Western Indian Ocean Marine Protected Area Enforcement Exchange

Only 8.3% of the global ocean is protected, and just 2.8% of these areas are effectively managed—highlighting the need not only for more MPAs but for stronger governance, threat management, and consistent compliance to avoid "paper parks." Effective enforcement is central to achieving ecological, socio-economic, and cultural outcomes.

With support from WIOMSA, WildAid, and the Blue Nature Alliance, the Western Indian Ocean (WIO) region has advanced MPA resourcing and national enforcement systems through technical assistance and peer-to-peer capacity building. To continue this momentum, 19 marine managers and enforcement practitioners from eight WIO countries convened in February 2026 in Mombasa, Kenya for a WIOMSA-hosted Learning Exchange on strengthening Monitoring, Control, Surveillance, and Enforcement (MCS&E) in MPAs. The gathering provided a collaborative space to share experiences, explore innovations, and deepen regional connections while confronting persistent enforcement challenges—remote geographies, limited resources and technology, weak governance, and low community engagement.

PURPOSE

To provide a high-level, interactive forum where senior MPA, fisheries, and maritime enforcement leaders could examine enforcement effectiveness, test strategic approaches, and co-develop forward-looking enforcement sailplans aligned with national and regional priorities, the exchange aimed to:

- Enable peer-to-peer learning on designing, governing, and sustaining effective MPA and fisheries enforcement systems.
- Highlight WIO country innovations and regional cooperation efforts in MCS and compliance.
- Introduce intelligence-led, risk-based, and deterrence-focused enforcement approaches suited to WIO contexts.
- Share relevant technologies and localized MCS methods and explore non-patrol levers of compliance, including behavioral insights, legitimacy, incentives, sanctions, institutional design, and cross-agency coordination.
- Support participants in developing enforcement sailplans that distinguish between actions within their control and structural barriers requiring higher-level political, legal, or budgetary support.

Exchange participants

PREPARATION

In preparation for the workshop, and to ensure all participants held a basic degree of knowledge of key enforcement principles and practices, invitees reviewed the Reef Resilience Network's new MPA Enforcement Toolkit. Developed in partnership with WildAid and BNA, the toolkit assembles leading strategies, expert advice, and success stories from marine managers to provide foundational knowledge on MCS&E systems. This critical information supports managers looking to improve the effectiveness of their MPA. The toolkit summarizes the four main components of MCS&E and explains how each relates to—and relies on—the other. It also provides an overview of tools and strategies for MPAs in various contexts and locations, as well as a scoping exercise for managers and teams to use when planning their MCS&E systems.

INSTITUTIONAL COORDINATION

Participants explored how to advance institutional coordination by sharing national and regional lessons learned:

EarthRanger for Marine Conservation, Allen Cedras, Seychelles Parks and Gardens Authority (SPGA): Allen presented the application of the EarthRanger platform as an integrated, real-time monitoring and management tool to strengthen enforcement and operational effectiveness in marine protected areas. Drawing on the Seychelles experience, he demonstrated how EarthRanger consolidates diverse data streams—including vessel tracking (AIS), patrol movements, incident reports, and remote sensing inputs—into a single platform that enhances situational awareness and coordination. The system supports a shift toward intelligence-led enforcement by enabling the identification of illegal activity hotspots, improving response times, strengthening evidence collection, and facilitating more strategic deployment of limited resources. The presentation highlighted how the platform is being used to improve inter-agency coordination, standardize reporting, and support adaptive, data-driven decision-making across SPGA-managed sites.

Bahamas Marine Action Partnership (MAP), Gregg Casad, WildAid: Aligned with WildAid's Blueprint for Marine Protection Systems (MPS), Gregg shared a collaborative approach to improving sustainable fishing in The Bahamas. Starting in 2018, Bahamian government agencies partnered with The Nature Conservancy (TNC) and WildAid to form the MAP. The initiative aims to enhance marine patrol, surveillance, investigation, and public outreach to reduce IUU fishing. The partnership has produced an enforcement gap assessment and a comprehensive MPS plan in 2021, conducted knowledge exchanges, and deployed new technology to detect illegal fishing. In addition, the MAP has enhanced the skills of fisheries officers, deployed an anonymous community reporting platform, and supported focused law enforcement operations, such as Operation Red Dawn.

Marine Protection Index, Bob Farrell, WildAid: The session introduced the Marine Protection System (MPS) Tracker, a rapid diagnostic tool used to assess enforcement capacity and identify priority gaps. Participants reviewed five core components: intelligence sources, national collaboration, sanctions and prosecutions, laws and regulations, and staffing. Discussions confirmed that most countries have adequate legal frameworks and existing interagency coordination, but enforcement effectiveness is constrained by limited staffing, operational resources, and analytical capacity. Intelligence systems are expanding but remain only partially integrated into decision-making, and sanctions do not always provide strong deterrence.

TECHNICAL INNOVATION

Regional organizations shared available tools and experiences using various technologies, and supported country teams as they considered which technologies apply to their MPAs:

EarthRanger, India Taylor-Smith: India shared information about EarthRanger, an integrated marine command platform that provides real-time situational awareness, operational coordination, and data analysis to support marine conservation and enforcement. It tracks assets such as patrol teams, vessels, and wildlife, while visualizing patrol activity, incidents, and areas of interest through interactive maps, geofences, and alerts. Field teams can collect standardized reports—including photos, locations, and incident details—using mobile tools, improving communication, safety, and evidence management. The platform integrates external data sources, including satellite-based maritime intelligence from Skylight, to generate alerts when suspicious vessels enter protected areas. Analytical tools such as heatmaps, time playback, and dashboards support patrol planning and performance assessment. By linking detection, field response, and analysis, EarthRanger helps agencies move toward intelligence-led operations and more efficient protection of marine protected areas.

WildAid, Gregg Casad: Gregg showcased how the Skylight platform uses artificial intelligence (AI) to monitor maritime activity in real time and at no cost, offering simplified, actionable insights. Skylight's capabilities include detecting behaviors such as transshipments, fishing activity, and vessel transits in monitored areas, as well as identifying dark vessels that are not broadcasting AIS signals. Gregg emphasized the importance of user collaboration and shared two success stories where Skylight's technology helped detect and stop illegal fishing—one involving a Vanuatu vessel fined in Argentine waters, and another identifying illegal longliner activity in Panama's Coiba National Park.

LEARNING SESSION: MPA ENFORCEMENT TECHNOLOGY

Gregg Cassad from WildAid led a learning session focused on understanding the monitoring technologies used across MPAs, along with the major gaps and barriers affecting their effectiveness. Participants described a wide mix of tools in use —from EarthRanger, VMS, OSIMS, Skylight, and SMART Patrol to drones, AIS, GPS, and various reporting and hotline systems—but noted that adoption remains uneven across sites. Many MPAs lack the equipment, connectivity, or skills needed to fully use these systems, and several tools face functional limitations such as limited device availability, insufficient training, coverage constraints, permitting challenges, and difficulty detecting small vessels or capturing real-time data. Participants highlighted broader barriers, including funding shortages, governance issues, low technological capacity, weak interagency coordination, and limited exposure to available tools. They also noted that technology uptake often depends on national and agency mandates or local champions. Across the region, participants emphasized the need for stronger multilateral and bilateral cooperation and regional initiatives to build shared technical capacity, improve data flow, and strengthen enforcement outcomes.

Mombasa Marine Park Risk Assessment: Chris Wilcox from WildAid led a session that focused on conducting a risk assessment for an MPA using a structured approach to evaluate threats and prioritize control strategies. Participants identified and scored various threats based on frequency and impact, using a methodology that converted qualitative assessments into quantitative risk scores. The group compared two patrol strategies - land and boat patrols - to determine which would most effectively reduce risks to the MPA. Through calculations and group discussion, they determined that boat patrols would be twice as effective as land patrols in reducing the overall risk to the MPA, primarily due to the higher frequency and greater impact of water-based threats compared to land-based activities.

Community Vigilance: The session focused on community-based conservation efforts and law enforcement challenges in marine protected areas. Participants discussed the importance of building trust with local communities, establishing clear enforcement protocols, and working collaboratively with government agencies. Bahari Hai shared their experience working with community members to monitor and report illegal activities and highlighted the role of NGOs in supporting conservation efforts and the challenges of maintaining consistent enforcement across different wardens. The group explored ways to improve accountability within government agencies and discussed potential solutions for addressing issues like unauthorized access to protected areas.

SYSTEMS THINKING IN ENFORCEMENT

Strategy, Intelligence and Adaptive Management: Across the two presentations, Arthur Tuda of WIOMSA framed enforcement and compliance in the Western Indian Ocean (WIO) as a systemic challenge, arguing that while MPAs are expanding and patrol capacity is increasing, effectiveness is constrained by weak intelligence, fragmented coordination, and limited adaptive capacity. He emphasized that enforcement outcomes are not determined by patrol effort alone, but by the strength of the broader system—legal follow-through, inter-agency collaboration, community legitimacy, and the integration of data into decision-making.

Building on this, the adaptive management session mapped the full enforcement cycle—from threats and operations to data collection, intelligence analysis, decision-making, and adjusted action—highlighting that the most critical gaps lie in intelligence functions and slow, constrained decision nodes. The presentations underscored the need to shift from reactive, patrol-centered approaches to intelligence-led, adaptive systems that continuously learn and respond to changing conditions, positioning this transition as essential for achieving durable and effective enforcement in the WIO region.

A Leadership Dialogue on Unlocking Structural Barriers to Enforcing MPAs in the WIO:
Panellists:

- Makame Makame, Director, Marine Conservation Department, Ministry of Fisheries and Blue Economy, Zanzibar
- Allen Cedras, CEO, Seychelles Parks and Garden Authority
- Eugénio Agostinho, Director of Conservation, ANAC Mozambique
- Delricia Augustus, Deputy Director Compliance, Directorate Monitoring Control and Surveillance, Department of Forestry, Fisheries and the Environment, South Africa

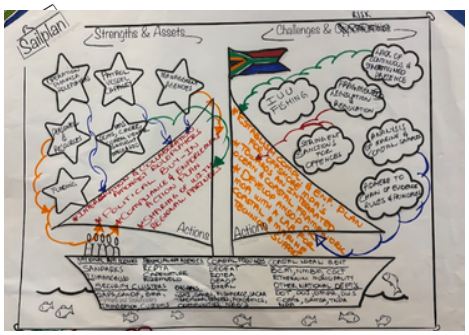
The panel brought together senior leaders from Zanzibar, Seychelles, Mozambique, and South Africa to reflect on the systemic barriers constraining effective enforcement across the region, reinforcing the workshop's core message that enforcement outcomes are shaped by systems, not patrol effort alone. Drawing on national experiences, Makame Makame highlighted governance and coordination challenges within co-management and fisheries decision-making structures, while Eugénio Agostinho emphasized Mozambique's intelligence-led approach—combining vessel tracking, community informants, and pattern analysis to guide patrol deployment—alongside persistent constraints such as weak prosecution processes and limited operational budgets. Allen Cedras and Delricia Augustus underscored the importance of formalizing data systems, strengthening inter-agency collaboration, and reducing reliance on individual-driven decision-making.

Across the discussion, a consistent theme emerged: while countries have legal mandates, assets, and growing technological tools, enforcement systems are hindered by gaps in intelligence integration, slow decision-making, and weak feedback loops from prosecution. The panel strongly aligned with the adaptive management framework, calling for structured learning systems, scenario testing, and intelligence-driven operations to improve responsiveness and effectiveness. At a regional level, participants emphasized the need for stronger integration through platforms such as WIOMPAN/YMPAC, harmonized procedures, and more regular director-level engagement, culminating in a shared commitment to present a unified regional position at the Nairobi Convention COP12. The dialogue ultimately reinforced that achieving durable enforcement in the WIO will require coordinated institutional reform, sustained leadership, and a shift toward adaptive, intelligence-led systems.

COUNTRY-SPECIFIC STRATEGIC PATHWAYS

MCS&E National RADAR Tool: While radar in an MCS&E system is typically used to detect and track vessels, the "RADAR" tool—adapted from WildAid's Blue Print Marine Protection System framework—was used here as a reflective learning tool. Each country team used it to capture insights and regional examples that could strengthen their national MCS&E systems. The RADAR helped participants organize key enabling conditions for effective implementation, including policies and regulations, monitoring and surveillance, enforcement, community engagement, partnerships, capacity building, and funding. It also captured country-specific actions to address challenges and leverage opportunities.

Sail Plan: A "Sail Plan" is a way to visualize the priority activities identified by an MCS&E RADAR, to help enhance an area's enforcement efforts. The Sail Plan also provides a way to share scoping results with other departments, partners, or other stakeholders, which may inspire further partnership and collaboration necessary to continue moving an MCS&E system forward. Each country's Sail Plan reflects a commitment to pursue ecosystem-based approaches, strengthen regional cooperation, and enhance citizen involvement in marine protection. The Sail Plans offer a detailed country-by-country breakdown of MCS&E strengths, challenges, and opportunities, reflecting the localized assessments that emerged during the exchange.



A sample RADAR (top) and Sail Plan (bottom) developed by participants

Country Strengths and Opportunities from Sail Plan Presentations:

Kenya: Plan highlights strong legal and institutional foundations, including existing MPA management plans, committed staff, partner engagement, and ongoing community collaboration. Key risks include equipment gaps, limited operational efficiency, funding constraints, weak evaluation of enforcement effectiveness, and climate impacts.

Comoros: Sail plan highlights strong ecological conditions, an established MPA legal framework, and a functioning co-management system, but also reveals risks related to weak monitoring capacity, fragmented information systems, fishing pressures, and lack of sustainable financing. Priority actions center on building a national monitoring system, strengthening surveillance and partnerships, and securing long-term financing for effective management.

Madagascar: Plan shows strong foundational assets, including an established MPA network, monitoring tools, active NGO support, and positive community relationships, but challenges include limited staff capacity, low enforcement participation, poor coordination, and weak prosecution outcomes. Priority actions include creating a specialized enforcement unit, strengthening prosecutor training, improving institutional coordination, expanding staff capacity, and deepening community engagement to boost compliance.

Mozambique: Plan highlights strong political backing, solid environmental legislation, and a national conservation authority, but faces risks from transboundary crime, pollution, climate impacts, and limited sustainable financing. Priority actions include expanding monitoring, strengthening surveillance and legal frameworks, improving technical capacity, securing dedicated enforcement budgets, and enhancing coordination across sectors.

South Africa: Plan highlights strong operational capacity, including patrol vessels, established agencies, monitoring systems, and available personnel, but also notes risks such as fragmented legislation, IUU fishing, and limited continuous offshore presence. Priority actions focus on strengthening joint offshore command, improving inter-agency coordination and evidence handling, expanding forensic capacity, and securing sustained funding for effective offshore enforcement

Tanzania: Plan highlights strengths, including an established MPA network, patrol capacity, and growing community engagement, and challenges, including illegal fishing, weak partner coordination, limited MCS technology, and inadequate funding. Priority actions focus on strengthening co-management, improving boundary demarcation, expanding ranger training and equipment, enhancing inter-agency coordination, and mobilizing partner resources for long-term sustainability.

Seychelles: Plan highlights strong operational and institutional capacity, with established training programs, effective digital tools, and coordinated cross-agency support. Risks include reliance on external funding, infrastructure and technical gaps, and the need for stronger legal alignment. Priority actions are focused on improving collaboration, strengthening investigative capacity, and diversifying long-term financing.

Mauritius: Plan highlights the need for stronger institutional and legal capacity, better data integration, and improved digitization to reduce reliance on paper records. Remaining challenges include limited field training, weak tracking of repeat offenders, and low monitoring frequency of coastal activities affecting MPAs.

A SYNTHESIS OF CROSS-CUTTING THEMES

Once the National RADARs and Sail Plans were presented, each country contributed its top 3 priority actions moving forward to a Regional RADAR. The Regional RADAR highlighted shared priorities and emergent strategies for MCS&E development across the region. Overall, a few main areas rose to the top: Regional enforcement exchange program (joint patrols, arrests, operations); consider adoption of a regional Enforcement Tech platform such as EarthRanger; Expand community co-management practice by partnering with local NGOs / environmental organizations and collection best practices across the region; Rapid response guide (training & integration) to improve governance and legal prosecution systems; regional exchanges on sustainable finance models to ensure durability of enforcement programs.

Various sessions hosted throughout the Enforcement Exchange

CONCLUSION

The RADAR and Sail Plan tools served as critical reference points throughout the 2026 WIO MPA Enforcement Exchange, guiding coordinated action on policy, community engagement, capacity development, and technology integration across participating nations. Their use directly supported the event's purpose: to create a regional forum for marine managers to share experiences and explore strategies to strengthen MCS&E systems both nationally and collaboratively.

All participants completed the evaluation survey, and feedback was unanimous: the workshop was highly relevant, a valuable use of their time, and the RADAR and Sail Plan exercises were especially useful for future planning. The exchange provided a comprehensive overview of effective MCS&E practices, surveillance systems, and technological tools used to address IUU fishing across the WIO. Participants gained insights into platforms such as EarthRanger, remote vessel monitoring, satellite systems, and MPA Policy tools. Equally important, they built alliances and learned from diverse national experiences, enhancing regional understanding and capacity for effective fisheries and MPA management.

The exchange also delivered tangible outcomes. Participants observed Monitoring, Control, and Surveillance (MCS) protocols in action and exchanged lessons learned on enforcement across WIO countries. The convening strengthened cooperation on managing, monitoring, and enforcing MPAs and deepened relationships between coastal and marine resource managers and enforcement agencies. Most notably, the workshop produced actionable Sail Plans ready for implementation, offering a pathway for advancing enforcement effectiveness at national and regional levels.

The region emphasized the importance of establishing a mentorship framework that pairs experienced MPA managers with emerging leaders, expanding the use of digital tools such as EarthRanger and IMET across regional MPAs, and integrating the exchange's insights into WIO MPA Network's broader strategy for strengthening management effectiveness. Continued collaboration will be supported through follow-up virtual sessions and regular national chapter meetings, helping maintain momentum and advance shared priorities across the Western Indian Ocean.