

2021 研究資料管理工作坊 , Taiwan, 2021.10.07

從東南亞蝙蝠研究探討 跨國生物多樣性資訊管理

黃俊嘉

Southeast Asian Bat Conservation Research Unit, Steering Committee

ChiroVox (<http://chirovox.elte.hu/>), Steering Committee

台灣蝙蝠學會 常務理事

黃金蝙蝠生態館 科學顧問





Source: ASEAN | GETTY IMAGES/WP graphic

Southeast Asia (東南亞 / 東協)

Background

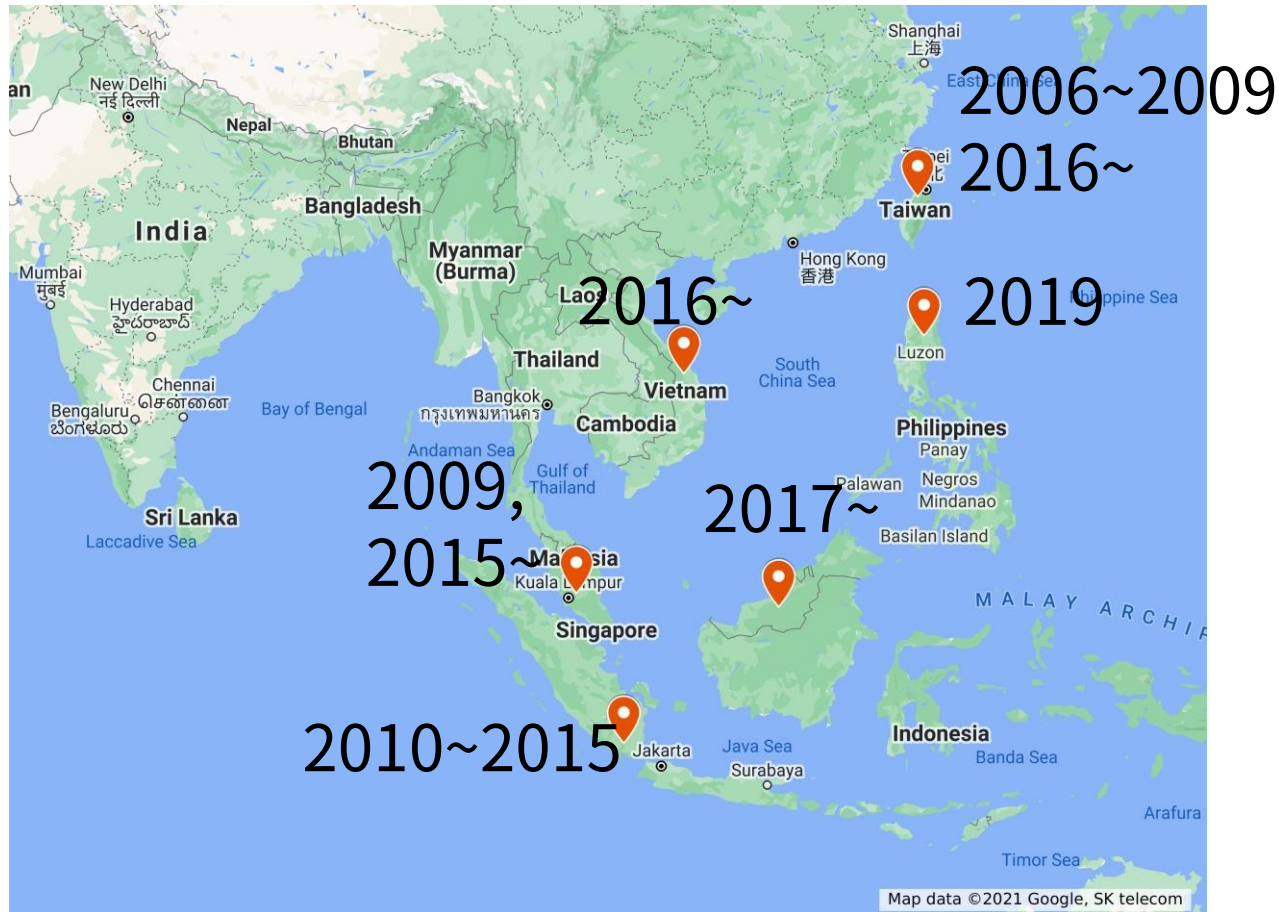
- 🇲🇾 Rich natural
- 🇲🇾 Colonial history
- 🇲🇾 Fragmented landscape
- 🇲🇾 Diverse language
- 🇲🇾 Conservative culture
- 🇲🇾 Limited incomes, except Singapore and Burnie



>25% of 1430 Bat Species can be Found from 8.8% of Global Land



My research in SE Asia (2009~present)



Species Conservation Assessment

2021-2 | [Login / Register](#) | [* What's New](#) | [Contact](#) | [Terms of Use](#) | [English](#) ▼

 Names - common, scientific, regions etc... [Advanced](#) | [About](#) | [Assessment process](#) | [More](#) ▼

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Ryukyu Flying Fox 琉球狐蝠 (台灣狐蝠)

Pteropus dasymallus

CITATION
 Vincenot, C. 2017. *Pteropus dasymallus*. *The IUCN Red List of Threatened Species* 2017: e.T18722A22080614.
<https://dx.doi.org/10.2305/IUCN.UK.2017-2.RLTS.T18722A22080614.en>. Downloaded on 05 October 2021.

[Download](#) ▼

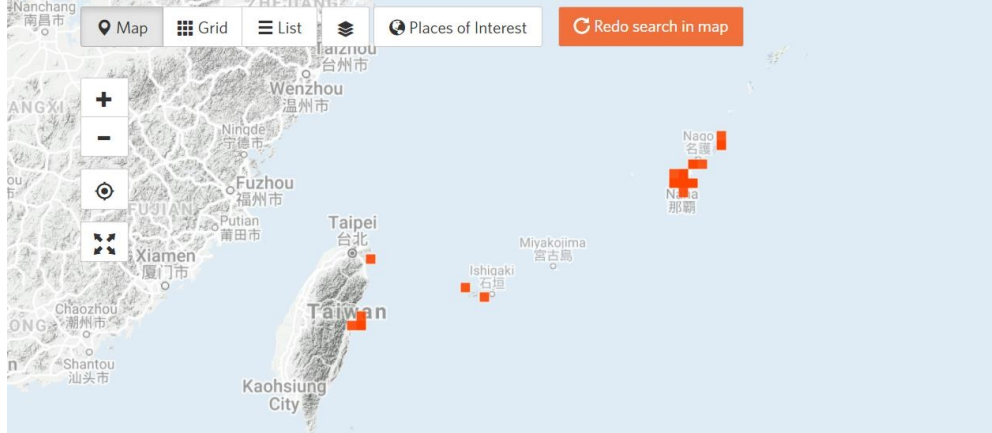
Translate page into:
 Select Language ▼

LAST ASSESSED
31 December 2016

SCOPE OF ASSESSMENT
Global

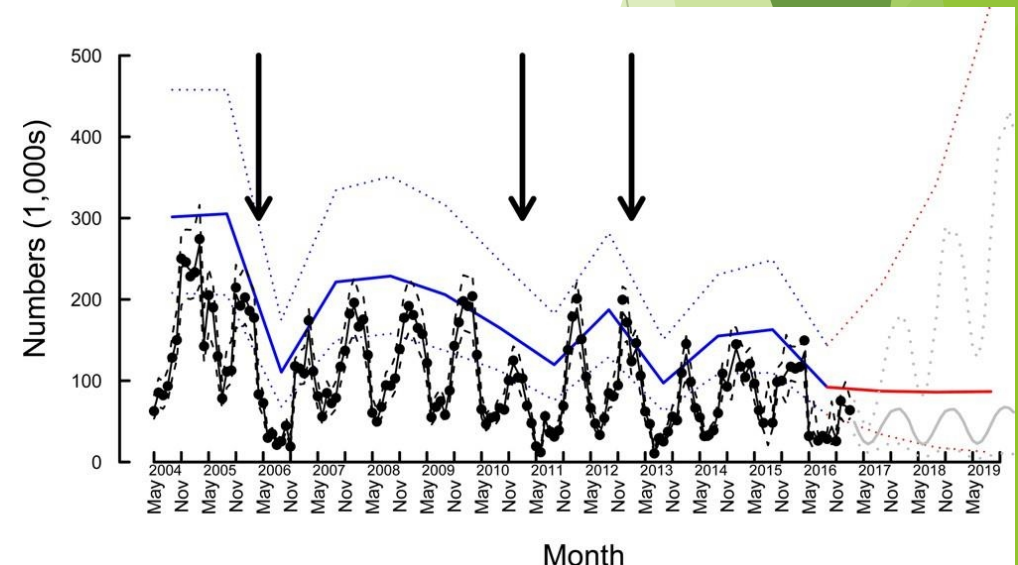
Skin to Assessment in detail

NOT EVALUATED	DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	VULNERABLE	ENDANGERED	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT
NE	DD	LC	NT	VU	EN	CR	EW	EX



Map | Grid | List | Places of Interest | Redo search in map

<https://www.inaturalist.org/>



<https://www.iucnredlist.org>



Using Bio-sonar Signals as Indicators of Bat Occurrence and Behaviors

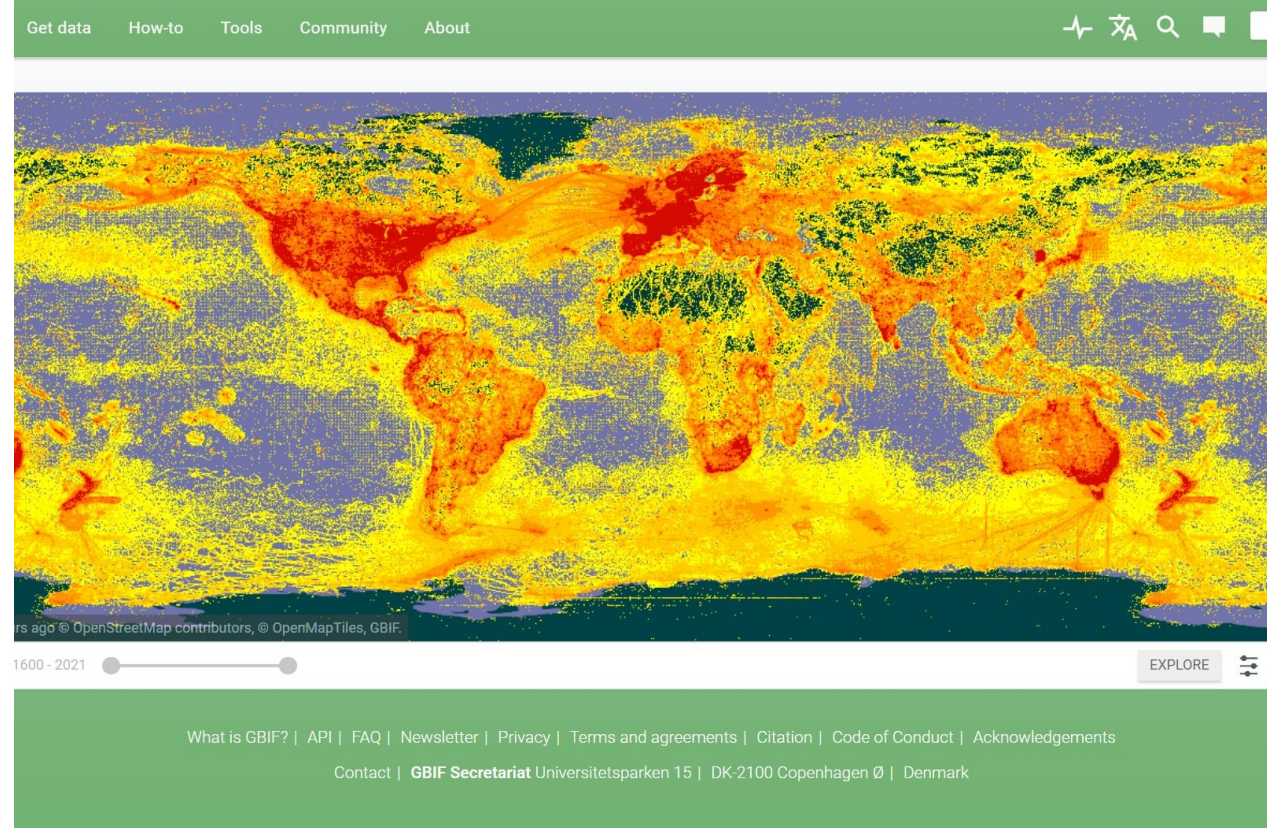
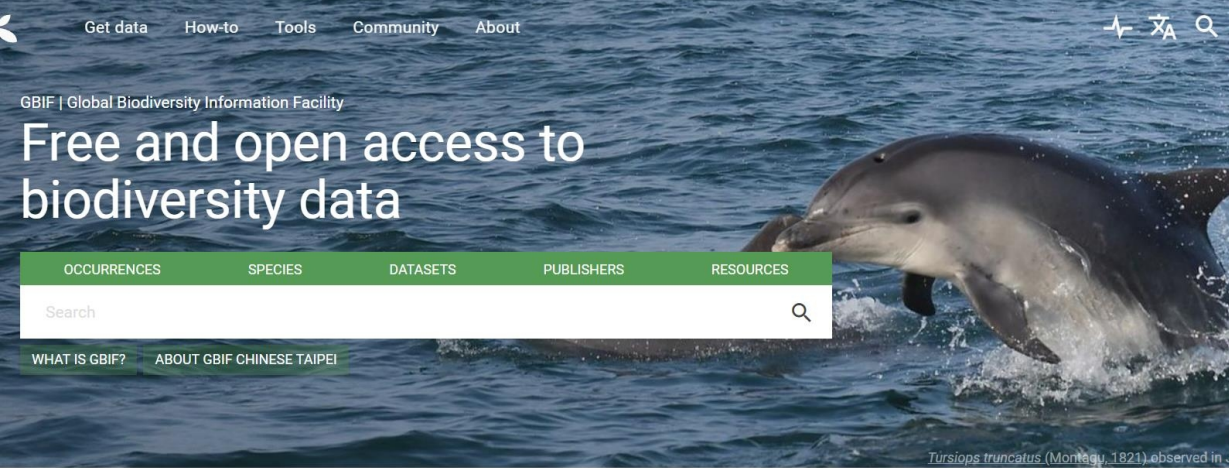






Necessary (Meta-) data

📌 Species Assessment: georeferenced and timestamped species records are required

In SE Asia, often linked to biological materials (specimen, DNA, tissue), and multimedia files (usually still images)

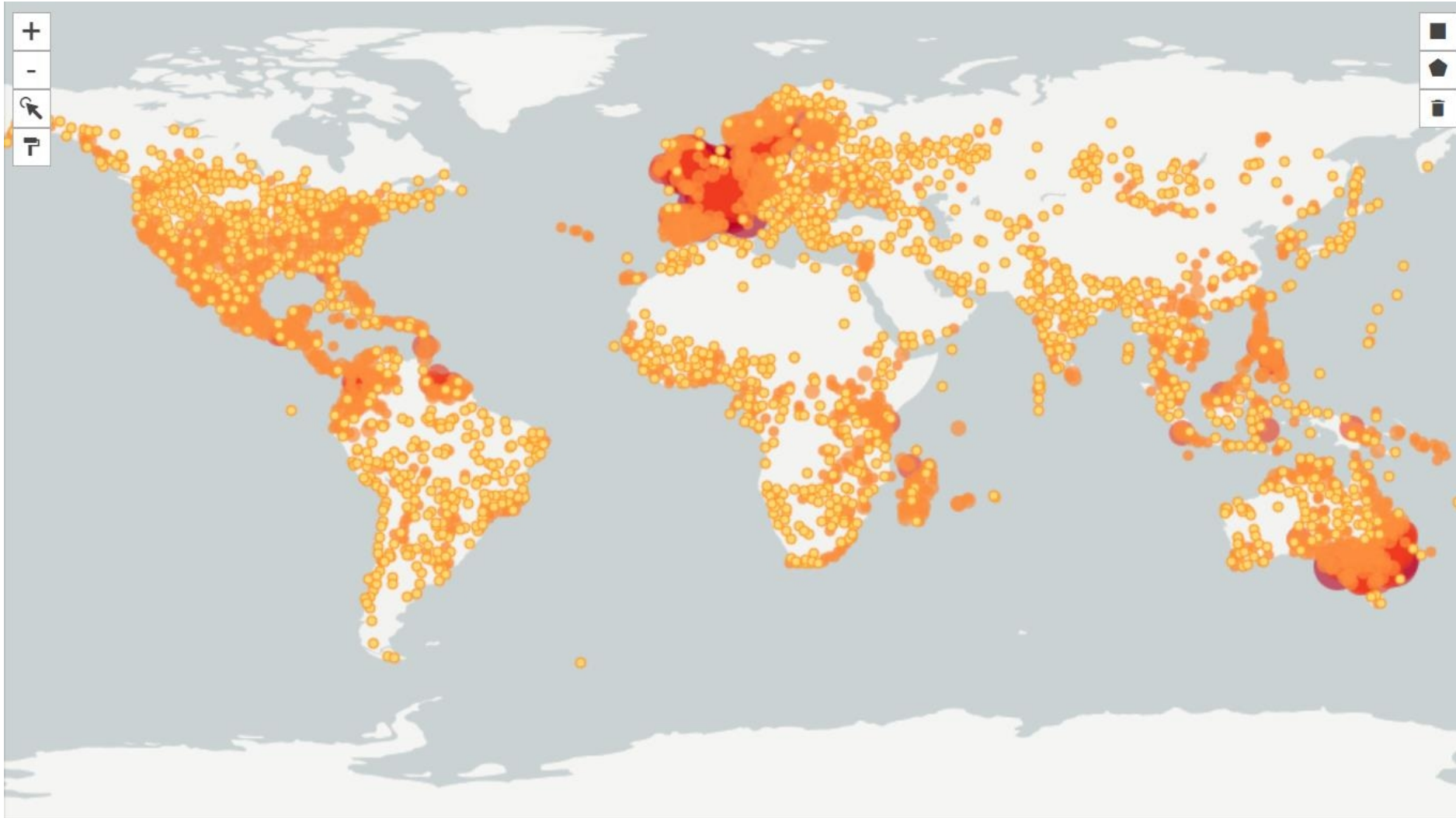
📌 Acoustic Monitoring: audio files needs to linked to species records & recording conditions



<p>Occurrence records 1,910,085,941</p>  <p>Bio-Dem wins 2021 GBIF Ebbe Nielsen Challenge</p>	<p>Datasets 62,445</p>  <p>Michael Belitz wins 2021 GBIF Young Researchers Award</p>	<p>Publishing institutions 1,746</p>  <p>Julen Torrens Baile wins 2021 GBIF Young Researchers Award</p>	<p>Peer-reviewed paper 6,283</p>  <p>GB28: 28th Meeting Governing Board</p>
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Global Biodiversity Information Facility (GBIF, <https://www.gbif.org/>)

SE Asia as a Gap of Bat Occurrence Data



c. 2% of global count (28729 of 1,409,060 records), SARS~Covid19 (2002~2021)

SE Asia as a Gap of Bat Call Data

Name	No. species	No. records	Region	Reference	Download
EchoBank	297	3531	Worldwide	Collen (2012)	not online
Bat Conservation Trust Sound Library	15	27	Great Britain	http://www.bats.org.uk	only members
Cornell lab of ornithology – Macaulay library	29+	258+	Worldwide	http://www.macaulaylibrary.org	no
British library – British sound archive	139+	700+	Europe	https://sounds.bl.uk	no
Nepal Bat Call Library	15	15	Nepal	http://smcrf.org/	no
BioSounds – Sumatran Chiroptera	16	16	Sumatra, Indonesia	https://soundefforts.uni-goettingen.de/	no
Bat Calls of New South Wales	31	1200+	New South Wales, Australia	https://www.environment.nsw.gov.au/	yes
Avisoft Bioacoustics	26	62	Europe	http://www.batcalls.com	yes
Morcegoteca	17	27	Brazil	https://ppbio.inpa.gov.br/	yes

After Gofol and Huang et al. *PeerJ*, in review.

Identifying Gaps via Regional Research Network

🌿 Southeast Asian Bat Conservation Research Unit
(2011~present)



GBIF's Biodiversity Information Facilitating in Asia grant (BIFA04-24, 2019-2020)

PROJECT | CLOSED

Deploying acoustic data to fill gaps in bat biodiversity information for Southeast Asia

📅 1 May 2019 - 30 April 2020 € 12,001

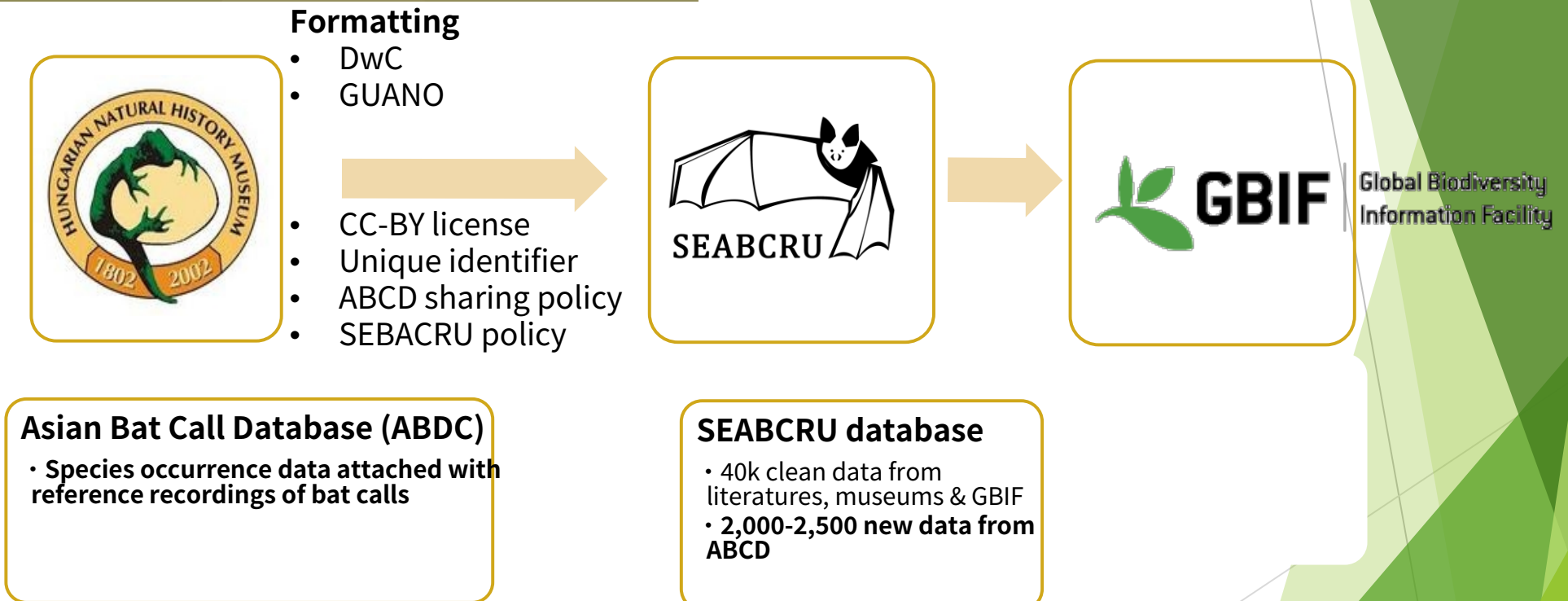
[ABOUT](#) [NEWS & EVENTS](#) [DATASETS](#)



Indian Barbastelle (*Barbastella darjelingensis*) from Mefeng, Taiwan. Photo by Joe Chun-Chia Huang (CC BY-NC 4.0)

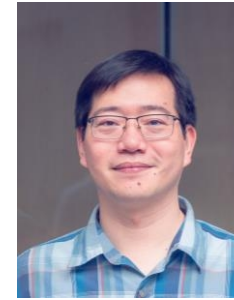


Project Architecture



Partners

- >25 bat scholars from 18 organizations in 9 SE Asian countries, USA, Canada, Hungary, & Taiwan
- Museums, universities, NGOs, one public health organization (Ecohealth Alliance)



端木茂甯 (BRC)



何英毅 (BRC)



郭浩志 (BRC)



劉建男 (NCYU)



陳湘繁 (NTPU)



張恆嘉 (FGBH)



TEXAS TECH
UNIVERSITY



EcoHealth
Alliance



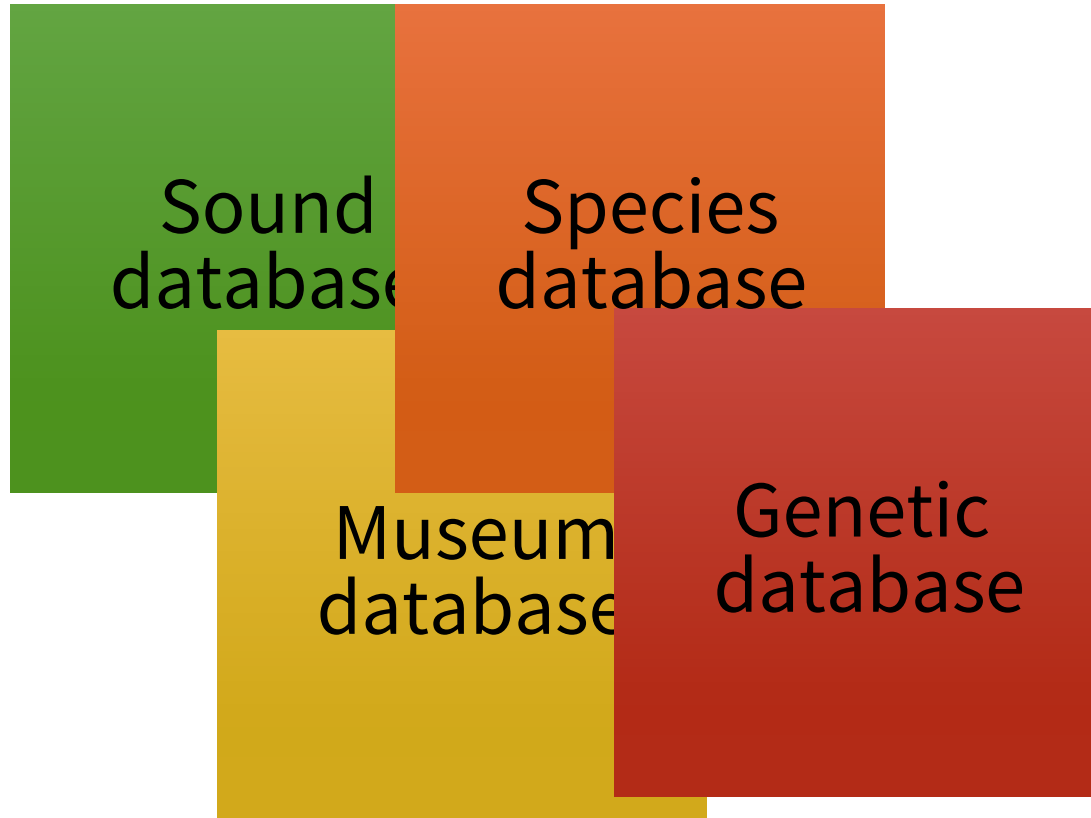
黃金蝙蝠生態館
Formosan Golden Bat's Home



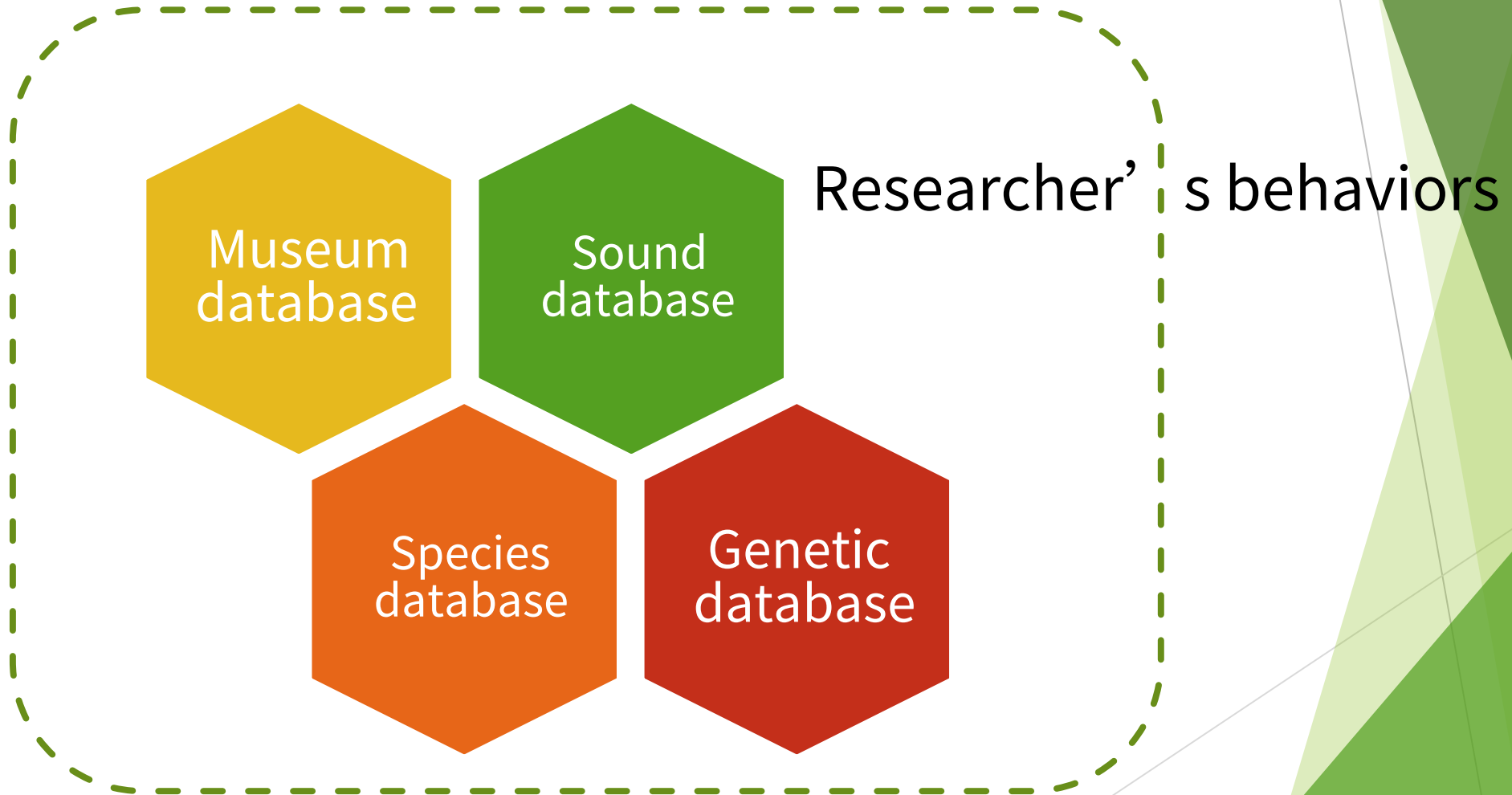
Data Architecture (We Thought)



Data Architecture (We Need)



Data Architecture (the Reality)



Data connections are weak, fragmented, and seldomly digitalized

Issues of Data Clean

- 🇻🇳 Diverse language
- 🇻🇳 No standard format, terminology, punctuation for data from partners across countries, regions, organizations, or labs.
- 🇻🇳 Data format even vary among members from the same lab and among projects of the same researcher
- 🇻🇳 No good behaviors of data management: not fully digitalized, many data are in field note, paper sheets, or embedded in folder, filenames.

National Zoological Museum, Vietnam






2008

ECHOLOCATION > 2008 > Hipposideridae > A.stoliczkanus > Cat Ba > 22 April 08 > Aselliscus 126 kHz

<input type="checkbox"/>	Name	#	Title	Contributing artists	All
<input type="checkbox"/>	 mAs01f0001.wav		Thong	Thong	
<input type="checkbox"/>	 mAs01f0002.wav		Thong	Thong	
<input type="checkbox"/>	 mAs01f0003 126.0....		Thong	Thong	
<input type="checkbox"/>	 mAs01f0004.wav		Thong	Thong	
<input type="checkbox"/>	 mAs01f0004_C.wav				

2015

collaborators' data > Thong > ECHOLOCATION > 2015 > CatBa2015 > 01Oct2015 > Manual

<input type="checkbox"/>	Name	#	Title	Contributing artists	All
<input type="checkbox"/>	 fRpea010001.wav		Thong	Thong	
<input type="checkbox"/>	 fRpea010001_C.wav				
<input type="checkbox"/>	 fRpea010002.wav		Thong	Thong	
<input type="checkbox"/>	 fRpea010003.wav		Thong	Thong	
<input type="checkbox"/>	 fRpea010004.wav		Thong	Thong	



What did We Do?

Authorization for Publication of Occurrence Data through SEABCRU Database

The Rights Holder(s) for these data is/are

Data authorization

Representative for Rights Holder(s)

The Representative has the authority to make decisions about data usage. Representative can complete and sign this document for the Rights Holder(s). The Representative will also be listed as the point of contact, if necessary, for data access.

Contact information for Rights Holder(s) or Rights Holder Representative named above:

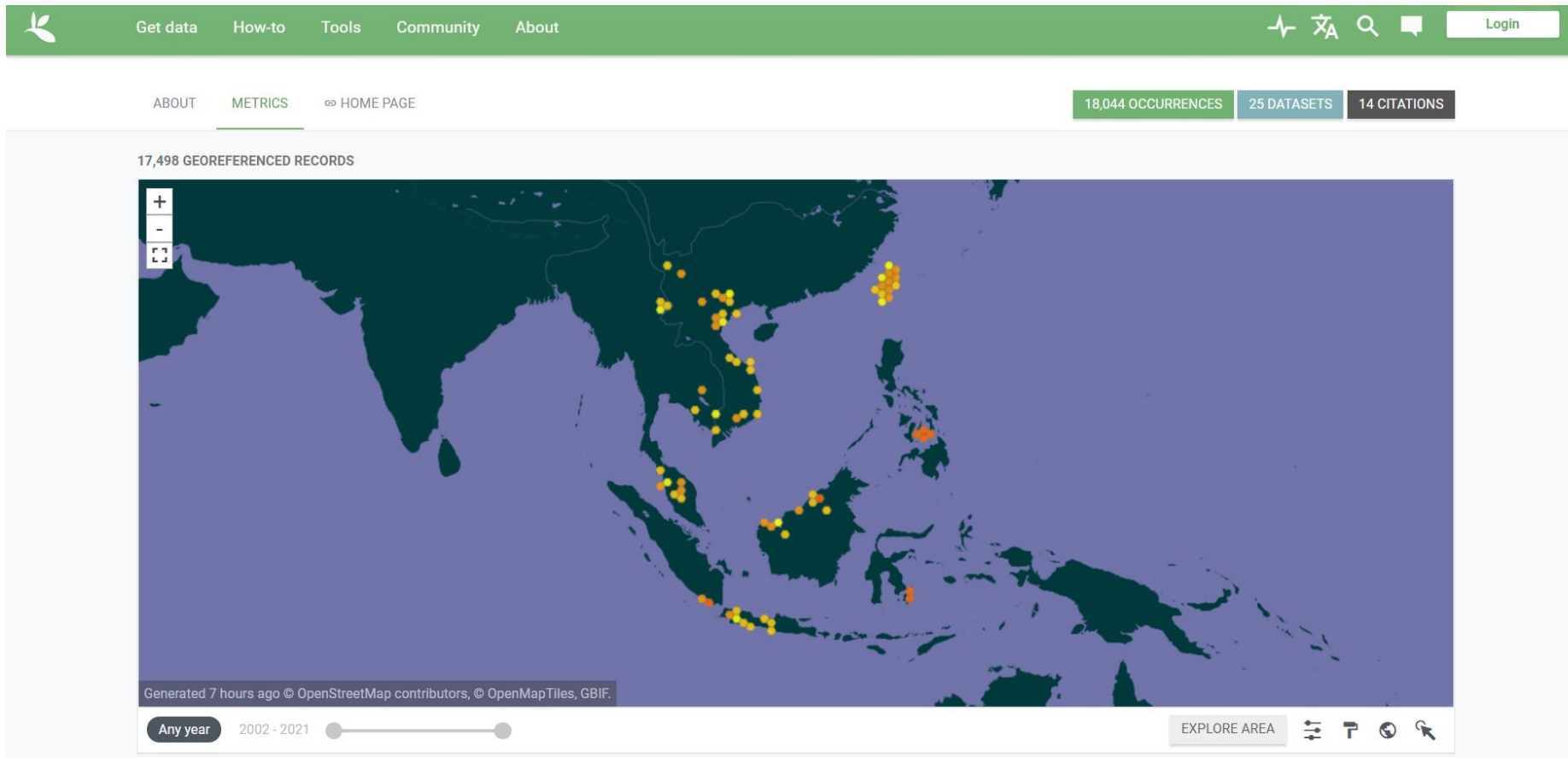
AutoSave On | Annes04_ABCD_datashsheetV4_2019Oct.xlsx - Ex... | Chun-Chia HUANG

Filename	Original Filename	Genus	Species	Subspecies	Gender	Age	Individual #	Accession #	Voucher #	Identified by	IdEvidence	GBBN/BOLD	GenBank	Date	Time	Locality	Settlement	Territory	Country	La
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Standard form following international codes, e.g., GBIF's DwC fields



18,044 bat records: c. 63% of 2002-2020 GBIF occurrence data



ChiroVox: the Largest Open Sound database of (Asian) bats



The screenshot shows the ChiroVox website interface. At the top, the logo "ChiroVox" is displayed in green, with the tagline "The bat call library" below it. To the right of the logo is a photograph of a bat in flight. Below the logo and tagline is a navigation menu with links for "Home", "About", "Sound library", "Resources", and "Publications".

On the left side of the main content area, there is a "Welcome on our site!" section. It features a paragraph of text and a small image of a bat in flight. The text reads: "Welcome to the ChiroVox website, the home of bat recordings from all over the world! The site is intended to facilitate work with bat sounds and is based on the Asian Bat Call Database, an initiative of the Hungarian Natural History Museum (HNHM) and the Southeast Asian Bat Conservation Research Unit (SEABCRU)."

On the right side of the main content area, there is a "NEWS" section. It contains a single news item dated "23.07.2021" with the text: "The site is running in a beta version and >3900 sound recordings are available mostly from Southeast Asia."

At the bottom right of the screenshot, there is a list of three bullet points in yellow text:

- 3900 recordings from 191 bat species
- Operated since July 2021
- Released with CC licenses (some with conditions)

ChiroVox

The bat call library



[Home](#) [About](#) [Sound library](#) [Resources](#) [Publications](#)

Welcome on our site!

Welcome to the ChiroVox website, the home of bat recordings from all over the world! The site is intended to facilitate work with bat sounds and is based on the Asian Bat Call Database, an initiative of the Hungarian Natural History Museum (HNHM) and the Southeast Asian Bat Conservation Research Unit (SEABCRU).



NEWS

23.07.2021 The site is running in a beta version and >3900 sound recordings are available mostly from Southeast Asia.

- 3900 recordings from 191 bat species
- Operated since July 2021
- Released with CC licenses (some with conditions)

What did We not Achieve?

- ✎ Not changing behaviors of most partners regarding data management
- ✎ No sustainable plan- lack of funding and resources
- ✎ Lack of data science specialists
- ✎ This pandemic slow the development at critical time

Looking forward

🕒 Online tools and training

1. Multi-language interfaces
2. Basic training
3. Implanted into hardware and software
4. Communication

🕒 Carrying capacity building

1. Cascade model: from regional network to country- and organization-levels
2. Practical strategies, project-leading, publication helps
3. Fundings

Thank You



Hipposideros lekaguli
Joe Chun-Chia Huang (CC BY-NC 4.0)