

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.

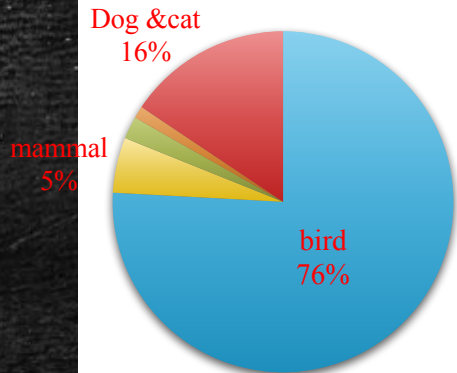


- In some case, a roadkill rate may be high enough to exceed natural causes of death due to predation and disease. (Calvo & Silvy, 1996; Haxton, 2000; Maehr, Land, & Roelke, 1991)

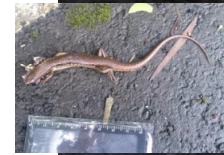
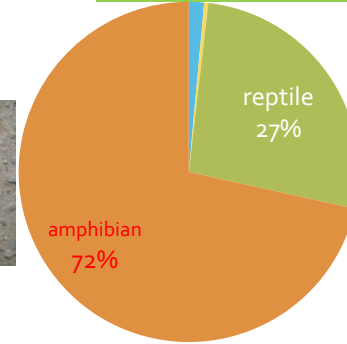


<http://www.jhwildlife.org/roadkill6.html>

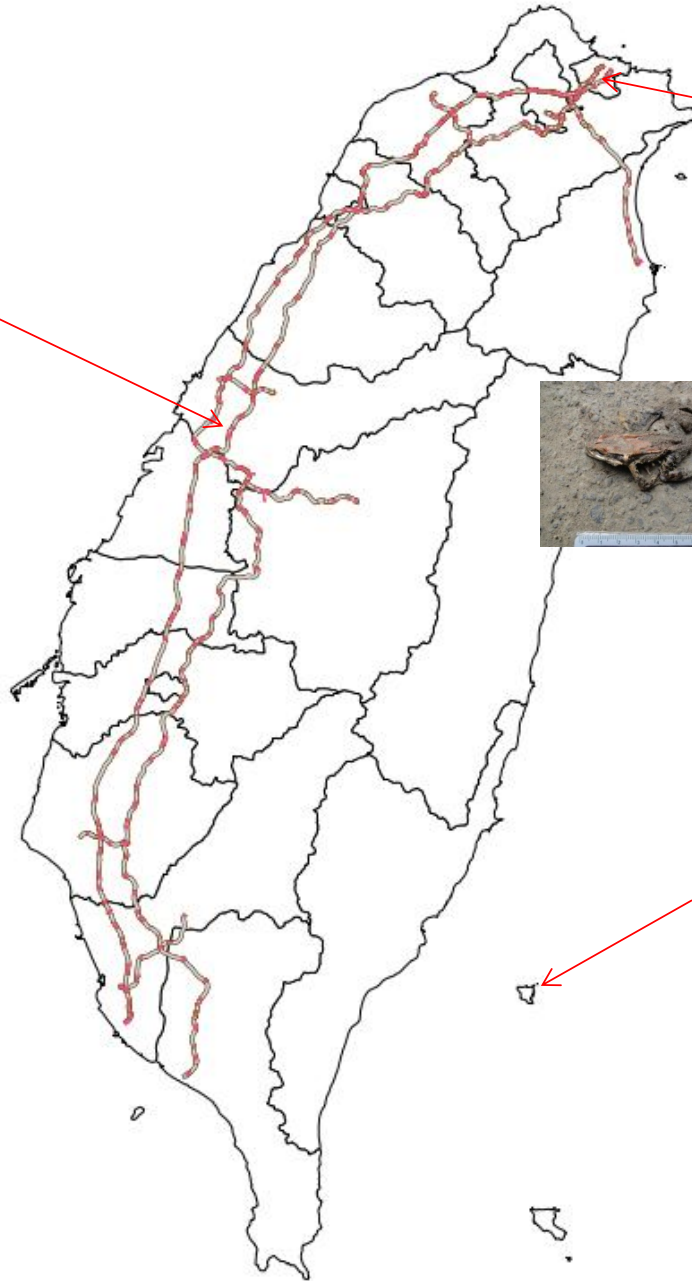
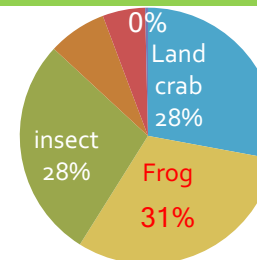
From 2009 to 2011
20,406 roadkill records
 in **National Freeway**
 (9/km/year)



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

[Home](#)

Resources

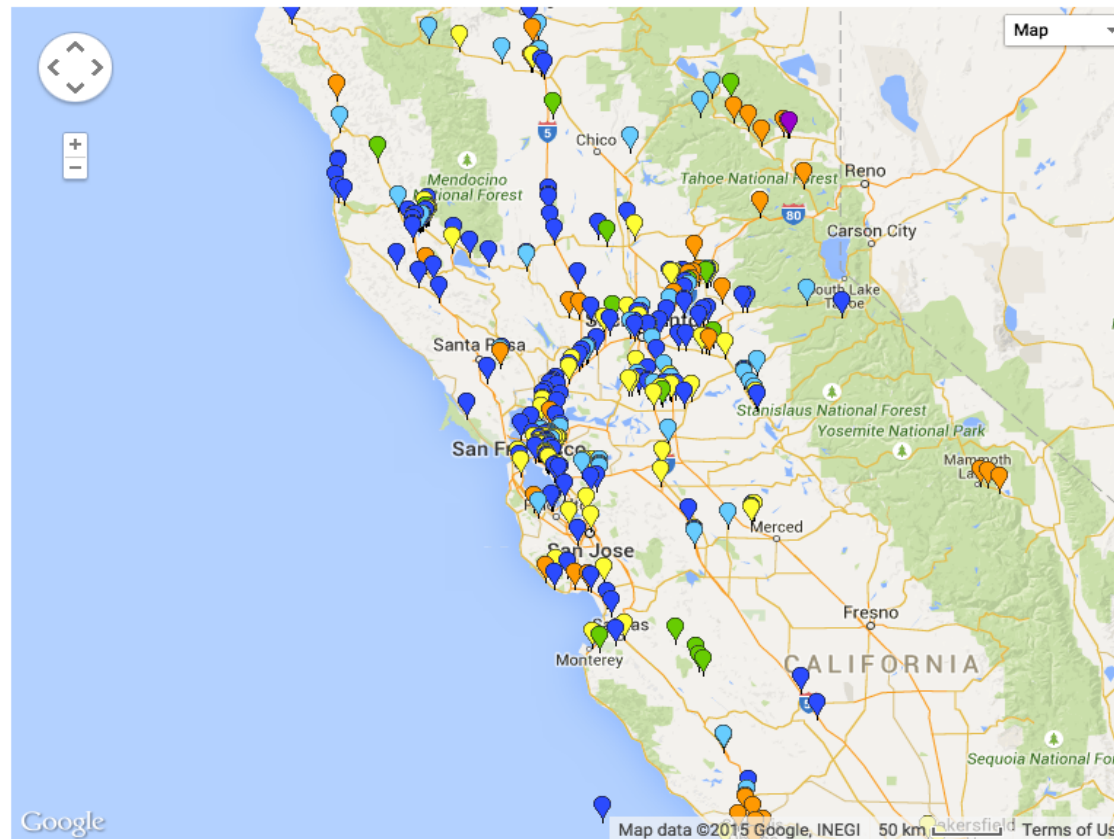
- [Enter Observation](#)
- [List of California Wildlife](#)
- [Roadkill Observations](#)
- [Roadkill Map](#)
- [Roadkill Photo Gallery](#)
- [Related Links](#)
- [About CROS](#)

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



UC DAVIS



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.



Set up a Facebook group

“Reptile Road Mortality”

- August 8, 2011

The screenshot shows a Facebook group page for "四處爬爬走(路殺社, Reptile Road Mortality)". The page features a prominent banner with the text "行經山區 留意路面 蛇出沒注意" and "DON'T BE A KILLER! STOP ROAD KILLING". Below the banner is a graphic of a car on a road with a snake in the path. The group has 1,023 members and 37 new members. The page includes a search bar, a navigation menu, and a list of members. A post by 蔡靖 (Chieh-te Liang) is visible, dated 10/24 in Taipei, East District, Shilin Street, showing a photograph of a green snake on a dark, gravelly surface.

Take photos and upload to our group

Photos

Scale

When

Who

Where

A screenshot of a Facebook post. The post is from a user named 謝米樂 (Xie Mile) in a group called 四處爬爬走(除殺社, Reptile Road Mortality). The post text includes the date 2014/06/23, location 台灣夜鷹 (Taiwan Night Hawk), and coordinates. Below the post, a comment from Dali Lin identifies the bird as #臺灣夜鷹# *Caprimulgus affinis*. A red arrow points from the 'Where' label to the location text, and another red arrow points from the 'Who' label to the user's name. A third red arrow points from the 'Identified by Experts' text to the comment.

謝米樂 ▸ 四處爬爬走(除殺社, Reptile Road Mortality)
Follow · 14 hrs

2014/06/23 台灣夜鷹
台東縣池上鄉台20甲線約4.4k
緯度: N 23°7.628' (23°7'37.7")
經度: E 121°12.225' (121°12'13.5")

朕知道了 · 卿家可知? · Stop Notifications · Share

Anderson Kuo likes this.

Dali Lin #臺灣夜鷹# *Caprimulgus affinis*
Just now · 朕知道了

Write a comment...

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



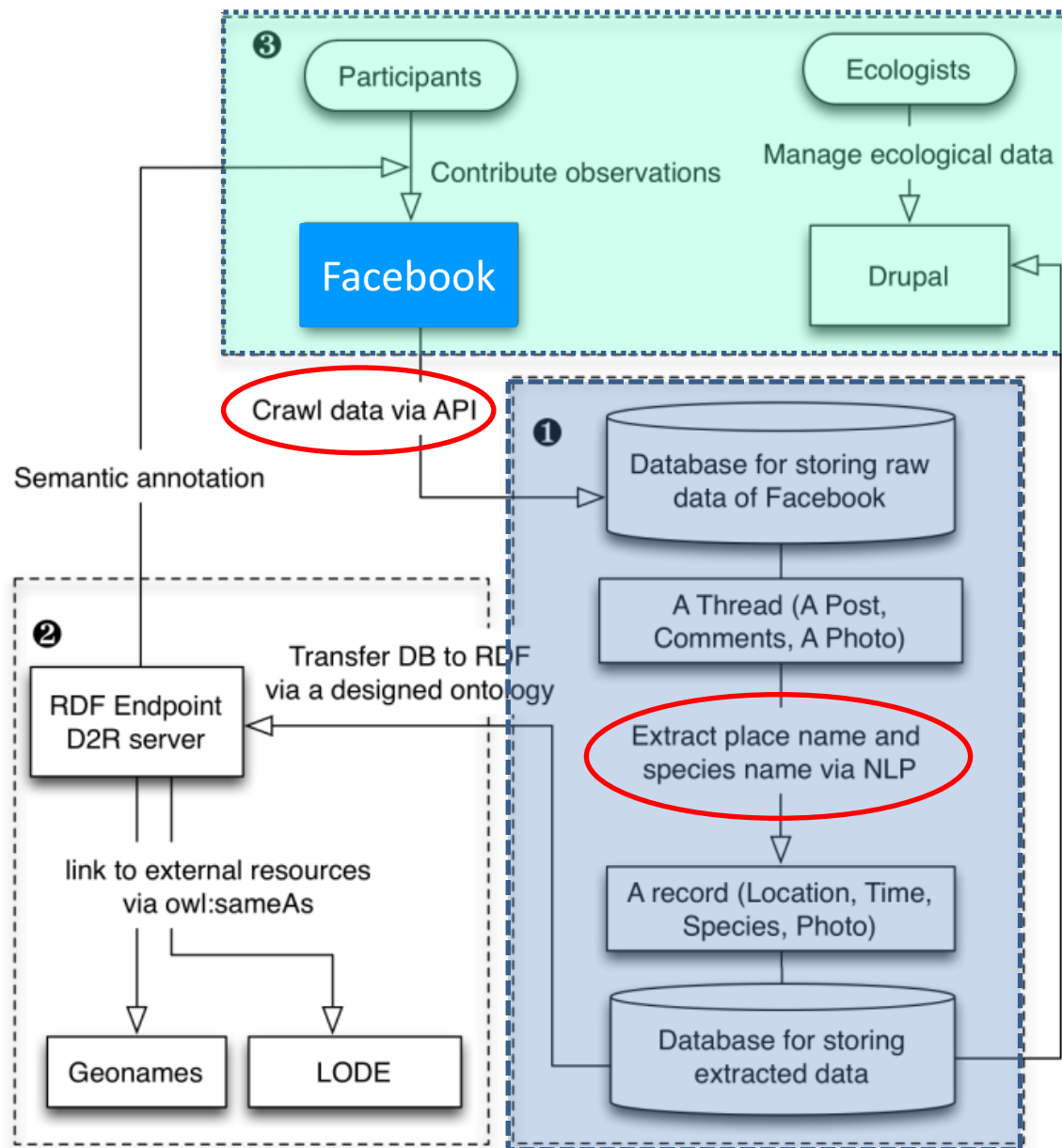
Dongpo Deng



Cheng-Hsin Hsu



Guan-Shuo Mai



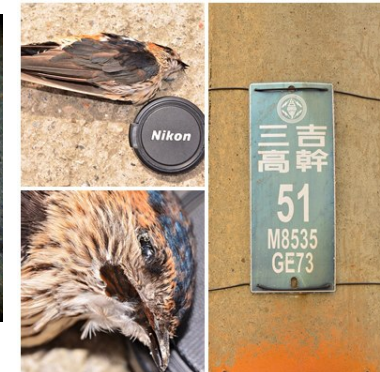
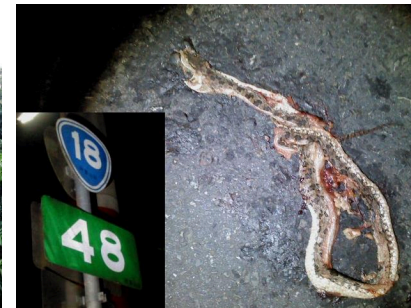
2nd problem

- 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.

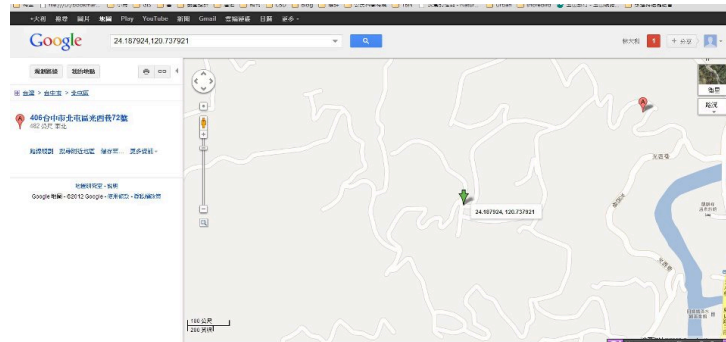
3rd problem

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.



消失的雲端自由夢 – 從教授的臉書封鎖事件談起 (邱
莒王) 台灣醒起 Awakening News Networks

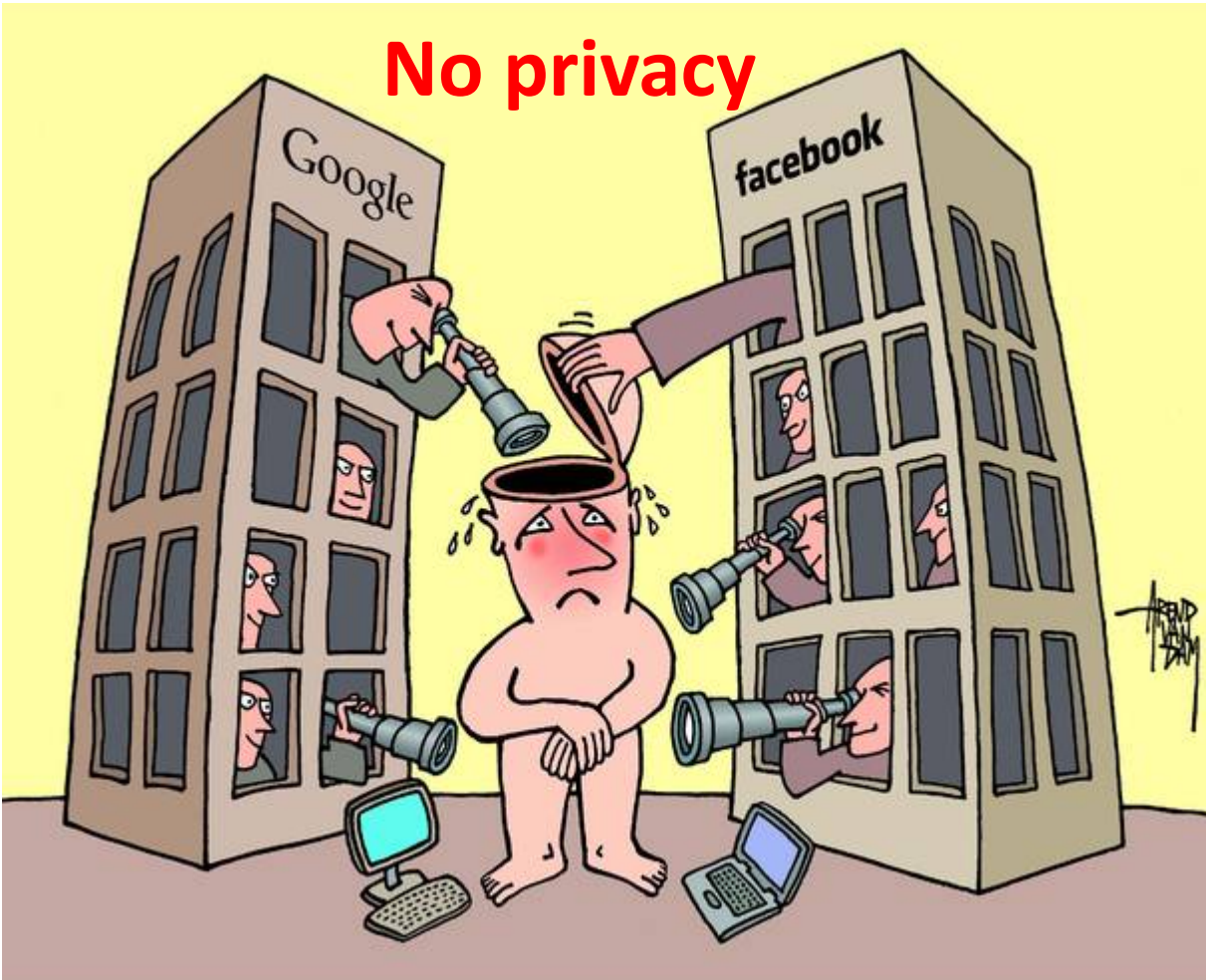
「不管什麼樣的人惡意檢舉我，臉書未能通知使用者、無預警關閉帳號、不給理由、不理會申訴，最後忽然開放帳號，卻又...

ANNTW.COM

收回讚 · 留言 · 分享 · 85 39

5th problem

No privacy



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

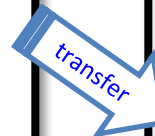
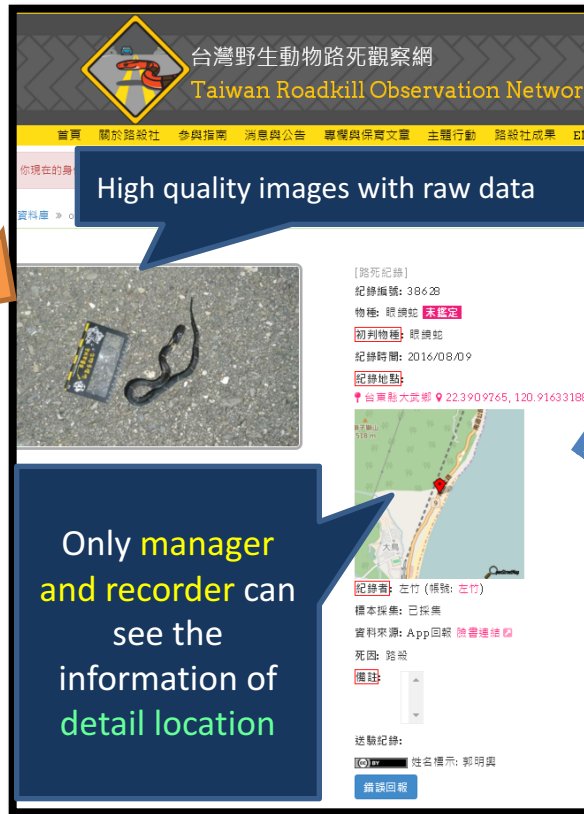
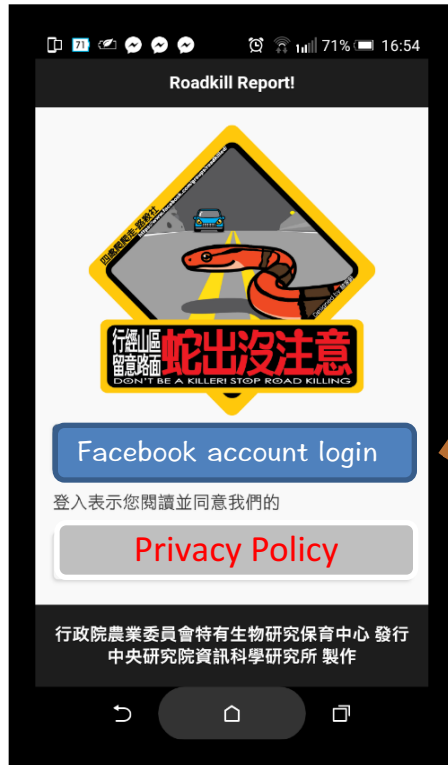


Change the direction of data flow

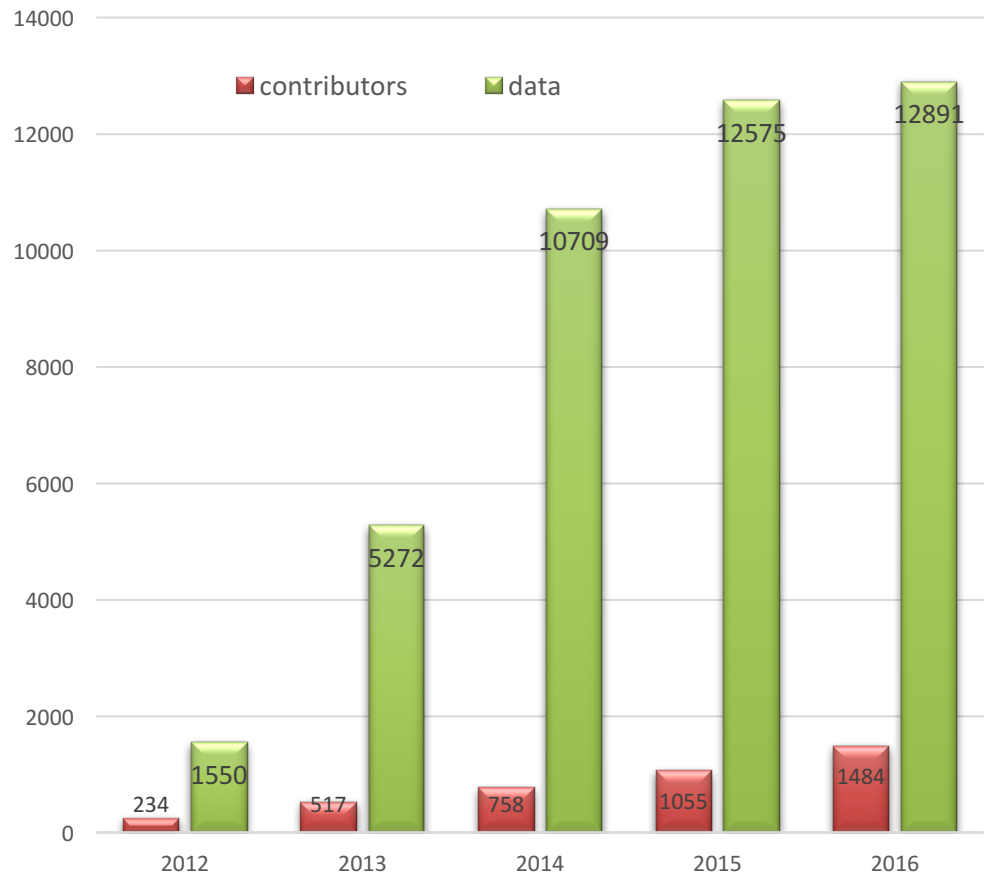
Data flow: **APP 2.0** → **Database** → **FB group**

TaiRON 2.0, beginning from 2016/01/01 ~

>78% data are uploaded by **APP 2.0**

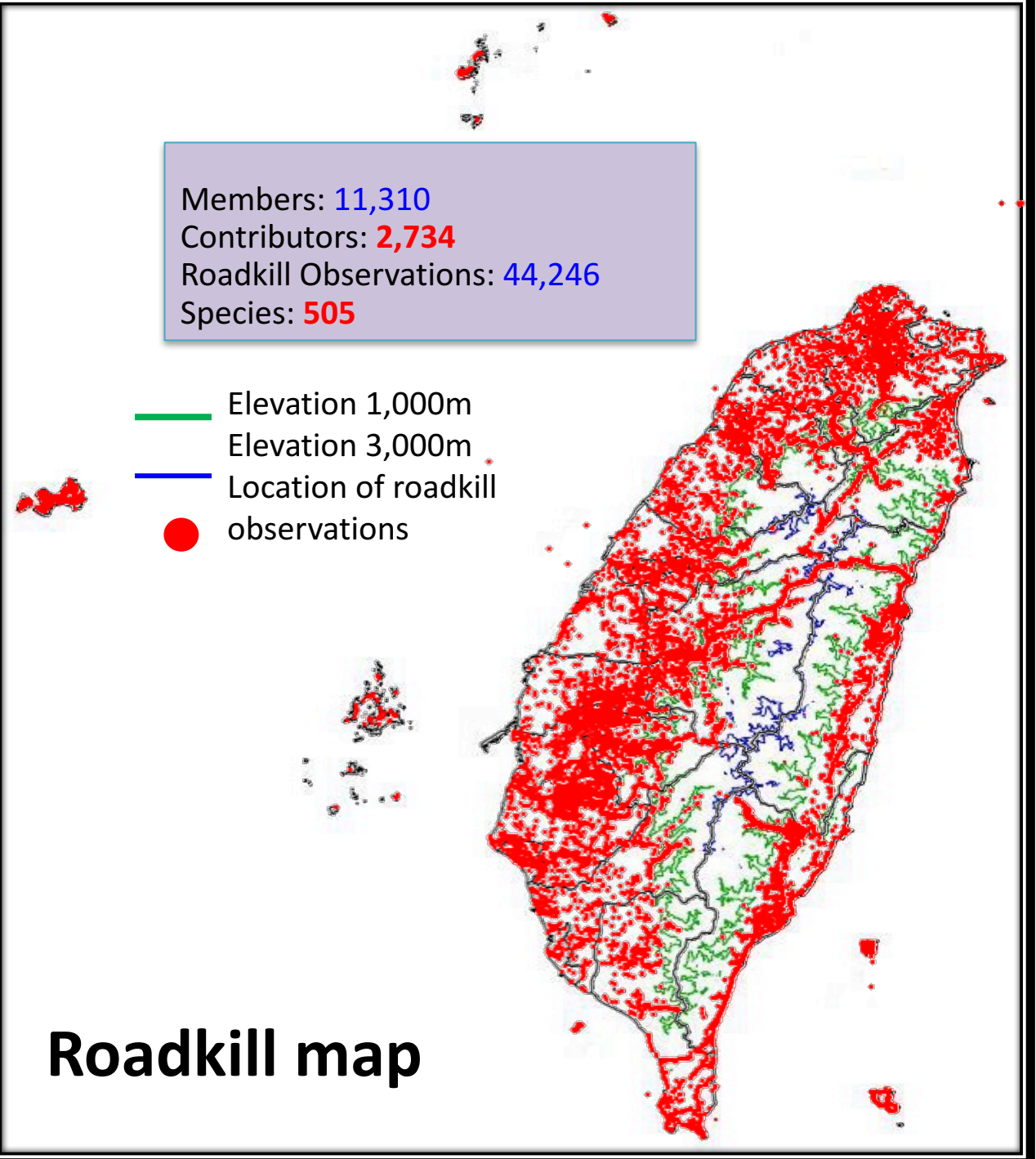


After post to Facebook, the data only "who" and "when" no "where", to protect user and animal privacy



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



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

▶ 本頁被浏览 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育之路殺照片及拍照日期、查所得。
主要欄位說明	流水號(SerialNo)、觀察日期(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

HOME ABOUT PARTICIPATE CAMPAIGN REPORT 台灣中文版

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.

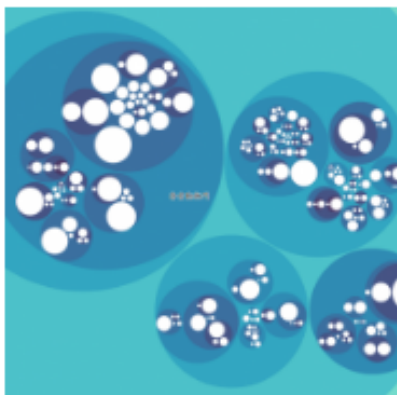
OCCURRENCE DATA

DATA VISUALIZATION

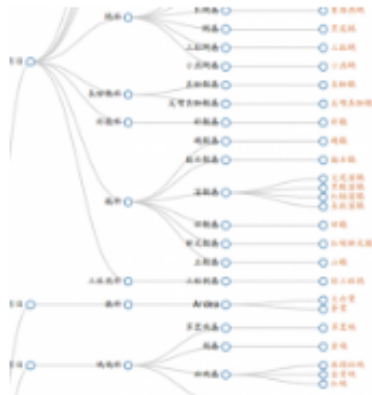
OPENAPI

REPORT

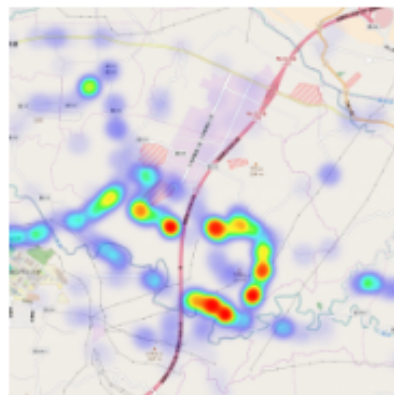
data visualization



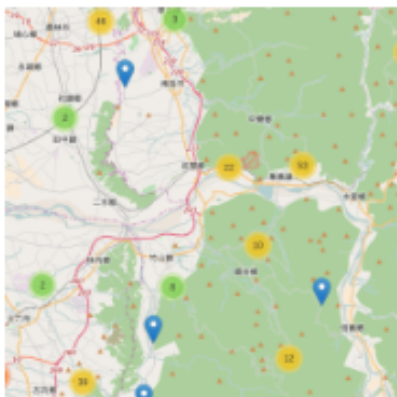
Taxonomy Tree (Circle Packing)



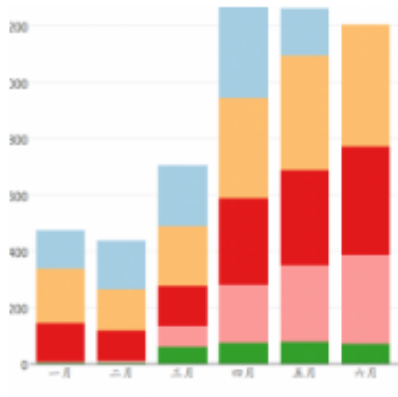
Taxonomy Tree



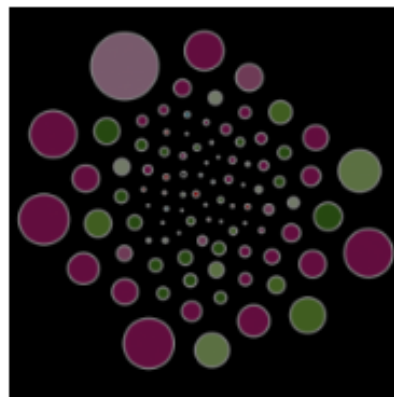
Heatmap



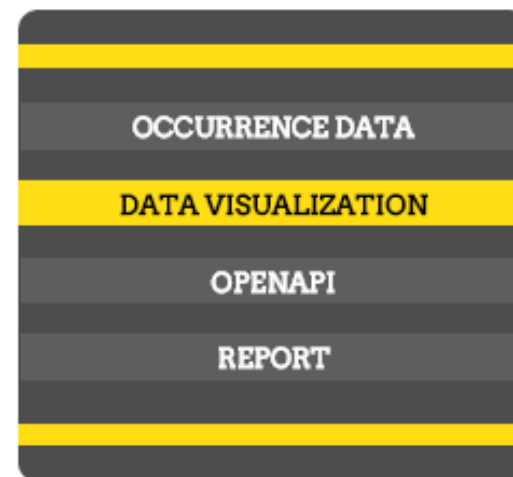
Occurrence Map



General statistics



Bubble Chart Remix

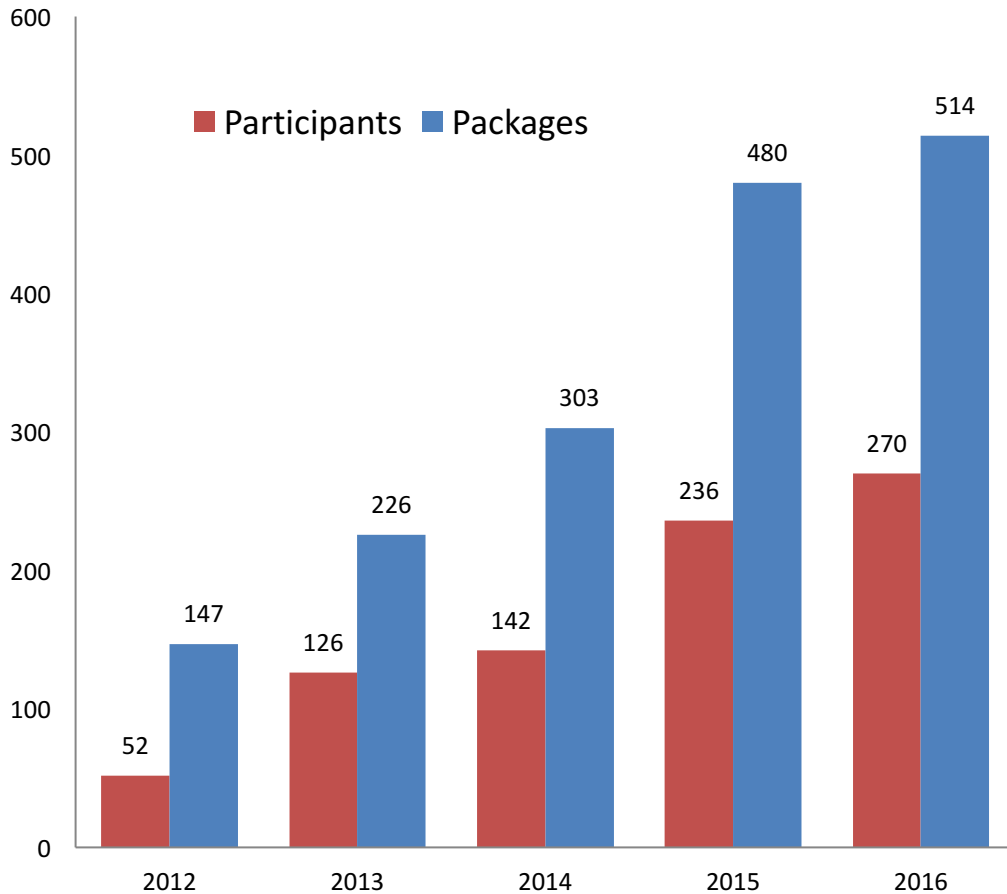


Important scientific resources



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

野生鼬獾染狂犬病 台灣從非疫區除名

文/上下游記者汪文豪 on 2013 年 07 月 17 日 in 農學堂 · 4 篇留言 · 閱讀人次 2,677



Ferret badger

本文摘要-台灣從動物狂犬病非疫區除名了！農委會昨(16)日證實，三隻野鼬獾病由民眾送往特有生物保育中心救治的野生鼬獾，確診染病狂犬病，防檢局也將會把此一結果通報世界動物衛生組織(OIE)。(農委會特生中心提供)

>50% Inspection samples of rabies were from roadkill

衛生組織(OIE)。

由於我國從民國50年起即為狂犬病非疫區，這次首度發現野生鼬獾染病，除了讓台灣淪為動物狂犬病疫區，也使得民眾攜帶犬貓出國，面臨其他國家更嚴格的檢疫要求。

Stop use Methomyl and Furadan (Pesticide)



Investigation of Agricultural Pesticides



吳錦拍攝 200

Positive feedback

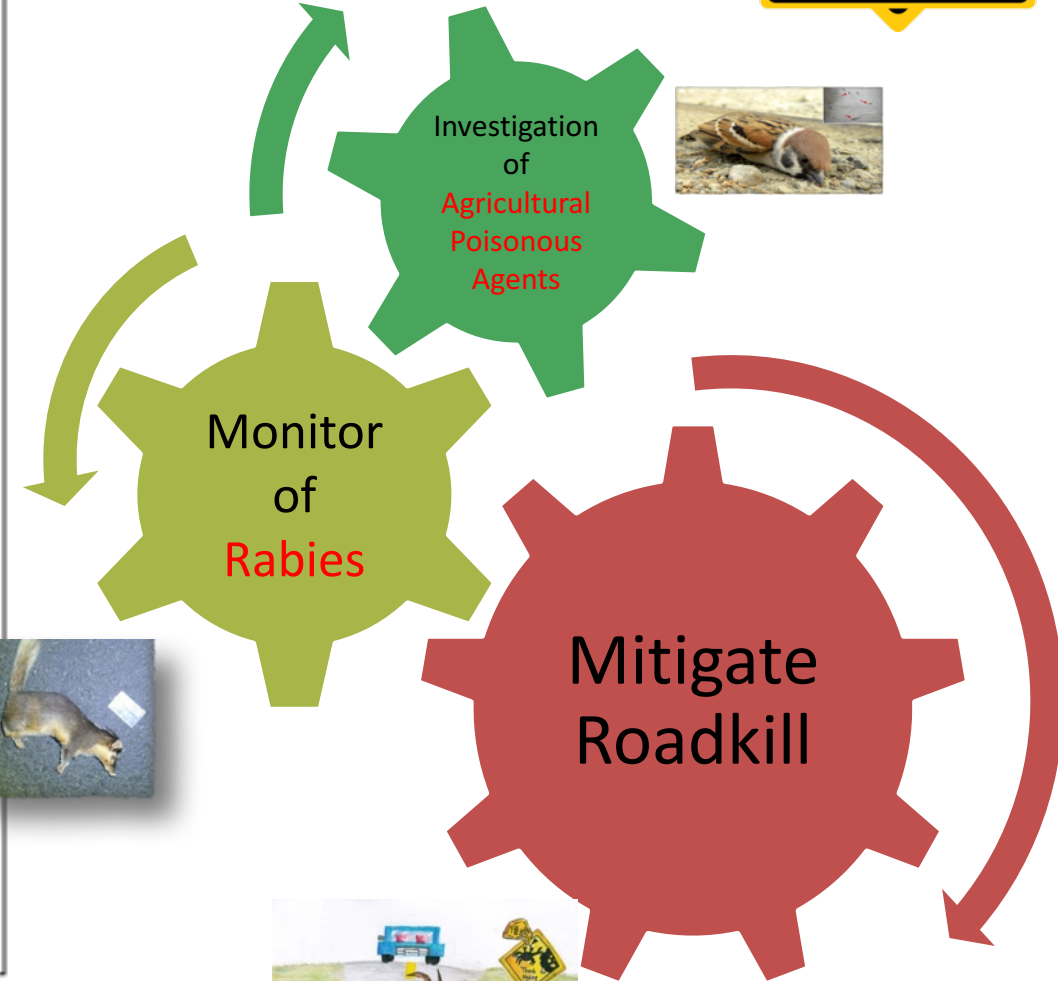
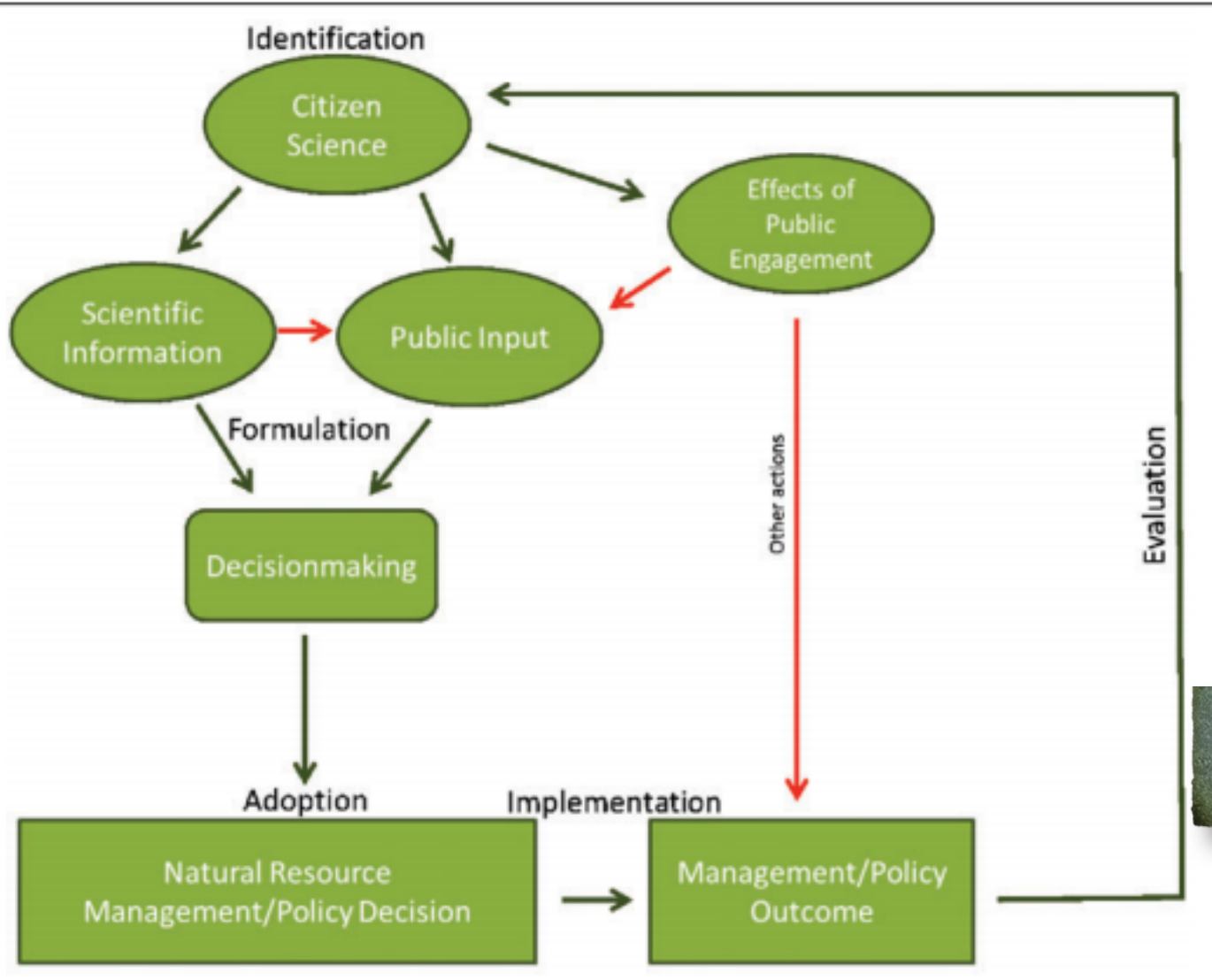
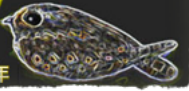


Figure 2. Pathways that citizen science can take to influence natural resource management and environmental protection by (1) generating scientific information, and (2) facilitating direct (green arrows) and indirect (red arrows) public input and engagement.

夜鷹首鳴回報

2016年



濃霧的秋天-農地淨化回報 成員 活動 相片 藝家 搜尋社群



編輯部 - 自然動物網平台地圖 - 首頁 - 新聞 - 影片 - 藝家 搜尋社群



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/>

