Transcription of audio accompanying poster presentation:

Making Parasite-Host Associations Visible using Global Biotic Interactions
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by:
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Jen Zaspel:
Hello everyone, I am Jen Zaspel from the Milwaukee Public Museum and I am excited to be co-presenting “Making Parasite-Host Associations Visible using Global Biotic Interactions” with coauthors Kat S., Jorrit P., and Katja S.

Parasitic arthropods inflict an enormous burden on the health of their hosts either directly, or through virulent pathogens that they vector; Parasites represent a substantial proportion of organismal diversity, their data are not readily accessible, in other words, these collections are underrepresented among the digitized specimen data out there for insects and other arthropods.

The Terrestrial Parasite Tracker (TPT) Thematic Collections Network (TCN) is a project actively working to digitize parasite collections across the US & territories

Our digitization objectives include:

- Transcribing and georeferencing label data from **1.2+** million arthropod parasite specimens from 25 collections across North America (U.S. and territories) including ~55,000 specimens from biotic-association collections
- The graphic shown here is a generalized workflow for the project showing the different database platforms our data providers using, with the SCAN portal being the primary aggregator for TPT.

The research themes that will be supported with the data from TPT are:

- *Biological Associations*- we have been heavily focused on transcribing host association data and making it available through the Global Biotic Interactions website
- This data will also inform research in *Disease Ecology* by creating digital records for organisms that spread disease
- We are also georeferencing our specimen data in order to facilitate the creation of distribution maps for parasitic taxa for both control and conservation management

- We are also generating research ready data for a variety of applications related to *Systematics, Taxonomy, and Species Trait Analyses*

Integration of host-parasite/biotic association data is also a major component of the project and we are achieving this through Global Biotic Interactions GloBI). I am going to hand it off to Jorrit Poelen to tell us more about GloBI, generally speaking, and then we will hear from Kat Sullivan about how TPT is using GloBI to make parasite host associations visible to the research community and beyond.

Jorrit Poelen:
Hey everyone, I am Jorrit Poelen. I am an independent open source and open data engineer affiliated with the Ronin Institute of Independent Scholarship and the Cheadle Center at UC Santa Barbara. I enjoy integrating complex datasets with frugal, yet powerful, informatics.

Since 2013, I've helped develop and maintain GloBI. GloBI uses open source software to make existing, openly available, species interaction datasets easier to find, access, and re-use. Examples of such datasets include, but are not limited to, natural history collections documenting parasite specimen found on specific hosts, vetted photographic evidence of Sea otter diets published on citizen science platform iNaturalist, virus-host associations from GenBank, and carefully transcribed records from published literature of bat ecology.

The many TPT workshops, discussions, and reviews sessions have not only improved GloBI's ability to index more available records, but also contribute to building communal knowledge on how to make valuable species interaction information available with minimal disruption to existing institutional infrastructures and international data exchange networks. I feel grateful for the open collaborations made possible by visionary projects like Terrestrial Parasite Tracker, iDigBio, and their funders, the National Science Foundation. Their support for Open Science allows the development of tools like GloBI to make better use of our public knowledge about the world around us.

Next up is Kat Sullivan, She is affiliated with Marquette University and Milwaukee Public Museum. and she'll talk about how GloBI helped increase the visibility of host parasite associations.

Kat Sullivan:
Hi I'm Kat Sullivan. We can use GloBI to track progress in TPT contributed records and specifically what interaction data is harvested. In this example shown in Table 1 we look at GloBI instances of all interactions with the deer tick. Starting in February 2019, prior to the start of TPT, there were 515 interactions publicly available that GlobI indexed. This covered 18 different host taxa and 2 terms associated with those interactions.After one year into the project, we nearly doubled all interactions records of deer ticks and added several new host taxa.

TPT data providers can share data with GloBI in a variety of ways, via IPT, SCAN, or direct data export. Data sharing is not intended to be a perfect one time process. Figure 5 shows our published data reviews on Zenodo. Our most recent report included 27 different data providers and we are almost to our goal of 500,000 interactions records. The increase and changes in the number of reported interaction records is due to several factors including an increase in the number of TPT institutions providing interaction data, new interaction records from TPT institutions, and improved methods of reporting interaction data.

Finally we will hear from Katja Seltmann.

Katja Seltmann:
Hi everyone, I am Katja Seltmann at UC Santa Barbara and I am also the lead PI on the new Big-Bee TCN. So in summary, we are using Global Biotic Interactions in the TPT project to combine datasets about species interactions coming from all of the TPT institutions. We have learned that different databases and institutions format their interaction information quite differently, and that there is not a single way to successfully share interaction data. These datasets are synthesized into a larger interaction dataset that also includes vertebrate parasite and host information from other sources, such as published literature. Globi is also providing direct feedback to collections about their data and learning about how people share interaction data from our data providers.

In this next year, we will continue to work with collections to integrate interaction data, and incorporate custom TPT taxonomies for searching and discovery. The work will also continue as Globi is an integral part of the new Big-Bee TCN that is just starting this year.