November 2026

Joint Statement on Global Compatibility in Acoustic Telemetry: A Shared Vision on Open Protocols

Rationale

Acoustic telemetry is an indispensable tool for tracking aquatic animals across the globe. It plays an essential role in studying their spatial ecology and providing crucial information for management and conservation efforts (Hussey et al. 2015; Crossin et al. 2017; Alós et al. 2022). Collaborating over administrative borders by sharing data enables researchers to track fish beyond a specific study area (Huisman et al. 2016; Daly et al. 2023; Lennox et al. 2023; Goossens et al. 2024; Edwards et al. 2025), and the many tracking network initiatives that exist worldwide have enabled the deployment of wide-ranging monitoring arrays covering both marine and freshwater environments. Together, these networks centralise billions of detections of hundreds of aquatic species. Many of the telemetry networks facilitate data sharing between their affiliated researchers and even across networks. This inter-network sharing has created a truly global animal observatory, facilitating collaboration for all of its affiliated researchers.

A successful networked approach to animal tracking is contingent upon maximizing the use of compatible equipment. Therefore, the adoption of interoperable protocols in acoustic telemetry indicates far-reaching benefits for science, conservation, and resource management. Interoperable protocols amplify the value of individual research investments while accelerating collective progress toward understanding and protecting aquatic ecosystems. Thus embracing open standards will be essential for maximizing the impact of acoustic telemetry as a conservation and research tool.

The networks' vision on compatibility in acoustic telemetry

Our vision on the future of compatibility in acoustic telemetry is for a globally connected approach in which the scientific community can depend on the availability of universally compatible code sets (including both PPM and BPSK) and select the best possible tools to conduct the best possible science.

In particular, this means:

1. Interoperable protocols should be available globally. Specifically, protocols should enable transmitters and receivers from different manufacturers to operate together, such that transmissions from a tag of one brand are successfully detected and correctly decoded by receivers of another brand.
2. The scientific community suggests continuing to use the interoperable protocols of 'Open Protocols' (OP) that are currently managed by an OP Steering Committee (SC). However, existing OPs can be adapted as needed, and new protocols can be added to OP when IDs run out or when technological developments warrant it.

3. Interoperable protocols should:
    - Have sufficient unique IDs available to meet the community's needs.
    - A reliable checksum to minimize ID misidentification.
    - A non-commercial third party that manages the ID allocation to manufacturers.
4. Manufacturers are advised to:
    - Provide the interoperable protocols without applying any type of fee or cost (both for existing and new infrastructure).
    - Incorporate all available interoperable protocols on their available models.
    - Implement the interoperable protocols globally without regional distinctions on which protocols are allowed on specific models.
    - Perform proper testing to ensure functional interoperability and share test insights/details with the OP-SC.
5. Research communities are advised to:
    - Perform proper testing of equipment and functional interoperability in different environments.
    - Properly assess which protocols (compatible or proprietary) fit not only the goals of your own study, but also advance regional and global connectivity.
    - Participate fully in their regional acoustic telemetry network, providing tag and receiver data and metadata for all equipment deployments.

Further reading

Background information on Open Protocols

Compatibility: https://europeantrackingnetwork.org/en/compatibility

Open Protocols: https://europeantrackingnetwork.org/en/open-protocol

Memorandum of Understanding: https://europeantrackingnetwork.org/en/memorandum-understanding

Scientific articles:

Aspillaga et al. 2024: https://link.springer.com/content/pdf/10.1186/s40317-024-00396-9.pdf

Reubens et al. 2021: https://link.springer.com/article/10.1186/s40317-021-00253-z



Signatories

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12. The Pacific Aquatic Telemetry Hub (PATH)

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13. Riverine Acoustic Fish Telemetry (RAFT) Network

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