CASE STUDY
2022

Researchers at the Australian Registry of Wildlife Health use Mediaflux® to curate a comprehensive database of Australian wildlife health data, deploying research in matters of conservation, environment management, public health, and agriculture.

The Australian Registry of Wildlife Health has curated the largest collection of wildlife health data in the nation. The Registry to provide vital data to a variety of stakeholders, who consult in matters ranging from conservation, zoonotic disease tracking, and risk assessment. With their data constantly growing, The Registry employed Mediaflux for their data solutions. Working as a web-based, permission secured, multi-user solution, Mediaflux allowed the Registry to connect with disparate organisations, making inter-organisational data sharing expedient and simple. As the Registry's dataspace changes and their caseloads grow, multiple updates to their current Mediaflux deployment will be made, further increasing the Registry's utility and efficacy.

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What the Australian Registry of Wildlife Health accomplishes

The Australian Registry of Wildlife Health, based out of Taronga Zoo, Sydney, is the largest repository of wildlife health data in the nation. Researchers at the Registry compile data through in house diagnostics and research as well as a multitude of external sources including, veterinarians, zoos, wildlife sanctuaries, and academic institutions. By combining data from these sources, the Registry has become the comprehensive database for all matters in Australian wildlife health. The applied sciences which the Registry both performs, and informs, make real-world impacts. Rich with utility, the Registry provides wildlife veterinarians and environmental managers data that is instrumental in identifying new instances of disease in Australian wildlife. The Australian Museum Research Institute promulgates that monitoring diseases across wildlife populations has an immense value in public health, citing that approximately 75% of emerging diseases, including Lyme disease, Ebola, SARS and COVID-19, are zoonotic. Zoonotic diseases originate in animal populations and spread to human populations via a vector, which is contact with an animal or habitat that has been infected by the host species, or direct contact with pathogens from an infected animal. Understanding how emergent zoonotic diseases spread is the first step in containment, and having the ability to identify, and track, these emergent diseases yields significant value. By amassing a range of data pertaining to wildlife health, including geo-spatial location, researchers can easily combine multiple data points to respond with agility. Furthermore, it acts as a space to collate data from both national, and international sources. A breadth of data sources increases the Registry's data density and helps close data gaps, simultaneously improving the efficacy of the repository while expanding its net for data capture and relay.

How the Australian Registry of Wildlife Health make real-world impacts

The Registry's utility expands beyond research. Involved in offering practical solutions, their researchers supply, and analyse, data that allows for complex risk assessments, a critical role, especially in reintroducing injured or displaced wildlife. They also advise policy regarding wildlife, environment, and public health. Acknowledging the causal links between environment, wildlife, and people, is imperative in creating healthy environments for wildlife and people alike. To highlight the importance of these intersecting factors, Dr. Karrie Rose posed a hypothetical, 'What's the best native vertebrate to use as a sentinel for Ross River Virus? Is it Swamp Wallabies? No, it's actually Eastern Grey Kangaroos.' Providing screening solutions relating to diseases that migrate from animal populations, to human populations, is just one example of how the Registry advises policy in critical sectors like public health. The Registry also advises in environment and agriculture policy. The role the Registry plays is vital, as the impacts of wildlife mortality are far reaching and shape the very environment upon which life is dependent. Through making data accessible to organisations, governments, and veterinarians, the Australian Registry of Wildlife Health is a lynchpin in Australian wildlife matters.

The Challenge

The Registry has migrated data management methods multiple times since their inception in 1985. Moving from a physical filing system to a digital solution that was single-user and institute based was a logical step. As data came in, it was entered into the system and maintained as a discrete silo. However, as caseload grew, and an increasing number of stakeholders needed data access streamlined for their research, it became apparent a web-based, permission secured, multi-user solution was necessary for the small team at the Registry to perform their work expediently. The solution needed to have query depth in order to produce result sets for either broad, or narrow, data requests and produce those result sets at speed. It needed to automatically store, and track data as it entered the system. It needed to store both structured, and unstructured, data on species, especially as the Registry's data sources are distributed widely, interacting with stakeholders both nationally and internationally. And finally, it had to connect with these distributed institutions and repositories, so users from the Registry, and stakeholders, could easily find data kept in disparate silos.

Why Mediaflux?

Mediaflux has been the solution the Australian Registry of Wildlife Health have used for the last 12 years. Providing a way to easily store and share all their digitised reports with their affiliates based on permissions, Mediaflux has given the Registry a wholistic data management solution. Being able to store structured and unstructured data, provide in built data mapping, and find data on any species based on the fuzziest of queries, Mediaflux makes sharing, collecting, and managing data expedient for researchers at the Registry and their stakeholders alike. Mediaflux is also proving itself to be highly adaptable, with projects being undertaken to meet the Registry's changing needs. Mediaflux continues to grow and provide a solution for an ever evolving, and ever complex, data landscape.

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Dr. Karrie Rose,

The Outcome

The Australian Registry of Wildlife Health has secured its position as a leading authority in all matters regarding wildlife health. Through effective data management they supply a valuable, science-based resource, allowing them to strengthen their stakeholder relationships through reciprocity and positive outcomes. When asked how Mediaflux makes their work better, Dr. Karrie Rose responded, 'With everything, it's been a really collaborative relationship, we've managed to develop exactly what we need, and have the support with Mediaflux to do our job.' The need for a positive solution is even more pressing for the Registry, as Karrie explains, 'we're a really small group, doing an awful lot of work for wildlife across Australia, and some of our offshore islands. We need the laboratory systems to track everything, all the information, all the digital assets, all the physical assets.' Being able to find one case, in one species, across a repository that stores case data on hundreds of native and non-native species expeditiously, is what makes Mediaflux right for the Registry. 'Individual cases in individual animals add up to an awful lot of data,' Karrie explained. Mediaflux's depth of query options gives researchers the capability to locate their essential data. This data goes on to produce valuable knowledge and solutions regarding wildlife welfare and management matters. The ability to isolate data is vital in environment management, as Karrie explains, 'the capacity to do really detailed or really broad searches, and pull out exactly what we need for whatever we're dealing with, allows all that diagnostic data to contribute to research, education, emerging disease surveillance, wildlife welfare, care, and management.'

The capabilities of Mediaflux's query functionality have been invaluable in providing datasets quickly to the Registry's stakeholders. Their stakeholders are diverse and commonly include state and commonwealth departments concerned with agriculture, environment, and public health, universities, researchers, and veterinarians. The situations their stakeholders tackle are variable and complex. As such, Mediaflux needs to hold a rich library of wildlife health data, spanning decades, to be effective as new cases emerge. Having a temporal breadth of data can disseminate whether a disease is old, novel, or existent in previous cases and now identified as novel. Project Officer Jane Hall explained why having a vast database is important, 'someone will ask for information on a species, and often we say, I don't think we have much information on that, but when we go into the database and trawl that data it's like wow, that's a lot. We're the biggest repository for Wildlife health information in the country, so everyone comes to us.' As goodwill grows between the Registry and separate institutes, such as sanctuaries and zoos, these separate entities can store their data as an independent, secure node, allowing them to share their data with the Registry, while still maintaining that data as private to other users. This gives the Registry an increasing wealth of data and helps close data gaps, provides supplementary data points for research tools like data mapping, and makes all research informed by the Registry continually richer. Mediaflux has successfully given the Australian Registry of Wildlife Health a continued way to easily store, find, and share data, making the task of managing data simpler, and less time intensive, for both the Registry and its stakeholders.

The Future

Through continued success, the Australian Registry of Wildlife Health has become the space where critical Australian wildlife health data is stored.

Growth in caseload and mortality reports mean changes to Mediaflux must be made to assure the Registry remains agile in their operations. To address emergent challenges, we will actively shape the Mediaflux deployment to meet their evolving needs. Updates will include making the application more user-friendly to peripheral institutions and new users, so it's easier for new contributors to share their data. Eliminating now redundant fields, and adding search options for diagnostic coding systems, will make data entry, and data retrieval, an efficient and intuitive process. The Registry will continue to offer contributing institutes a secure place to store their data, while also providing a way to maximise the information embodied in their data. Whether it's samples, digitised written reports, or excel spreadsheets, these disparate data points can be attached to their relevant cases, making the embodied information on the case richer. Making the platform more user-friendly to other institutes will further ease inter-organisational collaboration with the Registry.

Further upgrades will include a system where fields in the database can be used to create a purpose built webform, so people, either professionals or citizen scientists, can easily attach photos, and complete the generated fields in the webform to report sick or diseased animals. These submissions will provide increasingly accurate times of capture and location of sighting as well as contact information with the sample provider, which will be hidden depending on submitter. This webform will sit in a mediatory zone awaiting acceptance by a researcher. If accepted, the webform information will be added to the Registry automatically. Rejected submissions will be deleted. These additions will significantly increase the fidelity of incoming samples and streamline data input. A common problem with incoming wildlife health data is that the data can be upwards of three weeks old by the time it's sent to the institute. With three weeks of environmental changes, the potential for the impact data to be stale by the time of receival increases exponentially. Shrinking the time between the animal sighting and the Registry receiving the case, with precise location data attached, will help researchers recover samples and identify occurrences in eco systems with increasing accuracy. Jane Hall conveyed just how much their data landscape is changing, 'in the last 5 years the Registry has seen a significant increase in the number of unusual and mass mortality events affecting wildlife across Australia.' With these mortality events distributed across the vast expanse of Australia, it makes tracking the details of these events increasingly difficult.

Having an automated way to disseminate stale and fresh data will help isolate impact data. Faster impact data isolation leads to faster, effective intervention. Through increasing data precision, researchers will be able to understand why animal mortality events occur with increased speed.

Future work will overhaul the database, making data entry easier for researchers while also optimising workflow. UI elements will be added that show users where the specimen research is up to in a pipeline, and disclose what deliverables are awaiting decision or return. These UI elements will communicate whether a sample needs to be stored indefinitely or not, if pathology is awaiting return, the current stage of a necropsy. A report generating system will be added, so researchers can have a list of every task outstanding in their caseload. From here researchers can know, in an instant, what submissions need to be prioritised based on diagnostic deadlines. Adjustments to the inbuilt mapping tool will be made, so combined datasets can be represented in ways specifically tailored for stakeholders, making the information the data represents increasingly readable, accurate, and understandable. Final upgrades will involve digitising the Registry's entire glass slide collection, in which tissue samples from wildlife can be secured for future generations, and the valuable data these tissue samples contain can be maintained beyond their five-year expiry. These files are their own distinct file type and will be added as a compatible data format in this Mediaflux retooling.in a pipeline, and disclose what deliverables are awaiting decision or return. These UI elements will communicate whether a sample needs to be stored indefinitely or not, if pathology is awaiting return, the current stage of a necropsy. An automatic report generating system will also be added to show all pending tasks before specimens are finalised. From here researchers can know, in an instant, what submissions need to be prioritised based on diagnostic deadlines. Adjustments to mapping will be made, so combined datasets can be represented in ways specifically tailored for stakeholders, making the information the data represents increasingly readable, accurate, and understandable. Final upgrades will involve digitising the registry's entire glass slide collection, in which tissue samples from wildlife can be secured for future generations, and the valuable data these tissue samples contain can be maintained beyond their five-year expiry. These files are their own distinct file type and will be added as a compatible data format in this Mediaflux retooling.