

# Integrated biodiversity database on freshwater organisms of Monsoon Asia

More than 500 locations (only latest 500 items are shown)

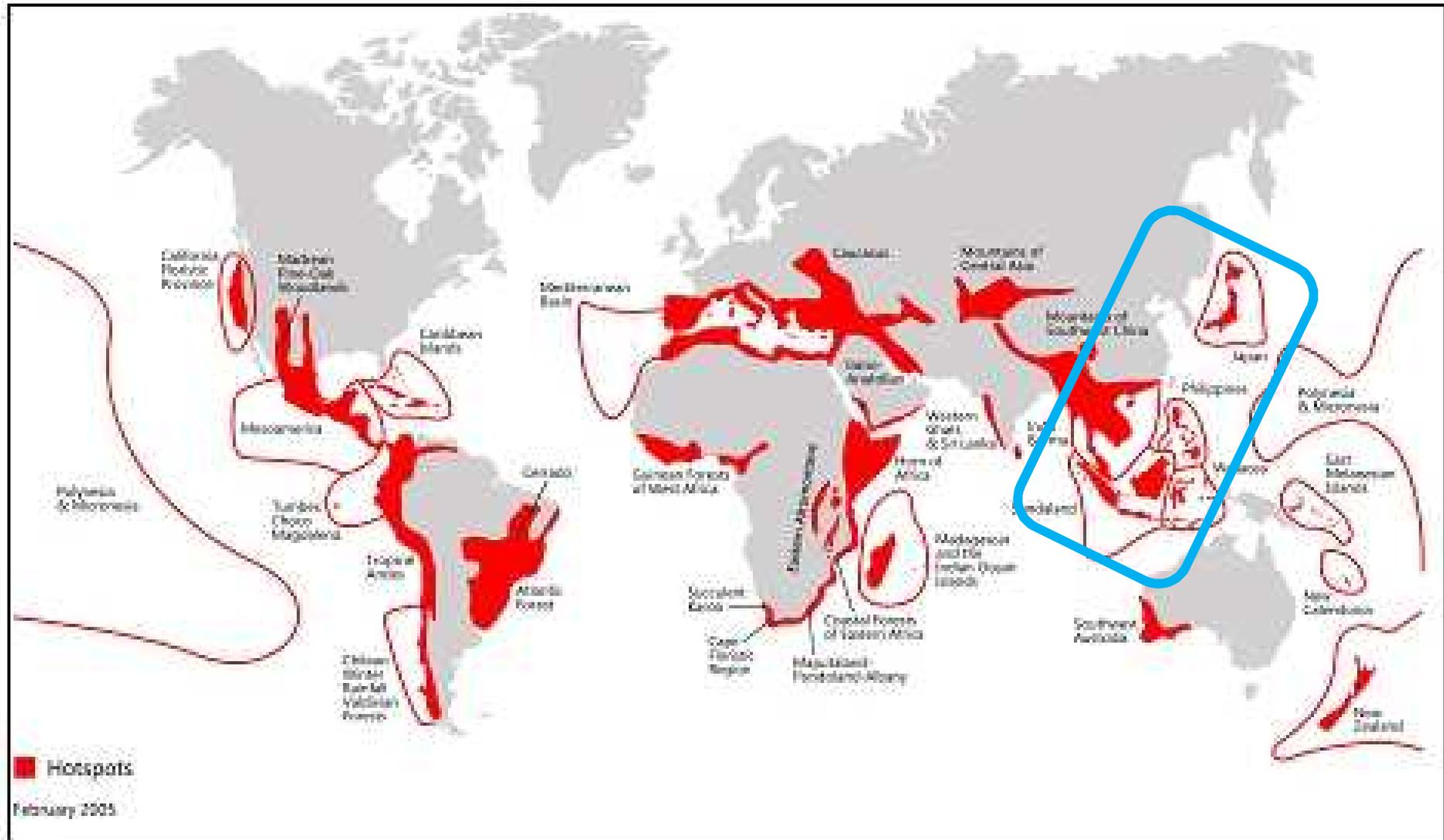
maxColor: 255, opacity: 0.5, lowerThreshold: 100, upperThreshold: 1000, minWidthLow: 100, minWidthHigh: 300, minWid: 121, minWid2: 100

File type: YouTube  
Link: [5767973-d84d-4d58-4d28-248849719471](https://www.youtube.com/watch?v=5767973-d84d-4d58-4d28-248849719471)

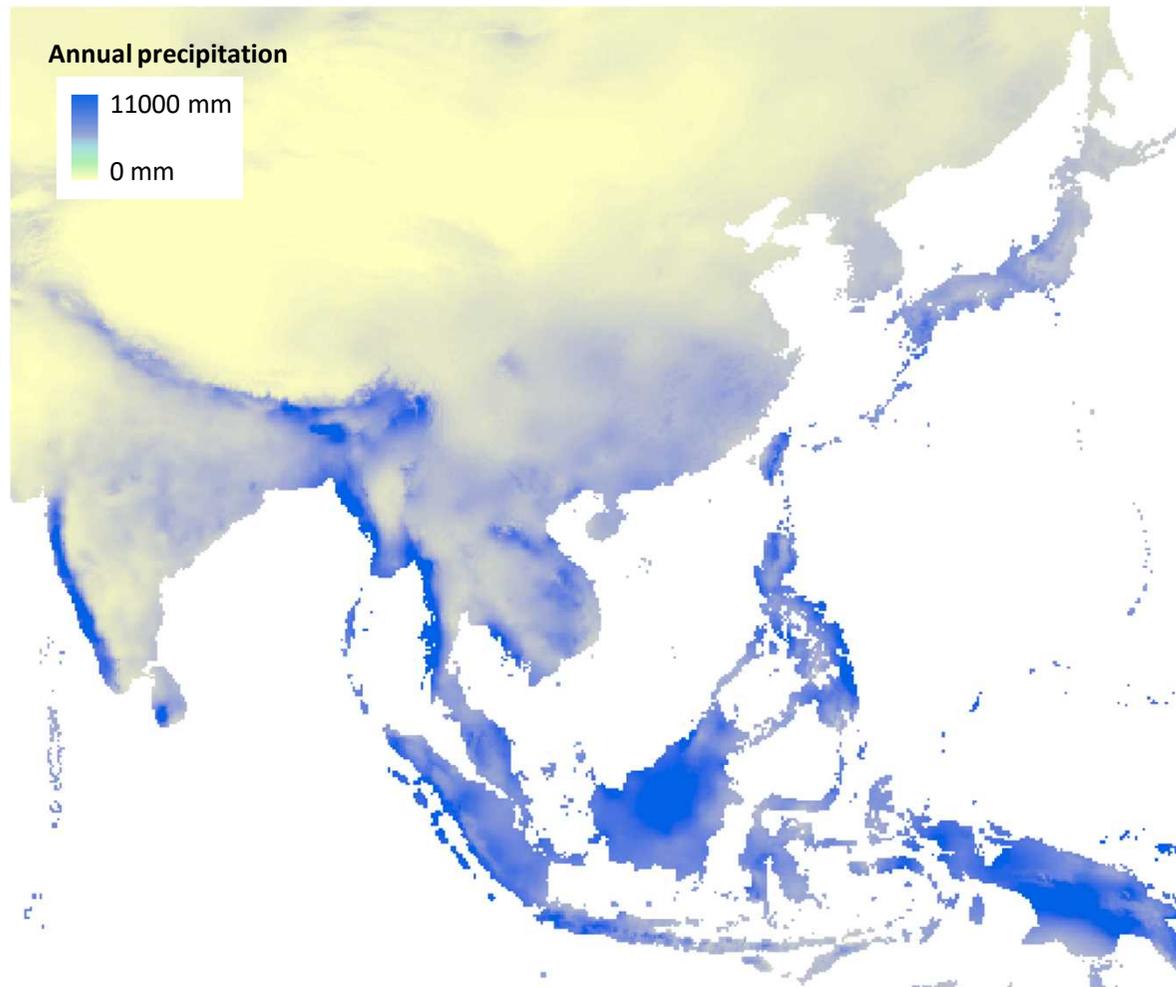
File type: SoundCloud  
Link: [47081163](https://www.soundcloud.com/47081163)

Haplotype name: h2B  
N frequency: 1  
Number of bases: 841bp  
DNA rank ID: LC487272  
DNA region: cyt-b (mitochondrial DNA)  
Comments: ex: GSDMAP ID: H4101  
Specimen occurrence ID: GSDMAP-F2306\_Castanixus\_fuku\_awara\_AK13 (Gymnogobius sp. 2)  
Species: Gymnogobius sp. 2  
Locality/Year/Month: ex: GSDMAP\_Fuku\_Awara\_AK13 Awara 福岡県 Japan 2017/1  
Associated source: Ohno, S., T. Kawasaki, K. Yamamoto, S. N. Ohno, K. Shouhwa, T. Hoshi and T. Kohda (2019) Geographical distribution and population genetic structure of the gobiid fish *Gymnogobius* sp. 2, formerly known as *Gymnogobius cf. castanixus* Toiyama-endemic? Ichthyol. Res.

# Monsoon Asia harbors many global biodiversity hotspots



## Why does Monsoon Asia have so high biodiversity?



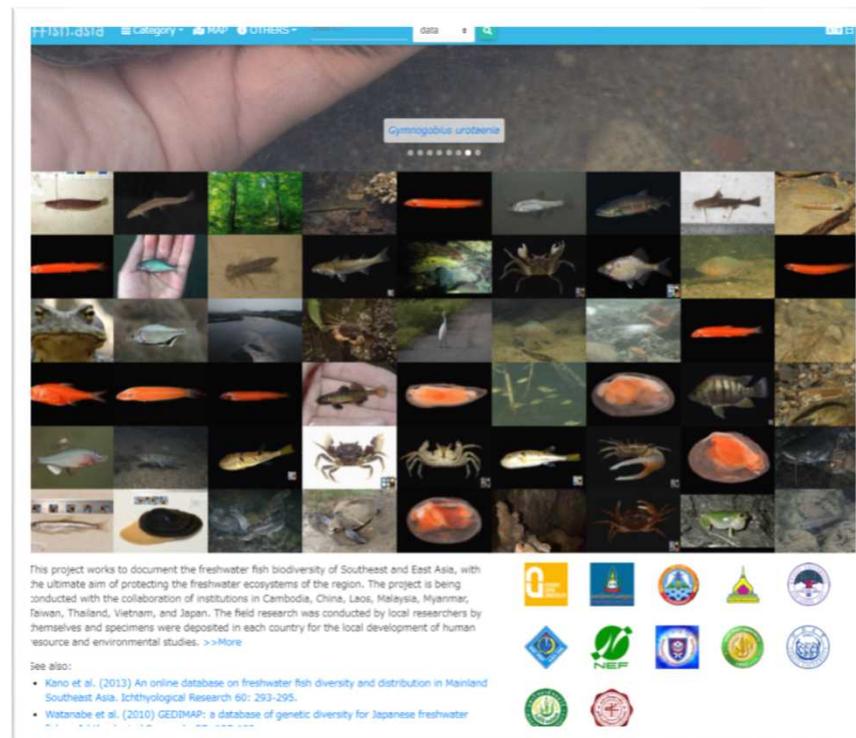
Monsoon climate brings adequate preparation to sustain high biodiversity.



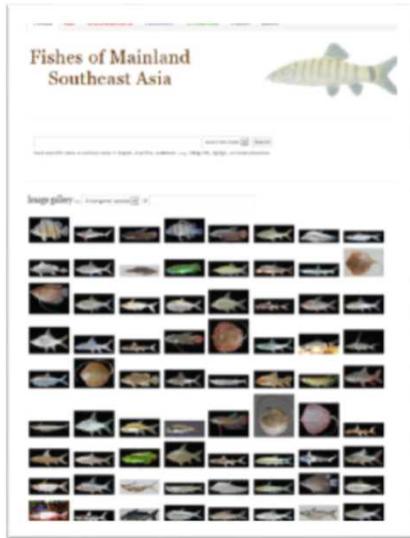
Freshwater organisms is the symbolic biodiversity in Monsoon Asia. However, the information has been quite limited.

Using AP-BON network, we have launched an integrated biodiversity database on freshwater organisms of Monsoon Asia

<http://ffish.asia>

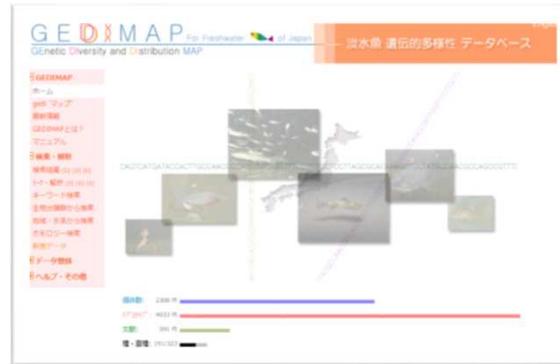


Database on freshwater fishes of mainland Southeast Asia



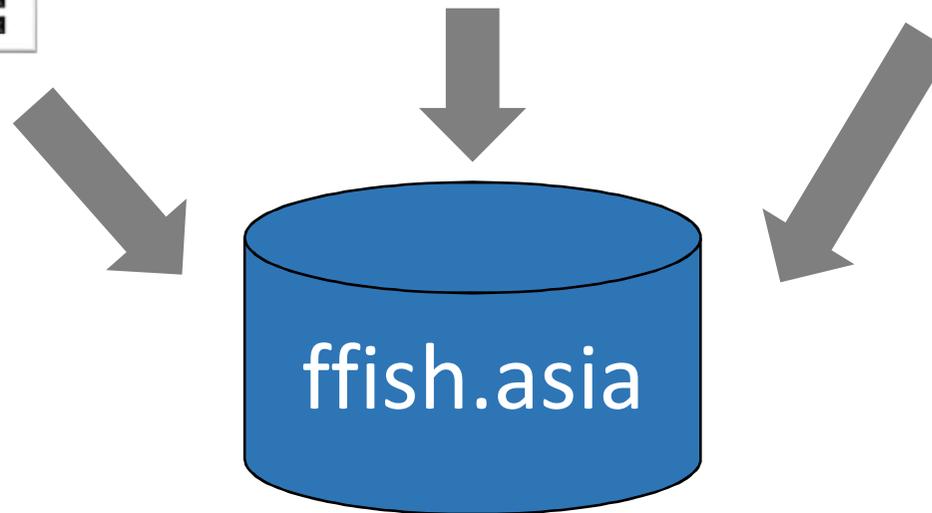
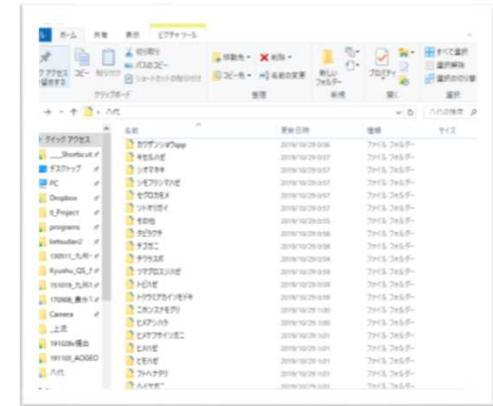
FiMSEA

Database on gene/DNA information of Japan

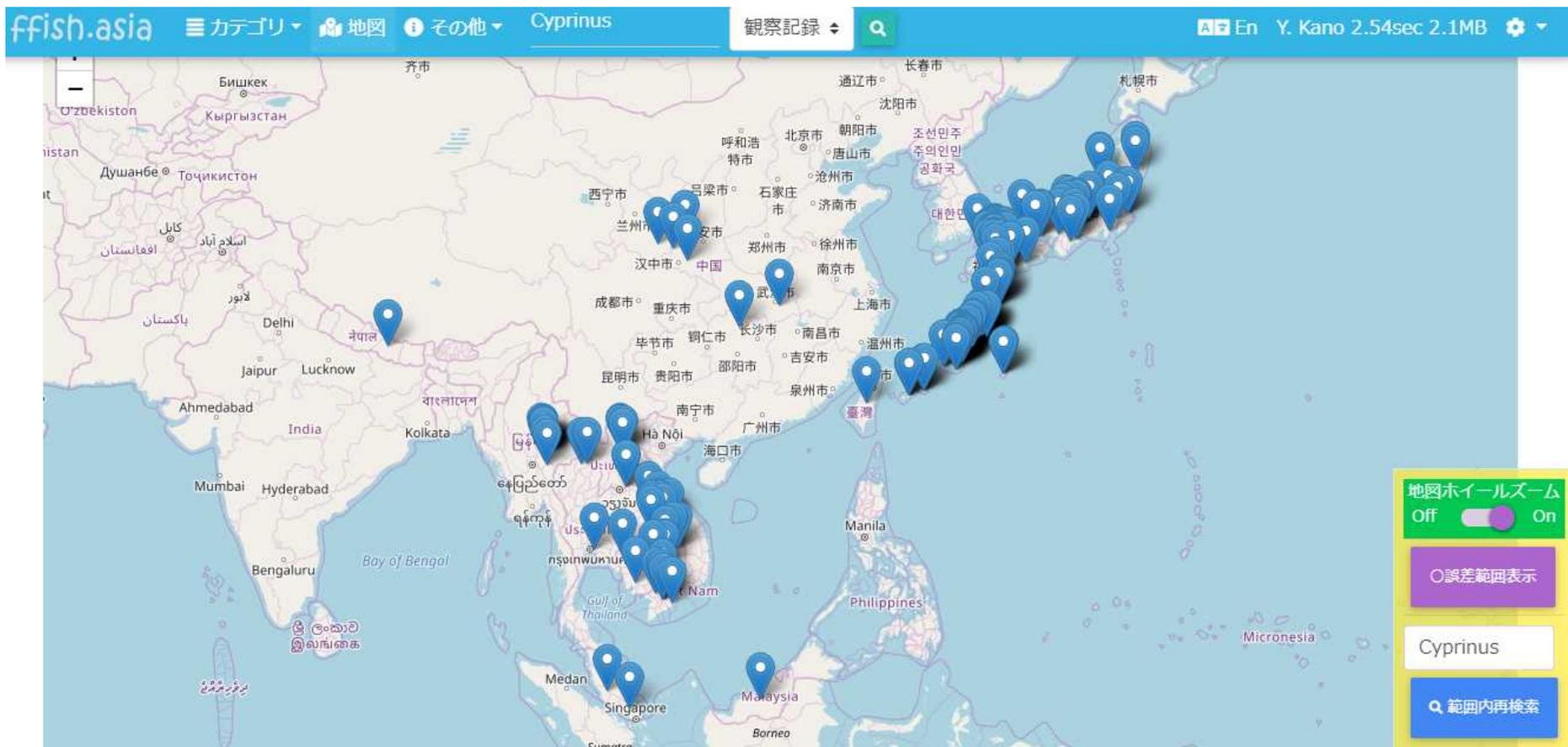


GEDIMAP

Kano's original data about freshwater organisms of Japan



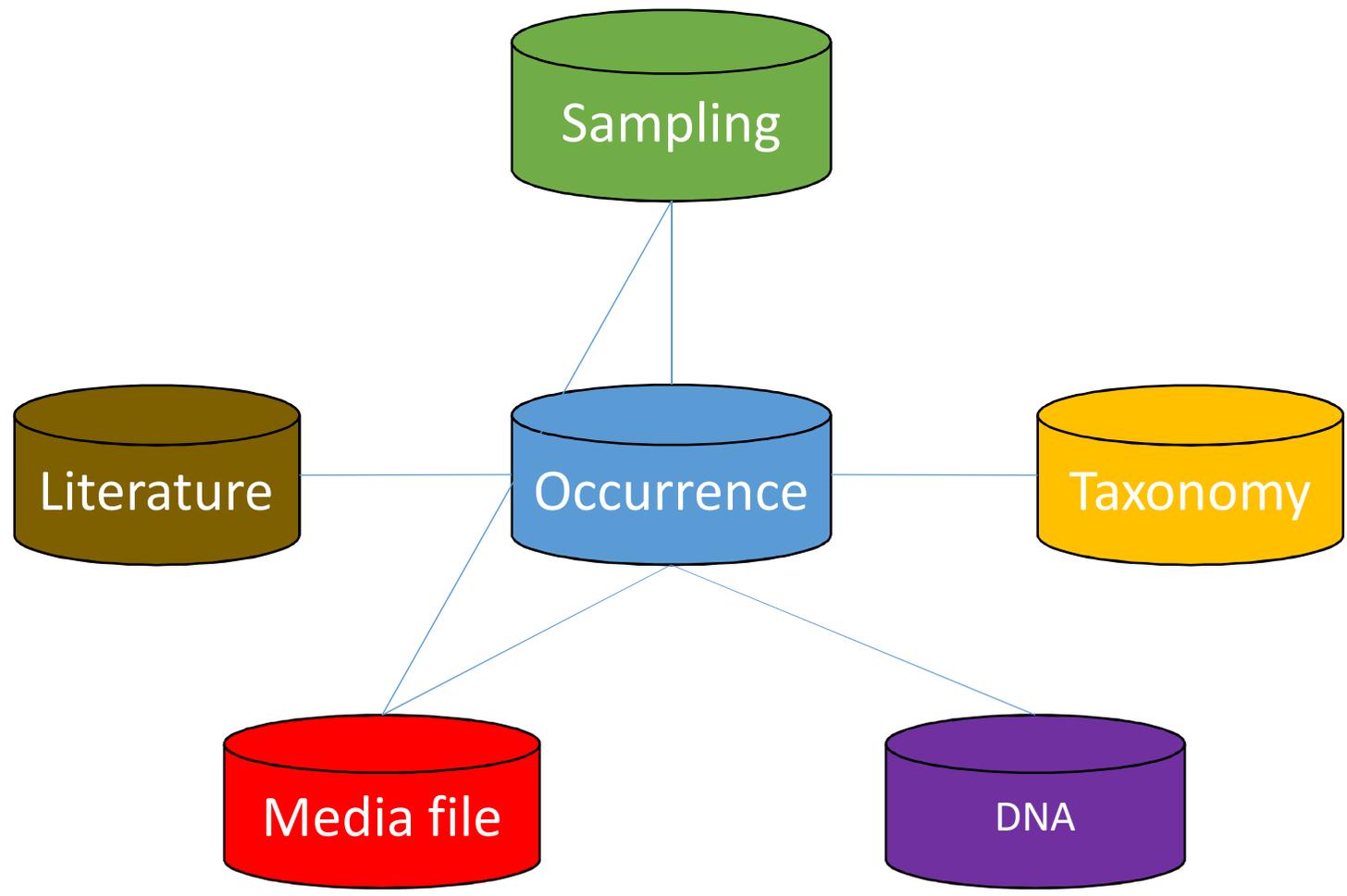
ffish.asia

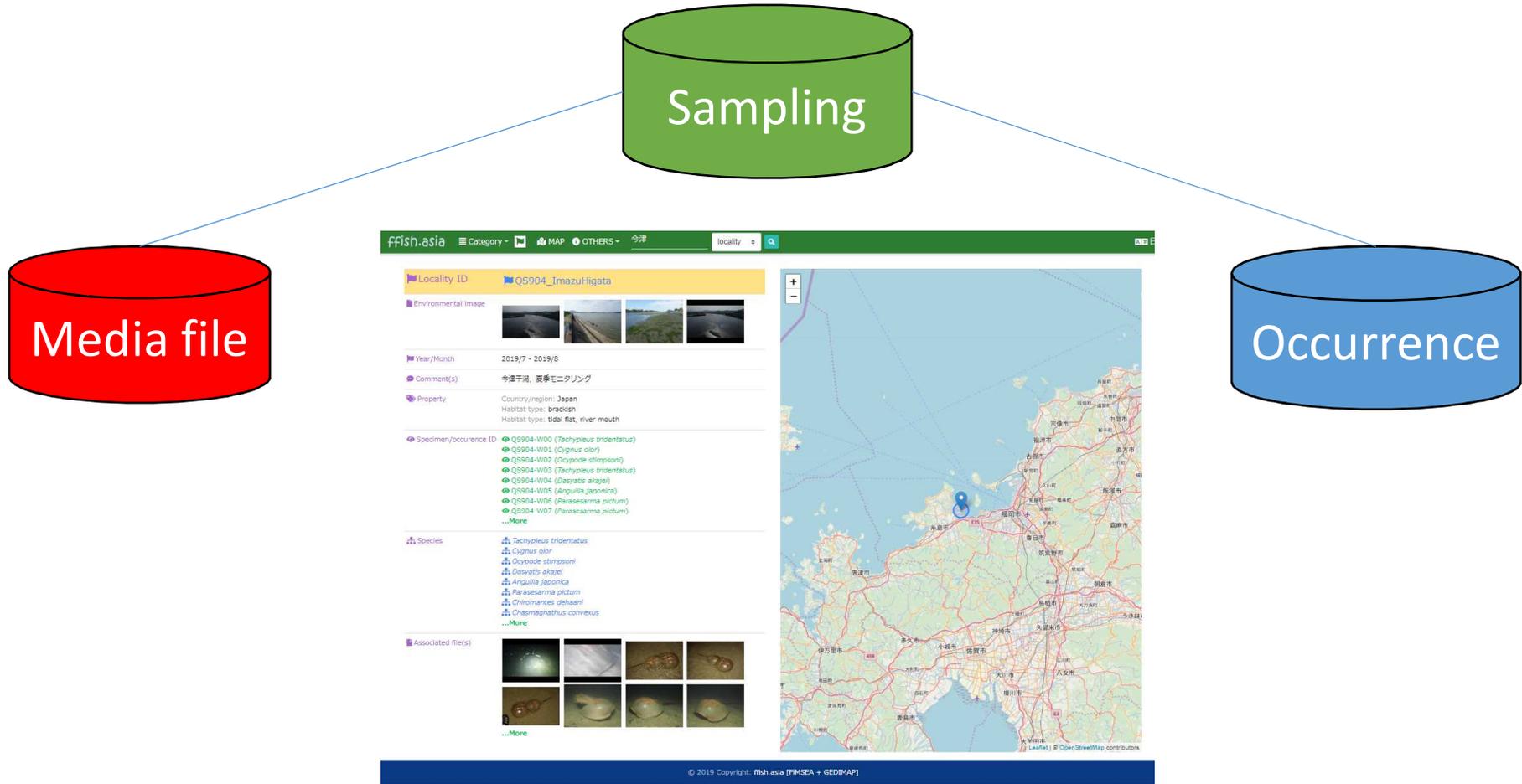


Data distribution: Japan, Thailand, Lao PDR, Cambodia, Vietnam, Malaysia, Myanmar

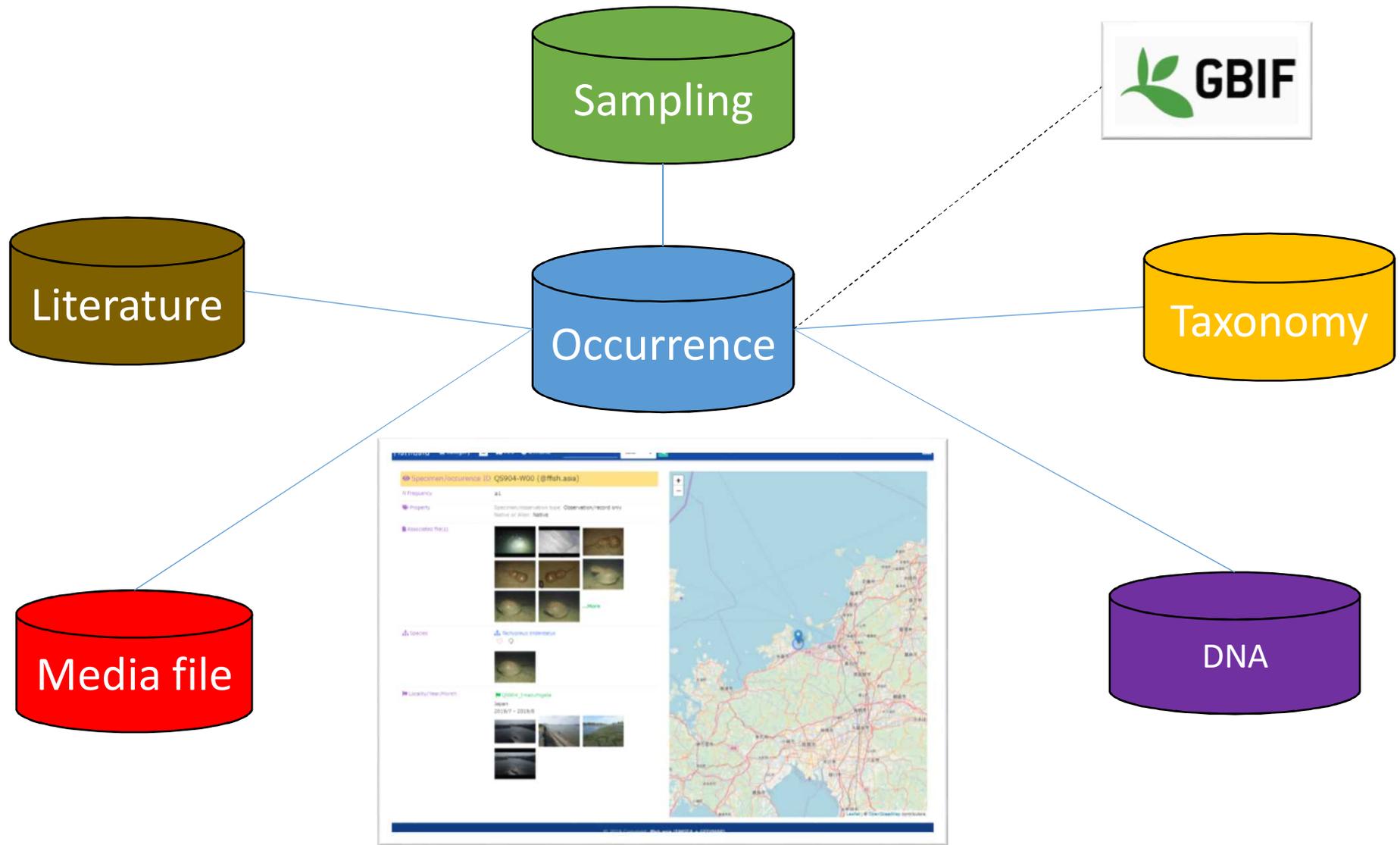
Structure of the database

6 tables





Locality, date, environment, etc



Observation/specimen data  
(N. of individuals, specimen condition,  
native/alien, etc)

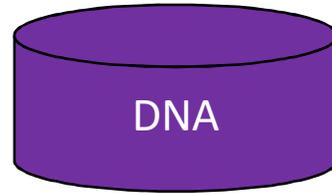
# Taxonomy

The screenshot displays a web interface for the species *Oreochromis niloticus*. The left sidebar contains the following information:

- Scientific name:** *Oreochromis niloticus*
- Standard name in Jp:** ナイルティラピア
- Tentative name in Jp:** イズミダイ (Izumida) (Japanese)
- Local name:** Cá rô phi vắ'n (Vietnamese), Tilapia (Malay), Sa (Nil) (Thai), វីដ វីដ (Trey tilapia) (Khmer)
- Synonym:** Chromis guentheri, Oreochromis niloticus baringoensis, Oreochromis niloticus flica, Oreochromis niloticus sugutae, Oreochromis niloticus tana, Perca nilotica, Tilapia calcat, Tilapia canceliana, Tilapia eduardiana, Tilapia inducta, Tilapia regani, Tilapia vulcani
- Taxon:** Animalia 動物界, Chordata 脊索動物門, Actinopterygii 輻鰭綱, Perciformes スズキ目, Cichlidae カラスミ科・シクリッド科, Oreochromis
- Associated data:** 237 | 16 | 335 | 171
- Associated file(s):** A grid of 12 small images showing various views of the fish.

The right side of the interface features a map of East Africa and Southeast Asia with blue location pins indicating the distribution of the species. The map includes labels for countries like Ethiopia, Kenya, Tanzania, Uganda, Rwanda, Burundi, and various regions in Southeast Asia such as Thailand, Laos, Cambodia, and Vietnam.

Scientific name, taxonomical information, standard name, local name, etc.



Global Gene Bank

**fish.asia** Category - MAP OTHERS - Tilapia DNA

```
GGTGCTTGAGCCGGAATAGTAGGAAGCTTAAGCCTCTAATTCGGGCAGAACTAAGCCAGCCGGCTCTCTCCGAGACGACCAGATTATAATGTAATGTTACAGCACATGCTTCGTAATAATTTCTTTATAGT  
AATGCCAATTATAATTGGAGGTTTGGAACTGACTAGTCCACTAATGATTGGTGCCAGACATGGCCCTCCCTCGAATAAATAACATGAGTTTTGACTCCTCCCCCTCATTTCTCTCTCTCTCGCCATCCGGGG  
TCGAAGCAGGGCCGGTACAGGATGGAAGTGTATCCCCACTCGAGGCAATCTCGCCATGCTGGCCCTCCGTTGACTTAACCATCTCTCCCTCCACTTGGCCGGGGTGTATCTATTTAGTGCAATTAATTTATT  
ACAACCATTTAACATAAAACCCCTGCCATCTCCAATCAAAACCCCTCTTTGTATGATCCGTTCTAATACCAGACTACTCTACTATCCCTACCCGTTCTTGGCCGGGCATACAATACTCTAACAGACCGAA  
ACCTAAACACAACCTCTTTGACCCTGCCGGAGGAGAGACCCATCTTTACCAACACTTATTC
```

Haplotype name	UnNamed464
N Frequency	1
Number of bases	639bp
DNA Bank ID	LC190042
DNA region	COI (mitochondrial DNA)
Specimen/occurrence ID	IL14-0317, RLJKU09319 ( <i>Oreochromis niloticus</i> )
Associated file(s)	
Species	<i>Oreochromis niloticus</i> Cá rô phi vắ'n Tilapia Cá (Ní) ဖိစုံ (Trey tilapia)
Locality/Year/Month	INLE-st020 Myanmar 2014/10

DNA sequence, N, region, etc





# Literature

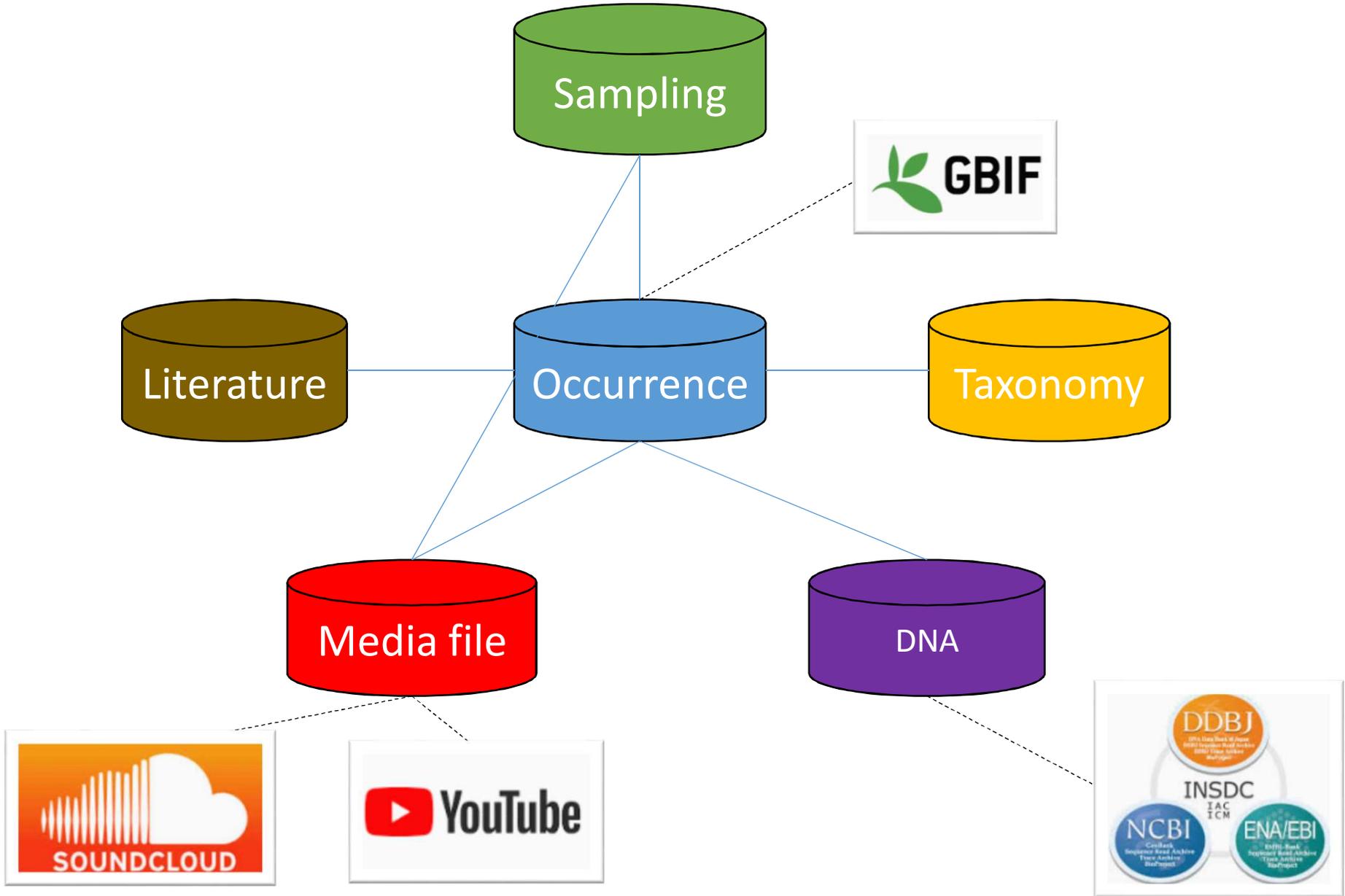
The screenshot displays a web interface for scientific literature. The top navigation bar includes 'Category', 'MAP', and 'OTHERS'. The main content is divided into two panels. The left panel, titled 'Literature', contains the following information:

- Associated source:** Watanabe, K., R. Tabata, J. Nakajima, M. Kobayakawa, M. Matsuda, K. Takaku, K. Hosoya, K. Ohara, M. Takagi, and N.-H. Jang-Liaw (unpublished) Large-scale hybridization of Japanese populations of *Hinamoroko*, *Aphyocypris chinensis*, with *A. kikuchii* introduced from Taiwan. UNDEFINED
- Language:** English
- Year:** unpublished
- Specimen/occurrence ID:**
  - st\_A\_chinensis\_Fukuoka\_1\_TNS08, GEDMAP-P2354 (*Aphyocypris chinensis*)
  - st\_A\_chinensis\_Fukuoka\_2\_TNS18, GEDMAP-P2355 (*Aphyocypris chinensis*)
  - st\_A\_chinensis\_Fukuoka\_3\_UKH07and08, GEDMAP-P2356 (*Aphyocypris chinensis*)
  - st\_A\_kikuchi\_Shizuoka\_4\_IZU11, GEDMAP-P2357 (*Aphyocypris chinensis*)
  - st\_A\_kikuchi\_Shizuoka\_5\_IZU18, GEDMAP-P2358 (*Aphyocypris chinensis*)
  - st\_A\_chinensis\_captive\_6\_HFC01, GEDMAP-P2359 (*Aphyocypris chinensis*)
  - st\_A\_chinensis\_captive\_7\_HFC16, GEDMAP-P2360 (*Aphyocypris chinensis*)
  - st\_A\_chinensis\_captive\_8\_LBM00, GEDMAP-P2361 (*Aphyocypris chinensis*)
  - ...More
- Species:** *Aphyocypris chinensis*
- DNA information:**
  - st\_IPN-4 (cyt-b) [3]
  - st\_KKC-1 (cyt-b) [3]
  - st\_KKC-1 (cyt-b) [1]
  - st\_IPN-3 (cyt-b) [2]
  - st\_IPN-5 (cyt-b) [1]
  - st\_KKC-1 (cyt-b) [2]
  - st\_KKC-1 (cyt-b) [16]
  - st\_IPN-4 (cyt-b) [1]
  - ...More
- Locality ID:**
  - st\_A\_chinensis\_Fukuoka\_1\_TNS08
  - st\_A\_chinensis\_Fukuoka\_2\_TNS18
  - st\_A\_chinensis\_Fukuoka\_3\_UKH07and08
  - st\_A\_kikuchi\_Shizuoka\_4\_IZU11
  - st\_A\_kikuchi\_Shizuoka\_5\_IZU18
  - st\_A\_chinensis\_captive\_6\_HFC01
  - st\_A\_chinensis\_captive\_7\_HFC16
  - st\_A\_chinensis\_captive\_8\_LBM00
  - ...More

The right panel features a map of East Asia, showing Japan, Korea, and parts of China. Several blue location pins are placed on the Japanese archipelago, corresponding to the localities listed in the left panel. The map is credited to 'Leaflet | © OpenStreetMap contributors'.

Scientific literature/paper information

# Structure of the database



## Features of the database

### Filtering search by time and space

The screenshot shows a web-based search interface for the database. The search term "Anabas" is entered in the search bar, and the results are filtered by "Partial match". The search parameters are: Taxon: Anabas, Country/region: Cambodia, Distribution: 2005-2010, and Habitat: Jul, Aug, Sep. The results are displayed on a map of Cambodia, showing 5 locations. A list of specimen/occurrence IDs is shown on the left side of the map, including IPREDI-01154, IPREDI-01964, IPREDI-01965, IPREDI-01966, IPREDI-01967, IPREDI-01968, IPREDI-01969, IPREDI-01990, and IPREDI-01991. The map also shows a list of species, including Leiodon angibardis, Trichopoma vittata, and others.

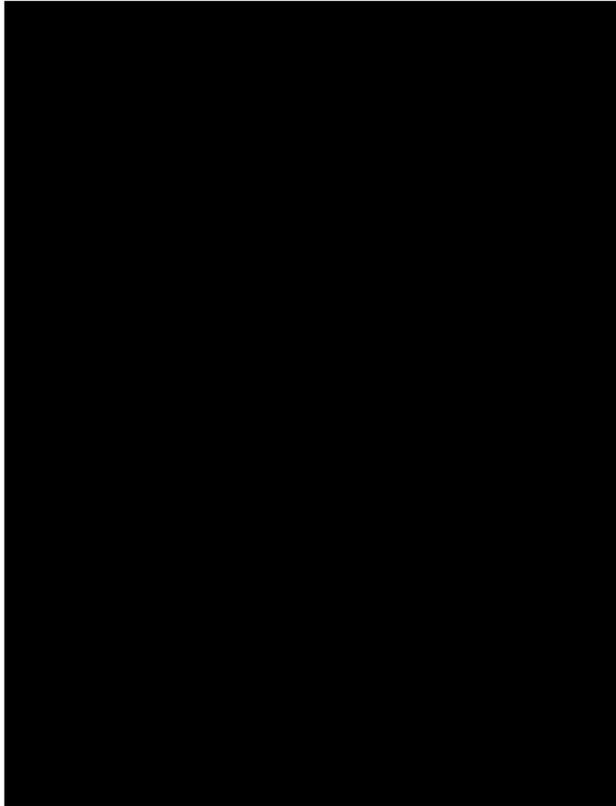
The screenshot shows a table of search results for "Anabas". The table has columns for "file", "Specimen/occurrence ID", "Species", "DNA information", and "Locality/Year/Month". The results are as follows:

file	Specimen/occurrence ID	Species	DNA information	Locality/Year/Month
 <a href="#">Image / Jpg</a>	IPREDI-01914 (Anabas testudineus)	Anabas testudineus Climbing perch Cà rô dô' ng Puyu វ្លា ឆ្កែ (Kheng) ឈ្លាត់ (Ja Kheng) វ្លា ឆ្កែ (They krann)		IPREDI-01154 Cambodia 2008/7
 <a href="#">Image / Jpg</a>	IPREDI-00084 (Anabas testudineus)	Anabas testudineus Climbing perch Cà rô dô' ng Puyu វ្លា ឆ្កែ (Kheng) ឈ្លាត់ (Ja Kheng) វ្លា ឆ្កែ (They krann)		IPREDI-01023 Cambodia 2007/8
 <a href="#">Image / Jpg</a>	IPREDI-00083 (Anabas testudineus)	Anabas testudineus Climbing perch Cà rô dô' ng Puyu វ្លា ឆ្កែ (Kheng) ឈ្លាត់ (Ja Kheng) វ្លា ឆ្កែ (They krann)		IPREDI-01023 Cambodia 2007/8

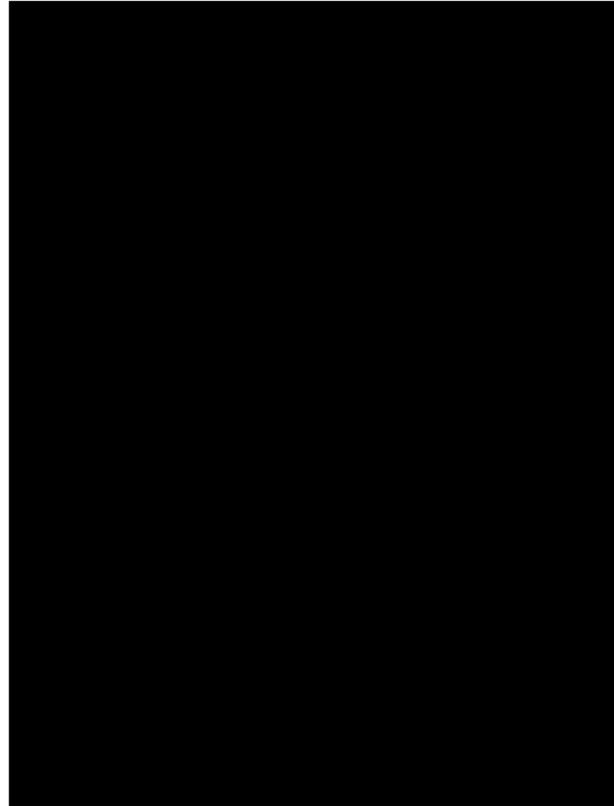
e.g. "Anabas", central Cambodia, 2005-2010, summer (Jul-Aug-Sep)

## Features of the database

### Various type of media file



Movie  
(YouTube embedded)



Sound/Soundscape  
(SoundCloud embedded )

FASTQ

Download (13,499B)

File type: eDNA / zip

License: Undefined

By: fishbase

UUID: 2cca4960-46ff-406e-e53e-caed8f7c52c

Specimen occurrence ID

- Q5572-eDNA-W01 (Rhynchocypris oxycephalus japonicus)
- Q5572-eDNA-W02 (Rhynchocypris sp. nsp. (not yet identified))
- Q5572-eDNA-W03 (Okuneobutis obscura)
- Q5572-eDNA-W04 (Nipponocypris homonickii)
- Q5572-eDNA-W05 (Cyprinus carpio)
- Q5572-eDNA-W06 (Carassius auratus langsdorfi)
- Q5572-eDNA-W07 (Pungtungia heroi)

Species

- Rhynchocypris oxycephalus japonicus
- Rhynchocypris sp. nsp. (not yet identified)
- Okuneobutis obscura
- Nipponocypris homonickii
- Cyprinus carpio
- Carassius auratus langsdorfi
- Pungtungia heroi

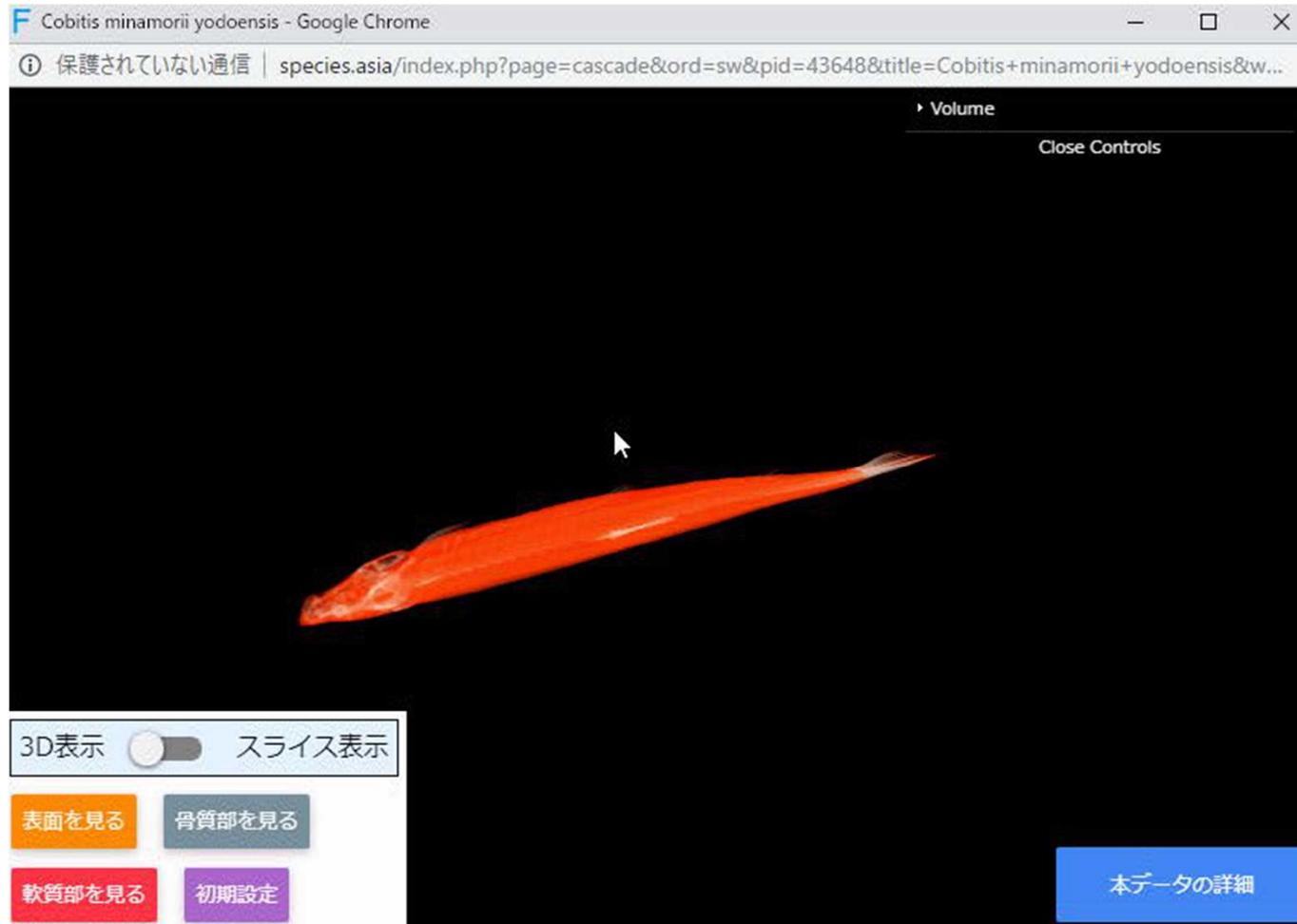
Localities/Year/Month

2017/12

Environmental DNA  
(.fastq raw data)

## Features of the database

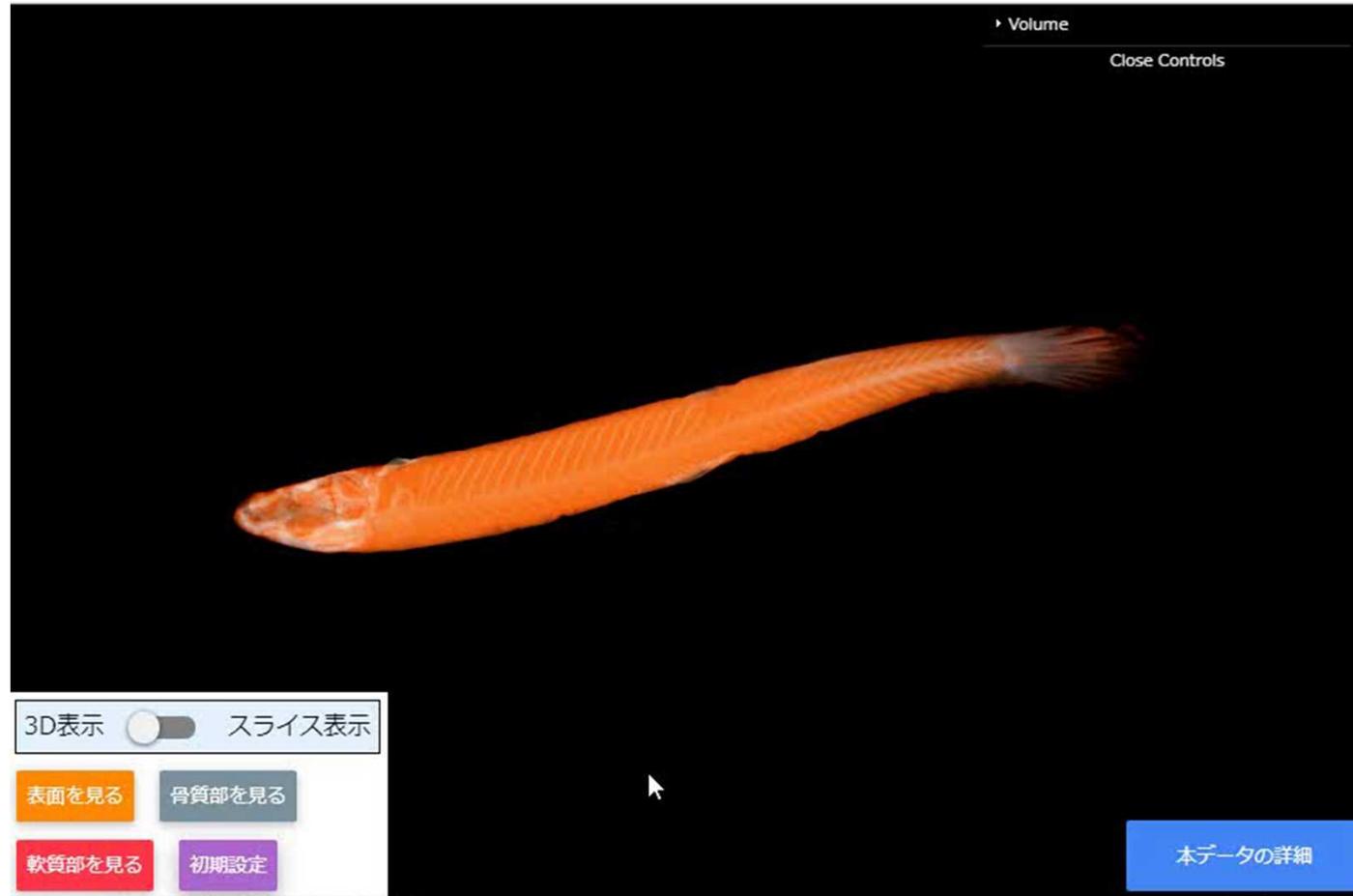
### Various type of media file



Online browse-able CT/3D model  
(The **holotype** of *Cobitis minamorii tokaiensis*)

## Features of the database

### Various type of media file



Specimen of **extinct species** (*Misgurnus* sp. [Jindai])

## Features of the database

### Direct link from paper to dataset

**Biodiversity Data Journal** Home Articles About About Pensoft Books E-Books Blog

Data Paper Biodiversity Data Journal 4: e10539  
<https://doi.org/10.3897/BDJ.4.e10539> (09 Nov 2016)

#### New information

Based on the fish specimens collected from markets, rivers, swamps, ponds and ditches around Inle Lake as well as from the lake itself from 2014 to 2016, we recorded a total of 948 occurrence data (2120 individuals), belonging to 10 orders, 19 families, 39 genera and 49 species. Amongst them, 13 species of 12 genera are endemic or nearly endemic to the lake system and 17 species of 16 genera are suggested as non-native. The data are all accessible from the document "A dataset of Inle Lake fish fauna and its distribution ([http://ipt.pensoft.net/resource.do?r=inle\\_fish\\_2014-16](http://ipt.pensoft.net/resource.do?r=inle_fish_2014-16))", as well as DNA barcoding data (mitochondrial COI) for all species being available from the DDBJ/EMBL/GenBank (Accession numbers: LC189568–LC190411). Live photographs of almost all the individuals and CT/3D model data of several specimens are also available at the graphical fish biodiversity database (<http://ffish.asia/INLE2016>; <http://ffish.asia/INLE2016-3D>). This information can benefit the clarification, public concern and conservation of the fish biodiversity in the region.

#### Keywords

Myanmar; Shan State; Inle Lake; freshwater fishes; endemic species; alien; GBIF; mitochondrial DNA; COI; CT scan; 3D model

#### Introduction

Inle Lake is located on the southwestern part of Shan State, which is the easternmost state of Myanmar. The lake is surrounded by Shan Hills, which isolate it from the neighbouring aquatic habitats. The lake harbours several endemic fish species (Annandale 1918). However, the detailed information of fish fauna of this region has long been unknown since Annandale (1918), while several studies reported the concerns for settlement of non-native species and decline of endemic/native species (Musikasinthorn 1998, Su and Jassby 2000, Davies et al. 2004, Oo 2010). This project aimed to elucidate the current status of fish fauna of the lake, especially focusing on survival of endemic/native species and settlement of non-native species. In addition,

PID	データを隠す	種名・種部 ID	関連ファイル
34062	詳細 public	IL16-0512, RLIKU10100 (Channa harcourtbutleri) [INLE2016] [disconnect] [INLE2016-3D] [disconnect]	[connect] [disconnect] public [disconnect] public [disconnect] public [disconnect] public ...More
34000	詳細 public	IL16-0447, RLIKU10035 (Cyprinus rubrofasciatus) [INLE2016] [disconnect] [INLE2016-3D] [disconnect]	[connect] [disconnect] public [disconnect] public [disconnect] public [disconnect] public ...More

Access a dataset directly from an peculiar URL in paper

## Features of the database

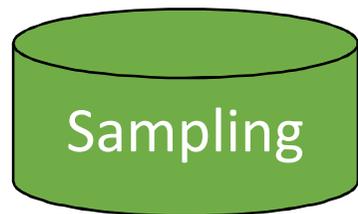
### DNA blast system

The screenshot shows the ffish.asia website interface for a DNA BLAST search. The top navigation bar includes the site name, menu options like 'カテゴリ', '地図', and 'その他', and a search bar with 'DNA' selected. Below the navigation, there are buttons for 'キーワード検索' and '相同性検索 [Blast]'. A text area contains a DNA sequence: CCATGCACTTGTTGATTTGCCAGCTCCCTCCAACATCTCTGCTTGATGAACTTTGGCTCTCTTTGGGCCTCTGCTTGATTGCTCAGATTGTCACGGGACTATTTCTTGCGATACATTACACTTCTGATATTGCCACAGCCTTCTCTTCTGTAGCCCACATTTGCCGGGATGTTAACTTTGGCTGACTAATCCGAAATATGCATGCTAATGGTGCTTCCTTTTCTTTATTTGCATCTATATGCATATTGGACGAGGTCTCTACTATGGCTCCTACCTTTATAAAGAAACGTGGACAATTGGTGTTGTCCTCCTCCTCTGTAATGATGACAGCGTTTGTGGCTACGTCCTCCCCTGGGCCAAATGTCCTTTGAGGTGCCACTGTAATTACTAACCTTCTTCTGCAGTCCCCTATGTTGGAGGCACCCTTGTTCATGAATTT. Below the sequence is a 'BLAST 実行' button and a dropdown menu set to '85%以上'. The search results section shows '48 件ヒット' and a 'Show 10 entries' dropdown. A search input field is also present. The main table displays search results with columns for BLAST score, DNA information, specimen ID, species, and related files. The first result shows a 100.0 BLAST score, DNA information 'h27 (cyt-b) [1] LC487271 H4100', specimen ID 'GEDIMAP-P2306, G\_c astaneus\_Fukui\_Awara\_AK15 (ホクリクジュズカケハゼ)', and species 'ホクリクジュズカケハゼ Gymnogobius sp. 2'.

	BLAST	DNA情報	標本・確認 ID	種	関連ファイル
<a href="#">詳細</a>	100.0	h27 (cyt-b) [1] LC487271 H4100	GEDIMAP-P2306, G_c astaneus_Fukui_Awara_ AK15 (ホクリクジュズカ ケハゼ)	ホクリクジュズカケハゼ <i>Gymnogobius</i> sp. 2	

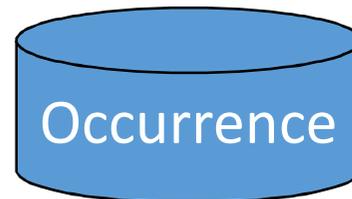
Search DNA data by “Blast”

Current status of the database



Sampling

7,521



Occurrence

49,360

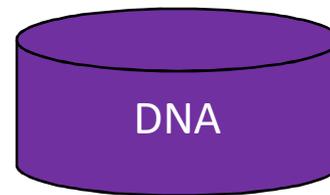


Taxonomy

2,215



10,000



DNA

6942



Media file

74,616



Literature

717

## Perspective of the database (2020~2025)

- More data on freshwater fishes of Myanmar
- More data on any fresh-brackish water organisms of Japan
- More CT scanned data; especially holotypes and extinct species