



Compliance – The ‘Achilles heel’ of protected areas

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ABSTRACT

Recent trends for rapidly establishing large protected areas demonstrate ongoing global interest in protected or remaining natural environments. However laudatory, these efforts rely on a significant, but uncertain assumption: that this protection will be effective. Unfortunately, many past efforts have been ineffective due to numerous types of implementation failures. We focus on one of the most pervasive and notoriously difficult reasons for failure - the inability to substantially reduce ongoing non-compliance in protected areas. We contend that this globally prevalent phenomenon is a symptom of fragmentary, reactive efforts to address compliance issues. This is best addressed by developing a rigorous, systematic approach to compliance management in protected areas. We are working with a team of compliance experts to finalise such a framework and approach, which will serve as the first step in an ongoing journey and discussion, as well as a cornerstone for building a global community of practice to address this issue.

1. Introduction

We are in the midst of a trend to rapidly establish protection for large swathes of the remaining natural environments on Earth (e.g., the 30×30 initiative [1] and the UN Treaty for the High Seas). While laudatory and well-intentioned, these efforts rely upon a significant but uncertain assumption: that such protection will be effective and ultimately achieve the reason(s) for protecting these areas. Sadly, many of the world’s protected areas can be considered as ‘paper parks’ [2]: they exist on paper but are ultimately ineffective in delivering the social or ecological outcomes envisioned during their establishment [3–5].

These paper parks are often hindered by a number of intersecting issues that we collectively describe here as ‘implementation failures’. Some of these failures are more obvious (e.g., a critical lack of resources and/or effective management capacity), but some are equally important although unresolved and undervalued (e.g., reducing considerable levels of ongoing non-compliance). Consequently, substantial amounts of limited resources (financial and staff-time) are being spent in fragmentary efforts that lack recognition of the necessity and value of a systematic approach to compliance management. In the end, it often costs more to fix problems that arise when enforcement programs are ineffective, than it would if compliance management systems were effectively developed and integrated during the initial planning, design, and legislative processes. The aim of this contribution is to increase

awareness on the critical issue of compliance in marine protected areas (MPAs), and to further emphasise the urgent need for an integrated, systematic approach to addressing and managing non-compliance.

2. What are implementation failures?

Implementation failures inhibit protected areas, whether on land or in the water, in progressing from a proposal, to legislation, and then into ongoing reality. For protected areas to remain effective over time, financial resources, community engagement, political support, and management capacity all need to be effectively addressed and sustained. These may then facilitate ongoing management actions that consistently support and bolster compliance/protection levels that are closer to initial (and often overly optimistic) expectations of effective protection set during MPA design and establishment [6].

While the explanations for failure can be complex, multifaceted, and site specific, we present three key reasons that contribute to implementation failures. One obvious reason is that implementation is inherently difficult, and often necessitates resolving substantial levels of conflict between various groups affected by the establishment of the protected area [7]. A second reason is the fundamental mismatch of expectations and timescales of those involved in establishing and implementing protected areas. The priorities, project and reporting timescales of funders, governments and non-governmental

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Table 1
Six elements required for effective compliance management in protected areas.

1. Underpinning legal basis	Establishing the legal basis and support for protected areas ensures that relevant policies, procedures and permit conditions are enforceable – this is a key element required for activities that seek to coerce compliance and deter non-compliance. The legal basis may range from ‘traditional’ or customary tenure to more ‘western’ statutory laws, regulations or mandates at local, state, national and international levels.
2. Data and Information collation	Data collection is the gathering of information from various sources, and data collation is the process of arranging that data in some sort of order to categorise it to obtain useful insights.
3. Risk analysis and strategic planning	Risk analysis , where all types of risks are identified and defined, is a step within a broader risk assessment. Risk assessment entails the whole process including identifying risks, defining uncertainty, completing analysis models, and implementing solutions. A key tool for risk assessment is a risk matrix that defines the level of risk by considering the category of probability or likelihood against the category of consequence severity. A risk matrix provides a simple mechanism to increase visibility of risks and assist management decision making. Strategic planning usually comprises the following four key components: visioning, objective setting, resource allocation, and prioritization. A good vision needs to define the short and long-term goals (“ <i>where we are going</i> ”) and guide the decisions that need to be made along the way (“ <i>what is needed to achieve this vision?</i> ”).
4. Awareness and engagement activities	Effective public engagement is a pre-requisite for legitimacy and an acceptance of laws and policy decisions. To be most effective, engagement needs to be more than simply informing or educating the public, rather it must involve effectively consulting the public and preferably the negotiating of possible outcomes.
5. Enforcement activities	Any activity that is officially authorized by the relevant agency or organisation to maintain its legal obligations and to ensure compliance with applicable local, state or federal laws or international conventions relating to the objectives of the area.
6. Monitoring effectiveness	Monitoring is a fundamental management tool to document environmental changes, due to either natural and anthropogenic factors, and assess the effectiveness of management actions. Monitoring and evaluation require two types of indicators to be defined at the planning stage; <i>trigger indicators</i> (which will be used to trigger new action or a change of action) and <i>performance indicators</i> . Monitoring generally refers to situations when there is voluntary reporting of specific measurements or where programs or actors (e.g., fishing vessel operators) are being monitored, via a range of tools such as satellite, vessel monitoring systems, or direct observation.

organisations (NGOs) often shift or are misaligned with the time needed to effectively establish and implement a protected area. As such, it is difficult for all stakeholders to stay engaged in processes that can span years to decades [8]. A third, very significant and frequently overlooked implementation failure is the inability to effectively manage human activities, primarily within the protected area boundaries but also in the surrounding areas [9]. This usually equates to a lack of an effective compliance management framework or system that contains the necessary components, actions, and processes to adequately understand and sufficiently manage human behaviour to ensure effective protection.

We believe all three of these issues can be addressed through the design and implementation of a systematic compliance management framework.

3. Enforcement is not compliance (and vice versa)

The term compliance is often used interchangeably with enforcement, which reflects a critical misunderstanding of the difference of these two terms. Compliance describes people following the rules (i.e., being compliant), whereas enforcement is often the primary tool used to coerce compliance. Enforcement in marine protected areas (MPAs) is notoriously expensive because it requires substantial resources and capacity to effectively deter non-compliant behaviour [10]. Indeed, enforcement often makes up a substantial portion of annual operating budgets in MPAs, and yet, does not always result in high compliance. To be effective, compliance management programs must do four things: i) identify compliance issues, ii) develop strategies to address the issues, iii) marshal sufficient capacity and resources for actions, and iv) monitor the effectiveness of the compliance management strategy [11]. Importantly, this process is dynamic, rather than static, so adaptive management that shifts priorities, approaches, and strategies over time in response to changes in compliance behaviours are likely to be more effective.

Problematically, discourse on how to increase compliance often centres on ‘shiny new toys’ or novel technological solutions (e.g., drones, acoustic buoys, satellite monitoring systems) that can increase detectability of offenses, but are unable to adequately address the complex task of systematically influencing, managing, and monitoring human behaviour in a dynamic environment. While enforcement practices are a critical component of compliance management, they are not the only tool for ensuring compliance – a holistic framework and compliance management program has many other elements [12].

4. Towards a holistic compliance management framework

Here, we introduce six different elements that are critical components of compliance management programs: i) underpinning legal basis²; ii) data/information collection and collation; iii) risk analysis & strategic planning; iv) awareness and educational activities; v) enforcement activities; and vi) monitoring effectiveness; Table 1). Importantly, these six elements are interdependent – they inform and are related to other components within the framework and should therefore not be considered as stand-alone elements. We present these elements in ‘order’ (i.e., we assign overall directionality that begins with establishing the legal basis and concludes with monitoring effectiveness of enforcement or educational activities), but we acknowledge that relationships between these elements will often be multi-directional. Activities or actions in one element are likely to effect and be affected by other elements. Yet, when considered as a whole, these elements ensure practitioners can identify, address, and measure the effectiveness and results of compliance management activities. Importantly, the six elements introduced here are not set in stone – they are intended as best practice recommendations based on the experience of an international working group and may be refined in light of further input.

Enforcement and prosecution may be treatments of last resort, and other actions may be more appropriate given the threat, human behaviour and environmental impact [12]. The ultimate aim of compliance management is to encourage self-regulation and voluntary compliance by the majority of users, thereby allowing limited focus on the non-compliance behaviours having the highest impact [11]. To achieve effective ongoing compliance, there is a need for managers and decision makers to recognise and implement a systematic approach to compliance management. This is essential to incentivize appropriate behaviour and dissuade inappropriate behaviour, but to our knowledge no such systematic framework currently exists for conservation in the peer-reviewed literature.

5. Relevance beyond protected areas

The necessity for effective compliance management extends well beyond the realm of marine protected areas. For instance, protecting

² The legal basis can be anything from traditional or customary tenure to statutory laws e.g., ‘western’ legislation.

only 30% of the marine environment, even if perfectly managed (which is virtually impossible) is not a sufficient strategy if the surrounding 70% is polluted, overfished and subject to climate change and other pressures (the best possible result might be *'islands of hope in a sea of despair'*). In addition, effective compliance management is critically important in many other sectors beyond environmental conservation. The relevance, efficacy, and cost-effectiveness of policies in a range of other sectors (e.g., health, law, finance, agriculture, fisheries, fraud detection, aerospace, etc.) are all dependent on their ability to achieve the compliance of those being regulated.

6. A call to action

As outlined here, many of the world's protected areas are unlikely to be effective without an efficient and cost-effective compliance management framework. We are currently working with a team of compliance experts from diverse fisheries and protected area contexts around the world to finalise a systematic framework and approach for effective compliance management. The applicability and usefulness of such a framework relies on incorporating understanding and expertise from a diverse range of actors (e.g., managers, political decision-makers, funders, and NGOs). Similarly, effective implementation also requires appropriate, ongoing funding across the range of the elements and actions encapsulated in the framework, recognising that successful implementation may look very different in a small island developing state compared to well-established, well-resourced PAs.

The framework is aimed to comprehensively capture the range of different tools, processes, and procedures relevant in the management of protected areas. Importantly, such a framework needs to be adaptable to meet specific contextual needs, given the diversity of approaches and designs used in protected areas today. As such, we see the framework as the first step in a larger ongoing discussion. Furthermore, we advocate for the establishment of a community of practice focused on compliance management in protected areas. Ideally, this community of practice will catalyse and coordinate the diverse experience of subject matter experts from both terrestrial and marine protected areas, with the goal of informing and enabling effective long-term environmental outcomes.

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CRedit authorship contribution statement

Contributions of the authors is indicated by author order – each author contributed to each component of the manuscript, but BJB led the effort while JD acted in the senior co-author role.

Declaration of Competing Interest

The authors have no competing interests to declare.

Data Availability

No data was used for the research described in the article.

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