Anima Huss

Internship Report: Whales and Climate - Southern Hemisphere Humpback Whale Research Program on Climate Change

International and National Regulations for the Protection of Humpback Whales in the Southern Hemisphere: A Comparative Study of Australia, South Africa, and Chile

Internship report presented to NOVA School of Law to obtain a Master´s Degree in Law, in the specialty of Law and Economics of the Sea – Ocean Governance

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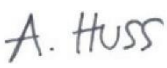
August 2025

Anti-plagiarism Statement

I hereby declare that the work I present, is my own work and that all my citations are correctly acknowledged. I am aware that the use of unacknowledged extraneous materials and sources, constitutes a serious ethical and disciplinary offence.



München, 08.09.2025

Acknowledgements

I would like to express my sincere gratitude to the Whales and Climate Research Program for their invaluable support and collaboration throughout my research.

I had the privilege of presenting my work at two conferences, the Network Conference of the Thematic Group - Polar and Ocean Politics - in Berlin and parts of my work at the One Ocean Science Congress 2025 in Nice (session T3-5 - Implementation of the BBNJ Agreement), where I received insightful feedback and engaged in enriching discussions with fellow researchers.

I am deeply thankful to Dr. Jan-Olaf Meynecke, whose assistance and encouragement made these experiences possible. His dedication and support played a significant role in shaping the success of my work and enhancing the quality of the presentations.

A special thanks to professor Jorge Oliveira e Carmo for continuous guidance and constructive feedback on my work.

Content

List of Abbreviations

AAGR - Annual growth rate

ABMT – Area-based management tool

ABNJ – Areas Beyond National Jurisdiction

AFMA - Australian Fisheries Management Authority

ALDFG - Abandoned, Lost, and Discarded Fishing Gear

ANGW&DW - Australian National Guidelines for Whale and Dolphin Watching

BBNJ - UN Treaty on Biodiversity Beyond National Jurisdiction

CCAMLR - Convention on the Conservation of Antarctic Marine Living Resources

CITES - Convention on International Trade in Endangered Species of Wild Fauna and Flora

CMS - Convention on the Conservation of Migratory Species of Wild Animals

DS N° 38-2011 - Decreto Supremo N° 38-2011 Reglamento General de Observación de Mamíferos y el Reptiles y Aves Hidrobiológicas y del Registro de Avistamiento de Cetáceos

EBPC - Environment Protection and Biodiversity Conservation Act 1999

FAA 1991 - Fisheries Administration Act of 1991

GBF - Kunming-Montreal Global Biodiversity Framework

ICRW - International Convention for the Regulation of Whaling

IUCN - International Union for the Conservation of Nature

IWC - International Whaling Commission

LGPA - Ley General de Pesca y Acuicultura (Ley N° 18.892)

LPC - Ley de Protección de los Cetáceos (Ley N° 20.293)

MLRA 1998 - Marine Living Resources Act 18 of 1998

MPA - Marine Protected Area

MBPM - Manual de Buenas Prácticas para Operaciones Marítimas de Avistamiento de Fauna Marina

MARPOL - International Convention for the Prevention of Pollution from Ships

NEMA - National Environmental Management Act (NEMA No. 107 of 1998)

POTS (PPS) Act 1983 - Protection of the Sea (Prevention of Pollution from Ships) Act of 1983

POTS Act 2012 - Protection of the Sea Act of 2012

RCC-Australia - Rescue Coordination Centre - Australia

SAMSA - South African Maritime Safety Authority

SAWDN - South African Whale Disentanglement Network

SOWS - Southern Ocean Whale Sanctuary

STB - Scientific and Technical Body

UNCLOS - United Nations Convention on the Law of the Sea

Abstract

Whales are exposed to a range of threats of human origin, including entanglements, whaling, and vessel strikes, as well as the broader impacts of climate change and global warming. Addressing these impacts necessitates the establishment of effective legal frameworks aimed at safeguarding whale populations across national boundaries. As part of the Whales and Climate research program, this study aims to develop an understanding of current whale protection laws from both an international legal framework and national perspectives. The study focuses on Australia, South Africa, and Chile as cases from largely different jurisdictions. Utilising a comparative legal analytical framework, the study identifies the strengths and weaknesses of each country's legislation and provides insights into their respective whale conservation policies. Furthermore, it points out the challenges of implementing scientific knowledge into policy-making and regulations. The findings reveal that national responses to threats vary significantly, influenced by differences in the local severity of these threats, while international agreements like CMS (Convention on the Conservation of Migratory Species of Wild Animals) and CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) offer a shared foundation. The study also highlights that regulations governing whale watching differ in their level of strictness across countries, yet share similarities in their systematic approach and, in some cases, build upon each other. While there is a general awareness of issues such as entanglements and vessel strike within policy discussions, the measures taken often remain inadequate or entirely absent. In light of these issues, the barriers between governance and science become particularly evident. The challenge of enforcing these regulations persists across all three nations. Finally, the study examines how the legal frameworks in Australia, South Africa, and Chile can be adapted to address the evolving challenges posed by climate change, ensuring the long-term protection of humpback whales.

1. Introduction

Whales are considered one of the most remarkable and intelligent species in the world's oceans. Each year, they embark on long migrations, drawing global attention. As key components of the marine ecosystem, whales play an essential role in ocean health. However, despite their ecological significance, they face multiple threats, including entanglement in fishing gear and other marine debris.

On August 22, 2024, I personally observed an incident of this nature. Late in the afternoon, while standing near Hornby Lighthouse in Sydney, we observed a humpback whale that appeared to be entangled in ropes, dragging multiple buoys in its wake. Despite having read extensively on entanglements and having discussed the issue at length during my internship, witnessing this problem in such proximity was a distressing experience. A team from the coast guard was on-site, attempting to slow the whale down by attaching additional buoys to enable a rescue. However, the distressing reality remained: a whale that becomes entangled and is not freed in time often dies within six months. During this period, the whale may travel vast distances, often hundreds of kilometres before succumbing to exhaustion and drowning (Moore, 2019, p. 782). Despite media attention for dramatic rescue operations, the causes of entanglements and ways to reduce them are rarely discussed. The number of unreported cases remains alarmingly high.

The present study sets out to examine the structure of the legal framework for protecting humpback whales, with reference to regulations aimed at reducing entanglements. The objective of this study is to bridge the gap, to establish a connection between research and regulation, contributing to improve protection for these remarkable animals.

2. Objectives and Scope of the Study

This study seeks to address, how humpback whales in the Southern Hemisphere are currently protected through existing legal frameworks, and what additional regulatory measures could enhance this protection given the numerous threats they face today. At the base of this investigation is the assumption that the protection of marine mammals, including humpback whales, can be effectively achieved through robust and appropriate legislation. Therefore, a thorough examination and analysis of existing laws and regulations are critical to pinpointing the areas where new directives or adjustments are needed to ensure improved conservation outcomes for these species.

The Whales and Climate Research Program is an international research initiative that studies whale populations in the Southern Hemisphere in varies countries including Australia, South Africa, Ecuador, Chile, Brasil and the continent Antarctica. To narrow the focus of this study, a selection of countries was chosen to provide insight into whale protection legislation across different continents in the Southern Hemisphere.

The inclusion of Australia was motivated by its critical role in whale conservation and the opportunity to build on insights gathered during my internship. Australia plays an important role in marine mammal protection due to its extensive marine territories. On-site experiences allowed me to observe and better understand the implementation of whale protection measures firsthand.

Chile, known for its exceptionally long coastline that stretches along the Pacific Ocean, was selected due to its importance as a habitat for a wide range of cetaceans, including humpback whales. As a leader in whale protection legislation in South America, Chile serves as an excellent case study for exploring progressive conservation practices in the region.

South Africa was chosen because of its significance as a key habitat for humpback whales, particularly during their migratory and breeding seasons. The country's unique position as a meeting point of two oceans and its established marine conservation efforts made it an important addition to the analysis.

The second phase of the study entailed the identification of weaknesses and gaps in the existing legislation of the selected countries. This step required a detailed evaluation of the frameworks to uncover areas where legal provisions are inadequate, enforcement mechanisms are lacking, or the practical implementation of policies falls short. These gaps were then analysed in relation to the key threats faced by humpback whales, including climate change, habitat destruction, entanglement in fishing gear, and ship strikes. The analysis also considered how transboundary issues - such as migration across international waters - impact the effectiveness of national legislation.

Finally, the study explores areas where stronger political initiatives could make a significant difference in enhancing the protection of humpback whales. This involves not only proposing new regulatory measures but also recommending improvements to existing frameworks. The research emphasizes the importance of integrating scientific findings into policy decisions to ensure that laws and regulations address the most pressing threats to humpback whales. By

identifying specific areas where political will and action are necessary, the study aims to provide actionable recommendations that bridge the gap between research and legislation.

In summary, this research offers a structured approach to understanding how humpback whales in the Southern Hemisphere are currently protected, what challenges exist within the existing frameworks, and how conservation efforts can be improved through targeted regulatory measures. By focusing on three key countries, the study provides insights into diverse legal landscapes while contributing to the broader conversation on marine mammal conservation.

3. Collaboration with the Organization

Within the framework of the Master's program in Law and Economics of the Sea – Ocean Governance, students are presented with the prospect of undertaking an internship during the third and fourth semesters. This internship provides a valuable opportunity to gain practical experience and apply theoretical knowledge in real-world settings.

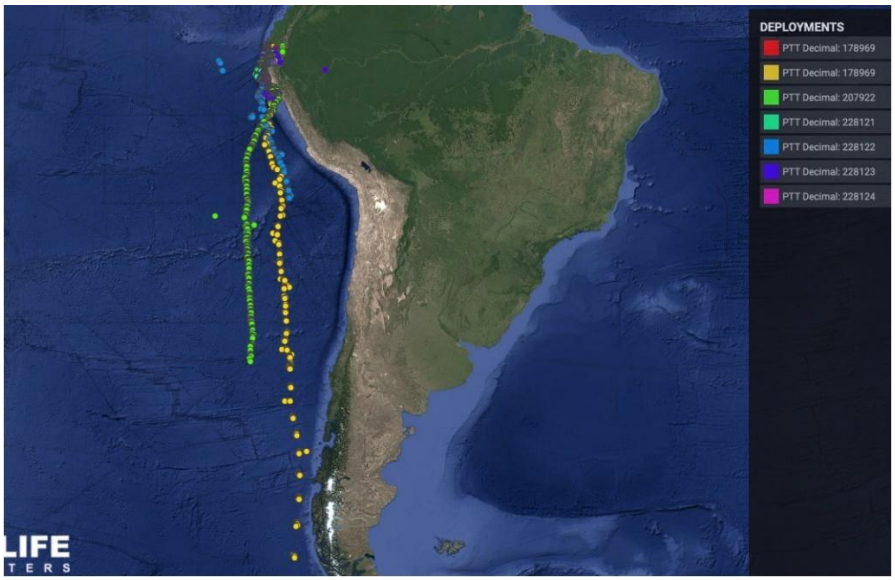
The master's thesis is thematically linked to the internship, allowing students to explore their chosen topic both academically and practically. By collaborating with researchers and professionals in the field, students gain insights into the complexities of ocean governance while enhancing the relevance and depth of their thesis.

3.1. Description of the "Whales and Climate Research Program"

As part of my internship, I was afforded the unique opportunity to spend four months from the first of August to the end of November 2024 as a member of the "Whales and Climate Research Program." This international research program investigates how climate change and the resulting oceanic changes affect the recovery of humpback whale populations. The overarching objective of this research endeavour is twofold: firstly, to enhance the protection of humpback whales and, secondly, to provide the scientific knowledge necessary to improve whale conservation policies.

The program focuses on the Southern Hemisphere and brings together an international and interdisciplinary research team from Australia, South America, and South Africa. It is a collaborative effort involving Griffith University, Stellenbosch University, the University of Pretoria, Cape Town University, Universidade Federal do Rio Grande, Pontifical Catholic University of Ecuador, and the Cape Peninsula University of Technology.

The Whales and Climate Research Program investigates how climate change affects the marine environment, with a particular focus on the population dynamics of humpback whales and the recovery of the population numbers that were heavily depleted by historical whaling practices. Researchers explore a wide range of topics, including the adaptation of humpback whales to rising sea temperatures, the effects of ocean acidification, and changes in the availability of krill and other prey species due to fluctuations in the marine ecosystem. To achieve these objectives, the program utilizes a variety of indicators to assess the impacts of climate change on humpback whales. These include feeding habits, body conditions, skin health, migration routes, and swimming speeds. By analyzing these factors, researchers aim to build a comprehensive understanding of how environmental changes influence the behavior, health, and recovery of humpback whale populations.



The map displays data from transdermal satellite tags attached to various whales in the summer of 2024. These tags enable the detection of deviations from the animals' usual migration routes. Credit: Whales and Climate Program.

This internship provided me with the invaluable opportunity to contribute to research at the intersection of marine biology and conservation policy, while collaborating with experts in the field. The work conducted within this program plays a vital role in shaping conservation strategies and fostering international cooperation to safeguard the future of humpback whales in a rapidly changing world.

3.2. Overview of the Internship

During the course of my internship, I was a visiting scholar at Griffith University in Gold Coast, Australia, where I had the opportunity to accompany Dr. Jan-Olaf Meynecke, the project manager of the "Whales and Climate Research Program" and CEO of "Humpbacks and Highrises," in his work. Over the course of four months, I had the opportunity to gain insight into many aspects of working for an international research program. Part of the work involved field research as well as the evaluation and analysis of data. The second component entailed the execution of daily tasks related to program organization and administrative activities.

During my internship, I was able to participate in and support research trips conducted at sea. These expeditions constituted a vital component of the broader, ongoing endeavours aimed at the study of whales, with an objective of accumulating indispensable data concerning their behaviour, biology, and environment. The primary objective of these trips was to collect reliable and comprehensive data about humpback whales, focusing on their behaviours, movements, and interactions. An important component of this research involved tagging whales. This method required the use of specialized equipment and techniques. Tags were affixed to the whale's skin using suction cups and a 5m carbon pole, ensuring minimal disturbance to the whales. Each tag was equipped with an array of advanced measuring devices designed to collect data on temperature, depth, orientation, position, direction, and movement. Additionally, a small camera was integrated into the tag, allowing researchers to capture video footage of the whale and its immediate surroundings. These recordings provided valuable insights into the whale's perspective and interactions within its environment. After a few hours, a galvanic release caused the tag to detach itself from the whale’s skin and float to the surface, making retrieval possible.

Tagging a whale using a pole.

The photo shows various tags that are attached to the whale's skin using suction cups.

Beyond tagging, several other methods of data collection were employed. On every research trip, behaviour data sheets were completed. These documents recorded a wealth of information, including the whales' behaviours, dive durations, resting periods, mugging times, estimated sizes, pod numbers, swimming speeds and directions, GPS locations of sightings, and reactions to the research vessel. Environmental factors, such as air and water temperature, wind direction, tide conditions, and wave swells, were also systematically documented. Additionally, skin samples were occasionally collected for further analysis, adding to the comprehensive dataset. To maximize data collection opportunities, trained volunteers were deployed on commercial whale-watching tours. These volunteers, typically working in pairs or teams of three, not only documented data on whale sightings but also engaged with tourists, answering their questions and raising awareness about the importance of whale research and conservation.

Land-based surveys were another key component of the research. Conducted from elevated vantage points along the coast, these surveys provided a broader perspective on the number of

whale pods observed over a given time frame. Each survey lasted approximately two hours and included both behavioural and environmental observations. The data collected during these sessions was critical for understanding patterns in whale distribution and behaviour over time. High-quality data collected at regular intervals formed the foundation of the research, underscoring the importance of precision and consistency in these efforts.

Another significant responsibility of my internship involved coordinating and training the project volunteers. This logistical task was crucial given the volume of data collected; on average, around 200 boat-based and 120 land-based data sheets were submitted per season. While fieldwork was important for data collection, it also served an educational purpose. Volunteers played a critical role in fostering public awareness by discussing whale research and conservation with visitors on whale-watching boats or at observation points. This public engagement helped to bring the topic of whale conservation into the broader societal discourse. Additionally, regular lectures, presentations, and events were organized to further educate the public about whale protection and the ongoing research.

In addition to fieldwork and volunteer coordination, I attended various meetings and appointments throughout the internship. These sessions covered a wide range of topics, including collaboration with other organizations and researchers, planning for public events, and securing grants for various projects. Each meeting provided valuable insights into the broader context of conservation work and the multi-faceted efforts required to protect marine wildlife. The aim was to discuss and share insights on whale conservation. These discussions included exchanges with journalists, representatives of local government, and lawyer Michelle Maloney, the co-founder and director of the Australian Earth Laws Alliance. Although I was not actively involved in the discussions myself, I was able to gain valuable insights into the topics and the process of knowledge exchange.

A salient point of the discourse pertained to the mounting evidence of skin diseases of whales, which have been documented by researchers in recent years. These diseases indicate a deterioration in the overall health condition of many animals, the exact causes of which are still unclear. Discussions revolved around how environmental factors such as pollution or climatic changes might contribute to this and what steps are needed for further investigation.

Another topic presented was an innovative method developed by the "Whales and Climate Program." In this approach, a stranded whale carcass is towed back out to sea to reintegrate it into the marine ecosystem instead of disposing of and burying it on land at high cost. This practice not only saves resources but also helps to support the natural cycle in the ocean (Meynecke et

al., 2024). This method garnered interest from government authorities, who even expressed the possibility of collaboration.

Participating in these discussions gave me the opportunity to gain valuable experience and firsthand insight into the challenges faced by professionals working in the field of whale and marine conservation. The insights into the daily lives and work of marine biologists, environmental scientists, and other natural scientists were particularly fascinating and enriching for me as a lawyer with a humanities background. The working methods of natural scientists differ significantly from those of legal professionals. To enable collaboration between politics, legislation, and science, it is necessary to understand these different approaches. The importance of the interface between science and politics becomes very clear through a change in perspective. For the first time, I was able to experience policy-making and legal work from the perspective of a natural scientist and met many people who work exactly at these intersections between research and politics. This work made me aware of the challenges and difficulties of conducting relevant research, producing clear results, and implementing them into legislation through politics. This process can take decades - if implementation happens at all. However, a major issue is that scientists' findings are often based on datasets that are already years or even decades old. Only over such periods can trends emerge and eventually be proven. This makes it even more critical to achieve faster implementation and avoid reacting with excessive delays.

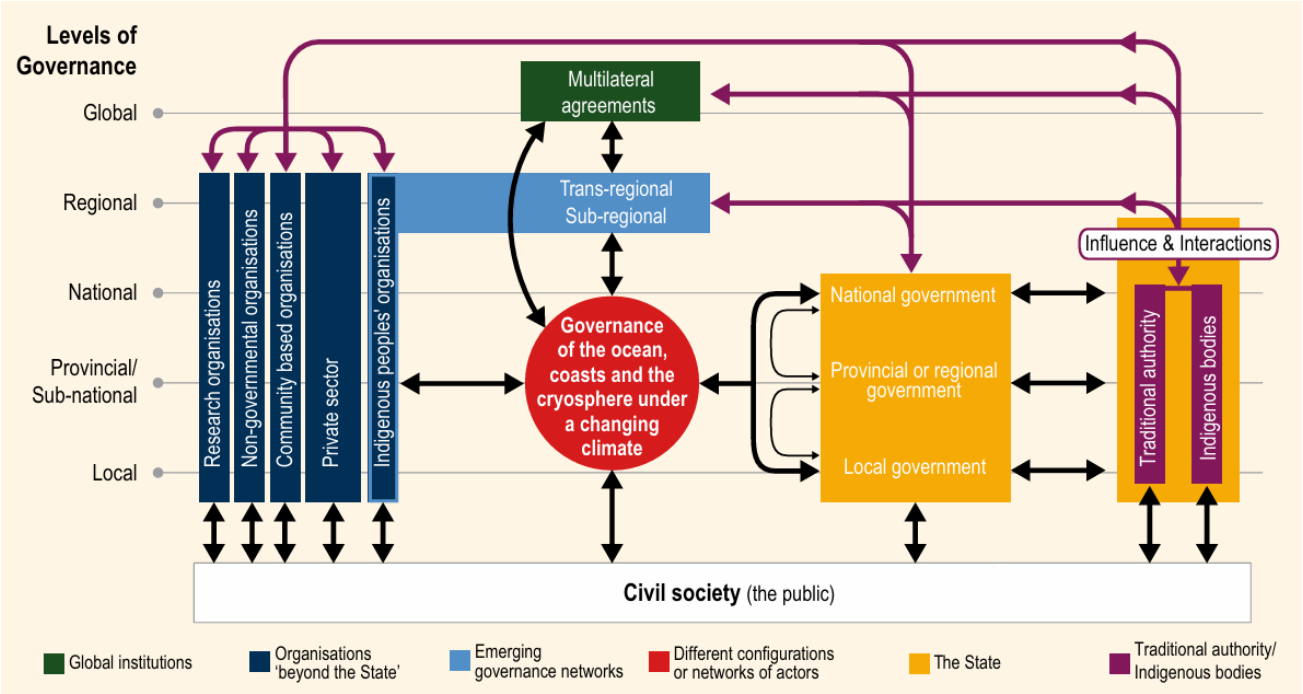
For me personally it was very helpful to learn on-site about the actual risks humpback whales face and how noticeably the behaviour of these animals has changed over the years. The experiences on-site made me better understand the relevance of the topic and served as a great source of motivation. During the internship, I encountered many people who are committed to protecting humpback whales. Conversations with commercial whale-watching operators, researchers, and politicians provided insights into the subject and the challenges related to whale conservation regulations. It became clear that many different interests need to be reconciled when striving for better regulations.

After all the internship had two primary benefits. Firstly, it expanded my understanding of marine conservation. Secondly, it emphasised the importance of interdisciplinary collaboration in addressing environmental challenges. The internship was a transformative experience that deepened my commitment to fostering connections between scientific research and policy-making for the benefit of the planet and its inhabitants.

4. Methodology

The study of maritime environmental law is complex for several reasons. Firstly, ocean-related events are transboundary in nature. This means that challenges rarely pertain to a specific, delineated area. On the contrary, events occurring in one location can have international repercussions. The success of ocean governance depends on the actions of various national and subnational actors worldwide (Cassotta, p. 61). Accordingly, maritime environmental law requires collaboration among a multitude of actors at the international, regional, national, local, and sub local levels. The integration of these various institutions is particularly critical for the management of oceans and the cryosphere to achieve unified and effective policies. Addressing maritime environmental law, therefore, also involves managing a multi-level governance structure that encompasses the many actors involved in the process of ocean governance (Cassotta, p.63 et seq.).

Moreover, the ocean is associated with numerous interests. It serves as a transportation route, a tourist attraction, a recreational area, a source of resources, and, not least, a habitat for many species. When examining sustainable marine policy, all these stakeholders and interests must be considered (world ocean review, 2024).



(Based on N. Abram et al., '2019: Framing and Context of the Report' in IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (02.10.24) 05_SROCC_Ch01_FINAL.pdf (ipcc.ch))

To provide a fundamental understanding of the challenges and risks faced by humpback whales, each threat is outlined in the first part of this paper to establish the context for the subsequent legal analysis. This initial overview highlights key issues such as habitat degradation, climate change, entanglement in fishing gear, ship strikes, pollution, and the long-term impacts of human activity on marine ecosystems. By identifying these threats, the study sets the stage for understanding the legislative measures required to mitigate them effectively.

The overview is followed by a discussion of international conventions and frameworks that benefit or concern marine mammals, particularly humpback whales. These international agreements are crucial, as many national laws and regulations derive directly from their provisions. Examples include conventions under the United Nations framework, such as the Convention on Migratory Species (CMS), and agreements like the International Whaling Commission (IWC). The analysis emphasizes that these frameworks establish overarching guidelines and principles, which are then implemented through domestic legislation. While the list of conventions and frameworks explored is not exhaustive, the study focuses on the most relevant texts that contribute to the protection of humpback whales and other marine mammals.

Given the complexities of ocean governance, understanding whale conservation requires a holistic, multi-jurisdictional approach. The migratory nature of humpback whales adds another layer of complexity, as their conservation cannot be effectively managed within the boundaries of a single nation's laws. Humpback whales traverse vast oceanic territories, crossing international borders and relying on protected habitats in multiple jurisdictions. To account for these factors, this study adopts a broad research approach that emphasizes on the transboundary protection of highly migratory species like humpback whales.

To provide examples, the study examines the legislative frameworks of three countries: Australia, South Africa, and Chile. These case studies from the continents of Australia, Africa, and South America, respectively offer valuable insights into how different nations address whale conservation within their unique legal, ecological, and socioeconomic contexts. The analysis focuses on national legislation, providing a detailed examination of laws and regulations at the federal level. References to provincial or regional texts are made only in exceptional cases where they serve as illustrative examples of unique approaches or challenges.

The research methodology involved an extensive review of primary legal sources, including national laws, regulations, guidelines, and government gazettes. These documents were analysed to identify both direct and indirect protections for marine mammals. It was necessary to distinguish between laws explicitly designed for the conservation of marine mammals and those

that, while not targeted at marine life, nonetheless have significant implications for their protection, such as regulations on shipping, fisheries, and marine pollution. Observing the similarities and differences between the legal frameworks of the three countries revealed significant trends and noteworthy distinctions.

After cataloguing the existing legislative frameworks, the study proceeded to identify specific weaknesses and gaps in these laws. This involved examining the practical application of the legislation and its effectiveness in addressing the key risks previously outlined. The study revisited these risks in light of the existing legal provisions in Australia, South Africa, and Chile, critically evaluating how well the laws mitigate threats to humpback whales. By synthesizing insights from numerous scientific papers on whale conservation, the research explored various proposed solutions, emphasizing the need for clear, actionable policies. The analysis raised critical questions about which new or improved regulations would be necessary to implement these solutions effectively.

In addition to the legal and scientific literature review, the research included consultations with experts from various fields. These discussions provided valuable perspectives on the primary risks faced by humpback whales, as well as insights into the regulatory measures needed to address these risks. By engaging with researchers, policymakers, and legal professionals, the study sought to bridge the gap between scientific findings and legislative action. The goal was to derive well-founded policy recommendations that align with the realities of both conservation science and legal systems.

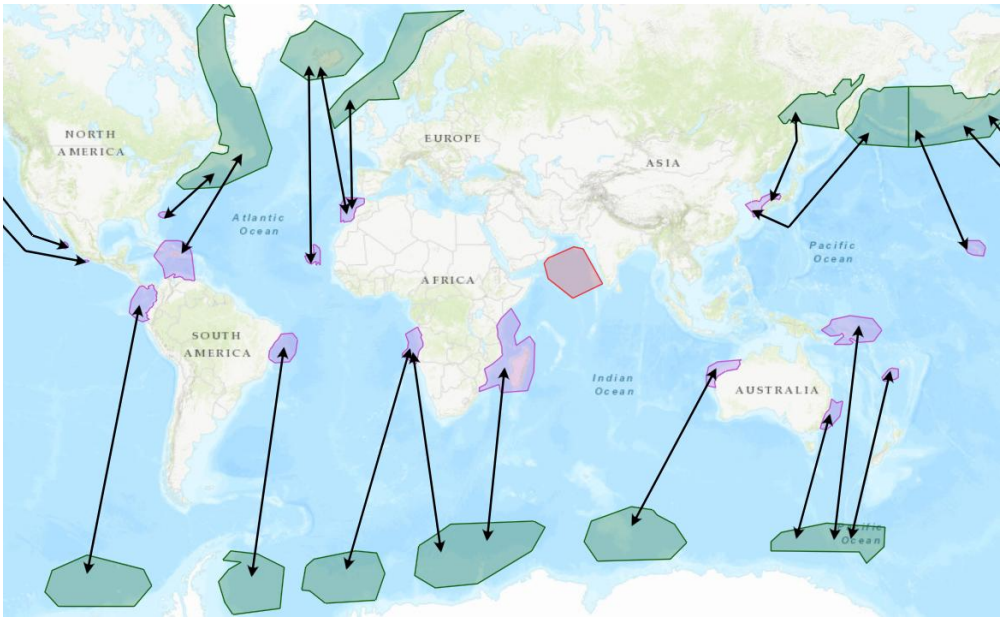
The focus of this work is on humpback whales (*Megaptera novaeangliae*). However, the study recognizes that legal and scientific literature often does not differentiate between whale species, instead referring to "whales" or even "marine mammals" as broader categories. To reflect this, the terms "whales," "marine mammals," and "cetaceans" are used interchangeably in this study, depending on the terminology of the sources and legal texts cited. Unless explicitly stated otherwise, the specific analyses and conclusions of the research pertain to humpback whales.

5. Threats to Whales

To gain an overview of the protection of whales through legislation in different countries, it is important to first investigate the potential threats to whales. Humpback whales are considered highly migratory species, meaning they migrate seasonally between feeding areas and breeding areas. Feeding areas are located in polar regions, while breeding areas are found in tropical

waters. Due to the extensive migration of whales between areas in equatorial and Arctic waters, the approach to studying threats to whales must be transregional. Whale migration routes pass through national and international waters, covering various areas with different threats (Johnson et al., 2022).

Additionally, whales have a long lifespan and a low reproduction rate, which makes them particularly vulnerable to threats (Meynecke et al., 2023, p. 1). The main threats to whales can be categorized into different groups.



Migration routes of humpback whales in the Northern and Southern Hemispheres. Source: https://storymaps.arcgis.com/stories/19af1858ea074c6bbc2b512d5111ddad

5.1 Bycatch

The fishing industry poses a significant threat to whales in several ways. The risk of entanglement in active fishing gear affects most marine mammal species worldwide and is now considered the primary threat to these animals. Bycatch occurs across all scales of the fishing industry and in most fishing methods (Johnson et al., 2022). In many regions, specific regulations on bycatch, as well as consistent monitoring and enforcement, are lacking. Particularly in international waters, there are few mechanisms to regulate bycatch. This also results in limited information about fishing activities in these areas, complicating efforts to study the actual scale and impacts (Nelms et al., 2021).

In addition to active fishing gear, marine mammals can become entangled in inactive fishing equipment, known as ghost gear or abandoned, lost, or otherwise discarded fishing gear (ALDFG), which poses a significant hazard to many species as it drifts through the ocean. Annually, 640,000 tons of fishing gear are abandoned in the ocean, accounting for 10% of all marine litter. These abandoned nets can drift for up to 600 years before breaking down into microplastics and entering the food chain (Johnson et al., 2022).

Marine mammals entangled in ALDFG can suffer lacerations and wounds, leading to restricted movement. This restriction can make foraging and escaping predators more difficult or even impossible. Ultimately, entanglement may result in collisions with ships or drowning (Nelms et al., 2021). A whale that becomes entangled and is unable to free itself or be rescued typically dies within six months. During this time, the animal often experiences chronic pain, severe restrictions on movement and feeding, and may suffer amputations (Moore, 2019, p. 782).

It is estimated that 300,000 whales and dolphins die annually due to bycatch, making it the leading direct cause of death for marine mammals (Figelist, 2018, p. 6). In July 2020, a disentanglement team freed a whale in a four-day operation from over 1,500 kg of fishing gear that was entangled around its tail fluke (NOAA Fisheries, 2020).

Injuries caused by entanglements. Credit: Whales and Climate Program

5.2 Pollution

Pollution can occur in various forms. The issue of ocean pollution caused by inactive fishing gear and its risks to whales has already been discussed. In addition, plastic pollution and chemical pollution pose significant threats. Besides entanglement, the ingestion of plastic debris presents a major risk. Ingesting plastic particles has become unavoidable, as most prey species of

marine mammals now contain microplastics. Chemicals in the water are also hazardous, particularly for whales, as they often inhabit coastal waters that are more severely affected. Moreover, whales accumulate pollutants in their bodies over their lifetimes, leading to increasing impacts on their health (Johnson et al., 2022).

Another critical yet frequently underestimated threat to whales is that of underwater noise pollution. Two distinct categories of underwater noise have been identified. High-intensity noise sources, including sonar, explosions and underwater construction, have been demonstrated to be especially disruptive. Additionally, there is the lower-frequency but persistent noise generated by ships. Continuous exposure to noise can significantly affect whale behaviour (Lancaster et al., 2021). Consistent noise pollution can cause temporary or permanent hearing damage in marine mammals and interfere with their ability to communicate. Behavioural changes and displacement from critical habitats have also been observed. Such disruptions can ultimately lead to lower reproduction rates among the animals (Johnson et al., 2022, p. 23).

5.3 Vessel Strikes

Another significant risk to whales is that of ship collisions. Global shipping traffic overlaps significantly with whale migration routes, leading to frequent incidents of whales colliding with vessels. Moreover, global shipping traffic has quadrupled between 1992 and 2012. Such collisions can cause life-threatening injuries, making vessel strikes one of the primary human-induced causes of whale mortality (Johnson et al., 2022, p. 21).

Determining the exact number of whales that die annually from injuries caused by ship collisions is challenging. Post-mortem examinations of stranded whales can sometimes identify the cause of death. External lacerations caused by propellers, as well as fractures and internal bruising, are common indicators of ship collisions. However, many whale carcasses sink and are not washed ashore, leading to a likely high number of unreported deaths caused by vessel strikes (Marine Mammal Commission, 2024). However, estimates suggest that the mortality rate from ship strikes could be reduced by up to 78% if the speed of cargo ships were decreased (Freeman, 2023). It is not uncommon to observe scars on humpback whales that indicate collisions with ship propellers. A well-known example is "Bladerunner," a humpback whale struck by a ship in Sydney in 2001. The prominent scars visible on its fluke and back vividly illustrate the dangers ship collisions pose to marine mammals (ABC news, 2020).

Bladerunner. Source: https://www.abc.net.au/news/2023-08-27/rare-whale-bladerunner-spotted-nsw/102781946

5.4 Commercial Whaling

In the 20th century, more than 2.9 million whales were hunted (Bestley S. et al., 2020, p. 13). This extensive hunting significantly reduced the populations of most large whale species, with some species now critically endangered. In 1982, the International Whaling Commission (IWC) decided to pause commercial whaling for all whale species starting with the 1985/1986 season. This moratorium remains in effect today. However, whaling continues to pose a threat to marine mammals. Despite the moratorium, commercial whaling is still practiced by Norway, Iceland, and Japan (International Whaling Commission, 2024b).

According to IWC rules, "subsistence harvest" by Indigenous peoples is permitted, if whale populations are at healthy levels. This recognizes the cultural and nutritional importance of whaling for Indigenous communities, which have no interest in profit-driven whaling. In many of these regions, whale meat is also a primary source of protein for local populations. Currently, Denmark, Russia, St. Vincent and the Grenadines, as well as the United States, conduct "subsistence harvest" whaling (International Whaling Commission, 2024a).

5.5 Industrial Development

The construction of coastal infrastructure for ports, aquaculture, energy production, and military facilities poses numerous stressors for whales. Fundamentally, the noise generated by such activities, as described earlier, is harmful to the animals. In particular, offshore construction on the seabed, such as the installation of wind turbines or pipelines, causes significant noise pollution. Additionally, these regions often experience increased ship traffic, which negatively impacts marine mammals by raising the risks of collisions and noise disturbance. Mid-water

infrastructure presents further risks for marine mammals, such as entanglement in cables. Collisions with tidal turbine blades also pose a potential threat (Nelms et al., 2021).

Aquafarming is also becoming an increasing threat to marine mammals due to its expanding scale. For example, in Patagonia, Chile, the growing salmon farming industry poses a rising risk to whales and other marine mammals. Annually, one million tons of salmon are produced in Chile, 80% of which is exported. This makes Chile the second-largest exporter of salmon, behind Norway. Currently, around 416 salmon farms are active in Patagonia, a crucial habitat for whales, and these are serviced by approximately 1,000 cargo vessels. The salmon industry pollutes whale habitats through chemicals, salmon waste, and uneaten feed. Additionally, noise pollution, ship collisions, and entanglement in nets further contribute to the risks faced by whales in this region (Centro de Conservación Cetacea, 2024).

5.6 Climate Change

Climate change primarily affects the availability of prey for marine mammals. Arctic and Antarctic waters are particularly vulnerable, as these ecosystems are closely tied to polar ice. The melting of ice can cause irreversible changes in these ecosystems. Consequently, the feeding areas of whales are undergoing significant transformations due to climate change, though the exact impacts remain uncertain (Bestley S. et al., 2020, p. 8). Krill is the primary food source for baleen whales. A direct correlation has been observed between the extent of sea ice and krill reproduction. Less ice or faster sea ice melt results in krill reproduction decreases (Gascón et al., 2005, p. 10). Changes in prey availability may cause humpback whales to alter their feeding areas and deviate from their traditional migration routes and times. Furthermore, the breeding grounds of whales are also experiencing temperature increases (Meynecke et al., 2023, p. 3).

It has been observed that whales alter their migration routes, extend or shorten them (Johnson et al., 2022, p. 21). For instance, humpback whales must now travel an additional 200 to 500 kilometres to find food in Antarctic waters (Figelist, 2018, p. 6). Changes in migration times have also been noted, such as along the western Australian coast, where humpback whales now arrive approximately 1.4 days earlier during their northern migration than at the start of the study 16 years prior. These shifts in migration patterns and presence can lead to broader habitat changes (Meynecke et al., 2023, p. 3). Given the irreversible consequences and the severe scale of its impacts, climate change is one of the most concerning risks for whales (Figelist, 2018, p. 6).

5.7 Other threats

In addition to the threats mentioned above, there are other risks that can prove fatal to marine mammals. Many of these threats are poorly understood or scarcely researched, as the complex interactions with whales are difficult to assess or predict. The whale watching industry is critically viewed by many scientists. Globally, whale watching generates over $700 million in revenue, with a growing trend. Of particular concern is the increasing number of whales watching vessels, which disturb whales in their habitats. Furthermore, the whale watching industry carries the risk of injuring whales through collisions or cuts from propellers (Department of Conservation New Zealand, 2024).

Overfishing can also lead to a reduction in prey for whales. Although relatively little is known about competition between commercial fishing and marine mammals, there is evidence that overfishing is partially responsible for the decline of various prey species. Additionally, it must be considered that fishing degrades the habitats of prey species, leading to a lack of food for marine mammals (Nelms et al., 2021, p. 296). The krill industry, in particular, is a subject of concern. Humpback whales are directly dependent on krill as a food source, as they rely on it to build sufficient reserves to raise their offspring (Gascón et al., 2005, p. 8 et seq.). Krill products are used as feed in aquaculture and are also found in pharmaceutical products. Krill fishing occurs at a scale and in areas that could disrupt the feeding of krill predators (Gascón et al., 2005, p. 22).

Toxic algae and algal blooms can also pose risks to marine mammals. The increased growth of algae can result from various factors. Some algae produce phytotoxins, a toxin that has already caused mass die-offs of different marine mammal species in various parts of the world (Department of Conservation New Zealand, 2024). Finally, whales can become targets of deliberate actions by fishers or fishing companies aiming to protect their catch and equipment from the animals. This often involves driving the whales away or attacking them with harpoons or firearms. Deliberate collisions with whales also fall into this category (Figelist, 2018, p. 120).

6. International Framework

To gain an overview of national legislation on whale protection, the international legal framework must first be examined. There are various conventions that explicitly or implicitly protect

and regulate marine mammals. Although only a few explicitly aim to protect marine mammals, others affect the animals indirectly or benefit them.

6.1. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was adopted in 1963 by members of the IUCN (The World Conservation Union) and came into effect on July 1, 1975. CITES aims to protect endangered animals and plants, currently, 184 parties, including states and organizations, are members of CITES (CITES, 2024b). The Convention assumes that restricting international trade directly affects the conservation status of species. According to the IUCN, trade in endangered plants and animals poses a risk to these species and can impact their populations. CITES lists species under three appendices with varying levels of protection. Species listed in Appendix I cannot be traded. Species in Appendix II can be traded only under strict regulation, and those in Appendix III require international cooperation for trade. All whale species are listed in various CITES appendices. Specifically, Greenland whales, right whales, all killer whales (except the West Greenland stock of minke whales, listed under Appendix II), sperm whales, and gray whales are listed under Appendix I, prohibiting trade. Trade in other whale species is at least restricted (Sellheim, 2020, p. 58).

Not all restrictions are binding for all CITES member states. States can lodge reservations within 90 days of a listing. If a reservation is submitted, the rules do not apply to the state that lodged it. Regarding whales, Norway, Japan, and Iceland have lodged reservations, and in some cases, Palau (CITES, 2024a).

6.2. Convention on the Conservation of Migratory Species of Wild Animals (CMS)

The Convention on the Conservation of Migratory Species of Wild Animals (CMS) specializes in protecting species that migrate across national borders. Adopted in 1979, the convention is unique in its habitat-based approach, which aims to protect not only the animals but also their habitats. CMS provides a basis for unified regulations to protect these species, facilitating cooperation among countries (CMS, 2024a). Currently, the convention has 133 members, with Jamaica having signed but not yet ratified it (CMS, 2024b).

Similar to CITES, CMS lists species under two appendices. Appendix I includes species that are particularly endangered, for which all takes must be avoided unless exceptions (e.g., scientific use) apply. Appendix II includes species that are not endangered but whose conservation status is unfavourable. Member states are encouraged to form agreements and partnerships to ensure transboundary protection. As a framework convention, CMS aims to facilitate collaboration between states.

Seventy-seven whale species are listed under CMS, 15 of which are on Appendix I. However, Japan and Iceland are not CMS parties and are thus not bound by its provisions. Norway, a CMS member since 1985, is not affected because it has no species listed under Appendix I. Therefore, the protection of whales through CMS remains limited. Nevertheless, the habitat-based approach is significant as it addresses threats beyond whaling, unlike many other conventions (Sellheim, 2020, p. 62).

6.3. International Convention for the Prevention of Pollution from Ships (MARPOL)

The MARPOL convention does not explicitly include provisions for the protection of marine mammals. Instead, it focuses on preventing and minimizing ship-induced marine pollution. Adopted on November 2, 1973, MARPOL serves as a legal basis for many countries' national legislation to prevent marine pollution. MARPOL consists of a protocol establishing general conditions and six annexes, with annexes I and II automatically binding upon ratification. The other annexes must be ratified separately to become binding (International Marine Organisation, 2024b). Annex V, ratified by over 150 countries, covers all types of waste, particularly plastic waste, discharged from ships into the sea. It generally prohibits the disposal of waste at sea and includes provisions for documenting the quantity and disposal of waste on ships (International Marine Organisation, 2024a). However, this documentation requirement applies only to ships of 400 gross tonnage (GT) or larger, making enforcement challenging for smaller vessels (Hodgson, 2022, p. 17 et seq.).

MARPOL is designed to address routine waste generation on ships. Abandoned, Lost, and Discarded Fishing Gear (ALDFG) does not fall under this category, raising concerns about whether Annex V provides a sufficient legal framework to address ALDFG. Moreover, the regulations and enforcement mechanisms are tailored to commercial shipping rather than the fishing industry (Hodgson, 2022, p. 50).

6.4. UN treaty on Biodiversity Beyond National Jurisdiction (BBNJ)

The BBNJ Agreement addresses areas beyond national jurisdiction (ABNJ). Adopted by the United Nations on June 19, 2023, it has been open for signature since September 20, 2023. The agreement becomes binding 120 days after being ratified by 60 states and will remain open for signatures for two years. While not yet legally binding, states are obliged to refrain from actions that undermine the treaty's purpose. The agreement aims to protect marine biodiversity in high seas areas (Clark et al., 2023, p. 1).

ABNJ refers to areas beyond national control, typically beyond 200 nautical miles offshore or EEZ. These constitute about 61% of the ocean and are thus the focus of the BBNJ agreement (Troemel et al., 2014, p. 109). Part III of the agreement outlines area-based management tools (ABMTs) to regulate human activities in specific areas for sustainable use. Marine Protected Areas (MPAs), a subset of ABMTs, focus primarily on conservation, permitting sustainable use only if it aligns with conservation goals. MPAs are considered the most effective ABMTs for protecting marine habitats (Clark et al., 2023, 1 et seq.).

The Kunming-Montreal Global Biodiversity Framework aims to protect at least 30% of marine areas by 2030 to safeguard these ecosystems (GBF, 2024). The BBNJ agreement provides a framework for establishing MPAs in ABNJ, promoting international cooperation and support for developing states in enforcing and managing ABMTs and MPAs. A Scientific and Technical Body (STB) reviews proposals for ABMTs and MPAs, which can be approved with a three-fourths majority. Implementation lies with the member states, while the STB monitors effectiveness (Clark et al., 2023, p. 3 et seq.).

For migratory species like humpback whales, whose routes traverse both ABNJ and national waters, the agreement enables protection even in high seas (Kachelriess et al., 2024, p. 1 et seq.). However, monitoring and managing ABNJ is more challenging than in national waters. Nevertheless, the BBNJ agreement could provide future frameworks to protect marine mammals in remote areas (Johnson et al., 2022, p. 109).

6.5. United Nations Convention on the Law of the Sea (UNCLOS)

UNCLOS, which has been ratified by 167 states, contains specific provisions for whales. Article 64 addresses highly migratory species, listed in Annex I, including all cetaceans. Article 64 obligates states to cooperate within international organizations to ensure conservation and

optimal utilization within and beyond Exclusive Economic Zones (EEZs). Where no such organizations exist, coastal and fishing states are required to establish one.

Article 65 specifically addresses marine mammals, granting coastal states and international organizations the authority to prohibit, restrict, or regulate their exploitation. While not mandatory, it clarifies that member states must respect international organizations' bans on whaling. Article 120 extends Article 65's provisions to the high seas, limiting the freedom of the seas (Sellheim, 2020, p. 65 et seq.).

Japan's withdrawal from the IWC (see 5.7. International Whaling Commission) raises questions about whether it violates Article 65, which mandates "cooperation." However, it is unclear whether this requires IWC membership or could be fulfilled by joining or forming another organization. The North Atlantic Marine Mammal Commission (NAMMCO) is the only alternative but is limited to the North Atlantic, making it unsuitable for Japan (Sellheim, 2020, p. 66 et seq.).

Regarding ALDFG, UNCLOS does not contain explicit provisions but allows states to establish regulations applicable within their territorial waters and on nationally flagged ships (Hodgson, 2022, p. 8).

6.6. International Whaling Commission (IWC)

The International Whaling Commission (IWC) was established in 1946 and traces its origins to the International Convention for the Regulation of Whaling. Currently, the IWC has 88 members, all of whom are signatories to the Convention. The IWC distinguishes between three types of whaling: commercial, scientific, and aboriginal subsistence whaling (IWC, 2024b). It regulates the whaling of all baleen and toothed whales, as well as the sperm whale. However, other marine mammals, such as dolphins and orcas, are not covered under the IWC's Convention.

Initially, the IWC was designed to ensure the safety of whaling methods and to regulate commercial whaling through quotas, aiming to preserve the whale population as a resource for future generations. The IWC members agreed that "increases in the size of whale stocks will permit increases in the number of whales which may be captured without endangering these natural resources" (Preamble to the ICRW). This indicates that the IWC's primary goal was not the protection of whales but rather the sustainable use of whales as a "resource" (Figelist, 2018, p. 3).

Over time, however, the focus of the IWC shifted more towards the protection of whales, independent of their value as a "resource". Key questions arose about how many whales could be harvested without endangering populations and whether scientific evidence supported sustainable use. Increasingly, voices called for a general ban on whaling to eliminate the risk of scientific error. This also raised concerns about how much the IWC could infringe on a nation's sovereignty to exploit its "resources". Ultimately, in 1982, the IWC adopted a moratorium with a zero-catch quota to counteract declining whale populations. This marked the IWC's evolution from a body regulating the whaling industry to an international organization focused on whale conservation. Japan, Norway, Peru, and Russia objected to the moratorium (Sellheim, 2020, p. 96 et seq.). However, the moratorium is not a blanket ban on whaling but a temporary reduction of quotas for all listed whale species to zero. The IWC is not in possession of the authority to enforce its own directives; this function is instead delegated to individual nations, who are charged with the responsibility of identifying, reporting and discussing any alleged violations with the IWC. The IWC itself is not empowered to impose sanctions on states that breach the moratorium. Sanctions such as the suspension of voting rights are possible if a member state fails to meet obligations like paying membership fees (Sellheim, 2020, p. 93).

The moratorium is binding only for the 88 IWC members. Other nations can continue commercial whaling. Japan withdrew from the IWC in December 2018 and announced the resumption of commercial whaling in July 2019. Japan refrains from commercial whaling in Antarctic waters and confines its activities to its exclusive economic zone, citing sufficient recovery of whale stocks. Since then, Japan participates in IWC meetings only as an observer. Norway and Iceland also lodged objections to the moratorium and are therefore not legally bound. Furthermore, the moratorium applies only to commercial whaling; whaling for scientific purposes and aboriginal subsistence use is still permitted within set quotas. Before the moratorium, whale sanctuaries were established. The Indian Ocean Sanctuary was created in 1979, covering the entire Indian Ocean up to the 55th parallel south (western boundary 20°, eastern boundary 130°). It borders the Southern Ocean Whale Sanctuary (SOWS), established in 1994, which encompasses the Southern Ocean around Antarctica (IWC, 2024e). In these areas, commercial whaling is prohibited regardless of whether the moratorium is in effect. These sanctuaries ban commercial whaling but do not consider whale migration routes (Sellheim, 2020, p. 101 et seq.).

Today, the IWC comprises three main committees: Scientific, Financial and Administrative, and Conservation (which replaced the Technical Committee). Additionally, there are 13 subcommittees focusing on topics such as subsistence whaling, catch limits, and bycatch. The IWC

met annually until 2012 but now convenes biennially, with the Scientific Committee continuing to meet annually. In recent years, the IWC has increasingly addressed other anthropogenic threats to whales, such as underwater noise, entanglements, and habitat conservation (Earth Negotiations Bulletin, 2024, p. 2 et seq.).

In late September 2024, the 69th IWC meeting was held in Lima, Peru, with over 350 participants and 68 member governments. Brazil's proposal to establish a whale sanctuary in the South Atlantic failed by one vote, as whaling nations opposed it. Proposals to create a working group to lift the commercial whaling ban and to recognize whaling as a contribution to food security were not supported and will be revisited at the next meeting in 2026 in Australia. The catch quota for indigenous whalers was extended for another six years. Additionally, three resolutions were adopted: strengthening cooperation with the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), the GBF, and the Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ Agreement) (Earth Negotiations Bulletin, 2024, p. 12). Finally, there was renewed condemnation of commercial whaling by non-member states. The resolution emphasized the importance of the moratorium and urged all member and non-member states to contribute to whale protection and research, report on commercial whaling activities, and minimize human threats to whales (Earth Negotiations Bulletin, 2024, p. 8 et seq.).

7. Case Studies

The threats to whales, as previously discussed, are diverse and complex. The question is which measures and protective laws individual states can enact to safeguard marine mammals. A distinction must be made between acts that directly and specifically address whale protection and those that only indirectly benefit whales. The latter include all types of climate protection measures, initiatives to reduce marine pollution from chemicals and plastics, efforts to limit commercial fishing, and measures to preserve natural marine ecosystems—all of which indirectly support marine mammals.

This work focuses primarily on explicit protection measures and legislation, neglecting incidental steps that indirectly benefit whales. It particularly examines risks that pose immediate life-threatening dangers to whales, such as whaling and entanglement in fishing gear.

7.1 South Africa

Whaling in South Africa began in the 1790s, primarily targeting right whales. The industrial revolution gave whaling a further boost, and between 1900 and 1914, approximately 14 whaling stations were established. Many whalers came from Norway, bringing European whaling techniques to South Africa. By the mid-20th century, South African ships were regularly hunting whales in Antarctic waters. South Africa joined the International Whaling Commission (IWC) in 1948 (The Heritage Portal, 2024).

Today, South Africa is one of the best places to observe whales and dolphins, with whale watching focused on humpback whales and southern right whales. South African waters serve as breeding grounds for whales, where mothers with calves are often spotted. The whale-watching season lasts from June to December. Whale watching in South Africa began in the early 1980s (IWC, 2024d). In 1998, South Africa started regulating and promoting boat-based whale watching by issuing the first permits. Dolphin watching was not explicitly regulated until 2008 (Department of Environmental Affairs and Tourism, 2008, p. 5 et seq.). Since the 1990s, the industry has grown significantly. By 2008, there were 12 operators taking 48,000 tourists on whale-watching trips, generating direct revenues of USD 2,762,427. Compared to 1998, this represents an annual growth rate (AAGR) of 14% (O'Connor at al., p. 74 et seq.).

7.1.1. National Laws and Guidelines for Whale Protection

South Africa's national conservation policy is embodied in the National Environmental Management Act (NEMA No. 107 of 1998). Within the framework of NEMA, additional acts were enacted to specify the regulations further. These include the Biodiversity Act (NEM: BA No. 10 of 2004), the Protected Areas Act (NEM: PA No. 57 of 2003), the Integrated Coastal Management Act (NEM: ICMA No. 24 of 2008), and the World Heritage Convention Act (WHCA No. 49 of 1999) (Peer, 2022, p. 3). The Protected Areas Act, in turn, regulates general conditions for protected areas, both on land and at sea. According to Regulation 86 of the Protected Areas Act, individual protected areas are regulated by the Minister through separate government gazettes. South Africa has a total of 41 marine protected areas (MPAs), covering 5% of the country's waters (Marine Protected Areas South Africa, 2024b). Some MPAs were established explicitly to protect whales, while others indirectly benefit marine mammals. For example, the Walker Bay MPA protects breeding areas of southern right whales, where they give birth to their calves during the three-month spring season. The Cape Canyon MPA protects a

feeding area off Cape Town's coast where humpback whales feed during their migration to Antarctica (Marine Protected Areas South Africa, 2024a).

The Regulations for the Management of Boat-Based Whale Watching and Protection of Turtles (BBWWR), based on the Marine Living Resources Act, are the central regulatory framework for whale protection in South Africa. These regulations aim to promote sustainable whale watching, focusing on the number of permits issued, the safety of both humans and animals, and minimizing negative impacts on whales, dolphins, and turtles. Additionally, the regulations explicitly seek to address and remedy past racial and gender discrimination in the whale-watching industry (Regulation 2 BBWWR). Regulation 3 BBWWR prohibits the killing of whales or dolphins, attempts to kill them, hunting or harassing them, and the feeding, holding, or possession of any part or product thereof. It is also forbidden to operate a vessel or processing facility related to whales or dolphins or to participate or collaborate in such activities (Regulation 3 (1) (d), (e) BBWWR). Approaching closer than 300 meters to a whale is prohibited under Regulation 3 (1) (g) BBWWR. Advertising dolphin-swimming experiences, whether commercial or non-commercial, is also banned under Regulation 3 (1) (h) BBWWR. The prohibitions do not apply to individuals making good-faith attempts to assist stranded whales or those appointed by the Ministry to aid trapped or entangled whales. Whale-watching tours may only be conducted with a permit, and only approved operators may advertise such activities (Regulation 3 (3), (4) BBWWR). Regulation 3 (5) BBWWR further emphasizes that persons under the supervision of operators are not allowed to swim with or feed whales or dolphins. Research on whales is permitted only with authorization (Regulation 3 (7) BBWWR). The areas and number of permits for whale watching are determined under Regulation 4 BBWWR and listed in the BBWWR annex. Regulations 5 and 6 BBWWR specify the formal requirements for obtaining a whale and dolphin-watching permit. Regulation 7 BBWWR states that the vessel used must comply with prescribed regulations and be registered when applying for the permit. According to Regulation 8 BBWWR, the permit must be displayed visibly on the operator's boat, and the permit number must be indicated when advertising the activity. Regulation 9 BBWWR addresses the handling of sea turtles. Finally, Regulation 10 BBWWR outlines the consequences of violations. Acts against Regulations 3, 7, 8, or 9, non-compliance with permit conditions under Regulation 5 (4), or conducting whale- or dolphin-watching outside the areas listed in Annex 1 are classified as offenses. Penalties include fines of up to R300,000 or imprisonment for up to two years. Additionally, permits may be suspended, revoked, or amended in cases of violations.

Despite strict research regulations concerning marine mammals under BBWWR and the prohibition of whale-watching operators advertising research on whales, the Department of Environmental Affairs and Tourism recognizes the importance of commercial whale and dolphin watching for research. The gazette accompanying BBWWR emphasizes that collaborations between researchers and whale-watching operators are considered essential. Data collection is regarded as a crucial component of scientific work, and a structured data collection concept (e.g., regarding numbers, gender, size, and identification) may positively influence permit issuance (Department of Environmental Affairs and Tourism, 2008, p. 4).

The Threatened or Protected Marine Species Regulations, Government Notice No. R 477 of 2017 (GN R 477 of 2017), govern the handling of threatened or protected species. This regulation was enacted under Section 97 (1) (b), (dA), (f), (fA), (g), and (h) of the National Environmental Management: Biodiversity Act of 2004 (Act No. 10 of 2004). It includes detailed provisions for the permitting process for whale and dolphin watching. "Boat-based whale and dolphin watching" is defined as "approaching whales closer than 300 meters, from a boat-based whale and dolphin watching vessel, and includes the advertising of such activity." Approaching a whale closer than 300 meters is classified as "harassing" under Regulation 1 and is therefore prohibited unless permitted. Whale watching is limited to specific areas designated by the Minister (Regulation 76 (1) GN R 477 of 2017), and the number of permits for a specific area may be restricted (Regulation 67 (3) GN R 477 of 2017). Boat-based whale and dolphin watching areas are listed in Annex 6 of GN R 477 of 2017. Permit applications must comply with Regulations 69 and 70, and applicants must provide evidence of employing a South African Maritime Authority (SAMSA)-certified skipper and a tour guide. Regulations 19 and 71 GN R 477 of 2017 specify that factors such as the conservation status of the species, existing management plans, or potential negative impacts of the activity must be considered when deciding on permit issuance. Feeding whales or dolphins and swimming with them are prohibited under Regulation 73 (1) (a) GN R 477 of 2017. Regulation 20 GN R 477 of 2017 reinforces this by stating that authorities cannot issue permits for swimming with dolphins or advertising such activities, whether for commercial or non-commercial purposes. Additionally, whale-watch operators are prohibited from entering closed or restricted areas (Section 1 (b) GN R 477 of 2017). According to Regulation 74 GN R 477 of 2017, permits may only be issued for a limited period not exceeding 10 years.

In addition to these strict whale and dolphin-watching rules, whales in South Africa are protected through various marine protected areas. Section 43 of the Marine Living Resources Act

18 of 1998 has been replaced by the more recent regulations under the National Environmental Management: Protected Areas Act (No. 57 of 2003).

Entanglements pose a significant risk to whales in South Africa. Lobster and squid fisheries are particularly controversial, as whales often become entangled in these rope-based fishing devices. These traps are set on the seabed and marked with ropes in the water column and buoys at the surface. On average, 14 reported entanglements occur annually in South African waters (WWF South Africa, 2024, p. 2 et seq.). The government's awareness of this issue was demonstrated by a 2019 order. On June 28, 2019, the Department of Environment, Forestry, and Fisheries temporarily suspended octopus fishing in False Bay due to frequent whale entanglements in the vertical lines of fishing gear (South African Government News Agency, 2019a). The suspension was lifted on November 15, 2019, after mitigation measures were set as permit conditions. These measures included anchoring buoys with a time-release mechanism on the seabed and using only sinking ropes for ground lines to minimize vertical ropes in the water column (South African Government News Agency, 2019b).

The annual costs of disentanglements in South Africa are estimated at R63,000 (approximately $3,622), based on 14 disentanglements. This estimate only accounts for fuel costs to operate the two boats of the South African Whale Disentanglement Network (SAWDN). SAWDN members work on a voluntary basis and receive no compensation for their efforts (WWF South Africa, 2024, p. 1). Established in 2006 and run entirely by volunteers, SAWDN is South Africa's official whale rescue team. Under the Threatened or Protected Marine Species Regulations, it is authorized to approach all whale species to remove fishing gear or abandoned, lost, or otherwise discarded fishing gear (ALDFG). With 24 stations along South Africa's coast, SAWDN responds quickly to entanglement reports. It also trains personnel, provides equipment, represents South Africa in the area of entanglement response, documents all entanglements in South African waters, and trains staff in other African countries (SAWDN, 2024).

7.1.2. Summary

South Africa's whale protection policy is grounded in regulations that focus on whale watching and the establishment of Marine Protected Areas (MPAs) that partially directly benefit whales. A particularly positive aspect of this policy is South Africa's identification and protection of critical zones, such as feeding and breeding areas. This ensures that whales can receive targeted protection during the crucial periods when they are not migrating, safeguarding their vital life processes in these key habitats.

The regulatory framework includes a clear and structured approach, such as allowing vessels to approach closer than 300 meters only under exceptional circumstances and with appropriate permits. This rule provides legal certainty and clear guidelines for recreational vessels, minimizing the risk of unintentional disturbances to whales. Similarly, the strict prohibition on swimming with whales or dolphins sets unambiguous boundaries for human interaction, further reducing potential harm to these marine mammals.

In terms of enforcement, South African law classifies the killing or injuring of a whale or dolphin as criminal behaviour. Additionally, violations of the 300-meter minimum distance rule without the necessary permit are also considered criminal offenses. This strong legal stance underscores South Africa's commitment to ensuring the safety and well-being of whales and dolphins.

The South African Whale Disentanglement Network (SAWDN) plays a crucial role in addressing the risks associated with whale entanglements. This organization facilitates the safe disentanglement of whales, collects valuable data on entanglement incidents, promotes information sharing, and provides standardized training for response teams. These efforts are critical for improving response effectiveness and preventing future entanglements. However, a notable challenge is that all SAWDN members work on a voluntary basis, receiving neither compensation nor reimbursement for their time and efforts. While this demonstrates remarkable dedication on the part of the volunteers, it also highlights a potential area for improvement in terms of providing support or resources to sustain and enhance the network's operations.

7.2 Chile

Chile's coastline, stretching over 4,000 km, serves as a habitat for numerous whale and dolphin species. Fifty percent of all recorded whale species live in Chilean waters, including the southern right whale, blue whale, minke whale, fin whale, humpback whale, sei whale, Bryde's whale, pygmy right whale, and a variety of dolphins. With this diversity of species, Chile bears a significant responsibility for whale conservation. Chile has been a member of the IWC since 1997. Humpback whales can typically be observed in Chile between December and March during their journey between feeding and breeding areas (IWC, 2024a). Chile signed the international moratorium on commercial whaling in 1982 and has repeatedly voted against lifting the moratorium. In 2008, Chile passed a law declaring the country's territorial waters a whale sanctuary. Many South American countries followed this example and enacted similar laws, including Ecuador and Uruguay (Figelist, 2018, p. 109).

Whale watching in Chile became popular relatively late, only in the late 1990s. The industry grew by 19.5% between 1998 and 2006. Whales can be observed along Chile's entire coastline. In particular, in the southern part of the country, many Antarctic cruises encounter marine mammals in Chilean waters, such as in Punta Arenas, the Strait of Magellan, and the Patagonian channels (O'Connor at al., p. 274).

7.2.1. National Laws and Guidelines for Whale Protection

Chronologically, the Ley General de Pesca y Acuicultura (Law No. 18.892) is the first law in Chile to explicitly prescribe the protection of whales. Since its enactment in 1991, the law has been supplemented by various other laws and decrees. Article 13E of Law No. 18.892 stipulates that when observing marine mammals, the protection of the species and observers must be ensured through respectful behavior. Harassment, pursuit, forced physical contact, mistreatment, or harm to the animal are prohibited.

The Ley de Protección de los Cetáceos (LPC, Law No. 20.293) is an amendment to the Ley General de Pesca y Acuicultura (Law No. 18.892) and is explicitly dedicated to whale protection. Article 1 of the LPC declares Chilean waters a whaling-free zone. Article 2 prohibits the killing, hunting, capture, harassment, possession, transportation, processing, marketing, or storage of whales. Harassment includes not only active actions that could disturb a whale but any type of human interference. Since all possible activities could constitute harassment, the law aims to minimize such disturbances wherever they occur. This establishes a principle that may only be deviated from in exceptional cases (Figelist, 2018, p. 117). Article 3 of the LPC commits the government to protecting whale habitats, particularly breeding grounds, migration routes, and feeding grounds, through the regulation of whale watching and the creation of protected areas and reserves. Article 4 of the LPC requires all fishing vessels to have an emergency plan in the event of a collision, injury, or accidental capture of a whale.

According to Article 13B, no ex-situ rehabilitation of whales is carried out. Article 13E requires whale observation to be conducted in such a way that the animal is not chased or harassed. Furthermore, the law mandates that Article 135 be included in the Ley General de Pesca y Acuicultura (Law No. 18.892). Killing a whale or participating in its capture or hunting is punishable by imprisonment of the lowest degree and confiscation, in addition to administrative penalties. Commercial marketing of the animal is expressly prohibited. Possession,

transportation, processing, or storage of a whale or any of its parts is also punishable by imprisonment of the lowest degree and confiscation. Imprisonment of the lowest degree ranges from 61 days to 10 years (Figelist, 2018, p. 114). Exceptions may be granted to state-recognized research institutions for research or rehabilitation purposes. The accidental death of a whale does not constitute a crime, provided that all prescribed safety regulations have been observed.

It is critical to note that the regulation does not specify minimum observation distances for whales or a maximum number of boats allowed to observe an animal at the same time. However, these rules are addressed in Decreto Supremo N° 38-2011 Reglamento General de Observación de Mamíferos y Reptiles y Aves Hidrobiológicas y del Registro de Avistamiento de Cetáceos (DS N° 38-2011) and the Manual de Buenas Prácticas para Operaciones Marítimas de Avistamiento de Fauna Marina, Valdivia, Chile, published in 2014 by WWF in collaboration with the Chilean government. This manual is based on regulations from Australia and New Zealand (Figelist, 2018, p. 119).

The Decreto Supremo N° 38-2011 Reglamento General de Observación de Mamíferos y Reptiles y Aves Hidrobiológicas y del Registro de Avistamiento de Cetáceos (DS N° 38-2011) contains specific regulations for whale watching in Chilean waters. The decree distinguishes between large whales, which include whales and sperm whales, and small whales, which include dolphins and porpoises. Article 2 states that the maritime authority may, without prejudice to the following regulations, adopt specific measures concerning the number of ships and observation duration to protect whales. The following minimum distances apply, except in cases of unintentional encounters or voluntary approach by the animals, in accordance with Article 3 of DS N° 38-2011.

The first paragraph governs whale observation from the air. Any aerial observation must have authorization from the Directorate General of Civil Aviation (DGAC) (Art. 5 DS N° 38-2011). Articles 6 and 7 address safety measures on board the aircraft. Article 10 requires boats used for whale watching to have protected propellers. Moreover, whale watching from certain vessels, such as jet skis or underwater scooters, is prohibited. Captains of whale-watching boats must ensure that no disturbing noises, such as honking or shouting, are made during the observation (Art. 12 DS N° 38-2011). Additionally, feeding or touching whales is prohibited, and no waste may be disposed of in the observation area.

Article 14 mandates a minimum distance of 100 meters from large whales and 50 meters from small whales, with the animal closest to the boat determining the applicable distance. Speed is not precisely regulated, but the boat must maintain a steady speed in the case of a pod or group

of animals and avoid sudden changes in speed and direction. If the boat stops for observation, it must remain in neutral to avoid endangering the animals. Upon departure, the area must be exited slowly and in the opposite direction of the whale. Disturbing animals during feeding, mating, resting, or migration must be avoided in all cases. According to Article 15, whale-watching boats may only approach from behind and parallel to the whale's swimming direction to avoid disturbances or collisions. If the animal reacts negatively to the boat, the area must be vacated, and the minimum distance increased to 200 meters for large whales or 100 meters for small whales. When observing mother whales with calves, Article 16 requires that the boat not position itself between the mother and the calf and that any approach come from the mother's side. Special caution is required in these cases. Article 17 establishes a minimum distance of 300 meters for blue whales, increasing to 500 meters if the animal exhibits signs of disturbance. Southern right whales, due to their highly endangered status, may only be observed from land, according to Article 18, except in areas with specific observation regulations for this species.

Finally, Articles 24 and 25 establish a whale observation registry. This database records whale populations in Chile's national waters to gather more data on whale presence. The registry is managed by the Merchant Marine and the Directorate General of Maritime Territory. According to Article 24, the data must be used for animal protection and conservation and be available to researchers and authorities. The registry includes at least the following information: (a) coordinates of the sighting location, (b) date and time, (c) number of individuals observed, (d) number of calves, if any, (e) direction of movement, (f) identification of the whale species, if possible, (g) characteristics of the specimen, presence of tracking markers or patterns, (h) copies of photos or films, if available, and (i) details of the observer. This information must be electronically submitted within 60 days of the sighting (Art. 25 DS N° 38-2011). This obligation applies to whale-watching operators and researchers conducting observations as part of publicly funded research or education projects, while for private individuals, registration is optional. Article 26 refers to Article 13E of the LGPA and notes that violations will be sanctioned according to the provisions of Article 116 of the LGPA.

These regulations are complemented by the Manual de Buenas Prácticas para Operaciones Marítimas de Avistamiento de Fauna Marina (MBPM), published in 2014 by WWF Chile and the Chilean government. The manual includes rules for observing whales from the air, based on the 2005 guidelines from the Australian government's Department of the Environment and Heritage. It specifies that aircraft must not fly below 300 meters (1,000 feet) in a whale observation area. Observations from helicopters or turbine aircraft are entirely prohibited, except for

military or scientific purposes. The MBPM also prohibits swimming and scuba diving with whales, even though this is not explicitly mentioned in DS N° 38-2011 (Troemel et al., 2014, p. 24 et seq.).

To combat bycatch, Decreto Supremo N° 76-2015 was enacted, requiring all fishing vessels to carry cameras for detecting and recording bycatch incidents. This allows for better monitoring and more data on the frequency of marine mammal entanglements in fishing nets (Figelist, 2018, p. 123). In 2020, 43% of Chilean waters were designated as marine protected areas (MPAs), tripling the area of MPAs between 2010 and 2020 (Latinapress, 2024). Many of these MPAs protect key whale habitats, such as the Choros and Damas Islands in the Coquimbo region and the Francisco Coloane Marine Park in Patagonia (Figelist, 2018, p. 125). However, a 2018 study revealed that only 5 out of 20 MPAs have management plans, and none of the 20 MPAs are effectively managed (Petit et al., 2018, p. 3).

7.2.2. Summary

The legal framework for whale conservation in Chile operates on a twofold basis. On one side, there are overarching strict regulations, such as those established under the General Law on Fisheries and Aquaculture (LPC), which include provisions with potential criminal consequences. On the other side, there are targeted regulations that specifically govern whale watching and the approach of vessels to whales and other marine mammals, ensuring a comprehensive approach to marine mammal protection.

Under the LPC, Chile has declared its waters a whaling-free zone, reflecting a strong commitment to the preservation of whale populations. The law goes further by establishing the protection of key habitats as a central goal. This focus ensures that critical areas such as feeding and breeding grounds, which are essential for the survival and reproduction of whale species, receive heightened protection. By addressing a broad range of causes and stressors, the LPC extends its scope beyond traditional anti-whaling measures. It regulates whale watching and explicitly tackles other significant threats to whales, such as vessel strikes, by-catch, and the establishment of Marine Protected Areas (MPAs).

One notable element of the legal framework is the introduction of a whale sighting registry, which underscores the importance of monitoring and research as essential components of conservation. This registry facilitates the collection of valuable data on whale populations, their

movements, and behaviours, contributing to informed decision-making and the refinement of conservation strategies.

To address gaps in the legal framework, such as those in DS N° 38-2011, Chile has implemented the Manual of Best Practices for Marine Mammals (MBPM). This manual is inspired by Australia's regulatory approach and aims to provide comprehensive guidelines for marine mammal interactions. However, the MBPM strictly prohibits swimming with whales, reflecting a more cautious approach to minimizing potential disturbances. Despite its value as a guideline, the MBPM is not legally binding, and non-compliance does not carry legal consequences, which may limit its overall effectiveness.

7.3 Australia

Australia has a long history of whaling. The first sperm whale was killed in October 1791. Whaling was an important industry for the colony, and the trade in whale oil and bone products flourished. Whaling also supplied the colony with much-needed food. The first downturn was recorded in the 1850s. Nevertheless, whaling continued until 1978, leading to severe overfishing of many whale species (national museum australia, 2024). Gradually, Australia began to place various whale species under protection. For example, the southern right whale was protected in Australian waters in 1935, and hunting of humpback whales ceased in 1963. Sperm whales were hunted until the closure of the last whaling station in 1978. From 1979 onward, commercial whaling was completely banned in Australian waters. Since then, Australia has been committed to the protection of all whale species (Australian Government, Department of Climate Change, Energy, the Environment and Water, 2024c).

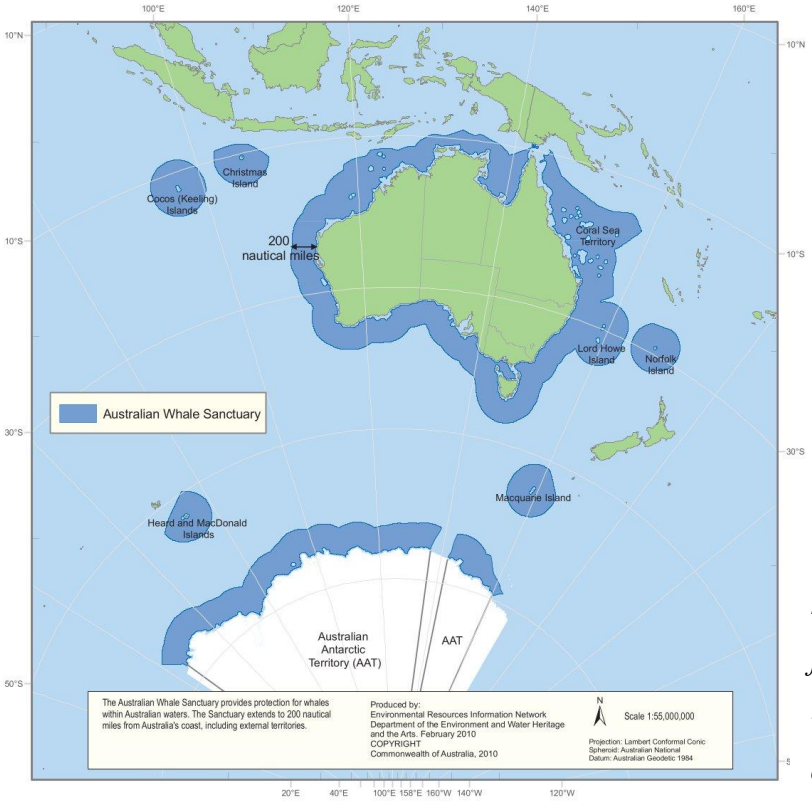
In 2010, Australia initiated legal proceedings against Japan before the International Court of Justice. Australia challenged Japan’s continued whaling for scientific purposes in Antarctica, arguing that it violated the International Convention for the Regulation of Whaling (ICRW). In its ruling on March 31, 2014, the court found that Japan’s Antarctic whaling was not justified for scientific purposes and therefore did not qualify as a special permit under the convention. The large number of whales killed could not be justified by Japan’s stated scientific objectives. Consequently, the court ordered Japan to revoke all existing licenses and permits and to halt its activities in Antarctica (International Court of Justice, 2024).

However, it must be mentioned that Australia faces unique risks for humpback whales due to the shark control program nets. These nets are installed along beaches to kill sharks that could

to reduce the number of potentially dangerous sharks. The goal is to reduce the risk of shark "attacks" on humans. The effectiveness and rationale of these nets are highly controversial, as they not only kill sharks but also many other marine animals. Between 2001 and 2017, there were 53 reported entanglements of humpback whales in the shark nets of the Queensland Department of Fisheries Shark Control Program (Waterworth, 2023, p. 16) (Gibbs et al., 2019, 189 et seq.).

7.3.1. National Laws and Guidelines for Whale Protection

In Australia, there are different jurisdictions governing various waters. Although there are exceptions, it can generally be said that individual states manage the waters adjacent to their territories up to the 3-nautical-mile boundary. Within this three-mile zone off the coast, laws apply under the Offshore Constitutional Settlement (OCS) of 1979, which grants legislative power to the states in these areas (White, 2011, p. 23 et seq.). However, it is debated how relevant this rule remains since Australia's territorial waters have been extended to 12 nautical miles (White, 2011, p. 33). For the purposes of this analysis, only national laws and regulations are considered. It should be noted, however, that each state adopts its own regulations and enforcement mechanisms within the framework of Commonwealth legislation. Australia has various mechanisms that contribute to whale protection. One key legal framework is the Environment Protection and Biodiversity Conservation Act 1999 (EPBC). This act incorporates CITES



The Australian Whale Sanctuary. Source: https://www.dcceew.gov.au/sites/default/files/env/pages/e0444cc5-6dd7-4afb-b3f5-2d9642482e96/files/sanctuary-map.pdf

provisions into Australia's national legislation (Part 13A EPBC - International movement of wildlife specimens). Additionally, the EPBC establishes the Australian Whale Sanctuary, where all whales and dolphins are protected. The sanctuary spans the entire area of Australia's territorial waters, extending up to the 200-nautical-mile Exclusive Economic Zone and, in some areas, even further (Section 225 EPBC et seq.). Within the sanctuary, it is prohibited to kill, injure, or disturb a whale.

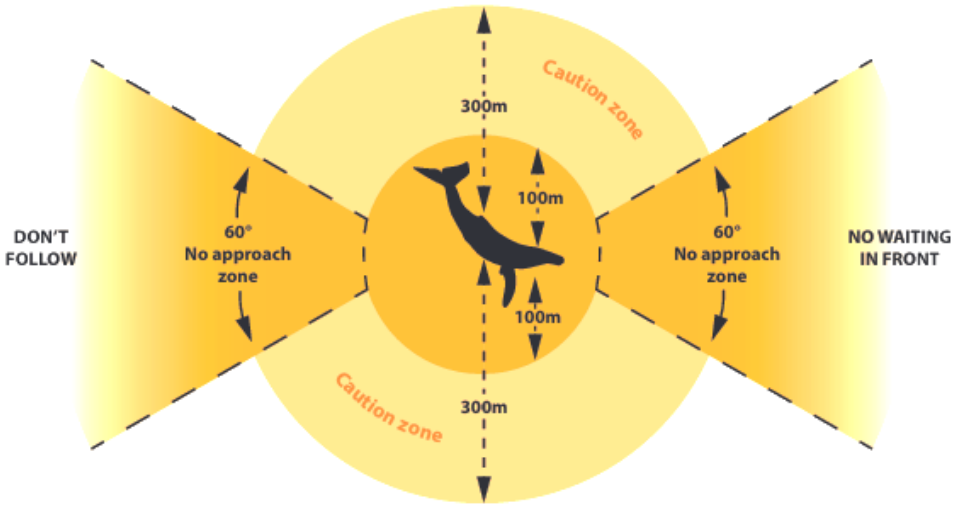
If a cetacean is intentionally injured or killed, the offender faces a penalty of up to two years imprisonment or a fine not exceeding 1,000 penalty units (Section 229 EPBC). The offender must be proven to have had intent or negligence regarding the act and its outcome, but not necessarily knowledge of the sanctuary's location. Section 229A EPBC holds anyone accountable for injuring or killing a cetacean, regardless of intent or negligence. In this case, the penalty is a fine of up to 500 penalty units. The lower burden of proof applies to all three elements of the offense: the act, the outcome, and the location of the act (Section 229A EPBC). This allows for the conviction of unintentional injury or killing of a cetacean. Strict liability is governed by Division 6, Section 6.1 of the Criminal Code Act 1995, which states that no fault elements are required for a physical element of an offense under strict liability. Sections 229B and 229C EPBC make it a criminal offense to capture, trade, hold, or move cetaceans within the sanctuary. Section 229D EPBC criminalizes the "treatment" of a dead whale, which includes dividing, cutting, or extracting any product from the cetacean. Section 230 EPBC penalizes the possession of unlawfully killed or imported whales.

Exceptions to these general provisions are outlined in Section 231 EPBC. Actions that fall under a wildlife conservation or recovery plan, or are necessary to protect human life or property, are not considered offenses. Additionally, no offense occurs if a permit has been issued under Section 238 EPBC. Section 238 allows individuals to apply for a permit to deviate from the rules in Sections 229 to 230. A permit can be issued by a minister if the action serves the purpose of conserving cetaceans, does not aim to harm whales, does not negatively impact the conservation status of the species, and minimizes any potential harm. Permits are also possible for whale watching, provided it complies with relevant regulations and does not harm the conservation status of the species or contravene a recovery plan (Section 238 (3) (c) EPBC). Whale watching is defined in Section 238 EPBC as "any activity conducted for the purpose of observing a cetacean, including but not limited to being in the water for the purposes of observing or swimming with a cetacean, or otherwise interacting with a cetacean."

The whale watching industry is a rapidly growing sector in Australia. According to a 2009 study, the number of whale watchers in Australia doubled between 1998 and 2008. In 2008, the industry generated $172 million in total expenditures ($31 million in direct expenditures) and provided approximately 617 jobs (O'Connor at al., p. 162 et al.).

Specific whale watching regulations are outlined in the Australian National Guidelines for Whale and Dolphin Watching, which supersede the 2005 version. The guidelines are the fundament of laws and rules in each state in Australia, each government in Australia applies these as best suits the situation of the jurisdiction. Therefore, there might be differences in each state. The guidelines specify that approaching injured or entangled whales and dolphins is not permitted. They also provide a list of relevant authorities to report sightings of injured or entangled animals (Australian Government - Department of the Environment and Energy, 2017, p. 6).

Boats may approach whales no closer than 100 meters, while maintaining a 300-meter distance from the front or rear. For dolphins, these distances are 50 and 150 meters, respectively. No more than three boats may be within the caution zone (100–300 meters for whales, 50–150 meters for dolphins) at the same time. These rules are not considered violated if the animals voluntarily approach the boat. Within the caution zone, boats must travel at a maximum speed of 6 knots. Additionally, boats are prohibited from waiting directly in the swimming path of whales or dolphins or following directly behind them (no approach zone) (Australian Government - Department of the Environment and Energy, 2017, p. 9 et seq.).



Source: (Australian Government - Department of the Environmant and Energy, 2017) p. 10

Special rules apply to approaching mothers with calves. If a calf is present, a minimum distance of 300 meters must be maintained, as is also required for injured, stranded, entangled, or distressed whales. Dolphins have their own rules, such as prohibiting intentional bow riding. If bow riding occurs, boats must maintain a steady speed to avoid endangering the animals. Collisions with animals must be avoided. Jet skis, underwater scooters, parasails, remote-controlled vehicles, and hovercraft must maintain a minimum distance of 300 meters from whales and dolphins. If one of these vehicles accidentally comes close to a whale or dolphin, it must retreat at a maximum speed of 6 knots. These vehicles are not permitted to engage in whale watching.

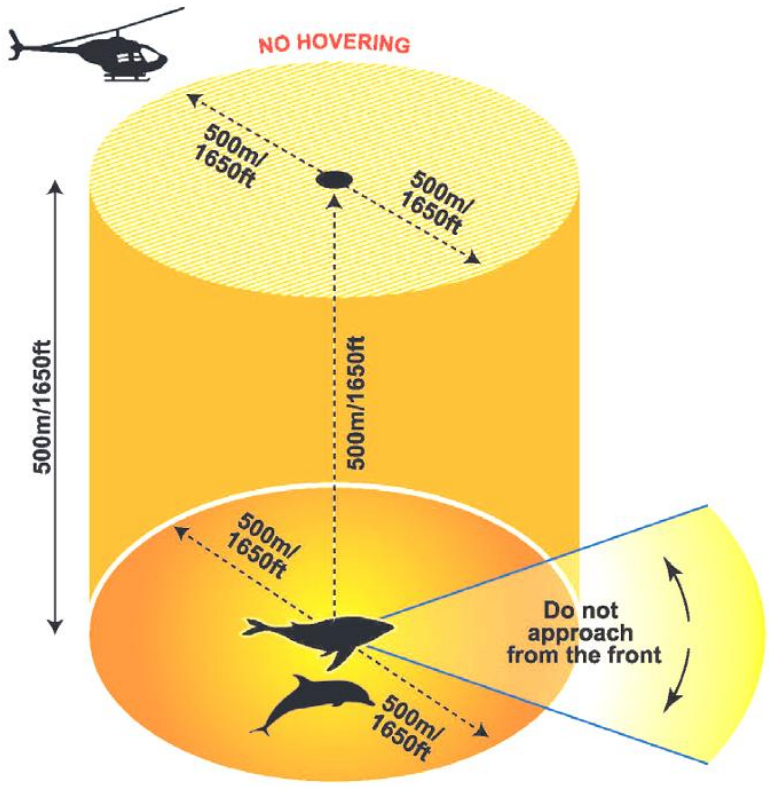
Southern right whales require special care, as they often inhabit shallow waters for calving and raising young. Feeding whales should not be disturbed; boats encountering feeding whales must maintain a minimum distance of 300 meters. In areas with many whale watching operators, additional measures such as regular training courses, limited licenses, time restrictions on interactions, or increased minimum distances may be implemented. In narrow passages like straits or river mouths, the prescribed minimum distances must also be observed. Whale observation during fishing operations is permissible, provided that fishing lines and associated equipment are detached to prevent entanglement (Australian Government - Department of the Environmant and Energy, 2017, p. 13).

Swimming with whales and dolphins is allowed only with authorization from the relevant authority. Permits are issued by the respective states and vary in their application requirements. Swimmers may breach the EPBC-prescribed minimum distances of 100 meters for whales and 50 meters for dolphins when entering the water. In the water, swimmers may not approach closer than 30 meters to whales or dolphins, unless the animal voluntarily approaches. In this case, swimmers must move slowly and may not touch the animal. The number of boats, the frequency and duration of interactions, and the presence of risk management plans are also considerations to minimize disturbances. Research is ongoing to assess the impact of swimmers on animals and adjust practices accordingly. These guidelines, however, are not legally binding. Authorized programs may deviate from the rules, including prescribed minimum distances, under strict oversight by the relevant authority (Australian Government - Department of the Environmant and Energy, 2017, p. 14 et seq.).

Using drones near whales requires authorization from the Department of Environment and Energy. Additional permits may be required from the Great Barrier Reef Marine Park Authority or the Civil Aviation Safety Authority (CASA), depending on location and altitude. Helicopters

must maintain a minimum distance of 500 meters, while other aircraft must stay at least 300 meters away. No aircraft may approach a whale from the front or land closer than 300 meters. Special permits for research purposes may be issued by the relevant authority (Australian Government - Department of the Environmant and Energy, 2017, p. 15 et seq.).

Feeding or touching whales and dolphins is prohibited, including stranded animals, except in approved feeding programs. In general, boats should minimize noise and reduce speeds. To reduce noise pollution, whale-watching boats should remain idle and avoid abrupt changes in engine speed. Sounds from passengers and operators, such as underwater playback of whale songs or knocking on the side of the boat, should also be minimized. Quiet vessels are recommended, along with noise-reducing measures and regular maintenance of propellers and engines. Boats should provide good visibility to avoid frequent maneuvering (Australian Government - Department of the Environmant and Energy, 2017, p. 19 et seq.).



Source: (Australian Government - Department of the Environmant and Energy, 2017, p. 16)

The MARPOL regulations are implemented in Australia through the Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (POTS (PPS) Act 1983) and the Protection of the Sea Act 2012. Fishing management at the federal level is overseen by the Australian Fisheries Management Authority (AFMA), established under the Fisheries Administration Act 1991. Section IIIC of the POTS (PPS) Act 1983 addresses waste disposal from ships. If fishing gear is accidentally lost, ships over 400 gross tons must record the loss in a Garbage Record Book. If the loss occurs in Australian waters from an Australian ship, it must be reported with approximate coordinates to the Rescue Coordination Centre (RCC-Australia). However, retrieval of lost fishing gear is not yet mandatory. Individual states have their own legislation to complement MARPOL Annex V. For example, the Northern Territory Fisheries Act 1988 explicitly prohibits the disposal of fishing gear at sea (Hodgson, 2022, p. 29).

According to the Australian Bureau of Statistics, approximately 45% of Australia's waters were designated as marine protected areas (MPAs) in 2022, compared to just 7% in 2002 (Australian Bureau of Statistics, 2024). Most of these areas have management plans. However, in 2018, no-take zones were reduced by 46% in favor of economic interests, significantly diminishing the effectiveness of MPAs. Studies show that no-take zones provide significantly better protection than partially protected areas (Kirk, 2019, p. 12 et seq.).

To implement EPBC regulations, various measures have been taken. Activities that could impact protected areas must be approved in advance. Such approvals typically include conditions to minimize harm to animals. Violations of regulations or permit conditions can result in warnings, injunctions, or civil and criminal penalties. Offenders may also be required to remedy the damage they caused (Australian Government - Department of Climate Change, Energy, the Environment and Water, 2024a). Permit holders are monitored through an audit program, which checks compliance with conditions. In some projects, the audit itself is a condition of approval (Australian Government - Department of Climate Change, Energy, the Environment and Water, 2024b).

7.3.2. Summary

Australia's national legal framework for whale protection is built around the Environment Protection and Biodiversity Conservation Act 1999 (EPBC), which is the cornerstone of the country's conservation efforts. This legislation plays a crucial role in safeguarding whales and other marine species by establishing a Whale Sanctuary within Australian waters. Under the EPBC Act, the killing or injuring of a whale is classified as a criminal offense. The legislation also

imposes strict liability for such offenses, meaning that individuals or entities can be held legally responsible regardless of intent or negligence.

To complement the EPBC Act, the Australian National Guidelines for Whale and Dolphin Watching outline practices for interacting with these marine mammals. These guidelines begin with practical information, including contact details for relevant authorities in each state, to ensure reporting of incidents such as injured, stranded, or entangled whales. Swimming with whales is different from South Africa or Chile; it is also allowed for commercial purposes under certain conditions.

8. Discussion

8.1. Comparison of Legislations: Similarities and Differences

The following table offers a concise overview of the measures taken by the respective countries to protect marine mammals. While not comprehensive, it serves to facilitate a direct comparison between their approaches.

Measures	South Africa	Chile	Australia
Minimum distance	All vessels minimum 300m Closer just with whale watching permit	All vessels 100m for bigger whales, 50m for smaller whales, 300m for blue whales, southern right whale only land-based surveys	All vessels 100m for whales, 50m for dolphins
Exception disentanglement attempt	+	-	-
Maximum whale watching vessels	-	Voluntary +	+
Approach rules	+	+	+
Special measures for mom and calf	-	+	+
Swimming with whales allowed	-	-	+ with permit
Vessel speed limits	-	+	+

Commercial Whaling as a criminal offence	+	+	+
Injuring/killing a whale as a criminal offence	+	+	+
Fines for unintentional Injuring/killing of a whale	-	-	+
Possession, transportation, processing, or storage of a whale meat as a criminal offence	+	+	+
Entanglement response teams	+	-	+
Whale sanctuary in national waters	-	+	+
Vessel collision mitigation measures (emergency plan)	-	+	-
Whale sighting register	-	+	-

The analysis of whale protection legislation across different countries in the southern hemisphere reveals several levels of regulation. The foundation is the legal management of the whale watching industry, such as the issuance of permits for whale watching operators and formal application criteria. This level also includes considerations for guest safety on whale watching boats and the standards that must be adhered to. The second level encompasses regulations aimed at protecting the animals, such as minimum distance requirements, provisions on areas where whale watching is allowed, and restrictions on the number and size of whale watching vessels. This second level also includes prohibitions on injuring, killing, or processing marine mammals. As such, it is not solely administrative in nature but declares certain actions against marine mammals as criminal offenses. The third level involves legislative approaches to address human-caused risks to marine mammals, such as entanglements, underwater noise, or vessel strikes.

South Africa, Chile, and Australia all regulate levels one and two, though with varying intensity and design. Australia's national legislation focuses heavily on levels one and two, with very detailed regulations and recommendations for whale watching and criminal prohibitions across all national waters. Australia is the only country to impose strict liability in cases where a cetacean is killed or injured by a human. Chile also declares a marine mammal sanctuary covering all of its territorial waters and provides detailed whale watching regulations, though these are primarily in the form of non-binding guidelines. Like Australia, Chile criminalizes the killing or injuring of marine mammals and related actions. A standout feature of Chile's legislation is the requirement under Article 4 of the LPC, mandating that all fishing vessels have an emergency plan in place in the event of a collision, injury, or accidental capture of a whale. This makes Chile the only country with a legal provision addressing the risk of vessel strikes. South Africa has not declared a whale sanctuary in its territorial waters but is a member of the IWC and no longer engages in whaling. South Africa stands out for its strict minimum distance regulations, prohibiting approaches closer than 300 meters without a permit. Violations, as well as the injury or killing of marine mammals, are treated as criminal offenses.

Level three is often addressed through other laws, such as national implementations of the MARPOL convention. However, these regulations do not specifically focus on the protection of marine mammals. Risks to marine mammals beyond whaling and disturbances caused by whale watching activities receive little legislative attention. In South Africa, there are some measures to mitigate the use of vertical fishing lines.

A comparison highlights several similarities and differences. All nations share a focus on level one regulations concerning whale watching, which is understandable given the growth of this industry and the need for regulation to ensure the safety of both whales and humans. Regarding these regulations, all countries adopt similar approaches, such as prescribing minimum distances and specific directions for approaching whales. Australia's recommendations are particularly detailed. Notably, swimming with whales is only permitted in Australia, while Chile and South Africa do not allow swimming with cetaceans for either commercial or non-commercial purposes. Chile sets itself apart with its whale sighting registry, which requires whale watch operators and researchers conducting publicly funded programs to record sightings. This underscores the importance of data collection for research purposes. Chile's legislation not only addresses the management of whale watching and the protection of whales but also prioritizes research to gain better knowledge of these animals.

It is also worth noting that Chile's whale watching regulations are based on those of New Zealand and Australia. While it makes sense to exchange established and effective practices, it is crucial to ensure that guidelines are tailored to the specific local conditions of each country.

The following table provides an overview of the three levels of protective legislation and how each of the three countries has implemented them in their current legal frameworks.

	Measures	Chile	Australia	South Africa
Level 1: Whale Watching Management	- Permits for operators - Safety standards for passengers - Formal application requirements	Detailed guidelines, mostly non-binding	Detailed national regulations and recommendations	Permit required; strict rules (e.g. 300 m minimum distance rule)
Level 2: Protection of Whales	- Minimum distance regulations - Area and vessel limits - Prohibitions on injuring, killing, or processing marine mammals	National waters declared marine mammal sanctuary Criminalizes injury/killing Collision emergency plans required	National waters declared marine mammal sanctuary, Strong legal prohibitions; strict liability for harm to cetaceans, enforcement difficult, fines for disentanglements attempts	No whale sanctuary Strict minimum approach distance (300 m without permit) Injury/killing = criminal offense
Level 3: Mitigation of Human-Caused Risks	- Risks: entanglement, underwater noise, vessel strikes, pollution, industrial development	Only country with legal provision for vessel strike response plans on fishing vessels (Article 4 LPC)	Some general legal measures, no whale-specific measures	Some effort to mitigate vertical fishing line use Otherwise, little whale-specific risk legislation

8.2. Practical execution

After the purely theoretical analysis of whale protection legislation, practical components such as enforceability must also be considered. It is immediately noticeable that very few cases are known in which individuals have been convicted for violating criminal whale protection laws.

While charges are occasionally brought—for example, in the case of two humpback whales found dead in southern Chile (Prensa Latina, 2024)—convictions remain rare.

There are several reasons for this. Firstly, the monitoring of maritime areas is challenging, making it difficult to prove criminal offenses in many cases. Many violations occur in remote regions where surveillance is logistically unlikely. This issue is compounded by the lack of resources available to the responsible authorities. Effective monitoring would require significantly more financial and human resources than are typically available. Lastly, according to Nurse, low prosecution rates are a key issue. For instance, in Cornwall, UK, between 2018 and 2020, over 200 alleged maritime environmental offenses were reported, but only 10 led to police investigations (Nurse, 2022, p. 8 et seq.).

There are also cases where marine mammal protection laws are misapplied, penalizing individuals who act to help whales. For example, Australian media often report on civilians fined for breaching minimum distance rules while attempting to free a whale entangled in nets. In principle, such penalties represent a consistent application of the law, which is necessary to ensure legal certainty. However, due to the increased media attention surrounding entangled whales near the coast, there are often photos and videos of these incidents, making proof of the offense less challenging. Nevertheless, in such cases, the law is not being applied in accordance with its intended purpose, especially when state disentanglement teams have been informed but fail to respond. A solution could be the introduction of an exception, stipulating that minimum distance rules do not apply to individuals acting in good faith to free a whale or marine mammal from a net. The BBWWR (Boat-Based Whale Watching Regulations) in South Africa already codifies such an exception in Regulation 3. However, this exception applies not to the 300-meter minimum distance rule but only to prohibitions against killing, attempting to kill, fishing, harassing, feeding, holding, or controlling a whale, as well as offering services related to these actions (Regulation 3 BBWWR).

In addition, there is much criticism regarding the implementation of these laws. For example, Chile's laws mandate the protection of key whale habitats and the reduction of disturbances to whales. However, the Magallanes region, a high-traffic whale area, continues to host intensive aquaculture operations, and new wind farms are being approved in areas like the Chiloé Island region (Figelist, 2018, p. 131).

There is also the question of whether the offense of killing a whale or marine mammal is fulfilled when the animal becomes entangled in a net and drowns or is killed in a ship collision. The issue here is that, in most cases, there is likely no intent. Typically, an action must be

committed either intentionally or negligently to constitute a criminal offense. A study from the UK criticizes the fact that unintentional or negligent actions that harm, impact, or kill marine life are often not penalized (Nurse, 2022, p. 7 et seq.).

Australia stands out with its strict liability for cases involving the killing or injuring of a cetacean. This means that an individual proven to have been responsible for the outcome of the act can face a fine of up to 500 penalty units, regardless of whether the act was intentional or negligent. In the case of a ship collision, there is at least a causal link between the fisher's actions (operating the vessel) and the outcome (injury to the cetacean). In the case of an entanglement, causation in the sense of sine qua non logic should also be present: without the (negligent) loss of fishing gear, the cetacean would not have become entangled, and its death would not have occurred. Strict liability could therefore apply in such cases. The greatest challenge, however, is proving the offense. Without marked fishing gear, the owner cannot be identified. Proving a ship collision is even more difficult, as injured animals may swim away, and deceased whales often sink to the ocean floor rather than stranding (Marine Mammal Commission, 2024). This makes it extremely difficult, if not impossible, to retroactively prove a ship collision as the cause of a cetacean's death.

8.3. Effectiveness of a declared whale sanctuary

The question arises as to whether declaring a whaling ban in national waters, as done in Australia and Chile, is redundant given the IWC's whaling moratorium. However, the moratorium is not a whaling ban but merely a zero-catch quota, which can be lifted with a 75% majority vote among IWC members. The pro-whaling stance of certain IWC member states, especially Japan's whaling policy, should not be underestimated, and the possibility of the moratorium being overturned by the IWC still exists. By declaring their own regulations, Australia and Chile have made themselves independent of the IWC's rules and have banned whaling within their exclusive economic zones. Moreover, the political statement and declarative effect of such measures should not be overlooked. In Chile's case, the establishment of the whale sanctuary inspired several South American countries to follow suit by enacting their own whale protection laws. Even though enforcing these laws in marine areas presents challenges, the laws themselves act as a deterrent and provide the navy with at least a theoretical basis to act against illegal whale and dolphin hunters (Figelist, 2018, p. 115).

8.4. Swimming with whales

Significant differences are evident in regulations regarding swimming with whales. While swimming with whales is prohibited in Chile and South Africa, it is allowed in Australia. Although requirements and rules for swimming with whales are stipulated, the enforcement and compliance with these regulations are questionable. Swimming with whales is promoted by various commercial operators in Australia. While it is explicitly stated that the animals must choose to interact with the swimmers and that encounters in the water must not be forced, tours are often marketed with "success guarantees" or "promises," which create certain expectations among customers (Aqua Adventure Centre, 2024). Prices for swimming with whales tours are up to four times higher than those for traditional whale watching tours (Sunreef, 2024).

The commercial nature of these tours increases the risk of pressuring the whales or failing to maintain minimum distance requirements. A study on swimming with whales in Hervey Bay showed that behavioural changes occur in humpback whales, even when operators adhere to legal regulations. Additionally, it was observed that these behavioural changes were significantly more pronounced than those during traditional whale watching tours. Although no measurable impacts on the population were detected, further studies are needed. At the latest, if changes in population dynamics or injuries to participants occur, swimming with whales would need to be discontinued. At the very least, customer expectations must be clarified in advance to ensure that the well-being of the animals takes priority. The elevated costs associated with swimming with whales' tours engender expectations among visitors, thereby exerting pressure on operators. This has led to the emergence of a need for effective expectation management strategies and seems to be one critical factor in whale protection (Stack et al., 2021, p. 14).

In this context, the regulations in Chile and South Africa appear more reasonable. A general ban provides clarity and ensures easier enforcement. While Australia's regulations acknowledge the risks, they are difficult to monitor and enforce on a case-by-case basis, while simultaneously posing a high risk of disturbing or harming the animals.

8.5. Entanglement prevention

The question of how to address whale entanglements is particularly urgent, as the high number of whales and dolphins dying from entanglements could have long-term consequences for their populations. Additionally, the number of reported entanglements continues to rise. For example, along the east coast of Australia, 28 entanglements were reported in 2021 (The Guardian, 2022), increasing to 45 in 2023 (The Guardian, 2025). To date, efforts have largely focused on

responding to entanglements rather than addressing their root causes. In 2011, the IWC established the Global Whale Entanglement Response Network with the goal of responding to entanglements effectively and safely. Experts from this network have developed guidelines for the best strategies for disentanglements and created training programs to specifically prepare professionals for disentanglement operations. These trainings have improved response capabilities while reducing risks to humans involved (IWC, 2024c). However, it is crucial to adopt a preventative approach (Warren et al., 2020, p. 5). Freeing a whale from nets and ropes can take several days and require multiple vessels and an entire team of personnel (NOAA Fisheries, 2020). The costs of disentanglement vary between countries but must account for boats, fuel, trained personnel, and equipment. The costs incurred by fishers due to entanglements are difficult to estimate, though nets must be replaced or repaired regularly if they are damaged, carried off, or destroyed by an animal.

Fishing techniques that use vertical lines in the water column are particularly critical. These methods typically involve traps or pots anchored to the seabed and connected to a buoy at the surface via a vertical line. This line is used to retrieve the traps. Techniques such as demersal fish trapping and spanner crab fishing, which employ such methods, were analyzed in a study conducted by the East Coast Whale Entanglement Mitigation Project in Australia. The project tested various alternative trap-and-line fishing techniques designed to prevent loose ropes or vertical lines in the water column. One approach involves the use of galvanic or acoustic time-release mechanisms that allow the buoy to float to the surface only after a certain period. Other techniques include using non-buoyant ropes or anchoring a vertical line to the seabed and retrieving it from above (Warren et al., 2020, p. 1 et seq.).

These alternative fishing techniques, however, must be critically evaluated. While technically feasible, they are very expensive for small-scale fisheries to implement, meaning they are currently only accessible to larger operations. Another proposed solution is the use of buoy lines with lower breaking strength, allowing entangled animals to free themselves more easily (Marine Mammal Commission, 2017). A potential legal solution for mitigating entanglements in vertical crab-fishing lines could involve banning such techniques during whale migration periods, following the principles of Dynamic Ocean Management (see Section 7.6. Dynamic Ocean Management).

In addition to the various fishing techniques that lead to whale entanglements, particularly in coastal areas, there is the issue of abandoned, lost, or otherwise discarded fishing gear (ALDFG). "Abandoned" refers to fishing gear intentionally left in the ocean due to

circumstances such as bad weather or emergencies. It also includes gear left behind by illegal fishers to avoid prosecution. "Lost" refers to fishing gear unintentionally left behind due to weather, currents, or entanglement with rocks, other vessels, or wreckage. This often involves gear that is not operated from a ship but drifts independently in the water. "Otherwise discarded" refers to the intentional disposal of gear at sea because it is damaged or no longer usable. This typically occurs when nets are dumped at the end of a fishing trip to make room for the catch on board. ALDFG is not a legal term and is not yet included in binding legal codifications (Hodgson, 2022, p. 3 et seq.). It represents a global issue affecting the fishing industry, maritime transport, and the environment. Several approaches have been proposed to address this problem. First, it is important to eliminate the anonymity of the perpetrators to hold them accountable. For instance, the European Union and parts of Australia have regulations requiring fishing gear to be marked. There are also reporting obligations for lost gear. Marking fishing gear would enable authorities to hold fisheries accountable for recovering and disposing of their equipment (Hodgson, 2022, p. 24).

With consistent marking of fishing equipment, the owners of the nets and lines responsible for marine animal entanglements could be identified. As discussed earlier, entanglements often occur in crab-fishing lines or ALDFG. Scientists and whale conservationists advocate holding the perpetrators of whale entanglements accountable (The Guardian, 2025). The concept of making fisheries liable for recovering and disposing of their fishing gear could be extended to disentanglement efforts, as recovering the gear represents a significant cost factor that could be borne by the perpetrators. Strict liability is not excluded in the realm of environmental law (Hodgson, 2022, p. 24).

Regarding the prevention of bycatch, regulations setting standards for fishing products could be effective. Import bans on fish and shellfish caught using methods that pose a high risk to marine mammals could prove successful. Such measures would not only regulate national fisheries but also impact fishing companies in other countries that export their products. For example, the U.S. Marine Mammal Protection Act, enacted in 2016, has prompted reconsideration of fishing techniques in Chile and other South American countries (Figelist, 2018, p. 123).

Another aspect in this context arises from the specific nature of marine policy. As previously mentioned, the ocean is a dynamic system where conventional, terrestrial concepts of boundaries do not apply. ALDFG (Abandoned, Lost or Otherwise Discarded Fishing Gear) can drift for hundreds of kilometres through the water. For instance, if a whale is spotted entangled in a net within Australian waters and – in the rare case – the net is marked and identifiable, the

question arises as to whether a French vessel, for example, can be held accountable. It must be considered that the original act, such as discarding the net, may have occurred on the high seas, beyond the jurisdiction of Australian law. In such a case, national legislation would be ineffective.

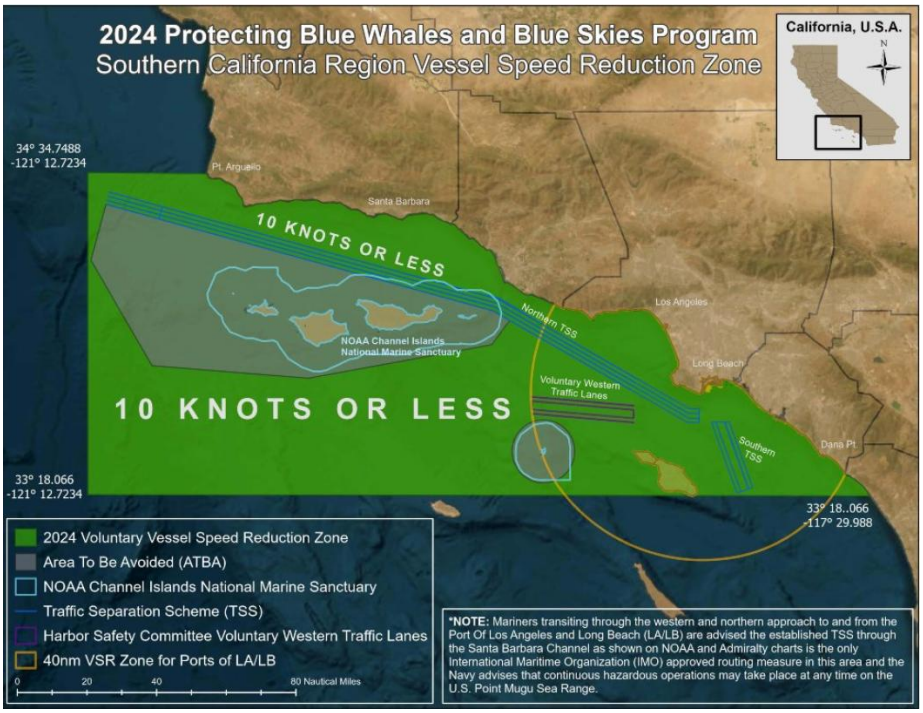
8.6. Dynamic Ocean Management

Dynamic ocean management refers to moving away from static management plans for dynamic marine ecosystems. Most maritime management tools, such as marine protected areas, are inflexible and not tailored to the needs of specific species. To address the dynamic processes of the ocean, conservation strategies can be designed to be more flexible and adapted to seasonal needs (Maxwell et al., 2015, p. 2).

The migration of whales between feeding and breeding areas means that whales are present in certain regions only for specific periods. For example, the whale season on Australia's Gold Coast runs from late May to early November. Whale watching operators, such as Sea World Cruises, align their activities with these times, offering tours only during the whale season (Sea World Cruises, 2024). However, whale protection laws are not yet adapted to these migration patterns. Increasingly, it has been proposed and advocated that regulations be implemented based on the migration times of whales (Troemel et al., 2014, p. 67). For instance, crab fishing with vertical lines in the water column could be banned during whale seasons in specific regions. During these periods, crab fishers would be required to use rope-free systems or reduce their fishing activity (Warren et al., 2020, p. 9). A seasonal adjustment of this kind was proposed by the Marine Mammal Commission in the United States for areas in New England (Marine Mammal Commission, 2017).

In order to avert and mitigate vessel collisions, a strategic reallocation of shipping routes may be considered a viable measure. Routes that overlap with whale migration paths are identified, and alternative routes that avoid whale areas are submitted to the International Maritime Organization (IMO), which reviews and incorporates them into navigational charts. Entire areas that are consistently used by whales could also be designated as protected zones. Additionally, speed limits could be introduced to reduce the risk of collisions between whales and vessels. Speeds of 10 knots are the most effective at preventing collisions. These regulations can be implemented year-round, seasonally, or at specific times of the day (Marine Mammal Commission, 2024). For example, voluntary ship speed limits of 10 knots are in place between May 1

and December 15 in areas off San Francisco, Monterey, and Southern California to prevent vessel strikes (NOAA Fisheries, 2024).



2023 Protecting Blue Whales and Blue Skies Program Southern California Region Vessel Speed Reduction Zones Source: https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/img/2024-cinms-vsr-zone-map-1000.jpg

8.7. Legal personhood of whales

Another way to provide legal protection to whales is to recognize them as legal persons. The movement to declare nature as legal subjects, rather than merely viewing it as a resource, has been gaining popularity in recent years. For example, Ecuador and Mexico City have constitutionally recognized the rights of nature. In India, the Ganges and Yamuna rivers have been granted rights and obligations, as has the Colombian Amazon. On November 15, 2017, the Inter-American Court of Human Rights (IACtHR) declared, for the first time, the right to a healthy environment as an autonomous right in an advisory opinion (Figelist, 2018, p. 128). In Chile, there are ongoing discussions about recognizing the rights of nature in the constitution (Netzewerk Rechte der Natur, 2025).

The rights of nature involve recognizing nature as a legal entity capable of exercising its own rights, which grants it the legal capacity to appear in court and act through its representatives. In May 2010, scientists at the University of Helsinki drafted the so-called Helsinki Declaration,

which outlines a set of rights for whales and dolphins (Figelist, 2018, p. 130). The declaration states that every individual whale and dolphin has an inalienable right to life. The legislation prohibits the keeping of cetaceans in captivity, the forcing of them to perform labour, the subjecting of them to cruel treatment, and the removal of them from their natural habitats. It also establishes that all cetaceans have the right to move freely and reside within their natural environments. The declaration clarifies that cetaceans must not be considered property of any state, corporation, human group, or individual. Furthermore, it guarantees the right of cetaceans to the protection of their natural environment and the preservation of their cultural structures. Additionally, the declaration demands that the rights, freedoms, and principles outlined in the document must be protected by both international and national laws. Cetaceans are granted the right to an international legal order that ensures the full implementation of these rights and freedoms. No state, corporation, group, or individual may take actions that undermine the rights and principles enshrined in the declaration. Finally, the declaration explicitly allows for stricter measures to protect cetacean rights by individual states (CetaceanRights, 2022).

Such a declaration was adopted for the first time in 2024. On March 27, 2024, various Māori leaders from the Pacific signed a declaration (He Whakaputanga Moana) granting whales in their water's legal rights. Under this declaration, whales are granted the status of legal persons, with rights that include freedom of movement, a healthy environment, and the restoration of their populations. However, the term "legal person" is not synonymous with "natural person." In many legal systems, "legal persons" can include entities such as companies, churches, or even ships, which are then granted their own rights and obligations. The duties of a river or a whale, for example, must be defined relative to their nature. Accordingly, humans have human rights, the ocean has ocean rights, and whales have whale rights. Whales are also recognized as having intrinsic value, which is worthy of protection regardless of their utility to humans (Bender et al., 2024).

The difference between legal personhood and traditional environmental law lies in the fact that classical environmental laws primarily regulate human activities and are not directly aimed at protecting ecosystems or animals themselves. A threat to or violation of an ecosystem's rights can be litigated representatively in court by a person acting on behalf of the protected area. This representative does not need to demonstrate their own standing to bring the case. However, the judicial enforcement of these rights is still in its developmental phase. Winning a court case and enforcing the rights of nature remains a significant challenge (GARN, 2024).

8.8. Effectiveness of MPAs in Whale Conservation

MPAs as an effective conservation measure are a good approach, but they cannot be convincing as long as protected areas lack proper management plans. These management plans are the foundation of an MPA, as they not only describe the specific conditions of the respective area but also detail how the flora and fauna are to be protected. Management plans also include the involvement of stakeholders and affected parties and regulate the use of the area. Often, MPAs either have no management plans or only inadequate ones, and therefore exist only on paper without having any real impact (Figelist, 2018, p. 126).

In addition, the effectiveness of MPAs largely depends on the level of protection they provide. A protected area with only minimal protection standards is significantly less effective than no-take zones. Moreover, protected areas are frequently ignored, as in the case of the San Rafael National Park in the Aysén region of Chile. The aquaculture industry was asked to leave the area due to previous environmental violations. However, silage modules for fish mortality, containing acids and chemicals, are still present in the area, putting a heavy burden on the marine environment (Centro de Conservación Cetacea, 2024).

8.9. Whale Conservation in Practice: Reflections and Experiences from my Research

While working on this study, I repeatedly noticed the discrepancy between normative design and practical feasibility. The rules and laws that are enacted aim to improve the situation, but they are often not implementable or require further refinement. These insights were only made possible through conversations with various researchers. Theory paints a significantly different picture than practice. For example, Chile's whale sighting register is, in theory, a good idea. The collection of data is crucial for whale research. Scientists must independently collect such data over many years. A whale sighting register would significantly increase data capacity, enabling comprehensive observation and data collection. For this reason, many scientists advocate for the introduction of citizen science, where tourists, visitors, amateur biologists, and others can collect and upload data. Scientists can then utilize this data for further research. However, these approaches regularly encounter various problems.

Dr. Jorge Acevedo Ramírez, Team Leader of the South America Team of the Whales and Climate Research Program, notes that Chile's whale sighting register is unreliable and incomplete in practice. Since sightings do not require official approval, reporting remains largely voluntary. Although the resolution obliges various actors to report sightings, it has little practical impact.

For instance, tourism companies such as whale-watching operators often lack a structured system or dedicated personnel to document sightings in the required format. Additionally, authorities do not monitor this aspect of tourism activities. Ramírez explains that while the Chilean Navy does record observations during navigation, the accuracy of species identification is questionable—especially for species that are difficult to distinguish. This is partly due to the lack of regular training for new crew members and the fact that personnel are rotated every two years. He emphasizes that, due to uncertainty regarding the origin of the data, he does not use this information unless there is a corresponding photo as evidence. Moreover, accessing these records requires official procedures, activating the entire bureaucratic apparatus of the state and consuming a significant amount of time. This is yet another example of the limited practical effectiveness of the resolution.

Similar to this case, many legal measures have been implemented but are either not enforced or insufficiently applied. These shortcomings are also evident in the whale-watching industry. My personal experiences confirm this. During numerous research trips at sea, we repeatedly observed jet skis and whale-watching boats disregarding minimum distance or approach regulations. The competition among different operators is intense, with companies that approach whales more closely being particularly popular among tourists. Raising awareness about animal-friendly tours is an effective measure to counteract this issue. This demonstrates that legal measures alone are not sufficient to promote the protection of humpback whales.

In January 2025, I had the opportunity to present my research and preliminary findings at the Thematic Group Polar- and Ocean Politics Network Conference 2025 in Berlin as part of the panel on Comparative and National Marine and Polar Policies. This annual meeting of the Polar and Ocean Politics working group within the German Political Science Association (DVPW) focuses on the study of ocean and polar regions from a political science perspective despite its interdisciplinary nature. The exchange and discussions with political scientists at the conference provided me with new perspectives on approaches beyond legal enforcement.

My study focuses on animal protection from a legal perspective and explores legal instruments that contribute to whale conservation regulations. However, these often overlap with other instruments and tools that enable governance beyond legal frameworks. For example, Chile's Manual de Buenas Prácticas para Operaciones Marítimas de Avistamiento de Fauna Marina (MBPM), developed by WWF and the Chilean government, is not a legal text but serves as a supplement to legal regulations and as an information source for stakeholders. Political governance is not achieved solely through laws, regulations, orders, and prohibitions. Persuasion and

information strategies, advertising and appeals, as well as the implementation of political goals through financial incentives and tax benefits, are also potential governance instruments.

9. Recommendations

The introduction of fault-independent liability is a fundamental step in ensuring accountability for actions that affect marine ecosystems and promoting stronger adherence to regulations. This approach would make it easier to hold individuals and organizations responsible for harmful activities, regardless of intent or negligence.

Concurrently, it is imperative to establish explicit and enforceable guidelines for activities such as swimming with whales. Such measures would contribute to the protection of marine mammals from the potential adverse effects of human interaction, thereby promoting a more conscientious and sustainable approach to wildlife tourism.

A critical aspect of marine conservation is the strict enforcement of distance regulations without exceptions. South Africa's implementation of such measures serves as a model, demonstrating how consistent application of distance rules can safeguard marine wildlife from disturbance and injury.

Marine Protected Areas (MPAs) should also be enhanced with comprehensive management plans tailored to the unique ecological needs of critical areas. These plans should include adaptive strategies to respond to environmental changes, ensuring MPAs remain effective in conserving biodiversity over time.

Seasonal dynamic management is another essential tool for protecting marine species during sensitive periods, such as migrations. For instance, the use of vertical lines during migration seasons can reduce the risk of entanglements and other harmful interactions between marine life and human activities.

Furthermore, migration routes must be safeguarded consistently and across national borders for instance by promoting vessel speed limits in certain areas. This requires close cooperation between nations and the implementation of the principles outlined in the BBNJ Agreement for the high seas. By aligning efforts globally, critical migratory pathways can be protected to ensure the survival of species that depend on these routes.

In addition, fishing gear and nets should be systematically marked to enable traceability and discourage illegal practices. A robust system of marking equipment would help identify and

hold accountable those responsible for abandoned or lost gear, which poses significant risks to marine life. To ensure compliance, the use of unmarked equipment should result in significant fines and other penalties. Such measures would not only deter non-compliance but also promote more sustainable and responsible fishing practices, contributing to healthier oceans for future generations.

10. Prospects / Legislative adaptations in the context of climate change

Environmental law is closely intertwined with various other legal fields such as human rights, trade law, and security law. The ocean also plays a significant role in climate change and environmental law. Internationally, the importance of the ocean in the context of climate change was indirectly acknowledged through UNCLOS, but it was only explicitly recognized with the Paris Agreement on Climate Change in 2016. Legally, climate law and maritime law are currently only loosely connected (Cassotta, p. 57 et al.).

The warming of the ocean causes acidification, oxygen depletion in the water, and the melting of ice sheets and glaciers. These effects are believed to be irreversible. Thresholds, once exceeded, cannot be undone, leading to permanent changes in the entire ecosystem. In order to identify and predict any changes occurring in the ocean, it is essential to carry out continuous modelling and ongoing monitoring. Only in this way can risks be assessed and evaluated (Gattuso, 2019, p. 76). To assess the state of an ecosystem, observing specific species as indicators is useful. This allows for an understanding of the relationship between climate change and ecosystem changes. Humpback whales are considered meaningful indicator species. They are distributed across the world's oceans during migration and are the most extensively studied large whale species. They have exhibited one of the highest population growth rates among large whales in recent decades and are thus considered resilient and adaptable (Fleming et al., 1214 et seq.). In terms of ocean policy, the continuous changes brought about by climate change require a flexible and adaptive framework to prevent or mitigate its possible consequences (Gattuso, 2019, p. 97).

Climate change has a lasting impact on the ecosystem of whales and dolphins. Rising water temperatures affect salinity, alter whale migration routes, and influence the reproduction rate of krill populations, a critical food source for many baleen whales (Figelist, 2018, p. 112). These changes may lead to whales entering new areas where they could face greater risks. In the face of such changes, it is important to adapt protection measures accordingly. For example, when establishing marine protected areas or determining shipping routes to prevent vessel strikes, it

must be considered that the migration routes and times of whales may change due to climate conditions (Marine Mammal Commission, 2024).

11. Final Remarks

This study presents an examination of the legislative framework designed to safeguard whales and other marine mammals. It elucidates the intricate interplay between national regulations and local governance structures, underscoring that harmonising these regulatory layers remains a substantial challenge. While these legal instruments are of paramount importance for the preservation of marine ecosystems, they frequently possess a predominantly declarative or symbolic nature, lacking the robust mechanisms required for effective implementation and enforcement.

One of the aspects of the most critical import discussed is that of addressing the deficiencies and ambiguities within extant legal frameworks. These gaps must be resolved to establish a comprehensive and actionable foundation for developing effective solution strategies. Without a practical approach to enforcement, even the most well-intentioned regulations risk becoming ineffectual. Ensuring that laws translate into tangible conservation outcomes requires not only political commitment but also substantial resources, cross-border cooperation, and community engagement.

The study emphasises the pivotal role of scientific research - notably that conducted on humpback whales - in informing and shaping environmental legal measures. Research on these iconic marine mammals not only sheds light on their specific needs and vulnerabilities but also serves as a valuable model for addressing broader ecological and legal challenges related to the ocean. The wide-ranging habitats of humpback whales expose them to diverse threats across different regions, including climate change, pollution, habitat degradation, and ship traffic. By identifying and mitigating these risks, conservation efforts benefit not only humpback whales but also a myriad of other marine species that share similar ecosystems.

Moreover, humpback whales act as flagship species, symbolizing the interconnectedness of marine biodiversity. Protecting them serves as a proxy for safeguarding smaller, less prominent marine species, many of which are equally vital to the health and balance of oceanic ecosystems. This interconnected approach underscores the importance of viewing marine conservation through a holistic lens, where addressing the challenges faced by a single species can lead to broader ecological benefits.

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