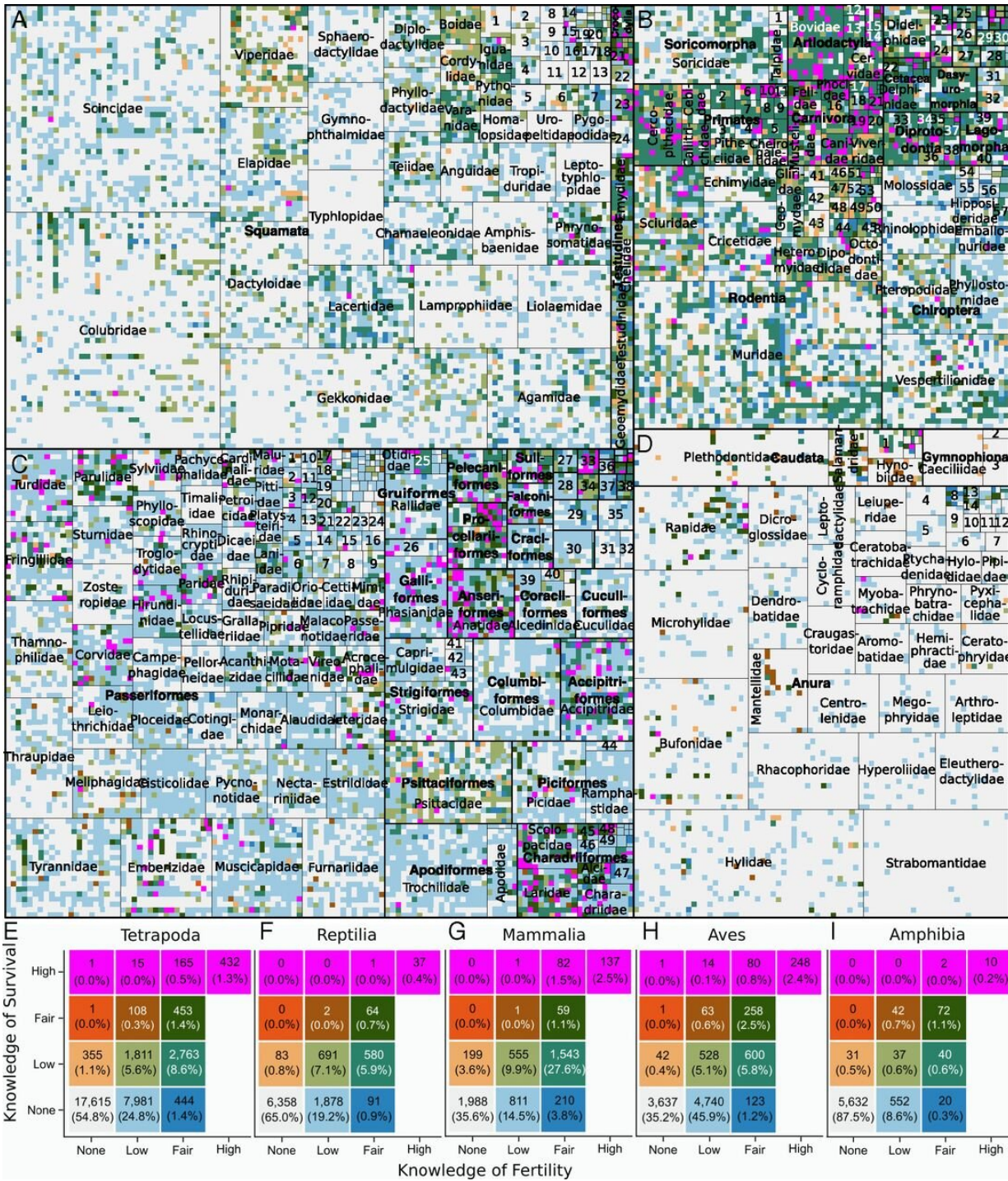


Study shows zoos and aquariums dramatically increase information needed to help save species

April 22 2019



The Species Knowledge Index maps what we know for 32,411 known species of mammals, birds, reptiles, and amphibians - in this case, with an eightfold gain after adding data from the Zoological Information Management System curated by 1200 zoos and aquariums worldwide. Credit: Species360 Conservation

Despite volumes of data currently available on mankind, it is surprising how little we know about other species. A paper published this week in the journal *Proceedings of the National Academy of Sciences (PNAS)* confirms that critical information, such as fertility and survival rates, is missing from global data for more than 98 percent of known species of mammals, birds, reptiles, and amphibians.

It's a gap with far-reaching implications for conservationists seeking to blunt the impact of the Earth's sixth mass extinction event. Scientists working worldwide on behalf of IUCN Red List, IUCN Species Survival Commission, Convention on International Trade in Endangered Species of Flora and Fauna (CITES), TRAFFIC, Monitor, and others, require [demographic data](#) to assess species populations and intervene where needed.

"It seems inconceivable. Yet scientists tasked with saving species often have to power through with best-guess assumptions that we hope approximate reality," said lead researcher and Species360 Conservation Science Alliance director Dalia A. Conde.

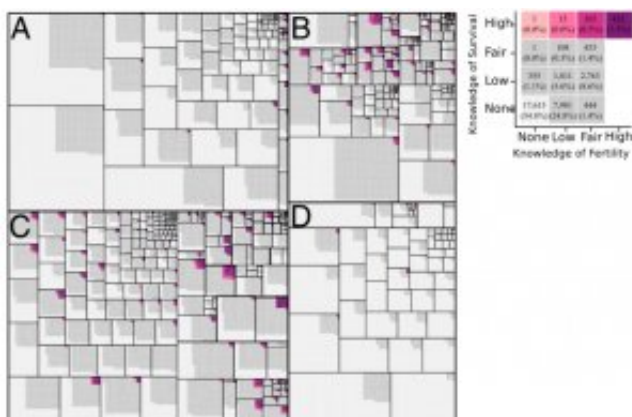
A multidisciplinary team led by researchers from the Interdisciplinary Center on Population Dynamics (CPop), Oxford, the Max Planck Institute for Demographic Research, the University of Southern Denmark, San Diego Zoo Global, and Species360 Conservation Science Alliance, with participants from 19 institutions, believes we can substantially increase what we know about species [population dynamics](#) by applying new analytics to data that has been long overlooked.

Predicting when species are at risk, and how best to bolster diversity and

numbers, requires knowing at what age females reproduce, how many hatchlings or juveniles survive to adolescence, and how long adults live. To understand what data are currently available, and to measure the void, researchers developed a Species Knowledge Index (SKI) that classifies available demographic information for 32,144 known species of mammals, birds, reptiles and amphibians.

"The demographic knowledge of species index provides significant information that, in conjunction with genetic data, allows estimations of events that affect population viability. Severe population declines, sometimes called genetic bottlenecks, influence the sustainability of populations, as we have found in studying endangered rhinos," said Oliver Ryder, Ph.D., Director of Conservation Genetics, San Diego Zoo Global.

Turning first to go-to global sources of information, the index registers comprehensive birth and death rates for just 1.3 percent of these major classes of species. The map, which illustrates demographic knowledge for individual species, shows that many remain blank.



A map of demographic data for (4) major classes of species – mammals, birds, reptiles, and amphibians – is largely blank. Credit: Species360

That changed when researchers added data from a previously untapped source, the Zoological Information Management System (ZIMS). Across classes of species, key blanks fill with salient data.

"Adding ZIMS was like turning on the lights in an otherwise very dim room," said Conde. "Class by class, from mammals through amphibians, we saw large gaps fill with fundamental data needed to help conservationists assess populations and advocate for threatened, endangered, and vulnerable species."

Incorporating ZIMS boosted the Species Knowledge Index eightfold for comprehensive life table information used to assess populations. Information on the age of first reproduction for females, a key piece to estimating how a population will fair in coming years, grew as much as 73 percent.

ZIMS is curated by wildlife professionals working within zoos, aquariums, refuge, research, and education centers in 97 countries. It is maintained by Species360, a non-profit member-driven organization that facilitates information sharing among its nearly 1,200 institutional members, and is the world's largest set of wildlife data.

The study, "Data gaps and opportunities for comparative and conservation biology," suggests a value far beyond the data itself. As Conservation Science Alliance and other researchers apply analytics to data aggregated across global sources, including ZIMS, they glean insights that impact outcomes for species in danger of extinction. Moreover, this can provide key insights for comparative and evolutionary biology, such as understanding the evolution of aging.

The team of 33 scientists including data analysts, biologists, and population dynamics specialists developed the first Species Knowledge Index to map just how much we know about species worldwide. The

index aggregates, analyzes and maps data from 22 databases and the IUCN Red List of Threatened species.

Demographic Species Knowledge Index

A multidisciplinary team of 33 scientist including data analysts, biologists, and [population](#) dynamics researchers developed the Species Knowledge Index to map just how much we know about species worldwide. The first, the Demographic Species Knowledge Index, aggregates, analyzes and maps data from 22 databases and the IUCN Red List Red List of Threatened [species](#).

More information: Dalia A. Conde et al, Data gaps and opportunities for comparative and conservation biology, *Proceedings of the National Academy of Sciences* (2019). [DOI: 10.1073/pnas.1816367116](https://doi.org/10.1073/pnas.1816367116)

Provided by Species360.org

Citation: Study shows zoos and aquariums dramatically increase information needed to help save species (2019, April 22) retrieved 25 April 2024 from <https://phys.org/news/2019-04-zoos-aquariums-species.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.