



Aim

This project aimed to improve our understanding of implementation of REM at scale by engaging with experts from the United States of America and New Zealand fisheries administrations who have implemented REM monitoring programmes at scale to understand their experiences.

Introduction and methodology

Remote Electronic Monitoring (REM) technology can be a cost-effective tool that can be used to support sustainable fishing. It's an interactive system involving cameras, GPS receivers and sensors on boats. MMO have conducted pilot studies and confirmed the effectiveness of REM for monitoring and improving accuracy of catch recording by fishers. Evidence gaps remain however with respect to implementation of REM at scale and evidence of improved fishery performance and compliance by fishers following deployment of REM.

Pre-identified experts in electronic monitoring implementation from the United States of America (US) and New Zealand (NZ) were targeted to take part in the research. These personnel have trialled and/or implemented REM programmes to inform fisheries management and meet specific monitoring requirements so are familiar with many aspects of successful roll outs and the challenges. MMO selected and made the initial contact with potential participants and formally introduced them to the Dialogue Matters team via email, describing the topic and purpose of the project. At this point, the Dialogue Matters team emailed potential participants to build some trust and invite participants to book an interview slot at a time that suited them.

Results

Key findings included:

- **Benefits** - cost efficiencies compared with observers, providing fisher options for monitoring, supporting better management, increased accountability and increased crew safety.
- **Costs** - financial: installation, upkeep, data transfer/storage, loss of earnings if not able to sail due to equipment issues, revising systems, Time: fisher extra processes, data analysis, acting on footage, Social: trust of peers,
- **Incentives** - initial reduced financial outlay, increased access, allowing flexibility in gear rules.
- **Challenges** - industry reluctance, regulatory barriers, cost/benefit balancing, additional work for both regulators and fishers, large geographical ranges.
- **Data issues** - legal basis clarity needed, ethics and privacy, needs clarity on what data is collected and how it will be used, data ownership and sharing clarity needed.
- **Machine learning and Artificial intelligence** – potentially useful but the practicalities are not there yet.
- **Further steps needed** - increase involvement, increase clarity around the data trail, technological advances, encourage innovation, improve policy and legal framework and scope expansion.
- **Lessons learned** - engage all stakeholders in an experimental approach, outreach and clarity with stakeholders at the outset, ensure benefits are mutual from the outset, learn from



others, avoid implementing new systems into legacy systems, funding is challenging, be patient and think globally.

Conclusions and recommendations

There is a significant amount of ongoing work to improve and implement REM programmes across the US and NZ. Whilst some are still in the trial phase, several tools are already widely used with great confidence. Despite progress in implementation, barriers remain such as concern over social impact, privacy, cost, and additional work limit industry uptake. However, the experts interviewed here were able to identify numerous solutions that could be developed to improve REM roll out.

Recommendations - Some of the organisations invited to participate in this research were unable to participate fully. For this reason, it may be useful to perform additional research in this area to develop a fuller picture of REM implementation across a wider area.

Overall, it was felt that the ongoing work and suggestions summarised in this report will provide a useful platform for MMO to prioritise actions to support any future expansion of the use of REM in English waters.

MMO comments

This work forms an important evidence base for MMO to inform any future expansion of REM in English waters.

Further information

Please direct any correspondence to the Evidence and Evaluation Team (evidence@marinemanagement.org.uk)