



## BIBLIOGRAPHIC REFERENCES ON ELECTRONIC MONITORING SYSTEMS IN FISHERIES

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### References

- Ames, R.T., Leaman, B.M., and Ames, K.L. 2007. Evaluation of video technology for monitoring of multispecies longline catches. *North American Journal of Fisheries Management* **27**(3): 955–964. doi:[10.1577/M06-029.1](https://doi.org/10.1577/M06-029.1).
- Bartholomew, D.C., Mangel, J.C., Alfaro-Shigueto, J., Pingo, S., Jimenez, A., and Godley, B.J. 2018. Remote electronic monitoring as a potential alternative to on-board observers in small-scale fisheries. *Biological Conservation* **219**: 35–45. doi:[10.1016/j.biocon.2018.01.003](https://doi.org/10.1016/j.biocon.2018.01.003).
- Briand, K., Bonnieux, A., Le Dantec, W., Le Couls, S., Bach, P., Maufroy, A., Relot-Stirnemann, A., Sabarros, P., Vernet, A.-L., Jehenne, F., and Goujon, M. 2017. Comparing electronic monitoring system with observer data for estimating non-target species and discards on French tropical tuna purse seine vessels. IOTC, San Sebastian, Spain, September 2017. p. 25. Available from <https://www.iotc.org/documents/comparing-electronic-monitoring-system-observer-data-estimating-bycatch-and-discards>.
- Briand, K., Sabarros, P.S., Maufroy, A., Relot-Stirnemann, A., Le Couls, S., Goujon, M., and Bach, P. 2018. Improving the sampling protocol of electronic and human observations of the tropical tuna purse seine fishery discards. IOTC, Cape Town, South Africa, 10-17 September 2018. p. 19. Available from <http://www.iotc.org/documents/improving-sampling-protocol-electronic-and-human-observations-tropical-tuna-purse-seine>.
- Brown, C.J., Desbiens, A., Campbell, M.D., Game, E.T., Gilman, E., Hamilton, R.J., Heberer, C., Itano, D., and Pollock, K. 2021. Electronic monitoring for improved accountability in western Pacific tuna longline fisheries. *Marine Policy* **132**: 104664. doi:[10.1016/j.marpol.2021.104664](https://doi.org/10.1016/j.marpol.2021.104664).
- Chavance, P., Batty, A., Mc Elderry, H., Dubroca, L., Cauquil, P., Restrepo, V., and Dagorn, L. 2013. Comparing observer data with video monitoring on a French purse seiner In the Indian Ocean. IOTC. p. 18. Available from <https://www.iotc.org/documents/comparing-observer-data-video-monitoring-french-purse-seiner-indian-ocean>.
- EFCA. 2019. Technical guidelines and specifications for the implementation of Remote Electronic Monitoring (REM) in EU fisheries European. European Fisheries Control Agency, Vigo, Spain. Available from <https://www.efca.europa.eu/sites/default/files/Technical>.
- Emery, T.J., Noriega, R., Williams, A.J., and Larcombe, J. 2019a. Measuring congruence between electronic monitoring and logbook data in Australian Commonwealth longline and gillnet fisheries. *Ocean & Coastal Management* **168**: 307–321. doi:[10.1016/j.ocecoaman.2018.11.003](https://doi.org/10.1016/j.ocecoaman.2018.11.003).
- Emery, T.J., Noriega, R., Williams, A.J., and Larcombe, J. 2019b. Changes in logbook reporting by commercial fishers following the implementation of electronic monitoring in Australian Commonwealth fisheries. *Marine Policy* **104**: 135–145. doi:[10.1016/j.marpol.2019.01.018](https://doi.org/10.1016/j.marpol.2019.01.018).
- Emery, T.J., Noriega, R., Williams, A.J., Larcombe, J., Nicol, S., Williams, P., Smith, N., Pilling, G., Hosken, M., Brouwer, S., Tremblay-Boyer, L., and Peatman, T. 2018. The use of electronic monitoring within tuna longline fisheries: Implications for international data collection, analysis and reporting. *Reviews in Fish Biology and Fisheries* **28**(4): 887–907. doi:[10.1007/s11160-018-9533-2](https://doi.org/10.1007/s11160-018-9533-2).

- Ewell, C., Hocevar, J., Mitchell, E., Snowden, S., and Jacquet, J. 2020. An evaluation of Regional Fisheries Management Organization at-sea compliance monitoring and observer programs. *Marine Policy* **115**: 103842. doi:[10.1016/j.marpol.2020.103842](https://doi.org/10.1016/j.marpol.2020.103842).
- Forget, F., Muir, J., Hutchinson, M., Itano, D., Sancristobal, I., Leroy, B., Filmalter, J., Martinez, U., Holland, K., Restrepo, V., and Dagorn, L. 2021. Quantifying the accuracy of shark bycatch estimations in tuna purse seine fisheries. *Ocean & Coastal Management* **210**: 105637. doi:[10.1016/j.ocecoaman.2021.105637](https://doi.org/10.1016/j.ocecoaman.2021.105637).
- Fujita, R., Cusack, C., Karasik, R., and Takade-Heumacher, H. 2018. Designing and implementing electronic monitoring systems for fisheries: A supplement to the catch share design manual. Environmental Defense Fund, San Francisco, California, USA. Available from [https://fisherysolutionscenter.edf.org/sites/catchshares.edf.org/files/EM\\_DesignManual\\_Final\\_0.pdf](https://fisherysolutionscenter.edf.org/sites/catchshares.edf.org/files/EM_DesignManual_Final_0.pdf).
- Garren, M., Lewis, F., Sanchez, L., Spina, D., and Brett, A. 2021. How performance standards could support innovation and technology-compatible fisheries management frameworks in the U.S. *Marine Policy* **131**: 104631. doi:[10.1016/j.marpol.2021.104631](https://doi.org/10.1016/j.marpol.2021.104631).
- Gilman, E., De Ramón Castejón, V., Loganimoce, E., and Chaloupka, M. 2019a. Capability of a pilot fisheries electronic monitoring system to meet scientific and compliance monitoring objectives. *Marine Policy*: 103792. doi:[10.1016/j.marpol.2019.103792](https://doi.org/10.1016/j.marpol.2019.103792).
- Gilman, E., Legorburu, G., Fedoruk, A., Heberer, C., Zimring, M., and Barkai, A. 2019b. Increasing the functionalities and accuracy of fisheries electronic monitoring systems. *Aquatic Conservation: Marine and Freshwater Ecosystems* **29**(6): 901–926. doi:[10.1002/aqc.3086](https://doi.org/10.1002/aqc.3086).
- Glemarec, G., Kindt-Larsen, L., Lundgaard, L.S., and Larsen, F. 2020. Assessing seabird bycatch in gillnet fisheries using electronic monitoring. *Biological Conservation* **243**: 108461. doi:[10.1016/j.biocon.2020.108461](https://doi.org/10.1016/j.biocon.2020.108461).
- Helmond, A.T.M. van. 2021. Research for PECH Committee – Workshop on electronic technologies for fisheries – Part II: Electronic monitoring systems, European Parliament, Policy Department for Structural and Cohesion Policies. Available from <https://research.wur.nl/en/publications/research-for-pech-committee-workshop-on-electronic-technologies-f>.
- Helmond, A.T.M. van, Chen, C., and Poos, J.J. 2015. How effective is electronic monitoring in mixed bottom-trawl fisheries? *ICES Journal of Marine Science* **72**(4): 1192–1200. doi:[10.1093/icesjms/fsu200](https://doi.org/10.1093/icesjms/fsu200).
- Helmond, A.T.M. van, Chen, C., and Poos, J.J. 2017. Using electronic monitoring to record catches of sole (*Solea solea*) in a bottom trawl fishery. *ICES Journal of Marine Science* **74**(5): 1421–1427. doi:[10.1093/icesjms/fsw241](https://doi.org/10.1093/icesjms/fsw241).
- Helmond, A.T.M. van, Mortensen, L.O., Plet-Hansen, K.S., Ulrich, C., Needle, C.L., Oesterwind, D., Kindt-Larsen, L., Catchpole, T., Mangi, S., Zimmermann, C., Olesen, H.J., Bailey, N., Bergsson, H., Dalskov, J., Elson, J., Hosken, M., Peterson, L., McElderry, H., Ruiz, J., Pierre, J.P., Dykstra, C., and Poos, J.J. 2020. Electronic monitoring in fisheries: Lessons from global experiences and future opportunities. *Fish and Fisheries* **21**(1): 162–189. doi:[10.1111/faf.12425](https://doi.org/10.1111/faf.12425).
- Hosken, M., Vilia, H., Agi, J., Williams, P., McKechnie, S., Mallet, D., Honiwala, E., Walton, H., Owens, M., Wickham, C., Zaborovskiy, E., and Cheung, B. 2016. Report on the 2014 Solomon Islands Longline E-Monitoring Project. WCPFC, Bali, Indonesia, 1-2 August 2016. p. 66. Available from <https://meetings.wcpfc.int/node/9574>.
- ISSF. 2016. Summary report of the International Workshop on Application of Electronic Monitoring Systems in Tuna Longline Fisheries. ISSF, Washington D.C., U.S.A. Available from <https://www.issf-foundation.org/download-monitor-demo/download-info/issf-technical-report-2016-07-international-workshop-on-application-of-electronic-monitoring-systems-in-tuna-longline-fisheries/>.
- Itano, D., Heberer, C., and Owens, M. 2019. Comparing and contrasting EM derived purse seine fishery data with human observer, onboard sampling and other data sources in support of Project 60. WCPFC, Pohnpei, Federated States of Micronesia, 12-20 August 2019. p. 44. Available from <https://meetings.wcpfc.int/node/11317>.

James, K.M., Campbell, N., Viðarsson, J.R., Vilas, C., Plet-Hansen, K.S., Borges, L., González, Ó., Helmond, A.T.M. van, Pérez-Martín, R.I., Antelo, L.T., Pérez-Bouzada, J., and Ulrich, C. 2019. Tools and technologies for the monitoring, control and surveillance of unwanted catches. In *The European landing obligation: Reducing discards in complex, multi-species and multi-jurisdictional fisheries*. Edited by S.S. Uhlmann, C. Ulrich, and S.J. Kennelly. Springer International Publishing, Cham. pp. 363–382. doi:[10.1007/978-3-030-03308-8\\_18](https://doi.org/10.1007/978-3-030-03308-8_18).

Legorburu, G., Lekube, X., Canive, I., Ferré, J.G., Delgado, H., Moreno, G., and Restrepo, V. 2018. Efficiency of Electronic Monitoring on FAD related activities by supply vessels in the Indian Ocean. ISSF Technical Report, ISSF, Washington D.C., U.S.A. Available from <https://iss-foundation.org/knowledge-tools/reports/technical-reports/download-info/issf-2018-03-efficiency-of-electronic-monitoring-on-fad-related-activities-by-supply-vessels-in-the-indian-ocean/>.

Michelin, M., Elliott, M., and Bucher, M. 2018. Catalyzing the growth of Electronic Monitoring in fisheries. Building greater transparency and accountability at sea. Opportunities, barriers, and recommendations for scaling the technology. California Environmental Associates consulting, San Francisco, California, USA. Available from [https://www.nature.org/content/dam/tnc/nature/en/documents/Catalyzing\\_Growth\\_of\\_Electronic\\_Monitoring\\_in\\_Fisheries\\_9-10-2018.pdf](https://www.nature.org/content/dam/tnc/nature/en/documents/Catalyzing_Growth_of_Electronic_Monitoring_in_Fisheries_9-10-2018.pdf).

Michelin, M., Sarto, N.M., and Gillett, R. 2020. Roadmap for Electronic Monitoring in RFMOs. California Environmental Associates consulting, San Francisco, California, USA. Available from <https://www.ceiconsulting.com/wp-content/uploads/CEA.Roadmap-EM-Report-4.23.20.pdf>.

Moncrief-Cox, H.E., Carlson, J.K., Norris, G.S., Wealti, M.C., Deacy, B.M., and Scott-Denton, E. 2021. Development of video electronic monitoring systems to record smalltooth sawfish, *Pristis pectinata*, interactions in the shrimp trawl fisheries of the southeastern United States, with application to other protected species and large bycatches. Marine Fisheries Review: 1–8. doi:[10.7755/MFR.82.3-4.1](https://doi.org/10.7755/MFR.82.3-4.1).

Monteagudo, J.P., Legorburu, G., Justel-Rubio, A., and Restrepo, V. 2014. Preliminary study about the suitability of an electronic monitoring system to record scientific and other information from the tropical tuna purse seine fishery. ICCAT Col. Vol. Sci. Pap. **71**(1): 449–459. Available from <https://iotc.org/documents/preliminary-study-about-suitability-electronic-monitoring-system-record-scientific-and>.

Murua, H., Fiorellato, F., Ruiz, J., Chassot, E., and Restrepo, V. 2020a. Minimum standards for designing and implementing electronic monitoring systems in indian ocean tuna fisheries. IOTC, Virtual meeting, 30 November -03 December 2020. pp. Sixteenth session of the IOTC Working Party on Data Collection and Statistics. Available from <https://www.iotc.org/documents/WPDCS/16/18>.

Murua, H., Herrera, M., Moron, J., Abascal, F., Legorburu, G., Hosken, M., Roman, M., Panizza, A., Wichman, M., Moreno, G., and Restrepo, V. 2020b. Comparing Electronic Monitoring and human observer collected fishery data in the tropical tuna purse seine operating in the Western and Central Pacific Ocean. WCPFC, Electronic meeting. Available from <https://meetings.wcpfc.int/node/11688>.

Murua, H., Herrera, M., Moron, J., Abascal, F., Legorburu, G., Roman, M., Moreno, G., Hosken, M., and Restrepo, V. 2020c. Comparing Electronic Monitoring and human observer collected fishery data in the tropical tuna purse seine operating in the Pacific Ocean. IATTC, La Jolla, California, USA. p. 25. Available from [https://www.iatc.org/Meetings/Meetings2020/SAC-11/Docs/\\_English/SAC-11-INF-G\\_Comparing%20Electronic%20Monitoring%20and%20human%20observer%20collected.pdf](https://www.iatc.org/Meetings/Meetings2020/SAC-11/Docs/_English/SAC-11-INF-G_Comparing%20Electronic%20Monitoring%20and%20human%20observer%20collected.pdf).

Needle, C.L., Dinsdale, R., Buch, T.B., Catarino, R.M.D., Drewery, J., and Butler, N. 2015. Scottish science applications of Remote Electronic Monitoring. ICES Journal of Marine Science **72**(4): 1214–1229. doi:[10.1093/icesjms/fsu225](https://doi.org/10.1093/icesjms/fsu225).

Piasente, M., Stanley, B., Timmiss, T., McElderry, H., Pria, M.J., and Dyas, M. 2012. Electronic onboard monitoring pilot project for the eastern tuna and billfish fishery. Australian Fisheries Management Authority. Available from <https://frdc.com.au/sites/default/files/products/2009-048-DLD.pdf>.

Pria, M.-J., Mc Elderry, H., Oh, S., Siddall, A., and Wehrell, R. 2008. Use of a video electronic monitoring system to estimate catch on groundfish fixed gear vessels in California: A pilot study. Archipelago Marine Research Ltd., Victoria, British Columbia, Canada. Available from <http://fightglobalwarming.com/sites/default/files/California>.

Restrepo, V., Justel-Rubio, A., Koehler, H., and Ruiz, J. 2018. Minimum standards for electronic monitoring in tropical tuna purse seine fisheries. ISSF, Washington D.C., U.S.A. Available from <https://www.iss-foundation.org/research-advocacy-recommendations/our-scientific-program/scientific-reports/download-info/issf-2018-04-minimum-standards-for-electronic-monitoring-in-tropical-tuna-purse-seine-fisheries/>.

Restrepo, V.R., Ariz, J., Ruiz, J., Justel-Rubio, A., and Chavance, P. 2014. Updated guidance on electronic monitoring systems for tropical tuna purse seine fisheries. International Seafood Sustainability Foundation, McLean, Virginia, USA. Available from <https://www.iss-foundation.org/download-monitor-demo/download-info/issf-technical-report-2014-08-updated-guidance-on-electronic-monitoring-systems-for-tropical-tuna-purse-seine-fisheries/>.

Ruiz, J., Bach, P., Krug, I., Briand, K., Murua, H., and Bonnieux, A. 2017. Strengths and weakness of the data elements currently collected through electronic monitoring systems in the Indian Ocean. In IOTC Proceedings. IOTC, Victoria, Seychelles, 26-28 November 2017. p. 9. Available from <https://www.iotc.org/documents/strength-and-weakness-data-elements-currently-collected-through-electronic-monitoring>.

Ruiz, J., Batty, A., Chavance, P., McElderry, H., Restrepo, V., Sharples, P., Santos, J., and Urtizberea, A. 2015. Electronic monitoring trials in the tropical tuna purse-seine fishery. ICES Journal of Marine Science **72**(4): 1201–1213. doi:[10.1093/icesjms/fsu224](https://doi.org/10.1093/icesjms/fsu224).

Ruiz, J., Krug, I., Justel-Rubio, A., Restrepo, V., Hamman, G., Gonzalez, O., Legorburu, G., Pascual Alayon, P.J., Bach, P., Bannerman, P., and Galan, T. 2016. Minimum standards for the implementation of Electronic Monitoring Systems for the tropical tuna purse seine fleet. IOTC, Victoria, Seychelles, 28-30 November 2016. p. 13. Available from <https://www.iotc.org/documents/minimum-standards-implementation-electronic-monitoring-systems-tropical-tuna-purse-seine>.

Schreiber Plet-Hansen, K. 2020. Fisheries data from electronic monitoring and traceability systems in the context of the EU landing obligation. Technical University of Denmark. Available from <https://orbit.dtu.dk/en/publications/fisheries-data-from-electronic-monitoring-and-traceability-system>.

Silvia, G., Harte, M., and Cusak, C. 2018. Challenges, Opportunities, and Costs of Electronic Fisheries Monitoring. Environmental Defense Fund. Available from [https://www.edf.org/sites/default/files/electronic\\_monitoring\\_for\\_fisheries\\_report\\_-\\_september\\_2016.pdf](https://www.edf.org/sites/default/files/electronic_monitoring_for_fisheries_report_-_september_2016.pdf).

Stanley, R.D., Karim, T., Koolman, J., and McElderry, H. 2015. Design and implementation of electronic monitoring in the British Columbia groundfish hook and line fishery: A retrospective view of the ingredients of success. ICES Journal of Marine Science **72**(4): 1230–1236. doi:[10.1093/icesjms/fsu212](https://doi.org/10.1093/icesjms/fsu212).

Stanley, R.D., McElderry, H., Mawani, T., and Koolman, J. 2011. The advantages of an audit over a census approach to the review of video imagery in fishery monitoring. ICES Journal of Marine Science **68**(8): 1621–1627. doi:[10.1093/icesjms/fsr058](https://doi.org/10.1093/icesjms/fsr058).

Suuronen, P., and Gilman, E. 2020. Monitoring and managing fisheries discards: New technologies and approaches. Marine Policy **116**: 103554. doi:[10.1016/j.marpol.2019.103554](https://doi.org/10.1016/j.marpol.2019.103554).

Vilas, C., Antelo, L.T., Martin-Rodriguez, F., Morales, X., Perez-Martin, R.I., Alonso, A.A., Valeiras, J., Abad, E., Quinzañ, M., and Barral-Martinez, M. 2020. Use of computer vision onboard fishing vessels to quantify catches: The iObserver. Marine Policy **116**: 103714. doi:[10.1016/j.marpol.2019.103714](https://doi.org/10.1016/j.marpol.2019.103714).