November 2025

Mobilising Aotearoa's Biodiversity Data:
A Blueprint for a National GBIF Node
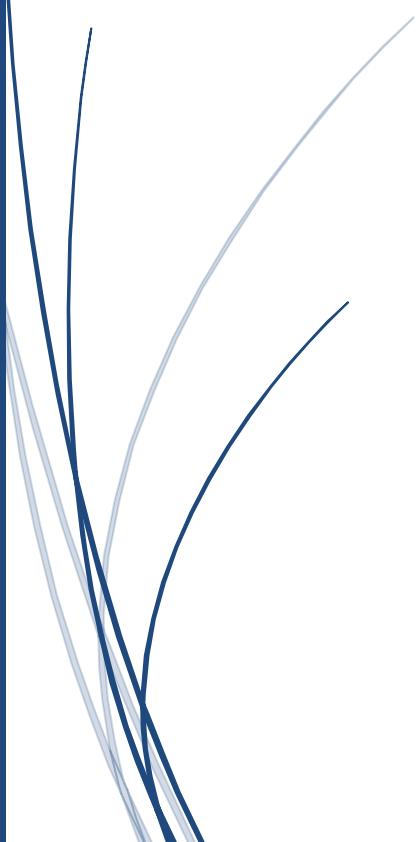
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Contents

Introduction

The Global Biodiversity Information Facility (GBIF)[1] is a global data infrastructure that provides free and open access to biodiversity information. It is not just a database, but a trusted platform that integrates diverse datasets, improves accessibility and reuse, and enables more effective science, policy, planning, biosecurity, and environmental management decisions.

GBIF is a global biodiversity data infrastructure that encompasses terrestrial, freshwater, and marine life. OBIS—the Ocean Biodiversity Information System[2]—is a complementary platform focused on marine biodiversity. GBIF and OBIS have formalised their collaboration with a joint strategy and action plan to strengthen interoperability and data sharing between the two networks.

New Zealand's GBIF Governance and Structure

New Zealand has been a voting Participant in GBIF since 2001. The country's participation is a collective effort managed by several key organizations:

- **Ministry of Business, Innovation and Employment (MBIE):** As the lead agency, MBIE funds New Zealand's annual GBIF membership through its Strategic Science Investment Fund. MBIE also appoints the Head of Delegation and Node Manager roles.

- **Environment Canterbury (ECAN):** Provides the current Head of Delegation, Meredith McKay, who is responsible for national leadership and representing New Zealand's interests in GBIF governance and strategic direction.

- **Bioeconomy Science Institute (BSI, formerly Manaaki Whenua – Landcare Research):** Hosts the GBIF Node for New Zealand and the **Node Manager,** currently Aaron Wilton who supports data mobilisation and leads technical collaboration across the network.

- **Cross-sector collaboration:** New Zealand's GBIF work programme is advanced in partnership with other government agencies, regional councils and institutes reflecting the whole-of-system nature of biodiversity data.

New Zealand is an active contributor[3] to the global network, which provides significant benefits to the nation's science, policy and environmental management sectors.

- **Data Published:** Over 15 million species occurrence records relating to New Zealand are accessible via GBIF. This data is provided by 20 publishers based within New Zealand and a total of 500 institutions globally that publish data on NZ occurrences.

- **Data Access:** Since 2008, New Zealand researchers have contributed to more than 200 peer-reviewed articles that cite GBIF-mediated data, including 21 publications in 2024 alone.

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[1] https://www.gbif.org/
[2] https://obis.org/
[3] https://www.gbif.org/country/NZ/summary

- **National Benefits:** GBIF's infrastructure saves New Zealand organisations the cost of developing and maintaining multiple separate portals. Instead, GBIF provides a single trusted access point, ensuring data are in a common format, discoverable, shareable, and reusable across sectors for science, policy, regulation, and decision-making.

New Zealand is also key participant in the Oceania regional network of GBIF, which aims to coordinate support and collaboration in the region. The New Zealand Node Manager also serves as the deputy regional representative for Oceania.

GBIF – Adding Value for New Zealand

At a workshop on August 25, 2025, central and regional government representatives explored how the Global Biodiversity Information Facility and supporting infrastructure can help strengthen Aotearoa New Zealand's biodiversity and biosecurity data systems.

The workshop objectives were to:

- Demonstrate the potential of GBIF and supporting infrastructure to deliver on national and regional biodiversity and biosecurity priorities.
- Identify collaborative opportunities to strengthen and resource a GBIF NZ node that reflects Aotearoa's interests and obligations.
- Co-develop case studies and pilots that mobilise priority data and deliver tangible value for environmental decision-making.

The workshop included presentations that highlighted national and international uses of GBIF, reported recent progress in New Zealand, and outlined the draft strategy and future work to strengthen GBIF NZ's role and alignment across agencies. Following this, the majority of the work was done through facilitated small group discussions focused on three key issues:

1. How can GBIF support central and regional government agencies' needs?
2. ChecklistBank as a use case of how GBIF tools can support central and regional government.
3. Identifying potential case studies or pilot projects where GBIF can support central and regional government needs.

Key messages from the presentations and breakout sessions have been condensed and summarised below. The report will be available on the GBIF New Zealand website: https://www.gbif.org.nz, The presentations are available via https://www.gbif.org.nz/assets/GBIF%20New%20Zealand%20Workshop_25%20Aug%202025_Presentations-compressed.pdf.

Issues and Opportunities

The shortcomings of New Zealand's environmental information system have been well documented, including several reports by the Parliamentary Commissioner for the Environment (PCE)[4]. The PCE's office told the workshop that the New Zealand system is:

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[4] pce-letter-ministers-re-federating-the-environmental-information-system-april-2025.pdf
PCE letter to Chris Bishop Environmental information Nov 2024

- Complex, fragmented and dispersed
- Plagued by duplication and overlaps
- Plagued by significant gaps
- Poorly accessible
- Lacking strong leadership
- Deficient in standardisation or compatibility.

The PCE repeatedly recommended federated data systems and highlighted GBIF and the Atlas of Living Australia as models that demonstrate how a federated approach can succeed. Mobilising data through GBIF would address many—though not all—of the issues raised for New Zealand.[5]

The Ministry for the Environment has responded to the PCE's reports with a suite of projects and has partnered with GBIF New Zealand to strengthen the way biodiversity data is stored, shared, and accessed. For example, MfE funded a pilot[6] involving five councils (Auckland, Environment Canterbury, Nelson, Otago, and Taranaki) to publish a range of biodiversity and biosecurity datasets to GBIF. This pilot provides a practical template for other councils and dataset types. MfE and GBIF NZ are also working with Wilderlab[7] to establish an "eDNA bridge" — creating standards, code, and pipelines to enable automated uploads of eDNA water sampling data to GBIF. In addition, MfE is supporting integration of New Zealand Organisms Register (NZOR)[8] taxonomy into GBIF's ChecklistBank, including supporting mobilisation of biodiversity data held by regional councils and scoping with the Department of Conservation mobilisation of MfE's National Carbon Monitoring programme (LUCAS) plot data from the National Vegetation Survey Databank (NVS).

Otago Regional Council (ORC) emphasised that GBIF would definitely add value to regional and unitary councils wanting to make better use of their biodiversity, biosecurity, and environmental data. They highlighted the recent Envirolink report[9] recommending councils adopt GBIF as the primary mechanism for preparing, sharing, and accessing publicly available species occurrence data. ORC also identified barriers where support from the GBIF node would be valuable, including case studies and documents demonstrating benefits for councils; manuals and pipelines to guide IT and environmental monitoring teams in overcoming technical barriers; and guidance for councillors, managers, and planners on data sovereignty and Indigenous knowledge considerations.

The Ministry for Primary Industries stressed that GBIF aligns closely with the government's biosecurity and biodiversity frameworks, including the Biosecurity System Action Plan (BSAP) and the Aotearoa New Zealand Biodiversity Strategy (ANZBS), particularly section 4.2 - "federated repositories and common standards". Both strategies emphasise improved systems for knowledge, science, data, and innovation, underpinned by national standards and

Letter to Ministers on improving New Zealand's environmental information | Parliamentary Commissioner of Environment

[5] https://pce.parliament.nz/publications/letter-and-note-a-federated-system-to-improve-environmental-information/

[6] Ministry for the Environment Funds Pilot Project to Upload Local Government Data to GBIF - GBIF New Zealand

[7] https://wilderlab.co

[8] https://www.nzor.org.nz/

[9] https://www.envirolink.govt.nz/assets/Envirolink/2340-ORC006-Potential-for-regional-councils-to-use-GBIF-to-access-and-share-species-occurrence-data.pdf

open data agreements that enable a federated repository of biodiversity information. Under section 12A of the Biosecurity Act, MPI is also responsible for facilitating communication, cooperation, and coordination among those involved in pest management to enhance effectiveness and equity of programmes. MPI highlighted GBIF as a practical tool for meeting these obligations.

MPI noted the New Zealand Established Pests Portal (NZEPP) as a flagship example of how GBIF could connect data from central government, regional councils, research institutes, and the private sector. NZEPP builds around specific themes, such as weeds, and could provide a practical path forward and mirror successful data mobilisation programmes overseas.

In particular, they demonstrated the challenge of inconsistent species identification across agencies, using the case of moth plant (Araujia spp.). Different agencies apply different names and synonyms, creating barriers to consistency. GBIF's taxonomic backbone and species keys—linked with NZOR—offer a stable solution for reconciling these differences. This example, along with opportunities such as uploading GRIIS and RPMP lists as GBIF checklists, illustrates how GBIF can help MPI improve data integration and support CBD[10] Global Biodiversity Framework Target 6[11] on invasive species.

The Department of Conservation (DOC) highlighted GBIF's role in supporting both domestic and international obligations, including the Aotearoa New Zealand Biodiversity Strategy (ANZBS) and New Zealand's reporting under the CBD and the Global Biodiversity Framework. DOC sees GBIF as a key enabler for building a federated national data system, addressing data sovereignty issues (through Local Context tags, CARE principles, and relational data contexts), and improving evidence-based reporting. To this end, DOC is developing a "biodiversity portal and clearinghouse" that will publish data to GBIF as part of a modernised data infrastructure. The image below shows how this portal would interact with GBIF and other parts of a biodiversity data system.

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[10] https://www.cbd.int/
[11] https://www.cbd.int/gbf/targets/6 and https://gbf-indicators.org/metadata/headline/6-1
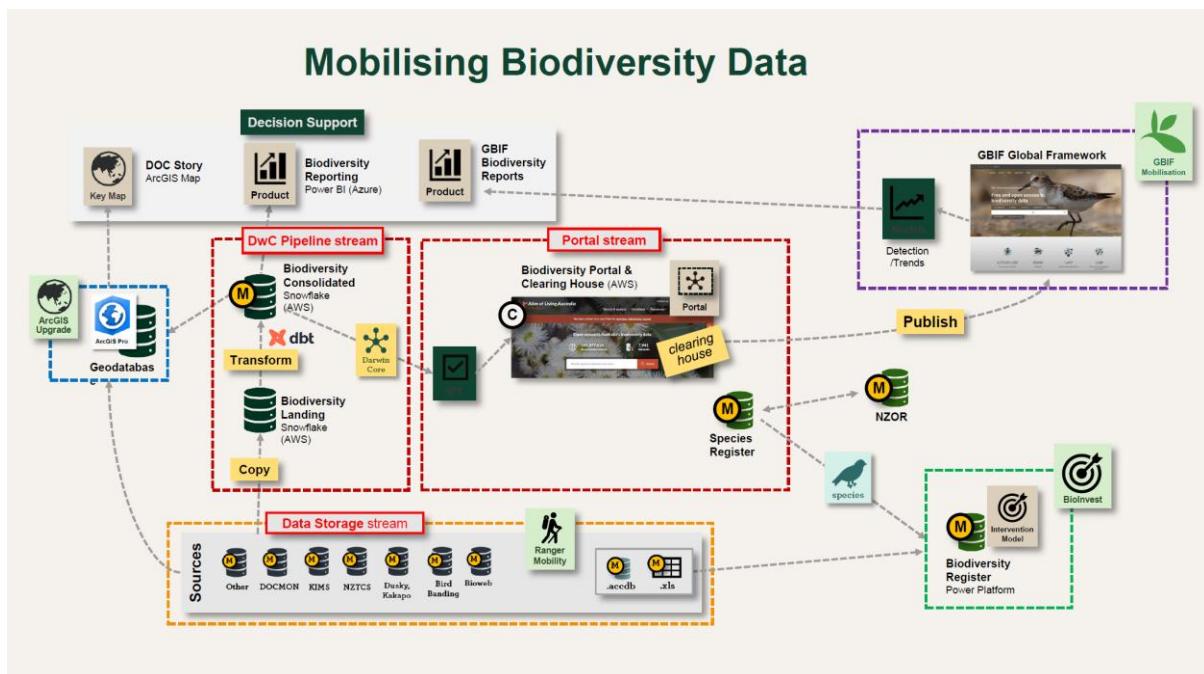
DOC also showcased the Smart Weed Alert Tool (SWAT)[12] that is under development. The tool uses GBIF data to enable early detection of new weeds and was described as a "gamechanger" for weed surveillance.

For threatened species, DOC stressed the importance of being able to measure changes in conservation status over time, noting that GBIF and NZOR together can provide a consistent taxonomic foundation and are vital for Red List Index calculations. These examples demonstrate how GBIF is already being used and how its expanded application could deliver even greater benefits for DOC, regional councils, and New Zealand's biodiversity system as a whole.

These examples demonstrate how GBIF is being used now and how its expanded use would provide even greater support for important government and council programmes.

Examining central and regional government needs

In the first breakout, participants discussed how GBIF could most usefully support central and regional government agencies' needs, and what barriers or challenges there are to using GBIF.

Common needs identified from that feedback included:

- **Value Proposition and Justification**

    o Senior leaders lack visibility of GBIF's potential. Participants agreed that "making better policy" is not enough; tangible benefits such as cost savings, efficiency, and improved outcomes (e.g., in pest management or weed surveillance) are needed.

    o Case studies demonstrating these benefits—both nationally and internationally—are essential to building support.

    o GBIF's role in monitoring trends over time and helping to understand the impacts of climate change and natural disasters were highlighted as potential value propositions.

    o Participants also noted the lack of an "authorising environment" or national mandate: without a clear strategy and political support, agencies may be reluctant to commit resources to alignment.

    o There was strong interest in establishing an effective participant node[13] and learning from other national nodes (e.g., Ireland, Australia) and linking with GEOBON[14] for indicators and reporting alignment.

- **Data Gaps and Mobilisation**

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[12] [Smart Weed Alert Tool (SWAT) using GBIF mediated data - GBIF New Zealand](#)
[13] https://docs.gbif.org/effective-nodes-guidance/1.0/en/establishing-an-effective-gbif-participant-node.en.pdf
[14] https://geobon.org/

- Participants consistently identified gaps in data that could be mobilised. Pest data was frequently mentioned as a good starting point to build momentum, including national pest tracking and mapping efforts.

- Event-based and sampling data were highlighted as crucial for supporting monitoring programmes, national reporting, and environmental limits.

- The need for abundance and absence data was stressed, along with links to metadata to understand survey coverage.

- Historical datasets (e.g., ships logs, botanical societies, New Zealand Plant Conservation Network (NZPCN) lists, oral histories) are important for mobilisation to GBIF to understand species distributions and changes over time.

- Remote sensing and ecosystem data were also flagged as priorities for regional councils.

- More guidance is needed on what datasets are missing for New Zealand's international commitments and national reporting.

- **Standards and Consistency**

  - The need for standardised methods and data elements across the country was a recurring theme. While GBIF does not impose data collection methods, by requiring data to be mapped to common formats with clear metadata, it makes differences visible and comparable. This visibility can drive improvements in collection processes nationally, where consistency has historically been difficult to achieve.

  - Getting taxonomic agreement across agencies would be a major achievement, supporting the role of NZOR.

  - Access to existing guidance on data quality, validation, and publication processes for GBIF is required, so that agencies and councils can confidently mobilise their data using established standards and best practices.

  - Integration with existing national datasets and typologies (e.g., NZOR, IUCN Global Ecosystem Typology, SNA/ecosystem data, Wilderlab eDNA, QEII Trust data) will be critical to avoid duplication.

- **Data Sovereignty and Sensitive Data**

  - Participants emphasised the need for good practices in data sovereignty, particularly for Regional Councils working with multiple iwi and hapū.

  - Data on sensitive species or weeds on private land could impact land values and needs to be managed and protected, potentially by obscuring or tagging it appropriately.

  - Commercially sensitive datasets also require careful treatment.

  - There is a need for guidance on how to tag different datasets and a consistent process for handling Indigenous data sovereignty issues. Decisions about data

sharing permissions (landowner, iwi) should be at a policy level, not left to practitioners.

- **Engagement with Mana Whenua/Iwi and Community**
  - Engaging with mana whenua at local levels is essential, with resourcing needed to support their involvement.
  - The importance of Indigenous names for species and resourcing mana whenua to provide these names was noted. Hapu/Iwi level checklists of species names in Te Reo Māori will be valuable.

- **Barriers and Hurdles**
  - Significant barriers include costs (especially for regional councils looking to cut costs), reluctance to share data due to concerns about quality, and a general risk-averse attitude.
  - Data sovereignty was explicitly named as a barrier.
  - There is a perception of GBIF as "cream on top of the cake" rather than a core system, and a belief that datasets need to be "perfected" before publishing. In reality, GBIF only requires that data can be accurately mapped to the relevant standards and accompanied by metadata explaining provenance — improvements and refinements can continue after mobilisation.
  - The complexity of biodiversity data management can be overwhelming, leaving agencies uncertain about where to start or how to prioritise without national coordination
  - Lack of sustained funding for data management and existing systems like GBIF and NZOR was raised.

- **Capacity Building**
  - Participants suggested capacity-building initiatives such as GBIF data camps[15] and agency ambassadors[16] to build skills, awareness, and confidence in using GBIF tools, reducing the burden on individual practitioners and lowering barriers to participation.

ChecklistBank -- Support for central and regional government

ChecklistBank[17] is a service provided by GBIF, developed in partnership with the Catalogue of Life (COL) [18]. It functions as a publishing and management platform for biological checklists and nomenclatural data. Users can upload, curate, version, and share taxonomic lists for a

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[15] https://www.gbif.org/news/5FkpxvdJtZtEhkW2jnXxs4/happy-campers-gbif-renews-partnership-with-datacamp-donates-to-foster-digital-upskilling-across-the-network
[16] https://www.gbif.org/ambassadors
[17] https://www.checklistbank.org/
[18]18 https://www.catalogueoflife.org/

wide range of applications, including threatened species registers and pest management lists. ChecklistBank hosts a diverse collection of biological checklists compiled for many different purposes. These checklists provide the foundational data that contribute to GBIF's "taxonomic backbone," which is used to integrate and standardize taxonomic information across its global biodiversity data infrastructure.

ChecklistBank promotes the use of standardised formats for checklist data, enhancing interoperability and ease of use. It also lets users compare different checklists and analyse the taxonomic data they contain.

For central and regional government, this means that regulatory, biosecurity, or conservation checklists (e.g., Global Register of Introduced and Invasive Species (GRIIS), Regional Pest Management Plans, threatened species lists, or ecosystem typologies) can be mobilised in a consistent format, linked to global standards, and integrated into wider biodiversity and biosecurity systems.

The New Zealand Organisms Register (NZOR) is a national, authoritative reference for the names and taxonomic classification of organisms present in New Zealand, including both native and introduced species. It provides a single, standardised source of taxonomy to support science, conservation, biosecurity, and environmental management. NZOR brings together data from multiple providers (such as Landcare Research/Manaaki Whenua, Department of Conservation, and other partners) and makes it accessible via an online platform.

NZOR is seen as the local/national reference list, while ChecklistBank is the infrastructure to manage, version, and integrate it internationally.

Workshop participants were briefed on ChecklistBank, including the potential for NZOR to integrate with ChecklistBank. The second breakout session revolved around what checklists would be most useful to them, as well as any challenges.

Common themes from this session included:

- **NZOR as the National Standard**
    - There was a strong consensus that NZOR is a valuable and necessary foundation. Participants agreed it should be the single, agreed-upon standard list for New Zealand data, linking to a standard taxonomy and managed with appropriate oversight and governance.
    - The lack of ongoing funding for NZOR is a serious issue; it needs stable investment and succession planning to ensure its long-term viability.
    - While NZOR is seen as the authoritative local list for New Zealand, it should link and integrate with ChecklistBank.
    - Once in ChecklistBank, this would provide the mechanism to connect and align with other international resources like WoRMS (World Register of Marine Species). This would reduce duplication of effort, improve synonym management, and ensure NZOR is interoperable with global standards.
    - Phrase names (tag names) and type localities: Participants noted the need to capture tag names, such as those used in the New Zealand Threat Classification System, (NZTCS) and link them to type localities. Phrase names are already in

scope for NZOR, and some flow to GBIF based on historical data. They are not inherently problematic, as long as they are handled correctly. Ensuring GBIF and NZOR can properly manage these will strengthen their role in supporting NZTCS and aligning with IUCN Red List practices.

- **Checklists to include in NZOR and GBIF**
  - A wide variety of checklists were identified by participants, including the national GRIIS list, RPMP lists, regional and national level New Zealand Threat Classification System lists and New Zealand's Environmental List of Weeds These were seen as essential for filling gaps in NZOR and fundamental for national and international reporting and decision-making, particularly in relation to Red listing and CBD Target 6.
  - Regional Pest Management Plan (RPMP) lists were frequently mentioned as important for public use, agency coordination, and outcome measurement.
  - Other needed lists included wetland species, national flora, unwanted and notifiable pests (MPI, NPPA), NVS lists, and lists for specific taxonomic groups like invertebrates.
  - There was significant interest in Te Reo Māori and vernacular name checklists, including regional variations and names provided at the hapu/iwi level.
  - Also mentioned were lists of restricted access species data, CITES checklists, and authoritative lists distinguishing native, non-native, endemic, and invasive species.
  - Participants highlighted the importance of invasive species checklists, including authoritative national and regional lists and international resources such as the Global Register of Introduced and Invasive Species (GRIIS). Participants supported integrating authoritative invasive species lists such as GRIIS to meet both regulatory needs and CBD reporting (e.g., Target 6).

- **Challenges and Barriers**
  - The governance structure for who maintains and updates checklists and ensuring transparency so users can trust them as the "source of truth."
  - Defining "invasive" in different contexts and tracking "new to NZ" species were identified as conceptual challenges.
  - Technical issues such as the ability to handle taxonomic changes dynamically, manage synonyms, and ensure consistency in species concepts also were raised.
  - RPMP lists are desirable but will need to accommodate geographically-limited rules.
  - Difficulties in finding source data for definitive native/non-native species lists and issues with cultivated species, including on platforms like iNaturalist, were noted.

- o Risks around succession planning and sustainability of checklist infrastructure (e.g., NZOR).

- o Potential duplication between existing lists (NZOR, NZTCS, RPMP, etc.) that needs to be reconciled.

- **Governance and Funding**

    - o There was a clear call for a steering group for NZOR with broad stakeholder involvement, along with operational and tactical working groups, to ensure proper governance and feedback loops.

    - o A clear national mandate was seen as necessary to underpin governance and encourage alignment across agencies.

    - o Central government's role in providing resources and potentially leading initiatives was emphasised.

    - o Sustainable funding for maintenance and implementation was seen as critical for NZOR and ChecklistBank to avoid issues like lack of succession planning and products not being socialised effectively.

Potential case studies

The goal of the third breakout session was to identify potential case studies or pilot projects linked to needs that had been identified earlier in the day. Participants were encouraged to think specifically about what GBIF-related investments would deliver the most collective benefit for New Zealand.

Below is an outline of the groups' suggestions, however a complete list is in Appendix 1.

- **GBIF Node Development**

    - o Scoping a National Biodiversity Information Facility (GBIF Participant Node): Explore options for establishing an effective GBIF Participant Node in New Zealand, drawing on international models (e.g., Ireland, Australia) and GBIF's guidance. This case study would scope governance, capacity, and funding models, and assess how a node could link national data mobilisation to global reporting frameworks (CBD, GBF targets, GEOBON) and ANZBS indicators.

- **Mobilising Data:**

    - o A number of datasets were identified for mobilisation, for example New Zealand's bird banding data. Publishing existing, hard to access datasets like the National Herpetofauna database was suggested. A full list of all the datasets mentioned during the workshop is in Appendix 2.

    - o An opportunity was identified in uploading historical records to GBIF to promote engagement and enrich datasets. Examples included the Biological Heritage Library and Royal Society transactions.

    - o Participants highlighted the need for a more systematic "data scan" to identify what biodiversity, biosecurity, and environmental datasets exist across New

Zealand, who holds them, and their current state of accessibility. The purpose would be to create a clear picture of available information, highlight gaps, and identify priority datasets for mobilisation to GBIF. Such a scoping exercise would help ensure that investments in data mobilisation focus on the areas of greatest need and impact, as well as providing a foundation for filling key gaps in New Zealand's biodiversity information system.

- **Checklist-Related Projects:**
  - Integrating NZTCS and RPMP lists into ChecklistBank/NZOR, enabling regional threat assessments and restricted species data management, and getting the full NZTCS list of names into the GBIF backbone for harmonisation.
  - Harmonising MPI's unwanted/notifiable organisms lists and linking them into the same infrastructure.
  - Developing a joint project with a hapu/iwi, such as Wakatū, to create a checklist of Te Reo Māori, vernacular, and scientific names would be a valuable use case, aligning with cultural knowledge and Indigenous engagement.

- **Sensitive/Restricted Access Data Guidance:**
  - Developing guidance and case studies for Restricted Access Sensitive Data (RASD), possibly focusing on specific taxonomic groups like orchids. The goal is to make data holders more comfortable with sharing through clear criteria for generalisation and automation, potentially drawing from resources like the Atlas of Living Australia.

- **Tools and Resources for Data Management:**
  - Utilising the GBIF resources that exist already to develop a New Zealand specific "cookbook" of guidance for specific data types to simplify the upload and use process for various stakeholders.
  - Utilising the GBIF resources that exist already to develop New Zealand specific guidance on validation/QA tools to improve trust in published datasets.
  - Aligning pest management standards to enable easier upload of data, such as LINZ control work, to GBIF was suggested to show the benefits and costs of doing pest control and show value of integration.

- **Demonstrating Value and Engagement:**
  - Creating materials to support discussions between Regional Councils, DOC, and mana whenua regarding mobilisation of data to GBIF, as well as between technical staff and agency leaders, was highlighted to foster understanding and buy-in.
  - Using GEO BON tools (e.g. Bon in a Box[19] and Essential Biodiversity Variables (EBVs)[20]) and existing datasets (e.g., 5-minute bird counts) as a proof of concept for national-level reporting to demonstrate GBIF's capabilities and value. (GEO

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[19] https://boninabox.geobon.org/index
[20] https://geobon.org/ebvs/what-are-ebvs/

BON -- the Group on Earth Observations Biodiversity Observation Network -- is a global network working to improve the collection, coordination, and delivery of biodiversity information worldwide.)

- Measuring outcomes from pest management projects to demonstrate return on investment and success of objectives was also seen as a very useful case study.

- Demonstrating GBIF's role in ANZBS and CBD Target 6 (invasive species reporting).

- **Ecosystem/Environmental Monitoring and Reporting:**

  - Using species data and GEOBON "Bon in a Box" tools to generate ecosystem typology maps that can be used to support spatial planning, New Zealand's resource management system, and international reporting commitments.

  - Exploring GBIF's role in supporting a nature repairs market or biocredits project to provide a data repository and guidance on metrics, especially in relation to the Taskforce on Nature-related Financial Disclosures.

  - Utilising sampling events to track monitoring data over time was proposed for understanding state and trend, composition, structure, and condition of ecosystems.

  - Demonstrate how event-based monitoring data (DOC Tier 1, council surveys) can be mobilised via GBIF to support CBD and SoE reporting.

Conclusions

The workshop highlighted the opportunity for New Zealand to strengthen its biodiversity and biosecurity information systems through greater use of the Global Biodiversity Information Facility. Across agencies and councils, there was strong recognition that GBIF offers tools and infrastructure that can help address long-standing issues of fragmentation, duplication, and poor accessibility in environmental data.

The Parliamentary Commissioner for the Environment's office reinforced the case for a federated data system, noting GBIF (alongside the Living Atlas of Australia) as a model for how such systems can succeed. Participants also emphasised that the benefits of GBIF extend beyond improved access to data: it can support policy and planning, reduce costs by providing a shared platform, and enable stronger reporting against national and international commitments.

At the same time, the discussions made clear that successful uptake will require addressing challenges such as stable, well-resourced national node, sustained funding, governance of national standards infrastructure like NZOR, provision of practical guidance for data mobilisation and data sovereignty. The need for a clear national strategy and authorising environment was also seen as essential to ensure sustained commitment and investment.

An effective way to address the needs and opportunities identified during the workshop is to scope a National Biodiversity Information Facility (including the current GBIF Participant Node), building on international models and GBIF's guidance. Establishing such a NBIF would provide governance, resourcing, and technical capacity to address fragmentation and ensure that New

Zealand's biodiversity and biosecurity data are effectively mobilised, connected to global frameworks (CBD, GBF targets, GEO BON), and aligned with domestic priorities such as the ANZBS. This was seen as an essential step in moving from ad hoc projects toward a coherent, federated system.

The breakout discussions explored agency needs, checklist priorities, and potential pilots. Several themes stood out:

- The significant opportunity to fill essential gaps in New Zealand data, infrastructure and system needs with GBIF and associated tools.

- That seizing this opportunity requires policy and funding signals to support data mobilisation and sharing.

- Strengthening the taxonomic foundation via NZOR, supported by clear governance and sustainable funding.

- Embedding Māori data sovereignty and co-developing Te Reo Māori and vernacular checklists with mana whenua. Expanding the use of ChecklistBank and GRIIS to support biosecurity, regulatory, and reporting needs Developing collaborative pilots on restricted/sensitive data (e.g. orchids, weeds on private land), integrating RPMPs, and aligning pest management standards.

- Mobilising standardised monitoring datasets (e.g., 5-minute bird counts, Tier 1 surveys, regional council monitoring), alongside filling critical gaps such as bird banding and herpetofauna records, and publishing key historical sources (e.g., Biological Heritage Library).

- Demonstrating value through case studies that show the use, cost savings, efficiencies, and improved outcomes for councils and central government.

- Capacity-building through initiatives like GBIF data camps or agency ambassadors was highlighted as a way to embed skills in agencies and councils, support cultural change, and sustain momentum.

- GBIF provides a trusted, global infrastructure that enables New Zealand to meet its obligations under the Convention on Biological Diversity (CBD), contribute to monitoring of Global Biodiversity Framework (GBF) targets, and connect with global initiatives such as GEO BON. Strengthening New Zealand's engagement with GBIF helps ensure our data and reporting are interoperable and visible internationally.

Conversations during the workshop highlighted the need for clear, appropriate communication and engagement to promote a clear and common understanding of GBIF and NZOR. For some issues that were mentioned as barriers or challenges to utilising GBIF, it later become clear that the difficulty is likely to be more about a lack of information or communication, rather than actual weaknesses in the GBIF system.

The workshop successfully energised the conversation about how to enhance central and regional government's connection to GBIF. It is important to build on that momentum and identify projects that will deliver improvements to New Zealand's biodiversity data systems. Prompt, post-workshop follow-up with councils, central government agencies, mana whenua and the wider community is necessary.

With coordinated investment and support for the existing node, GBIF can become a cornerstone of a much more effective and federated biodiversity data system for Aotearoa New Zealand.

Just as importantly, strengthening New Zealand's engagement with GBIF ensures that our biodiversity and biosecurity data are aligned with international standards and visible in global frameworks such as the CBD, the Global Biodiversity Framework, and GEO BON—positioning Aotearoa as both a contributor to and beneficiary of the global biodiversity knowledge commons

Appendix 1 – Full list of potential case studies or pilot projects from breakout groups

The breakout groups were given a set of questions to help identify projects that could demonstrate GBIF's ability to support central and regional government biodiversity data needs. This appendix contains the unedited material from those discussions; no changes have been made except to correct formatting and remove personal names. These initial conversations provided much useful information but given the time available were unavoidably incomplete. The details will be followed up on after the workshop.

Group One

The idea/opportunity	NZTCS Feed into the NZOR and Checklist. Complicated with history and synonyms. Turn NZTCS into checklist that can be uploaded to NZOR and Checklist.
What problem would this help solve (E.g. automated threat listing, pest or weed alerts systems)?	NZCTS database can't cope with big download Enable RCs to do regional threat assessment Enable and feed into Restricted Species Data checklists
What are the essential data/datasets needs to mobilise achieve this (e.g. DOC's Tier 1 data)	NZCTS
Who would need to lead **Who else needs to be involved**	Pascale, Scott/Roger/Halema with Regional Threat Assessment, Burcu
What dependencies do you have (E.g. supporting checklists)	

What resources would it require	
Identify any funding opportunities (e.g. Envirolink tools)	Envirolink? but a bit tenuous link to regional threat assessment.
Are there any partnership / collective action opportunities that could be explored?	DOC - MfE - RCs

The idea/opportunity	Wakatū hapu looking at te reo species names. Could do a checklist with Latin names and all vernacular names including local hapu te reo. Could also link into local context labels.

The idea/opportunity	Restricted Access Sensitive Data case studies with particular taxonomic groups? E.g. orchids. Guidance taking from Atlas of living Australia/Chapman GBIF paper. Criteria for generalisation - categories. Automation
What problem would this help solve (E.g. automated threat listing, pest or weed alerts systems)?	Making people feel more comfortable about sharing.

The idea/opportunity	Upload historic records as case studies and to promote engagement. Biological Heritage Library. Now not funded. But worth looking into. Transactions for Royal Society. Lots of different stuff. Historical bird band data.

What problem would this help solve (E.g. automated threat listing, pest or weed alerts systems)?	Engagement Historical data not being used.

The idea/opportunity	Resources for particular data types - uploads e.g. 5 min bird count, other standard datatypes that councils are collecting.

Group Two

The idea/opportunity	There are regional checklists for indigenous species in regional councils about Birds, Reptiles, Amphibians. (work already started, not completed.)
What problem would this help solve (E.g. automated threat listing, pest or weed alerts systems)?	Make them easily accessible, and available to more users outside of regional councils.
What are the essential data/datasets needs to mobilise achieve this (e.g. DOC's Tier 1 data)	Load existing work NZTCS Vascular flora, NZ Flora list, Te Papa, Auckland Memorial Museum catalogue, Alan Herbarium catalogue, Scion Herbarium catalogue, Auckland Herbarium, Weeds and Invasive species lists
Who would need to lead Who else needs to be involved	involved: Te Papa, MWLCR, Auckland Museum, DOC
What dependencies do you have (E.g. supporting checklists)	

What resources would it require	People
Identify any funding opportunities (e.g. Envirolink tools)	Envirolink?
Are there any partnership / collective action opportunities that could be explored?	Through groups above.

The idea/opportunity	Using GeoBON tooling to support national level reporting. (need to choose a topic to report on)
What problem would this help solve (E.g. automated threat listing, pest or weed alerts systems)?	Use this as a proof of concept to demonstrate what GBIF could do for us nationally to create reporting. Use data that's already in there. Eg 5mbc
What are the essential data/datasets needs to mobilise achieve this (e.g. DOC's Tier 1 data)	5mbc datasets from DOC, Regional Councils, PF projects
Who would need to lead **Who else needs to be involved**	DOC/MWLCR Regional Councils Predator Free projects
What dependencies do you have (E.g. supporting checklists)	Bird species names Quality standards for accepting observations

What resources would it require	People to:
	- determine quality standards - contact holder of data DOC people who worked on 5MBC Ethos team who worked on 5mbc

The idea/opportunity	Publish the National Herpetofauna database to provide public access to a currently inaccessible dataset consistently dealt with through OIAs

The idea/opportunity	Create a National Ungulates species distribution map using GBIF to collate data from National and Local Govt collections.

Group Three

The idea/opportunity	Develop a pilot for Nature repairs market /Biocredits project and GBIF - relates to TNFD etc and metrics to measure progress and credits market Get in early and create data landscape for
What problem would this help solve (E.g. automated threat listing, pest or weed alerts systems)?	Consult with MFE leads about this and guidance It would potentially provide a repository It would give us a mechanism for us to give guidance on this this would also allow key players int he world of designing measurements and monitoring to be there to guide what measures and where (bring in the indicators and measures side of things)
What are the essential data/datasets needs to mobilise achieve this (e.g. DOC's Tier 1 data)	GBIF is a baseline along with the current markets Remote sensing is one method and there are opportunities there as GBIF is looking at this now

Who would need to lead Who else needs to be involved	MFE, DOC, Regional councils SNA (MWLR thing) TNFD(?)
What dependencies do you have (E.g. supporting checklists)	MFE need to know the cost of implementing this
What resources would it require	Not much initially - early mapping up who does what and who leads etc We need people time
Identify any funding opportunities (e.g. Envirolink tools)	GBIF Secretariat and MFE?
Are there any partnership / collective action opportunities that could be explored?	MFE, GBIF, EKOS etc

The idea/opportunity	Explore the different GBIF node models and benchmark with Irish node and Biodiversity data centre (More time needed after the workshop to discuss a node for NZ - need to develop a plan for the node in NZ and include OBIS and Inat)

The idea/opportunity	Ecosystem Typology - love to have species data generate to maps and species distribution modelling to get map of ecosystem for spatial planning and RM system Need current and potential to look at representative in biodiversity limits We could look at GEOBON tools and GBIF Tools to look at tools for dist. mapping (what tools are there already) - join up the system

What problem would this help solve (E.g. automated threat listing, pest or weed alerts systems)?	MFE spatial planning and RM system - extend, condition, DOC international reporting ANZBS reporting
What are the essential data/datasets needs to mobilise achieve this (e.g. DOC's Tier 1 data)	Monitoring data sets of scale Sample event data where it is Primarily veg data Tier 1 - below DOC monitoring data in NVS move from level 2 to level 1
Who would need to lead **Who else needs to be involved**	DOC, MFE, MPI, RCs
What dependencies do you have (E.g. supporting checklists)	GBIF node manager/ Permission to make data open
What resources would it require	Probably some funding but not sure Main thing is access to people to lead this and coordination Piloting GEOBON Bon in a Box – MfE staff will meet GEOBON in October and could report back on this

The idea/opportunity	NZTCS checklist / GRIIS and that issue around all the names in Checklist bank Get full list of NZTC list of names into GBIF taxon backbone for harmonizing process - regional and national
What problem would this help solve (E.g. automated threat listing, pest or weed alerts systems)?	state and trend of Name matching problem solve Annual report on the NTCS status NZTCS index

The idea/opportunity	using sampling events to track monitoring data set thru time
	For state and trend, comp, structure, condition and difference made and typology
What problem would this help solve (E.g. automated threat listing, pest or weed alerts systems)?	We ran out to time but want to progress this offline

Group Four

The idea/opportunity	RPMP pests into ChecklistBank
What problem would this help solve (E.g. automated threat listing, pest or weed alerts systems)?	
What are the essential data/datasets needs to mobilise achieve this (e.g. DOC's Tier 1 data)	all RPMPs
Who would need to lead **Who else needs to be involved**	Biosecurity Working Group and council managers or possibly MPI needs discussion
What dependencies do you have (E.g. supporting checklists)	robust processes to update and manage key to be able to see geographic areas with special rules. Very useful to community groups. polygon data associated with subregions; a "subchecklist"
What resources would it require	Nigel, MB, identify systems and process to publish. GBIF technical expertise.

Identify any funding opportunities (e.g. Envirolink tools)	Envirolink, MPI, GBIF/International funding.
Are there any partnership / collective action opportunities that could be explored?	helps with MPI Portal, SWAT tool, PCE recommendations

The idea/opportunity	Measuring outcomes from pest management
	How to put data in and get data out. Guides for the public and users.
	MPI portal intends to do some of that.
What problem would this help solve (E.g. automated threat listing, pest or weed alerts systems)?	return on investment
	success of objectives
	"are we making a difference?"
What are the essential data/datasets needs to mobilise achieve this (e.g. DOC's Tier 1 data)	being able to incorporate polygon data
	being able to aggregate regional data to national picture (Manchurian wild rice, all councils do it differently even though it's the same programme)
	can we capture density?
	appropriate data standards (Darwin core)
Who would need to lead Who else needs to be involved	
What dependencies do you have (E.g. supporting checklists)	define "good" species or define success

What resources would it require	
Identify any funding opportunities (e.g. Envirolink tools)	not obvious in-kind support ANZBS and PF2050
Are there any partnership / collective action opportunities that could be explored?	

The idea/opportunity	LINZ control work -- aligning pest management standards so they can be uploaded to GBIF. Surveillance data even if not found
What problem would this help solve (E.g. automated threat listing, pest or weed alerts systems)?	ability to show benefit and cost of what we are doing
What are the essential data/datasets needs to mobilise achieve this (e.g. DOC's Tier 1 data)	all LINZ data
Who would need to lead Who else needs to be involved	LINZ project, not much else needed. Shaun's time. Involve regional councils
What dependencies do you have (E.g. supporting checklists)	

What resources would it require	
Identify any funding opportunities (e.g. Envirolink tools)	
Are there any partnership / collective action opportunities that could be explored?	councils

The idea/opportunity	1. Weeds data from Bay of Plenty RC; has commonality with ongoing projects 2. Feral browsers data 3. MPI meta data as a case study (least contentious data). 4. Kauri dieback -- Difficult but interesting and national icon. 5. Project Yellow weed programme; MOU renewed 6. Wild animal programme information system 7. Annual funding pool for data mobilisation; competitive round

Appendix 2 – Potential datasets to be mobilised

Workshop participants referred to numerous data sets, databases, lists and types of data that should be considered for mobilisation to GBIF. In this context, "data" is used quite broadly and in most cases the state of the data and issues such as data sovereignty were not explored. Some data mentioned here is already being mobilised to GBIF, while in other cases considerable further work would be needed to determine suitability.

Databases and Platforms

- **NZOR (New Zealand Organisms Register)**: Frequently discussed as the necessary taxonomic authority or concept list for NZ data.

- **NVS (National Vegetation Survey)**: Mentioned as having an easy interface for loading data and potentially holding SNA data.

- **National Herpetofauna database**: Mentioned as a currently inaccessible dataset that should be published.

- **National Ungulates species data:** Occurrences and control data from national programmes lead by DOC, MPI, LINZ and potentially Predator Free.

- **Regional Council biodiversity and biosecurity datasets;** Monitoring, Occurrences and control data from regional programmes lead by councils and contractors.

- **Te Papa, Auckland Memorial Museum catalogue, Alan Herbarium catalogue, Scion Herbarium catalogue, Auckland Herbarium**: Specific catalogue/collection data needed to mobilize regional checklists.

- **MPI Portal**: Mentioned as a viewer for different species/data (like *Caulerpa*) and an interface that intends to show pest management outcomes.

- **FFDB (Freshwater Fish Database)**: Mentioned as relying on NZOR for synonyms.

- **Marine Vertebrate database**

- **diatom database**: Mentioned as a catalogue that WoRMs (World Register of Marine Species) automatically links to.

- **Wild animal programme information system**

Specific Lists and Checklists

- **NZOR –** New Zealand Organism Register

- **Restricted Sensitive Species -** list for New Zealand)

- **Atlas of living Australia NZ sensitive species list -** NZ list hosted in ALA mobilised back to NZ

- **National and Regional level NZTCS (New Zealand Threat Classification System)**: Identified as a key checklist that could be included in GBIF/ChecklistBank, (e.g., vascular plants[21].

- **NZ GRIIS (New Zealand Global Invasive Species Information System, implied)**: A list of invasive species needing finalization and verification for upload to ChecklistBank.

- **Regional Pest Management Plans (RPMP) lists**: Cited as important checklists for public and agency use, particularly for LINZ outcome measurement and return on investment tracking.

- **NZ Flora list**: A needed checklist/essential dataset.

- **Taonga species**: Desirable but problematic because there is no single list.

- **Vernacular Name lists:** Such as Te Reo species name lists (Wakatū species names)

- **Regional Holdings (IRIS roll out)**: Lists for natives and non-natives.

- **Highly mobile species list**: A list potentially submitted by the MfE.

- **MCI list with tolerances**: A specific list mentioned as an example of adding properties to a checklist.

- **Environmental weeds list** – DOC published list of environmental weeds

- **Wetland species list**: A needed checklist, noting national and regional variations.

- **Unwanted and notifiable pests list**. Unwanted and notifiable pests

- **NPPA (National Plant Pest Association) list**.

- **Wetland codes for hydrophilic plants**.

- **Native species definitive list**: A needed list.

- **CITES checklist**

- **Fill gaps for invertebrates**

- **Bicultural notices and labels** (Local Context)

- **Marine checklists - WoRMs** (OBIS?)

- **NZPCN lists** – New Zealand Plant Conservation Network.

- **Type localities**

General Datasets, Types and Sources

- **National or regional datasets of importance - Essential for supporting trends over time and for high-level indicators.**

  - **DOC's Tier 1 and MFE LUCAS National Monitoring programme data**: Cited as an example of essential data needed to mobilize projects.

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[21] https://www.doc.govt.nz/globalassets/documents/science-and-technical/nztcs43entire.pdf

- o **Predator Free data**

- o **New Zealand's Bird banding data**

- o **National pest data**: Identified as a starting point for building momentum. This includes specific need for data to complete national modelling of pests; DOC Wild Animal Programme data, MPI ungulate mapping work, LINZ Wallabies, MPI Feral browsers, and feral animals

- o **LINZ control work data**: Data related to pest management standards, surveillance data (even if species were not found), and cost/benefit information.

- o **DOC 5-minute bird count (5mbc) dataset**: A standard data type that DOC and councils collect and a dataset used for GeoBON proof of concept

- **Historical datasets/records**: Important for promoting engagement and understanding change over time, including:

  - o Ships logs.

  - o Botanical societies species lists.

  - o NZPCN lists.

  - o Oral histories.

  - o Biological Heritage Library.

  - o Transactions for royal society.

  - o Historic bird band data.

  - o Scion Herbarium catalogue, Auckland Herbarium,

- **Occurrence data**: Mentioned as foundational biodiversity infrastructure that GBIF underpins but also noted as potentially insufficient without abundance and absence data.

- **Abundance and absence data**: Needed alongside occurrence data for monitoring and reporting.

- **Pest data**: Identified as a starting point for building momentum. This includes specific mentions of national modelling of pests, MPI ungulate mapping work, feral browsers, and feral animals.

- **Freshwater data**.

- **Wetland and coastal data**

- **Marine data (into OBIS)**

- **Ecosystem data**: Needed for remote sensing and developing ecosystem typology.

- **Metadata**: Information about the data coverage of survey collections and data lineage, which needs to be published.

- **DOC ecosystem Redlist / regional threat listing**: Spatial layers and data needed for regional assessments.

- **Indigenous data / Restricted Access Sensitive Data (RASD)**: Data types requiring guidance and specific policies around sharing.

- **5-minute bird count (5mbc) data**: A standard data type that councils collect and a dataset used for GeoBON proof of concept.

- **Observation data / monitoring data**: Essential for supporting trends over time and for high-level indicators.

- **Kauri dieback data**: Data collected by the Kauri national management agency, often locked in their system.

- **Public incident reports**: Could be uploaded from roading agencies.

- **eDNA data**: Especially useful for surveillance, presence/absence.

- **Ecosystem Typology data (Level 3)**: Data needed for classification, spatial planning, and reporting.

- **SNA (Significant Natural Area) info/data**: Data related to Significant Natural Areas that could be mobilized to GBIF.

- **Abiotic data**: Mentioned, with a question posed about where this data should be housed.

- **Remote sensing data**: e.g., from Regional Councils.

--ENDS--