

World view



By Christian Rutz

Register animal-tracking tags to boost conservation

The COVID-19 pandemic highlighted the value of pooling animal-tracking data – a global tag registry would facilitate data discovery and collaboration.

In early 2020, my colleagues and I realized that animal-tracking data collected before, during and after the pandemic lockdowns could provide invaluable insights into human–wildlife interactions and conservation benefits on a global scale. We launched a research consortium – the COVID-19 Bio-Logging Initiative – to investigate how animals behaved while much of the world’s human population sheltered at home.

But we had no way to establish how many, and which, animals were wearing tags. Miniature tracking devices are routinely attached to a vast range of species – from songbirds to whales – to collect detailed data on their movements, behaviour and physiology. Yet, of the thousands of ‘bio-loggers’ deployed every year, many generate data sets that remain effectively undiscoverable – they are saved on personal hard drives or institutional servers, inaccessible to the wider community. This problem can be solved by setting up a global registry for all tags on wild animals.

Although individual tracking studies make important contributions to our understanding of the ecological needs of animal species, pooling data (across taxa, longer time periods or multiple locations) can reveal general patterns, aiding the design of particularly effective conservation strategies. For example, integrating the tracks of 4,060 animals across 17 marine species (including albatrosses, penguins, seals and whales) has helped to identify conservation priority areas in the Southern Ocean (M. A. Hindell *et al. Nature* **580**, 87–92; 2020).

In an ideal world, all animal-tracking data would be archived – with either open or restricted access – in public repositories, such as Movebank. Excellent progress has been made towards this goal, but universal uptake is hindered by time constraints, governmental or institutional restrictions and concerns over inappropriate data use.

To encourage as many data owners as possible to join the COVID-19 Bio-Logging Initiative, we launched a recruitment campaign through Movebank, social media, mailing lists, newsletters, personal contacts and a published call to action (C. Rutz *et al. Nature Ecol. Evol.* **4**, 1156–1159; 2020). Our consortium has grown to more than 600 international collaborators, accumulating a staggering one billion location records for some 200 animal species. Despite this impressive community response, we know that this is only the tip of the iceberg.

The global tag registry that I suggest would contain meta-data for tags (including tag type and settings, information

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on the animal, and date and location of deployment), as well as researchers’ contact details – but not the actual tracking data. This decoupling of information would unlock the field’s full conservation potential in the short term and would build the trust required to allow raw data to be archived routinely in public repositories in the longer term. Over time, the tag registry is likely to evolve naturally into a ‘meta-repository’, linking to raw data sets hosted across a multitude of repositories.

The registry would enable researchers to check data availability at the push of a button – for example, for a particular taxonomic group, such as terrestrial carnivores, or a specific region, such as the Pacific Ocean – and to get in touch with the relevant data owners. Registry management must comply with international best practices, so robust processes would need to be set up to vet queries, pass on collaboration proposals to data owners and minimize overlap between studies.

For the registry to fulfil its intended purpose, it must be used by the entire animal-tracking community. How can this be achieved? I see an opportunity to integrate tag registration into existing ethical-review processes. Governmental authorities, research institutions, funders, publishers and fieldworkers agree that permits must be in place before animals can be tagged. Building on this international consensus, ethical review boards could make tag registration a condition of study approval.

To complement this bottom-up approach, well established initiatives – such as those associated with the United Nations Environment Programme or the International Union for Conservation of Nature – could help to build an international policy mandate and provide independent oversight. The International Bio-Logging Society, which has been working to unite animal-tracking efforts on land and at sea, could provide crucial support.

This vision is no doubt ambitious, but it is achievable. Every civil aircraft on the planet must be registered – so I am convinced that, with effective coordination, we can accomplish the same for tagged animals. Furthermore, the basic principle of hosting metadata, but not raw data, is being used productively by other databases, such as AviSample – a registry for biological samples collected from wild birds.

Many researchers, myself included, feel a moral obligation to the animals carrying our tags. A global tag registry would help to realize the full conservation potential of all tracking data, minimize duplication of tagging efforts and facilitate sharing of welfare-related expertise. The conservation cost of missing data in large-scale collaborative projects cannot be easily measured, but is probably substantial. We simply cannot afford this, and must ensure that all animal-tracking data are immediately discoverable.