

# Ocean Tracking Network Data Policy

## This Document in a Nutshell

In an era that is increasingly cognizant of the value of open data, it is often desired by researchers and the bodies which provide funding for their research that data collected in the course of a study or research program be made available to the public as soon as is reasonable, in order to maximize the utility of that data.

"[D]ata sharing can maximize the efficiency and utility of funding for ecological research and accelerate the advancement of the science. "

- [Nguyen et al, 2016-0261 CJFAS](#)

While there is concrete benefit to sharing and cross-referencing technologically compatible telemetry studies, there are understandable concerns surrounding the publishing of telemetry data. The OTN Data Policy was designed to balance the utility of data sharing, both within the acoustic telemetry community and with the broader public, against the real and practical concerns of sharing this very sensitive ecological information. The concerns of the researchers who are studying their tagged species are addressed by an optional embargo period that grants researchers time to complete their work while ensuring a pathway to the public domain for their research data. In both states of embargo and publication, the citation and collaborative rights of the data-producing researcher are retained and respected.

The way this is addressed by this policy, stated in simple terms: all acoustic receiver metadata (information about the deployments, offloads, and recoveries of listening stations) are made public as soon as is practical. The detection data retrieved by these operations are not included in the information that is immediately publicized. Animal tagging metadata and their association with detections on any OTN platform may, at the Principal Investigator's option, be placed under a 2-year embargo, i.e., will be kept private (PI access and designates only) until 2 years following the expiration of the tag (based on estimated tag life as provided by the vendor). PIs may request further extensions to their embargo period, with OTN reviewing and approving requests on a case-by-case basis. Earlier release of a researcher's matched detection data may be required by the terms of a granting agency or desirable to the researcher for other reasons, in such cases this information can be distributed immediately upon request by the tagging investigator(s).

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## 1 BACKGROUND

The Ocean Tracking Network (OTN), funded by the Canada Foundation for Innovation (CFI), is a global research platform designed to expand knowledge and understanding of the oceans. The OTN infrastructure includes acoustic and satellite transmitters, receiver lines, data storage capacity, and various physical oceanographic equipment; marine and freshwater animals tagged with these transmitters will be tracked as they move through the oceans and freshwater ecosystems and pass over a world-wide system of acoustic receiver arrays. Data collected via the OTN infrastructure will be stored in a database (the “Database”).

The following documentation has been created to support preservation and stewardship of the data generated by, shared with, and/or stored by OTN:

1. **Data Management Plan** provides the framework for managing the data according to internationally recognized best practices;
2. **Data Decommissioning Plan** establishes the parameters for preserving the data system and ensuring it remain accessible by user communities (or “Collaborators”) in the case of OTN being decommissioned, and;
3. **Cybersecurity Plan** catalogues key data resources and other cyber assets, explores threat potential and mitigation strategies, and describes baseline controls for the data that flows through OTN.

## 2 OBJECTIVES

In managing and maintaining the Database, OTN will incorporate collaborative efforts from researchers around the world. By facilitating the unification of information gathered by compatible acoustic monitoring devices, the OTN can provide a global network of collaborative coverage to local and regional telemetry projects that agree to the data sharing terms of the Network.

Scientific funding agencies around the world, particularly those in the Network's host country of Canada, have placed a high value on open access to the results of research, prioritizing open access to publications within 12 months for their grant recipients, and a data management strategy that provides a pathway to open access for all data collected in service of the funded Project.

The Ocean Tracking Network Data Centre (OTNDC) curates the data management guidelines and rules for submission of scientific data to which its affiliated Projects should adhere, as well as ensuring that the design of its data processing and access pipelines will serve OTN's data security, availability, and transparency goals, as outlined in this document.

This policy is designed to serve these ends while preserving any sensitive information collected by Projects in the course of their work. Through adherence to the principles set out in the Tri-Agency Statement of Principles on Digital Data Management, the timely release of reasonably accurate metadata is prioritized, the curation of an authoritative dataset is facilitated, and the eventual public accessibility of this curated dataset is ensured.

### **3 DEFINITIONS**

**“Data Operator Collaborator”** means those parties with whom OTN enters into agreement to manage OTN-compatible regional data nodes;

**“Database”** means the instruments and systems that store and make accessible the information lodged with the OTN;

**“Deployment Collaborators”** means those parties which OTN enters into agreement with to deploy, maintain, retrieve, and share data from OTN Receivers or other compatible acoustic telemetry gear;

**“Indigenous-led data”** means data informed by, pertaining to, or collected by Indigenous peoples;

**“Project”** is any research project or study with a number of affiliated Tracking Collaborators or Deployment Collaborators;

**“OTN”** means the global research platform outlined above;

**“OTNDC”** means the Ocean Tracking Network Data Centre, its employees and infrastructure;

**“OTN Collaborators”** means the Deployment Collaborators, the Tracking Collaborators, and the Data Operator Collaborators;

**“OTN Data”** means the Unrestricted Data and the Restricted Data stored in the OTN Database;

**“OTN Portal”** means the web portal that enables users to access the information contained in the Database;

**“OTN Receivers”** means any receiver which has been purchased by OTN;

**“Restricted Data”** means the data which Tracking Collaborators have submitted to the OTN Database on the condition that access to that data is restricted in accordance with this policy;

**“Tracking Collaborators”** means those parties who oversee the tagging of marine and freshwater life and provision of the data to the OTN Database;

**“Unrestricted Data”** means all OTN Data that is not Restricted Data;

**“Regional Data Node” or “Node”** refers to any repository of region-specific data formed on an ad-hoc basis using the Ocean Tracking Network’s database structure and data ingestion processes, having and enforcing a Data Policy accepted as compatible with this Policy by OTN. Data held in a Regional Data Node will be cross-referenced against other Regional Data Nodes and the OTN database;

**“Partner”, “OTN Partner” or “Partner Database”** refers to any repository of telemetry data establishing database structures, data ingestion and quality control processes and/or data policies independent from or incompatible with OTN and its Nodes.

## **4 DATA COLLECTION, ACCESS, AND USAGE**

### ***a Public Data***

#### **Submission:**

1. Deployment Collaborators and Tracking Collaborators agree to be responsible for ensuring that data are uploaded in accordance with predefined OTN standards, as

described in OTN-provided metadata submission forms and their associated data dictionaries and are submitted to the OTN data centre in a timely fashion.

2. Deployment Collaborators and Tracking Collaborators shall inform OTN of any errors, inaccuracies, or necessary updates with respect to data which they have provided to OTN as soon as possible after becoming aware of such issues.
3. Each Deployment Collaborator will direct potential Tracking Collaborators and others seeking access to OTN Data to OTN.
4. On retrieval and downloading of an OTN Receiver, the following operational metadata will be made public as soon as practicable for acoustic tagging efforts:
  - a. Receiver make and model
  - b. Deployment location information as accurately as possible
  - b. Deployment date
  - c. Download date
  - d. Retrieval date
5. Oceanographic observations, whether or not they are captured on OTN funded equipment, are to be submitted directly (in real time if feasible) to the appropriate International Ocean Exchange (IODE) National Oceanographic Data Centre (NODC). It is there that the oceanographic data will be quality controlled and submitted into the Global Ocean Observing System (GOOS). All OTN data products where feasible will be based on the standards required for ingestion of oceanographic data as it is being managed by the appropriate NODCs and reported by the GOOS.
6. For satellite and acoustic telemetry instrument data held by OTNDC, basic data regarding the species to which the instrument is attached, release location and date is generally considered unrestricted and will be published as soon as is practical. Exceptions are considered given any ecological or economic sensitivities as identified by the Collaborator. Animal morphology information and ongoing locational information in whatever capacity the instrument is capable of reporting it are considered by default to be Restricted Data.

**Access:**

By accessing or using OTN Data, all users agree to:

1. Give proper attribution for all data used in a publication to all contributing data providers, using their project citations, or otherwise via mutual agreement, and to OTN's data infrastructure using the pre-formed citation as supplied by the Portal via OTN metadata reports and/or those found in line with the data records themselves;
2. Inform OTN of publications, data products (e.g., tables, graphs, maps, etc.), and commercial applications resulting from use of the OTN data;
3. Acknowledge that neither OTN nor the provider is liable for inaccuracies in the data;

4. Assume responsibility for investigating and understanding any limitations of the data;
5. Report all problems with respect to data to [data@oceantrack.org](mailto:data@oceantrack.org)

#### **Dissemination:**

All non-Restricted Data held by OTN will be routinely copied to the appropriate National Ocean Data Centre for the International Oceanographic Data Exchange (IODE) / Global Ocean Observing System (GOOS) (such as the Department of Fisheries and Oceans for projects within Canada) for long term archiving. It will also be reported to international biodiversity facilities such as the Ocean Biogeographic Information System ([www.iobis.org](http://www.iobis.org)) and Global Biodiversity Information Facility ([www.gbif.org](http://www.gbif.org)), in all cases where such data types are compatible with the formats held at those facilities.

Data that is classified as Restricted due to an embargo period or otherwise will not be shared with these facilities until such time as it is no longer Restricted.

OTN publishes unrestricted animal occurrence and sampling event data under a Creative Commons Attribution International license. ([CC BY 4.0](https://creativecommons.org/licenses/by/4.0/))

#### ***b* Restricted Data**

##### **Submission:**

1. Tracking Collaborators shall be entitled to require that access to the data which they upload to OTN initially be restricted to only those individuals who have been approved by that Tracking Collaborator in their sole discretion (hereinafter referred to as Restricted Data).
2. Upon written request, Tracking Collaborators may be provided with a Restricted Data embargo which guarantees that their Restricted Data will not become Unrestricted Data for a default period of up to two years, which period would commence at the end date of the data collection period. The data collection period end date corresponds to the date beyond which no collection is possible, which for telemetry studies is generally equivalent to the expected battery expiry date for each item of tagging equipment used in the study.
3. Tracking Collaborators whose projects may require a restricted access period that is greater than two years after the end of the collection period (tag expiry date) must submit a request to OTNDC ([data@oceantrack.org](mailto:data@oceantrack.org)) who will forward to the appropriate committee for review/approval. Collaborators will be given notice of impending embargo end dates so that they may apply for an extension, should one be necessary.
4. Prior to submission of any Indigenous-led data to the OTN Portal, a data-use agreement may be developed in alignment with First Nations principles of ownership,

control, access, and possession ([OCAP](#)) for Canadian Collaborators or CARE (Collective Benefit, Authority to Control, Responsibility, Ethics) [Indigenous Data Governance](#) for international Collaborators, as described in the Data Management Plan. Data-use agreements are established on a case-by-case basis in collaboration with the respective Collaborators. If collaborations evolve to include Indigenous-led data, data-use agreements may be established retroactively.

**Access:**

1. Registered users will be required to agree to terms and conditions, as outlined in section 5.c below, of use relating to their access to the restricted Project folders on the OTN Portal prior to receiving a confidential username and password by which they can access these parts of the OTN Portal
2. Any registered user who wishes to access Restricted Data other than their own must obtain the consent of the Tracking Collaborator who submitted the Restricted Data, which consent shall be provided directly from the Tracking Collaborator to OTN in a manner satisfactory to OTN, via OTNDC (data@oceantrack.org). Once consent has been received from the Tracking Collaborator who submitted the Restricted Data, access shall be provided on the terms set out by that Tracking Collaborator.
3. Access and use of any Indigenous-led data entrusted to the OTN Portal may be governed by a data-use agreement on a case-by-case basis, as described above.

**c     *Data Exchange between OTN Nodes***

*Data collation and management within regions is the proper-scaled approach to organic collaboration and coordination of effort. Nodes allow regional organizations to cross-reference data and metadata with one another and with OTN and in turn provide more data to their end-users. This report-once, track-everywhere system of compatible databases simplifies reporting of metadata and data and keeps information nearest to where it is being generated, authoritatively in one place for ease of update or correction.*

1. OTN will periodically compare and perform matching on tag records and detections between OTN-compatible nodes. This ensures maximum connectivity between OTN nodes and eliminates duplication of effort for Tracking Collaborators and Deployment Collaborators. The OTN Node with which the Tracking Collaborator is associated will be referred to as its Primary Database.
  - a. The data citation policy that applies to the use of the cross-matched detections will be that of its Primary Database.
  - b. The tag embargo policy will be that of the Primary Database.
  - c. The publication status of all aspects of the Project being shared between Databases will be determined by the Project's Primary Database and respected by all other Node databases.

2. In the case of OTN Partners having strongly divergent Databases or data policies that could result in conflicting privacy rules, sharing of the data for a Project will only occur when the Collaborators of a Project agree to be bound by both this Policy and the Partner policy. Each Partner may then execute their responsibilities as per their own data policy.
3. Project-level and other non-Restricted metadata that have been shared and made available by nodes may be aggregated into global data catalogues to improve discoverability. Only non-Restricted project metadata that is actively being served by the Node Database will be used in these aggregations and will only be harvested via the Node Database's public data endpoints. Control of what appears at those endpoints is left to the Node Database.

## **5 RESPONSIBILITIES OF PARTIES**

### ***a Tagging Operators and Deployment Operators agree to:***

1. Report in a reliable and timely manner to OTN and/or an appropriate Regional Data Node all Data and metadata collected in association with their Project(s), be it directly or indirectly related to acoustic or satellite telemetry.
  - a. Keep complete and unedited the Data provided to maximize its utility to other OTN Collaborators past, present, and future;
  - b. Provide manufacturer's specifications for all tags and receivers pertaining to the Project; and
  - c. Provide high-level information metadata relating to the parameters of the Project and its participants for publication in a registry of Projects.
2. Maintain accurate contact information for all Project participants, including project roles, whether those participants should have access to the Project's



Restricted Data, and whether those participants may grant access to others.

**b OTNDC agrees to:**

1. Generate aggregate data products for each Project unifying all complementary detections that have been reported across the entire Database and OTN-compatible databases, complying with the Node policies;
2. Provide a repository where Tagging Operators and Deployment Operators may securely access their Project(s)' Restricted Data as well as the aggregated data products generated by the Database;
3. Uphold any embargo period granted to the Restricted Data within a Project, and generally to protect and keep unpublished all Restricted Data;
4. Provide access to Restricted Data only to the approved Tagging and Deployment Operators designated for a Project by its Principal Investigators;
5. Notify and attempt to obtain explicit approval of the appropriate Tagging Operators before the scheduled reclassification of a Project's Restricted Data in accordance with this Policy, within reasonable limitations;
6. Provide all Unrestricted Data publicly in formats that are acceptable to the international community and compatible with all relevant data and metadata standards, with the goal of curating a complete record of the study undertaken and the data collected as part of the Project;
7. Disseminate and curate evolving best practices guidelines and conduct periodic reviews of data management activities for each OTN Regional Data Node to ensure that they are consistent with this Policy
8. Endeavour to include and cross-reference externally held data with that of the Database through increased membership as well as the development of partnerships and cooperation among OTN Partners around the world;
9. Ensure data-related infrastructure is well maintained and secure from threats (physical and cyber), within reason. This includes performing routine maintenance checks, data backups, and software and infrastructure upgrades; and,
10. Preserve the data system and valuable data it houses to ensure continuity of access, within reason, and as per the archival strategy laid out in the Data Decommissioning Plan.

**c Users of OTN Data agree to:**

1. Provide proper notification and attribution to all Data Providers and/or OTN if OTN Data is used as part of a publication, product, or commercial application;
2. Notify OTN of publications, products, or commercial applications that use OTN Data;
3. Investigate and understand the limitations of the Project parameters that have supplied the OTN Data;
4. Understand and acknowledge that data is provided as-is with no guarantee of accuracy, and may be updated to reflect new understanding of the study parameters or to correct errors in reporting; and
5. Understand that OTN and/or the Data Provider are not liable for inaccuracies in the OTN Data.

d ***Noncompliance***

1. Instances of noncompliance with the Data Policy or any other terms of participation in OTN can be reported to OTNDC via email ([data@oceantrack.org](mailto:data@oceantrack.org)). Instances of noncompliance are reviewed by relevant committees as recommended by the OTN Researcher Code of Conduct and other OTN policies, including the Deployment Committee, International Data Management Committee, and/or International Science Advisory Committee, on a case-by-case basis and appropriate action taken, as required.

## 6 REFERENCES

OTN Data Policy (2011) / Policy Highlights (which superseded parts of the 2011 Data Policy)  
<https://members.oceantrack.org/data/policies/OTN-Data-Policy.pdf>  
<https://members.oceantrack.org/data/policies/data-policy-highlights-28-feb-2013>

[OTN Data Management Plan \(2021\)](#)  
<https://members.oceantrack.org/data/policies>

[OTN Decommissioning Plan \(2021\)](#)  
[This document may be made available by request.](#)

[OTN Cybersecurity Plan \(2021\)](#)  
[This document may be made available by request.](#)

Nguyen et al. (CJFAS 2016)  
<http://www.nrcresearchpress.com/doi/pdf/10.1139/cjfas-2016-0261>

Tri-Agency Open Access Policy on Publications

[http://www.nserc-crsng.gc.ca/NSERC-CRSNG/policies-politiques/OpenAccess-LibreAcces\\_eng.asp](http://www.nserc-crsng.gc.ca/NSERC-CRSNG/policies-politiques/OpenAccess-LibreAcces_eng.asp)

Tri-Agency Statement of Principles on Digital Data Management

[http://www.science.gc.ca/eic/site/063.nsf/eng/h\\_F6765465.html?OpenDocument](http://www.science.gc.ca/eic/site/063.nsf/eng/h_F6765465.html?OpenDocument)