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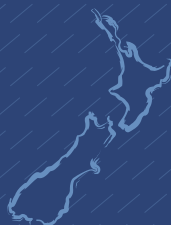
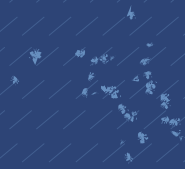


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*E-data for fisheries compliance:*

*Case Studies and Summary Report*





# *E-data for fisheries compliance: Case Studies and Summary Report*

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# I. Introduction

The vastness of the ocean has long offered the promise of discovery to those who seek to explore it, while concealing the identities of those seeking plunder. Indeed, for most of human history, the only way to tell what was happening in a stretch of sea beyond the horizon was to send a vessel and investigate, with all the money and expertise such a voyage might entail.

As a consequence, fisheries governance generally remains expensive and intensive even after centuries of evolving practice.<sup>1</sup> Collecting data to assess stocks of both target species and bycatch, monitoring vessel activities, and combating illegal fishing have typically required laborious reporting by fishers, small armies of human observers, inspectors, and officials, as well as maritime fleets capable of finding and punishing wrongdoing across large swaths of ocean. Managers, policymakers, and other officials rarely have access to sufficient resources and constantly struggle to keep up.

Yet the digital age is reconfiguring our relationship with even the most remote reaches of the planet. Fisheries are no different. Emerging technologies, such as satellite-based vessel monitoring, remote video and photographic observation, and even artificial intelligence, are beginning to offer unprecedented, real-time views into fishing activities and an expanded menu of governance options, while also reducing the effort and resources needed to implement effective controls. The result could be improved fishery governance, reduced illegal fishing, and increased sustainability of fish stocks - but more work is needed to secure these benefits.

Despite their promise, the uptake of these new tools remains fragmented, and the experience is still nascent. Tight budgets deter investments in new technology, even when it could help reduce long-term expenses. While some jurisdictions embrace new technologies, in others, inertia and fear of disruption prevent experienced fishers or officials from adopting new approaches.

Ultimately, all stakeholders must gain a deeper understanding of how these new tools can be utilised effectively to strike a balance

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<sup>1</sup> For fisheries governance, we will understand “[t]he sum of the legal, social, economic, and political arrangements used to manage fisheries.” R.Q. Grafton, et al. “Positioning fisheries in a changing world” (2008) 32(4) *Marine Policy* 630

between their potential and the costs of implementation. One key feature of these applications is that they all generate electronic data, also known as “e-data.” E-data has become ubiquitous in modern life. In fisheries, the concept could include everything from a logbook entry to a photograph or video of a landed fish, to a vessel transponder signal received by a satellite. Standing alone, this data is meaningless; it must be integrated into a governance framework to enhance visibility of fishing activities and improve management outcomes. This, in turn, requires a legal regime that recognises the value of e-data, supports its collection, facilitates its integration into monitoring, control, and surveillance (MCS), and ultimately supports its use in administrative and judicial proceedings in the event of infringement.

This report discusses five target jurisdictions to enhance the understanding of legal regimes that support the use of e-data. These case studies outline national approaches to e-data collection and its application in fisheries governance, with a particular focus on their role in administrative and judicial proceedings aimed at combating illegal, unreported, and unregulated fishing (IUU fishing). From these collected experiences, the report provides an overview of current institutional and legal arrangements, as well as practices relevant to the use of e-data as evidence in infringement cases. A second, subsequent report will distil lessons learned from these case studies and other sources to propose practices that could encourage effective approaches to integrating e-data into fisheries management and compliance globally.

Part II of this report will describe the methods used and terminology deployed in this report. Part III will provide a brief overview of the case studies. Part IV will present some key learnings and conclusions derived from the cases discussed. Part V includes each of the case studies themselves.

## II. Methods and terminology

### 1. Methods

This report gathers and analyses the collection and use of e-data in fisheries management of five countries: Australia, New Zealand, Spain, the United States (U.S.), and the Republic of the Marshall Islands (RMI). The first four case studies were selected based on four qualitative criteria: (i) the relative size of their fishing industries in terms of catch and effort; (ii) their relative fisheries management capacity; (iii) their geographic diversity; and (iv) the likelihood that information about their fisheries e-data practices would be available in English or Spanish (the working languages of the authors). Although it is not large in terms of the fishing industry or management capacity, RMI was added to investigate the potentially instructive experiences of a low-income country that nevertheless manages a large ocean area and regularly confronts the threat of illegal fishing.

Countries were initially selected based on the authors' collective knowledge and experience and then assessed through a desktop review of their fisheries laws, regulations, and policies to determine if information about their e-data practices was indeed available, as initially assumed under criterion (iv). Following the completion of this desktop review, the authors conducted a series of interviews, both virtual and in-person, with national and regional fisheries management personnel in each country to gain a deeper understanding of how each country's laws and regulations governing fisheries e-data are applied in practice.

These methods were not intended to provide a comprehensive survey of e-data practices across the globe, nor a comparative analysis of "best" practice, especially when some e-data technologies are only just beginning to take hold. Instead, this report aims to describe the "indicative" practice evolving in its case study jurisdictions to better illustrate the potential applications of e-data for improving fisheries management and enforcement outcomes.

### 2. Terminology

To better understand the collection and use of e-data in fisheries governance, it is helpful to define several relevant terms at the start. Most importantly, it may be necessary to draw distinctions between terms that are sometimes used interchangeably in general discussion. Wherever possible, the authors have adhered to definitions reflected in the existing literature, while also providing additional context to clarify some of those key distinctions. For many terms, no definition could be found; therefore, the authors have suggested provisional definitions for the purposes of this report.



- a) **Tracking:** *Collections of equipment that allow for monitoring a vessel's location and activity.*<sup>2</sup> Vessel “tracking” is a subsidiary form of “surveillance.” These systems might include the vessel’s automatic identification system (AIS), which transmits vessel position via radio or satellite, or a vessel monitoring system (VMS) specifically designed to provide officials with location and other fisheries-relevant information.
- b) **Monitoring:** *The continuous requirement for the measurement of fishing effort characteristics and resource yields.*<sup>3</sup> “Monitoring” can occur onboard the vessel, but can also be conducted remotely via emerging technologies like satellite imagery. Although they may be used interchangeably in other contexts, for the purposes of this report, “monitoring” is distinct from “tracking”, which focuses on vessel position rather than fishing activity, and “reporting”, which covers information on fishing activity.
- c) **Reporting:** *The collection and transmission of information regarding catch and effort by fishers to government officials.* “Reporting” is a form of monitoring, but one that is explicitly related to catch data and carried out by fishers.
- d) **Data management:** *The storage, verification, validation, and analysis of e-data after its collection.* Data management may be among the most important and intensive functions performed by fisheries officials with respect to e-data and is critical to ensuring the utility of e-data in addressing infringement cases.
- e) **Verification:** *The process of ensuring data has been accurately recorded or transferred.* This typically involves cross-checking e-data sources. For example, this might entail comparing a vessel’s reported catch in an electronic logbook with what was actually entered into the database to make sure there were no transcription errors; or comparing logbook entries with VMS data, onboard observers’ reports, or historical catch patterns to confirm the location of a vessel’s catch.
- f) **Validation:** *The process of demonstrating that data has been obtained through systems or devices that meet required rules or standards.* This involves, for example, accompanying e-data with certificates from technical standards providers and manufacturers.
- g) **Enforcement:** *Action taken to encourage compliance or identify and correct non-compliance with fisheries regulations.* Enforcement may involve action concerning a vessel while it is fishing to prevent or disrupt ongoing non-compliance; it may also involve action taken through regulatory or judicial channels after non-compliance has been identified.
- h) **Infringement proceedings:** *Civil, criminal, or administrative actions against a vessel, owner, or operator for violation of a law, rule, or regulation.* These cases may include

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2 JA Silva, et al. “Assessing the drivers of vessel tracking systems adoption for improved small-scale fisheries management” (2008) 226(1) *Ocean and Coastal Management* 106265.

3 P Flewelling, et al. “Recent trends in monitoring, control, and surveillance systems for capture fisheries” (2003) *FAO Fisheries Technical Paper* 415 (citing a 1981 FAO expert consultation on monitoring control and surveillance).

penalties ranging from monetary fines to imprisonment. “Administrative proceedings” refer to infringement proceedings conducted by government officers or agencies but held outside the scope of the country’s judicial system. They typically involve monetary penalties or suspension of fishing rights.

### III. Case studies

The report discusses five states to illustrate how relevant jurisdictions and legal regimes integrate e-data into fisheries management, compliance and enforcement. This section provides a brief explanation of why the authors selected these countries.

**Spain** is a significant fishing nation, a member of the European Union (EU), and is subject to EU law regarding fisheries matters. Over the last two decades, Spain has invested in modernising its fisheries management and strengthening control and enforcement, motivated also by the desire to eliminate severe instances of IUU fishing by Spanish vessels and nationals. Spain has rapidly transitioned to an electronic system for collecting and processing information, supported by a risk assessment approach that identifies situations requiring closer monitoring. More than using sophisticated technologies –which it uses too–, Spain has prioritised data collection and automated analysis of information, when possible, to identify inconsistencies or compliance gaps. When prosecuting fisheries offenders, Spain prioritises thorough administrative procedures over judicial approaches, as administrative fines can be very high and the procedure is shorter and less expensive for the administration. However, to ensure the success of infringement proceedings, the administration puts a great deal of effort into documenting the quality and reliability of the evidence used, regardless of its source, whether technological or not.

The **U.S.**, as one of the world’s wealthiest and most prominent countries, has more fisheries management resources than almost any other nation. Yet its e-data regime is notable as much for what it lacks as for what it includes. Despite national policies encouraging the adoption of e-data technologies, the U.S. appears to lack a real-time monitoring capability and remains reliant on resource-intensive enforcement cruises and investigations. This may reflect the abundance of resources—reducing the incentive to adopt alternative technologies—or simply bureaucratic inertia. No officials responded to interview requests for this case study, perhaps reflecting the current political climate; however, practical insights were drawn from the many administrative infringement decisions the U.S. publicly makes available. These decisions reveal a system where e-data use is expanding, but where lessons could be learned from more resource-constrained countries on how to employ such data more effectively.

**New Zealand** has the world’s 8th largest EEZ and a long history of successful fisheries management. It appears to be a world leader in the use of e-data technologies, having mandated electronic tracking and reporting for all commercial fisheries since 2017 and is now mandating electronic monitoring technologies for several fisheries under its jurisdiction, while other jurisdictions are only in pilot phases. New Zealand provides the



only examples of electronic monitoring data from onboard cameras being successfully used to address infringement cases.

The **RMI** is a small island state with a vast exclusive economic zone (EEZ), which is critical for Pacific tuna fisheries. RMI's coastal fisheries are managed locally through seasonal closures, spatial management measures, and other traditional fishery management tools. In its offshore pelagic fisheries, however, it deploys cutting-edge e-data collection and management. In particular, RMI has developed strong maritime domain awareness, utilising remote e-data collection technologies for real-time oversight of the commercial tuna fishery in its waters. While RMI provides a window into what can be achieved by leveraging e-data, its lessons must be assessed in their specific context: they apply to a large, commercially oriented fishery supported by intensive regional cooperation.

With the third-largest exclusive economic zone (EEZ) in the world, **Australia** has a strong presence as a maritime state in the Indo-Pacific. Although Australian waters are not particularly rich in marine life, the country's fishing industry remains the sixth most important food-based primary domestic industry. Australia is a wealthy country with a tradition that combines innovative approaches and technological development to support business, as well as a strong commitment to the rule of law. Australia's fishing, aquaculture, and seafood sectors, although not large in the domestic context, are still sophisticated. This context made Australia a good case to observe. However, as this report will observe, the assessment of the Australian experience with e-data as part of the fisheries governance structure, including its compliance support, offered fewer lessons than expected.

## IV. Learnings from case studies

The five case studies demonstrate that countries with diverse legal systems, fisheries activities, and levels of development share similar approaches to collecting and utilising e-data for fisheries control and enforcement. Differences are mostly related to specificities in national administrative organisations and legal frameworks. The conclusions below offer general reflections on the use of e-data at the national level, provide specific takeaways on individual processes and technologies, and outline considerations for its use in infringement proceedings.

### 1. Fisheries governance and e-data

**E-data collection is already an indispensable tool in fisheries governance, and its role is only growing.** Uptake varies—different technologies are at various stages of adoption across jurisdictions—so no two countries provide the same type or extent of e-data to fisheries managers and enforcement officials. What is consistent across the countries studied, however, is that all are using e-data and building legal frameworks to support its integration into real-time decision-making and use in addressing infringements.



**E-data is collected through processes which align with countries' existing fisheries governance frameworks.** Some countries, like New Zealand, have adopted national regulations and policies. In contrast, others, such as the U.S., rely on more localised or fishery-specific requirements (although the U.S. has adopted non-binding national policies to encourage the adoption of e-data technologies). Spain, despite its decentralised fisheries administration, maintains uniform national regulations and control and enforcement capabilities for any fisheries occurring in Spain or by Spanish nationals. These decisions seem to correspond to the country's existing fisheries governance structures and its division of responsibilities between national and sub-national authorities.

**Fisheries e-data regimes are nested within broader legal frameworks regarding data and information:** Fisheries e-data is always subject to a host of other laws and rules concerning government collection and use of information. These might include privacy or record safety laws, government retention or disclosure requirements, or others. These broader frameworks often limit access to the data, particularly for the public and scientific community, but generally allow for the use of e-data for control and enforcement by government authorities.

**Effective data management appears to depend on a centralised approach; centralised management makes it easier for officials to coordinate oversight and identify potential violations.** Even in the U.S., where data collection policies are set fishery by fishery, most e-data is funnelled to a single, national agency to ensure integration and access for law enforcement, though it is stored across multiple platforms that lack efficient interoperability.

**None of the countries studied had laws explicitly permitting or prohibiting the use of specific types of e-data in fisheries infringement proceedings.** Instead, authorities relied on general evidentiary frameworks and administrative rules, which allowed virtually any e-data to be admitted, provided it could be shown to have been properly collected and relevant. This does not appear to hinder e-data collection or use; on the contrary, the case studies describe instances of authorities proactively gathering new types of e-data and introducing them into proceedings under general evidentiary rules, even when not required by law or policy.

**There is a normative tension between data privacy and access-to-information principles:** In all jurisdictions analysed, there are data privacy rules governing the disclosure of fishery information; some of these are confidentiality restrictions specific to fisheries legislation that are designed to protect fishers' commercial interests, while others are more general rules designed to protect personal information. Jurisdictions resolve this tension by providing: 1) tightly controlled access to fisheries data to law enforcement agencies or officials; 2) aggregate and anonymised data to private or government scientific entities. There is typically no provision for public disclosure of fisheries data except in connection with an enforcement or infringement proceeding.



**E-data is typically used in conjunction with other types of evidence, but this is an operational practice, not a legal requirement:** As e-data has become more common in fisheries management, it has also become a more reliable source of evidence in infringement proceedings. In some cases, it has even been used as the sole basis for civil enforcement. For example, in the United States, AIS data has been sufficient to fine fishing vessel owners for speeding through seasonal speed-reduction zones established to protect whales. This is more straightforward in situations—such as this one—where a vessel’s speed and position are the only elements relevant to the offence. However, when confirming more complex violations involving illegal catch or gear use, or when officials believe e-data may be less reliable than eyewitness testimony, authorities typically seek to corroborate it with additional evidence.

**Limited capacity seems to be a reason to increase, rather than curtail, reliance on e-data.** It is likely no coincidence that RMI, one of the most capacity-constrained countries reviewed, has one of the most advanced e-data regimes and aggressively uses real-time tracking technology to deploy its resources efficiently. E-data can be capital-intensive, but it may provide long-term savings for enforcement officials by enabling faster, easier identification of infringements, thereby reducing the need for expensive patrols and investigations. In Spain, extensive data collection and its use for control and enforcement have disincentivised illegal fishing practices within Spanish waters and among nationals, thereby reducing the number of infringement cases.

## 2. Key technologies and relevant legal frameworks

### a) E-data Collection

#### Tracking

*VMS and AIS are extensively used for MCS and enforcement purposes.* These technologies are widely used, and dedicated VMS systems are required in virtually all fisheries with an industrial component and a high-value catch, such as tuna. Their primary value has been to ensure compliance with temporal or area-based management measures, like restricted zones. Because regulators rely on uninterrupted positional data, simply switching off or powering down a VMS unit, or tampering with an AIS unit, is itself prohibited conduct and triggers penalties in many jurisdictions – although it may also be considered an indicator of illicit activity.

*The trend is toward monitoring e-data from these sources in real time through dedicated monitoring centres, with increasingly sophisticated, risk-based algorithmic processes (or artificial intelligence) used to direct attention and resources toward likely infringements.* Notably, the U.S. appears to be an outlier, as it seemingly does not monitor tracking data in real-time and instead relies on patrols and targeted reviews of collected data to identify infringements. AIS, given its vulnerability to fraud, is used to complement or support the use of other information for MCS and prosecution. However, in some instances, it has

been accepted as evidence in infringement cases.

## **Monitoring**

*On-board electronic monitoring is being increasingly normalised.* The use of electronic monitoring on board fishing vessels, most notably on-board camera systems, is becoming increasingly common. In some countries, such as Australia and New Zealand, it is already mandatory in specific fleet segments, often those with a higher risk of IUU fishing and difficult or costly observer programmes. After the initial years of trial phases, electronic monitoring is well accepted by the industry in these countries, and the data collected is used for enforcement purposes. In other countries, such as the RMI, participation is voluntary or in pilot phases. It will likely be required in the EU in the next few years. One challenge with onboard monitoring is finding methods to transmit and manage the large amounts of data generated by these systems, as described below. Electronic monitoring is used in voluntary programs in industrial fisheries, and pilot programs are underway in various parts of the world.

*Other technologies are available and being explored.* While other monitoring technologies seem increasingly available, some have been subject to systemic deployment, while others have been used ad hoc and experimented with. For example, all countries gather information from patrols conducted by vessels or aircraft, which may include electronic information collected via photographs, videos, and computer equipment. Some countries, such as Spain, are systematically adopting drones or specialised cameras, while others, like the RMI, routinely use electro-optical imagers, synthetic aperture radar, and radio frequency geolocation systems.

## **Reporting**

*Electronic reporting has become a fundamental part of fisheries governance and seems to be increasingly the norm in all jurisdictions reviewed.* Electronic systems are generally more effective than other forms of reporting, reducing errors and facilitating the later analysis and use of this information. All countries reviewed require electronic logbooks that provide daily haul-by-haul data (some for relatively small vessels), as well as the reporting of other data, such as transshipments, landings, and sales notes.

### **b) E-data management**

#### **Databases & storage**

*Data storage is a critical—and frequently overlooked—component of e-data use.* In most countries, information reported from fisheries and other information, such as licensing or vessel registries, is stored in databases accessible to any authority that needs the information. Additionally, in most countries, databases are integrated, allowing for the cross-checking of information from different sources. As e-data becomes more widespread and data volumes rise, managing storage will become an increasingly costly and complex challenge for fisheries authorities.



## Verification and validation

*Verification and validation remain complex, labour-intensive processes that are still critical to ensuring e-data utility, particularly as evidence in infringement procedures.* Digitalisation of reporting helps reduce errors and inconsistencies, which can be automatically detected. In most countries, acts of authorities, such as inspection reports, have a presumption of truth. However, in several countries, it is common to conduct additional investigations to corroborate facts and build stronger cases.

*E-data validation helps ensure that evidence in infringement proceedings is robust by guaranteeing that systems or equipment that generate such data operate according to established standards.* Some verification and validation processes are not reflected in the reviewed legal frameworks and had to be determined through discussions with officials or inference. However, for some systems, such as VMS or e-logbooks in Spain, technical specifications are established by law. Much like with data storage, verification and validation will become increasingly critical challenges as e-data use expands.

## E-data analysis

*Fisheries monitoring centres are becoming the norm for jurisdictions engaged in risk-based fisheries management.* They integrate key e-data into fisheries activities and help determine where to deploy enforcement resources, including government-owned assets such as surface vessels, drones, and satellites. As noted above, however, the U.S. seems to be an outlier in this regard.

*Human capacity is necessary to analyse data, and tasks can be labour-intensive.* However, automation of systems can help resolve errors and, based on the incorporation of risk assessment criteria, alerts and other prioritisation mechanisms can be incorporated to help with MCS objectives. Increasingly, countries are exploring augmenting this analysis with AI-driven support, and most countries reviewed have integrated machine-learning algorithms into their data analysis, particularly to detect potential non-compliant activities.

### c) Use of e-data for infringement proceedings

*E-data is used routinely as part of enforcement activities and can be crucial evidence in infringement cases.* Practice shows that the type of technology that generates specific data does not determine whether information can be accepted as evidence in infringement proceedings or in court. Whether it is accepted as proof depends on its conclusiveness, and this is primarily supported by the existence of a robust due diligence process, as shown in the case studies for the RMI and Spain.

*Due diligence used to build robust infringement proceedings is not a legal requirement, but the result of practical experience by government authorities to ensure that wrongful acts are successfully prosecuted and sanctioned.* In some jurisdictions, such as the U.S., this due diligence is embedded in the regulations. Only technology providers who agree to provide in-person testimony explaining how their systems function will be approved for use by the regula-

tor for required e-data collection (most notably with respect to VMS).

*An essential institutional feature in many of the jurisdictions studied is that sanctioning authority—rather than enforcement authority per se—has been delegated first to administrative officials and left to courts for the most serious infringements. This model, used in all jurisdictions assessed for this report (in the RMI this is done as a matter of practice, for it is not explicitly regulated), has generated debate but has also created practical benefits. By handling a steady stream of infringements, administrative officials develop expertise in fisheries compliance and the use of e-data systems, such as VMS, thereby reducing the need for repeated explanations and enabling more informed decisions.*

*In all these countries, initiating judicial proceedings is a last resort, and there is a preference for focusing on administrative proceedings, which often involve well-documented files that are difficult to contest, or attempting to reach out-of-court settlements. Cases that cannot be resolved administratively, including those involving more serious criminal violations or appeals, still proceed through formal judicial channels, ensuring a balance between efficiency and due process.*

A rise in the proliferation of e-data, coupled with increased administrative delegation, has made it easier to enforce against non-criminal or less serious infringements. This can make fisheries enforcement more granular and responsive, and improve overall accountability.



## V. Appendices



### **Case Study: Australia**

The following section provides an overview of Australia's fisheries management, legislation, and the use of technologies and electronic data for fisheries monitoring, control, and surveillance (MCS) and enforcement. Following the same approach observed in the other case studies, this part will begin by providing a brief background of Australia as a maritime and fishing nation. It then briefly presents the primary technologies currently in use to support fisheries management and compliance. This chapter will also provide a general overview of the role that e-data plays in supporting the Australian fisheries management system and compliance. It will focus on the Australian Commonwealth's commercial fisheries, including their management and regulation.

## 1. Background

### a) Australia as a fishing nation

Australia has the third-largest exclusive economic zone (EEZ) in the world, a vast ocean area within which its fisheries are permitted to operate. However, from a fisheries perspective, Australian waters are relatively nutrient-poor due to the impact of southward-flowing currents. As a result, the waters around Australia tend to have low productivity of marine resources.<sup>4</sup>

The fishing industry is still the sixth most important food-based primary industry in the country.<sup>5</sup> Australia's fishing, aquaculture, and seafood sectors comprise commercial, indigenous, and recreational fishing (marine, lakes, and rivers), aquaculture, and post-harvest activities, with a gross value of production of approximately \$3.42 billion (Australian dollars/AUD) per year.<sup>6</sup> This includes fisheries and aquaculture managed by the Commonwealth (national) Government and the States and Territory Governments.

The Australian marine capture fishery has stabilised at around 170,000 tonnes, after peaking at the turn of the century at about 230,000 tonnes.<sup>7</sup> Total fishery production in quantity was 295,100 tonnes in 2021, with 42% coming from aquaculture.<sup>8</sup> In 2022, Australia's total export value for fish products was \$1.28 billion. Despite the country's large seafood production, Australia imports approximately \$2.19 billion AUD of seafood products per year, accounting for around 65% of national consumption.<sup>9</sup>

### b) Fisheries governance

Australia is a parliamentary democracy. Its legal system is based on common law, deriving its laws from legislation (Acts of Parliament) and judicial decisions (courts interpreting the law). The Australian Constitution establishes a federal system of government, whereby powers are divided between the Commonwealth or federal government and Australia's states and territories (Legislation regulating Australia's Federal fisheries is outlined in Annex 1).

Australia manages its fisheries through a shared responsibility between the federal government and state governments. The federal government has jurisdictional control over commercial fisheries within the Australian Fishing Zone (3 to 200 nautical miles from the Australian coastline) and over Australian-flagged vessels operating in areas beyond national jurisdiction. It is an offence for Australian-flagged fishing vessels to operate

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4 Department of Agriculture, Fisheries and Forestry, "Domestic Fisheries", available at <https://www.agriculture.gov.au/agriculture-land/fisheries/domestic>

5 FAO, Fishery and Aquaculture Country Profiles. Australia, 2024. Country Profile Fact Sheets. In: Fisheries and Aquaculture. Updated Nov 8, 2023 [Cited Wednesday, September 17th 2025].

6 Australian Fisheries and Aquaculture Statistics 2022, available at [https://daff.ent.sirsidynix.net.au/client/en\\_AU/search/asset/1035343/0](https://daff.ent.sirsidynix.net.au/client/en_AU/search/asset/1035343/0) (p.4)

7 FAO, Fishery and Aquaculture Country Profiles. Australia, 2024.

8 FAO, Fishery and Aquaculture Country Profiles. Australia, 2024.

9 Australian fisheries and aquaculture statistics 2022 (p.4)



within other States' exclusive economic zones<sup>10</sup>. Therefore, Australian-flagged vessels only operate within Australia's EEZ or in the high seas. Figure 1 contains a chart of the Australian Fishing Zone and identifies the twenty Commonwealth fisheries managed by the Australian Federal Government.

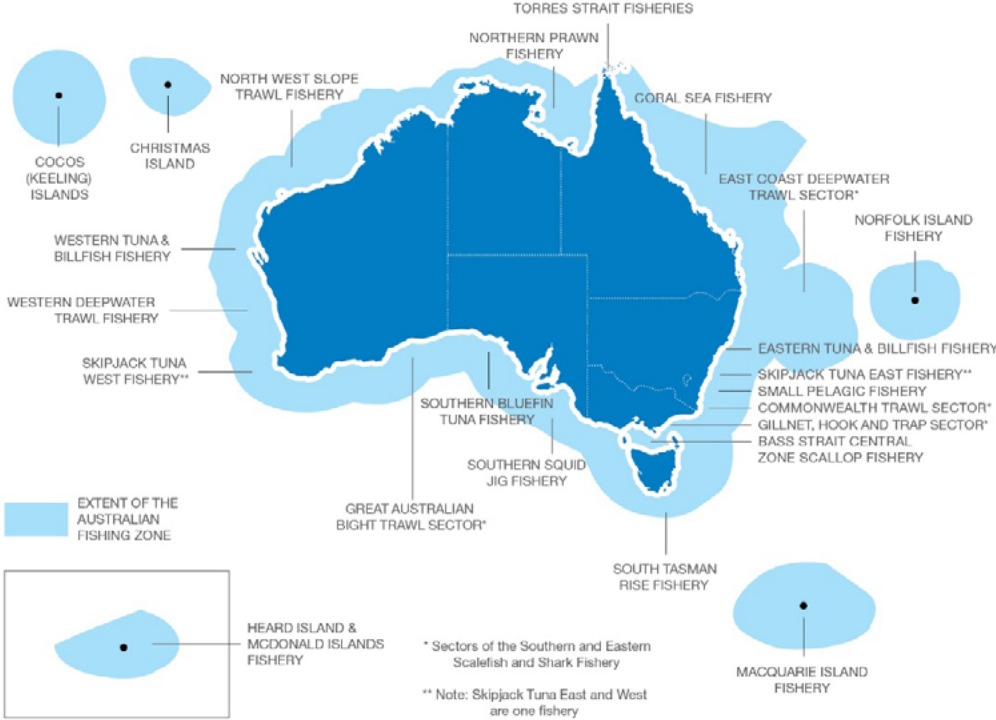


Figure 1: Australia's Commonwealth fisheries (source: Australian Fisheries Management Authority, AFMA).

Australia's six State Governments and the Northern Territory Government are responsible for managing fisheries (both commercial and recreational) within three nautical miles of the coast. However, specific fisheries off the north and west coasts of Australia are jointly managed by established Joint Authorities, which split responsibility between the Commonwealth, the State/Territory, and a regional authority. The Australian Federal Government primarily regulates commercial fishing, while state and Territory governments regulate recreational and indigenous fisheries in coastal waters (customary fishing within three nautical miles of the coast).<sup>11</sup>

Australia's Commonwealth fisheries are relatively small compared to other fishing nations with large EEZs. Within the twenty existing Commonwealth fisheries, over 270 registered fishing vessels target over 45 different commercial fish species.<sup>12</sup>

10 Section 105C, Fisheries Management Act 1991.  
 11 Department of Agriculture, Fisheries and Forestry "Managing Australian Fisheries", available at <https://www.agriculture.gov.au/agriculture-land/fisheries/domestic/managing-australian-fisheries>  
 12 Australian Fisheries Management Authority, "Fisheries", available at <https://www.afma.gov.au/fisheries-1>

### c) Fisheries administration

The Australian Department of Agriculture, Fisheries and Forestry (DAFF) oversees the development and implementation of policies for Commonwealth fisheries management. The Australian Fisheries Management Authority (AFMA) is a federal government agency responsible for managing Commonwealth fisheries on behalf of the Australian community. AFMA is the specific agency responsible for managing Commonwealth fisheries in accordance with those policies set by DAFF, focusing on sustainable fisheries management through regulation, monitoring, and research.

AFMA is established under the *Fisheries Administration Act 1991* (FAA) and exercises its functions and responsibilities in accordance with the *Fisheries Management Act 1991* (FMA).<sup>13</sup> Under the FAA and the FMA, AFMA and the Minister of Fisheries (Minister for Agriculture, Fisheries and Forestry) have fisheries management roles and responsibilities. AFMA's objectives, functions and powers are derived from the FAA and FMA and shape the nature and scope of AFMA's fisheries management of Australia's Commonwealth fisheries. AFMA's objectives are outlined in the FAA<sup>14</sup> and FMA<sup>15</sup> and include:

- i. implementing efficient and cost-effective fisheries management on behalf of the Commonwealth;
- ii. ensuring that the exploitation of fisheries resources and the carrying on of any related activities are conducted in a manner consistent with the principles of ecologically sustainable development (which include the exercise of the precautionary principle), in particular the need to have regard to the impact of fishing activities on non-target species and the long-term sustainability of the marine environment;
- iii. maximising the net economic returns to the Australian community from the management of Australian fisheries; and
- iv. ensuring accountability to the fishing industry and the Australian community in AFMA's management of fisheries resources.

AFMA's responsibilities are shared between the AFMA Commission and the Chief Executive Officer. The AFMA Commission is responsible for domestic fisheries management, while the AFMA Chief Executive Officer is responsible for foreign compliance, assisting the Commission and implementing Commission decisions.<sup>16</sup>

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<sup>13</sup> In addition, the *Torres Strait Fisheries Act 1984* regulates the fisheries within the Torres Strait. These fisheries are located in the northern waters of Australia bordering Papua New Guinea and are managed consistent with the Torres Strait Treaty 1978, which defines the border between these two countries and the management of the border zone. Importantly, it also recognises and protects the rights of traditional inhabitants of the Torres Strait area, including their rights to fish.

<sup>14</sup> Section 6, Fisheries Administration Act 1991.

<sup>15</sup> Section 3, Fisheries Management Act 1991.

<sup>16</sup> Australian Fisheries Management Authority "Who we are", available at <https://www.afma.gov.au/who-we-are/afma-commission>



#### d) Fisheries compliance

AFMA has both domestic and foreign compliance functions. AFMA’s domestic compliance and enforcement approach is outlined in its National Compliance and Enforcement Policy 2022.<sup>17</sup> This policy outlines the framework on which AFMA’s National (domestic) Compliance and Enforcement Program is based.<sup>18</sup> The National Compliance and Enforcement Program 2023-25 outlines AFMA’s programmatic approach to delivering cost-effective, efficient fisheries compliance services. The program has four key areas of focus: education and engagement, general deterrence, targeted risks, and maintenance. Australia’s international compliance and enforcement approach is outlined in the International Compliance and Engagement Program 2022-2024.<sup>19</sup> This outlines a “multifaceted program to combat illegal, unregulated and unreported (IUU) fishing” that includes “effective enforcement and monitoring, regional cooperation, diplomatic representations and engagement measures such as capacity building, education and outreach programs”.

Federal maritime enforcement powers are shared by multiple Australian Government agencies under the *Maritime Powers Act 2013*. These agencies are AFMA, the Australian Defence Force, the Australian Border Force and the Australian Federal Police. Australia’s Maritime Border Command is a multi-agency task force within the Australian Border Force, supported by the Australian Defence Force, which contributes to the whole-of-government effort to protect Australia’s national interests in Australia’s maritime jurisdiction. This includes multi-agency efforts to deter and prevent illegal activities, including IUU fishing.

## 2. Technologies in support of fisheries MCS and prosecution of infringements

Australia utilises various monitoring tools to support the effective and sustainable management of its fisheries. Key monitoring tools include an electronic monitoring (EM) program, an observer program, vessel monitoring systems (VMS), and electronic reporting tools. Australia also conducts data collection and monitoring by requiring fishers to complete logbooks and catch-disposal records. Vessel operators’ use of specific technologies, such as VMS, is prescribed in national fisheries laws and regulations, like in many other jurisdictions.

To complement these monitoring tools, Australia employs various monitoring, control, and surveillance measures to investigate potential fisheries infringements and support potential fisheries prosecutions. This includes surface patrol vessels and aerial surveillance

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17 AFMA National Compliance and Enforcement Policy 2022, available at [https://www.afma.gov.au/sites/default/files/2023-02/11321\\_afma\\_national\\_compliance\\_and\\_enforcement\\_policy\\_2022\\_web.pdf](https://www.afma.gov.au/sites/default/files/2023-02/11321_afma_national_compliance_and_enforcement_policy_2022_web.pdf).

18 AFMA National Compliance and Engagement Program 2023-2025, available at <https://www.afma.gov.au/sites/default/files/2023-08/2023-25-National-Compliance-and-Enforcement-Program-FINAL.pdf>

19 AFMA, International Compliance and Engagement Program 2022-2024, available at [https://www.afma.gov.au/sites/default/files/2023-02/afma\\_international\\_compliance\\_and\\_engagement\\_program\\_2022-24\\_tagged.pdf](https://www.afma.gov.au/sites/default/files/2023-02/afma_international_compliance_and_engagement_program_2022-24_tagged.pdf)



from patrol aircraft. Australia also utilises satellite surveillance technologies, including the Automatic Identification System (AIS), Radio Frequency analysis tools, and Synthetic Aperture Radar (SAR). To supplement these tools, Australia resorts to emerging technologies to monitor and surveil its waters, such as unmanned surface vessels (USVs) that autonomously patrol Australian waters and are equipped with sensors and imaging systems.

All relevant MCS tools and technologies are utilised in accordance with established standards and procedures, ensuring consistent and appropriate application in accordance with relevant fisheries legislation. A more detailed outline of technologies to support effective fisheries MCS and enforcement is provided in the sections below and Annex 2 of this section.

### a) Mandatory systems for vessel operators

Operators must comply with a range of mandatory systems and monitoring tools in Australia's Commonwealth fisheries.

- i. **VMS:** mandatory for all fishing vessels operating in Commonwealth fisheries (including those operating beyond national jurisdiction), and all VMS units must meet AFMA's type-approved standards.
- ii. **Electronic-monitoring** (for specific fisheries): E-monitoring is fundamentally a system of a central computer, video cameras, and sensors capable of monitoring and recording fishing activities (stored on a hard drive on the vessel that can later be reviewed and verified onshore by analysts for management and compliance purposes). EM in Australia is compulsory for most commercial fishing boats operating in four Commonwealth fisheries: the Eastern Tuna and Billfish Fishery; the Western Tuna and Billfish Fisheries; the Gillnet, Hook and Trap fishery; and the Midwater Trawl Sector of the Small Pelagic Fishery. Commercial fishing boats using gillnets for over 50 days per season or longlines for over 100 days per season must have EM systems installed and operational. There is no explicit information on why Australia chose these four fisheries for mandatory e-monitoring (perhaps because of historical risks, but it is not easy to know). The system was first introduced in 2015 when the Australian Fisheries Management Authority (AFMA) mandated the use of EM. It followed nearly seven years of trials, a pilot program, and testing, including the deployment of observers to ensure that the recorded footage encompassed all pertinent data necessary for effective fisheries management.
- iii. **Electronic reporting:** the logbook for catch and effort reporting, whether electronic or otherwise, is compulsory for all Commonwealth fisheries. Electronic logbooks (i.e. electronic reporting of logbook data) are mandatory for all operators fishing 50 days or more in the current or previous fishing season, or those with an EM system installed, when fishing using specific gear (gillnet, line,



Danish seine, prawn trawl and trawl), and for all operators using line methods in the Eastern or Western Tuna and Billfish fisheries.

- iv. **Automated Information System (AIS):** the Australian Maritime Safety Authority mandates AIS for vessels over 300 gross tonnage and prescribes additional AIS requirements that apply to ships in accordance with Marine Order 27.<sup>20</sup> However, AIS is generally not mandatory for fishing vessels, except those operating within the Convention Area of the Commission for the Conservation of Marine Living Resources (CCAMLR), as required under CCAMLR Conservation Measure 10-02, paragraph 2(vii).

#### b) Voluntary systems for vessel operators

Some fishing operators use technologies that are not mandated by Australian law in their fishing operations. For example, fishing operators may not meet the threshold requiring them to have EM systems installed, but they have voluntarily chosen to do so. Similarly, where electronic reporting of logsheets (i.e. e-logs) is not mandated, many operators are using these technologies. They primarily do it to prepare for potential future obligations and to achieve immediate operational efficiencies, such as reducing manual data entry.

In addition, fishing operators are constantly trialling innovative technological solutions to increase efficiency within their fleets. For example, electronic scales can be used when unloading. The fishing industry has also engaged in an Industry Collected Data Project, which entails the development of an end-to-end solution for the digital capture, exchange, and integration of data from industry-based data collection initiatives in various fisheries and areas.<sup>21</sup>

The engagement of the fishery industry has been a critical factor in the success of the transition period. This positive feature may not always be easily replicated in other jurisdictions. For example, vessel operators are required to collect, maintain, and make available catch-disposal records as part of their operations, including information on species and the weight of catch at the point of landing. Catch disposal records are mandatory, but they can be completed using either paper-based or electronic forms. Australian authorities have developed catch disposal record systems to facilitate the electronic submission of these data. Even as some operators are exempt from mandatory electronic reporting, it is illustrative that many of them have voluntarily adopted electronic reporting of catch disposal records.

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20 Marine Order 27 (Safety of navigation and radio equipment) 2023 (AMSA MO 2023/9).

21 AFMA Annual Report 2022-2023.

### c) Technology used at the discretion of the Australian authorities

Australia uses a range of electronic technologies to support its MCS functions. However, because its EEZ is extensive, Australia employs a risk-based approach to its fisheries surveillance and monitoring. Technologies used by Australian authorities to support their risk-based analysis include observer data collected and reported by authorised human observers electronically using a tablet-based reporting application, surveillance data collected by surface patrol vessels (manned and unmanned), surveillance data collected by aircraft, and surveillance satellite data. These datasets include positional data within each dataset (e.g., geotagged GPS locations and/or specific coordinates and the time of data collection).

Additionally, Australian authorities utilise a range of automated analytical tools to support and plan their MCS activities and operations, such as machine learning algorithms to detect potential non-compliance, including incursions into protected areas or illegal transshipment. However, the processes by which this machine learning occurs or is set are not publicly accessible.

From an institutional perspective, Australia uses a multi-agency approach to monitoring maritime threats, including those from fishing activity, within Australia's EEZ and in the high seas. This collaborative approach includes AFMA and Australia's Maritime Border Command and is supported by shared maritime powers (under the *Maritime Powers Act 2013*). It contemplates enforcement actions such as the seizure of catch and fishing equipment, the disposal of vessels, and the apprehension and prosecution of foreign fishers.

### d) Databases

AFMA manages its own fisheries database, which contains all fisheries data generated by Commonwealth fisheries, including catch and effort data (logbook data), licensing information, fishing authorisations, and catch disposal records. Raw data regarding fish landed at an Australian port for Commonwealth fisheries is publicly available on the AFMA website.<sup>22</sup>

Compliance-related information, including any data, information, or evidence used in enforcement actions or proceedings, is also maintained by AFMA in a dedicated secure database. Multiple Australian agencies or departments, including AFMA, the Australian Border Force, and the Australian Defence Force, have maritime enforcement powers and exchange information accordingly.

AFMA publishes a range of fisheries datasets online and discloses fisheries datasets to different entities and organisations in accordance with the Australian Government Public

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<sup>22</sup>Available on AFMA website at <https://www.afma.gov.au/resources/commonwealth-fisheries-annual-catch-and-effort-data>.



Data Policy Statement,<sup>23</sup> AFMA’s Information Disclosure Policy,<sup>24</sup> and various pieces of national legislation, including the *Privacy Act 1988*. AFMA’s Information Disclosure Policy outlines the policy and procedures it must follow for disclosing data or information it collects. Generally, vessel location and catch data are considered commercially sensitive and are not published publicly. Concerning MCS and enforcement, AFMA is authorised to disclose fisheries data or information it collects where such disclosure is permitted under the FAA or FMA, or where such disclosure is necessary for AFMA to perform one of its legislated functions. However, in general, the public has no access to such information.

### 3. E-Data for fisheries MCS and enforcement

Australian authorities actively use electronic data to support MCS and enforcement activities. This includes appropriate data collection, verification, validation and analysis processes. The results of these processes are used for a range of purposes, including scientific (stock assessments, development or refinement of fisheries management objectives and measures) and compliance (compliance and enforcement action).

#### a) E-Data verification and validation

All information and data, including e-data, collected by Australian authorities are maintained in secure databases and are subject to verification by authorities. Several Australian authorities are responsible for storing and verifying electronic data from fishing operators upon collection, including AFMA and DAFF through their science and economics research division, the Australian Bureau of Agricultural and Resource Economics and Sciences. This includes both automated and manual verification processes to ensure adherence to established standards, specifications and procedures for the collection and reporting of datasets by fishing operators.

Australian authorities also conduct data validation processes for electronic fishing information and data to ensure the accuracy and reliability of datasets for scientific purposes and monitoring, as well as to verify compliance with domestic and international fisheries rules and regulations.

#### b) E-Data analysis

AFMA has a dedicated monitoring unit that monitors the location and activity of Commonwealth fishing fleets, as well as any other fishing vessels operating within or near the Australian EEZ. As part of its monitoring capacity, AFMA operates a fisheries monitoring centre (FMC) that monitors vessel tracks and operations primarily through the receipt and analysis of VMS data. AFMA also has a dedicated intelligence unit that undertakes specific fisheries analyses of available datasets to identify trends and patterns of fishing activities, including potential IUU fishing. However, the role of e-data in different risk-based approaches is not publicly accessible information.

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<sup>23</sup> [https://www.dpvc.gov.au/sites/default/files/publications/aust\\_govt\\_public\\_data\\_policy\\_statement\\_1.pdf](https://www.dpvc.gov.au/sites/default/files/publications/aust_govt_public_data_policy_statement_1.pdf)

<sup>24</sup> AFMA “Fisheries Management Paper 12: Information Disclosure” (May 2014), available at <https://www.afma.gov.au/sites/default/files/2023-02/Fisheries-Management-Paper-12-Information-Disclosure-May-2014.pdf>

AFMA also collaborates with other agencies to conduct maritime surveillance and enforcement both within its EEZ and on the high seas. This includes analysing all available maritime datasets, including fisheries e-data. Additionally, Australia utilises regionally available maritime domain platforms, such as the Pacific Islands Forum Fisheries Agency's (FFA) Regional Surveillance Picture, which provides a risk-based vessel profiling of all fishing vessels within the Western and Central Pacific Ocean. This dataset and analytical capability supplement Australia's national monitoring activities off its southeastern, eastern, and northern coasts, as well as in the adjacent high seas.

The data processed and analysed have shown some positive results, as e-monitoring and e-reporting illustrate in the electronic reporting of logbook information. The weight of evidence suggests there has likely been a shift in logbook reporting incentives among fishers in the EM years, compared to the previous six years, leading to changes in logbook reporting behaviour.<sup>25</sup>

### c) E-Data for enforcement and prosecution actions

AFMA's fisheries officers are authorised to undertake enforcement action in accordance with the *Maritime Powers Act 2013*. Authorised fisheries officers use available data to support potential enforcement action, including e-data that meets Australia's evidentiary standards. Australian fisheries officers have the power to seize vessels, as well as their catch, gear, and equipment on board. This also includes the seizure of electronic equipment, such as global positioning systems (GPS), chart plotters, laptops, desktop computers, tablets, or other devices that contain potential evidence in support of a fisheries investigation or prosecution.

Notably, AFMA employs forensic investigators who conduct examinations of electronic equipment (both on board vessels and on land) to gather potential evidence related to suspected illegal activity. These examinations must be performed to ensure that they are legally admissible in judicial proceedings. This analysis ensures that fisheries officers possess the necessary qualifications for forensic examination and maintain a documented chain of custody for all equipment.

Fisheries prosecutions are initiated where there is available evidence of prima facie breaches of the FMA or *Torres Strait Fisheries Act 1984*. AFMA, as the Commonwealth fisheries regulator, collects and prepares all available evidence, including e-data, and decides whether to refer fisheries compliance cases to the Commonwealth Director of Public Prosecutions for prosecution.

## 4. Administrative and criminal procedures

Australian legislation outlines the evidentiary thresholds for administrative procedures and criminal prosecutions for fisheries offences. The evidentiary requirements permit

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<sup>25</sup> Timothy J. Emery et al "Changes in logbook reporting by commercial fishers following the implementation of electronic monitoring in Australian Commonwealth fisheries" (2019) 104 *Marine Policy* 135 at 143-144.



the use of a wide range of data and information types, including e-data. The reliability of any data is primarily linked to established data fields and formats that are collected and managed in accordance with established standards, specifications, and procedures regulated by Australian authorities.

### a) Administrative procedures

In accordance with the FMA and the *Maritime Powers Act 2013*, Australian authorities can undertake a range of enforcement measures in response to non-compliance with fisheries laws.<sup>26</sup> Under the FMA, AFMA fisheries officers can issue Commonwealth Fisheries Infringement Notices, as well as cautions, warnings, suspensions, and forfeitures (of catch, gear, vessels, or proceeds from the sale of catches) for breaches of fisheries laws or regulations. These compliance responses can be used separately or in combination, depending on the severity of the non-compliance.

AFMA officers issue warnings for minor, low-impact offences. The evidentiary threshold is higher for the issuing of cautions (must be *prima facie* evidence of an offence) or Commonwealth Fisheries Infringement Notices (the evidence discloses a *prima facie* case against the accused with reasonable prospects of success). The evidence may include electronic evidence, including relevant e-data. Fisheries officers can also issue directions to a fishing operator requiring specific action (e.g., stop fishing, move a vessel, or allow a boarding).<sup>27</sup> AFMA may also suspend or cancel a fishing authorisation where there are reasonable grounds for a breach of the FMA.<sup>28</sup>

For any Court proceedings for an offence under the FMA, AFMA may issue a certificate outlining specific evidence relating to a fisheries offence, for example, relating to licence or permit information, the location of fishing activity, or e-monitoring data.<sup>29</sup> Such a certificate will be considered *prima facie* evidence of the matter in Court proceedings.<sup>30</sup>

The participation and role of private citizens or entities, such as providing facts to the fisheries compliance authority about what may constitute evidence of a violation or infringement, are not regulated by the FMA (it does not necessarily mean that such actions are prohibited either).

### b) Criminal procedures

Specialised law enforcement agencies are responsible for conducting criminal investigations into maritime offences under their respective enabling legislation.<sup>31</sup> As noted above, the FMA offers a range of compliance responses that AFMA may utilise, including fines (immediate), suspension of fishing licences, seizure of catch, gear, or vessels. Additionally, the FMA establishes various offences that may be prosecuted before a Court. Fisheries

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<sup>26</sup> AFMA National Compliance and Enforcement Policy 2022.

<sup>27</sup> Section 69, *Maritime Powers Act 2013*.

<sup>28</sup> Sections 38 and 39, FMA.

<sup>29</sup> Section 166, FMA.

<sup>30</sup> Section 166(7), FMA.

<sup>31</sup> Guide to Australia Maritime Security Arrangements (GAMSA), 2020.

prosecutions are initiated where there is sufficient evidence of *prima facie* breaches of the FMA or *Torres Strait Fisheries Act 1984*. AFMA, as the Commonwealth fisheries regulator, will collect and prepare all available evidence, including e-data, and decide whether to refer fisheries compliance cases to the Commonwealth Director of Public Prosecutions for prosecution.

As an example of the procedure, on 15 January 2025, a commercial fisher pleaded guilty at the Bairnsdale Magistrates Court to two counts of mistreating bycatch, landing an illegal catch, and failing to keep an accurate logbook<sup>32</sup>. Following an investigation by AFMA, which included reviewing footage captured by the vessel’s electronic monitoring system, the master of the ship was charged with four offences under the Fisheries Management Act 1991. In this case, the charges of mistreatment related to bycatch stem from incidents identified in the EM footage on 15 May 2023 and 8 June 2023. The charges of inaccurate reporting originated from an electronic logbook submitted to AFMA on 19 May 2023. The logbook failed to record five sharks caught on the vessel, which were discarded into the sea. The illegal catch concerns an incident on 20 May 2023, when a quantity of Australian salmon (*Arripis trutta*) was unloaded from the vessel. The catch was taken from waters near Victoria and Tasmania, where Australian salmon is a no-take species under the relevant licence. The examination of EM video, discrepancies with the submitted electronic logbook, and the VMS position of the vessel during the reviewed period provided the legal basis for the case, supporting the legitimacy of the electronic evidence.

## 5. Conclusions

Australia’s electronic monitoring (EM) system is among the most established globally, having been instituted in 2015 when the Australian Fisheries Management Authority (AFMA) mandated the use of EM in four of its fisheries. The transition to electronic monitoring (EM) began that year, following nearly seven years of trials, pilot programs, and testing. This process included the concurrent deployment of observers and EM to ensure that the recorded footage encompassed all pertinent data necessary for effective fisheries management.<sup>33</sup> Currently in its tenth year of operation, the EM program has demonstrated efficacy as a monitoring instrument for AFMA’s fisheries managers and compliance teams.

The efficacy of Australia’s electronic monitoring system as a tool for fisheries management and compliance can be attributed to two factors: first, its thorough integration of new technologies, and second, the collaborative engagement of the private sector in fisheries. These two conditions are supported by an adequate legal framework for electronic evidence, a strong social commitment to data transparency and accountability, and substantial human and financial resources. These are not easy background baselines to

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32 AFMA, “Commercial fisher fined \$4,000 for shark mistreatment, illegal catch and inaccurate reporting” (22 January 2025), available at <https://www.afma.gov.au/news/commercial-fisher-fined-4000-shark-mistreatment-illegal-catch-and-inaccurate-reporting-0>

33 Claire van der Geest “Australia’s Standards Based Electronic Monitoring Program” (EM4Fish, 3 April 2022), available at <https://em4.fish/australias-standards-based-electronic-monitoring-program/>



export, but they should be taken as a reference for other legislations when adopting and later implementing fisheries electronic tools

There have been difficulties. The execution of the EM program has necessitated that AFMA confront many ancillary challenges that were not previously encountered by prior data collection initiatives. This includes privacy regulations, storage of footage, and ownership of systems and footage (since the EM regulations require the collection of personal data, such as facial images). These concerns have necessitated AFMA to confront legislative obligations that were previously within the purview of fisheries management. These exist alongside prominent concerns about data confidentiality and data sharing, for instance.

AFMA is mandated to conduct Privacy Impact Statements in conjunction with the Regulatory Impact Statement processes. AFMA obtained an exemption from the Commonwealth Archives Act to retain EM video and documents for a six-month period. The system ownership issue has been resolved by establishing a requirement for AFMA that mandates the industry to acquire its systems, with maintenance and EM analysis funded through industry levies. AFMA has also secured legal counsel regarding the ownership of the footage. Additionally, to facilitate co-management, AFMA revised the Fisheries Management Regulations in 2019 to permit the license holder access to their own EM footage.

AFMA's EM experience has highlighted the potential to optimise monitoring methods, especially in acquiring geolocation data. Both EM systems and VMS devices provide geolocation information via integrated satellite polling. Although some differences remain, such as dual polling, trials by AFMA compliance teams have shown the advantage of using EM as a geolocation data source, particularly when sensor data is linked.



# Annex 1. List of legislation

## Fisheries legislation

- Fisheries Administration Act 1991
- Fisheries Management Act 1991
- Torres Strait Fisheries Act 1984

## Subordinate legislation

- Torres Strait Fisheries Regulations 1985
- Fisheries Management Regulations 2019
- Fisheries Levy (Torres Strait Prawn Fishery) Regulations 2019
- Fisheries Management (Heard Island and McDonald Islands Fishery) Regulations 2002
- Fisheries Management (International Agreements) Regulations 2009
- Fisheries Management (Fishing Levy Collection) Regulations 2018

## Enforcement legislation

- Maritime Powers Act 2013

## Environmental legislation

- Environment Protection and Biodiversity Conservation Act 1999



## Annex 2. Technology overview

|   | Mandatory / Voluntary                               | Responsible for providing e-data                   | Responsible for receiving and keeping data    | e-data public?           | e-data shared?                                  | Technology certified     |
|---|---|--|---|--------------------------|---|--------------------------|
| AIS   | Mandatory for some fishing vessels in certain areas | Vessel operator                                    | Publicly available via satellite subscription | Public                   | Public  | No                       |
| VMS   | Mandatory   | Vessel operator                                    | Government authority (AFMA)                   | Confidential - with AFMA | For enforcement between Govt agencies           | Yes                      |
| Electronic reporting (elogs)                    | Mandatory for vessels in certain fisheries          | Vessel operator                                    | Government authority (AFMA)                   | Confidential             | Aggregated data only                            | Yes                      |
| On board electronic monitoring                  | Mandatory for select fisheries                      | Vessel operator                                    | Government authority (AFMA)                   | Confidential             | Within Govt agencies for Science and Compliance | Yes                      |
| Photos & videos from drones, vessels & aircraft | Discretionary use by Govt authorities               | Government authority (fisheries and non-fisheries) | Government authorities                        | Confidential             | For enforcement between Govt agencies           | Vessels and aircraft Yes |





## **Case Study: New Zealand**

The following section outlines fisheries management, legislation, and the application of technologies and electronic data for monitoring, control, surveillance (MCS), and enforcement in New Zealand. It begins by providing a brief background of New Zealand as a maritime and fishing nation, then presents the chief technologies and the role that e-data currently plays in supporting fisheries management and compliance. This section will examine New Zealand's commercial fisheries, including their management and regulation, with a focus on fishing activities that occur within New Zealand's EEZ.

## 1. Background

### a) New Zealand as a fishing nation

New Zealand has the eighth-largest exclusive economic zone (EEZ) in the world, covering an area of 4,083,744 square kilometres, or approximately fifteen times its land area. Due to its north-south orientation and its position between several currents, the country exhibits high biodiversity in its waters. The seafood sector provides a vital source of income and employment, with export revenue rising by 3% to reach approximately NZD\$2.2 billion (about USD\$1.2 billion) in 2025.<sup>34</sup> Equally relevant, the latest information indicates that New Zealand fisheries remain healthy.<sup>35</sup> To maintain this scenario, New Zealand collects a range of data to aid decision-making for sustainable fisheries and minimise the impact of fishing on other wildlife.

### b) Fisheries governance and administration

New Zealand's fisheries governance structure relies on Fisheries New Zealand, an agency within the Ministry for Primary Industries, to manage and regulate fisheries within its Exclusive Economic Zone (EEZ) and internationally, particularly through regional fisheries management organisations (RFMOs). The primary mechanism for managing domestic fisheries is the Quota Management System (QMS), which allocates a commercial total allowable catch and allowances to fishing companies, as well as recreational and customary fishers. New Zealand also participates in international agreements and RFMOs to manage fisheries within and beyond its EEZ. New Zealand is a member of the Commission for the Conservation of Southern Bluefin Tuna (CCSBT), the Western and Central Pacific Fisheries Commission and CCAMLR.

### c) New Zealand legal system and fisheries legislation

New Zealand is a parliamentary democracy under a common law system. Statutory law (laws passed by the Parliament) and court rulings, including precedents, also play a significant role. One of such laws is the Fisheries Act 1996, which governs fisheries management within its territorial sea and the EEZ. This law applies to New Zealand-flagged vessels operating in these waters.<sup>36</sup> The Act establishes the principles of sustainability and utilisation of fisheries resources, while regulations specify how these principles are applied in practice. The Act also regulates the activities of New Zealand vessels fishing in international waters. The Ministry for Primary Industries is responsible for administering the Fisheries Act.

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34 "Trade and Economic Update - Q1 2025: New Zealand Exports show growth and resilience despite global trade uncertainty" New Zealand Ministry of Foreign Affairs and Trade (July 2025)

35 "The Status of New Zealand's Fisheries 2024", Fisheries New Zealand, Ministry for Primary Industries, available at: <https://www.mpi.govt.nz/dmsdocument/55933-Report-on-the-status-of-New-Zealands-fish-stocks/#:-:text=Fisheries%20New%20Zealand%20evaluates%20402,species%20complexes%20in%20the%20QMS>.

36 Although sometimes permitted in the past, no foreign-flagged vessels are currently allowed to fish in waters under New Zealand's jurisdiction.

Other laws that directly impact fishing activities include the Wildlife Act 1953, which outlines reporting requirements for interactions with protected species, and the Marine Reserves Act 1971, under which Marine Reserves are established where fishing activities are prohibited. Also relevant for this report, New Zealand has the Privacy Act 2020 as the primary legislation governing data use, including rules on confidentiality and intellectual property. This Act outlines thirteen information privacy principles that determine how agencies collect, use, disclose, store, retain, and access personal information. Additionally, the Official Information Act 1982 grants New Zealand residents and visitors the right to request access to information held by government agencies and organisations.<sup>37</sup> It promotes transparency and accountability in government by ensuring that the public can access official information unless there is a good reason to withhold it. The Official Information Act defines “official information” as any information held by a government agency, including documents, emails, memos, reports, and other records, both physical and digital. Currently, all fisheries-related data provided to the government is considered “official information”.

A summary of the relevant legislation and regulations for New Zealand’s fisheries is outlined in Annex 1 to this section.

#### **d) Fisheries management**

As mentioned, the foundation of New Zealand’s fisheries management is the Quota Management System (QMS). Introduced in 1986, the QMS is widely recognised worldwide as an innovative and comprehensive approach to sustainable fishing. The QMS sets catch limits for commercially valuable fish stocks and allocates these as Individual Transferable Quotas to individual fishers or companies. These rights can be bought, sold, leased, or traded, creating a market-based incentive for efficient and sustainable fishing practices. This enables the most efficient operators to expand their activities. Individual Transferable Quotas are a perpetual right to harvest a proportion of the total allowable catch for a specific stock.

#### **e) Fisheries compliance**

Within the Ministry for Primary Industries, the role of administering regulations is undertaken by the Compliance Services Directorate. Its compliance strategy is guided by the VADE operating model (Voluntary, Assisted, Directed, Enforced),<sup>38</sup> which is designed to provide a comprehensive framework encompassing a full range of compliance elements. The core principle is that enforcement (including prosecution) serves as the incentive for voluntary compliance. At the same time, the model allows frontline staff to exercise discretion and ensures that any compliance intervention is proportionate to the level of non-compliance. Broadly, enforcement actions in the form of prosecutions will only be taken in cases involving serious criminal or repeated offending, unacceptable practices, or when prosecution is considered to be in the public interest.

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<sup>37</sup> <https://www.legislation.govt.nz/act/public/1982/0156/latest/whole.html#whole>

<sup>38</sup> <https://www.mpi.govt.nz/dmsdocument/39353/direct/>



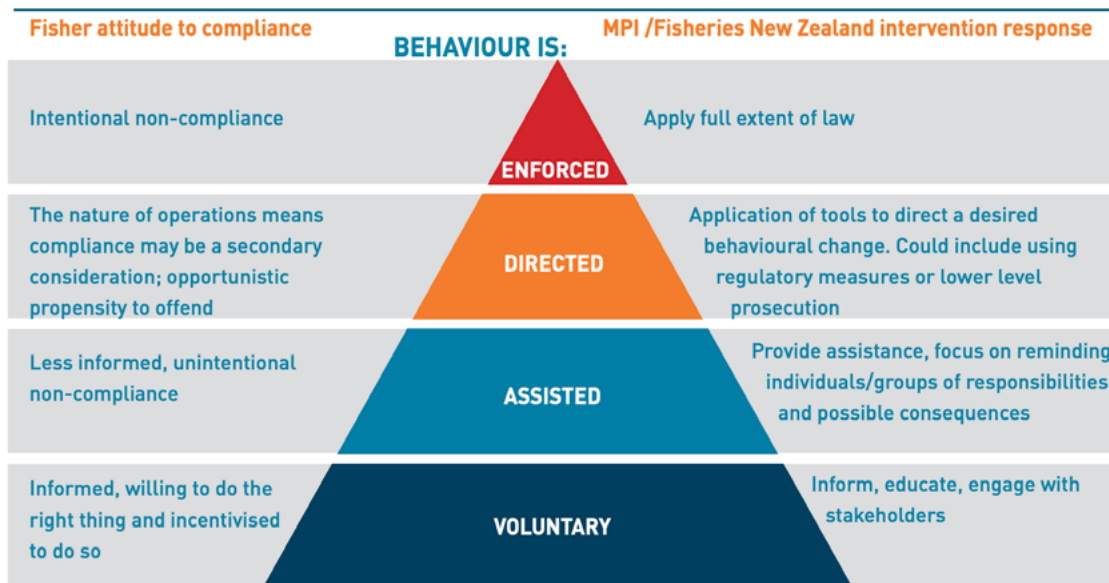


Figure 2: Overview of the VADE operating model.

The QMS is supported by a comprehensive set of regulations under the Fisheries Act (see Annex 1) that govern fishing practices, such as what fish must be retained or returned to the sea, gear restrictions (often related to specific areas and seasons), and reporting requirements. These reporting requirements cover not only at-sea activities, such as catches and fishing effort, but also the volumes of fish landed (including the processing state) and the entities to which the fish were sold. Aside from a small number of exceptions, all fish landed commercially must be sold to a Licensed Fish Receiver, who also has reporting obligations.

The Ministry for Primary Industries employs enforcement officers who monitor fishing activities, inspect vessels and catches, and investigate illegal fishing practices. It utilises ships and aircraft from the New Zealand Defence Force and other government agencies. Penalties for non-compliance may include fines, forfeiture of vessels and gear, imprisonment, and/or revocation of Individual Transferable Quotas.

## 2. Technologies in support of fisheries management, MCS and prosecution of infringements

Over the last decade, New Zealand has introduced significant updates to its data collection and verification system for commercial fishing as part of efforts to modernise the fisheries management framework.<sup>39</sup> This included the Fisheries (Reporting) Regulations 2017, which mandate near real-time (end-of-day) reporting of catch and effort, including protected species; the Fisheries (Geospatial Position Reporting) Regulation 2017, requiring all vessels to report their location in real time; and the Fisheries (Electronic Monitoring on Vessels) Regulations 2017, establishing a requirement for electronic monitoring to

<sup>39</sup> Ministry for Primary Industries, “How we manage New Zealand Fisheries”, available at: <https://www.mpi.govt.nz/fishing-aquaculture/fisheries-management/how-we-manage-new-zealands-fisheries/>

be operational on vessels using specific fishing methods in designated areas. Additionally, the requirements regarding which fish (species and sizes) must be kept on board or returned to the sea, as well as the offences and penalties for non-compliance, were also amended.<sup>40</sup>

### a) Mandatory systems for vessel operators

As noted above, New Zealand has made significant changes to the obligations on commercial fishers. These are outlined below.

- i. **Global Position Reporting (GPR).** The real-time reporting of vessel location is mandatory for all commercial fishing activities. The obligations are established within the Fisheries (Geospatial Position Reporting) Regulations 2017, and requirements of a more technical nature are outlined in the Fisheries (Geospatial Position Reporting Devices) Circular 2019.<sup>41</sup> The obligations are on the operator or master of the fishing vessel, and the data is provided directly to MPI in real-time.
- ii. **Electronic Reporting (ER).** The near real-time completion of a range of reports is mandatory for all commercial fishing activities. The obligations are established within the Fisheries (Reporting) Regulations 2017, and requirements of a more technical nature are outlined in several Circulars.<sup>42</sup> These obligations cover a range of different reports, including catch and effort, landings and disposals, and interactions with protected species. The obligations are on the permit holder, and the data are submitted in near real-time to a third party (see section 3.4)<sup>43</sup> and then to the Ministry for Primary Industries.
- iii. **Electronic Monitoring (EM).** Onboard cameras must be operated on all vessels in specific fisheries. New Zealand has prioritised EM in “mixed fisheries” (i.e., fisheries that catch multiple species simultaneously), especially where observer coverage is difficult or not cost-effective. Currently, more than 200 vessels require cameras to operate.

### b) Voluntary systems for vessel operators

EM in New Zealand fisheries has evolved over the last two decades, progressing from pilot studies to voluntary trials and ultimately to widespread implementation. Initially, EM

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40 There are also reporting requirements under the Fisheries (Amateur Fishing) Regulations 2013 concerning those vessels that take paying non-commercial fishers fishing. These vessels are known as Amateur Charter Vessels (ACVs), but are not considered further in this report.

41 The Fisheries (Geospatial Position Reporting) Regulations 2017 require commercial fishers to carry and operate a Geospatial Position Reporting (GPR) device, which replaces the older Satellite Vessel Monitoring System (VMS) requirement. AIS transponders can be used as an alternative to GPR, provided they meet position reporting standards (one report every 3 minutes, public broadcast, coverage limitations, etc.)

42 In some instances a RFMO or other international body (e.g. CCAMLR) might have different requirements for reporting and these requirements will be imposed through a High Seas fishing permit issued to a vessel.

43 The third party is Fishserve. Established in 1999, Fishserve provides the services that support and enhance the operation of the Quota Management System through purpose-built web-based software that delivers industry and government with a single, secure platform, and the public with access to [registry information](#) as set out in the Fisheries Act 1996.

systems were used to monitor interactions between fishing gear and protected species, such as marine mammals and seabirds, particularly in inshore trawl and set net fisheries. These early trials focused on assessing the effectiveness of EM in capturing relevant data and identifying potential issues.

As with most new technologies, different stakeholders will perceive both positive and negative aspects of EM, and these views will vary significantly across groups. Some stakeholders faced a “fear of the unknown” or an aversion to change due to the uncertainty about system costs, reliability, impact of additional monitoring, and the extra work EM obligations may require. The early voluntary pilot projects and effective dissemination of the results helped to demystify EM. As experience with EM increased, more mitigating mechanisms emerged to address these challenges. Early engaged stakeholders tended to become supporters of EM, and their support can help positively influence others.

### c) Technology used at the discretion of the New Zealand authorities

Alongside insights from Global Position Reporting (GPR), license fish receivers reports, observer data and EM, the Ministry for Primary Industries utilises various other Maritime Domain Awareness technologies and data sources, such as AIS, electro-optical (EO) imagers, synthetic aperture radar (SAR), and radio frequency (RF) geolocation systems, to monitor fishing activities and identify offences. These technologies have restricted access (they are subject to the withholding provisions of Section 6 of the Official Information Act 1982) and are used for targeted operations based on compliance risks.

### d) Databases

The Ministry for Primary Industries employs a hybrid approach to database management. On the one hand, GPR and EM data are sent directly to the Ministry and held in databases. On the other hand, electronic catch and reporting data are submitted to Fish-Serve, an Approved Service Delivery Organisation authorised under the Fisheries Act,<sup>44</sup> which is responsible for a range of administrative tasks for commercial fishing and the Quota Management System. These data are provided in near real-time to the Ministry, whose fisheries research databases are managed under contract by the National Institute of Water and Atmospheric Research (NIWA)<sup>45</sup>, a Crown Research Institute (a government-owned company) established to undertake scientific research and related activities under the Crown Research Institutes Act 1992. Ownership is held equally between shareholding ministers appointed by the New Zealand government and governed by a government-appointed Board of Directors.

The Ministry for Primary Industries has recently established an Enterprise Data Warehouse,<sup>46</sup> managed directly by Fisheries New Zealand. It is a valuable database containing fisheries datasets, including electronic reporting, legacy catch effort, and monthly harvest returns, which have been modelled for analysis and reporting.

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44 Part 15, 296 B <https://www.legislation.govt.nz/act/public/1996/0088/latest/DLM399509.html>

45 <https://marlin.niwa.co.nz/databases>

46 <https://www.mpi.govt.nz/dmsdocument/45553-EDW-Electronic-Data-Warehouse/>



### e) Disclosure of fisheries data and access to relevant information by interested parties

In developing the overall systems for GPR, electronic reporting, and electronic monitoring, a range of protection has been implemented, as determined through Privacy Impact Assessments, to safeguard this data. New Zealand actively publishes a range of fisheries datasets online,<sup>47</sup> and data can also be requested under either the Privacy Act or the Official Information Act. For the public, fisheries data are considered “official information” and can be requested. However, its release is subject to the withholding provisions of the Privacy Act 2020 and the Official Information Act 1982.

At an operational level, these legislative provisions are reflected in the “Guidelines for the Release of Fishery Information”.<sup>48</sup> It would be uncommon for this information to be released in anything other than a highly aggregated form (i.e., captures per trip, number of interactions with protected species, etc.) and only with the permission of the operator or master of the fishing vessel. Sometimes, government agencies establish memoranda of understanding to facilitate the exchange of information.

For external agencies (such as NGOs, research groups, universities, etc.), information will only be provided upon request, in accordance with the Privacy Act 2020 and the Official Information Act 1982. Requests must include an explanation of the reasons for the request. However, public offices have many grounds to withhold access to relevant fisheries information (such as Section 6 of the Official Information Act 1982, “to prejudice the maintenance of the law, including the prevention, investigation, and detection of offences, and the right to a fair trial”).

### f) E-Data for fisheries management, MCS and enforcement

New Zealand authorities actively utilise electronic data for various purposes, including scientific ones (such as stock assessments, developing or refining fisheries management objectives, and creating fisheries regulations) and compliance (monitoring and detecting offences). All information and data, including e-data, collected by New Zealand authorities are stored in secure databases and are subject to verification and validation by the authorities.

For all catch and effort data, there are at least two levels of validation:<sup>49</sup> (1) primary validation, such as species codes using only letters and weights using only numbers; and (2) secondary validation, such as species being likely within specific fisheries. Any errors are notified to the permit holder for correction, but subtle errors are often identified and corrected during scientific analyses. New Zealand authorities also perform both automated and manual discrepancy checks by comparing data from multiple sources (e.g., report-

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<sup>47</sup> <https://www.mpi.govt.nz/fishing-aquaculture/sustainable-fisheries/managing-the-impact-of-fishing-on-protected-species/seabirds-and-protected-marine-species-caught-by-commercial-fishers-quarterly-report/>

<sup>48</sup> <https://www.mpi.govt.nz/dmsdocument/34803/direct/>

<sup>49</sup> In the context of this report, Data validation is the process of ensuring data accuracy and consistency by checking it against predefined rules and criteria before it is used or processed.

ed catches versus observer or EM data). To facilitate this operation, a range of statistical analysis tools and alerts has been developed by integrating GPR and electronic reporting data.

All GPR, ER and EM data can be used to support infringement notices and court prosecutions. Typically, this information is used to investigate breaches of the Fisheries Act. However, it can also be utilised for prosecuting violations of other legislation when shared with other agencies under “maintenance of the law” requests (Principle 11(e)(i) of the Privacy Act).

### 3. Administrative and criminal procedures

New Zealand legislation outlines the evidentiary standards for administrative procedures and criminal prosecutions related to fishing infringements. These standards allow the use of various types of data and information, including electronic data. The reliability of data is vital and is mainly linked to recognised data types and formats that are collected and maintained according to standards, specifications, and processes mandated by New Zealand regulators.

#### a) Administrative procedures

The Fisheries Act 1996 allows the chief executive of the Ministry for Primary Industries to impose monetary penalties for admitted offences. Infringement notices can also be issued for breaches of bylaws and regulations. If a person admits to a fisheries offence, the chief executive can impose a monetary penalty, but it cannot exceed one-third of the maximum fine that a court could impose.<sup>50</sup>

The participation and role of private citizens or entities, such as providing facts to the fisheries compliance authority about what may constitute evidence of a violation or infringement, are not regulated by the 1996 Fisheries Act (it does not necessarily mean that such actions are prohibited either).

#### b) Criminal procedure

The Ministry for Primary Industries, as the national fisheries regulatory authority, gathers, assesses, and compiles all relevant evidence, including electronic data, and determines whether to send fisheries compliance matters for prosecution. Although the Ministry has its prosecution policies and guidelines,<sup>51</sup> the responsibility for prosecutions may also rest with the Crown (through Crown Solicitors and Police) or other government agencies. The specific agencies involved depend on the type of offence and the relevant legal framework.

New Zealand has implemented EM, ER, and GPR to enhance fisheries compliance and transparency. While early enforcement focused on GPR, 2024 marked a turning point

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50 <https://www.legislation.govt.nz/act/public/1996/0088/280.0/DLM397392.html>

51 <https://www.mpi.govt.nz/dmsdocument/16279-MPI-Organisational-Prosecutions-and-Infringements-Policy/>



with prosecutions based on onboard camera footage, guided by the Fisheries (Electronic Monitoring on Vessels) Regulations 2017. The integrity and effectiveness of the process can be exemplified by the following two recent cases available in the public domain.

On 13 January 2025, Tony Peter Phillipson and Alfred Fishing Ltd pleaded guilty to charges of omitting information from a record under the Fisheries Act.<sup>52</sup> The prosecution was the first of its kind by the Ministry for Primary Industries based on evidence from the EM on-board camera program. According to the summary of facts supplied by the Ministry, in August 2023, Phillipson, in charge of the Fishing Vessel *Jeanette* with a crew member, conducted a fishing trip involving 19 bottom trawls. The footage showed the overboard disposal of snapper, a quota species, which cannot be legally discarded unless they are less than the minimum legal size. The disposal was not recorded on the Electronic Reporting requirement in six of the tows. Furthermore, the footage also proved that Phillipson's report of tow 15 did include snapper, despite many of the snapper thrown overboard being above the minimum size, and as such, should not have been returned to the sea. The nature of the offence suggested Phillipson was "high-grading"<sup>53</sup> the snapper caught to avoid incurring deemed value liability.<sup>54</sup>

The second case concerns a 14 February 2025 verdict whereby Macnicol Fishing Limited was sentenced in the North Shore District Court on three charges under the Fisheries Act, following a successful prosecution by Fisheries New Zealand.<sup>55</sup> The company failed to use tori lines, which are required to prevent accidental seabird capture when surface longlining. Video footage showed that one of Macnicol's fishing vessels, *Carolina M*, was longlining without employing a bird-scaring device, increasing the risk of catching endangered seabirds. Additionally, another vessel operated by the company, *Kiella*, submitted an electronic report that misidentified the area where the fish was harvested, as proven by analysis of GRP and ER. On a later fishing trip, the *Kiella* filed another incorrect electronic report related to its catch of snapper and trevally, which was not substantiated by cross-checking the electronic reports submitted to the Licensed Fish Receiver, where the catches were landed.

The above examples prove that the analysis of EM footage, inconsistencies in the submitted electronic logbook, the Licensed Fish Receiver reports, and the vessel's GPR position during the periods under consideration provided the statutory basis for the cases, thereby validating the acceptance of electronic evidence.

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52 <https://www.thepress.co.nz/nz-news/360546434/fisherman-caught-camera-disposing-undeclared-snapper>

53 A practice where fishers discard certain fish from their catch, even if they are of marketable size and quality, in order to keep only the most desirable or valuable individuals. This is often done to maximize profit or meet specific quota requirements.

54 Deemed values are a financial penalty applied to commercial fishers who land fish in excess of their Annual Catch Entitlement (ACE). Fishers can either buy more ACE or pay the deemed value, which is typically set higher than the cost of ACE to incentivize responsible fishing.

55 <https://www.mpi.govt.nz/news/media-releases/fishing-company-fined-16500-for-not-using-tori-line-submitting-false-statement-on-fish-landing-return/>



## 4. Conclusions

The rollout of GPR, ER and EM has significantly modernised the New Zealand fishery management system and increased the information available for fisheries management, monitoring, and offence detection. The New Zealand experience shows that these tools are stronger when used together, leading to changes in fisher behaviour and improvements in reporting. However, this can also mean that the relativity of Fisher-reported data time series has changed. Therefore, the rollouts needed to be treated as formal “change processes” with a focus on fishers’ engagement, the provision of guidance materials, and a strong emphasis on education from the compliance officer’s post-rollout.

Equally, the rollout demonstrated the importance of prioritising monitoring objectives to enable better configuration of the EM system. It also highlighted the value of industry involvement in project design and the potentially significant cost savings of EM over human observer programs.

Like Australia, the effectiveness of New Zealand’s EM system relies on the comprehensive integration of innovative technology and the cooperative involvement of the sector. Both requirements are based on a well-established, effective legal framework for electronic evidence, a strong societal commitment to data transparency and accountability, and substantial human and financial resources.

It is also relevant to recognise the role that civil society and the media play in the EM implementation process. Civil society organisations, notably environmental NGOs, lobbied for improved fisheries management and emphasised the need for more accurate data collection and reporting. The media increased public awareness of the benefits of EM, particularly its impact on species of interest (Maui Dolphins<sup>56</sup> and Seabirds<sup>57</sup>), and called for greater accountability from fishing companies, specifically, and fisheries management more broadly.

Overall, New Zealand’s experience with EM demonstrates that effective rollout requires more than technology. Success depends on strong governance, meaningful engagement, support of the wider society, legal clarity, and adaptive management. These lessons provide a pathway for other jurisdictions considering or expanding EM programs in their fisheries.

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<sup>56</sup> <https://www.nzherald.co.nz/nz/delay-in-monitoring-wont-see-more-dead-dolphins-minister/2C6Q47SLRVVT7XZ-MLTVDNKOVCY/>

<sup>57</sup> <https://wwf.org.nz/demand-more-cameras-fishing-boats>



## Annex 1. List of legislation

| Relevant legislation  | Link  |
|---|---|
| Fisheries Act 1996  | <a href="https://www.legislation.govt.nz/act/public/1996/0088/latest/DLM394192.html">https://www.legislation.govt.nz/act/public/1996/0088/latest/DLM394192.html</a>   |
| Official Information Act 1982                                       | <a href="https://www.google.com/url?sa=t&amp;source=web&amp;rct=j&amp;opi=89978449&amp;url=https://www.legislation.govt.nz/act/public/1982/0156/latest/whole.html&amp;ved=2ahUKEwi-a8q6R6-iMAxX6BNsEHQWOL7sQFnoECBsQAQ&amp;usg=AOvVaw-3j7XvksUe6wxQGd5DifErc">https://www.google.com/url?sa=t&amp;source=web&amp;rct=j&amp;opi=89978449&amp;url=https://www.legislation.govt.nz/act/public/1982/0156/latest/whole.html&amp;ved=2ahUKEwi-a8q6R6-iMAxX6BNsEHQWOL7sQFnoECBsQAQ&amp;usg=AOvVaw-3j7XvksUe6wxQGd5DifErc</a>       |
| Privacy Act 2020  | <a href="https://www.google.com/url?sa=t&amp;source=web&amp;rct=j&amp;opi=89978449&amp;url=https://www.legislation.govt.nz/act/public/2020/0031/latest/LMS23223.html&amp;ved=2ahUKEwiuj-vur7OiMAxVSVvEDHX0vNsEQFnoECAkQAQ&amp;usg=AOvVaw2tkk-CZQRGx3b9sNiWFZfCC">https://www.google.com/url?sa=t&amp;source=web&amp;rct=j&amp;opi=89978449&amp;url=https://www.legislation.govt.nz/act/public/2020/0031/latest/LMS23223.html&amp;ved=2ahUKEwiuj-vur7OiMAxVSVvEDHX0vNsEQFnoECAkQAQ&amp;usg=AOvVaw2tkk-CZQRGx3b9sNiWFZfCC</a> |
| Relevant Regulations  | Link  |
| Fisheries (Geospatial Position Reporting) Regulations 2017          | <a href="https://legislation.govt.nz/regulation/public/2017/0155/latest/DLM7330540.html?search=ts_act%40bill%40regulation%40deemedreg_fisheries_resel_25_y&amp;p=1">https://legislation.govt.nz/regulation/public/2017/0155/latest/DLM7330540.html?search=ts_act%40bill%40regulation%40deemedreg_fisheries_resel_25_y&amp;p=1</a>   |
| Fisheries (Electronic Monitoring on Vessels) Regulations 2017       | <a href="https://legislation.govt.nz/regulation/public/2017/0156/latest/DLM7329212.html?search=ts_act%40bill%40regulation%40deemedreg_fisheries_resel_25_y&amp;p=1">https://legislation.govt.nz/regulation/public/2017/0156/latest/DLM7329212.html?search=ts_act%40bill%40regulation%40deemedreg_fisheries_resel_25_y&amp;p=1</a>   |
| Fisheries (Reporting) Regulations 2017                              | <a href="https://legislation.govt.nz/regulation/public/2017/0154/latest/DLM7324101.html?search=ts_act%40bill%40regulation%40deemedreg_fisheries_resel_25_y&amp;p=1">https://legislation.govt.nz/regulation/public/2017/0154/latest/DLM7324101.html?search=ts_act%40bill%40regulation%40deemedreg_fisheries_resel_25_y&amp;p=1</a>   |
| Other relevant documents  | Link  |
| Guidelines for the release of fishery information                   | <a href="https://www.mpi.govt.nz/dmsdocument/34803-Guidelines-for-Release-of-Fisheries-Information">https://www.mpi.govt.nz/dmsdocument/34803-Guidelines-for-Release-of-Fisheries-Information</a>   |
| Electronic catch and position reporting - privacy impact assessment | <a href="https://www.mpi.govt.nz/dmsdocument/42006-IEMRS-privacy-impact-assessment-2020-">https://www.mpi.govt.nz/dmsdocument/42006-IEMRS-privacy-impact-assessment-2020-</a>   |
| Onboard cameras - privacy impact assessment                         | <a href="https://www.mpi.govt.nz/dmsdocument/58234-On-board-cameras-project-privacy-impact-assessment-July-2023">https://www.mpi.govt.nz/dmsdocument/58234-On-board-cameras-project-privacy-impact-assessment-July-2023</a>   |
| Onboard cameras - general information on privacy protections        | <a href="https://www.mpi.govt.nz/fishing-aquaculture/commercial-fishing/fisheries-change-programme/on-board-cameras-for-commercial-fishing-vessels/privacy-and-on-board-cameras/">https://www.mpi.govt.nz/fishing-aquaculture/commercial-fishing/fisheries-change-programme/on-board-cameras-for-commercial-fishing-vessels/privacy-and-on-board-cameras/</a>   |



## Annex 2. Technology overview

|   | Mandatory / Voluntary                               | Responsible for providing e-data                   | Responsible for receiving and keeping data    | e-data public?          | e-data shared?                                  | Technology certified     |
|---|---|--|---|-------------------------|---|--------------------------|
| AIS   | Mandatory for some fishing vessels in certain areas | Vessel operator                                    | Publicly available via satellite subscription | Public                  | Public  | No                       |
| GRP/VMS   | Mandatory   | Vessel operator                                    | Government authority MPI                      | Confidential - with MPI | For enforcement between Govt agencies           | Yes                      |
| Electronic reporting (elogs)                                | Mandatory for vessels in certain fisheries          | Vessel operator                                    | FISHServe on behalf Government authority MPI  | Confidential            | Aggregated data only                            | Yes                      |
| Onboard electronic monitoring                               | Mandatory for select fisheries                      | Vessel operator                                    | Government authority MPI                      | Confidential            | Within Govt agencies for Science and Compliance | Yes                      |
| Photos & videos from satellites, drones, vessels & aircraft | Discretionary use by Govt authorities               | Government authority (fisheries and non-fisheries) | Government authorities                        | Confidential            | For enforcement between Govt agencies           | Vessels and aircraft Yes |





### **Case Study: The Republic of the Marshall Islands**

The following section provides an overview of fisheries management, legislation, and the application of technologies and electronic data for monitoring, control, and surveillance (MCS) as well as enforcement in the Republic of the Marshall Islands (RMI). This part will begin by providing a brief background of the RMI as an archipelagic state and fishing nation. It then presents the primary technologies currently in use to support fisheries management and compliance, discussing the role that e-data plays in the RMI.

# 1. Background

## a) The Marshall Islands as a fishing nation

The RMI comprises 29 coral atolls and five individual islands situated in the equatorial and tropical Pacific Ocean, positioned between 2° and 17°N latitude and 157° and 175°E longitude. It has an exclusive economic zone (EEZ) of approximately 2,131,000 km<sup>2</sup>, with a land area of about 181 km<sup>2</sup>, making it the fourth-largest EEZ among Pacific Island states (excluding territories) and the 19th-largest EEZ in the world. Nearly half of its EEZ borders international waters to the north, while the other half adjoins three other Pacific Island nations –the Federated States of Micronesia, Nauru, and the Republic of Kiribati– to the south.

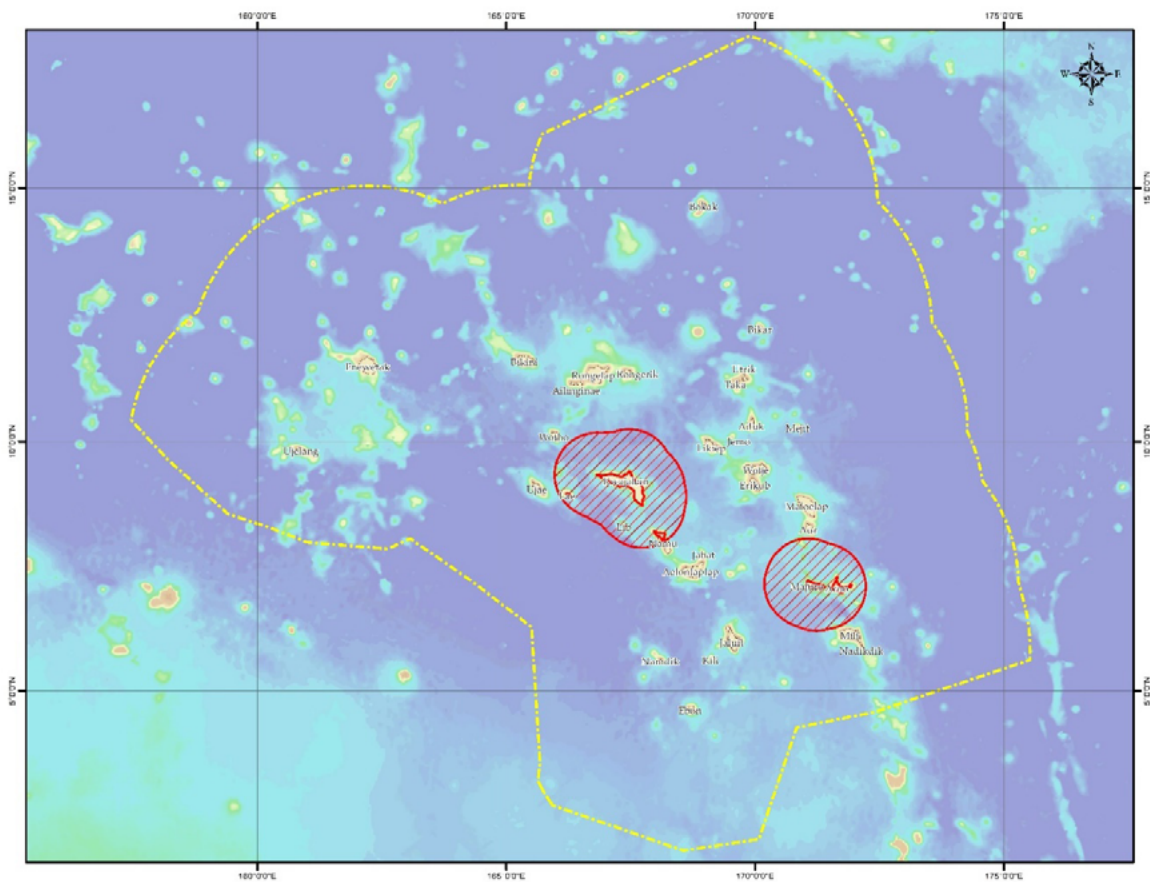


Figure 3: Maritime limits of RMI

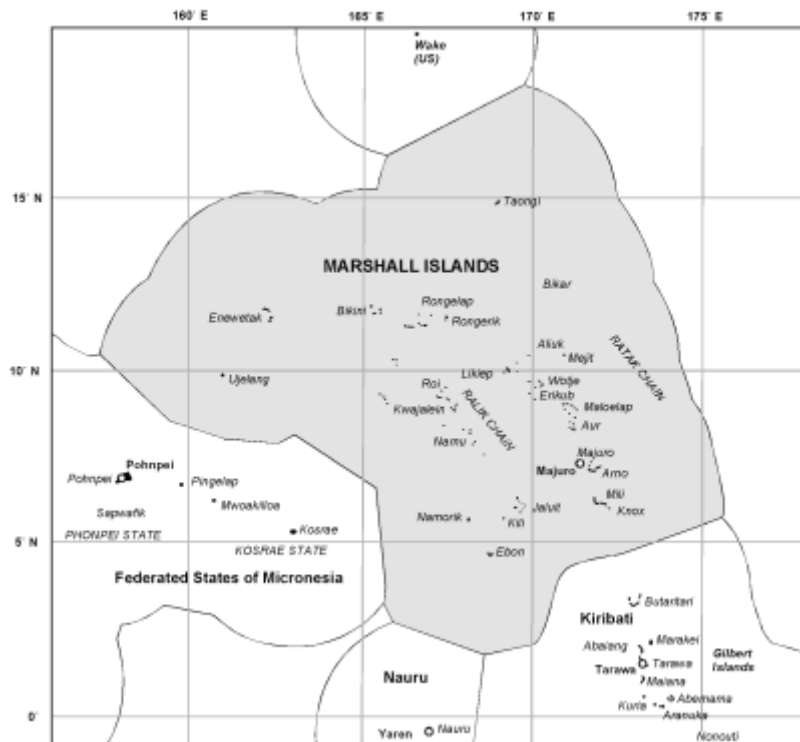


Figure 4: Maritime limits of RMI and neighbouring countries

With a GDP of \$280 million in 2022, the RMI is one of the smaller economies in the Pacific, accounting for 0.7% of regional GDP. The RMI has a population of 42,000 (as of 2022), resulting in a GDP per capita of \$6,700, which ranks fifth among Pacific Island states. While the RMI is classified as a microstate,<sup>58</sup> the country’s Exclusive Economic Zone (EEZ) covers 1.99 million square kilometres, the 19th largest globally, and is comparable in size to the EEZ of Portugal. RMI has the third-highest official development assistance-to-GNI ratio in the Pacific Islands region, with aid accounting for approximately 47% of the country’s GNI. With a score of 0.731, RMI’s Human Development Index ranks 102nd out of 193 ranked countries<sup>59</sup>.

As a coastal state in the Western Central Pacific Ocean, marine resources are vital to the RMI. With the introduction of the Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest, commonly referred to as the Parties of the Nauru Agreement (PNA) and its Vessel Day Scheme in 2010 (see section 2.2), offshore tuna fishery revenues have become a significant income source.

The main species by volume in RMI’s oceanic fisheries are skipjack, yellowfin, and bigeye tuna, among others. Skipjack is the dominant species, accounting for 89% of the catch. The primary industrial fishing method is purse seine, followed by longline and pole-and-line. However, longline fishing is more widely distributed across the RMI’s EEZ than purse-seine fishing, which is concentrated in the southern waters. In 2023, the total

58 Thomas D Grant “Micro States” (last updated February 2013) in A Peters (ed.), *The Max Planck Encyclopedia of Public International Law* (OUP 2008-) <[www.mpepil.com](http://www.mpepil.com)> (accessed 21 September 2025).

59 Lowy Institute Pacific Aid Map. <https://pacificaidmap.lowyinstitute.org/country/marshall-islands/#4.985/167.03/8.162>

catch by purse-seine fleets operating in the RMI's Exclusive Economic Zone (EEZ) rose to 44,232 metric tons, an increase from 41,123 metric tons in 2022.

Approximately 200 foreign vessels are licensed to fish in RMI, but not all fish in any given year. These include fleets from Taiwan, South Korea, Kiribati, Nauru, Japan, Tuvalu, China, Vanuatu, the Solomon Islands, and Papua New Guinea. Equally, RMI operates eleven nationally flagged foreign-owned purse-seine vessels exclusively in the Western and Central Pacific Ocean and approximately 30 chartered longline vessels within its EEZ, all based in Majuro. There are no small-scale fishing companies per se, only some operators in the outer atolls targeting reef fish.

Majuro is the only designated port for transshipment in RMI and a central regional hub for purse-seine transshipment. Majuro has been identified as the second-busiest fishing port in the world after Busan (South Korea), based on the number of foreign vessel visits (1,168), and as the first in the world for foreign fishing vessel hold size (943,000 m<sup>3</sup>).<sup>60</sup>

## **b) Fisheries governance**

The Marshall Islands Marine Resources Authority (MIMRA) is responsible for the national development and management of marine resources within the RMI. MIMRA operates under the Marine Resources Act 1997 (as amended in 2001, 2006, 2011, 2016 and 2018), which establishes a comprehensive framework for fisheries management. MIMRA is led by a 7-member Board of Directors, headed by the Minister of Natural Resources and Commerce, who serves as the Chairman of the Board and reports to the Prime Minister's Cabinet (the Cabinet may give directions to the Board in writing with respect to policy matters, and the Board shall give effect to such directions). The functions, roles, and responsibilities of MIMRA and its staff are defined in Part II of the Marine Resources Act 1997<sup>61</sup>.

The RMI's coastal fisheries governance is rooted in food security and community livelihoods. Management is primarily carried out through local or community-based measures (e.g., size limits, seasonal closures, marine protected areas), with MIMRA providing support, while day-to-day responsibility rests with local governments and communities. In contrast, offshore pelagic fisheries, particularly tuna, are managed centrally by MIMRA within a framework of regional agreements. These fisheries are commercially oriented, generate significant government revenue through licensing and access fees, and are regulated through licensing, observer programs, and electronic monitoring systems rather than community-level rules.

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60 Hosch, Gilles; Soule, Bradley; Schofield, Max; Thomas, Trevor; Kilgour, Charles; and Huntington, Tim (2019) "Any Port in a Storm: Vessel Activity and the Risk of IUU-Caught Fish Passing through the World's Most Important Fishing Ports," *Journal of Ocean and Coastal Economics*: Vol. 6: Iss. 1, Art.

61 [https://www.rmimimra.com/media/attachments/2020/08/03/marshallislandsmarineresourcesact1997\\_3-1.pdf](https://www.rmimimra.com/media/attachments/2020/08/03/marshallislandsmarineresourcesact1997_3-1.pdf)



This case study describes the RMI's adoption of cutting-edge e-data systems for its fisheries, primarily in relation to its oversight of the tuna fishery. Any lessons or best practices derived from this case should be understood in the context of supporting the governance of regional cooperation in managing a large, commercially oriented fishery.

### c) Institutional arrangements

MIMRA's specific powers concerning fish and fishery resources are provided for in the Fisheries Act 1997 (as amended in 2011 and 2017), Part 1, Sections 203-209, 211-213. They include the authority to adopt management measures for fish stocks based on the best available scientific evidence and a list of competences to make decisions on implementing management principles and goals, some of which align with Articles 5 and 6 of the UNFSA (including the application of precaution and broader ecosystem considerations).

MIMRA is also guided by the Fisheries Enforcement Act 1997 (as amended)<sup>62</sup>, the Marshall Islands Maritime Zones Declaration Act 2016 (2016), the Fishing Access and Licensing Act 1997<sup>63</sup> (amended 2011), and other instruments like the Tuna Management Plan 2020-2025<sup>64</sup>, the National Plan of Action to Prevent IUU Fishing (2020-2025)<sup>65</sup> and the RMI National Plan of Action on Sharks 2024-2029.

Regarding the by-law, the Marshall Islands Cabinet approves all fisheries regulations promulgated by MIMRA, under the authority granted by the Fisheries Act 1997. Like domestic regulations, binding decisions adopted under regional agreements to which the RMI participates are also implemented domestically, most significantly the Western and Central Pacific Fisheries Commission, and those adopted under the 1982 Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Stocks (Parties to the Nauru Agreement, PNA) follow a similar process. Such regional measures are discussed through MIMRA and then submitted to the Cabinet for endorsement.

Within MIMRA, the Oceanic and Industrial Affairs Division has specific subtasks relevant to fisheries management, including licensing, the national fisheries database (data collection and statistics), research and monitoring (port sampling and observer programmes), international liaison, and collaboration in national MCS.

### d) Regional arrangements and MCS measures

A critical element to understanding the RMI's and MIMRA's fisheries governance system is the relationship with the Western and Central Pacific Fisheries Commission (WCPFC), the most relevant RFMO in the area. As one of the founding members of the WCPFC, the RMI enforces WCPFC conservation and management measures. These

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62 [https://www.rmimimra.com/media/attachments/2020/08/03/fisheriesenforcementact\\_1.pdf](https://www.rmimimra.com/media/attachments/2020/08/03/fisheriesenforcementact_1.pdf)

63 [https://www.rmimimra.com/media/attachments/2019/09/08/fishingaccessandlicensingact\\_1.pdf](https://www.rmimimra.com/media/attachments/2019/09/08/fishingaccessandlicensingact_1.pdf)

64 <https://www.rmimimra.com/media/attachments/2020/10/19/mimra-tmp-2021-2025.pdf>

65 <https://www.rmimimra.com/images/Resources/NPOA-IUU%202020-2025.pdf>



measures are implemented through minimum terms and conditions that each WCPFC member must apply to each vessel licensed to fish in its national waters, including all ships fishing within RMI's EEZ and RMI's vessels when fishing throughout the WCPFC waters. The Technical and Compliance Committee of the WCPFC assesses RMI's performance against the implementation of the WCPFC measures annually under the conditions of WCPFC 2011-06 (CMM 2010-03/2011-06).

Equally, in addition to RMI's domestic regulations and measures agreed under the WCPFC, the RMI also participates in the Nauru Agreement. This treaty imposes additional rules and conditions for vessels that the RMI may authorise to fish within its EEZ. For example, it imposes on purse seine vessels licensed to fish in the PNA parties' waters a prohibition on fishing in the high sea's pockets between their EEZs. Other PNA requirements include a prohibition on setting purse-seine nets around whale sharks, a temporary ban on fishing near fish aggregation devices, 100% observer coverage aboard purse-seiners, a minimum mesh size, and retention of all tuna catch on board (no discards). These PNA-specific measures supplement those in national legislation and relevant RFMOs (essentially, WCPFC) and may need additional MCS means and efforts to ensure compliance with them.

The RMI is also a founding member of the Pacific Islands Fisheries Forum Agency (FFA),<sup>66</sup> which serves as an advisory body supporting regional MCS cooperation. There is a critical relationship between the FFA and its member states regarding MCS measures, as well as potential projections and cooperation regarding e-data. The FFA's Secretariat provides access to shared MCS tools and a menu of harmonised policies, while member states, such as RMI, implement them via national agencies like MIMRA. In this setup, the Fisheries Operations Division is the FFA division directly responsible for supporting member countries in their efforts to combat IUU fishing. This FFA Division provides a menu of recommended standardised policies and complementary operational and technical support, some of which are relevant to the collection of e-data and described in further detail below.

As part of this arrangement, the RMI implemented the FFA regional satellite VMS in 1998. This regionally harmonised rules package required all vessels fishing in the waters of FFA Members to report their activities using an electronic, satellite-based VMS system. The FFA regional VMS framework catalysed the WCPFC's adoption of a similar suite of requirements in 2007.

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66 Established in 1979 and based in Honiara (Solomon Islands), the Pacific Islands Forum Fisheries Agency (FFA) is a regional intergovernmental organisation established to support its member countries in managing and sustainably using tuna and other highly migratory fish stocks within their exclusive economic zones. The FFA provides scientific, technical, and policy advice to member states, serves as an umbrella for regional cooperation, and enhances national capacity to ensure member countries benefit socially and economically from their fisheries resources. It is funded partly through a mix of member country contributions and cost recovery from industry. Still, most of its project-level funding comes from donor support from developed economy partners with commercial interests in the fishery or geopolitical interests in the region. A significant portion of this support may include in-kind contributions, such as satellite surveillance resources.

Over time, the integration of this VMS data with various other data sources has evolved into FFA’s Regional Surveillance Picture, which is hosted in the Regional Fisheries Surveillance Centre at FFA headquarters in Honiara (Solomon Islands). The Regional Fisheries Surveillance Centre provides all 17 FFA members with real-time, up-to-date information on vessels operating in the region through a centralised hub that integrates FFA-VMS, WCPFC-VMS, and AIS data into a fused display environment, covering both their respective EEZs and the high seas. The FFA’s Regional Surveillance Picture tracks all vessels fishing and transiting their respective zones. It is linked to the FFA secure databases, which contain a range of fisheries information (such as registration and licence lists and AIS data) designed to assist national MCS officers in assessing the relative level of compliance of all vessels on the FFA VMS.

The RMI receives data from the Regional Surveillance Picture via MIMRA’s “MCS Operation Room” at its headquarters in Majuro. This room is enhanced by additional Maritime Domain Awareness tools (MDA, or the comprehensive and real-time understanding of all elements and activities at sea –events, vessels, cargo, infrastructure—that could impact a nation’s security, safety, economy, or environment) sourced by MIMRA, such as Starboard.nz. In addition to the routine monitoring and identification of potential IUU fishing vessels, the Regional Fisheries Surveillance Centre also coordinates four large annual MCS operations. These operations coordinate aerial and surface surveillance support from the so-called Quadrilateral Partners (Australia, France, New Zealand, and the United States), as well as the police forces, fisheries surface surveillance authorities, and port State authorities of the FFA Members.

Since 2018, MIMRA has coordinated approximately 300 hours of aerial surveillance during the four regional fisheries surveillance operations that occur annually in the RMI’s waters. Moreover, FFA has planned, coordinated, and supported an additional 1,400 hours of dedicated year-round aerial surveillance with neighbouring states. This programme involves FFA operational control and coordination over two King Air B200 aircraft equipped with state-of-the-art surveillance technology.

Furthermore, MIMRA and the Marshall Islands Sea Patrol (the national maritime law enforcement force of the RMI, which works to combat IUU fishing, trafficking, and other criminal activities within the RMI’s EEZ) carry out fisheries enforcement duties, primarily through at-sea boardings. The RMI Sea Patrol operates under the Department of Public Safety, reporting to the Ministry of Justice, and utilises the patrol boat *Lomor* (which is soon to be replaced), with support from the Royal Australian Navy’s Maritime Surveillance Advisor. Periodic patrols of the EEZ, averaging 100 days annually, are conducted based on information about fishing vessel activity provided by MIMRA and data generated from VMS coverage. These patrols are coordinated with aerial surveillance conducted by the US Coast Guard and FFA aircraft when operational in the RMI.

## 2. Technologies in support of fisheries MCS and prosecution of infringements

Data collection for MCS and infringement procedures is not restricted to a specific set of technologies and processes in the RMI. Instead, the RMI utilises a diverse array of technologies to monitor and manage fishing activities, analyse all information collected regarding these activities, and initiate infringement procedures in the event of a violation of fisheries law. As discussed above, these include VMS, an observer program with real-time report submission, and electronic reporting tools, all of which are supported by regional, sub-regional, and national means.

Additionally, while the RMI has participated in EM in fisheries trials over the last decade, it presently lacks laws or policies addressing EM. However, while formalising its national policies,<sup>67</sup> the RMI continues to be actively involved in regional trials and collaborations to incorporate EM into its fisheries management strategies.

The RMI participates actively in the WCPFC Electronic Reporting and Electronic Monitoring Intersessional Working Group (ER and EM-IWG).<sup>68</sup> The recent adoption in 2024 of the WCPFC Interim EM Minimum Standards<sup>69</sup>, establishing a long list of standards for the Onboard EM System components (including control centre, cameras, user interface, sensors), for the Installation, Operation, and Service of onboard EM Systems, for Data Review Centres, and an annex containing Guidelines for Administration of an EM Program, will ultimately establish a foundation for regulating the use of EM technologies under RMI's national laws.

### a) Mandatory systems for vessel operators

Under Section 507 of the Fisheries Enforcement Act, all fishing vessels licensed to fish in the RMI's EEZ must install a Mobile Transceiver Unit, and vessel operators are required to transmit data to the MIMRA. The VMS system is the FFA Trackwell, integrated into the FFA's Regional Surveillance Picture in Google Earth.<sup>70</sup> Two separate stations, one at MIMRA and the other at Marshall Islands Sea Patrol, track vessels through a Google interface using a traffic light system associated with the FFA compliance index, where red indicates Vessels of Interest. MIMRA has the authority to collect and review data generated by vessels fishing in the RMI EEZ through each vessel's MTU.

E-reporting is mandated as a licensing condition under the PNA Implementation Arrangements (First and Second Implementation Arrangements), which includes data on catch, effort, catch rates, and transshipment, all of which are fed into a single database:

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67 A ER/EM policy document is to be developed and implemented in 2026 with the support of the NZ government.

68 <https://www.wcpfc.int/file/1018473/download?token=VRpDP8-6>

69 "Interim Electronic Monitoring Minimum Standards, covering Technical, Data and Reporting Requirements" (WCPFC, 2024), available at <https://www.wcpfc.int/doc/data-08/interim-electronic-monitoring-minimum-standards-covering-technical-data-and-reporting>

70 <https://www.ffa.int/what-we-do/monitoring-control-surveillance/regional-fisheries-surveillance-centre/>

the PNA iFIMS portal (e-reporting occurs only through the e-log sheet via iFIMS). This requirement applies to vessels operating in the waters of PNA member countries, including in the RMI. Instances of non-compliance are addressed administratively and may result in the revocation of access to the fishery, as non-compliance may restrict vessel days under the PNA Vessels Day Scheme (VDS)<sup>71</sup>.

The iFIMS portal is a critical platform that integrates fishing industry reporting, including catch, vessel position, and activity data generated by the VMS, as well as fisheries observer reporting. Data related to catch and vessel activity, in particular EEZs of the PNA, can be viewed through iFIMS by individual PNA Parties, including the RMI. Companies can view their own information in the portal, access relevant details, and apply for licenses electronically through their portal—information that the system automatically submits to the PNA Office.

The iFIMS portal provides integrates multiple data streams and details that aid the full range of fisheries management work, including national fisheries authorities to share import and export data related to fisheries with the government’s customs department and with the Pacific Community (SPC) for stock assessments, for patrol boats on surveillance missions at sea (they can log into the “live” section of iFIMS to check vessel licenses, for example), for observer managers to manage their observers, including electronic reports, and to underpin the “chain of custody” of fish that is essential for exporting tuna to international markets and for gaining certification of the fishery, as PNA has accomplished for its skipjack and yellowfin purse seine free school fishery through the Marine Stewardship Council.<sup>72</sup> Other information available through iFIMS includes vessel licences and registrations, port sampling and unloading data, activity notifications, and boarding and inspection data.

## **b) Voluntary systems for vessel operators**

Most fishing operators use technologies that are not required by RMI legislation in their operations. For example, all purse seiners flagged to RMI and most longliners licensed nationally have EM systems on board for safety and operational controls. As such, under Section 507 of the Fisheries Enforcement Act, footage can be used as evidence, as can images from the on-screen tracking of navigational and fishing aggregation devices (FAD) plotters, as this data is stored, found in various formats, which can be collected and provided for electronic discovery (e-discovery) requests, and is accessible virtually anywhere.

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71 <https://www.pnatuna.com/content/pna-vessel-day-scheme>

72 “iFIMS. The backbone of PNA Fisheries Management” (2018), available at <https://www.pnatuna.com/content/ifims-backbone-pna-fisheries-management>



### c) Technology used at the discretion of the authorities

As discussed above, the RMI, as part of its MCS activities and in addition to regular inspection activities at sea or on land, has access to patrol vessels, aircraft and, more recently, Maritime Domain Awareness (MDA) tools, including satellite technology through collaboration with FFA and Starboard.nz.

Satellites are one of the tools which possess a distinctive advantage: they can continuously observe extensive ocean areas as the viewing radius expands with the observer's altitude. Most satellites for vessel detection orbit our planet at altitudes between 300 and 1,000 km (low Earth orbit) and scan the Earth's surface daily using various sensors. This coverage enables satellites to support comprehensive monitoring of significant ocean areas during operations, allowing patrol assets to investigate dark targets and providing enhanced MDA over extended periods. However, each satellite sensor has specific limitations on the area it can scan.<sup>73</sup>

Under regional frameworks, the FFA collects and analyses satellite data as part of coordinated surveillance operations, often supported in-kind by larger FFA members or partners – for example, the U.S., Japan, Australia, or New Zealand providing satellite imagery or technical expertise. The FFA processes this data centrally and delivers actionable intelligence to member countries, such as RMI, including alerts or evidence of IUU fishing. This system allows the RMI to leverage cutting-edge satellite monitoring without operating its own satellites.

### d) Databases

MIMRA maintains its own Fisheries Information Systems databases that house the information obtained from its activities. It also participates in the following regional ones:

- i. FFA Regional Register of Fishing Vessels and FFA Vessel Monitoring System.<sup>74</sup>
- ii. Under the Niue Treaty and the Niue Treaty Subsidiary Arrangement, some members of the FFA established the Niue Treaty Information System, which provides an online platform that facilitates secure sharing of information and resources between Parties. Parties to the NTSA can request information and resources from other Parties using the Niue Treaty Information System.
- iii. PNA iFIMS
- iv. Regarding port state measures under the FAO 2009 Port State Measures Agreement, PMSA, the RMI databases interact with the FFA e-PSM and the FAO Global Information Exchange System (GIES).<sup>75</sup>

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<sup>73</sup> Source: Satellite “dark vessel” detection for MDA. INFOFISH International 6/2022

<sup>74</sup> <https://vessel-register.ffa.int/>

<sup>75</sup> <https://www.fao.org/port-state-measures/operational-resources/gies/en>

### 3. E-Data for fisheries MCS and enforcement

MIMRA fisheries officers actively use electronic data to support MCS and enforcement activities and actions. This includes data collection, verification, validation and analysis processes.

#### a) E-Data analysis

All information obtained from VMS, AIS, using Starboard, platforms such as PNA’s iF-IMS, and other sources, including satellite data, weather data, and electronic reporting, converges in MIMRA’s MCS Operation Room. Its officers plot all information received, allowing for individual vessel and fleet analysis based on various criteria such as vessel names, individual vessels’ compliance histories, types of fishing gear, flag, IRSC, IMO number, location speed, overall speed, course, track, IAS data points for buoys, bathymetry, chlorophyll concentration, sea surface temperature, total wave height, and wind velocity, all framed over a mapping platform identifying all regional EEZ, archipelagic and territorial waters.

Using the FFA’s Regional Surveillance Picture, MIMRA officers can assign “risk levels” to specific vessels (Figure 5): green (low risk; ship is registered and licensed), amber (medium risk, vessel transiting), and red (high risk of conducting IUU fishing). The system is engineered to issue an alert when vessel activity breaches relevant regulations and/or vessel licensing requirements. It relies on an algorithm that integrates and evaluates multiple criteria, which are established by the FFA overall, although they are tailored for each FFA member state. The Regional Surveillance Picture displays three primary datasets—FFA VMS, WCPFC VMS, and AIS—on one common operating picture for 17 EEZs in 365 days and WCPFC VMS high seas data.

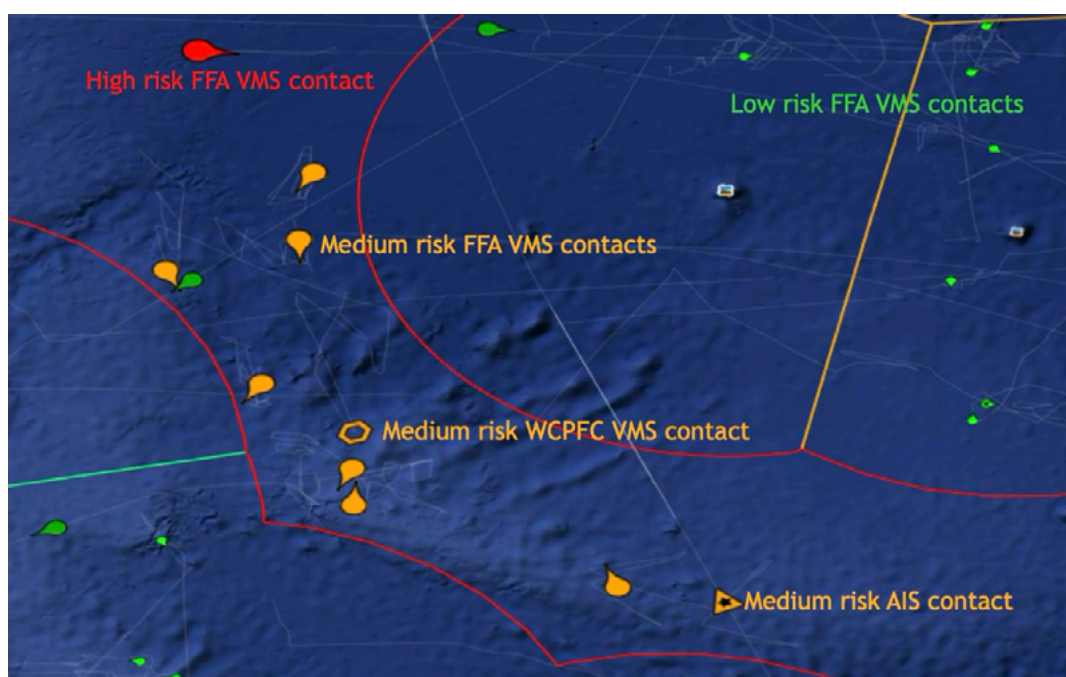


Figure 5: FFA “traffic light” risk levels

### **b) E-Data verification**

Data and images collected in the analysis are verified with local and regional assistance if necessary. Evidence collected by enforcement officers is consolidated in a “case” and presented to the “Chief Fisheries Officer” and the “Offshore Fisheries Advisor”, who revise the case and may contact the MCS advisors in FFA for their technical opinion and to provide any extra information that may be available. The case can then proceed to a notice of violation only after the officers, management, advisors, and legal counsel reach a consensus.

### **c) E-Data validation**

As data is sourced from commercially available systems, MIMRA does not impose data validation rules but relies on service providers’ data integrity standards. The guarantees of data validation do not necessarily ensure accuracy, and it is possible for data entry errors, such as misspellings, to be accepted as valid only to be subsequently purged during the verification process.

### **d) E-Data for enforcement action**

MIMRA fisheries officers are authorised to undertake enforcement action in accordance with national law and use all available data to support potential enforcement action. They consolidate and analyse all information acquired from the above sources, validating and verifying it with local and regional (FFA/PNA) assistance as necessary. As such, MIMRA officers are authorised to seize vessels, catch, gear and equipment on board vessels. This includes the seizure of electronic equipment such as global positioning systems (GPS), chart plotters, laptops, desktop computers, tablets or other devices that contain potential evidence in support of a fisheries investigation or prosecution. Under Section 508, paragraph (1) of the Fisheries Enforcement Act provides that “[o]wnership of all vessel monitoring system information generated by a mobile transmitting device required and operating under this legislation is vested in the Marshall Islands.” Should all evidence collected converge, MIMRA officers generate an affidavit for the legal counsel, initiating the enforcement action process.

### **e) E-Data for prosecution**

Generally, the enforcement action process culminates in out-of-court settlements. No available data indicates that illegal fishing incidents have been discussed in local courts. In cases of vessels flagged to another WCPFC party, the prosecution of offenders and compliance notifications can be facilitated through the WCPFC Technical and Compliance Committee. Open discussions under this multilateral forum can add additional pressure on flag states whose vessels operate in RMI waters to take actions that support the efforts of government agencies.



## 4. Administrative and criminal procedures

The RMI is a common law jurisdiction. Although the RMI lacks a general personal data protection law, a general data protection authority, and legislation governing cybersecurity, Section 13 of the Constitution stipulates that all persons shall be free from unreasonable interference in personal choices that do not harm others and from unjustified intrusions into their privacy. Equally, other criminal, financial, and tax-related laws could also protect personal data and might be applied to fisheries (e.g., the Criminal Code 2011 includes provisions on privacy violations, and various pieces of legislation in the financial sector address the protection of personal information). Nevertheless, as explained earlier, fishery cases rarely (none in the last 10 years) reach the court level and are typically resolved administratively, making it impossible to determine the effects and limits of these provisions when applied to the prosecution of IUU fishing.

### a) Administrative procedures

Title 51 of the Marshall Islands Revised Code contains five legislative references that grant MIMRA the legal authority to manage oceanic and coastal fisheries. Four pieces of national legislation, along with two key regulations, include penalty provisions for various offences committed by natural persons (e.g., masters, operators, crew members) and corporations (e.g., foreign or domestic fishing industries).<sup>76</sup>

Part II of the Fisheries Enforcement Act provides clear guidance regarding the powers available to Authorised Officers, i.e., those given the power to enforce this Act (duly sworn officers with the same rights and powers as police officers). Under the relevant section of the Act, a penalty for each offence is provided. The following table provides a summary of the schedule of fisheries offences and penalties.

| Offence   | Penalty   |
|---|---|
| Possess or obtain parts removed from a vessel impounded and disabled by authorities | US\$ 20,000 and 6 months imprisonment                           |
| Offence (obstructing) against an authorised officer                                 | US\$ 50,000 and/or 6 months imprisonment                        |
| ALC tampering   | US\$ 100,000 and/or 6 months imprisonment                       |
| Providing incorrect information to an authorised officer                            | US\$ 10,000 and/or 6 months imprisonment                        |
| Gear not stowed   | US\$ 100,000 and/or 6 months imprisonment                       |
| Contamination of fishery waters   | US\$ 500,000 plus clean-up costs                                |
| Repeated offending  | Maximum penalty applied plus suspension of license for 6 months |

<sup>76</sup> See Fisheries Act, Fishing Access and Licensing Act, Fisheries Enforcement Act, Fishing License (Third Implementing Arrangement) Regulation of 2009 and MIMRA Regulations 1998.

|  |   |
|--|---|
| Multiple offences  | In addition to any relevant fine, a ban from fishing for up to three years  |
| Fishing without a license  | US\$ 1m, forfeiture of vessel, gear and catch   |
| Any fine not paid within 30 days   | Revocation, suspension or conditions applied to license   |
| Non-reporting of catch and effort  | US\$ 10,000 and/or 6 months imprisonment  |
| Marine Scientific Research: no license, failure to submit information, carry an observer, train a national or submit all samples not required. | US\$ 250,000  |
| Prohibition of taking of sharks, possession, sale and trade  | US\$ 25,000 to US\$ 250,000   |
| Contravention of license conditions  | Citizens: US\$ 500 to US\$ 10,000 or 3 months imprisonment.<br>Non-citizens: US\$ 5,000-US\$ 750,000 and shall not engage in fishing or license suspension for 3 months.<br>Each day is a separate violation. |
| Obstruction in fish processing inspections   | US\$ 100,000  |
| Long Driftnet fishing  | US\$ 1m for owner, master, charterer.   |
| Land. sell, deal, receive, display for sale fish caught by use of explosives or poison   | Citizens: US\$ 20,000 and/ or 6 months imprisonment.<br>Non-citizens: US\$ 500,000 and/ or 6 months imprisonment.   |
| Discharge of pollutants  | US\$ 25,000 each day.<br>US\$ 50,000 repeated offence.  |

Once the investigation is completed, the collected information is compiled into a report and submitted to the legal officer, who will assess the matter and determine whether the case warrants further legal action (e.g., the issuance of violation notices, prosecution, etc.). MIMRA engages its legal counsel to negotiate settlements with representatives of the vessel operators and the flag state, which is generally the preferred resolution of the mechanism.

If the case has merit and requires further legal action, the following course of action will be taken. The first step in taking enforcement action against an alleged violator is issuing a Notice of Violation (NOV) under national law. The violator – typically a commercial fishing vessel owner or operator – must respond to the notice within 48 hours. If the alleged violator does not respond within 48 hours, the case is presumed not to have been settled, and it proceeds to court for formal prosecution under the Criminal Procedures Act. If the alleged violator responds to the NOV and wishes to resolve the matter out of court, MIMRA negotiates a settlement offer based on the NOV concerning the alleged infringements. Once both parties agree on a mutually agreed-upon fine value, a Non-Disclosure Agreement is signed, and the matter is closed.

Finally, the participation and role of private citizens or entities, such as providing facts to the fisheries compliance authority about what may constitute evidence of a violation or infringement, are not explicitly regulated by the RMI Fisheries Enforcement Act (it does not necessarily mean that such actions are prohibited either).

**b) Criminal procedures**

MIMRA engages its legal counsel to negotiate settlements with representatives of the vessel operators and the flag state, which is generally the preferred resolution mechanism. If needed, MIMRA will engage via its legal counsel with representatives of key national agencies involved in potential prosecutions, particularly the Ministry of Justice, Immigration and Labour, the Attorney General’s Office, the Maritime Police and the Port Authority.

**c) Examples of the use of electronic evidence and MDA tools for enforcement**

MIMRA has successfully used various Maritime Domain Awareness tools in domestic cases and international collaborations over the last few years. Two examples follow. The first case involved “Foreign fishing vessel X” (for domestic legal reasons, the vessel cannot be identified). On March 27, 2024, while routinely using the AIS tool Starboard.nz, an officer noticed that the “Foreign fishing vessel X” had entered the RMI EEZ while manoeuvring in patterns that likely indicated longlining fishing activity (as shown on Figures 6 and 7). The vessel, flagged to a distant water fishing country, was not licensed to fish in the RMI. The officer verified the vessel tracks on the VMS (Figures 8 and 9) and that fishing activity occurred via the fishing set logged in the electronic logsheets submitted to the PNA FIMS system (red box in Figure 10).

A note of violation was enacted and presented to the vessel operator and flag state fisheries authority; the weight of evidence was so clear that the operator chose to settle out of court.<sup>77</sup>



Figure 6: Detail of the entry in the EEZ as found on AIS through the Starboard.nz platform

77 2025, Pers comm. Beau Biggler, Chief Fisheries Officer, MIMRA.

### HOSHIN MARU NO.81

[Overview](#) [Track history](#)

Details as at 23 Mar 2024, 01:20

Location [8.5651 N, 159.4969 E](#)  
Direction **298.3°** Course over ground  
**176°** True heading  
**0.8kn** Speed


Flag [Japan](#)   
Type **Fishing - Longliner**  
MMSI **431902000**  
IMO **9907287**  
Call sign **7KHG**  
AIS class **A**  
Dimensions **57m long, 9m wide**  
Owner [IKEDA SUISAN](#)  
Operator [IKEDA SUISAN](#)  
[View all owners and managers](#)



Figure 7: Detail of longline buoy proving fishing identified on AIS through the Starboard.nz platform

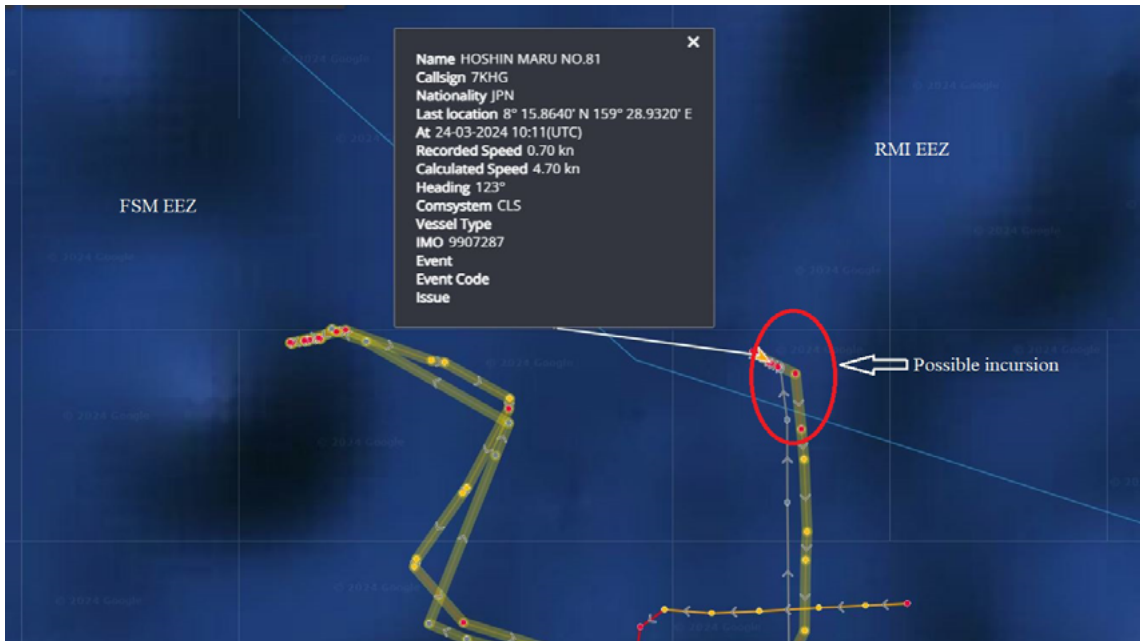


Figure 8: Verification through the FFA Trackwell VMS system





of the vessel’s course via Starboard. Once it became clear that it was heading to Bangkok, they contacted the Thai Department of Fisheries and the representative of the Bangkok Environmental Justice Foundation, providing the same evidence via the same platform. The Thai Department then boarded the vessel under the authority granted by the FAO 2009 Port State Measures Agreement to search for explanations that could dispute the evidence supplied by MIMRA. As the master could not reasonably explain its actions, in coordination with Thai authorities, port use authorisation was denied. The vessel was required to return to Korea, its flag state, to face prosecution and fines<sup>78</sup>.

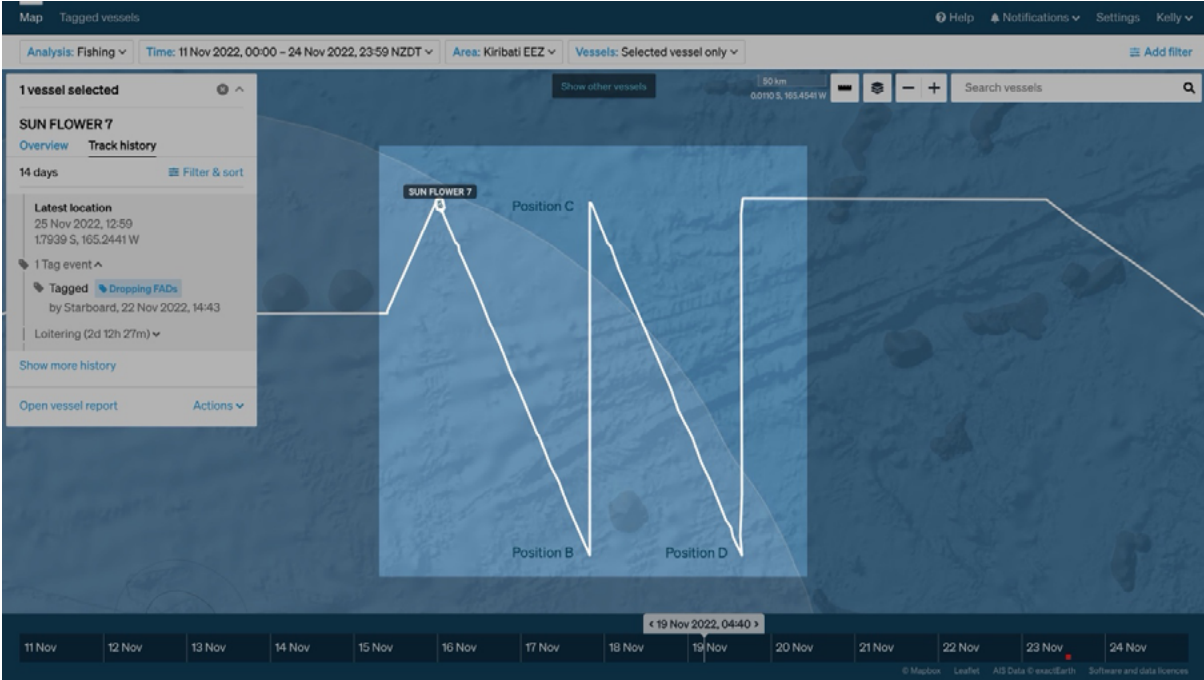


Figure 11: Track showing behaviour consistent with FAD deployment in the EEZ of Kiribati during an FAD closure season.

### 5. Conclusions

Despite its limited resources and legal constraints as a Small Island Developing State, and its ranking 102<sup>nd</sup> among 193 countries in the Human Development Index, the RMI has successfully leveraged new technologies and electronic evidence to enforce domestic and regional fisheries laws effectively. It has done so, most notably, through intensive regional cooperation from organisations like the FFA, and also through a robust domestic commitment.

Regionally available Maritime Domain Awareness tools and resources, accessible through the RMI’s membership in FFA and PNA, have played a fundamental role in enhancing the RMI’s capabilities. They have proven the value of fostering and participating in regionally cooperative models in fisheries management, control and enforcement. The MIMRA MCS Operation Room at the institution’s headquarters in Majuro fully utilises FFA’s Regional Surveillance Picture capabilities (VMS, AIS, risk levels assigned to vessels, etc.) and supplementary Maritime Domain Awareness tools sourced from Starboard.nz.

78 <https://www.starboardintelligence.com/press/sun-flower-7>

RMI has traditionally been an early adopter of new technologies and systems; however, it presents a limited regulatory framework regarding EM, with no comprehensive legislation or rules governing EM in fisheries. It is possible to explain this paucity in the regional complexity surrounding EM standards. Once these are defined and tested, an EM policy will likely be adopted. Likewise, the RMI is actively participating in regional trials and collaborations to integrate EM into its fisheries management strategy. After such trial periods, these standards will likely be incorporated in national legislation (as occurred with VMS and ER). The recent implementation of the WCPFC Interim EM Minimum Standards will support and likely trigger a proper framework for governing the application of EM technology under the RMI Fisheries Enforcement Act. This stepped approach, although slow, has served RMI well in the past and is consistent with the regional nature of its MCS structure.

Regarding the use of EM technologies for compliance and enforcement actions against IUU fishing, they have proven their value in that judicial proceedings are typically avoided when firm evidence is presented, as operators would opt to accept the charges and avoid such proceedings. As mentioned in this report, MIMRA has negotiated out-of-court settlements with fisheries operators by utilising electronics-based Marine Awareness Tools and electronic evidence following the issuance of infraction notifications for over two decades. Furthermore, in comparison with more advanced jurisdictions, the RMI's limited regulatory framework in terms of privacy regulations has not been a concern or an impediment to enforcement actions so far.



# Annex 1. List of legislation

## Acts

Fisheries Act 1997 (Amended 2011 and 2016)  
Fisheries Enforcement Act 1997 (Amended 2011)  
Fishing Access and Licensing Act 1997 (Amended 2011)  
Management and Development of Local Fisheries Act  
Protected Areas Network Act 2023  
Protected Areas Network (PAN) Act 2018  
Republic of the Marshall Islands Maritime Zones Declaration Act 2016  
Protected Areas Network (PAN) Act 2015  
Marine Mammal Protection Act 1990  
Marshall Islands Marine Resources Act 1997 (revised 2002)  
Tuna and Game-fish Conservation Zone Act 1996

## Regulations

Aquaculture Regulations 2019  
Aquarium Fisheries Regulations of 2015  
Domestic Watercraft Regulation  
Fish Harvest Regulations 2020  
Fish Processing and Export Regulations 2022  
Fishing License (Third Implementation Arrangement) Regulations of 2009 (Title 51 MIRC)  
Protected Areas Network Regulations 2020  
Regulations Governing Marine Resources Under the Marine Resource Act, 1997  
Sea Cucumber Regulations of 2012  
FAD Buoy Tracking Implementing Arrangement Regulations

## Regulatory Plans, Procedures and Standards

MIMRA Leasing Policy & Procedures 2020  
MIMRA Strategic Plan 2024-2027  
MIMRA Tuna Fisheries Management Plan 2020-2025  
RMI National Plan of Action on IUU Fishing 2020-2025

RMI National Plan of Action on Sharks 2024-2029

RMI MCS Implementation Plan

Reimaanlok National Conservation Area Plan

Protected Areas Network Strategic Action Plan

Fish and Fishery Products - Exports National Control Plan

Fish and Fishery Products - Industry Standards

Protected Areas Network (National Marine Sanctuaries of Bikar and Bokak) Regulations, 2024

Certified Declaration of the Protected Areas Network (National Marine Sanctuaries of Bikar and Bokak) Regulations 2024.



## Annex 2. Technology overview

|   | Mandatory / Voluntary  | Responsible for providing e-data                   | Responsible for receiving and keeping data                       | e-data public?            | e-data shared?  | Technology certified        |
|---|--|--|--|---------------------------|---|-----------------------------|
| AIS   | Mandatory for some fishing vessels in certain areas                  | Vessel operator                                    | Publicly available via satellite subscription                    | Public                    | Public  | No                          |
| VMS   | Mandatory  | Vessel operator                                    | Government authority MIMRA<br>Regional Support Organisation FFA  | Confidential - with MIMRA | For enforcement between Govt agencies in RMI and regionally via FFA Niue Treaty | Yes                         |
| Electronic reporting (elogs)                    | Mandatory for vessels in certain fisheries                           | Vessel operator                                    | Government authority MIMRA<br>Subregional Management Body<br>PNA | Confidential              | Yes among countries under data rules  | Yes                         |
| On board electronic monitoring                  | Voluntary for now. Yet working towards regional imposition via WCPFC | Vessel operator                                    | Government authority MIMRA<br>Subregional Management Body<br>PNA | Confidential              | Within Govt agencies and service providers for Science and Compliance           | Yes                         |
| Photos & videos from drones, vessels & aircraft | Discretionary use by Govt authorities                                | Government authority (fisheries and non-fisheries) | Government authorities   | Confidential              | For enforcement between government agencies and FFA Members                     | Vessels and aircraft<br>Yes |



## **Case Study: Spain**

This part of the study examines Spain's fisheries management, legislation, and the application of technologies and electronic data for monitoring, control, and surveillance (MCS) purposes, as well as enforcement. This section is based on desktop research and, significantly, on direct communication with staff from Spain's General Fisheries Secretariat during in-person meetings at headquarters over two days in March 2025.

## 1. Background

### a) Spain as a fishing nation

Spain is the largest fishing nation in Europe, based on total catch volume. In 2022, the Spanish fleet landed approximately 752,000 tonnes of fish, accounting for 22% of the European Union's (EU) total catch of 3.4 million tonnes. Worldwide, it ranks 20th in global capture fisheries, representing 1% of total global production. By comparison, China leads with a 14% share.

The Spanish fleet is the EU's third-largest by absolute number of vessels, at around 8,700 fishing boats, behind Italy and Greece. The fleet is predominantly small-scale, with 78% of vessels measuring less than 12 meters long.<sup>79</sup> However, it is the EU's largest fishing fleet by gross tonnage, notable for its significant presence in international waters. In 2022, 61% of Spain's catch came from international waters, 32% from national waters, and 6.5% from other EU waters.<sup>80</sup> The fleet targets a wide range of species, including tuna (41% of the national catch by value), whitefish (14%), small pelagics such as sardines and anchovies (6%), cephalopods (6%), and shrimp (5%).<sup>81</sup>

This activity supports a robust seafood export industry, placing Spain among the top ten exporting countries of aquatic animal products by value in 2022, with exports exceeding 1.22 million tons of fishery products.<sup>82</sup> Notwithstanding, Spain is one of the largest fish-importing countries globally and has one of the highest rates of fish consumption. In 2022, it ranked as the world's fourth-largest importer of fish and seafood, following the United States, China, and Japan.<sup>83</sup>

### b) Spain in the European Union: legal, policy and fisheries control implications

Spain, as a member of the EU, has delegated all competences concerning fisheries management to the EU institutions. The EU has exclusive jurisdiction to pass legislation on fisheries matters, which all EU Member States must implement. This legislation includes setting catch limits, quotas for stocks, catch allocations for Member States in EU waters, and conservation and management measures for specific stocks or fishing areas, including the prohibition of certain fishing practices or fishing in specific regions or seasons. Primary EU legislation is adopted through Regulations and Directives. Regulations are binding, directly applicable to Member States and generally contain the necessary level of detail to be implemented without any further national legislation; Directives are also

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79 <https://eurofish.dk/member-countries/spain/>

80 [https://www.lamoncloa.gob.es/lang/en/gobierno/news/paginas/2023/20231212\\_eu-agriculture-fisheries-council.aspx?](https://www.lamoncloa.gob.es/lang/en/gobierno/news/paginas/2023/20231212_eu-agriculture-fisheries-council.aspx?)

81 <https://www.cde.ual.es/en/the-spanish-fishing-fleet-fished-more-than-a-fifth-of-the-european-unions-catches-in-2022/>

82 FAO, The State of World Fisheries and Aquaculture 2024, <https://openknowledge.fao.org/server/api/core/bitstreams/f985caed-cc7a-457e-8107-7ce16c6ef209/content>, 88.

83 Ibid., at 91. See also <https://eumofa.eu/documents/20124/158265/Spain.pdf>

binding but typically require implementation through Member States' national legislation. The primary EU measure on fisheries is the 2013 Regulation establishing the EU's Common Fisheries Policy (CFP), which provides basic legislation on fisheries matters.<sup>84</sup>

The EU has a specific Regulation on fisheries control mechanisms, known as the “Fisheries Control Regulation”, adopted in 2009 and revised in 2023.<sup>85</sup> The Control Regulation establishes a system for control, inspection, and enforcement to ensure compliance with the rules of the CFP by national and foreign vessels in EU waters and overseas, as well as by national vessels and national citizens. The Fisheries Control Regulation is supported by the Commission Implementing Regulation (EU) No 404/2011.<sup>86</sup>

The Control Regulation requires the operation of vessel monitoring systems (VMS), Automatic Identification Systems (AIS), the use of an electronic fishing logbook and other electronic reporting requirements, such as advanced requests for port entry, transshipment declarations, and others. The revised 2023 Control Regulation introduces a significant amendment to the EU's illegal, unreported, and unregulated (IUU) fishing policy by requiring that the “catch certificates” required when importing fish into the EU scheme be digitalized. This will allow regulators to trace fish better and prevent the entry of IUU fish into the EU market. The Control Regulation also covers the anticipated implementation of Remote Electronic Monitoring (REM) for certain vessels.

The Regulation further provides that inspections and inspection reports shall constitute admissible evidence in administrative or judicial proceedings, including those from other EU member states. In addition, EU members are required to have in place minimum requirements concerning investigation, infringement proceedings and sanctions, providing a detailed catalogue of serious infractions.

The EU regulates the use of AIS through separate legislation.<sup>87</sup> In addition, the IUU Regulation, which aims to establish a Community system to prevent, deter, and combat IUU fishing, contains provisions that specifically require electronic reporting. A key feature of the IUU Regulation is the requirement of the above-mentioned “catch certificates” when importing fish into the EU, to trace fish and prevent the entry of IUU fish into the EU market.

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84 Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on The Common Fisheries Policy, Amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1380>

85 Regulation (EU) 2023/2842 of the European Parliament and of the Council of 22 November 2023 amending Council Regulation (EC) No 1224/2009, and amending Council Regulations (EC) No 1967/2006 and (EC) No 1005/2008 and Regulations (EU) 2016/1139, (EU) 2017/2403 and (EU) 2019/473 of the European Parliament and of the Council as regards fisheries control, [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L\\_202302842](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202302842).

86 Commission Implementing Regulation (EU) No 404/2011 of 8 April 2011 laying down detailed rules for the implementation of Council Regulation (EC) No 1224/2009 establishing a Community control system for ensuring compliance with the rules of the Common Fisheries Policy, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011R0404>.

87 Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system and repealing Council Directive 93/75/EEC



Under EU law, enforcement is the responsibility of each member state, which has sovereign control over its nationals, vessels and ports. However, the EU provides some support in control and enforcement, particularly through the European Fisheries Control Agency (EFCA), whose primary role is to facilitate coordination and cooperation between national control and inspection activities.

### c) Spanish legislation and administrative organisation

Spain's legal system is based on civil (or continental) law, with a legal tradition rooted in Roman law, firmly grounded in comprehensive written rules, a hierarchical judiciary, and a developed corpus of administrative measures. In addition to EU legislation mentioned above, which is directly applicable in Spain, Spanish fundamental fisheries legislation is provided by the 2001 Fisheries Law<sup>88</sup> and the 2023 Law of Sustainable Fisheries and Fisheries Research.<sup>89</sup> The latter amends some aspects of the 2001 Fisheries Law but does not substantially change its provisions on fisheries control and enforcement.

The 2001 Fisheries Law only sets out the most fundamental or basic aspects on matters concerning control and enforcement. There is no single piece of legislation in Spain that specifically regulates the collection of information for fisheries control and enforcement. Some of the specific technologies or processes used for fisheries control and enforcement are regulated through Ministerial Orders and Resolutions of the competent administrations. These orders and resolutions provide, for example, technical specifications of equipment to be used, such as VMS<sup>90</sup> and AIS,<sup>91</sup> or information-sharing protocols for the electronic logbook.<sup>92</sup> The sanctioning procedure for fishing activities in domestic waters and by Spanish vessels and/or Spanish nationals overseas undertaken in contravention of applicable rules is set up in an administrative order (Real Decreto).<sup>93</sup>

In terms of its fisheries administration, Spain is a decentralised state, organised into 17 regions, each with a high degree of autonomy in setting its own legislation and administering a wide range of matters within its competence. The central Spanish government is competent in matters common to the entire country, such as defence, foreign affairs, and constitutional rights; it also shares some competence with the regional governments.

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88 Ley 3/2001 de pesca marítima del Estado, <https://www.boe.es/buscar/pdf/2001/BOE-A-2001-6008-consolidado.pdf>

89 Ley 5/2023, de 17 de marzo, de pesca sostenible e investigación pesquera, <https://www.boe.es/boe/dias/2023/03/18/pdfs/BOE-A-2023-7052.pdf>

90 Ministerial Order 3660/2003 which regulates in Spain the vessel monitoring system via satellite and which establishes the basic rules for support to buy and install such VMS (ORDEN APA/3660/2003, de 22 de diciembre, por la que se regula en España el sistema de localización de buques pesqueros vía saté-lite y por la que se establecen las bases reguladoras de las ayudas para la adquisición e instalación de los sistemas de localización en los buques pesqueros), <https://www.boe.es/boe/dias/2003/12/31/pdfs/A46994-47012.pdf>

91 Real Decreto 210/2004, de 6 de febrero, por el que se establece un sistema de seguimiento y de información sobre el tráfico marítimo, <https://www.boe.es/buscar/pdf/2004/BOE-A-2004-2752-consolidado.pdf>

92 Orden ARM/3145/2009, de 19 de noviembre, por la que se regula la implantación del registro y transmisión electrónicos de los datos de la actividad de los buques pesqueros españoles, <https://descargas.pesca.mapama.es/docs/dea/3.BOE-ARM-3145-2009-consolidado.pdf>; <https://descargas.pesca.mapama.es/docs/dea/4.resolucion-DEA22-12-2009-tcm7-7089.pdf>

93 Reglamento 182/2015 de procedimiento del régimen sancionador en materia de pesca marítima en aguas exteriores, <https://www.boe.es/boe/dias/2015/03/14/pdfs/BOE-A-2015-2715.pdf>

This is the case with fisheries. Whilst regional governments have full capacity to regulate activities in their internal waters (on the landward side of the baseline from which the breadth of the territorial sea is measured), basic fisheries legislation and enforcement are provided by the central government and applied uniformly across the Spanish territory and to all Spanish nationals.

The leading Spanish authority responsible for fisheries monitoring and enforcement is the General Fisheries Secretariat (GFS, *Secretaría General de Pesca*), part of the Ministry of Agriculture, Fisheries and Food. The General Fisheries Secretariat has a specific unit for fisheries control and inspection, as well as combating illegal fishing (*Subdirección General de Control e Inspección y Lucha contra la Pesca Ilegal*).

As part of the central government's monitoring and enforcement competences on fisheries, regional offices in coastal areas ("peripheric fisheries administration") have a central role in fisheries monitoring, inspection and data collection. The GFS currently has 150 fisheries inspectors, 120 in coastal areas and 30 in the central offices of the GFS in Madrid.

All legislation of reference is listed in Annex 1.

## 2. Key technologies and relevant legal frameworks

Spain relies on a wide range of technologies to monitor and control fishing activities, analyse all information thereby obtained, and eventually initiate infringement procedures if a violation of fisheries law is identified. There is no closed list of technologies and processes that can be used to collect data for MCS and for infringement procedures.

However, when using data obtained from technologies or other equipment for infringement procedures, Spanish authorities routinely ensure that the relevant technology or other equipment meets previously established technical requirements set by the Spanish administration. Certification is provided by a third party, often in accordance with international standards, such as those set by the International Standards Organization (ISO). It should be noted that there is no legal requirement to validate the technology used to provide evidence of an infringement; however, Spanish authorities consistently do so to support the validity of electronically gathered evidence used in infringement procedures.

Based on a legal review and direct information from staff at the General Fisheries Secretariat, the Spanish government currently relies on the following technologies and processes to collect, analyse and use data for fisheries enforcement.

### a) E-data collection

#### i. Tracking

Spain, as mandated by the EU, requires that all ships of 15 meters or longer have an active AIS on board, and that all vessels of 12 meters or longer have a functioning VMS. As mentioned, these requirements apply to national and foreign vessels fishing in Spanish

waters, as well as to national vessels and citizens operating overseas, in EU waters, and internationally.

AIS requirements are managed under the Ministry of Transportation, as it is technically a maritime safety device. The Spanish fisheries administration collects this data and integrates it with other databases and systems used for fisheries monitoring, including via its Fisheries Monitoring Centre – the Secretariat’s continuously operating virtual watchroom based at its headquarters in Madrid. Given this technology’s inherent vulnerability to manipulation, it is not used as a single piece of evidence in infringement proceedings. However, it can be used (and it has been) to initiate such proceedings, cross-check information and support other monitoring and control activities. AIS data is publicly available.

The use of VMS is also widespread. VMS data is kept exclusively in the hands of the Spanish fisheries administration and monitored in real time 24/7 in its Fisheries Monitoring Centre. VMS data can be exceptionally shared with the European Commission, EU agencies, and competent authorities of other Member States engaged in surveillance operations for maritime safety and security, border control, protection of the marine environment, and general law enforcement.

The costs of operating each VMS are covered by vessel owners, who generally pay a “flat rate” for a minimum level of daily “pings” (about 500 euros a year). Spanish authorities can require more frequent pings from vessels if they consider that closer monitoring is warranted, which is also the responsibility of vessel operators.

## **ii. Monitoring**

The 2023 Control Regulation anticipates the increasing deployment of electronic monitoring (described as Remote Electronic Monitoring or REM in the Regulation). REM refers principally to the use of CCTV on board fishing vessels and may include other instruments and/or equipment used to monitor fishing activity on a vessel’s deck. The 2023 Control Regulation mandates REM as of January 2028 for vessels 18 meters or longer, which pose a high risk of non-compliance with the landing obligation.<sup>94</sup> The landing obligation concerns the EU requirement to land all fish and other species caught, including those resulting from incidental catch, to reduce the risks of bycatch or overcatch.

As for what constitutes a “high risk of non-compliance”, the Control Regulation establishes that the European Commission shall assess the risk and determine which fleet segments must have REM on board. The Commission shall also provide detailed rules on technical specifications, operation of the system, and use of video material obtained, among others. Currently, some fleets in Spain, such as large Spanish purse seiners fishing overseas, voluntarily use electronic monitoring devices. Spanish authorities have in place pilot projects underway to test the functionality of this technology.

Other technologies are also being used for monitoring. Spanish authorities, as part of their MCS activity and in addition to their ordinary inspection activities at sea or on land,

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94 Art. 13.

have patrol vessels, aircraft, and, more recently, drones available to obtain information and carry out enforcement actions. This information is primarily obtained as photos or videos, which are automatically geotagged with GPS locations. Aircraft can take pictures at 1200 meters in altitude, which go unnoticed by vessels at sea. Some helicopters carry Wescam imaging systems, at a cost of about 1 million euros each, which permit stable covert surveillance.

Video information is not available in real time as it needs to be validated. All information is provided as part of an inspection report, in most instances electronically, along with certificates that prove compatibility between the technologies used to obtain the images, ensuring there are no interferences between equipment.

Drones have recently become a highly valuable resource, often provided by third-party companies external to the national administration. Additionally, inspectors or other fisheries enforcement staff regularly conduct land-based sightings. This includes using cameras with long-range lenses to photograph vessels at sea. They are an inexpensive way to alert the Fisheries Monitoring Centre and trigger other MCS action, even if not used directly as evidence.

### **iii. Reporting**

As EU law requires, operators involved in fishing or fish trade have several reporting requirements. Most of this reporting will be carried out electronically, based on protocols established in the EU Control Regulation. The reports are provided electronically.

Electronic logbooks are a central tool for reporting data. They register information for each individual haul. Vessel operators provide electronic logbook information directly to the Spanish authorities online at least once a day (authorities validate and manage this data, as described in the following subsection below). By design, electronic logbooks can identify infractions based on data-entry inconsistencies, transmission times, and other variables. Logbooks generate their own infraction reports and certify the time of transmission, which is relevant when used as evidence.

Currently, in Spain, 1650 vessels over 12 meters in length overall transmit their electronic logbook daily. As of January 1, 2028, vessels of any size will be required to transmit their electronic logbooks. In preparation for mandatory reporting by small-scale vessels, Spanish authorities have developed a mobile phone application (iPesca) currently in trial with 150 boats.

In addition to the electronic logbooks, EU and Spanish law also require the electronic submission of transshipment declarations and of landing declarations. Market operators are required to submit electronic sales notes. All this data feeds several databases, which are interconnected and accessible to authorised inspectors and other staff of the GFS and “peripheric” (regional) administration.

## b) E-data Management

### i. Databases and storage

The GFS has established digital databases containing information from the electronic reports mentioned above, as well as fishing permits and other relevant documentation. They include the fishing vessel register (list of vessels that potentially can fish nationally, in EU waters, on the high seas or in third country waters), fishing licenses (general authorization to fish in domestic waters), fishing authorizations (authorizations to fish in a specific area, stock, period and/or gear, including overseas), private fishing agreements (to fish in a third country), and private chartering agreements (Spanish-flagged vessel to fish in a country where the EU has no fishing agreement).

Most of these records and authorisations are managed electronically, and the Spanish administration, in collaboration with fishers' associations, has trained fishers to use these electronic tools. All information from these documents is under the custody of the GFS, and the different databases are integrated into a "Spanish Fisheries Information System" (SIPE, Sistema de Información Pesquera de España), where information from the various databases can be cross-checked. Some of the most important databases, along with their corresponding applications, are as follows: "GESCUOTAS", which monitors compliance with total allowable catches and licensed fishing quotas, and "TRAZAPES", which enables the management of sales notes. All information relevant to infringement proceedings is also integrated into the SIPE, via the database "SANCIPES", which hosts all inspection reports and other documents related to infringement proceedings. Information from inspection reports and infringement proceedings automatically corrects or completes existing data in the database. Databases are accessible only to the authorised government personnel, based on their professional profile. Information on these databases is automatically reviewed for quality and completeness. Additionally, information obtained through other means, such as direct inspections on board fishing vessels or in port, is also incorporated into the SIPE.

All information received from the sources mentioned above is verified, validated, analysed, and, if appropriate, used for enforcement action at sea, in port, or on land, and eventually to prosecute offenders.

### ii. Verification and validation

"Verification" and "validation" are concepts with distinct meanings, depending on the context in which they are used. They can also be used interchangeably at times. When used in the context of collecting and processing information for administrative control, enforcement activities, and ultimately as evidence in infringement proceedings, verification refers to the process of establishing the truth or accuracy of a statement or fact. In contrast, validation refers to demonstrating that the information has been obtained through means that ensure its accuracy and reliability. Spain relies on the principles of verification and validation in its administrative process by verifying that information is cross-checked and validating that the equipment or methods used to generate data or

information comply with pre-established standards. Sections below describe these processes in more detail.

Verification is driven by the principles of coherence and completeness and is directed at removing unintentional errors and cross-checking information with data from other sources. Electronic tools, such as the electronic logbook, have integrated in their own design rules to ensure a basic level of verification of the information submitted by the vessel (the logbook or other forms cannot be completed if they contain errors or inconsistencies). Examples of cross-checking information include reviewing each vessel's catches against fishing and landing declarations to identify potential instances where a vessel has overshot its quota. For smaller ships, which are not yet required to submit an electronic logbook, authorities monitor the sales notes. All verified information is transferred to a new database, where the "clean" data can then be used for monitoring and follow-up actions.

Validation of all systems and technologies used to measure and locate vessels is equally relevant to using data as evidence in infringement proceedings. These systems and technologies are certified and calibrated in accordance with the applicable certification standards. These certificates are systematically attached to the inspection reports, and all documentation supporting each certification is registered and stored for use as needed. There is specific legislation - the Law on Metrology - that establishes the principles and general rules to apply to measurement systems.<sup>95</sup> However, individual specifications for individual systems or technologies are determined separately.

Based on EU requirements, Spain has implemented the "VALID" system, an electronic tool that facilitates the cross-checking of data used for fisheries control, such as that coming from the logbook, VMS, inspection reports etc. This system also permits the automatic acceptance or rejection of data based on pre-established criteria.

### **iii. E-Data analysis**

Information obtained from VMS and other sources, such as AIS, is monitored in real time by Spain's Fisheries Monitoring Centre (FMC) at the GFS. The FMC maps out all information received from VMS, allowing individual and group vessel analysis based on different criteria (vessel size, gear, location, protected areas, bathymetry, dates, and others). Based on the administration's knowledge and priorities, risk assessment criteria are incorporated in the integrated database. This allows prioritising specific fleet segments and individual vessels for monitoring, control and surveillance. These "risk levels" are displayed on the FMC's map with different colours. The system is designed to generate alerts when vessel behaviour breaches specific applicable measures and/or a vessel's license, all of which are tracked alongside vessel activity in the system. The system is based on an algorithm that combines and weighs criteria set by EFCA, but is specific to each EU Member State. Data from the FMC can also be judged on a case-by-case basis.

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<sup>95</sup> Ley 32/2014, de 22 de diciembre, de Metrología, <https://www.boe.es/buscar/pdf/2014/BOE-A-2014-13359-consolidado.pdf>



Inspectors also play a role in e-data analysis. They routinely review records of any potentially unusual or illegal activity identified by GFS's staff that applies to their area of competence. To clarify these situations, they can further query the system, as authorised by the GFS, looking into e-logbooks, historical fishing records, meteorology or other factors, and cross-checking the data as necessary. Inspectors can access data and coordinate with staff at the FMC and other GFS's units in real time. In exceptional circumstances, inspectors can request that the FMC increase the frequency of VMS data transmission, for example, when a vessel is in waters outside national jurisdiction.

### 3. The use of e-data to prosecute fisheries infringements

#### a) Administrative proceedings

Spain prioritises administrative over jurisdictional solutions. It relies on its administrative process to investigate, prosecute and sanction fisheries infractions. Jurisdictional proceedings, particularly criminal cases, are the exception; however, administrative cases are frequently appealed in courts competent over administrative matters. The Spanish administration has invested in strengthening its human and technical MCS resources in the past two decades. This long-term policy has resulted in successes, particularly in building robust infringement proceedings that hold up in court, imposing very high fines on offenders that impact their ability to continue their fishing practices, and discouraging illegal fishing in their waters or by nationals.

Spanish procedures for investigating and prosecuting fisheries infractions are clearly regulated under the Spanish Fisheries Law and EU legislation, particularly the Control Regulation.<sup>96</sup> The law does not focus on the types of evidence to obtain, but on ensuring there is due process to collect and analyse information (validation, verification), and to document any potential infractions fully. More specifically, any infringement proceeding is based on two main steps: the inspection report and the evidence procedure. Both administrative acts rely on accessing the large body of information described above, which is collected according to strict protocols and standards, and stored in accessible, integrated, and regularly updated databases. As long as information is accurate and the sources authoritative, any evidence can be used for infringement proceedings. Sections below describe the main elements of the two main parts of any infringement proceeding and clarify other procedural aspects such as deadlines, provisional measures and sanctions.

#### i. Inspection report (“el acta”)

Any administrative proceeding to further investigate and eventually prosecute an infraction is initiated with an “inspection report”. This is an official, administrative act that comprises not only findings from a physical inspection of a vessel, landings and other controls, but also from the analysis of data. The inspection report contains confidential information, including vessels' positions, and is not publicly available. It also displays all

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<sup>96</sup> Law 3/2001, Section V.



information necessary to support the infringement procedure, including certificates regarding the technology used. The administration builds its infringement proceedings to meet the evidentiary threshold for administrative and jurisdictional proceedings, which require that the government presents evidence that confirms the infraction occurred “beyond any doubt.” The report, with all the attached documentation, is sent to the vessel owner. It can be sent via the Ministry’s website or email.

## ii. Evidence procedure (“instrucción”)

Once an inspection report is completed, another authority, typically a civil servant based in one of the peripheral regions (or in central offices for more complex cases), follows up on the case. This authority (“instructor”) reviews the case and may request additional evidence from the GFS if necessary, drawing on any available databases or information repositories. The instruction procedure may involve, with the assistance of inspectors or other staff, examining any information related to the fishing activity, including documents, goods, and computer hardware, software, and files. When necessary, authorities can inspect vessels, factories, offices and any other relevant space. The operating company and any person related to that fishing activity have to allow access to any information. Any civil servant, inspector, or other official has the status of authority, and their reports, statements, and other representations are presumed to be true. As mentioned above, all evidence obtained from devices is verified against certified standards. Some of these standards may be regulated, though there is no need to establish them by law.

Based on the instructor’s assessment, the sanctioning process can proceed or be dismissed. If it proceeds, those who have been sanctioned can appeal to the higher administrative authority and, if the sanction is confirmed, take the case to the administrative court.

A relevant, additional point to clarify concerns the possibility for private entities to lodge a complaint that may initiate an administrative sanctioning procedure.

Two main laws regulate fisheries in Spain. Neither of the two laws that regulate marine fisheries in Spain (Law 3/2001, of national marine fisheries, and Law 5/2023, of sustainable fisheries and fisheries research; the 2023 cross-references to the 2001 Law in what concerns the sanctioning procedure) has any provision that authorises private parties, either directly concerned or third parties, to initiate a sanctioning procedure.

However, the (general) Law 39/2015 on the regular administrative procedure of public administrations allows, in its art. 62, that private individuals can lodge complaints (“denuncias”) to inform a government body about the existence of a situation that could justify the initiation of an administrative procedure. This complaint, however, does not force the administration to initiate any proceeding and does not grant to the person lodging the complaint the condition of “interested party”. Likewise, there is a specific Regulation that establishes the sanctioning procedure concerning fisheries in external waters (*Real Decreto 182/2015, de 13 de marzo, por el que se aprueba el Reglamento de procedimiento del*

*régimen sancionador en materia de pesca marítima en aguas exteriores*), which foresees the initiation of a sanctioning procedure upon a complaint (art. 20. d)). As in Law 39/2025, this Regulation clarifies that a complaint does not force the competent authority to initiate a sanctioning procedure (art. 20.2).

### **iii. Deadlines and prescription periods**

The Fisheries Law stipulates that the statute of limitations for severe infractions is three years, for serious infractions is two years, and for minor offences is one year. Sanctions imposed for severe infractions will expire after three years, while those imposed for serious or minor infractions will expire after two years and one year, respectively. The statute of limitation periods is to be calculated in accordance with Spanish Law related to administrative procedures. Regarding deadlines for processing a sanctioning procedure, the maximum period to process, resolve, and notify the sanctioning resolution will be six months for minor infractions and nine months for the most serious infringements.

### **iv. Provisional measures**

EU and Spanish legislation permit authorities to adopt provisional measures, such as the confiscation of catch, gear, or vessel retention, when they identify an infraction. Provisional measures, which are common, must be justified and confirmed, modified, or lifted within 15 days of their adoption.

### **v. Sanctions**

The 2001 Spanish Fisheries Law details its sanctioning system. It lists types of minors, serious and very serious infractions, and describes, more broadly, the different kinds of sanctions applicable under each category. The sanctioning procedure is currently being revised to align it with the amended EU Control Regulation, which establishes categories of infractions and sanctions applicable in EU member states. It is expected that this revision will be concluded by the end of 2026.

EU law prescribes that sanctions shall be calculated in such a way as to “make sure that they effectively deprive those responsible of the economic benefit derived from their infringement without prejudice to the legitimate right to exercise their profession.” Equally, sanctions “shall also be capable of producing results proportionate to the seriousness of such infringements, thereby effectively discouraging further offences of the same kind.”<sup>97</sup>

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<sup>97</sup> Control Regulation, art. 89.2. Spain has been notorious for imposing high fines on fisheries offenders as part of administrative proceedings. One of the most relevant cases concerns the sanctions applied after the “Operation Sparrow”, which targeted IUU fishing in the Southern Ocean by vessels linked to Spanish corporations. The administrative process, concluded in 2016, resulted in combined penalties of nearly 18 million Euros applied to nine Spanish companies and seven individuals. The financial penalties include sanctions for obstructing the work of officials and destroying documents during the investigations. In addition to economic fines, operators were prohibited from carrying out fishing activities and from requesting public funds for a period ranging from 5 to 23 years. These penalties were upheld in a 2020 court ruling by the Audiencia Nacional.

## vi. Administrative proceedings database

All information pertinent to infringement procedures, at any phase of the process, is uploaded to the database “SANCIPES”. For example, inspection reports are stored in this database, along with a certificate that ensures the inspection report is legitimate and true to its original form. Any complementary report prepared by the “instructor” is stored in the same database. SANCIPES also stores information on the “points register”, an EU-mandated system under the Control Regulation that assigns points to cases of serious infringements. SANCIPES automatically shows an alert when a vessel master/owner reaches 12 points.

## vii. Access to relevant information by interested parties

As explained at the outset of this report (*Learning from the case studies*), there is a permanent normative tension between data privacy and the rules governing access to relevant fisheries data provided by the fishing industry to the fisheries authorities. Like in other jurisdictions (see, for example, Section 2.e on the New Zealand case study), Spain has generic legislation regulating this matter, granting access to public information, ie, information in the custody of government agencies or the public administration. There are provisions in the basic legislation on administrative bodies and procedure (*Ley 30/1992 de Régimen Jurídico de las Administraciones Públicas y del Procedimiento Administrativo Común*) and, more specifically, in the *Law 19/2013, of 9 December, of transparency, access to public information and good governance*.

Under this legislation, anyone can request information through simple procedures; if available, the information is to be provided within a month in normal circumstances (up to 2 months). There are potential restrictions to accessing public information when this access could prejudice: national security, defence; foreign affairs; public order; prevention and investigation of criminal, administrative or disciplinary cases; equality among parties in court cases; administrative functions of monitoring, inspection and control; economic and commercial interests; economic and monetary policy; professional secret and intellectual property; confidentiality rules in decision making processes; environmental protection.

Access to personal data, including that related to criminal or administrative proceedings, will only be authorised with the express consent of the concerned individual. However, in general terms, access to personal information is to be weighed against the public interest in accessing the information concerned. There is specific legislation for the protection of information privacy rights (*Law 3/2018, of 5 December, on the protection of personal data and guarantee of digital rights*, which implements *EU Regulation 2016/679*), which is in line with the restrictions foreseen in the access to public information Law mentioned above.

In addition, there is specific legislation regulating access to information in specific circumstances, particularly Law 27/2006 of 18 July, which regulates the rights of access to information, public participation, and access to justice in environmental matters, which

implements EU Directive 2003/4/ of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC and, more broadly, the 1998 Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters.

The law on access to environmental information has served as the basis for requests for access to public information on fisheries-related matters. Still, there have been limitations on the right of access to information. In some instances, Spanish courts have denied access to information (under Law 27/2006, on access to environmental information), invoking the exception for commercial and industrial confidentiality (Art. 13(2)(d) Law 27/2006) and the confidentiality provision in Art. 113 of Regulation (EC) 1224/2009 (fisheries control system).<sup>98</sup> On the contrary, in other cases, Spanish courts have recognised the right of an NGO to access information on shark finning and mercury levels in fish under the abovementioned Law 27/2006 (Audiencia Nacional, Administrative Chamber, 23 December 2009, *Fundación Oceana v. Ministry of Agriculture, Fisheries and Food*).<sup>99</sup>

To sum up, Spain's law recognises access to fisheries-related information held by government agencies, both under general access to public information legislation and under the more specific legislation on access to environmental information (domestic, EU and international). However, the administration and courts have applied some legally established restrictions on the right to access information, such as commercial confidentiality and the confidentiality of fisheries control documents. In doing so, they balanced limitations to public access with the public interest in accessing this information.

## b) Criminal Proceedings

In cases where conduct could constitute a crime, the Administration will refer the case to the competent criminal jurisdiction. The Administration will then refrain from continuing the infringement procedure until the judicial authority issues a final sentence, the proceedings are dismissed or archived, or the Public Prosecutor's Office returns the file. If returned to the fisheries administration because no crime or misdemeanour was found, the administration will continue the infringement proceeding.<sup>100</sup>

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98 This is the case before the High Court of Justice of Madrid (TSJ Madrid), Administrative Chamber, Section 6 (STSJ M 217/2016, ECLI:ES:TSJM:2016:127, 14 January 2016), where an environmental foundation requested environmental information from the Ministry of Agriculture, Food and Environment concerning fishing vessels, specifically: the engine power of particular vessels; the sampling plan for verifying engine power; and a list of vessels on which verification had been performed.

99 In this case, the Spanish administration had repeatedly refused to provide the information requested and the court granted Oceana's claim and ordered the Ministry to provide the information, holding that it constituted environmental information under Law 27/2006.

100 A notorious example of fisheries infringements ending up being prosecuted under criminal law is the so-called "Operation Tarantelo", which involved the trading of illegally caught bluefin tuna. Evidence came out in 2018 that led to the prosecution of eight persons and 12 companies for crimes against public health, money laundering, criminal organization and tax fraud. The case is currently before the Audiencia Nacional.



## 4. Conclusions

Based on a review of Spain's current legal framework and practice, the following conclusions can be drawn regarding the use of e-data for fisheries MCS, enforcement, and prosecution.

Technology is used for MCS, enforcement and prosecution. The Spanish system relies heavily on technology to support MCS and infringement cases. In the past 20 years, it has significantly strengthened its access to electronic resources and the digitalisation of its information management systems.

The use of technology is typically regulated by law and often mandatory. EU and Spanish law require the use of specific technologies, such as VMS and AIS, and are open to using a wide range of technologies for MCS and enforcement. That said, there are no limits to the type of technology that can be used for MCS and enforcement. Spain accepts many sources of electronic information to support compliance and enforcement with fisheries law, and the system is open to incorporating new tools. For example, VMS and AIS are widely used for MCS and enforcement purposes, enabling real-time monitoring 24/7. AIS, given its vulnerability to fraud, is used to complement or support the use of other information for MCS and prosecution. Spain also invests in some expensive technology, such as Wes-cams on board aircraft and is increasing its use of drones.

EM on board fishing vessels is not yet mandatory but is implemented voluntarily or on pilot projects. It is currently employed in voluntary programs within industrial fisheries and in pilot programs. However, it will be mandatory in the EU as of January 2028 for higher-risk vessels over 18 meters.

Reporting is mainly carried out electronically. EU vessels are required to transmit the electronic logbook daily and provide reports on other activities, such as transshipment or landings, also electronically. All information from reporting and other sources is available on databases, many of which are integrated. A key element of the Spanish MCS and enforcement system is the digitalisation of the transmission of most fisheries-related information, including licenses and vessel register information. All information is stored in databases that can be used to cross-check data and queried by various agencies and personnel on the ground. Information is accessed by government personnel with prior authorisation based on their specific competence.

The principle of authority is key to building robust cases, but it is not enough. Spanish authorities operate under the legal principle that any acts by authorities are presumed to be true. However, all information is verified, and sources validated. Equally, all information from reporting and other sources that is stored in databases is verified. Some of this information is automatically verified, while other information is reviewed daily by 23 operators in the Spanish fisheries agency. Validation of e-data sources is essential to ensure robust evidence in infringement proceedings. It can be said that the use of e-data relies on



the validation of all sources of information. Any equipment or system that provides evidence is validated with certificates issued against previously established requirements.

Regardless of the type of technology used to obtain and analyse information, infringement proceedings are thoroughly documented. The Spanish system is based on building strong infringement proceedings that cannot be contested based on facts. It is guided by the principles that evidence needs to be beyond doubt, and that proceedings are factually and legally justified.



# Annex 1. List of legislation

## European Union

Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a Union control system for ensuring compliance with the rules of the common fisheries policy, amending Regulations (EC) No 847/96, (EC) No 2371/2002, (EC) No 811/2004, (EC) No 768/2005, (EC) No 2115/2005, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007, (EC) No 676/2007, (EC) No 1098/2007, (EC) No 1300/2008, (EC) No 1342/2008 and repealing Regulations (EEC) No 2847/93, (EC) No (consolidated text)

Commission Implementing Regulation (EU) No 404/2011 of 8 April 2011 laying down detailed rules for the implementation of Council Regulation (EC) No 1224/2009 establishing a Community control system for ensuring compliance with the rules of the Common Fisheries Policy

Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC

Council Regulation (EC) No 1005/2008 of 29 September 2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing, amending Regulations (EEC) No 2847/93, (EC) No 1936/2001 and (EC) No 601/2004 and repealing Regulations (EC) No 1093/94 and (EC) No 1447/1999

Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system and repealing Council Directive 93/75/EEC

## Spain

Real Decreto 717/2024, de 23 de julio, por el que se desarrolla la estructura orgánica básica del Ministerio de Agricultura, Pesca y Alimentación

Ley 5/2023, de 17 de marzo, de pesca sostenible e investigación pesquera

Ley 3/2001 de pesca marítima del Estado

Reglamento 182/2015 de procedimiento del régimen sancionador en materia de pesca marítima en aguas exteriores

Real Decreto 176/2003, de 14 de febrero, por el que se regula el ejercicio de las funciones de control e inspección de las actividades de pesca marítima



Resolución de 10 de junio de 2019, de la Subsecretaría, por la que se publica el Acuerdo marco entre el Ministerio del Interior y el Ministerio de Agricultura, Pesca y Alimentación, sobre la inspección y vigilancia de las actividades de pesca marítima.

Resolución de la Secretaría General del Mar (actual Secretaría General de Pesca) por la que se desarrolla el artículo 3.3 relativo al registro de la aplicación informática DEA en la Dirección General de Recursos Pesqueros, así como se establecen las actuaciones que deberán seguirse en caso de fallo de la comunicación previsto en el artículo 9, respectivamente, de la Orden ARM/3145/2009, de 19 de noviembre, por la que se regula la implantación del registro y transmisión electrónicos de los datos de la actividad de los Buques Pesqueros Españoles

Orden ARM/3145/2009, de 19 de noviembre, por la que se regula la implantación del registro y transmisión electrónicos de los datos de la actividad de los buques pesqueros españoles

Orden ARM 3238/2008 de 5 de noviembre, modifica Orden APA 3660/2003

Orden APA 3660/2003 de 22 de diciembre

Ley 32/2014, de 22 de diciembre, de Metrología

Ley 39/2015, de 1 de octubre, del Procedimiento Administrativo Común de las Administraciones Públicas

Ley 1/2000, de 7 de enero, de Enjuiciamiento Civil

Ley 19/2013, de 9 de diciembre, de transparencia, información pública y buen gobierno

Ley 27/2006, de 18 de julio, por la que se regulan los derechos de acceso a la información, de participación pública y de acceso a la justicia en materia de medio ambiente (incorpora las Directivas 2003/4/CE y 2003/35/CE)

## Annex 2. Technology overview

|   | Mandatory / Voluntary | Responsible for providing e-data | Responsible for receiving and keeping data | e-data public?          | e-data shared?                           | Technology certified |
|---|-----------------------|----------------------------------|--|-------------------------|--|----------------------|
| AIS   | Mandatory             | Vessel operator                  | Government authority (SGP)                 | Public                  | Public                                   | No                   |
| VMS   | Mandatory             | Vessel operator                  | Government authority (SGP)                 | Confidential - with SGP | For enforcement with other govt agencies | Yes                  |
| On board electronic monitoring                  | Voluntary             | Vessel operator                  | Government authority (SGP)                 | Confidential            | n/a                                      | n/a                  |
| Photos & videos from drones, vessels & aircraft | Discretionary         | Government authority             | Government authority (SGP)                 | Confidential - with SGP | For enforcement with other govt agencies | Yes, when GPS-tagged |





### **Case Study: The United States of America**

The final part of this report provides an overview of the application of technologies and electronic data for fisheries monitoring, control, and enforcement in the United States of America (the U.S.). It will first provide a short overview of the U.S. context and the most relevant fisheries regulations and institutional setup. The second section reviews the use of technologies for electronic data collection and management. The third section offers a discussion on whether and how the U.S. fisheries sanctioning system has utilised e-data and tools to enhance compliance and enforcement, including a reference to recent administrative and judicial case law.

## 1. Background

### a) The United States as a fishing nation

While not the world's largest fishing nation, the U.S. consistently ranks among the top 10 countries by production. In 2022, U.S. commercial fisheries landed about 3.8 million metric tonnes,<sup>101</sup> while recreational anglers caught an additional 160,000 mt. In the same year, it also imported a further 6.7 million tonnes. While the U.S. does not compile statistics on the size of its fishing fleet, the Organisation for Economic Co-operation and Development estimates that about 75,000 commercial vessels are under its jurisdiction.<sup>102</sup>

The country's largest fishery is for Alaska pollock (walleye), which comprises nearly one-third of U.S. commercial landings. Its most valuable fishery is for salmon (\$827 million), followed by lobsters (\$581.3 million), crabs (\$570.2 million), then pollock (\$513 million), and sea scallops (\$466.9 million). The country's North Pacific fisheries (in the waters off the state of Alaska) account for about 60% of total landings, followed by those in the Gulf of Mexico at 17.4%. Dutch Harbour, Alaska and New Bedford, Massachusetts, are its largest fishing ports, serving the Northeastern Pacific and Northwestern Atlantic fleets, respectively. While the U.S. issues some permits for high seas fisheries, its high seas fleet has a comparatively small footprint relative to other countries with large fisheries; only a handful of vessels fish the high seas in the Eastern Pacific and Western Atlantic Oceans.<sup>103</sup>

### b) Fisheries Management and Enforcement in the U.S.

The U.S. has a federal system of government, with policymaking responsibilities split between its national or federal government based in Washington D.C., its 50 states, and a handful of territories with varying levels of autonomy, like Puerto Rico and American Samoa. As a result, fisheries management is divided between state and federal waters, with the boundary delineated at three nautical miles from the country's coastal baselines, subject to a handful of exceptions specific to certain states. This means that most of the country's fisheries, extending out to 200 nautical miles, fall under federal control and are governed by the Magnuson-Stevens Fisheries Management and Conservation Act (Fisheries Management Act) of 1976, the cornerstone of U.S. fisheries legislation. This law provides a comprehensive framework and division of labour for setting and enforcing catch limits and other controls for federally managed fisheries.

There are three tiers of fisheries-related rulemaking for federal waters. Initially, the legislature enacts laws, such as the Fisheries Management Act, which establishes the parameters, strategic priorities, and penalties for the country's fisheries governance framework. In the second tier, the Fisheries Management Act establishes eight regional fishery

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101 NOAA Fisheries, Fisheries of the United States 2022, available at: <https://www.fisheries.noaa.gov/national/sustainable-fisheries/fisheries-united-states>.

102 OECD, OECD Review of Fisheries 2025, available at: [https://www.oecd.org/en/publications/2025/02/oecd-review-of-fisheries-2025\\_d308ff48.html](https://www.oecd.org/en/publications/2025/02/oecd-review-of-fisheries-2025_d308ff48.html).

103 Information derived from the Distant Water Fishing Subsidy Atlas, a project of the UC Santa Barbara Sustainable Fisheries Group, <http://www.dwfsubsidyatlas.org/>.



management councils, comprising state and national policymakers, law enforcement officials, scientists, and representatives from the fishing industry. The councils are responsible for developing regulations to implement the Fisheries Management Act within their region, including fisheries management plans for each fishery. Federal officials must approve these council-adopted plans and, if the council agrees, they may also include fishery-specific e-data collection and management requirements.

The third tier is the federal administrative agencies, particularly the National Marine Fisheries Service under the National Oceanic and Atmospheric Administration (or “NOAA”) which reviews council management plans for compliance with the Fisheries Management Act. The Fisheries Management Act authorises NOAA to codify approved management plans as binding regulations. NOAA’s federal law enforcement officials will monitor and enforce these regulations, as well as investigate non-compliance.<sup>104</sup> Additionally, NOAA officials will sometimes issue non-binding policy guidance on decision-making or operational processes, including e-data collection and management.

In summary, the interplay between federal agencies, particularly NOAA, and regional councils defines the U.S. approach to e-data. While NOAA promotes the use and management of e-data through non-binding policy guidance and informational support, binding regulations must be developed through regional management councils via fishery management plans. U.S. fisheries e-data policies vary by region and specific fisheries, while national and federal authorities encourage the uptake of technologies and the harmonisation of regional approaches.

## 2. Key technologies and relevant legal frameworks

### a) E-data Collection

In 2013, NOAA adopted its Policy on Electronic Technologies and Fishery-Dependent Data Collection<sup>105</sup> to provide “guidance on the implementation of electronic technology (ET) solutions in fishery-dependent data collection programs.” The policy does not promote the deployment of any specific technologies. Instead, it encourages all fishery stakeholders “to consider implementing [electronic technology] options, where appropriate, to meet science, management, and compliance data needs.” It also provides general guidance for using such technologies - namely that they be cost-effective and consistent with applicable law. Moreover, the policy outlines responsibilities for promoting e-data collection within NOAA, assigning specific staff to support new e-data projects and develop best practices, while also requiring regional administrators to develop e-data implementation plans for fisheries within their jurisdiction. Overall, the policy functions as a signal to fishery management and enforcement officials to explore and implement e-data collection programs.

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104 NOAA’s at-sea enforcement may be carried out in partnership with the U.S. Coast Guard, a branch of the U.S. military responsible for maritime law enforcement. Each state and municipality also has its own police force which may be engaged where violations occur in state waters.

105 NMFIS Policy 04-115, Electronic Technologies and Fishery-dependent Data Collection (2021).



NOAA has augmented this policy with subsidiary guidance on cost allocation between government and industry participants in electronic monitoring programs.<sup>106</sup> Generally, this policy provides that the federal government will be responsible for the administrative costs, like standard setting and certification, monitoring performance, and administrative support to address science, enforcement, and management needs. Responsibility for most other costs falls on the fishing industry, including equipment, training, and transmission and storage costs.<sup>107</sup>

Additionally, NOAA provides vessel owners and operators with plain language compliance guides and answers to frequently asked questions. These resources are not a substitute for reviewing the relevant regulations but give owners and operators a user-friendly summary of applicable regulations, including those related to e-data collection technology and practices.<sup>108</sup>

### **i. Tracking**

The U.S. has encouraged the widespread, albeit inconsistent, use of remote sensing technologies, such as AIS and VMS, to monitor vessel positions and support area-based management frameworks. In accordance with International Maritime Organization regulations, all U.S. vessels over 65 feet in length are required to carry an AIS transponder. As for VMS, in some cases, its use is required in the management plans for a particular fishery; in others, it is not.

For example, virtually all vessels engaged in the “Atlantic Highly Migratory Species” fishery, such as billfish, tuna, and sharks, are required to carry government-approved “enhanced” VMS systems, distinguished by their ability to support two-way communication.<sup>109</sup> In the Northeast Atlantic, however, vessels may be required to use VMS depending on their target fishery, with different “ping” requirements - the frequency with which the VMS device reports the vessel’s position - for different fisheries (i.e., scallop fisheries require more “pings” every 30 minutes, instead of every hour, presumably to ensure that scallop vessels do not enter sensitive protected areas).<sup>110</sup> In the Southeast, meanwhile, charter boats and vessels fishing for South Atlantic Rock Shrimp, a highly migratory

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106 Note that the allocation of monitoring costs, whether in-person observers or electronic, has been the subject of extensive litigation in the U.S. with implications for agency deference extending far beyond the fisheries management context. See *Loper Bight v. Raimondo*, 603 U.S. 369 (2024). The law in the area remains unsettled, but it can be assumed - for now at least - that NOAA’s interpretation of the applicable law is correct and that costs can be passed on to industry as contemplated under 107 NMFS Policy 04-115-02, Cost Allocation in Electronic Monitoring Programs for Federally Managed U.S. Fisheries (2019).

108 See, e.g., NMFS, HMS Compliance Guide: Commercial Fishing Guide for Complying with the Atlantic Tunas, Swordfish, Shark, and Billfish Regulations, (2023), in particular part XI on VMS requirements and part XII on Electronic Monitoring Requirements, available at <https://www.fisheries.noaa.gov/atlantic-highly-migratory-species/atlantic-highly-migratory-species-fishery-compliance-guides>.

109 50 CFR § 635.69 - Vessel monitoring systems (Atlantic Highly Migratory Species)

110 50 CFR § 648.10 - VMS and DAS requirements for vessel owners/operators (Fisheries of the Northeastern United States)



species, and Gulf Reef Fish are required to use VMS, but this requirement does not extend to other commercial fisheries.<sup>111</sup>

Federal rules support the use of electronic tracking equipment in several ways. First, they provide a centralised approval process for VMS systems via the Office of Law Enforcement under NOAA’s National Marine Fisheries Service.<sup>112</sup> An application must specify the regions and fisheries for which approval is sought and provide further information regarding the devices’ functionality, serviceability, security, and compatibility with the national VMS network and regulatory systems. Notably, this process requires that any provider of an approved system “provide technical and expert support for litigation to substantiate the [VMS system] capabilities to establish [NOAA’s] Office of Law Enforcement cases against violators, as needed.”<sup>113</sup> NOAA also maintains an easily accessible list of approved VMS units for each region, along with a link to technical support.<sup>114</sup>

In addition, federal authorities provide some reimbursement for the initial purchase of a VMS unit, although this is permitted -not required- by law and is dependent on budget availability. The reimbursement available for some VMS programs has been reduced as cheaper, cellular-based VMS have increasingly proliferated for near-shore fisheries that can maintain cellular network coverage.<sup>115</sup>

Information from the national VMS system is fed in real-time to NOAA, where it is stored in a database and displayed on an electronic surveillance software called vTrack. This allows U.S. enforcement officials to monitor vessel activity in real-time and deploy enforcement resources to investigate potential illegal fishing, particularly where a vessel enters and appears to be fishing in a protected area. It would be helpful to uncover in future interviews with U.S. fisheries officials, if feasible, more details as to how vTrack is subject to human or algorithmic monitoring to identify potential illegal activity.

## ii. Monitoring

Human observers have traditionally undertaken onboard monitoring of U.S. fishing vessel activity at sea. Increasingly, the U.S. is exploring electronic monitoring techniques, but the uptake of these technologies remains in its early stages. In specific fisheries, electronic monitoring may be permitted as an alternative to at-sea observer coverage. For example, in 2019, NOAA adopted a rule permitting vessels in the Pacific coast ground fishery to use electronic systems in place of observers to meet the requirements for 100% at-sea observer coverage. The rule included an application process for interested vessel

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111 See, NOAA, Commercial Vessel Monitoring Systems (VMS) for Gulf Reef Fish Gulf of America Commercial Vessel Monitoring Systems (VMS), <https://www.fisheries.noaa.gov/southeast/sustainable-fisheries/commercial-vessel-monitoring-systems-vms-gulf-reef-fish>

112 50 CFR § 600.1500

113 50 CFR § 600.1515

114 NMFS, NOAA Fisheries Type-Approved VMS Units, <https://www.fisheries.noaa.gov/national/enforcement/noaa-fisheries-type-approved-vms-units>

115 NMFS, NOAA Fisheries Announces Changes to the VMS Reimbursement Program (2022), <https://www.fisheries.noaa.gov/bulletin/noaa-fisheries-announces-changes-vms-reimbursement-program>.

owners, performance standards for electronic monitoring systems, requirements for vessel operators, a permitting process, standards for electronic monitoring service providers, and requirements for receiving and disposing of prohibited and protected species as identified during electronic monitoring trips.<sup>116</sup>

There are now 14 electronic monitoring programs underway in the US, with several more in development.<sup>117</sup> These include bycatch and retention electronic monitoring programs, as well as logbook auditing (comparing video feeds to a vessel’s logbook entries to validate the logbook).<sup>118</sup> electronic monitoring may take on increasing importance as budget cuts increasingly shrink federal support for observer programs.<sup>119</sup> Yet, storage and review protocols, along with their corresponding costs, remain one of the most significant barriers to the uptake of electronic monitoring. Not coincidentally, they are among their most contentious elements of proposed electronic monitoring programs. These requirements are discussed in greater detail below.

### iii. Reporting

Like other rules, requirements to provide e-data in the form of electronic logbooks or other catch reporting systems vary by region and fishery, although the use of these systems in the U.S. is quite mature. For example, all Mid-Atlantic and New England fisheries are required to use electronic catch reporting via approved devices and software.<sup>120</sup> The Alaskan region maintains an integrated electronic reporting system that allows commercial fisheries to provide a single update to multiple management agencies.<sup>121</sup>

Regional management offices have supported this rollout with webinars, training, and answers to frequently asked questions, although it does not appear that any financial support is available. Additionally, federal websites provide aggregate details on software options for electronic reporting.<sup>122</sup> These supports have eased the transition to e-reporting; stragglers remain, but the trend is clearly toward electronic reporting as the norm for

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116 Fisheries off West Coast States; Pacific Coast Groundfish Fishery; Electronic Monitoring Program, 84 Federal Register 31146 (2019), <https://www.federalregister.gov/documents/2019/06/28/2019-13324/fisheries-off-west-coast-states-pacific-coast-groundfish-fishery-electronic-monitoring-program>.

117 NOAA, Electronic Monitoring (10 April 2025), <https://www.fisheries.noaa.gov/national/fisheries-observers/electronic-monitoring#:~:text=Electronic%20monitoring%20is%20a%20tool,use%20to%20track%20their%20catch>

118 NOAA, Electronic Monitoring Program Manual West Coast Region Groundfish (updated May 2023), <https://www.fisheries.noaa.gov/s3/2023-05/2024EMProgramManual-May2023.pdf>

119 For example, “in the Hawai’i deep-set longline fishery, in which NOAA reduced the target observer coverage rate from 20% in 2023 to 7% in 2025 citing increasing costs.” EDF, Enhancing Federal Cost Savings: Electronic Monitoring and Reporting in U.S. Fisheries (2024), <https://library.edf.org/AssetLink/8jrchpmv7a0rgq0cu03e0yfs5x4nu42n.pdf>. Recent litigation has also created uncertainty around the government’s ability to require industry to pay for observer or EM programs.

120 NOAA, NOAA Fisheries Moves From Paper to Electronic Reporting (4 October 2021), <https://www.fisheries.noaa.gov/feature-story/noaa-fisheries-moves-paper-electronic-reporting>

121 NOAA, Electronic Reporting in Alaska Fisheries (updated 18 August 2025), <https://www.fisheries.noaa.gov/alaska/resources-fishing/electronic-reporting-alaska-fisheries>.

122 See, e.g., Mid-Atlantic Fishery Management Council, Commercial Electronic Vessel Trip Reporting, <https://www.mafmc.org/commercial-evtr>.

commercial fisheries and greater integration across state, regional, and federal reporting through centralised platforms.<sup>123</sup>

## b) E-data Management

In addition to its above-referenced Electronic Technology Policy, NOAA has adopted an overarching Data and Information Management policy.<sup>124</sup> It recognises data as one of the most important assets available to fishery managers; among its provisions, it establishes responsibilities within the division for data management, encourages data sharing within NOAA as permitted by law, and calls for standardised metadata and a single, “authoritative repository for each of the agency’s primary data assets” to avoid redundancies.

The U.S. Electronic Technology Policy has also been augmented with two more subsidiary guidance documents in addition to the cost-sharing policy mentioned above: (i) a “Third-party Minimum Data Retention Period in Electronic Monitoring Programs for Federally Managed U.S. Fisheries” policy; and (ii) an “Information Law Application for Data and Supporting Guidance in Electronic Monitoring Programs for Federally Managed U.S. Fisheries” policy. The former<sup>125</sup> provides that third-party electronic monitoring service providers should be required (pursuant to a contractual agreement with NOAA) to retain e-data for a minimum of 12 months following data reconciliation and catch monitoring for the fishery. The purpose is to “ensure that vessel owners’ [electronic monitoring] data are available to NOAA Fisheries to effectively administer the [electronic monitoring] program and monitor service provider and vessel compliance.”

The latter policy explains how existing U.S. data laws apply to e-data in fisheries, whether held by government personnel or by third parties. These laws include the Federal Records Act, which requires that any raw data transmitted to or collected by U.S. federal authorities (including copies obtained from third parties) be retained for 5 years; Section 402(b) of the Fisheries Management Act which protects the confidentiality of any observer information that would disclose the identity of a person or business (while permitting disclosure for law enforcement, or for scientific purposes if the identifying information is removed); and the Freedom of Information Act, which allows general public access to government records, including fisheries e-data collected by NOAA, unless specific exemptions apply. Together, these policies establish a general presumption that personal or sensitive business records will be protected from public disclosure. At the same time, non-confidential information can be requested as needed for fisheries science or other academic purposes.

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123 Atlantic Highly Migratory Species, for example, do not yet require electronic reporting, but a proposal has been put forward to convert from paper to electronic logbooks: Atlantic Highly Migratory Species; Electronic Reporting Requirements, 88 Federal Register 30699 (2023), <https://www.federalregister.gov/documents/2023/05/12/2023-10073/atlantic-highly-migratory-species-electronic-reporting-requirements>.

124 NMFS Policy, 04-111, NMFS Data and Information Management (2011).

125 NMFS Policy 04-115-03, Third-party Minimum Data Retention Period in Electronic Monitoring Programs for Federally Managed U.S. Fisheries (2020).



## i. Transmission and storage

There are two streams of e-data emerging from U.S. fisheries. One stream flows directly to regulators and is maintained on government-owned storage platforms. The other goes to third-party service providers.

Tracking data from VMS systems goes to NOAA's Office of Law Enforcement, where, as noted above, it is stored in a database and made accessible via NOAA's vTrack software platform. NOAA maintains its own policy on Vessel Monitoring Systems Data Access and Dissemination,<sup>126</sup> which delegates responsibility for information technology services, networks, systems, and support for VMS to NOAA's Office of the Assistant Chief Information Officer. This includes managing "storage, access, security, and destruction of VMS data in a manner which preserves the integrity and credibility of the data commensurate with standards that ensure the data's acceptance for use in investigative and legal proceedings, protected resources and fisheries management, and science." NOAA enforcement officers and attorneys are granted unfettered access to VMS data. Others must be approved by the Office of Law Enforcement and execute a non-disclosure agreement. However, this system has been criticized for its lack of transparency and poor availability to government and academic fishery researchers.<sup>127</sup>

Monitoring data are more fragmented. Where electronic monitoring programs have been initiated, transmission methods and storage solutions may depend on programmatic goals, such as the duration of fishing trips (and corresponding amount of monitoring data that must be transmitted and analysed), the types and frequency of interactions that must be analyzed, the resulting technological options, and their resulting costs. The absence of a universally applicable policy makes transmission and storage issues a key point of discussion in the design of each fishery management program. It has also prompted calls for national performance standards and certification programs to improve fishers' familiarity with electronic monitoring programs and encourage economies of scale for tested transmission and storage solutions.<sup>128</sup>

Electronic reporting is typically delivered to federal regional offices, but it may come through a variety of channels and be stored on different systems and servers. This piecemeal system has been critiqued for its lack of interoperability. For example, an East Coast fisher undertaking a single trip may be required to report to three different scientific or management offices. Like monitoring data, reporting data is region and fishery-dependent, and at least one U.S. non-governmental organisation has called for consolidating back-end management of reporting data, with efforts now underway to combine systems at a regional level.

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126 NMFS Policy 06-101, Vessel Monitoring Systems Data Access and Dissemination (2014).

127 Net Gains Alliance, Five Recommendations for Better Utilizing VMS Data to Enhance Fisheries Management (June 2023), <https://www.netgainsalliance.org/news/five-recommendations-for-better-utilizing-vms-data-to-enhance-fisheries-management>

128 EDF, White Paper - Electronic Technologies and Data Policy for U.S. Fisheries: Key Topics, Barriers, and Opportunities, [https://www.edf.org/sites/default/files/documents/EDFWhitePaper\\_ElectronicTechnologiesAndDataPolicyForU.S.Fisheries,6-22-20.pdf](https://www.edf.org/sites/default/files/documents/EDFWhitePaper_ElectronicTechnologiesAndDataPolicyForU.S.Fisheries,6-22-20.pdf).



## ii. Verification and validation

Data verification and validation practices are not incorporated in legislation. Like transmission and storage, these are handled on a case-by-case basis, depending on the data collected and the needs of the fishery management program. In cases where fishers are required to submit data to multiple organizations, data may be subject to different validation standards along each pathway. Most validation is carried out manually, meaning that NOAA staff review reporting or monitoring entries to ensure that they have been correctly filed and match with other records. This imposes substantial burdens on staff time and capacity.<sup>129</sup> Nevertheless, these auditing processes are crucial to ensuring that data is captured accurately and maintained in a format that is readily accessible to future users. There have been calls from members of the U.S. conservation community to leverage machine learning and other artificial intelligence tools to streamline these reviews. However, this approach may be theoretical, as this study could uncover no examples of pilot programs or official testing.

## iii. Analysis

All tracking data is transmitted to NOAA's Office of Law Enforcement, where it is stored on secure servers and made available for real-time enforcement. It is not entirely clear how that office analyses data, either in real-time or in aggregate, to identify potential violations and undertake investigations. Given its resources, the U.S. could maintain a full-time "virtual watch room", as some countries have done, engaging in software-assisted, continuous monitoring of all fishing activity for potential violations of area-based management measures or patterns indicative of illegal fishing. Yet nothing in the Fisheries Management Act, its implementing regulations, NOAA's e-data policies, or the administrative proceedings described below indicates this is the case.

Instead, a review of administrative and judicial proceedings since 2019<sup>130</sup> suggests that tracking data is analysed only after a potential violation has been identified via other means or through a directed investigation regarding a particular rule or fishery. As a substitute for supporting specific enforcement actions, anonymised VMS data are sometimes provided to third-party academics or analysts, often in partnership with NOAA, to monitor fleet behaviour at scale to inform policymaking.<sup>131</sup> Administrative hurdles have prompted calls for greater transparency and increased public access to this data, enabling civil society to support fisheries management better.<sup>132</sup>

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129 Colson Leaning, D., McGonigal, H., Seeley, M., Jud, S., 2024. Enhancing Federal Cost Savings: Electronic Monitoring and Reporting in U.S. Fisheries (EDF, 2024), <https://www.edf.org/content/enhancing-federal-cost-savings-electronic-monitoring-and-reporting-us-fisheries>.

130 Available at: <https://www.noaa.gov/general-counsel/gc-enforcement-section/enforcement-decisions-and-orders>

131 See, e.g., JT Watson et al., Vessel monitoring systems (VMS) reveal an increase in fishing efficiency following regulatory changes in a demersal longline fishery, *Fisheries Research* 207: 85-94 (2018), <https://doi.org/10.1016/j.fishres.2018.06.006>; Y. Wang et al., High resolution assessment of commercial fisheries activity along the US West Coast using Vessel Monitoring System data with a case study using California groundfish fisheries, *PLOS One* (2024), <https://doi.org/10.1371/journal.pone.0298868>.

132 See Net Gains Alliance, *supra*.

It is also unclear whether electronic monitoring data is subject to analysis beyond its use in reconciling logbooks. The above-referenced review of administrative and judicial proceedings could identify no cases in which human or machine analyses identified illegal fishing based on electronic monitoring data, or instances where such data was part of the evidentiary record in an enforcement proceeding.

### 3. E-data in enforcement proceedings

#### a) Civil Proceeding

The U.S. federal system extends to enforcement proceedings. Federal courts apply federal law, whereas states have their own courts and jurisdiction over alleged violations of state law. Further complicating this picture, federal administrative agencies may be authorised by statute to take jurisdiction over non-criminal, or “civil” proceedings, which are then presided over by administrative law judges employed by the relevant agency. These administrative judges will have expertise in the agency’s legal or regulatory subject matter and are likely to hear cases repeatedly involving the same laws and regulations.

Under the Fisheries Management Act, only the U.S. government, acting through NOAA, can bring a complaint for civil penalty for violations of the Act, although any citizen may report a violation. Civil respondents wishing to appeal a violation or penalty under the Fisheries Management Act can have their case heard by an administrative law judge. If the respondent is dissatisfied with the administrative ruling, they may appeal to a federal court.

The amount of any civil penalty imposed cannot exceed \$100,000 for each violation, although each day of a “continuing violation” shall constitute a separate offence.<sup>133</sup> NOAA maintains detailed schedules and examples as to how it calculates its penalties.<sup>134</sup> In case the respondents contest NOAA’s interpretation of the law, its authority to enforce the relevant rules, or believe their penalty was not supported by substantial evidence, they may appeal the agency’s decision in federal court.<sup>135</sup>

In a review of administrative proceedings since 2019, this study found only scattered examples of e-data’s use in enforcement proceedings. That is not to say, however, that e-data cannot be used in this context. Under U.S. law, documentary evidence – including electronic records – may be admitted into a federal judicial proceeding as long as it can be shown to be authentic and relevant. “Authentication” requires the proponent to demonstrate that the record is what it claims to be, typically through witness or expert testimony explaining how the record was collected and maintained. This is the reason why, for example, approval of any VMS systems requires the manufacturer to “provide technical and expert support for litigation.” The manufacturer must provide testimony to explain

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133 16 U.S.C. §1858(a).

134 NOAA, Penalty Policy and Schedules (updated 5 June 2025), <https://www.noaa.gov/general-counsel/gc-enforcement-section/penalty-policy-and-schedules>.

135 16 U.S. Code § 1858(b).



how the VMS system works in practice and reinforce the testimony of law enforcement officials about the information it provides.

In practice, it seems that this requirement for in-person “authentication” does not hinder enforcement proceedings, as the authenticity of tracking data was not contested in any of the U.S. proceedings examined in preparing this case study. Where the cases address the authenticity of e-data at all, it is only to note that the parties have agreed or stipulated to the authenticity of this data at the outset. Even without a definitive record, one can speculate at least two reasons for this: (i) the maturity of U.S. tracking systems has made judges familiar with the relevant technologies and skeptical of superfluous challenges particularly the administrative judges repeatedly presiding over fisheries case, and (ii) respondents are aware that regulations require vendors to “authenticate” their e-data if called upon, and any challenge is likely to resurface and reinforce the evidence against them.

Vessel tracking systems have served two uses in U.S. enforcement proceedings, providing the basis for investigating potential illegal fishing or confirming a vessel’s speed or position, particularly where those variables are relevant to the offence. NOAA brought its first prosecution based on VMS data in 2001.<sup>136</sup> A review of more recent administrative and judicial proceedings since 2019 yielded five examples in which tracking data (either VMS or AIS) was relevant in an enforcement proceeding.

**i. In re F/V Kingfisher, Docket No. NE2106798 (2024)**

The *F/V Kingfisher* was a 42-foot gillnet vessel captained by its owner. In the spring of 2021, the ship was granted a “multispecies” fishing permit for cod, haddock, and pollack, which required the use of VMS for all days at sea. The *Kingfisher* maintained a VMS system on board, purchased from a third-party supplier (Wood Hole Group) and connected to the vessel’s main power supply. This system included a control box with indicator lights to show its proper functioning.

A diagnostic report prepared from Woods Hole records indicated that the VMS unit on the *Kingfisher* was disconnected from its primary power supply on 14 May 2021.<sup>137</sup> It continued to transmit on battery power until 17 May, but then ceased transmission until 23 June. Consequently, the VMS was not transmitting during a fishing trip on 17 June 2021 when the *Kingfisher* landed about 14 pounds of cod. On 20 June, the vessel also landed a 300-kilogram bluefin tuna without the necessary permit for highly migratory species. Later, the owner would obtain the required bluefin permit and file a false trip report claiming that the bluefin was caught via trolling.

The record does not clarify whether the false trip or the VMS failure triggered the resulting investigation by NOAA. Regardless, the owner was found liable for fishing without

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136 MarineLink, NOAA Wins First Prosecution Using Vessel Monitoring System (13 December 2001), <https://www.marinelink.com/news/noaa-wins-first-prosecution-using-vessel-monitoring-system-----322051>

137 Notably, Woods Hole was able to provide this report in fall of 2023, although the relevant violations occurred in spring of 2021.

an operating VMS unit (as well as illegally landing bluefin tuna), in contravention of the permit and the requirements of the relevant fishery management plan. The government presented evidence from both the VMS vendor and its vTrack database to demonstrate that the vessels' VMS system was disconnected from power and failed to transmit for over a month, despite the vessel undertaking fishing trips under permits that required year-round, uninterrupted VMS use. Respondents claimed ignorance of the VMS system failure, but regulations classify VMS failures as "strict liability" offences, meaning intent is not required. The burden is on the vessel operator to ensure that the tracking system operates properly. However, demonstrating a good faith effort to comply and maintain equipment may lessen culpability and penalties, as shown below.

**ii. In re F/V Ocean Hunter, Docket No. NE2201102 (2024)**

The F/V *Ocean Hunter*, an 81-foot fishing vessel, held a federal fishing permit for Atlantic Sea scallops in March 2022, requiring an active VMS system. On 2 March 2022, NOAA's Office of Law Enforcement detected the vessel's VMS signal in the Great South Channel Habitat Management Area, where scallop dredging is prohibited to protect groundfish spawning and nursery habitats.

After noting the potential violation, NOAA coordinated with the Coast Guard to carry out an at-sea boarding later that day, confirming that the *Ocean Hunter* was actively fishing for scallops in the protected area and had scallops on board. At the hearing, the government introduced VMS data as evidence that the vessel had entered the fishing area on 28 February (about 4 days earlier) and remained there, "near-continuously [travelling] at speeds consistent with fishing while in the protected area." Coupled with other evidence (including the catch on deck), this was enough to justify a conclusion that illegal scallop fishing had taken place. The owner did not appear at the hearing to contest the validity of this data or the findings.

There are two other notable elements of this case. First, when officers boarded his vessel, the owner demonstrated that his navigational equipment indicated his ship to be outside the protected area, although the VMS data showed otherwise. The judge recognised the owner's good-faith attempt to respect the boundaries of the protected area by reducing his penalty. Second, the hearing record suggests that the vessel was in the protected area and likely fishing for nearly four consecutive days before the VMS data prompted an interdiction. This raises questions about how OLE analyses tracking data in real-time, as discussed above.

**iii. In re M/V Determination III, Docket No. SE2303316 (2024)**

The M/V *Determination* is not a fishing vessel, but a 111.4 yacht. On 7 December 2022, with its captain at the helm, the vessel travelled about 86 nautical miles through the Southeast Seasonal Management Area off the coast of Florida and the Mid-Atlantic Seasonal Management Area from Georgia to Rhode Island. The *Determination* was maintaining speeds of about 18 to 19 knots, although the management areas require vessels to reduce their speeds to under 10 knots to avoid collisions with the endangered right whale.

Parties stipulated that the vessel’s AIS data correctly showed their vessel was transiting protected right whale habitat at illegal speeds, and the data was not further discussed. Instead, respondents contested the agency’s authority to promulgate this regulation under the U.S. Constitution, and their case remains pending.

**iv. In re M/V M/V Brett Allie V, Docket No. NE2203327 (2024)**

The *Brett Allie* was another yacht found to have maintained illegal speed in a right whale Seasonal Management Area. The case is notable for its detailed description of how AIS transponder data flows from vessels to a dedicated systems centre operated by the U.S. Department of Transportation, then to NOAA, where it is compiled into spreadsheets to plot vessel speeds while in seasonal management areas.<sup>138</sup> Given that three similar cases were brought in six months (see below), it may be reasonable to assume that NOAA was analysing AIS data specifically as part of a concerted effort to enforce speed restrictions related to Atlantic right whale protections.<sup>139</sup> The validity of the AIS data was not contested.

**v. In re M/V Michele My Belle, Docket No. NE2300747 (2025)**

As in the cases above, AIS data was used to establish a vessel’s violations of speed restrictions in a North Atlantic right whale Seasonal Management Area. The judge found that “the accuracy and reliability of this data is not subject to reasonable dispute” without further discussion. Again, it may be inferred that judges and industry stakeholders are becoming more familiar with vessel tracking systems and the resulting e-data.

Of the cases referenced above, only one (*In re Ocean Hunter*) utilised VMS data collected as part of a fishery management plan to identify and interdict illegal fishing activities. More often than e-data, fisheries enforcement officials seem to use enforcement patrols and visual inspections to identify illegal fishing activity, then use navigational software

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138 The full text of the description follows: “The United States Coast Guard operates onshore facilities that collect AIS data broadcasted by nearby ships like that of the M/V Brett Allie V and store the data on servers at its Operations Systems Center (“OSC”) in West Virginia. Tr. 150, 152-155. The Volpe Center, a vessel tracking operation under the United States Department of Transportation, maintains a constant, secure connection to this server which transmits the unmanipulated, raw data collected by OSC in near real time, mere seconds after being broadcasted by vessels. Tr. 155; see AX 10. As the data are received by the Volpe Center, the only change that occurs is the addition of a time stamp denoting when the data are received. Tr. 155-156. NOAA, for its part, hosts a server at the Volpe Center that then transmits the AIS data to a NOAA data center. Tr. 156-157; see AX 10 at 2. As the data arrive at the NOAA data center, a computer program decodes the messages to extract pertinent information—like time; latitude; longitude; speed; and vessel information, including name, length, and type of vessel (e.g., recreational vs. commercial). Tr. 157, 180-190. This information is put into a spreadsheet alongside data fields created by NOAA after analyzing the data, such as whether a particular data entry was provided while in a Seasonal Management Area (“SMA”), which are areas with 10-knot speed limits for ships 65 feet or more to protect North Atlantic right whales from vessel collisions. Tr. 180-190. (...). Once the data have been put into a spreadsheet, other offices within NOAA can request access to the data for a particular vessel during a specified time period. Tr. 178-179. An investigative support technician for NOAA’s Office of Law Enforcement, tasked with assisting in building cases involving potential speed violations, requested the dataset for the M/V Brett Allie V after determining it may have traveled faster than permitted through two SMAs. Tr. 196, 196-198. The technician used the data to create ten charts plotting the M/V Brett Allie V’s position and speed at each data point transmitted while within an SMA as a means of visualizing the speed at which the vessel transited the areas.”

139 NOAA, Reducing Vessel Strikes to North Atlantic Right Whales (updated 28 November 2025) <https://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-vessel-strikes-north-atlantic-right-whales>

and GPS tools to confirm positioning.<sup>140</sup> It is difficult to draw conclusions because of the lack of other examples, although it seems likely that e-data remains underutilised in the enforcement context. It is also possible that in well-managed U.S. fisheries, high compliance levels result in few instances where e-data helps identify or prosecute illegal fishing.

As noted, none of the cases reviewed introduced e-data from management or reporting programs as evidence. Only *In re M/V M/V Brett Allie V* discussed transmission, storage, or analysis of e-data regarding AIS. Once more, it is difficult to draw any conclusions from the absence of litigation around these issues; it may be evidence of programmatic failures to leverage this data, successful deterrence, or simply a product of limited initial deployment. It is a subject ripe for further investigation.

## b) Criminal Proceedings

The MFCA provides for criminal penalties for egregious violations of fishing rules, including interfering with officials in the conduct of their duties, knowingly submitting false information or making false statements, or engaging in illegal fishing by foreign vessels or nationals.<sup>141</sup> Penalties for criminal violations include not only heavy fines (ranging from \$100,000 to \$200,000 if dangerous weapons or threats of injury are involved), but also imprisonment.

There is no administrative jurisdiction over criminal violations of fisheries or other federal law. These cases - which may result in much higher fines and imprisonment - are prosecuted by the U.S. Department of Justice and always heard by a federal court. While the burden of proof for the complainant is higher in a criminal proceeding (allegations must be proven “beyond a reasonable doubt” as opposed to just “more likely than not”), and the case must be heard in federal court with an opportunity to empanel a jury, the rules governing the introduction of e-data are essentially the same.

Although NOAA maintains a database of enforcement decisions and orders, no criminal cases are listed after 2017.<sup>142</sup> While the advantages and disadvantages of criminalising illegal fishing have received increasing attention in fisheries governance literature,<sup>143</sup> no analysis of the evolving U.S. approach could be found in preparing this case study. One could speculate that civil and administrative penalties have been substantial enough to deter illegal activity and promote a culture of compliance. Alternatively, there may have been political pressure to deemphasise criminal prosecutions, given the country’s political volatility and the central place of fishers in the U.S. national mythology. It is a question that may warrant further study.

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140 See, e.g., *In re: F/V Santiago’s Revenge*, (using GPS coordinates from chart plotter to confirm vessel location for illegal possession of Atlantic striped bass)

141 16 U.S.C. §1859.

142 A more detailed review of U.S. case law for criminal violations of the Fisheries Management Act would be possible via an online database of court cases like LexisNexus or Westlaw, but is outside the scope of the present report.

143 Blaise Kuemlangan et al., *Enforcement approaches against illegal fishing in national fisheries legislation*, *Marine Policy* 149: 105514 (2023), <https://www.sciencedirect.com/science/article/pii/S0308597X23000416>.

## 4. Conclusions

The U.S. is an example of a jurisdiction with ample capacity to leverage e-data in fisheries governance, but has only taken partial advantage of emerging technologies. While the U.S. maintains national policies to encourage e-data collection and use, e-data requirements are driven by policymakers at the regional level and reflect the needs of individual fisheries, even as efforts to integrate them better are underway.

Electronic tracking methods, such as AIS and VMS, are in widespread use. However, it appears that the pathways for managing this data do not yet enable real-time analysis and identification of illegal fishing. Instead, enforcement officials must request specific tracking data to support investigations and proceedings, or to support enforcement priorities, such as monitoring seasonal speed limits.

Equally, electronic monitoring remains nascent. While it may offer cost savings at a moment when government budgets are under pressure, its upfront costs of transmission, storage, and analysis remain key considerations, and thus far, it does not seem to be playing a significant role in investigations or enforcement proceedings. Yet the legal frameworks requiring electronic reporting are mature, and coverage is increasing. But at the same time, these technologies do not appear to be playing a significant role in enforcement.

Tracking data plays a role in enforcement proceedings, both to confirm compliance with the tracking regime and as evidence of a vessel's speed and location, where relevant. Monitoring and reporting data were not introduced in any of the proceedings reviewed in connection with this case study.

## Annex 1. List of legislation

Magnuson-Stevens Fisheries Management and Conservation Act (Fisheries Management Act) of 1976, 16 U.S.C. § 1801 et seq. 50 CFR Part 600 (Fisheries Management Act implementing regulations)

## Annex 2. Technology overview

|   | Mandatory / Voluntary                          | Responsible for providing e-data                             | Responsible for receiving and keeping data | e-data public?           | e-data shared?  | Technology certified |
|---|--|--|--|--------------------------|---|----------------------|
| AIS   | Mandatory                                      | Vessel operator  | Government authority (SGP)                 | Public                   | Public  | No                   |
| VMS   | Mandatory in many (although not all) fisheries | Vessel operator  | Government authority (NOAA)                | Confidential - with NOAA | For enforcement with other govt agencies  | Yes                  |
| Electronic Reporting (e-logs)                   | Mandatory in many (although not all) fisheries | Vessel operator  | Government authority (NOAA)                | Confidential             | For enforcement with other govt agencies - some aggregated data shared with scientific bodies | Yes                  |
| On board electronic monitoring                  | Pilot stage in some fisheries                  | Vessel operator  | Government authority (NOAA)                | Confidential             | n/a   | n/a                  |
| Photos & videos from drones, vessels & aircraft | Discretionary                                  | Generally government authority (fisheries and non-fisheries) | Generally government authority             | Depends on source        | Depends on source   | n/a                  |



## Annex 3: summary chart of the five case studies

### Legend

Higher level of data transparency, accessibility, or quality

Lower level of data transparency, accessibility, or quality

| Technology | Country  | Mandatory / Voluntary                               | Responsible for providing e-data | Responsible for receiving e-data              | e-data public?                           | e-data shared?  | e-data source validated |
|------------|--|---|----------------------------------|---|--|---|-------------------------|
| AIS        | Australia                                      | Mandatory for some fishing vessels in certain areas | Vessel operator                  | Publicly available via satellite subscription | Public                                   | Public  | No                      |
|            | New Zealand                                    | Mandatory for some fishing vessels in certain areas | Vessel operator                  | Publicly available via satellite subscription | Public                                   | Public  | No                      |
|            | Marshall Islands                               | Mandatory for some fishing vessels in certain areas | Vessel operator                  | Publicly available via satellite subscription | Public                                   | Public  | No                      |
|            | Spain  | Mandatory   | Vessel operator                  | Publicly available via satellite subscription | Public                                   | Public  | No                      |
|            | USA  | Mandatory for vessels > 65 feet long                | Vessel operator                  | Publicly available via satellite subscription | Public                                   | Public  | Yes                     |
| VMS        | Australia                                      | Mandatory   | Vessel operator                  | Government authority (AFMA)                   | Confidential - with AFMA                 | For enforcement between Govt agencies   | Yes                     |
|            | New Zealand                                    | Mandatory   | Vessel operator                  | Government authority MPI                      | Confidential - with MPI                  | For enforcement between Govt agencies   | Yes                     |
|            | Marshall Islands                               | Mandatory   | Vessel operator                  | Government authority MIMRA                    | Confidential - with MIMRA                | For enforcement between Govt agencies in RMI and regionally via FFA Niue Treaty | Yes                     |
|            |  |   |                                  | Regional Support Organisation FFA             |  |   |                         |
|            | Spain  | Mandatory   | Vessel operator                  | Government authority (SGP)                    | Confidential - with SGP                  | For enforcement with other govt agencies  | Yes                     |
| USA        | Mandatory in many (although not all) fisheries | Vessel operator                                     | Government authority (NOAA)      | Confidential - with NOAA                      | For enforcement with other govt agencies | Yes   |                         |



|                                       |  |  |                             |  |   |   |     |
|---------------------------------------|--|--|-----------------------------|--|---|---|-----|
| <b>Electronic reporting (e-logs)</b>  | <b>Australia</b>                               | Mandatory for vessels in certain fisheries                           | Vessel operator             | Government authority (AFMA)                  | Confidential  | Aggregated data only  | Yes |
|                                       | <b>New Zealand</b>                             | Mandatory for vessels in certain fisheries                           | Vessel operator             | FISHServe on behalf Government authority MPI | Confidential  | Aggregated data only  | Yes |
|                                       | <b>Marshall Islands</b>                        | Mandatory for vessels in certain fisheries                           | Vessel operator             | Government authority MIMRA                   | Confidential  | Yes among countries under data rules                                  | Yes |
|                                       |  |  |                             | Subregional Management Body                  |   |   |     |
|                                       |  |  |                             | PNA  |   |   |     |
|                                       | <b>Spain</b>                                   | Mandatory for most vessels   | Vessel operator             | Government authority (SGP)                   | Confidential  | For enforcement with other govt agencies                              | Yes |
| <b>USA</b>                            | Mandatory in many (although not all) fisheries | Vessel operator  | Government authority (NOAA) | Confidential                                 | For enforcement with other govt agencies - some aggregated data shared with scientific bodies | Yes   |     |
| <b>On board electronic monitoring</b> | <b>Australia</b>                               | Mandatory for select fisheries                                       | Vessel operator             | Government authority (AFMA)                  | Confidential  | Within Govt agencies for Science and Compliance                       | Yes |
|                                       | <b>New Zealand</b>                             | Mandatory for select fisheries                                       | Vessel operator             | Government authority MPI                     | Confidential  | Within Govt agencies for Science and Compliance                       | Yes |
|                                       | <b>Marshall Islands</b>                        | Voluntary for now. Yet working towards regional imposition via WCPFC | Vessel operator             | Government authority MIMRA                   | Confidential  | Within Govt agencies and service providers for Science and Compliance | Yes |
|                                       |  |  |                             | Subregional Management Body                  |   |   |     |
|                                       |  |  |                             | PNA  |   |   |     |
| <b>Spain</b>                          | Voluntary                                      | Vessel operator  | Government authority (SGP)  | Confidential                                 | n/a   | n/a   |     |
| <b>USA</b>                            | Pilot stage in some fisheries                  | Vessel operator  | Government authority (NOAA) | Confidential                                 | n/a   | n/a   |     |



|  |                         |                                       |  |                                |                         |   |                          |
|--|-------------------------|---------------------------------------|--|--------------------------------|-------------------------|---|--------------------------|
| <b>Photos &amp; videos from drones, vessels &amp; aircraft</b> | <b>Australia</b>        | Discretionary use by Govt authorities | Government authority (fisheries and non-fisheries)           | Government authorities         | Confidential            | For enforcement between Govt agencies                       | Vessels and aircraft Yes |
|  | <b>New Zealand</b>      | Discretionary use by Govt authorities | Government authority (fisheries and non-fisheries)           | Government authorities         | Confidential            | For enforcement between Govt agencies                       | Vessels and aircraft Yes |
|  | <b>Marshall Islands</b> | Discretionary use by Govt authorities | Government authority (fisheries and non-fisheries)           | Government authorities         | Confidential            | For enforcement between government agencies and FFA Members | Vessels and aircraft Yes |
|  | <b>Spain</b>            | Discretionary                         | Government authority   | Government authority (SGP)     | Confidential - with SGP | For enforcement with other govt agencies                    | Yes, when GPS-tagged     |
|  | <b>USA</b>              | Discretionary                         | Generally government authority (fisheries and non-fisheries) | Generally government authority | Depends on source       | Depends on source   | n/a                      |





Derecho al ambiente

