major components of Canada's National Strategy for the Protection of Species at Risk (Environment and Climate Change Canada 2019). The other two components are the Habitat Stewardship Program, which provides funding for relevant projects, and the Accord for the Protection of Species at Risk, which aims to spur collaboration between the federal and provincial levels of government.

The interaction between federal and provincial governments is essential in the Canadian context. Generally, issues surrounding species protection and the use of natural resources fall under provincial jurisdiction. However, few provinces have comprehensive legal frameworks for species at risk protection, leading to a patchwork approach. Although SARA aimed to fill this gap in Canada's environmental laws, SARA's application is limited by the federal government's jurisdictional authority.

SARA's implementation revolves around a series of activities concerned with a) the assessment of the species at risk status, b) recovery planning and monitoring, and c) protection. To be covered by SARA, a species first must be assessed as at risk by a scientific panel Committee on the Status of Endangered Wildlife in Canada (COSEWIC),[4] and then the Governor in Council (GIC)[5] must agree to list the species under the Act. Listing a species triggers recovery planning and legal protection mechanisms, such as general prohibitions on harmful activities. Three federal departments are collectively responsible for the implementation of the Act: Environment and Climate Change Canada (ECCC) is in charge of the overall administration and most species, while Parks Canada Agency (PCA) is responsible for species within national parks, and Fisheries and Oceans Canada (DFO) is responsible for aquatic species.[6]

[4] COSEWIC is an independent advisory body created in 1977 to provide the classification of wildlife species. It is funded by the federal government (Environment and Climate Change Canada 2020b, 15).

[5] In Canada, Governor in Council (GIC) refers to the Governor General, as the Crown's representative, acting on advice from the federal Cabinet. The Cabinet is the federal government's executive branch, headed by the prime minister (House of Commons of Canada n.d.; Centre for Constitutional Studies 2019).

[6] Throughout the paper we refer to these departments and the ministry cabinet which oversees their work, broadly, as the federal government.

Overall then, protection depends on species type, listed status, and location. SARA applies immediately to species under federal jurisdiction, while provinces have the first opportunity to protect species under provincial jurisdiction. Federal jurisdiction covers Canada's oceans and waterways, national parks and wildlife areas, and birds covered by the federal Migratory Birds Convention Act, 1994 (Government of Canada 2020). Thus, protections afforded under SARA apply immediately only to aquatic species, certain migratory birds, and species found on federal lands. In contrast, terrestrial species found on non-federal lands are not automatically protected when listed under SARA.[7] Here, provinces are encouraged to take the necessary steps to protect the species.

If a province fails to protect a species at risk, SARA allows the federal minister to intervene. In this case, the federal government can use "safety-net" orders and emergency orders to protect species at risk on non-federal lands. While SARA gives the federal government ability to prohibit certain activities and enforce compliance, it was not envisioned as a heavy-handed and coercive piece of legislation (Illical and Harrison 2007). Instead, SARA provides for many different tools that the federal government can use to entice and persuade stakeholders, including provincial governments, to protect species at risk.[8] Overall, SARA appears to give the federal government a lot of leeway in the implementation of the Act by providing a suite of conservation and recovery measures. SARA also recognizes the importance of the federal government reporting on its progress in administering the Act, and this reporting forms the basis for our study, as described next.

### *3.2 Methods*

Key to our study is the requirement under SARA for the minister to prepare an annual report "on the administration of the Act" and to table it before the parliament (SARA, s. 126). Given that the production of these reports and the content topic areas are legally mandated, we consider SARA reports a form of mandatory annual disclosure by the federal government. We focus on examining sixteen SARA reports produced after the Act came into force, and which

[7] In Canada, 41% is federal crown land, 48% is provincial crown land, and the remainder is privately owned (The Canadian Encyclopedia 2013).

[8] These tools include, for example, administrative and conservation agreements, stewardship action plans, compensation clauses, and alternative measures.

cover the period from 2003 to 2020 (these total over 700 pages; 280,000 words), along with the Act itself (104 pages; 54,000 words).[9]

The Act requires the reports to include a summary of the following topics: COSEWIC's assessments and the minister's response; preparation and implementation of recovery strategies and action plans; agreements made; enforcement and compliance actions; regulations and emergency orders made; and any other matters that the minister considers relevant. Although all reports provide information in relation to these topics, the breadth and depth of the discussion vary from year to year, such that the report length ranges from under 30 to over 80 pages. This variability suggests that the preparation of SARA annual reports is not a simple technical or "tick box" exercise, but rather that it may be used as a calculative space. Our aim in this paper, then, is to examine the content of these disclosures and to analyze their framing.

We accessed annual reports from the Species at Risk Public Registry (the Registry).[10] The Registry was created to fulfill SARA's additional transparency requirements, which extend beyond SARA annual reports, and call for the government to establish a public registry "for the purpose of facilitating access to documents" (SARA, s. 120). Today the Registry is a database that hosts over three thousand documents related to SARA's implementation and species at risk, including government orders, agreements, status reports, and planning documents. Although our study focuses on SARA annual reports as key disclosures in their own right, we include additional documents from the Registry in our analysis to the extent that they help us more fully understand and illustrate the issues discussed in the reports, as well as those left out. For example, we accessed documents on the individual species (such as the species summary for Laura's Clubtail and the emergency order for the Greater Sage-Grouse) as well as administrative agreements (such as on the cooperation between government departments to implement SARA). We also used the Registry's search tool to get additional overview information regarding SARA's implementation (such as to identify the number of species for which GIC decision is pending).

To address our research question regarding the manner in which SARA reports function as calculative spaces, we employed a qualitative discourse analysis approach in scrutinizing

[9] The Act presents the English and French versions side by side and we only reviewed the English version.
[10] The Registry can be accessed at https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html.

these disclosures. Gee (2001, 88) explains that discourse analysis hinges on the details of text which are deemed relevant to the arguments the analyst seeks to make. In this regard, discourse analysis is predicated not merely on the text being investigated but also on the objectives of the analysis (research question) and theoretical judgments. In this context, Gee (2001, 88) emphasizes that "a transcript is a theoretical entity. It does not stand outside an analysis, but, rather, is part of it." Owing to its constructivist orientation, disclosure analysis enables us to probe into the framing created by reports in their context (with consideration of the overflows), as well as the ways in which the framing contributes to constituting the process of discharging accountability. With this rationale, we closely read the sixteen reports and compiled narrative and tabular summaries which highlighted significant similarities and differences in the report content over time. We also read the Act, paying close attention to the sections referred to in the reports. We then applied the three stages of the calculation framework to SARA reports. Specifically, we first examined the content for the identification of the performance object, or the main entity of concern in the reports. Second, we examined the content for discussions of forces that impact the performance object. Third, we examined the content for descriptions of the government actions in relation to the performance object.

To examine the overflows, we identified gaps in the report narratives. Gaps are sometimes made visible in the narrative itself (for example, the differences between species assessed by COSEWIC and listed by the Act indicate that not all species at risk are listed, suggesting an overflow process at this stage). However, there are also many overflows which are not made visible in the narrative (for example, certain threats to species are omitted from being discussed in the reports). In this case, we relied on existing literature (especially in the field of conservation) to identify the overflows. Notably, our aim is not to create a comprehensive list of overflows but rather to highlight how identifying overflows helps create a more comprehensive understanding of the framing used by the reports to depict the government efforts to discharge accountability over species at risk. Overall then, in conducting our analysis, we paid particular attention to understanding what issues are, and are not, discussed in the annual reports, and how these discussions frame government actions over species at risk management.

## 4. The three stages of calculation

In this section, we use the three stages of calculation to explore how SARA reports, as mandatory disclosures, are framed. We begin by analyzing the identification of the performance object, or the entity of concern in SARA annual reports, which is the focus of calculation. We then examine how this performance object is manipulated. That is, what forces come to bear on the performance of the object according to SARA annual reports. Finally, we examine the results of manipulation. In our setting, it is the role of Canada's federal government in impacting the performance of the object and, in the process, helping discharge its accountability over the management of species at risk. For each stage, we also explore potential overflows to the framing.

### *4.1 Stage 1*

#### *4.1.1 Identifying the performance object*

We begin with identifying the performance object, or the object over which SARA reports aim to discharge accountability. The stated purpose of SARA reports is to fulfill the minister's obligation under the Act, which requires the minister to prepare a report on the administration of SARA for each calendar year (SARA, s. 126). The section of the Act that outlines the requirements for SARA reports is barely 150 words long and requires each report to contain summaries on seven aspects of the Act, including assessment, enforcement, agreements, and other pertinent matters. Yet, while SARA reports are mandated to disclose information about the administration of the Act, administration per se is not the performance object. When the minister releases the report, the aim is not only to discharge their accountability over the production of mandatory annual disclosure but over the Act as a whole.

The stated purpose of the Act is "to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened" (SARA, s. 6). In other words, the government is responsible for managing all wildlife in such a way that prevents species from becoming extirpated or extinct. Thus, in theory, SARA charges the government with the management of all species within Canada's borders. In practice, however, the government is primarily focused on

managing the species that are deemed to be at risk. Thus, we suggest that species at risk are the performance object of SARA reports and the key object of accountability.

What it means to be a "species at risk" is itself a constructed concept. SARA sets a high bar for protecting species at risk by defining "wildlife species" at a level of a subspecies, or a geographically or genetically distinct population (SARA, s. 2). In other words, SARA is not concerned with the preservation of species as a whole, but rather with the preservation of all the different *populations* of the species, however small, as they are found in Canada. Yet, despite SARA's aim to protect all species, in practice, species must pass through several screens to even be recognized by SARA as at risk, at which point they may be afforded protection under the Act.

The process through which a species at risk is recognized, or "listed," under SARA includes two steps. First, the population must be assessed as at risk by a scientific panel: COSEWIC (SARA, s. 15). The panel, which includes members from the government, academia, Indigenous organizations, NGOs, and the private sector (Environment and Climate Change Canada 2020b, 15), uses a variety of available information sources to assess (and then reassess every decade) the biological status of the species populations as extinct, extirpated, endangered, threatened, special concern, not at risk, or data deficient (see Appendix for definitions). Through this process, COSEWIC has assessed over 900 wildlife species, with 566 of these assessed as endangered or threatened (Environment and Climate Change Canada 2022, 21). Thus, the first screen is for a species population to be picked up by the COSEWIC agenda and get assessed as at risk.

Next, the species must pass through the second step of the listing process. The actual decision to list the species is made by political decision makers, or elected officials "who are accountable for those decisions" (Environment and Climate Change Canada 2020b, 15). Upon receiving COSEWIC assessments (or reassessment that requires an "uplist" or "downlist" status change), the minister conducts a socio-economic analysis and engages in public consultation. Then, after considering the feedback from the consultation and the analysis, the minister makes a recommendation to the GIC. Also, the minister must recommend listing a species on an emergency basis if the species population faces an imminent threat (SARA, s. 29). In either case, the final decision to list the species is discretionary and rests with the GIC. The GIC can decide to list the species or not (or to change the status in the case of reassessment), or to refer the

assessment back to COSEWIC for further consideration. Thus, the second screen is for the species to be listed through the decisions of the minister and the GIC.

As not all species make it through the second step of the listing process, only 417 species were listed as endangered or threatened under SARA (Environment and Climate Change Canada 2022, 27), compared to 566 assessed as such by COSEWIC. SARA reports focus on discussing the management of the species listed under the Act, and thus effectively exclude a subset of species deemed at risk by COSEWIC. Next, we investigate some of the reasons why species assessed as at risk fail to make it through the second, and more political, step of the listing process.

*4.1.2 Overflow in Stage 1*

We observe different pathways through which the assessment of the species at risk status by COSEWIC might not be reflected in the Act. First, and most straightforward, is the GIC decision declining to list the species. This is the case for 13 species, which is a small proportion of all species assessed. For some of the species, this decision is likely to be insignificant in terms of overall survival. For example, Canada's population of Laura's Clubtail, a dragonfly, was assessed as endangered by COSEWIC because it is found in only two small and unique locations in Canada (Government of Canada 2021). However, the species is abundant elsewhere in North America and is given a Least Concern status by the International Union for Conservation of Nature (Paulson 2017). Thus, the decision to decline to list the dragonfly is unlikely to have a significant impact on this species overall.

In most cases, however, the decision to decline to list the species has major implications. In particular, of the 13 species which GIC decided not to list, nine are fishes whose listing would have significant economic consequences for the fishing industry. For instance, in 2011, COSEWIC assessed Canada's Atlantic Bluefin Tuna population as endangered due to a 69% decline in spawning fish and due to overfishing as a primary threat. However, after extensive consultations, the 2017 GIC decision stated that listing the species would cause significant socio-economic impacts on the industry (Environment and Climate Change Canada 2017). Furthermore, since fishing quotas are determined by the International Commission for the Conservation of Atlantic Tunas, closing Canada's fishery would only result in reallocating Canada's quotas elsewhere, providing no net mortality benefit to the species. This example

highlights how some species at risk are purposefully excluded in light of economic considerations (Findlay et al. 2009).

Another path through which the scientific assessment might not be reflected in the Act is the government delaying the listing process. The listing process from the COSEWIC assessment to the final decision is expected to take up to two years (Environment and Climate Change Canada 2020b, 22). However, delays can occur in several ways. For instance, the Act does not specify a time period for the minister to forward COSEWIC assessments to the GIC, creating a loophole for delaying the mandated nine-month decision-making clock for the GIC. According to the Registry, 186 unlisted species have GIC decisions pending, with 120 assessed by COSEWIC as endangered or threatened at least two years prior (before 2020). Among these, 55 species were assessed over five years ago (before 2017), and some as early as 2008. The Registry shows that their assessments were never formally forwarded to the GIC, resulting in delays.

Of the 55 previously mentioned species, 39 are fish, including cod, salmon, and sturgeon populations, and six are mammals, including four caribou populations. Protection of these species could have significant socio-economic consequences, and extensive consultation is often cited as the reason for their current stage of the listing process. The minister must consult with the public before making a recommendation to the GIC, but SARA lacks clear guidance on consultation timelines and scope, making it difficult to determine if delays are justified (Turcotte et al. 2021). Paradoxically, fish populations are most often denied SARA listing despite being under federal jurisdiction (e.g., Findlay et al. 2009; McDevitt-Irwin et al. 2015). Applying protection mechanisms under SARA could result in the immediate closure of fisheries. Consequently, the government opts to manage at-risk fish species through the Fisheries Act, which lacks sufficient protective measures (McDevitt-Irwin et al. 2015). Even when COSEWIC recommended emergency listing for fish species facing imminent threats, the government declined to list them under SARA.[11] These examples demonstrate the federal government's discretion in preventing species at risk from being listed under SARA even when species face significant threats to their survival (Findlay et al. 2009).

[11] Between 2003 and 2019, COSEWIC made four emergency listing assessments, three of which were fish related (for populations of chinook salmon, sockeye salmon, and steelhead trout).

### *4.2 Stage 2*

#### *4.2.1 Identifying the forces impacting the performance object*

Having identified species at risk as the performance object, this section examines how this object is manipulated within SARA reports. If SARA reports are used as calculative spaces to help discharge accountability over the management of species at risk, then these reports should explain the forces which impact the performance of species at risk. Species become at risk as their populations decline significantly and go extinct when their populations completely disappear. In species conservation, the drivers behind population declines are aptly described as threats because they threaten the species' existence, and understanding the threats is fundamental to conservation management (e.g., Nixon et al. 2012; Hayward 2009; McCune et al. 2013). Our key question, then, is how threats are portrayed in the reports.

While discussions of threats in SARA reports vary over time, overall, the information about threats is very limited. Under the Act, a discussion of threats is not itself a mandatory requirement for SARA reports. Instead, the discussion of threats must feature in recovery and action plans for each species (discussed more in section 4.3), and SARA reports must include only a "summary addressing [...] the preparation and implementation of recovery strategies, action plans and management plans" (SARA, s. 126). Nevertheless, SARA does not preclude the reports from providing more information on why species in Canada are declining.

When SARA reports do discuss threats, it is often within a case study highlighting a single species or an investigation conducted by SARA enforcement officers. For example, in discussing the North Atlantic Right Whale, the 2006 annual report lists "accidental deaths from collisions with ships and entanglements in fishing gear" as the primary cause of adult mortality, and hence a major threat to the species' population (Government of Canada 2009, 15). Similarly, the enforcement section indicates certain threats. For example, the 2018 report describes an investigation into a pair of homeowners who dredged a shoreline adjacent to their properties, destroying protected habitat of a threatened freshwater fish (Environment and Climate Change Canada 2020a, 34). Similar discussions of threats are sprinkled throughout the reports and give an insight into the types of threats that are faced by species at risk; the reports also make it clear that a more complete identification of threats is covered by the recovery and action plans for those species.

This discussion of threats has several implications. On the one hand, these narrative examples highlight an important point that threats are often location specific, and thus the management of an endangered population requires an understanding of threats to that population rather than threats to the species in general. On the other hand, this fragmented discussion of threats creates an impression that either many of these threats arise from individual human actions or that systemic threats impact single species. An example of the former includes a homeowner dredging their property leading to destruction of critical habitat, or an individual engaging in the collection of endangered turtles for the pet trade; and of the latter, is the discussion of fishing gear posing a threat to North Atlantic Right Whale and not explicitly to other species. These discussions suggest that the protection of species requires stronger enforcement targeting individual Canadians or enhanced management of single species.

The reports, however, also hint at wider, more systemic issues that are contributing to biodiversity loss. For example, in the discussion of the rehabilitation of a key ecosystem, the 2012 report states that "degradation and disturbance of riparian habitat due to human activity are the main threats to the project's target species" (Environment Canada 2013, 31). Indeed, in some years, the reports claim that "Habitat degradation and loss are now prime causes of species decline, globally and in Canada" (e.g., Environment Canada 2010a, 31). These statements identify widespread habitat degradation as a key threat, which can be contrasted with individual-level threats, yet they are not discussed in any detail. If habitat loss is a prime cause of species decline, the problem of biodiversity loss is unlikely to reside with a handful of individuals or species, rather, the problem is more likely to be a result of large-scale, collective actions.

Further evidence that the management of threats requires more system-wide thinking comes through in the 2018 report, which outlines a new approach for species at risk management called the Pan-Canadian Approach to Transforming Species at Risk Conservation in Canada (Environment and Climate Change Canada 2020a). This approach, which was agreed upon by all relevant federal and provincial ministers, claims to transition from a single- to multi-species focus, thus prioritizing multiple species or ecosystems by identifying priority industry sectors, geographic areas, and country-wide threats. Under this new approach, the three pan-Canadian threats were identified as invasive alien species, wildlife disease, and illegal wildlife trade; and the three sectors as agriculture, forestry, and urban development. These threats and sectors suggest that biodiversity loss in Canada is a widespread, systemic problem, driven by existing

industry practices and economic incentives. Yet, despite the recognition of the importance of systemic threats to species at risk, SARA reports are almost completely void of any in-depth discussion of this information, even in light of the new pan-Canadian approach.

Overall, the discussion of industry in relation to threats is very limited within SARA reports. The only industry that is frequently mentioned is the fishing sector, where it is often featured in the discussion of the DFO outreach and education work. Other industry sectors are mentioned only sporadically in the discussion of threats. Indeed, when industry is mentioned, it is typically either in the context of industry as a stakeholder, or in the context of industry representation on SARA committees. Thus, SARA reports describe industry as an important stakeholder, and industry outreach and participation as a vital part of biodiversity management, but do not explore the role of industry as threats to species at risk.

Given the focus within SARA reports on individual-level threats and impacts on individual species, our understanding of threats is one of fragmented, almost unconnected forces that happen to affect one species or another. Yet, at the same time, there is some limited discussion of the importance of systemic issues like habitat loss. Next, we explore whether the focus on individual, versus systemic, threats might be justified.

*4.2.2 Overflow in Stage 2*

Although SARA reports provide limited information on the threats to species at risk, this information must be present in other parts of SARA implementation. Specifically, COSEWIC must identify threats as part of the species assessment (SARA, s. 15), and the government must identify threats to species and their habitat (or propose research to identify threats) as part of the recovery strategies (SARA, s. 41). This information on threats has been used to better understand the drivers of biodiversity loss.

Research suggests that the nature of threats to species at risk in Canada is indeed widespread, in the form of habitat loss, invasive species, overexploitation and pollution (Dextrase and Mandrak 2006; Prugh et al. 2010; Venter et al. 2006), acid precipitation and climate change (Minister of Environment 2007). Many of the threats are driven by human activity, with industry playing a particularly important role. Prugh et al. (2010) link COSEWIC-identified threats for 399 species to 13 different industries. They identify resource use (e.g., fishing, logging), invasive species, and development as the most frequently cited threats; and agriculture, construction (residential and commercial development), and fishing and hunting as

the sectors threatening the greatest proportion of threatened species. Again, these findings point to the systemic, industry-level nature of threats.

Comparing the threats listed in the recovery strategies to COSEWIC assessments, McCune et al. (2013) find that recovery strategies place a much greater emphasis on individual-level threats, such as human intrusions and disturbances, compared to industry-level threats, such as resource use (e.g., logging) and agriculture. This indicates a possible bias on the part of the government in dimming the role of industry-level threats which might have greater economic consequences (McCune et al. 2013). These results are consistent with our observations on the type of threats discussed in SARA reports, which also tend to highlight individual-level threats rather than systemic, industry-level threats. Overall, these findings suggest that, in producing SARA reports, the federal government deliberately chooses to focus on some threats over others.

### *4.3 Stage 3*

#### *4.3.1 Establishing an entity to manage the performance object*

Above, we examine how the performance object is manipulated within SARA reports by identifying threats to species at risk as primarily related to individual-level action and individual-level species. In this section, we examine how the government claims to manage these threats, according to SARA reports. It is in describing the management of these threats that the federal government can claim to be discharging its accountability in administering the Act and achieving its purpose. SARA reports describe different ways in which the federal government manages species at risk, which can be broadly split into two categories: actions related to planning and monitoring, and actions related to protection, and we discuss each in turn.

##### 4.3.1.1 Planning and monitoring

Once a species is listed under SARA, the government must engage in recovery planning and monitoring activities to address the threats and bring about species recovery. This process includes the preparation of a recovery strategy and an action plan for each species listed as extirpated, endangered, or threatened (SARA, s. 37, 47).[12] A recovery strategy "is a planning

[12] For species which are assessed as special concern, the minister prepares a management plan (instead of a recovery strategy) which outlines measures for species conservation (SARA, s. 65) by setting "goals and objectives for maintaining sustainable population levels" (Environment Canada 2010b, 18).

document that identifies what needs to be done to reverse the decline of a species" (Environment Canada 2012, 22) by identifying threats to species, identifying habitat critical for the survival of the species, and setting population objectives (SARA, s. 41). An action plan outlines projects to be completed in order to accomplish the objectives outlined in the recovery strategy, including identification of critical habitat, protection measures, methods for monitoring recovery, and an evaluation of socioeconomic costs and benefits of different actions (SARA, s. 49). These plans are meant to be collaborative, relying on other stakeholders to carry out much of the implementation. After final recovery strategies and action plans are posted, the minister is expected to periodically report on progress and make updates to the strategy as appropriate.[13] It is expected that the completion of this recovery planning process will lead to the implementation of protection measures and recovery projects, which, in turn, will improve the species' status.

However, SARA reports are filled with evidence demonstrating the government's failure to comply with planning requirements. For example, the Act requires recovery strategies for endangered (threatened or extirpated) species to be produced within one (two) years, and action plans within five years thereafter.[14,15] In 2005, the government anticipated that between 2006 and 2009 (i.e., in the first four years that the recovery strategies were expected to be produced), recovery strategies produced by ECCC would cover 171 species, DFO–51 species, and PCA–49 species. However, the actual final recovery strategies produced over that time period by ECCC covered only 30 species, DFO–42 species, and PCA–33 species. The expected and actual numbers of recovery strategies over that time period are shown in Table 1. As a result, the recovery process was non-compliant for over 166 species.

[Insert Table 1 about here]

SARA reports briefly discuss efforts to improve the performance of government planning processes, such as the 2006/07 report noting the use of a multi-species or ecosystem approach to reduce duplication (Government of Canada 2009, 19), and the 2009 annual report mentioning a

[13] Although the minister must report on progress, aside from the requirements outlined in the Act, there are no repercussions for lack of progress or continued decline in species populations.

[14] For species assessed as special concern, a management plan is expected to be produced within five years.

[15] The Act provides slightly longer timelines for species listed when the Act came into force to give the government extra time during the initial years of SARA implementation.

multiyear plan to address the backlog (Environment Canada 2010b). However, by 2014, a decade after SARA's implementation, ECCC was still overdue in producing recovery strategies for 189 species (Environment and Climate Change Canada 2016, 16). By the end of 2019, although SARA listed 417 species as endangered or threatened (Environment and Climate Change Canada 2020b, 29), ECCC had identified critical habitats for only 172 species and produced just a few dozen action plans. This evidence raises questions about the government's ability to effectively administer the Act.

Yet alongside the quantitative information demonstrating government failures to comply with SARA, the reports are sprinkled with specific narrative case study examples of successful government projects. Many of these are examples of government research and monitoring initiatives carried out to identify population trends, threats, and critical habitat—information that is key to the production of recovery strategies and action plans. These specific examples bring positive "balance" to the otherwise negative disclosures by suggesting that competent work is being done and progress is being made in the planning and monitoring processes that are essential to the management of species at risk.

#### 4.3.1.2 Protection

SARA reports detail government activities related to species protection. Although general prohibitions under SARA should apply immediately to listed species within federal jurisdiction, protection levels can vary even on federal lands. Recent SARA reports extensively discuss efforts to protect species at risk in national parks, migratory bird sanctuaries, and national wildlife areas, which are under the direct control of ECCC and PCA. However, these efforts alone are insufficient to safeguard Canada's species at risk populations. Some of the more meaningful and difficult work is taking place at the inter-departmental level, as ECCC tries to support SARA compliance on lands controlled by other federal departments, such as Agriculture Canada and Department of National Defence.[16] SARA reports describe examples of projects supported by a dedicated fund in these contexts. Thus, even within federal departments, SARA implementation is a negotiated process, and compliance cannot be assumed.

[16] ECCC and PCA even signed a cooperation agreement with the Department of National Defence (DND) which noted that "SARA is binding on Her Majesty in right of Canada [and] DND is, therefore, also bound by the provisions of SARA" (Government of Canada 2011).

As the purpose of SARA is to protect species at risk regardless of their location, SARA reports also briefly discuss the efforts to manage species at risk on non-federal lands. Here, the federal government initiated bilateral administrative agreements with territorial governments. Between 2005 and 2011, five such agreements were signed.[17] The ten-year agreements were meant to increase collaboration between federal and provincial governments and articulate the provincial government's responsibility for protecting species at risk. However, such agreements did not prove to be popular, as only one agreement was since renewed. More recently, the government has been negotiating agreements that focus specifically on protecting individual species, such as caribou (Environment and Climate Change Canada 2022, 45-46). While disclosures of these efforts suggest that work is being done to implement SARA, there is no discussion of their effectiveness.

Regardless of the level of collaboration between federal and provincial governments, the Act allows the federal government to intervene, if provinces fail to protect listed species, through the use of protection orders. There have been no instances of the use of safety-net orders and only two instances of the use of emergency orders to address imminent threats to species.[18] However, the related SARA report disclosures are brief and do not contain a substantive discussion.

SARA reports also provide discussions of enforcement and compliance work. For example, some reports state how many SARA enforcement officers are currently employed or trained, or how many investigations are ongoing. The reports also provide some narrative examples of enforcement work, such as charging an individual for capturing endangered turtles for the pet trade (Environment Canada 2010a, 33). Much of the enforcement work seems focused on individual-level threats. In contrast, addressing wider-scale threats is more often discussed in the context of education and outreach, such as how many hours DFO officers spent on educational programs. Although these discussions provide some concrete examples of ongoing enforcement work, there is little discussion of their value.

The focus on compliance promotion is consistent with SARA's focus on non-punitive measures. Indeed, the reports contain a great deal of information about projects funded by the

[17] Agreements were signed with Quebec, Ontario, Nunavut, Saskatchewan, and British Columbia.

[18] A third emergency protection order was declined, for the first time, by the GIC in 2018. The order was for the protection of the Pacific population of killer whales (Government of Canada 2018).

Habitat Stewardship Program and other dedicated funding pools. These projects portray competent work that is being done to protect species at risk, but there is limited discussion of their effectiveness. What becomes apparent from the reports is that much activity happens outside of the responsible federal departments and that government–stakeholder interactions are key to SARA's implementation. Next, we explore the role of stakeholders in more detail, given the limited information in the reports.

*4.3.2 Overflow in Stage 3*

SARA reports only briefly note the work of other stakeholders in managing species at risk. These stakeholders include, among others, industry, conservation organizations, and provincial governments. Each stakeholder has different (and changing) powers and interests, and, in practice, they collectively shape the work of the federal government by enabling and constraining certain actions. For example, it is noteworthy that the federal government had never used a protection order *before* a species faced an imminent threat to its survival. This reluctance to impose prohibitions reflects the tension between federal and provincial governments. Yet, while the federal government may be constrained by its relationship with the provinces and industry, the conservation organizations are more concerned about protecting species and holding the federal government accountable in relation to SARA implementation.

A quick overview of the first emergency order, issued in 2013 to protect the Greater Sage-Grouse (Government of Canada 2013), helps illustrate these tensions among various stakeholders. Notably, the emergency order was not initiated by the government to protect a species facing an imminent threat. Rather, the order followed a petition (which the government ignored) and an application for judicial review by conservation organizations who sought for the court to force the minister to recommend an emergency order to the GIC, citing the requirements under the Act (Jaremko 2019).[19]

[19] The NGOs argued that the government failed to comply with SARA reporting obligations which required the government to disclose every 180 days whether the species' critical habitat is protected and what steps have been taken to protect it. The federal government argued that its plans with respect to a possible emergency order were subject to strict cabinet confidence (i.e., non-disclosure) rules and, hence, not subject to a legal review. The Federal Court of Appeal concluded that the claim to immunity was unjustifiably broad and that the government's decision to not issue an emergency order could be subject to a legal review to the same extent that a decision to issue an emergency order could.

This emergency order restricted oil and gas development on over 1600 sq. km of land in southern Alberta and Saskatchewan,[20] and the oil and gas industry immediately challenged the legal validity of the order as well as the constitutionality of the Act (Jaremko 2019). This lawsuit was eventually settled out of court because a separate lawsuit, following the second emergency protection order, found the application of SARA to be constitutional (Jaremko 2019).[21] This brief overview of the application of the emergency protection order demonstrates the work of many different stakeholders in enabling and constraining the ability of the federal government to address threats to species at risk. SARA reports, however, only briefly mention the work of other stakeholders, and do not examine the competing pressures and tensions in any depth.

## 5. Discussion and conclusion

In the above section, we examined SARA annual reports as calculative spaces. We identified species at risk as the performance object. Then, we examined how the object is manipulated, or what threats are identified as causing species to become at risk. Lastly, we examined the actions described in monitoring and protecting the species, thus displaying the federal government's ability to manage the threats. In this last section, we return to our research question to assess how SARA reports are used as calculative spaces to discharge government accountability over the management of species at risk.

One of the primary steps in discharging accountability is for an agent to provide the principal with information regarding performance, and government reporting is seen as key to helping discharge its accountability over conservation efforts (e.g., Turcotte et al. 2021; Westwood et al. 2019). SARA reports are a source of information regarding the federal government's performance on species at risk management. The very production of the reports is itself evidence of SARA's administration. While the Act states that a report must be produced annually, compliance with this mandatory requirement cannot be assumed, and indeed many SARA reports took longer to produce than intended by the Act. However, once the report is prepared, in all cases it appears to be complete by containing information on all of the required aspects. Thus, the existence of the reports in the first instance suggests that SARA is being

[20] For comparison, the area of the province of Alberta alone is 661,848 sq. km.

[21] The second emergency order was issued in 2016 to protect a population of Western Chorus Frog in a suburb in Quebec. Here, the industry also challenged the constitutionality of the Act.

administered and that the government is not shirking its responsibility (i.e., that SARA is not merely a law-on-the-books).

Much of the information in the reports is mandated to be disclosed by the Act and it speaks to key aspects of implementation. This information tends to be quantitative and presented in tabular formats (although the Act does not mandate the format). It is also often negative, providing evidence of government non-compliance with the Act's requirements, such as missing timelines for developing action plans and recovery strategies. However, the reports also briefly describe actions that are supposedly put in place to become compliant, although their effectiveness is not discussed. Disclosures on these mandatory aspects, no doubt, provide important information regarding the level of government competence in managing the species.

Yet, at the same time, the reports frequently make use of discretionary disclosures in the form of narrative case studies that flesh out the report content. These disclosures are framed as success stories, thus helping portray a favourable impression of the government's work by "balancing" the negative quantitative information. We see this most clearly around the discussion of threats and enforcement stories which tend to focus on specific projects, individual-level enforcement action, and educational work.

Another feature of the reports that helps form a favourable impression of the government's efforts is brevity and diversity of content. The reports make brief mentions of many different activities, such as funded projects, enforcement actions, administrative agreements, stakeholder involvement, and so on. These activities are briefly explained and are seldom accompanied by an evaluation or a more thorough discussion. Yet, in mentioning the many types of work, the reports create an impression of busyness and high levels of activity around SARA's implementation.

This analysis suggests that mandatory disclosures, just like voluntary disclosures examined by Cuckston (2022), are used as calculative spaces and frame information in a particular way. The discretion used around the selection of case studies, and the amount and type of disclosures indicates an effort to portray government work in a positive light. This intent is also made visible by what is missing from the reports. While no calculation can take everything into account, examining the overflows can help understand how framing is used (Callon 1998; Christensen and Skærbæk 2007). In the case of SARA reports we note the little discussion of species assessed as at risk by COSEWIC but which are not listed under SARA. There is also

little discussion of systematic wide-spread threats, which are often industry wide. Similarly, there is little discussion about the effectiveness of the different actions or about the role of stakeholders in influencing the government. These overflows further suggest that the reports are written to convey a specific (positive) impression regarding the government's ability to manage species at risk while not critiquing priority stakeholders like industry or provinces.

The academic debate around mandatory-voluntary disclosure makes assumptions about each type. For example, it is often assumed that mandatory disclosures have clear requirements and are strictly enforced, while voluntary disclosures are ad hoc and arbitrary in nature, not comparable, and function as self-serving public relations exercises while avoiding regulatory oversight (Stubbs and Higgins 2018). It is a common belief, then, that regulation of sustainability disclosure would lead to an improvement in terms of quality and comparability of information (Fortuna et al. 2020). However, in practice, mandatory requirements can be vague and lack enforcement (e.g., Larrinaga et al. 2002), and voluntary disclosures can have clear requirements and high levels of compliance (e.g., CDP). Our analysis provides further evidence that the dichotomy is false, and that both voluntary and mandatory disclosures are subject to similar pressures and limitations in that any discretion is likely to be used to create a certain impression. Although the amount of discretion is likely higher when the requirements are vague, all disclosures are likely to have some discretion given that ambiguity makes legal requirements inherently indeterminate (Halliday and Carruthers 2007).[22]

We note three characteristics of SARA reports that make them more useful. First, progress can be easily tracked because of the regular frequency of disclosure. Second, the main content themes are sufficiently specific and relevant. Also, what makes the content particularly useful is that the reports are required to cover activities over the preceding year, and thus there is no uncertainty over the staleness of information. This is similar to how corporate financial statements are required to identify the relevant time period, and in contrast to many corporate sustainability disclosures which frequently fail to do so. Lastly, the reports clearly follow a template, although one is not prescribed by the Act. This standardization of format makes information easy to process. These three characteristics of timeliness, content, and format, greatly improve the comparability and completeness of SARA reports from year to year, making

[22] Even at 54,000 words, SARA has been criticised for vagueness (Turcotte et al. 2021).

it easier to scrutinize government performance. When these three characteristics are all present, they are likely to result in more useful and user-friendly disclosure, regardless of whether the disclosure is mandatory or voluntary. Indeed, focusing on disclosure characteristics other than their voluntary-mandatory nature is in line with the recognition of the growing reliance on soft-law approaches to regulation and governance (Djelic and Quack 2018).

While information provision and disclosure are necessary steps toward achieving accountability, the accountability loop can only be said to be functioning if the principal is able to take action to elicit changes in the performance of the agent (Bovens 2007). Hypothetically, it is possible for the public to vote a government out of office for failing to manage species at risk (Mansbridge 2003). In reality, it is highly unlikely that the issue of SARA administration and the management of species at risk would ever be a priority for voters in light of other more immediate issues like jobs, healthcare, and even climate change. Thus, this information is not sufficient to ensure accountable changes in behaviour along this channel.

Yet our findings also highlight another channel through which the accountability loop can be completed. Even if voters are unlikely to hold the government to account, SARA reports, along with other government disclosures, provide information that allows other stakeholders, such as NGOs and civil society, to demand accountability. These organizations demand action by petitioning the government directly or through the courts. We observed this channel at work when, for example, NGOs forced the issuance of the emergency protection order for the Greater Sage-Grouse. Similarly, by filing judicial reviews, NGOs helped improve the process of critical habitat identification and protection (Taylor and Pinkus 2013). Although working through the court system may be slow and inefficient, it is no doubt a more effective accountability mechanism than through general elections.

These results also suggest that even as civil society starts with less power vis-a-vis the federal government, compared to industry or provincial governments, the information provided by these disclosures increases their power. As Callon and Muniesa (2005, 1238) argue, an agency that is in a weak position initially can change the balance of power and become more active by gradually acquiring tools. Thus, accountability holders such as civil society can gain calculative power through these disclosures (Henri and Journeault 2010).

By applying the three-stage framework to examine the Canadian public sector's mandatory disclosures, we were able to engage in a more "nuanced and constructive form of

critical evaluation based on identifying what has been brought into, and what has been excluded from, [this] calculative space" (Cuckston 2022, 84). Future research can examine the specific techniques (and their limits) used in the calculative space that enable disclosures to achieve their intended effect. Future research should also examine the specific channels through which disclosures can be used to elicit accountability. Disclosures alone will not stem the tide of biodiversity loss, but they can be a key tool if they improve the accountability of those charged with protecting our Earthly home.

## References


Adler, Paul S., and Bryan Borys. 1996. Two Types of Bureaucracy: Enabling and Coercive. *Administrative Science Quarterly* 41 (1): 61–89. https://doi.org/10.2307/2393986

Alford, Robert R., and Roger Friedland. 1985. *Powers of Theory: Capitalism, the State, and Democracy*. Cambridge University Press.

Ball, Amanda. 2007. Environmental Accounting as Workplace Activism. *Critical Perspectives on Accounting* 18 (7): 759–78. https://doi.org/10.1016/j.cpa.2006.04.005

Ball, Amanda, Ian Mason, Suzana Grubnic, and Phil Hughes. 2009. The Carbon Neutral Public Sector. *Public Management Review* 11 (5): 575–600. https://doi.org/10.1080/14719030902798263

Beckwith, Jo Ann, and Susan A. Moore. 2001. The Influence of Recent Changes in Public Sector Management on Biodiversity Conservation. *Pacific Conservation Biology* 7 (1): 45–54. https://doi.org/10.1071/pc010045

Benveniste, Emile. 1973. *Indo-European Language and Society*. London: Faber and Faber.

Bonaimé, Alice Adams. 2015. Mandatory Disclosure and Firm Behavior: Evidence from Share Repurchases. *The Accounting Review* 90 (4): 1333–62.

Bonebrake, Timothy C., Fengyi Guo, Caroline Dingle, David M. Baker, Roger L. Kitching, and Louise A. Ashton. 2019. Integrating Proximal and Horizon Threats to Biodiversity for Conservation. *Trends in Ecology & Evolution* 34 (9): 781–88. https://doi.org/10.1016/j.tree.2019.04.001

Bovens, Mark. 2007. Analysing and Assessing Accountability: A Conceptual Framework. *European Law Journal* 13 (4): 447–68. https://doi.org/10.1111/j.1468-0386.2007.00378.x

Boyd, David R. 2013. The Status of Constitutional Protection for the Environment in Other Nations. David Suzuki Foundation. https://davidsuzuki.org/science-learning-centre-article/status-constitutional-protection-environment-nations/

Briggs, John C. 2017. Emergence of a Sixth Mass Extinction? *Biological Journal of the Linnean Society* 122 (2): 243–48. https://doi.org/10.1093/biolinnean/blx063

Brock, Caroline, Jessica D. Ulrich-Schad, and Linda Prokopy. 2018. Bridging the Divide: Challenges and Opportunities for Public Sector Agricultural Professionals Working with Amish and Mennonite Producers on Conservation. *Environmental Management* 61 (5): 756–71. https://doi.org/10.1007/s00267-018-0998-5

Callon, Michel. 1998. An Essay on Framing and Overflowing: Economic Externalities Revisited by Sociology. *The Sociological Review* 46 (1_suppl): 244–69. https://doi.org/10.1111/j.1467-954X.1998.tb03477.x

Callon, Michel, and John Law. 2005. On Qualculation, Agency, and Otherness. *Environment and Planning D: Society and Space* 23 (5): 717–33. https://doi.org/10.1068/d343t

Callon, Michel, and Fabian Muniesa. 2005. Peripheral Vision: Economic Markets as Calculative Collective Devices. *Organization Studies* 26 (8): 1229–50. https://doi.org/10.1177/0170840605056393

Cardinale, Bradley J., J. Emmett Duffy, Andrew Gonzalez, David U. Hooper, Charles Perrings, Patrick Venail, Anita Narwani, et al. 2012. Biodiversity Loss and Its Impact on Humanity. *Nature* 486 (7401): 59–67. https://doi.org/10.1038/nature11148

Ceballos, Gerardo, Paul R. Ehrlich, and Peter H. Raven. 2020. Vertebrates on the Brink as Indicators of Biological Annihilation and the Sixth Mass Extinction. *Proceedings of the National Academy of Sciences* 117 (24): 13596–602.

https://doi.org/10.1073/pnas.1922686117
Centre for Constitutional Studies. 2019. Governor in Council. Accessed at https://www.constitutionalstudies.ca/2019/07/governor-in-council/
Cho, Charles H., Martin Freedman, and Dennis M. Patten. 2012. Corporate Disclosure of Environmental Capital Expenditures: A Test of Alternative Theories. *Accounting, Auditing & Accountability Journal* 25 (3): 486–507. https://doi.org/10.1108/09513571211209617
Cho, Charles H., Matias Laine, Robin W. Roberts, and Michelle Rodrigue. 2015. Organized Hypocrisy, Organizational Façades, and Sustainability Reporting. *Accounting, Organizations and Society* 40 (January): 78–94. https://doi.org/10.1016/j.aos.2014.12.003
Christensen, Mark, and Peter Skærbæk. 2007. Framing and Overflowing of Public Sector Accountability Innovations: A Comparative Study of Reporting Practices. *Accounting, Auditing & Accountability Journal* 20 (1): 101–32. https://doi.org/10.1108/09513570710731227
Clarkson, Peter M., Yue Li, Gordon D. Richardson, and Florin P. Vasvari. 2008. Revisiting the Relation between Environmental Performance and Environmental Disclosure: An Empirical Analysis. *Accounting, Organizations and Society* 33 (4): 303–27. https://doi.org/10.1016/j.aos.2007.05.003
Cochoy, Franck. 2002. *Une Sociologie Du Packaging Ou l'âne de Buridan Face Au Marché: Les Emballages et Le Choix Du Consommateur*. Presses universitaires de France.
Conway, Susan Lee, Patricia Ann O'Keefe, and Sue Louise Hrasky. 2015. Legitimacy, Accountability and Impression Management in NGOs: The Indian Ocean Tsunami. *Accounting, Auditing & Accountability Journal* 28 (7): 1075–98. https://doi.org/10.1108/AAAJ-04-2012-01007
Cooper, Stuart M., and David L. Owen. 2007. Corporate Social Reporting and Stakeholder Accountability: The Missing Link. *Accounting, Organizations and Society* 32 (7): 649–67. https://doi.org/10.1016/j.aos.2007.02.001
Cowan, Stacey, and David Gadenne. 2005. Australian Corporate Environmental Reporting: A Comparative Analysis of Disclosure Practices across Voluntary and Mandatory Disclosure Systems. *Journal of Accounting & Organizational Change* 1 (2): 165–79. https://doi.org/10.1108/18325910510635344
Cuckston, Thomas. 2022. Accounts of NGO Performance as Calculative Spaces: Wild Animals, Wildlife Restoration and Strategic Agency. *Critical Perspectives on Accounting* 84: 102374. https://doi.org/10.1016/j.cpa.2021.102374
Dextrase, Alan J., and Nicholas E. Mandrak. 2006. Impacts of Alien Invasive Species on Freshwater Fauna at Risk in Canada. *Biological Invasions* 8 (1): 13–24.
Dhanani, Alpa. 2019. Identity Constructions in the Annual Reports of International Development NGOs: Preserving Institutional Interests? *Critical Perspectives on Accounting* 59: 1–31. https://doi.org/10.1016/j.cpa.2018.06.001
Dhanani, Alpa, and Ciaran Connolly. 2015. Non-Governmental Organizational Accountability: Talking the Talk and Walking the Walk? *Journal of Business Ethics* 129 (3): 613–37. https://doi.org/10.1007/s10551-014-2172-1
Djelic, Marie-Laure, and Sigrid Quack. 2018. Globalization and Business Regulation. *Annual Review of Sociology* 44 (1): 123–43. https://doi.org/10.1146/annurev-soc-060116-053532
Ekoko, Francçois. 2000. Balancing Politics, Economics and Conservation: The Case of the Cameroon Forestry Law Reform. *Development and Change* 31 (1): 131–54.

https://doi.org/10.1111/1467-7660.00149
Enns, A., D. Kraus, and A. Hebb. 2020. Ours to Save: The Distribution, Status and Conservation Needs of Canada's Endemic Species. NatureServe Canada and Nature Conservancy of Canada.
Environment and Climate Change Canada. 2016. Species at Risk Act: Annual Report for 2014. Accessed at https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/reports/RapportLEP-SARAReport2014_eng.pdf
———. 2017. Species at Risk Act: Order of Decisions Not to Add Certain Species (Volume 151, Number 9). Accessed at https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/orders/decisions-not-add-species-may-2017.html
———. 2019. Species at Risk: The Act, the Accord and the Funding Programs. Accessed at https://www.canada.ca/en/environment-climate-change/services/species-risk-act-accord-funding.html
———. 2020a. Species at Risk Act: 2018 Annual Report to Parliament. Accessed at https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/reports/SaraAnnualRpt2018-eng.pdf
———. 2020b. Species At Risk Act: Annual Report to Parliament for 2019. Accessed at https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/sara-annual-reports/annual-report-2019.html
———. 2022. Species At Risk Act: Annual Report to Parliament for 2020. Accessed at https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/reports/Sar-2020-v02-eng.pdf
Environment Canada. 2010a. Species at Risk Act: Annual Report for 2008. Accessed at https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/reports/sar_2008_0310_e.pdf
———. 2010b. Species at Risk Act: Annual Report for 2009. Accessed at https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/reports/sar_2009_1210_e.pdf
———. 2012. Recovery Planning. SARA Annual Report for 2011. Accessed at https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/publications/annual-report-2011/chapter-4.html
———. 2013. Species at Risk Act: Annual Report for 2012. Accessed at https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/reports/SARA_AR_2012_eng.pdf
Findlay, C. Scott, Stewart Elgie, Brian Giles, and Linda Burr. 2009. Species Listing under Canada's Species at Risk Act. *Conservation Biology* 23 (6): 1609–17. https://doi.org/10.1111/j.1523-1739.2009.01255.x
Fortuna, Fabio, Silvia Testarmata, Silvia Sergiacomi, and Mirella Ciaburri. 2020. Mandatory Disclosure of Non-Financial Information: A Structured Literature Review. In *Accounting, Accountability and Society: Trends and Perspectives in Reporting, Management and Governance for Sustainability*, edited by Mara Del Baldo, Jesse Dillard, Maria-Gabriella Baldarelli, and Massimo Ciambotti, 95–128. CSR, Sustainability, Ethics & Governance. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-41142-8_6
Gee, James Paul. 2001. *An Introduction to Discourse Analysis - Theory and Method*. New York: Routledge.
Goffman, Erving. 1959. *The Presentation of Self in Everyday Life*. Doubleday Anchor Books;

A174. Garden City, N.Y: Doubleday.
———. 1986. *Frame Analysis: An Essay on the Organization of Experience*. Boston: Northeastern University Press.
Government of Canada. 2009. Species at Risk Act: Annual Report for 2006 and 2007. Accessed at https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/reports/ar_SARA_AnnualReport_0209_e.pdf
———. 2011. Cooperation between government departments on terrestrial species at risk (February 2011). Accessed at https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/administrative-agreements/cooperation-government-departments-february-2011.html
———. 2013. Emergency Order for the Protection of the Greater Sage-Grouse. Accessed at https://species-registry.canada.ca/index-en.html#/documents/1736
———. 2018. Order Declining to make an Emergency Order for the protection of the Killer Whale Northeast Pacific Southern Resident Population: SI/2018-102. Accessed at https://gazette.gc.ca/rp-pr/p2/2018/2018-11-14/html/si-tr102-eng.html
———. 2020. Federal land managers and the Species at Risk Act. Accessed at https://www.canada.ca/en/environment-climate-change/services/species-risk-education-centre/your-responsibility/federal-managers.html
———. 2021. Laura's Clubtail (*Stylurus laurae*). Accessed December 28, 2021 at https://species-registry.canada.ca/index-en.html#/species/1080-743
Gray, Rob. 2010. Is Accounting for Sustainability Actually Accounting for Sustainability…and How Would We Know? An Exploration of Narratives of Organisations and the Planet. *Accounting, Organizations and Society* 35 (1): 47–62. https://doi.org/10.1016/j.aos.2009.04.006
Gray, Rob, Carol A. Adams, and Dave Owen. 2014. *Accountability, Social Responsibility and Sustainability: Accounting for Society and the Environment*. Harlow: Pearson. http://www.tandfonline.com/doi/abs/10.1080/0969160X.2014.967961
Gray, Rob, and Jan Bebbington. 2000. Environmental Accounting, Managerialism and Sustainability: Is the Planet Safe in the Hands of Business and Accounting? *Advances in Environmental Accounting & Management*, 1:1–44. https://doi.org/10.1016/S1479-3598(00)01004-9
Gray, Rob, Reza Kouhy, and Simon Lavers. 1995. Corporate Social and Environmental Reporting: A Review of the Literature and a Longitudinal Study of UK Disclosure. *Accounting, Auditing & Accountability Journal* 8 (2): 47–77. https://doi.org/10.1108/09513579510146996
Gray, Rob, and Markus J. Milne. 2018. Perhaps the Dodo Should Have Accounted for Human Beings? Accounts of Humanity and (Its) Extinction. *Accounting, Auditing & Accountability Journal* 31 (3): 826–48. https://doi.org/10.1108/AAAJ-03-2016-2483
Gray, Rob, Dave Owen, and Keith Maunders. 1988. Corporate Social Reporting: Emerging Trends in Accountability and the Social Contract. *Accounting, Auditing & Accountability Journal* 1 (1): 6–20. https://doi.org/10.1108/EUM0000000004617
Halliday, Terence C., and Bruce G. Carruthers. 2007. The Recursivity of Law: Global Norm Making and National Lawmaking in the Globalization of Corporate Insolvency Regimes. *American Journal of Sociology* 112 (4): 1135–1202. https://doi.org/10.1086/507855

Hayward, Matt W. 2009. The Need to Rationalize and Prioritize Threatening Processes Used to Determine Threat Status in the IUCN Red List. *Conservation Biology* 23 (6): 1568–76. https://doi.org/10.1111/j.1523-1739.2009.01260.x

Henri, Jean-François, and Marc Journeault. 2010. Eco-Control: The Influence of Management Control Systems on Environmental and Economic Performance. *Accounting, Organizations and Society* 35 (1): 63–80. https://doi.org/10.1016/j.aos.2009.02.001

Hill, Stephen, Nicholas Abercrombie, and Bryan Turner. 2006. *The Penguin Dictionary of Sociology*. Penguin Books. http://gen.lib.rus.ec/book/index.php?md5=9A8C825843E3CB0848C1DB475533F963

Hoffman, Nadine. 2018. Species at Risk Act: A Comprehensive Inventory of Legislative Documents, 1973-2017. *Canadian Institute of Resources Law (CIRL)*, March. http://hdl.handle.net/1880/107632

House of Commons of Canada. n.d. Canadian Parliamentary System. Accessed March 31, 2023. https://www.ourcommons.ca/procedure/our-procedure/ParliamentaryFramework/c_g_parliamentaryframework-e.html

Illical, Mary, and Kathryn Harrison. 2007. Protecting Endangered Species in the US and Canada: The Role of Negative Lesson Drawing. *Canadian Journal of Political Science/Revue Canadienne de Science Politique* 40 (2): 367–94. https://doi.org/10.1017/S0008423907070175

Jaremko, Sara L. 2019. Laws Protecting the Sage Grouse in Alberta as Compared to Saskatchewan and the United States. Canadian Institute of Resources Law, University of Calgary.

Jones, Michael John. 1996. Accounting for Biodiversity: A Pilot Study. *The British Accounting Review* 28 (4): 281–303. https://doi.org/10.1006/bare.1996.0019

Jones, Michael John, and Jill Frances Solomon. 2013. Problematising Accounting for Biodiversity. *Accounting, Auditing & Accountability Journal* 26 (5): 668–87. https://doi.org/10.1108/AAAJ-03-2013-1255

Laine, Matias, Helen Tregidga, and Jeffrey Unerman. 2022. *Sustainability Accounting and Accountability*. Third Edition. London; New York: Routledge, Taylor & Francis Group.

Larrinaga, Carlos, Francisco Carrasco, Carmen Correa, Fernando Llena, and José Moneva. 2002. Accountability and Accounting Regulation: The Case of the Spanish Environmental Disclosure Standard. *European Accounting Review* 11 (4): 723–40. https://doi.org/10.1080/0963818022000001000

Latour, Bruno. 1987. *Science in Action: How to Follow Scientists and Engineers through Society*. Cambridge, Mass: Harvard University Press.

Lave, Jean. 1984. The Values of Quantification. *The Sociological Review* 32 (May): 88–111. https://doi.org/10.1111/j.1467-954X.1984.tb00108.x

Le Roux, Johannes J., Cang Hui, Maria L. Castillo, José M. Iriondo, Jan-Hendrik Keet, Anatoliy A. Khapugin, Frédéric Médail, et al. 2019. Recent Anthropogenic Plant Extinctions Differ in Biodiversity Hotspots and Coldspots. *Current Biology* 29 (17): 2912-2918.e2. https://doi.org/10.1016/j.cub.2019.07.063

Legislative Services Branch. 2020. Consolidated Federal Laws of Canada, the Constitution Acts, 1867 to 1982. https://laws-lois.justice.gc.ca/eng/const/

Macintosh, Norman B. 2002. *Accounting, Accountants and Accountability: Poststructuralist Positions*. London; New York: Routledge. http://site.ebrary.com/id/10205078

Mansbridge, Jane. 2003. Rethinking Representation. *American Political Science Review* 97 (4):

515–28. https://doi.org/10.1017/S0003055403000856
Mazor, Tessa, Christopher Doropoulos, Florian Schwarzmueller, Daniel W. Gladish, Nagalingam Kumaran, Katharina Merkel, Moreno Di Marco, and Vesna Gagic. 2018. Global Mismatch of Policy and Research on Drivers of Biodiversity Loss. *Nature Ecology & Evolution* 2 (7): 1071–74. https://doi.org/10.1038/s41559-018-0563-x
McCune, Jenny L., William L. Harrower, Stephanie Avery-Gomm, Jason M. Brogan, Anna-Mária Csergő, Lindsay N.K. Davidson, Alice Garani, et al. 2013. Threats to Canadian Species at Risk: An Analysis of Finalized Recovery Strategies. *Biological Conservation* 166 (October): 254–65. https://doi.org/10.1016/j.biocon.2013.07.006
McDevitt-Irwin, Jamie Marie, Susanna Drake Fuller, Catharine Grant, and Julia Kathleen Baum. 2015. Missing the Safety Net: Evidence for Inconsistent and Insufficient Management of at-Risk Marine Fishes in Canada. *Canadian Journal of Fisheries and Aquatic Sciences* 72 (10): 1596–1608. https://doi.org/10.1139/cjfas-2015-0030
Messner, Martin. 2009. The Limits of Accountability. *Accounting, Organizations and Society* 34 (8): 918–38. https://doi.org/10.1016/j.aos.2009.07.003
Minister of Environment. 2007. Species at Risk in Canada. 2007. https://www.hww.ca/en/issues-and-topics/species-at-risk-in-canada.html
Minister of Supply and Services Canada. 1995. *Canadian Biodiversity Strategy: Canada's Response to the Convention on Biological Diversity*. Hull, Quebec, Canada: Biodiversity Convention Office, Environment Canada.
Murray, K., D. J. Roux, J. L. Nel, A. Driver, and W. Freimund. 2011. Absorptive Capacity as a Guiding Concept for Effective Public Sector Management and Conservation of Freshwater Ecosystems. *Environmental Management* 47 (5): 917–25. https://doi.org/10.1007/s00267-011-9659-7
Neu, D., H. Warsame, and K. Pedwell. 1998. Managing Public Impressions: Environmental Disclosures in Annual Report. *Accounting, Organizations and Society* 23 (3): 265–82. https://doi.org/10.1016/S0361-3682(97)00008-1
Nixon, Sean, D. Page, S. Pinkus, L. Podolsky, and S. Russell. 2012. Failure to Protect: Grading Canada's Species at Risk Laws. EcoJustice.
OECD. 2020. Biodiversity and the Economic Response to COVID-19: Ensuring a Green and Resilient Recovery. Paris: OECD. https://doi.org/10.1787/d98b5a09-en
Paulson, D.R. 2017. *Stylurus laurae*. *The IUCN Red List of Threatened Species* 2017: e.T51272472A65836489. https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T51272472A65836489.en
Power, Michael. 1991. Auditing and Environmental Expertise: Between Protest and Professionalisation. *Accounting, Auditing & Accountability Journal* 4 (3): 30–42. https://doi.org/10.1108/09513579110141751
Prugh, Laura R., Anthony R.E. Sinclair, Karen E. Hodges, Aerin L. Jacob, and David S. Wilcove. 2010. Reducing Threats to Species: Threat Reversibility and Links to Industry: Reducing Threats to Species. *Conservation Letters* 3 (4): 267–76. https://doi.org/10.1111/j.1755-263X.2010.00111.x
Qian, Wei, Roger Burritt, and Gary Monroe. 2011. Environmental Management Accounting in Local Government. *Accounting, Auditing & Accountability Journal* 24 (1): 93–128. https://doi.org/10.1108/09513571111098072
Roberts, John. 2009. No One Is Perfect: The Limits of Transparency and an Ethic for 'Intelligent' Accountability. *Accounting, Organizations and Society* 34 (8): 957–70.

https://doi.org/10.1016/j.aos.2009.04.005
Roux, Dirk J., Kevin Murray, and Ernita van Wyk. 2008. Learning to Learn for Social-Ecological Resilience: Balancing Strategy Options in Public Sector Organisations. In *Exploring Sustainability Science: A Southern African Perspective*, edited by Michael Burns and Alex Weaver, 1st ed, 599-625. African Sun Media.
Samkin, Grant, and Annika Schneider. 2010. Accountability, Narrative Reporting and Legitimation. *Accounting, Auditing & Accountability Journal* 23 (2): 256–89. https://doi.org/10.1108/09513571011023219
Shelton, Dinah. 1991. Human Rights, Environmental Rights, and the Right to Environment. *Stanford Journal of International Law* 28: 103.
Singh, Vijeta, Shikha Shukla, Anamika Singh, Vijeta Singh, Shikha Shukla, and Anamika Singh. 2021. The Principal Factors Responsible for Biodiversity Loss. *Open Journal of Plant Science* 6 (1): 011–014. https://doi.org/10.17352/ojps.000026
Species at Risk Act. 2002. S.C. 2002, c. 29. https://laws.justice.gc.ca/eng/acts/s-15.3/
Stubbs, Wendy, and Colin Higgins. 2018. Stakeholders' perspectives on the role of regulatory reform in integrated reporting. *Journal of Business Ethics* 147 (3): 489–508.
Taylor, Eric B., and Susan Pinkus. 2013. The Effects of Lead Agency, Nongovernmental Organizations, and Recovery Team Membership on the Identification of Critical Habitat for Species at Risk: Insights from the Canadian Experience. *Environmental Reviews* 21 (2): 93–102. https://doi.org/10.1139/er-2013-0002
The Canadian Encyclopedia. 2013. Crown Land. December 16, 2013. https://www.thecanadianencyclopedia.ca/en/article/crown-land
Thomson, Ian, Suzana Grubnic, and Georgios Georgakopoulos. 2014. Exploring Accounting-Sustainability Hybridisation in the UK Public Sector. *Accounting, Organizations and Society* 39 (6): 453–76. https://doi.org/10.1016/j.aos.2014.02.003
TNFD (Taskforce on Nature-Related Financial Disclosures). n.d. Welcome to the Taskforce on Nature-related Financial Disclosures. Accessed February 22, 2023. https://tnfd.global/
Tollefson, Jeff. 2020. Why Deforestation and Extinctions Make Pandemics More Likely. *Nature* 584 (7820): 175–76. https://doi.org/10.1038/d41586-020-02341-1
Turcotte, Audrey, Natalie Kermany, Sharla Foster, Caitlyn A. Proctor, Sydney M. Gilmour, Maria Doria, James Sebes, Jeannette Whitton, Steven J. Cooke, and Joseph R. Bennett. 2021. Fixing the Canadian Species at Risk Act: Identifying Major Issues and Recommendations for Increasing Accountability and Efficiency. *FACETS* 6 (January): 1474–94. https://doi.org/10.1139/facets-2020-0064
UN Educational, Scientific and Cultural Organization. n.d. 2011-2020: United Nations Decade on Biodiversity. Accessed December 13, 2021. http://www.unesco.org/new/en/natural-sciences/special-themes/biodiversity/international-day-for-biological-diversity/united-nations-decade-on-biodiversity/
Van Liempd, Dennis, and Jacob Busch. 2013. Biodiversity Reporting in Denmark. *Accounting, Auditing & Accountability Journal* 26 (5): 833–72. https://doi.org/10.1108/AAAJ:02-2013-1232
Venter, Oscar, Nathalie N. Brodeur, Leah Nemiroff, Brenna Belland, Ivan J. Dolinsek, and James W. A. Grant. 2006. Threats to Endangered Species in Canada. *Bioscience* 56 (11): 903–10.
Vinnari, Eija, and Markus Vinnari. 2022. Making the invisibles visible: Including animals in sustainability (and) accounting. *Critical Perspectives on Accounting*, 82, 102324.

Vinnari, Eija, Wai Fong Chua, and Jane Baxter. 2022. Accounting, accountability and animals. *Critical Perspectives on Accounting* 84, 102412.
Weir, Kenneth. 2018. The Purposes, Promises and Compromises of Extinction Accounting in the UK Public Sector. *Accounting, Auditing & Accountability Journal* 31 (3): 875–99. https://doi.org/10.1108/AAAJ-03-2016-2494
Westwood, Alana R., Sarah P. Otto, Arne Mooers, Chris Darimont, Karen E. Hodges, Chris Johnson, Brian M. Starzomski, et al. 2019. Protecting Biodiversity in British Columbia: Recommendations for Developing Species at Risk Legislation. *FACETS* 4 (1): 136–60. https://doi.org/10.1139/facets-2018-0042
Wild Species Canada. n.d. How Many Species in Canada. Accessed December 24, 2021. https://www.wildspecies.ca/how-many-species-in-canada
Wiseman, Joanne. 1982. An Evaluation of Environmental Disclosures Made in Corporate Annual Reports. *Accounting, Organizations and Society* 7 (1): 53–63. https://doi.org/10.1016/0361-3682(82)90025-3
World Economic Forum. n.d. Agenda. Accessed December 25, 2022. https://www.weforum.org/agenda/biodiversity/

**Table 1**

The number of species at risk with recovery strategies, by responsible department, over 2006-2009. The Expected values are the government's estimates as of 2005, and the Actual values are the actual numbers of species with final recovery strategies.

| | ECCC | | DFO | | PCA | |
|---|---|---|---|---|---|---|
| **Year** | **Expected** | **Actual** | **Expected** | **Actual** | **Expected** | **Actual** |
| 2006 | 83 | 10 | 21 | 6 | 29 | 20 |
| 2007 | 65 | 15 | 20 | 25 | 17 | 5 |
| 2008 | 11 | 4 | 8 | 10 | 0 | 5 |
| 2009 | 12 | 1 | 2 | 1 | 3 | 3 |
| Total | 171 | 30 | 51 | 42 | 49 | 33 |

**Appendix: COSEWIC wildlife species assessment status categories**

Extinct
A wildlife species that no longer exists.

Extirpated
A wildlife species that no longer exists in the wild in Canada, but exists elsewhere.

Endangered
A wildlife species facing imminent extirpation or extinction.

Threatened
A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

Special Concern
A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

Data Deficient
A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.

Not At Risk
A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.