Metadata management for soundscape study

Joe Chun-Chia Huang

What is metadata?

- Data of data
- Original from card catalog of library in 1980s

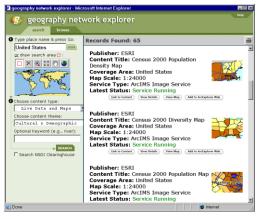


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Metadata management has been adopted in biodiversity study



Museum collection



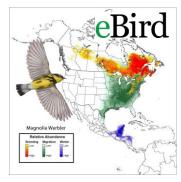
Geospatial metadata

Why metadata is important for biodiversity research?

- 1. Provide additional information to extend research beyond the samples per se
- 2. Help users to access and mine data efficiently
- 3. Help researchers to manage data systematically
- 4. Provide necessary information to justify sample quality



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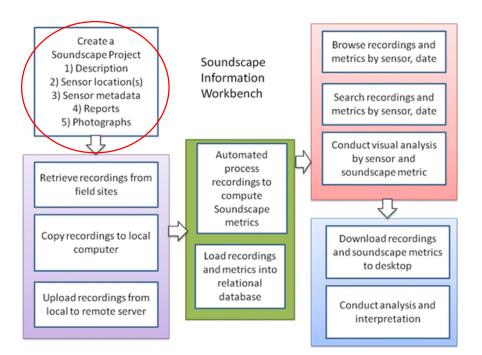


Metadata for Soundscape ecology

- 1. Large quantity of recordings, especially ultrasoundscape studies. Therefore, systematic data management is necessary.
- 2. Analysis and exploration of long term recordings are time- and resource consuming, at least, currently.
- 3. Analyzable data of biological information must be derived from the original files, hence part of the metadata







EML(Ecological Metata Language)

An extension of XML (extenable Markup Language) that designed for ecological works by ESA. Used by ESA, GIBIF and associated (e.g. Taibif, Asian Soundscape)





Metadata for Asian Sounscape Network

- SoundscapeDataManagement_2018_US_workshop.xlsx
- 8 worksheet: EML, project, site. sensor, deployment event, sampling event, occurrence, taxon

	A	В	C
1	EML sections	EML elements	Content
2	Basic Metadata	Title*	
3		Publishing Organisation*	•
4		Update Frequency*	•
5		Type*	•
6		Subtype	
7		Metadata Language*	•
8		Data Language*	•
9		Data Licence*	•
10	Description*	•	
11	Resource Contacts*	First Name	
12		Last Name*	
13		Position*	
14		Organisation*	
15		Address	
16		City	
17		State/Province	
18		Country	•
19		Postal Code	
20		Phone	
21		Email	
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10	()) 🕂 EML Project	Site Sensor DeploymentEvent S	amplingEvent Occurrence Taxon
If	*表1/8	PageStyle_EN	1L 英文 (美國)

Team up

Each team please finish your metadata spreadsheet by this session

- 1. Team Cat Tien-Vy, Khanhs, Thuan, Cuong
- 2. Team Cat Ba- Thong, Leuong, Q Tuan, Tuan N
- 3. Team Malaysia Gunung Mulu Ellen, Dao, Tai, Janice
- 4. Team Malaysia Kubah Emy, Praveena, Hai, Vuong

On May 11, please upload the datasheet to FTP (Janice)

EML sheet-basica metadata

1. Basic description of the dataset (recordings in this case)

	A	В	С
1	EML sections	EML elements	Content
2	Basic Metadata	Title*	Ultrasoundscape in Taiwan 🛑
3		Publishing Organisation*	Biodiversity Research Center Academia Sinica
4		Update Frequency*	Monthly
5		Type*	Sound
6		Subtype	
7		Metadata Language*	English
8			English
9			TBA(but the data should and will need to open for download with CC-
		Data Licence*	by licence)

For each of the team, I will need to discuss with you together on the legality and permission for opening the recording

EML sheet (filled)

- Description: abstract of the project related to the dataset (I will fill later)
- Resource contacts- person in charge the project associated with the dataset

10	Description*		
11	Resource Contacts*	First Name	Mao-Ning
12		Last Name*	Tuanmu
13		Position*	Assistant Researcher
14		Organisation*	Biodiversity Research Center Academia Sinica
15			Room C208, Interdiciplanary Buildling, No. 28, Section 2, Academia Rd, <u>Nangang</u> District
16		City	Taipei
17		State/Province	
18		Country	Taiwan
19		Postal Code	11529

EML sheet-resource creators

Ini	formation about wr	to actually fill the met	ad	ata
25	Resource Creators*	First Name	/	Chun-Chia
26		Last Name*	(Huang
27		Position*	$\langle \rangle$	Postdoctoal research fellow
28		Organisation*	$\overline{\ }$	Biodiversity Research Center Academia Sinica
29		Address		
30		City		
31		State/Province		
32		Country		
33		Postal Code		
34		Phone		
35		Email		
36		Home Page		
37		Personnel Directory		
38		Personnel Identifier		

Information about who actually fill the metadata

EML sheet-metadata provider

Information about who in charge the metadata (e.g. yourself or your advisor/boss)

39	Metadata Providers*	First Name	Chun-Chia
40		Last Name*	Huang
41		Position*	Postdoctoal research fellow
42		Organisation*	Biodiversity Research Center Academia Sinica
43		Address	
44		City	
45		State/Province	
46		Country	•
47		Postal Code	
48		Phone	
49		Email	
50		Home Page	
51		Personnel Directory	
52		Personnel Identifier	

EML sheet

53	Geographic Coverage	Set global coverage*	24.760N, 121.585E		
54		Description*	East Asia		
55	Taxonomic Coverage	Description	Echolocating bats		
56		Scientific Name*	Chiroptera		
57		Common Name	Bat		
58		ık Order			
59	Temporal Coverage		2018/06!2019/09		
60	Keywords	Thesaurus/Vocabulary*	n/a		
61		Keyword List*	echolocation, soundscape		
		-•			

EML sheet-sampling methods (filled)

87	Sampling Methods*	Study Extent	single point, nightly sampling for consecutive nights for 15 months
88			recording sounds with a sample rate of 384kHz without trigger and with a high pass filter of 16kHz and a duty cycle of 1 min on and 5 min off using wildlife acoustics SM4BatFS
89			Weather-proof omidirectional ultrasonic microphone set at 1.3m high from ground and point horizontally toward open space under dense forest. Sound analysis will be carried using computer automatically with open tool
90		Step Description	(as in the instructions)

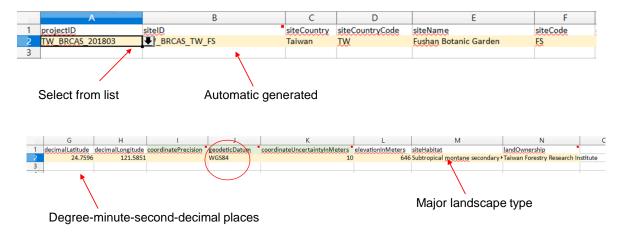
Project(filled)

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	A	В	C	1
1	projectID	projectTitle	projectDescription	p
2	TW_BRCAS_201803	Evesdropping the impacts of extreme climate events to ultrasoundscape in the	Monitoring the associations between echolocating bat diversity and climate in Taiwan and Southeast Asia using acoustic technique	Ť.
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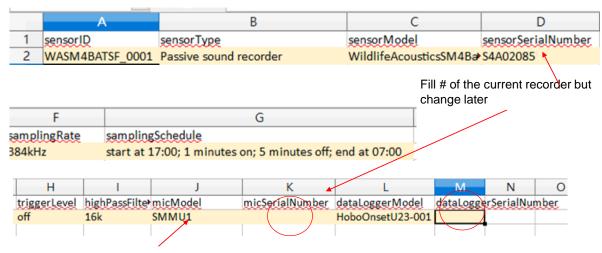
Automatic generated

	D	E	F	G	н	I.	J
1	projectCountry	projectCountryCode	projectOrganization	projectOrganizationCod	projectYearMonth	contactPerson	contactEmail
2	Taiwan	IW	Biodiversity Research Center of Ac>	BRCAS	201803	Mao-Ning Tuand	mntuanmu@gate.sinica.edu.tw
3							

Site



Sensor



Fill # of the current mic model but change to U2 later

Deployment event

A	В	С		D	E	
1 projectID	trapLocationID	deploymentStartDa	ate deploymentID		sensorID	star
2 TW_BRCAS_201803	TW_BRCAS_TW_FS01_	01 2018	0509 TW_BRCAS_TW_F	\$01_01_20180509	WASM4BATFS	0) 🕂 5
2		I		/		/
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F	G	Н	I	J	K	~
tartDateTime	startedByWhom	endDateTime	endedByWhom	workingStatus	deploymentNote	
5/09/18 04:00 PM	Joe Chun Chia Huan	2018-05-09 08:00:00	Joe Chun Chia Huar	▶normal	Battery 6.2V, A: 43/256; B:	

Sampling event, occurrence and taxon metadata

• Data analysis workshop (2019)