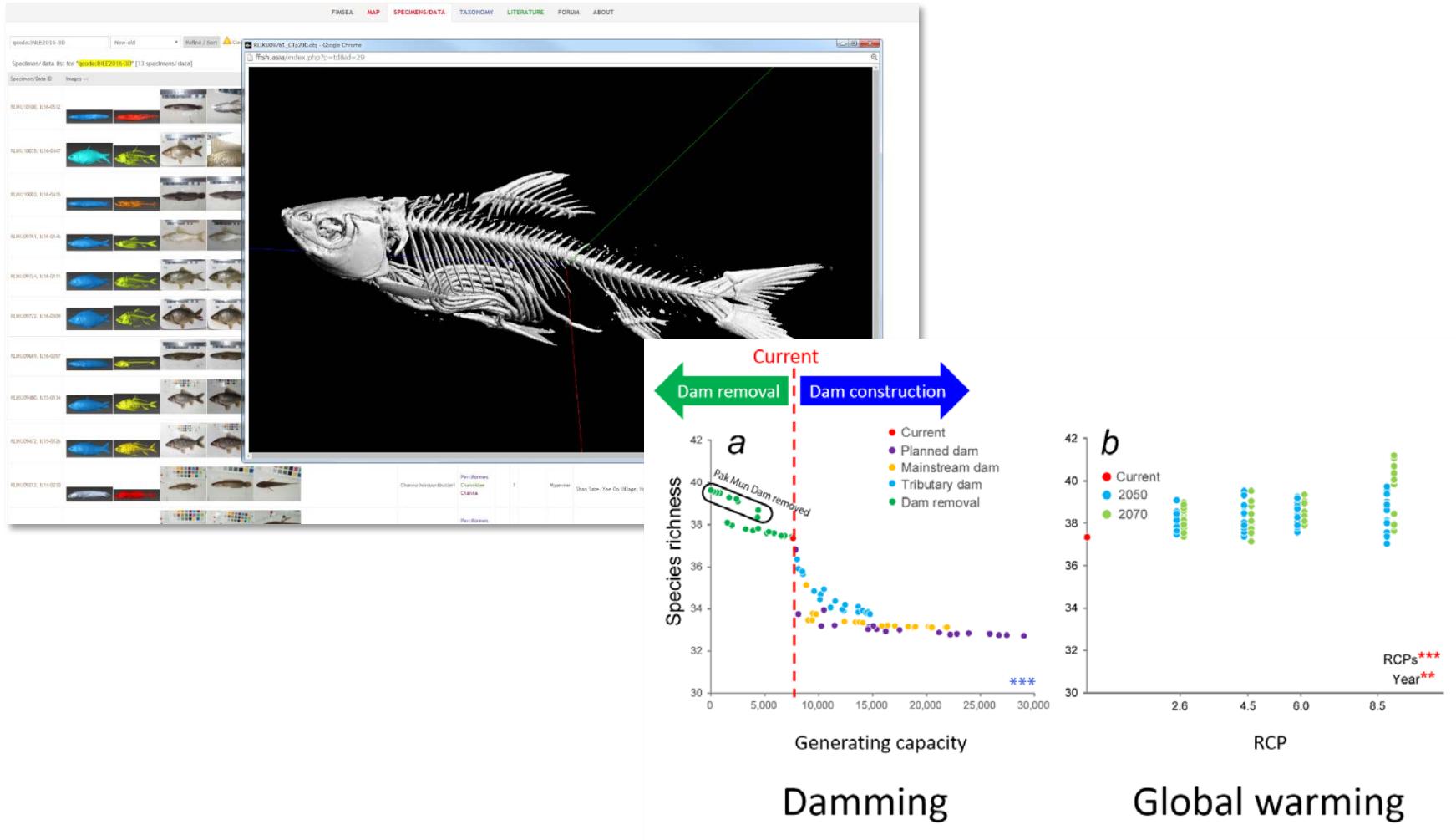


# Database of freshwater fishes in SE Asia and its contributions



From 2013~

The screenshot shows the homepage of ffish.asia on the left and a detailed species page on the right.

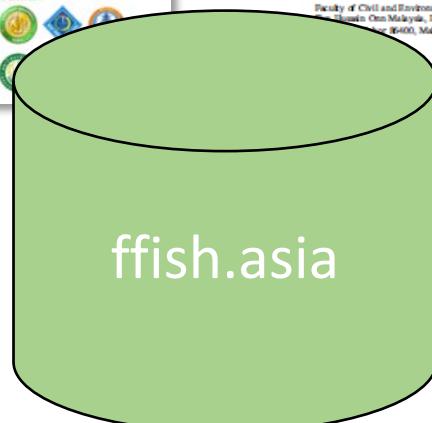
**Homepage:** Features a large image of a fish, navigation links (FINSEA, MAP, SPECIMENS/DATA, TAXONOMY, LITERATURE, FORUM, ABOUT), and a search bar. Below the search bar is a grid of small fish images labeled "Image gallery". To the right is a "Database" summary: 2954 Specimens/Data, 796 Species, 91 Families, and 25 Orders.

**Species Page:** Headed "Fishes of Mainland Southeast Asia" with the subtitle "Explore the freshwater fish diversity in the mainland Southeast Asia". It includes a scientific name input field, a search button, and a detailed species record for "Osteobrama maculata". The record includes a 3D model of the fish, distribution maps, and a table of morphological measurements.

**Right Panel (Detailed Species Page):**

- Header:** Ichthyol Res (2013) 60:293–295  
DOI 10.1007/s10228-013-0348-8
- Section:** NEWS AND COMMENTS
- Title:** An online database on freshwater fish diversity and distribution in Mainland Southeast Asia
- Authors:** Yuichi Kano · Mohan Shalabhuklin Adnan · Chintapatra Grapapan · Jurasjigit Grapapan · Wichan Magloen · Prachya Mookutikum · Yoshitaka Natori · Sufin Othman · Boumroth Prayayonbath · Konosumi Phongru · Acharya Rangsieng · Koichiro Shibusawa · Yukihiko Shimatani · Naom So · Apinan Suvannakudta · Phanura Thida · Phuong Nguyen Thanh · Duc Dinh Tuan · Kenzo Ueda · Tomomi Yamashita
- Received:** 28 April 2013 / **Revised:** 10 May 2013 / **Accepted:** 12 May 2013 / **Published online:** 21 June 2013  
© The Ichthyological Society of Japan 2013
- Text:** Mainland Southeast Asia, the region that includes Cambodia, Laos, Thailand, Vietnam and Peninsular Malaysia, is known for its high diversity of freshwater fishes (e.g., Myers et al. 2000; Dudgeon 2005; Kang et al. 2009). Recently, however, intensive exploitation pressures have been threatening this biodiversity. While some studies on fish fauna of the region have been made (e.g., Taki 1974; Rainboth 1996; Kristof 2005; Widhayawan and Pramidham 2002), most have been of limited duration and geographical range, and the full extent of the effect of this exploitation on the fish diversity is not fully understood.
- Text:** The main obstacles standing in the way of a proper understanding of the threats to this biodiversity and determining the means to alleviate them have been identified by several factors: one is a general shortage of trained scientists in the region proficient in fish taxonomy; another is that exchanges of the results of the taxonomical studies done by scientists in the region are few and far between. And finally there is a general lack of awareness of the significance of species diversity in ecosystems.
- Text:** Beginning in 2007, the Nagoya Natural Environment Foundation (NEF), from Japan, has been working to improve this situation in the Mekong-Chao Phraya region, the results of which are presented in a new online database, "Fishes of Mainland Southeast Asia (FMSEA)" (Fig. 1; URL: <http://ffish.asia>).
- Text:** Since the outset of the project, the NEF has worked in collaboration with a number of counterpart institutions in the region, namely: Can Tho University (Vietnam), The Island Fisheries Research and Development Institute
- Contributors:**
  - Y. Kano (✉) · Y. Shimada · T. Yamashita  
Center for Asian Conservation Biology, Kyushu University,  
90-2 Morokita, Nakita-ku, Fukuoka 819-0395, Japan  
e-mail: [yamashita@sci.kyushu-u.ac.jp](mailto:yamashita@sci.kyushu-u.ac.jp)
  - M. S. Adnan  
Faculty of Civil and Environmental Engineering, Universiti Teknologi PETRONAS, Seri Iskandar 31000, Seri Iskandar, Malaysia
  - Department of Agriculture,  
Wat Chalong, and  
Sukhothai University,  
Thailand
  - A. Suvannakudta  
Faculty of Fisheries Technology and Aquatic Resources,  
Maejo University, San Sai, Chiang Mai 50330, Thailand
  - P. N. Thida · D. D. Tuan  
Department of Fisheries Management and Economics,  
College of Agriculture and Fisheries, Can Tho University,  
92 street, Ninh Kieu, Can Tho, Vietnam
- Page-Footer:** Springer

**Object:** freshwater fish  
**Scale:** SE Asia  
**Contents:** distribution,  
photo images, 3D  
models, literatures

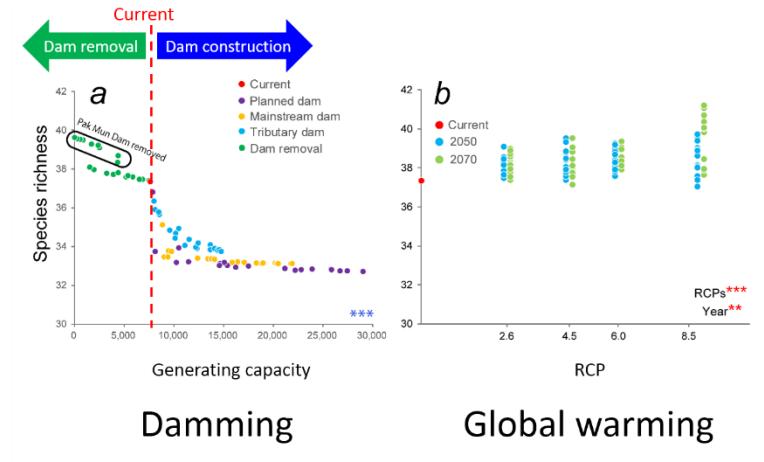


Spatial extent: Cambodia, Thailand, Vietnam, Malaysia, Myanmar

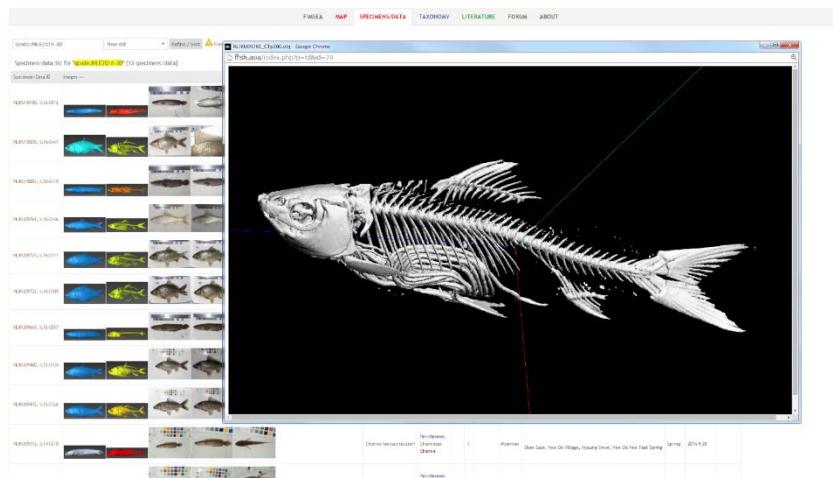
e.g. Search result for “spiny eel”

# Two recent contributions using our database

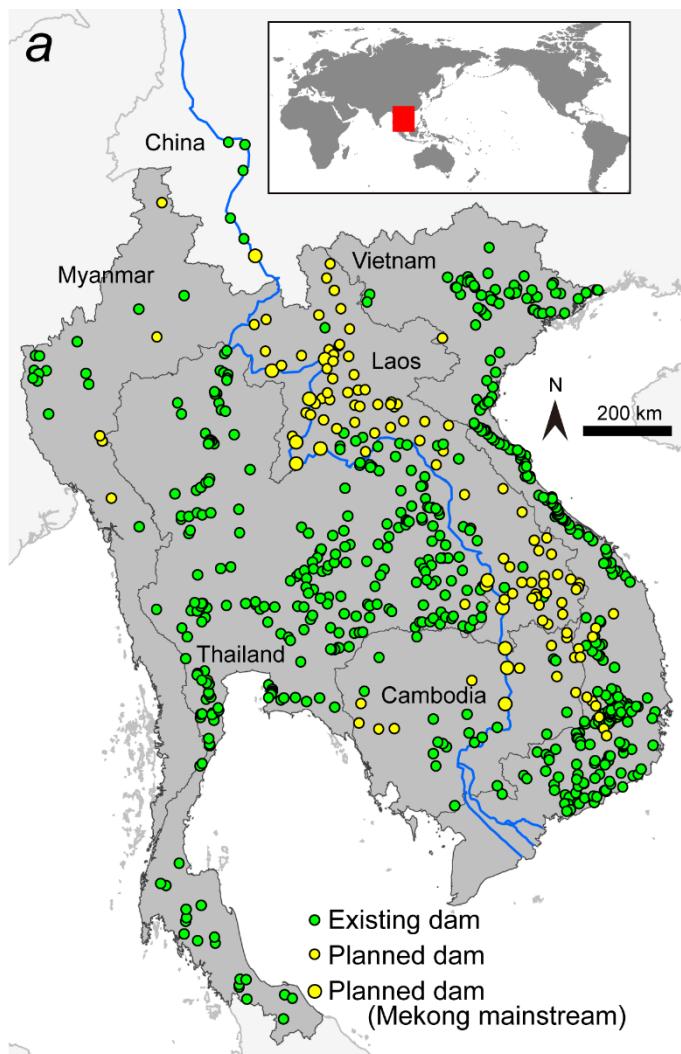
## 1) Impacts of dams and global warming around the Mekong River



## 2) Fish fauna of Inle Lake was elucidated for the first time in 100 years



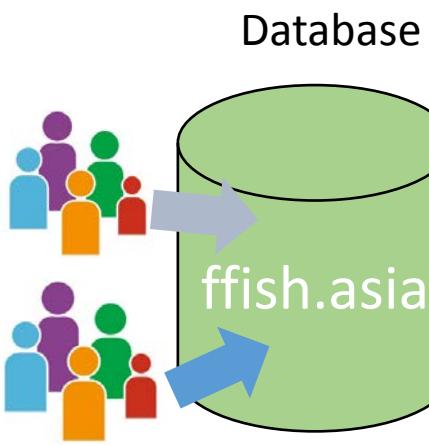
## Recent contribution 1: SDM analysis using data of the database in Mekong-Chaophraya



Hydropower dam issues



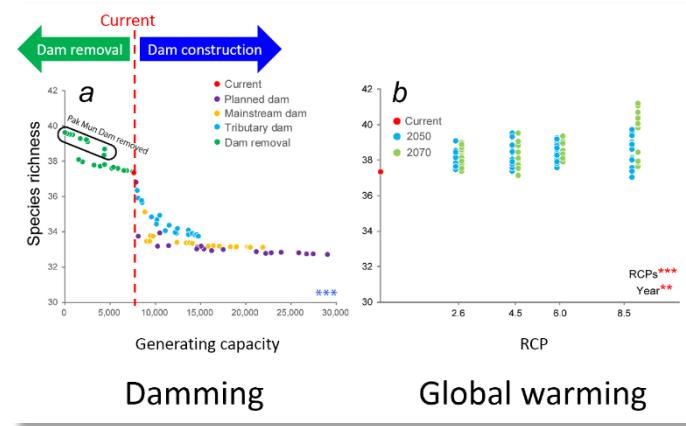
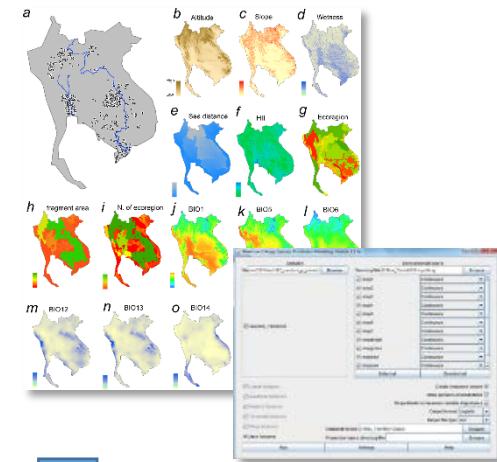
Global warming



## Distribution data

	A	B	C
1	species	x	y
2	Acanthoco	99.66258	19.27219
3	Acanthoco	98.36644	17.78086
4	Acanthoco	98.37061	17.75889
5	Acanthoco	99.47934	18.77903
6	Acanthoco	99.48483	18.83153
7	Acanthoco	99.50324	18.81019
8	Acanthoco	99.45561	18.04189
9	Acanthoco	100.4084	19.89428
10	Acanthops	104.0988	15.34289
11	Acanthops	99.98547	14.96239
12	Acanthops	106.9807	13.66463
13	Acanthops	104.9923	15.47739
14	Acanthops	105.0176	14.69972
15	Acanthops	105.4225	14.70178
16	Acanthops	104.4034	15.13538
17	Acanthops	104.1582	15.33678
18	Acanthops	104.0025	15.14557

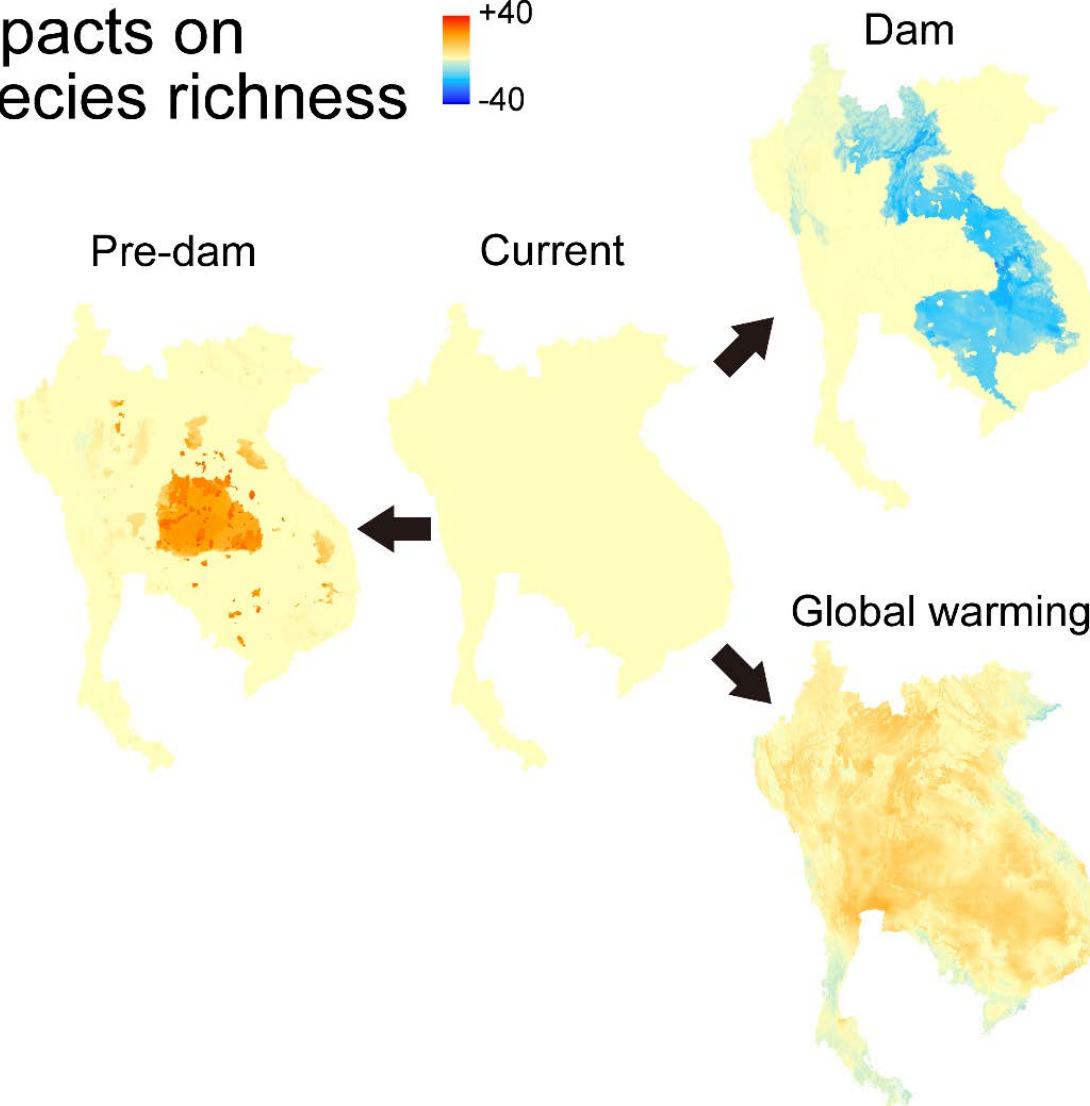
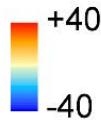
## Maxent Analysis



Publication of scientific paper  
(Kano et al., 2016)

Simulate impacts of dams and global warmings

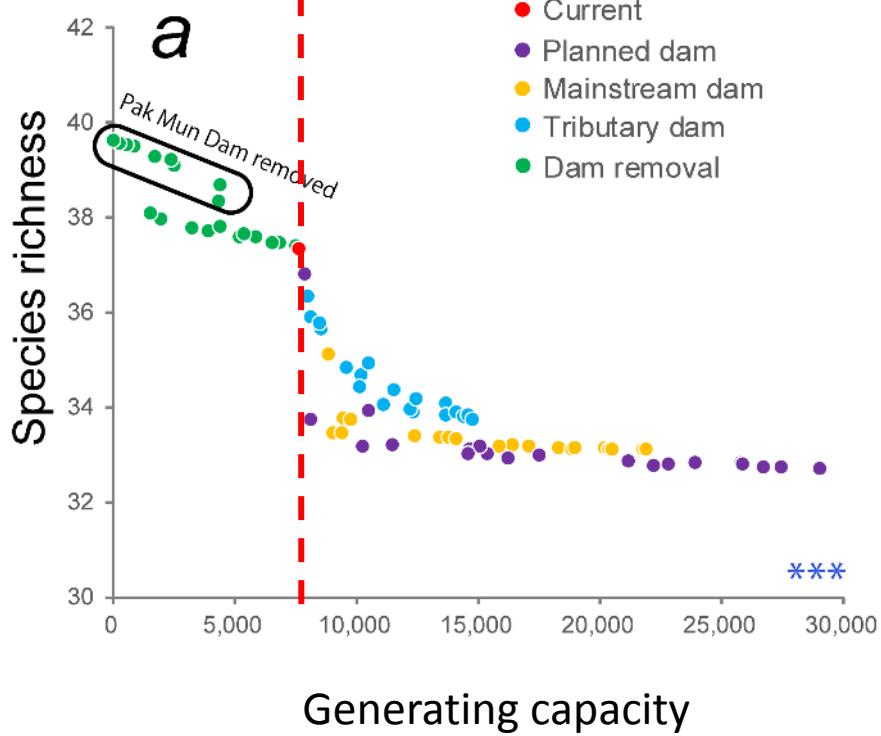
# Impacts on species richness



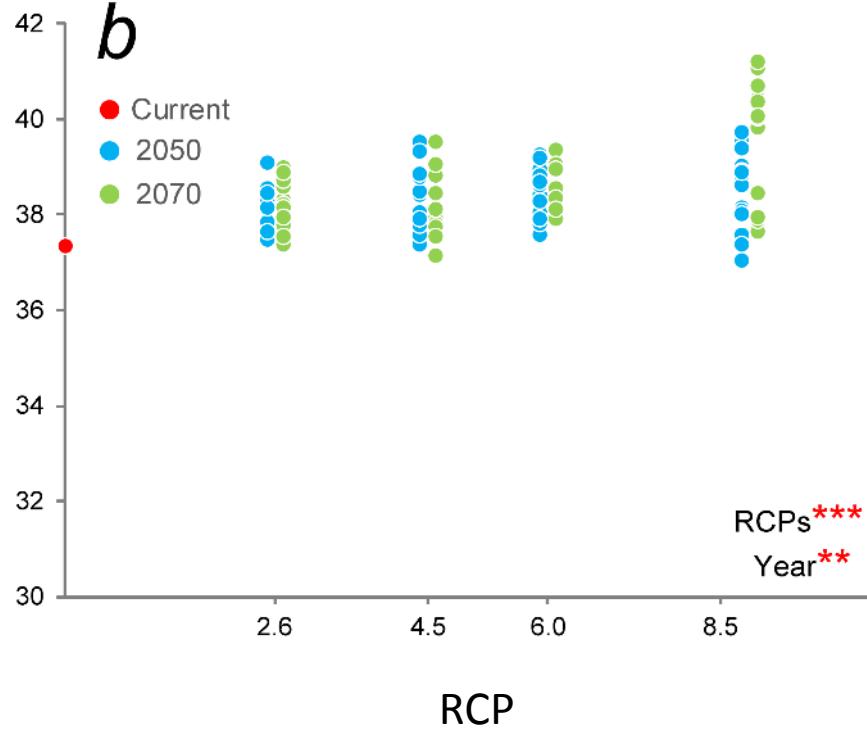
Current

Dam removal

Dam construction

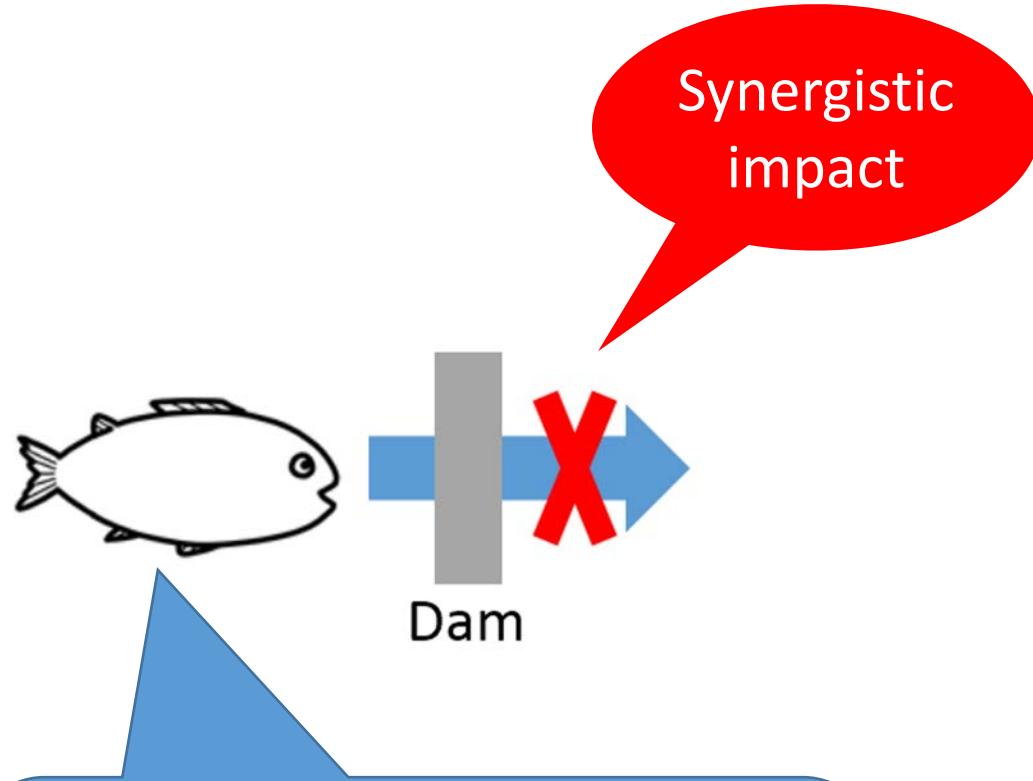


**b**

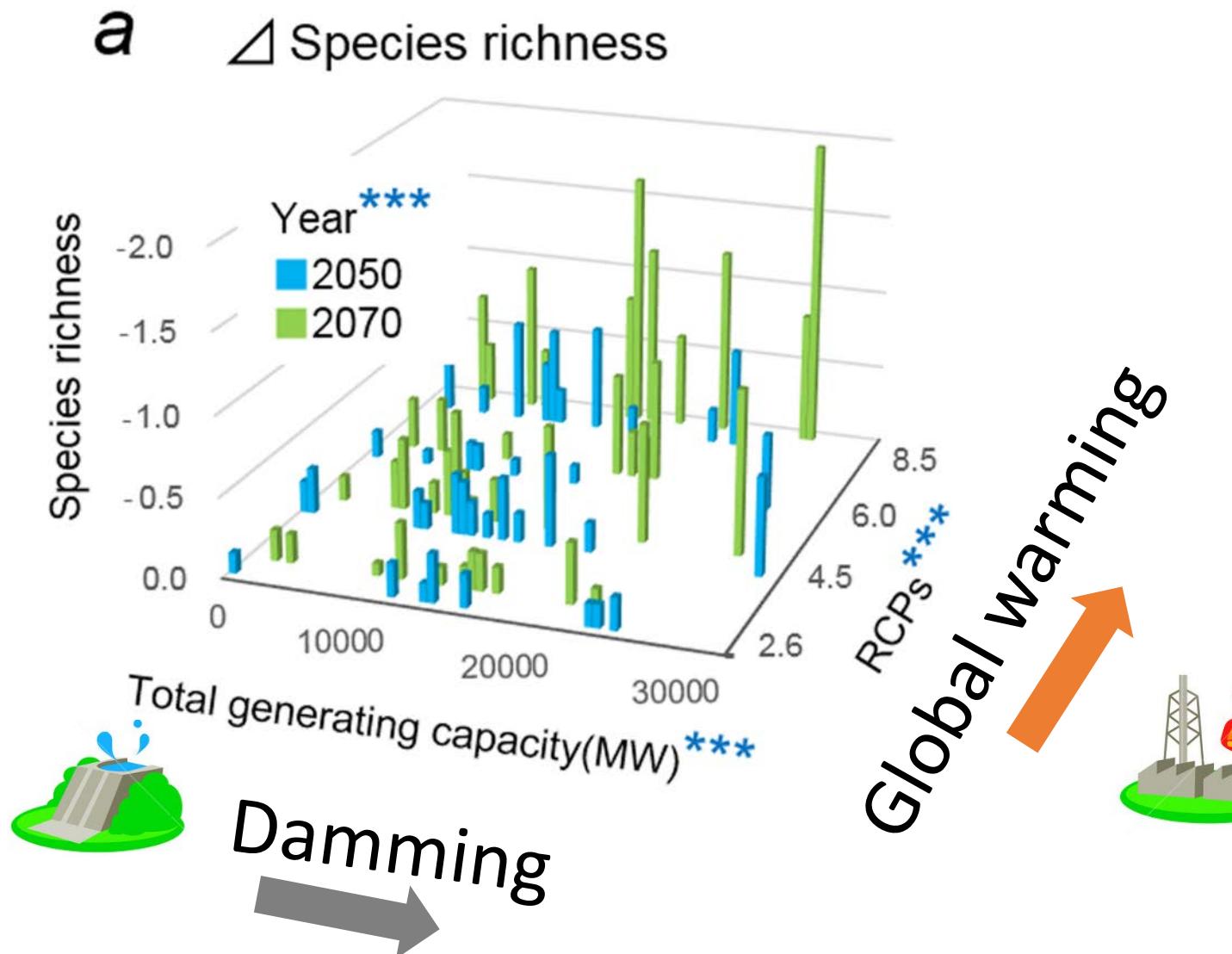


Impacts of damming and global warming are not independent....

## Global warming



# Synergistic impact



# One of a typical contribution of a local database

Thailand



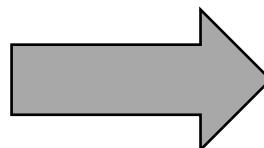
Vietnam



Laos



Cambodia



The screenshot shows the PLOS ONE website interface. At the top, there are links for 'plos.org', 'create account', and 'sign in'. Below that, there are buttons for 'Publish', 'About', 'Browse', 'Search', and 'advanced search'. On the right side, there are metrics: '2 Save', '0 Citation', '1,567 View', and '35 Share'. The main content area displays the article title 'Impacts of Dams and Global Warming on Fish Biodiversity in the Indo-Burma Hotspot' by Yuichi Kano, David Dudgeon, So Nam, Hiromitsu Samejima, Katsutoshi Watanabe, Chaiwut Grudpan, Jarungjit Grudpan, Wichan Magtoon, Prachya Musikasinthorn, Phuong Thanh Nguyen, Bounthab Praxaysonbath, Tomoyuki Sato, Koichi Shibukawa, Kenzo Utsugi, and view all. It was published on August 17, 2016, with the DOI <http://dx.doi.org/10.1371/journal.pone.0160151>. The article has sections for 'Article', 'Authors', 'Metrics', 'Comments', and 'Related Content'. The 'Abstract' section includes links to 'Introduction', 'Materials and Methods', 'Results', 'Discussion', 'Supporting Information', 'Acknowledgments', and 'Author Contributions'. The 'Abstract' text describes the threats posed by dams and global warming to freshwater fish diversity.

OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

## Impacts of Dams and Global Warming on Fish Biodiversity in the Indo-Burma Hotspot

Yuichi Kano , David Dudgeon , So Nam , Hiromitsu Samejima , Katsutoshi Watanabe , Chaiwut Grudpan , Jarungjit Grudpan , Wichan Magtoon , Prachya Musikasinthorn , Phuong Thanh Nguyen , Bounthab Praxaysonbath , Tomoyuki Sato , Koichi Shibukawa , [ ... ], Kenzo Utsugi [view all]

Published: August 17, 2016 • <http://dx.doi.org/10.1371/journal.pone.0160151>

Article	Authors	Metrics	Comments	Related Content

### Abstract

Introduction  
Materials and Methods  
Results  
Discussion  
Supporting Information  
Acknowledgments  
Author Contributions

### Abstract

Both hydropower dams and global warming pose threats to freshwater fish diversity. While the extent of global warming may be reduced by a shift towards energy generation by large dams in order to reduce fossil-fuel use, such dams profoundly modify riverine habitats. Furthermore, the threats posed by dams and global warming will interact; for example, dams constrain range adjustments by fishes that might compensate for warming temperatures. Evaluation of their combined or synergistic effects is thus essential for adequate assessment of the consequences of planned water-resource developments. We made estimates of the ranges of 383 fish species within the

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CrossMark

Subject Areas

Global warming  
 Biodiversity  
 Freshwater fish  
 Species diversity

All the stakeholders included as co-authors

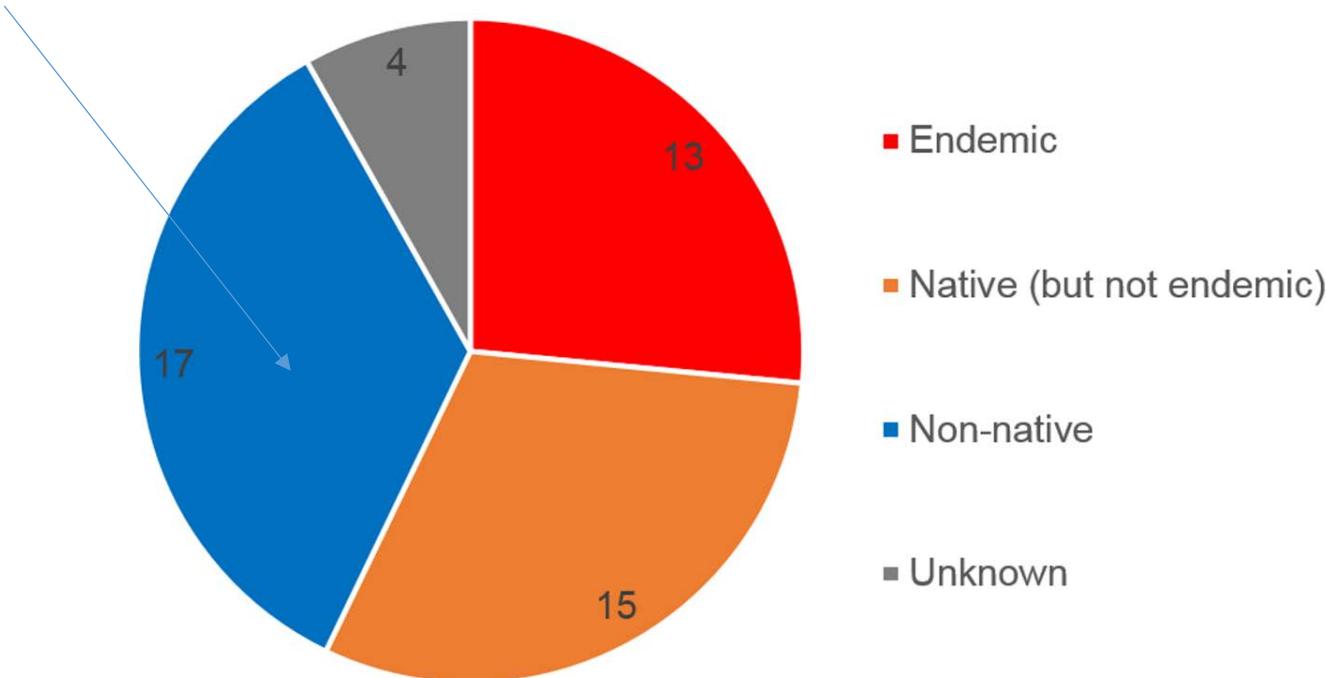
## Recent contribution 2: Fish fauna of Inle Lake



An ancient lake of Myanmar:

No records of the fish fauna have been reported since Annandale (1918)

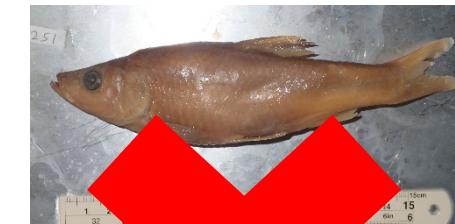
35 % of the fish fauna was introduced species



In local markets



In biomass, > 50% is Nile Tilapia



Two endemic species may be extinct

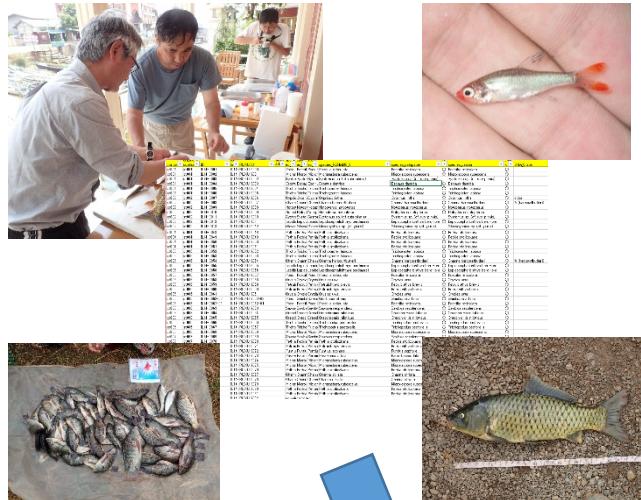
# Challenge of publishing 3D models of specimens on the browser

Fishes of Mainland Southeast Asia

Specimen/data list for "specieID:0016-3D" [13 specimens / data]

Specimen/Data ID	Image	Species	Taxon	DNA	N	Size (mm)	Country	Latitude
0016-00100, 8.16-0012		Channa maculata (L.)	Perciformes Channidae Channa		1	400	Shan State, Inle Wildlife San	22°15'N 97°15'E
0016-00200, 8.16-0047		Cyprinus rubrofuscus	Cyprinidae Cyprinidae Cyprinus		1	400	Shan State, (location uncertain)	22°15'N 97°15'E
0016-00300, 8.16-0045		Channa maculata (L.)	Perciformes Channidae Channa		1	400	Shan State, Inle Wildlife San	22°15'N 97°15'E
0016-00500, 8.16-0146		Gymnotus maculatus	Gymnotiformes Gymnotidae Gymnotus		1	400	(location uncertain)	Shan State, Nam Pa, Shan
0016-00700, 8.16-0111		Cyprinus rubrofuscus	Cyprinidae Cyprinidae Cyprinus		1	400	(location uncertain)	Kayah State, Lekkan, Taung
0016-00900, 8.16-0109		Cyprinus rubrofuscus	Cyprinidae Cyprinidae Cyprinus		1	400	(location uncertain)	Kayah State, Lekkan, Taung
0016-00900, 8.16-0057		Channa maculata (L.)	Perciformes Channidae Channa	03.11.1982, 400m	1	400	(location uncertain)	Kayah State, Lekkan, Taung
0016-00940, 8.16-0114		Cyprinus rubrofuscus	Cyprinidae Cyprinidae Cyprinus		1	400	(location uncertain)	Shan State, Pekon, Peikin M

# Collecting data and specimens in Inle Lake



Publication of a data paper

A dataset of fishes in and around Inle Lake, an ancient lake of Myanmar, with DNA barcoding, photo images and CT/3D models

Inle (Inlay) Lake, an ancient lake of Southeast Asia, is located at the eastern part of Myanmar, surrounded by the Shan Mountains. Detailed information on fish fauna in and around the lake has long been unknown, although its outstanding endemism was reported a century ago.

Abstract

Background

New information

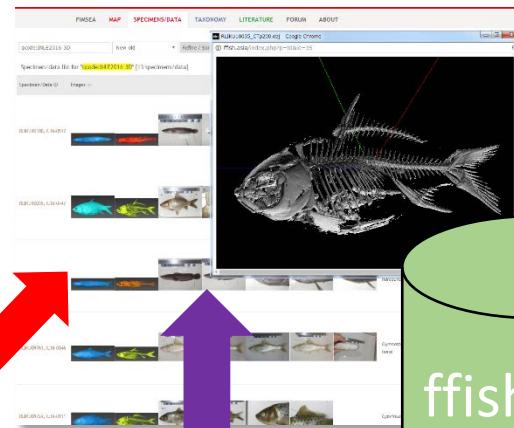
Sampling Methods

Collection Data

Additional Metadata

Sub-Article-Level Metrics

Register the data, photo images and 3D models into the DB



Register the data to GBIF and GeneBank

A dataset of fishes in and around Inle Lake, an ancient lake of Myanmar, with DNA barcoding, photo images and CT/3D models

Inle Lake is located in the northwestern part of Shan State, which is easternmost state in Myanmar (Burma). The lake is surrounded by Shan Hills, by which the lake and neighboring aquatic habitats have been geographically isolated and thus harboring several endemic fish species. These aquatic environments are still relatively undisturbed and local markets where the surveys were carried out.

Downloads

Versions

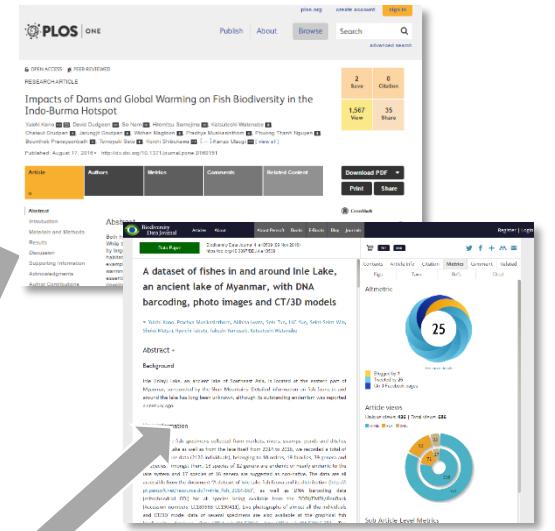
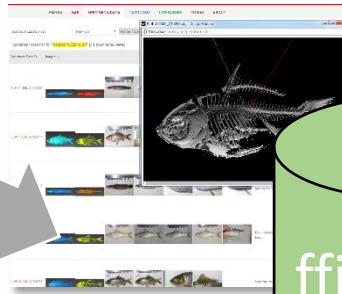
Version Published on Records Change summary DOI handle Last modified by

1.5	2016-11-04	948	Common names in Taxonomic coverage were updated	10.5009/GBIF.1320011	2016-11-04	948
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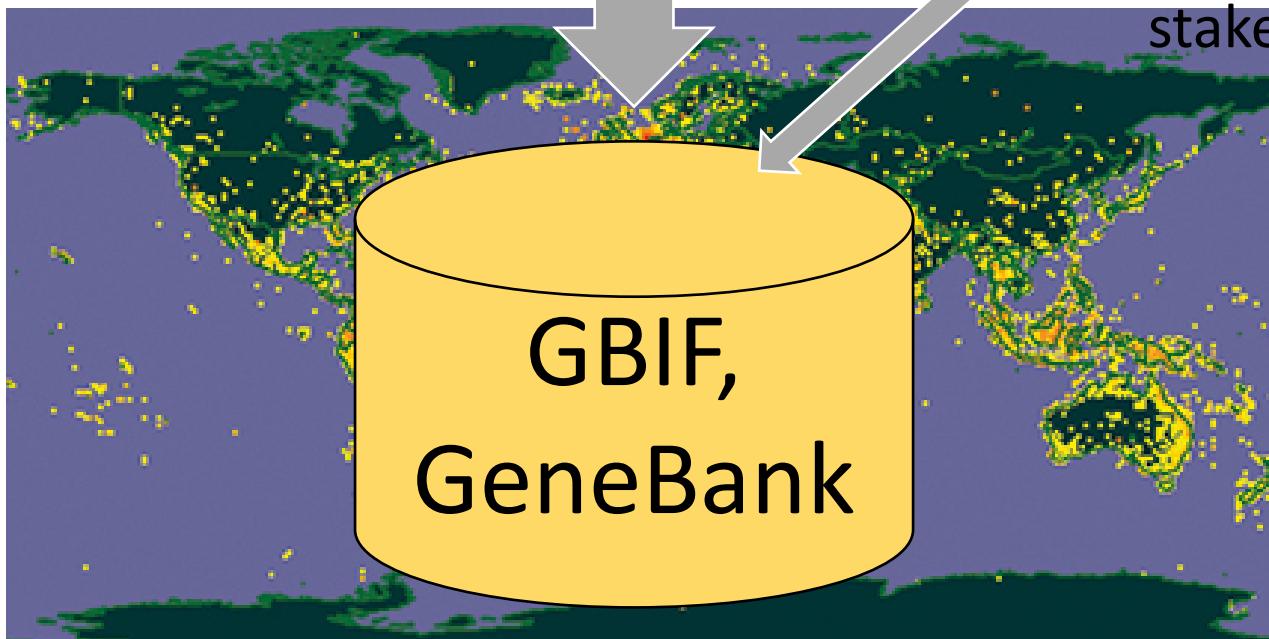
# The system of our local database



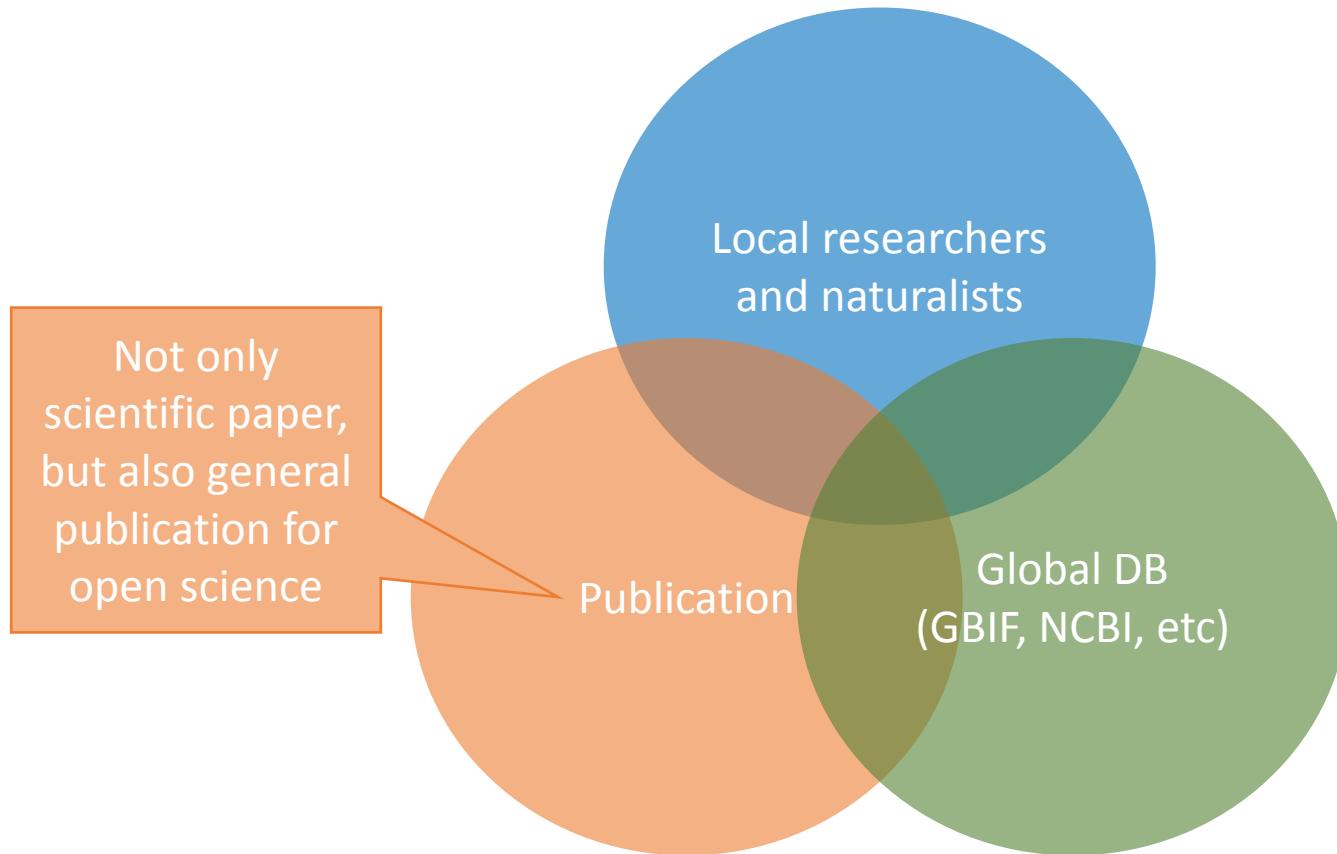
original contents



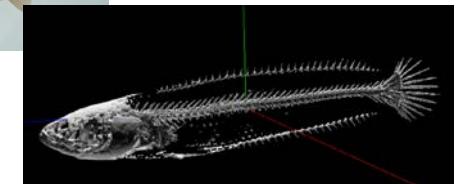
Publication with  
stakeholders



# The roles of our local database is to connect



as well as archiving digital objects such as



# One of the answers of AP-BON?

