Social Media and Public Engagement: On Taiwan Roadkill Observation Network (TaiRON)

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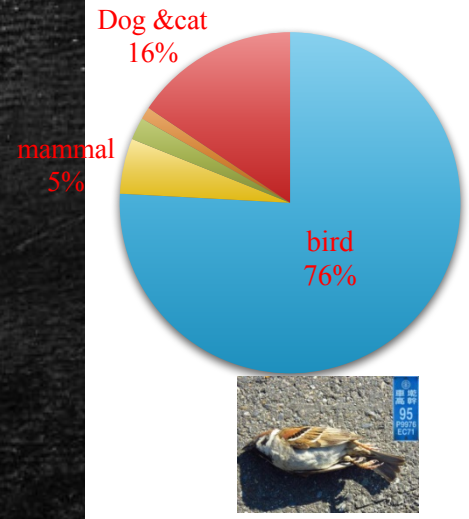
Roadkill (Road mortality)

- Definition
  - animals that have been killed by being hit by cars and other vehicles.

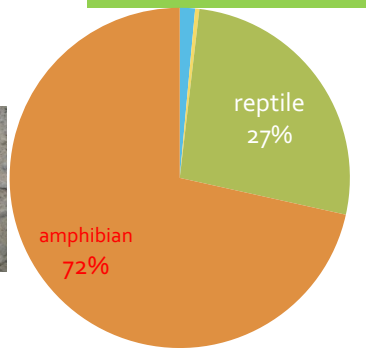
- In some case, a roadkill rate may be high enough to exceed natural causes of death due to predation and disease. (Calvo & Silvy, 1996; Haxton, 2000; Maehr, Land, & Roelke, 1991)

http://www.jhwildlife.org/roadkill6.html

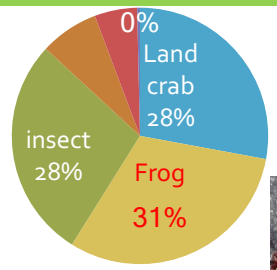
From 2009 to 2011
20,406 roadkill records
in National Freeway
(9/km/year)



11,267 roadkill
records in 2008
Yangmingshan
National Park
(176/km/year)



3,572 roadkill records
in 2006
Green island
(179/km/year)



How many Roadkill per year in Taiwan?

California Roadkill Observation System

Resources

- Enter Observation
- List of California Wildlife
- Roadkill Observations
- Roadkill Map
- Roadkill Photo Gallery
- Related Links
- About CROS

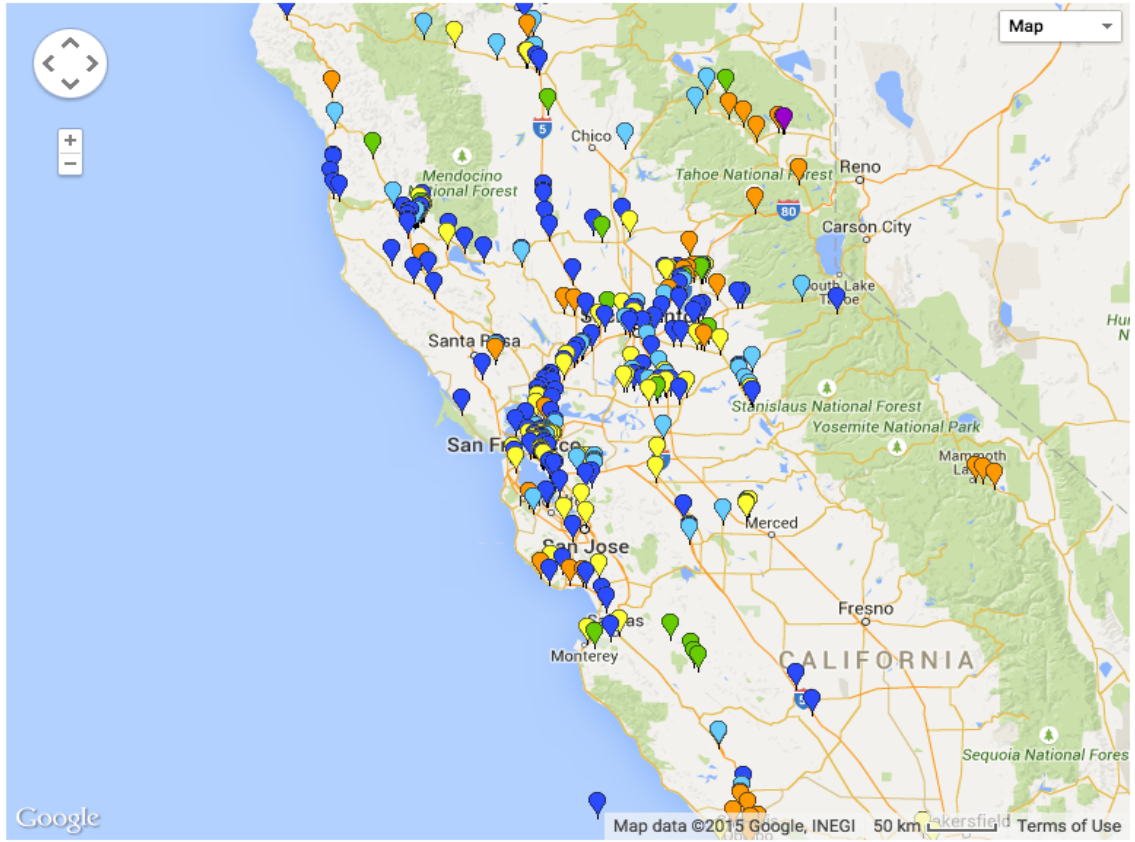
Locations of Roadkill Observations

Past 30 days | **Past 90 days** | Species Map | Santa Clara County | Charles Scott Cyclist

Roadkill observations from the past 90 days.

Taxon Category

<Any> Apply



UCDAVIS

Road Ecology Center

Information Center for the Environment

Legend

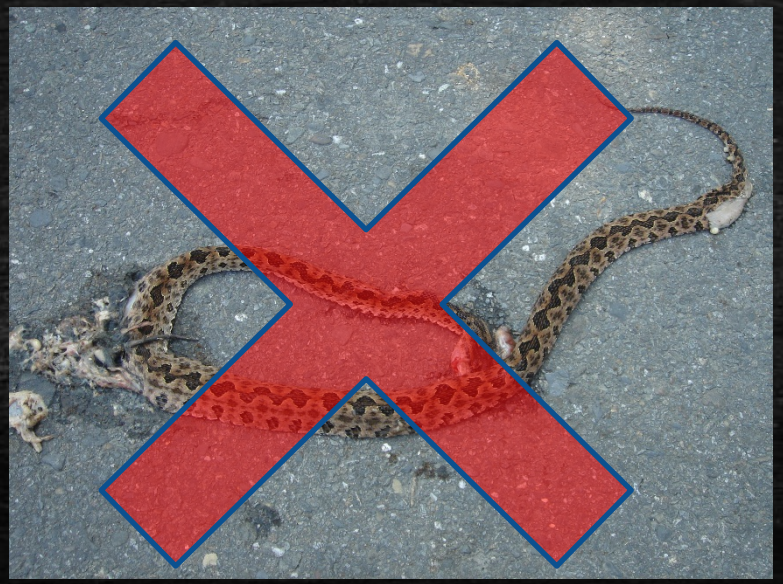
- Amphibians
- Birds
- Mammals (Large)
- Mammals (Medium)
- Mammals (Small)
- Reptiles

Since 2009

Roadkill citizen science

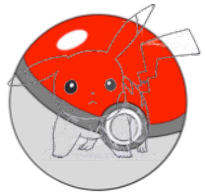
- We try to find and train the volunteers use their smart phone or digital camera to collect roadkill data, 7 years ago

- But we failed.



© Cherry and Lime. 2013

You got it



Set up a Facebook group

“Reptile Road Mortality”

- **August 8, 2011**

Take photos and upload to our group

Photos

Scale

When

Who

Where

Identified by Experts

Blooded and Ugly photos

1st problem

- We cannot manage of our data at FB
  - FB is not a database, we need type all the information by ourselves into the database
  - We cannot keep important message at the top of FB

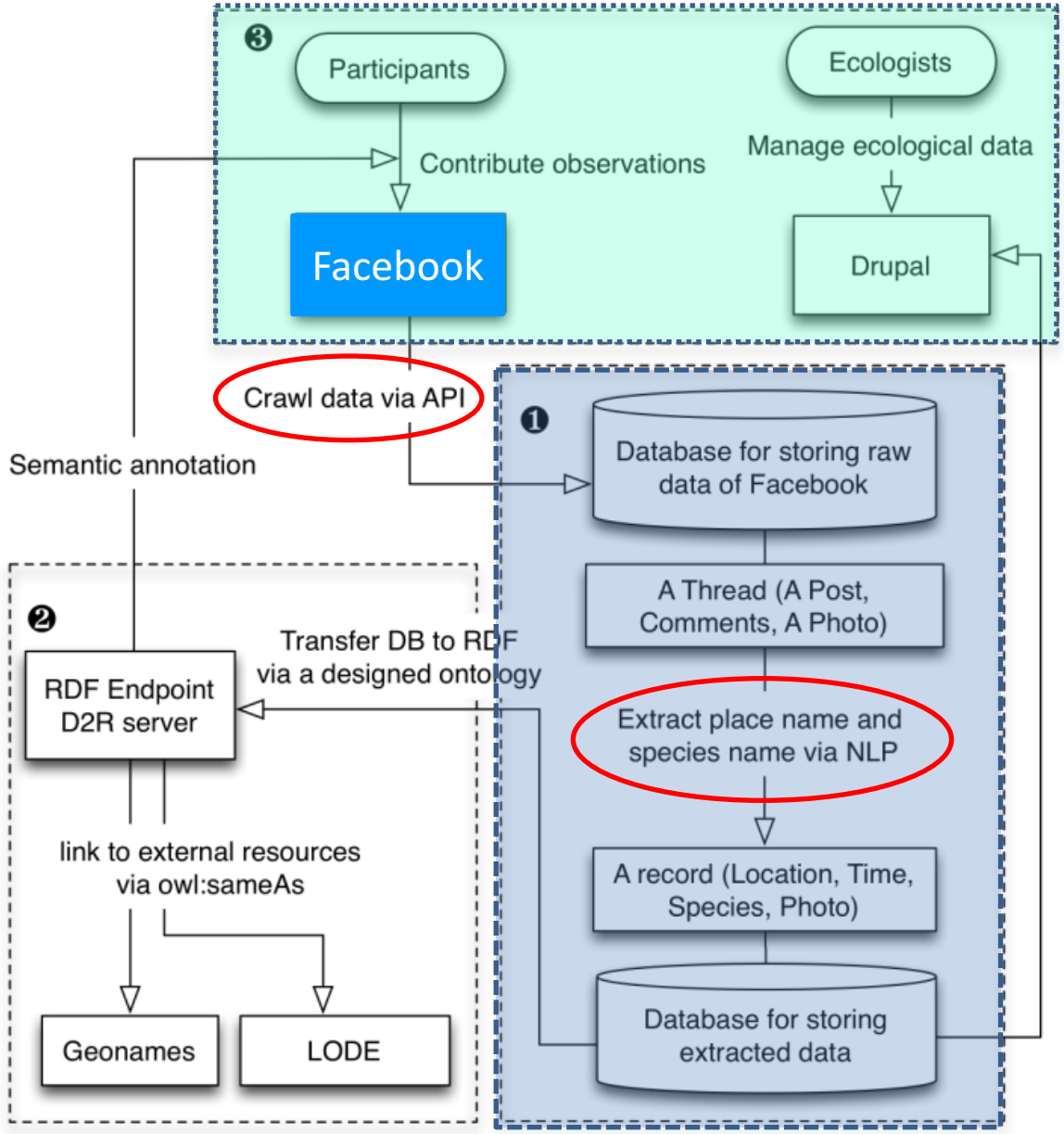
How do we store and management the data?

Crawl data via FB group API

Dongpo Deng

Cheng-Hsin Hsu

Guan-Shuo Mai



2nd problem

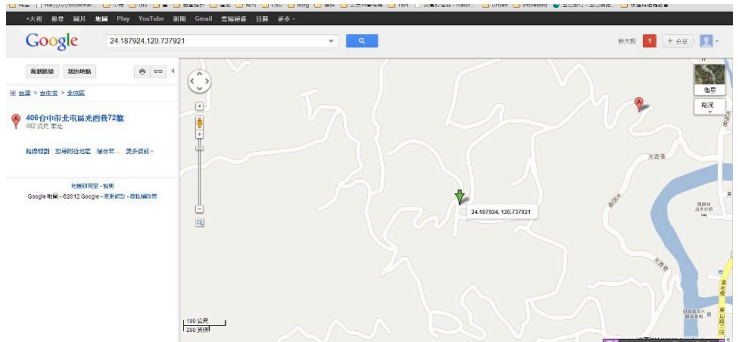
- Sometimes datas are incomplete, we usually need to ask the detail information of the photos from people who upload them.
  - The advantage of FB is people can transmission information very rapid.
  - But, it is no easy to ask everyone do the job very well.

3rd problem

The information is not always machine readable

- more than 5 kinds of positioning method need to transform to latitude and longitude
  - GPS
  - Address
  - Utility pole
  - Road sign
  - Google map

Format is not uniform



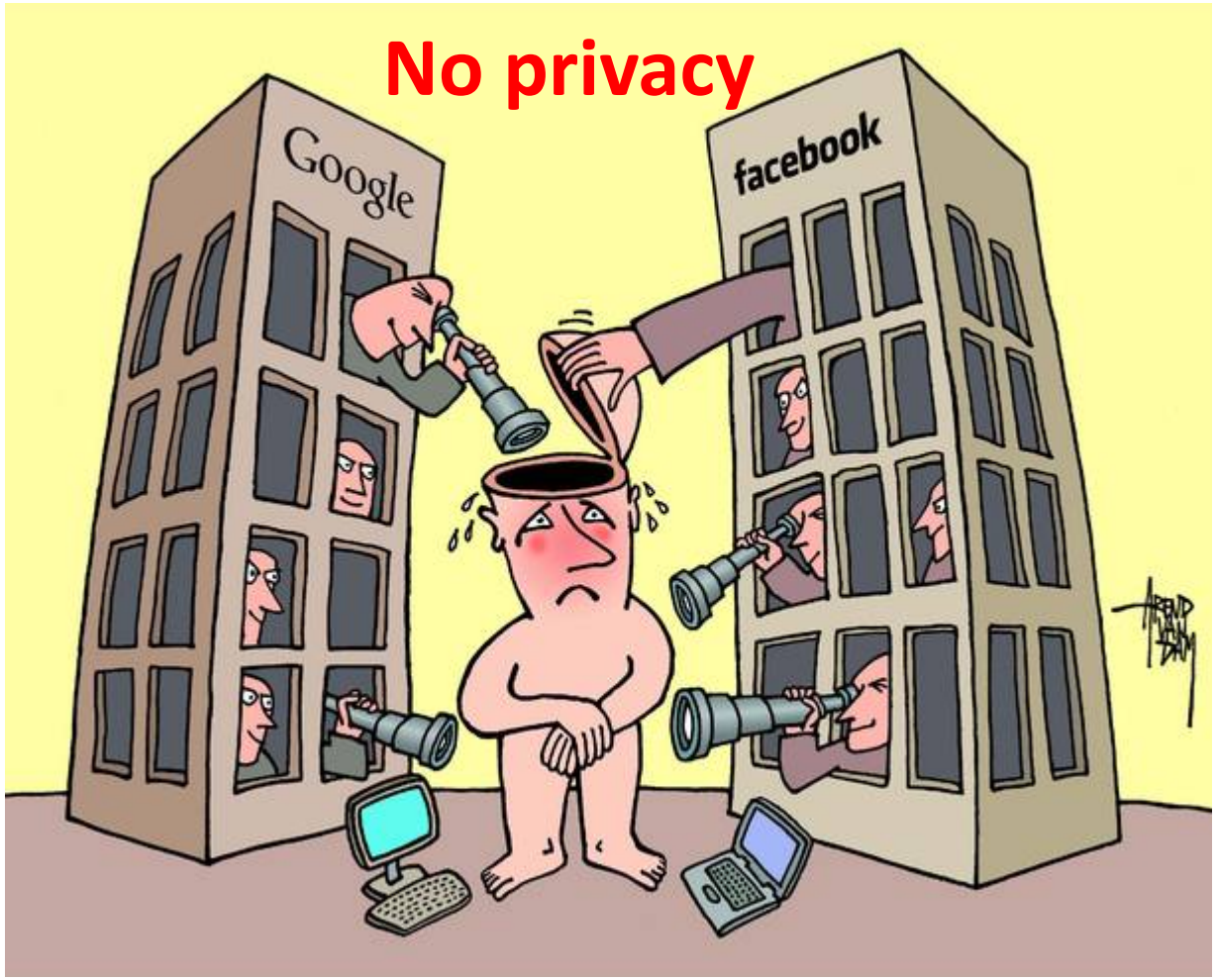
Get help from software engineer

- Complete data
- Uniform format
- High quality photos

4th problem

FB API policy be changed too often and anyone's account can be closed by FB for any reason.

5th problem



http://thepoliticalscienceclub.com/wp-content/uploads/2014/03/Privacy.jpg

Change the direction of data flow

upload

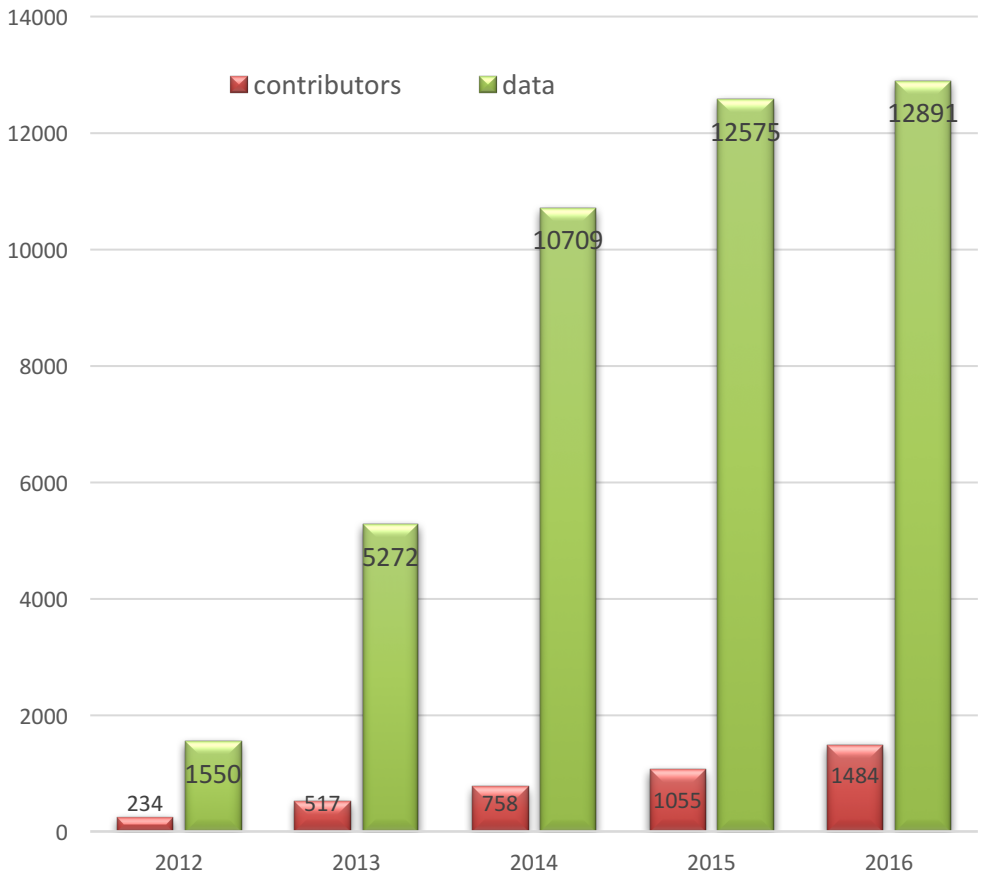
Data flow: **APP 2.0** → Database → FB group

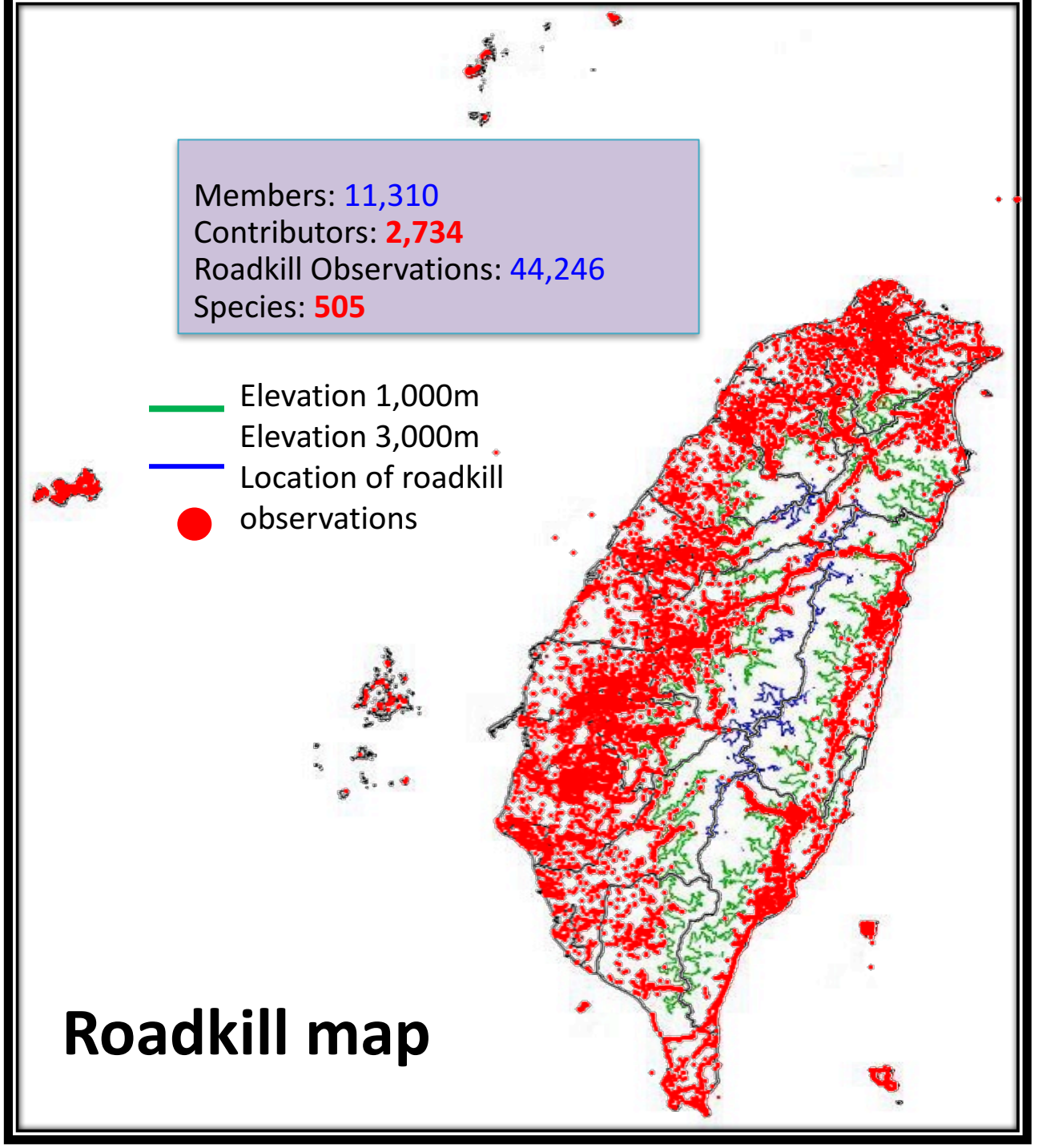
TaiRON 2.0, beginning from 2016/01/01 ~

>78% data are uploaded by APP 2.0

transfer

After post to Facebook, the data only "who" and "when" no "where", to protect user and animal privacy


14000
12000
10000
8000
6000
4000
2000
0
contributors
data
234
1550
517
5272
758
10709
1055
12575
1484
12891
2012
2013
2014
2015
2016


Members: 11,310
Contributors: 2,734
Roadkill Observations: 44,246
Species: 505
Elevation 1,000m
Elevation 3,000m
Location of roadkill observations
Roadkill map

Open data

OpenData.epa
行政院環境保護署 環境資源資料開放平台

資料異動紀錄 ::: 問卷調查 ::: 關於我們 資料集目錄 地理資料集 開發者專區

::: 資料集目錄 / 資料查詢

› 特有生物研究保育中心臉書社團路殺社資料集

- 本頁被瀏覽 4848 次
- 資料被使用 7090 次

From 2013/1/1

關於資料集 | 資料檢視

分類	生態
分類及編號	E00生活安全及品質
資料集名稱	特有生物研究保育中心臉書
資料集描述	本資料集為特有生物研究保供之路殺照片及拍照日期、查所得。
主要欄位說明	流水號(SerialNo)、觀察日(Township)、地點(Location(WGS84Lat)、科名(Family
資料集類型	原始數據
檔案格式	XML、JSON、CSV
資料集提供單位	特有生物研究保育中心
資料量	約 20,813 筆
收錄期間	
更新頻率	1年
最後更新時間	2016/3/2 上午 08:26:25
授權方式	依政府資料開放平臺使用規
授權說明網址	http://data.gov.tw/opendata/
計費方式	0
計費說明網址	無
計費法令依據	無
編碼格式	UTF8

Taiwan Roadkill Observation Network

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» report » openapi

openapi From 2015/10/31

Roadkill data "open api" offers every user access to all roadkill data contributed by members. You are welcomed to use those data in research, analyzation and visualization, etc. Point information of species that are severely poached will not be displayed, so please contact us if you need it.

Data Update: Everyday

Data Range: All confirmed, disclosed data

Data Blank: Due to privacy concerns, there is no blank for information of the contributor

Node: https://roadkill.tw/api/getrkdata?[flag]=[val]&format=[format]

Node parameter format=[format]: json (preset) , xml

Node parameter [flag]=[val]:

- Identifier id={nid}

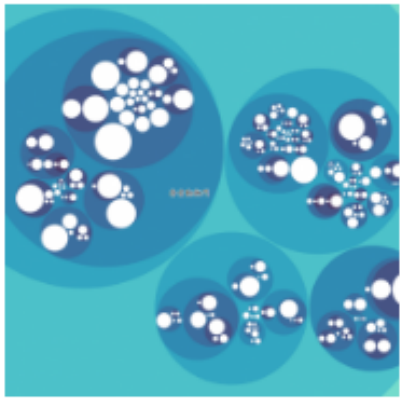
  e.g. https://roadkill.tw/api/getrkdata?id=655

- Species species={species name}

  e.g. https://roadkill.tw/api/getrkdata?species=Oligodon formosanus
  - Either scientific (Latin) name or common name is acceptable.

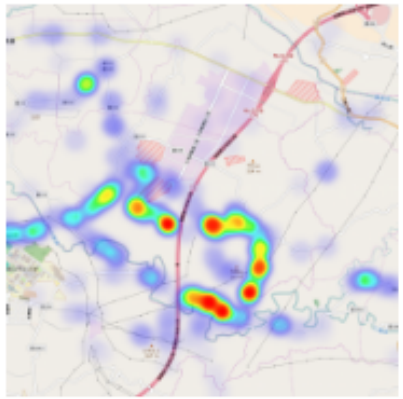
OCCURRENCE DATA
DATA VISUALIZATION
OPENAPI
REPORT

data visualization



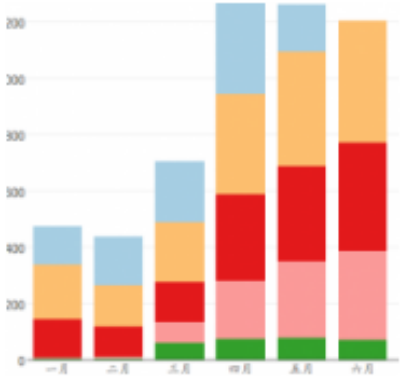
Taxonomy Tree (Circle Packing)

Taxonomy Tree

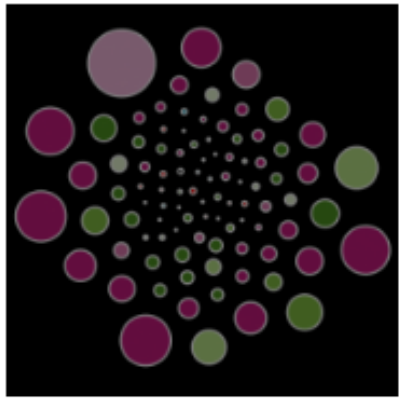


Heatmap

Occurrence Map



General statistics



Bubble Chart Remix

OCCURRENCE DATA

DATA VISUALIZATION

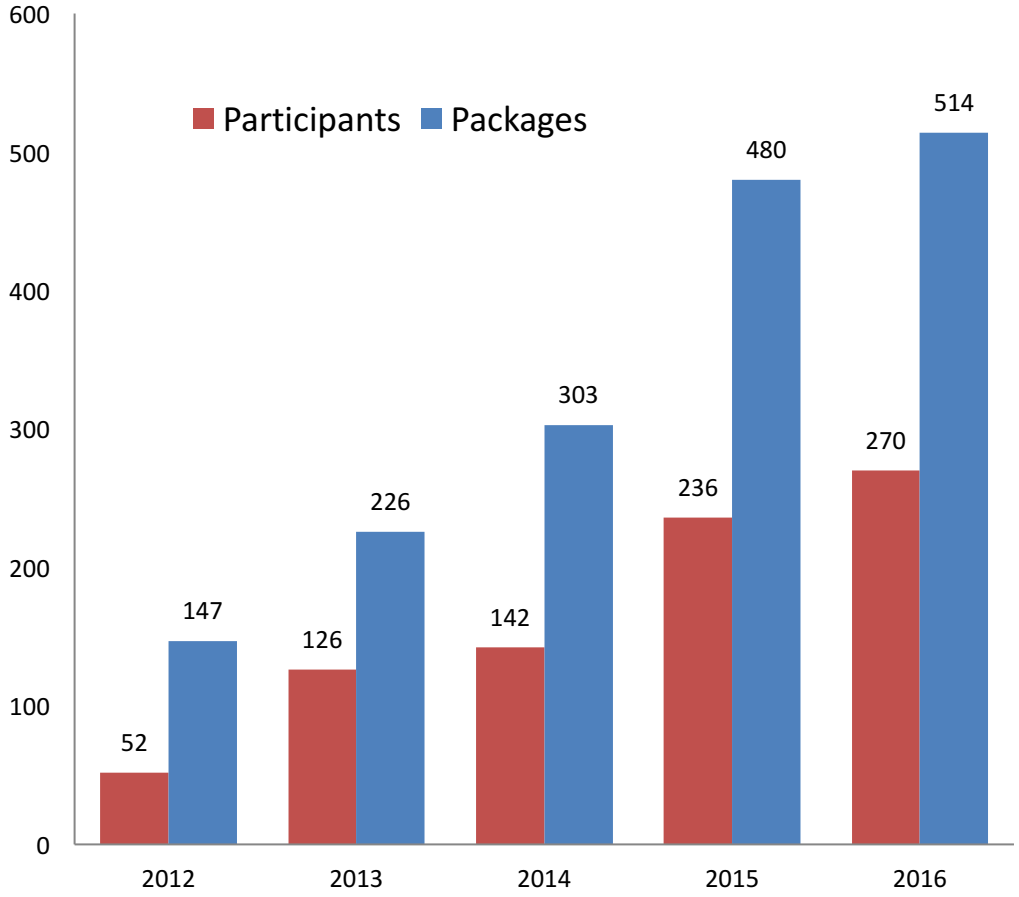
OPENAPI

REPORT

Important scientific resources

Specimen collection

- There are >10,000 convenience store in Taiwan
- Home Delivery (Express)

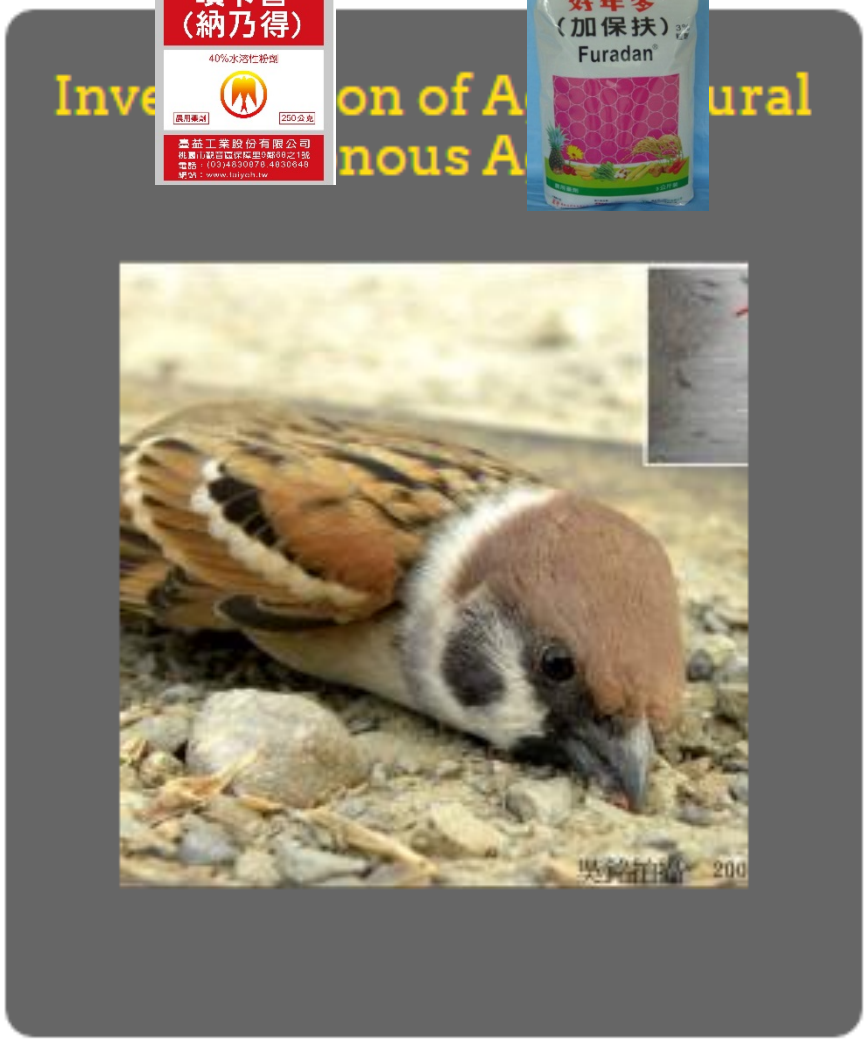


- 1,680 packages / 5,467 specimens
- Total Cost: NTD$ 219,690
  average: 40 NTD$ / specimen

Rabies free zone

2013/7/17

Stop use Methomyl and Furadan (Pesticide)



Positive feedback

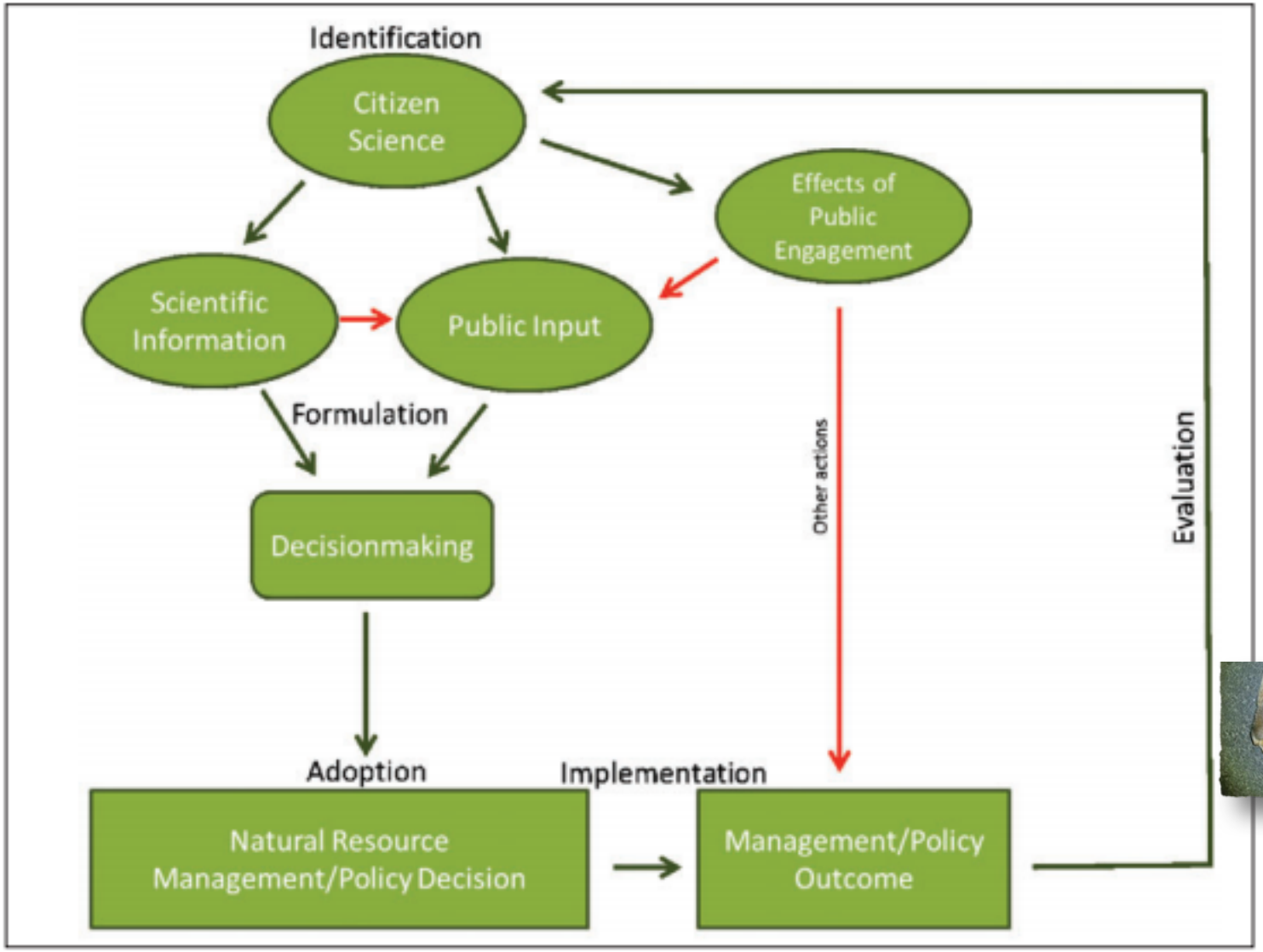
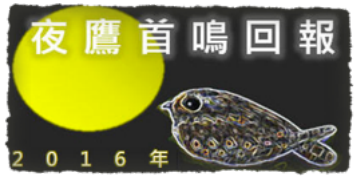


Figure 2. Pathways that citizen science can take to influence natural resource management and environmental protection by (1) generating scientific information, and (2) facilitating direct (green arrows) and indirect (red arrows) public input and engagement.


夜鷹首鳴回報
2016年

台灣猛禽研究會
RRGT林鵰紀錄徵求站
Photo: 謝米樂

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成員
活動
相片
檔案
搜尋這個社團

某北城

Invasive fish
Roadkill
Biodiversity
House bat

Thanks for your attention!

Contact us:

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Tyng-Ruey Chuang, trc@iis.sinica.edu.tw

Taiwan Roadkill Observation Network (TaiRON) http://roadkill.tw

Our Facebook group, https://www.facebook.com/groups/roadkilled/