GIS use for Rapid Response

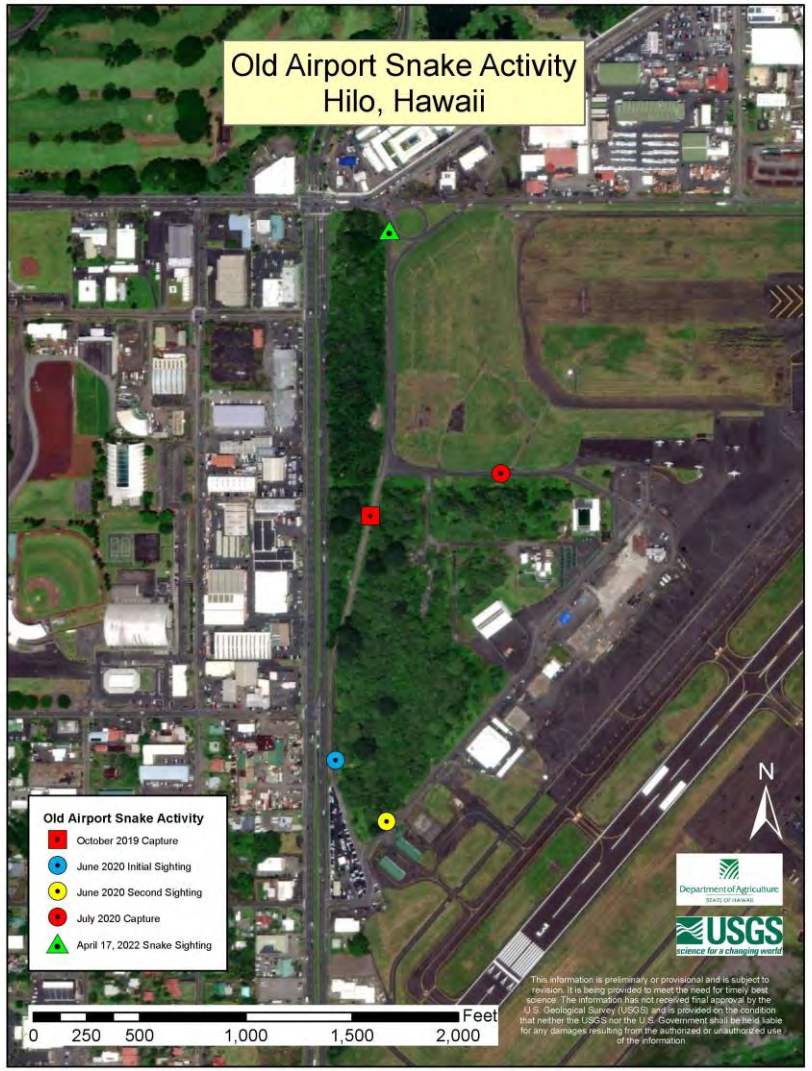
HOW THE HAWAII DEPARTMENT OF AGRICULTURE PLANT QUARANTINE BRANCH USES GIS IN A RAPID RESPONSE SITUATION

- This presentation will cover how the Hawaii Department of Agriculture (HDOA), Plant Quarantine Branch (PQB) uses GIS to respond to an invasive species sighting. The example situation occurred in Hilo earlier this year.
- Presentation will also have overview of other PQB GIS uses.
- In April of this year Hilo PQB received a report of a snake sighting at the Hilo Old Airport area. Interviews of the person who spotted the snake was done by both a PQB inspector and USGS personnel. Upon confirmation a rapid response was initiated by HDOA PQB and later the USGS Rapid Response Team from Guam.

Rapid Response

- Initial data collection was conducted to show the location of the sighting. All data collected for points, lines, and polygons were collected using Field Maps.
- Points: initial sighting location, trap locations, and transect points.
- Lines: survey transect and boundaries.
- Polygons: area surveyed.

Initial Snake Sighting Location



Prior Snake Activity in Area

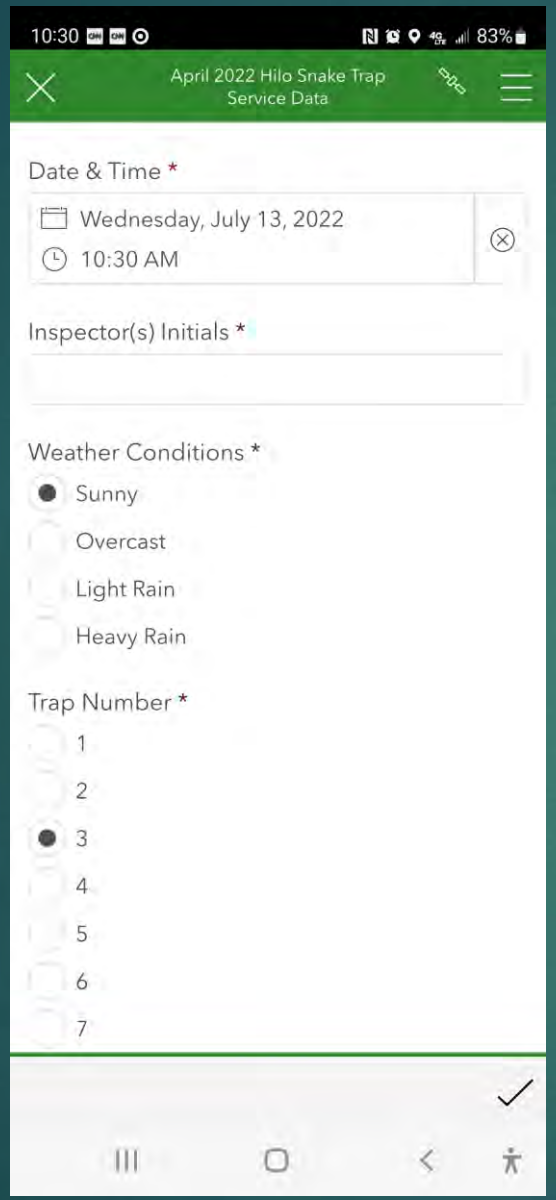
- Using GIS to show the initial sighting, trap locations were identified and plotted. Trap locations were then cleared and treated for Little Fire Ant. Once area was cleared and treated, traps were installed and baited. Initial trap service was done by Hilo PQB then transferred over to USGS until the end of the rapid response.

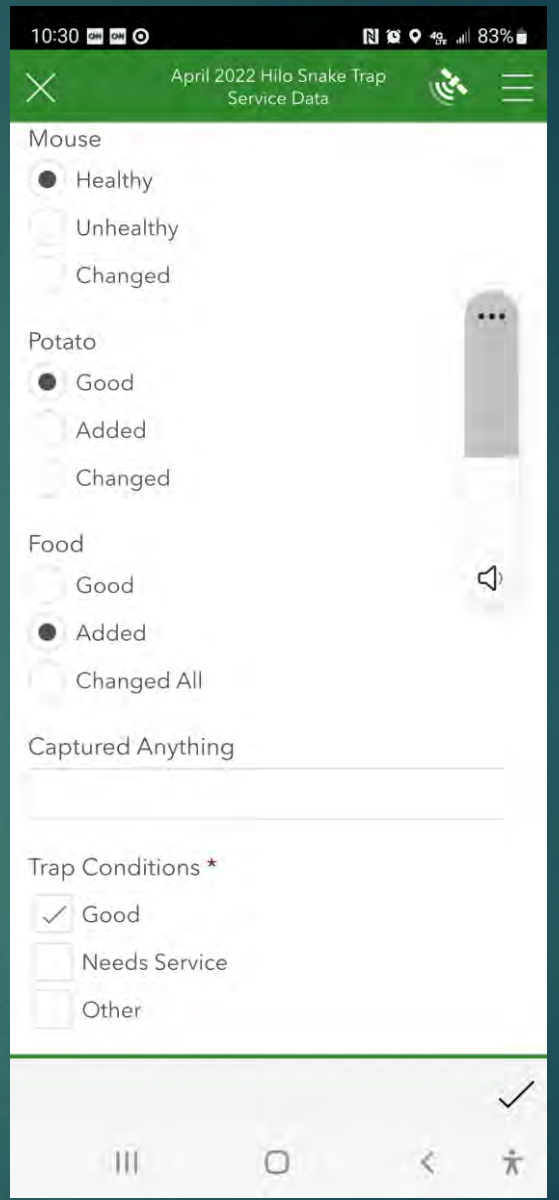
Initial trap Locations

- Upon arrival of USGS Rapid Response personnel, 10 more traps were to be added to area. A new map with a total of 17 traps were planned. Due to shipping problems, the 10 traps never arrived during the rapid response and was never set up. The seven traps were set for 14 days. Between servicing of the traps on April 25th and April 26th, Trap number 6 was stolen. Only one of the end caps from trap 6 was found.

New Trap Locations and Numbers

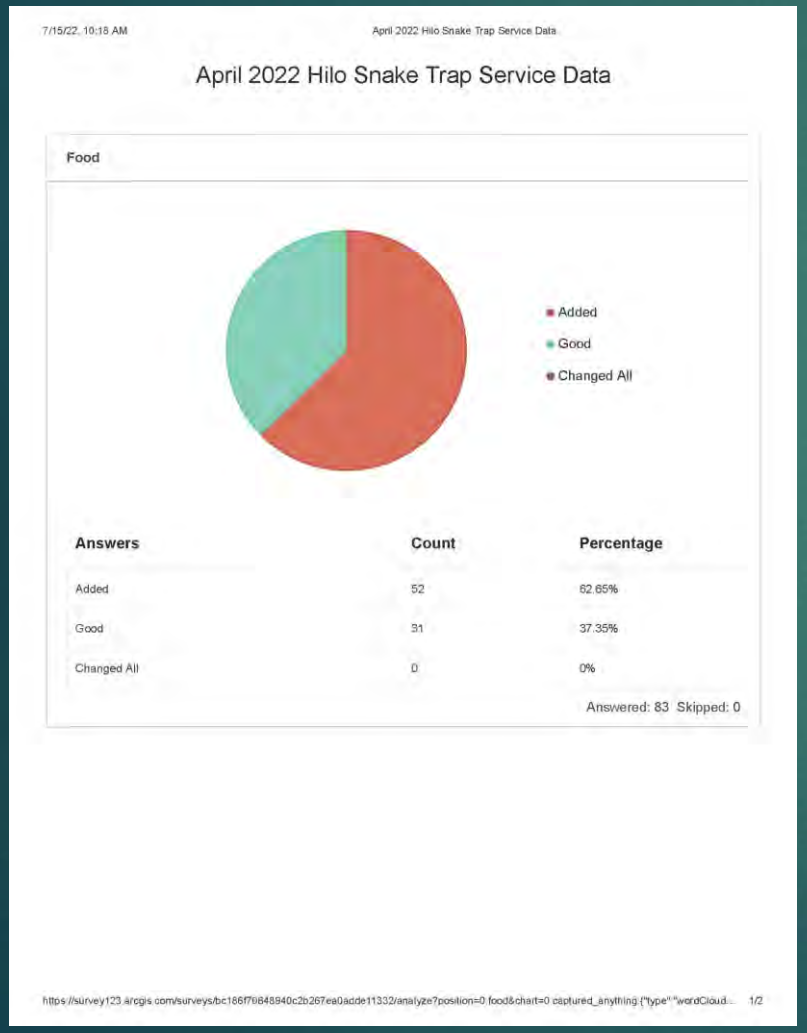
- Survey 123 was used to collect trap service data.
- Types of service data:
  - Date of service
  - Mouse status
  - Food and potato status
  - Capture information.
- The following are screenshots of the Survey 123 on a phone.


10:30
83%
April 2022 Hilo Snake Trap
Service Data
Date & Time *
Wednesday, July 13, 2022
10:30 AM
Inspector(s) Initials *
Weather Conditions *
Sunny
Overcast
Light Rain
Heavy Rain
Trap Number *
1
2
3
4
5
6
7


10:30
83%
April 2022 Hilo Snake Trap
Service Data
Mouse
Healthy
Unhealthy
Changed
Potato
Good
Added
Changed
Food
Good
Added
Changed All
Captured Anything
Trap Conditions *
Good
Needs Service
Other

- Survey 123 data can then be saved in excel or used to produce reports.
- The following are reports from Survey 123 and used for current survey evaluation and also for future rapid response planning.

Food and potato service report can be used to plan future response needs.



7/15/22, 10:18 AM April 2022 Hilo Snake Trap Service Data

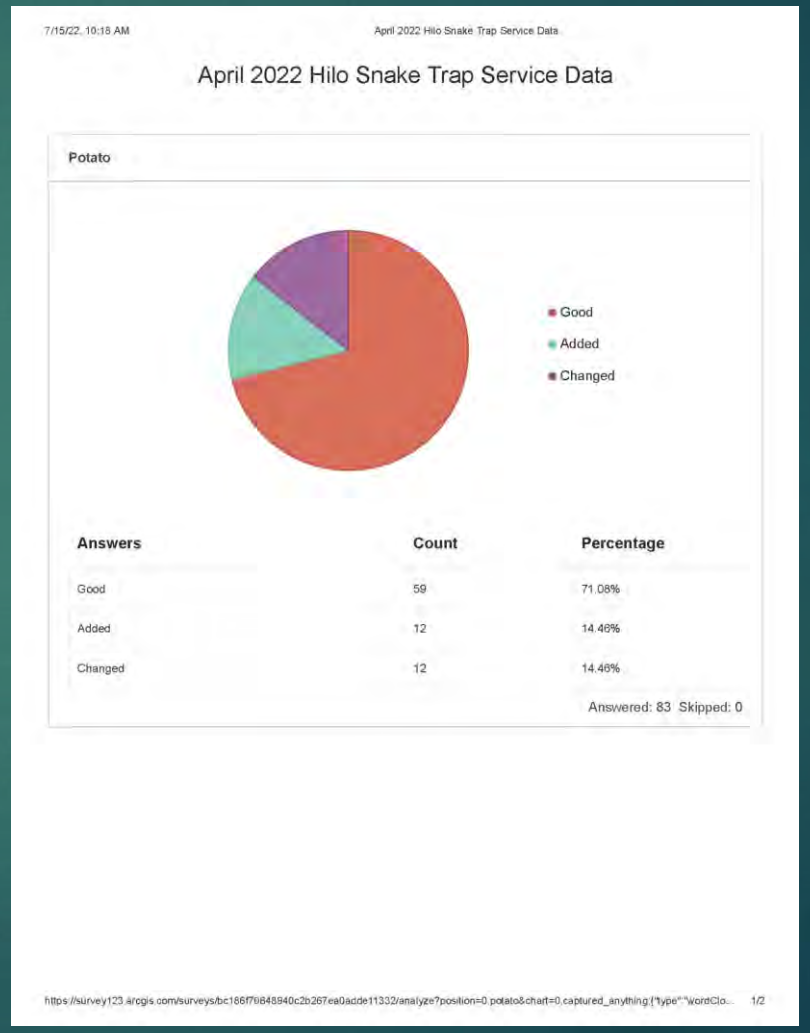
April 2022 Hilo Snake Trap Service Data

Food

Answers	Count	Percentage
Added	52	62.65%
Good	31	37.35%
Changed All	0	0%

Answered: 83 Skipped: 0

https://survey123.arcgis.com/surveys/bc166f7b848940c2b267ea0adde11332/analyze?position=0.food&chart=0.captured_anything.{"type":"wordCloud... 1/2



7/15/22, 10:18 AM April 2022 Hilo Snake Trap Service Data

April 2022 Hilo Snake Trap Service Data

Potato

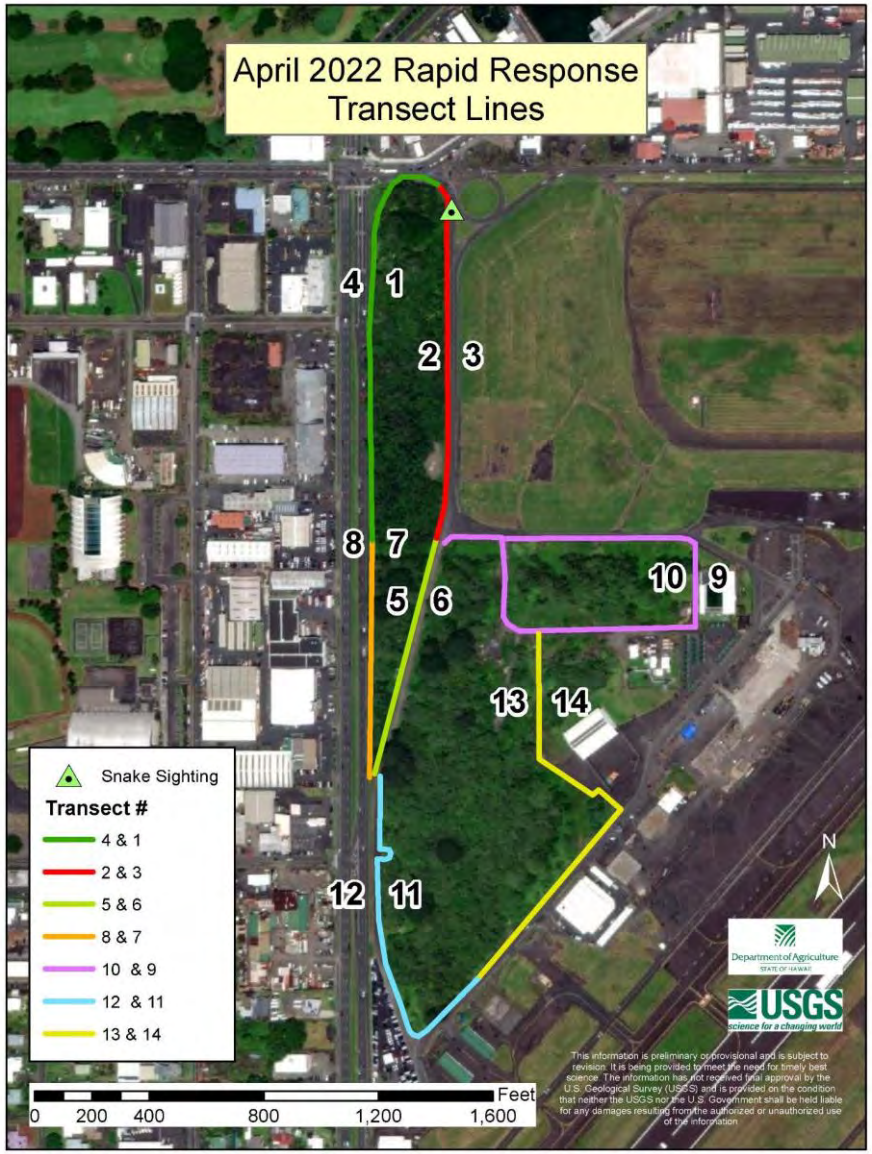
Answers	Count	Percentage
Good	59	71.08%
Added	12	14.46%
Changed	12	14.46%

Answered: 83 Skipped: 0

https://survey123.arcgis.com/surveys/bc166f7b848940c2b267ea0adde11332/analyze?position=0.potato&chart=0.captured_anything.{"type":"wordClo... 1/2

Transect Line Map

Transect lines were set up by USGS personnel and used for night surveys and data collection. Surveys were done each night for 19 consecutive nights. All transect survey data was collected by USGS. Transect survey data collected was recorded using USGS data record keeping.



Other PQB GIS Programs

Coqui Survey and Data

- PQB has been conducting Coqui searches for reports of Coqui frogs on Oahu.
- Examples of capture locations and numbers are NOT REAL. Location and numbers are for Expo presentation.

Frog capture

Field Maps and Survey 123

- Field Maps are used to collect capture data and locations
  - Frog Capture Location
  - Date of Capture
  - Time of Capture
  - Weather Conditions
  - Other physical data related to the single capture

- Survey 123 is used to collect response data
  - Response Date
  - Response Location
  - Location Data (names, addresses, phone numbers)
  - Amount Captured
  - Other data for each response.

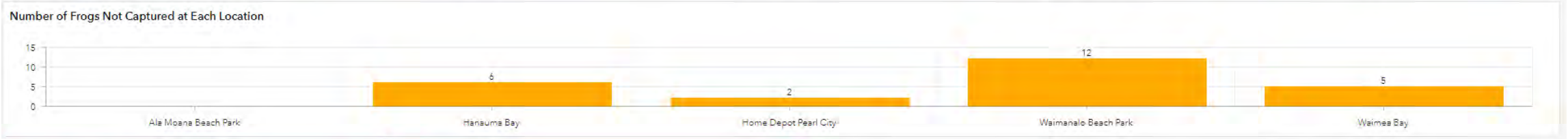
Dashboards

- A Dashboard is created to keep a running total of the response data.

- The following is an example of a coqui response dashboard. The dashboard does NOT contain actual data. It is an example.

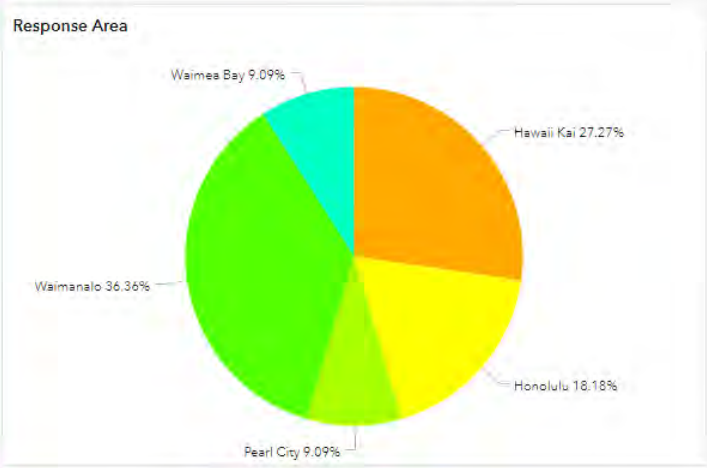
Number of Responses to Each Location
6
4
2
0
2
3
1
4
1
Ala Moana Beach Park
Hanauma Bay
Home Depot Pearl City
Waimanalo Beach Park
Waimea Bay

Number of Frogs Captured
30
20
10
0
3
9
0
19
2
Ala Moana Beach Park
Hanauma Bay
Home Depot Pearl City
Waimanalo Beach Park
Waimea Bay


Number of Frogs Not Captured at Each Location
15
10
5
0
6
2
12
5
Ala Moana Beach Park
Hanauma Bay
Home Depot Pearl City
Waimanalo Beach Park
Waimea Bay

Number of Frogs Captured
33

Number of Responses
11


Response Area
Waimea Bay 9.09%
Hawaii Kai 27.27%
Waimanalo 36.36%
Honolulu 18.18%
Pearl City 9.09%

Total OT Hours
52

HDOA PQB Brown Tree Snake Programs

- BTS traps at Daniel K Inouye International Airport and Hickam Air Force Base
- BTS Flights Cargo Inspection and Dog Handling Program
- Hickam AFB Fence Line Searches
- HDOA PQB BTS Employee Training Program.

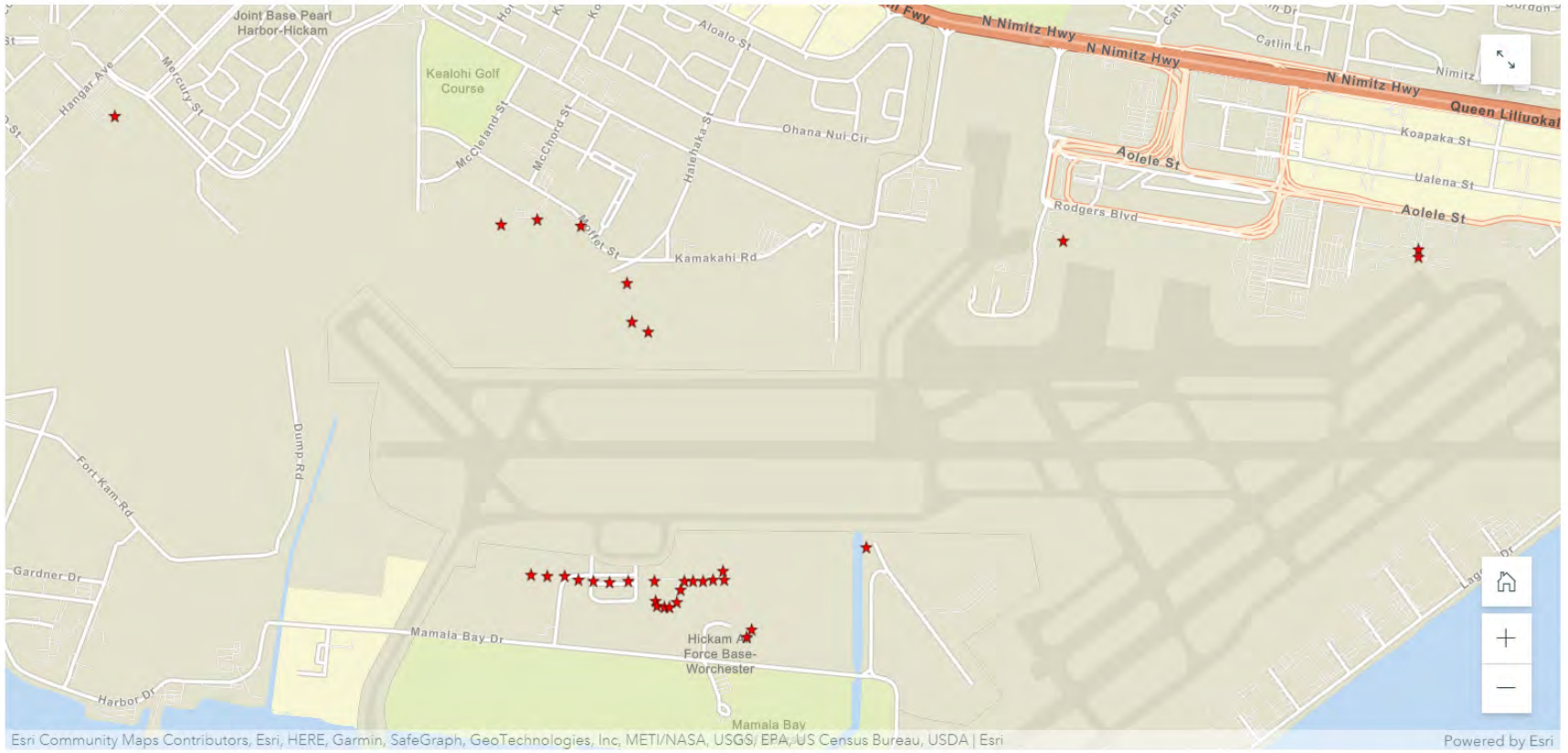
BTS Traps at DKIIA and Hickam AFB

Brown Tree Snake Program (Hogan 2015)

Brown Tree Snake Traps

- The BTS traps are placed in strategic locations around the DKIIA and Hickam AFB and serviced three time a week
- All service data is collected using Survey 123

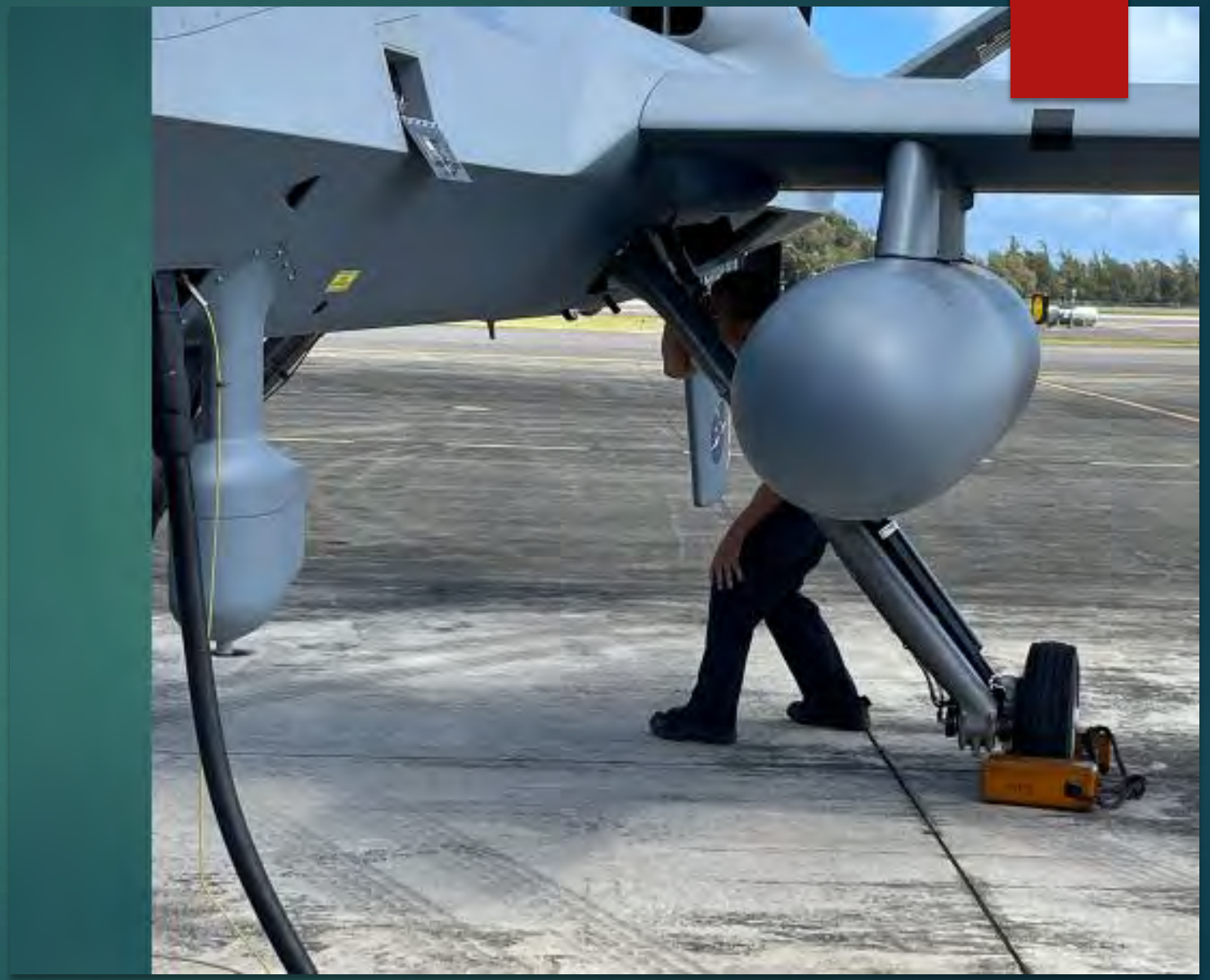
BTS Trap Locations



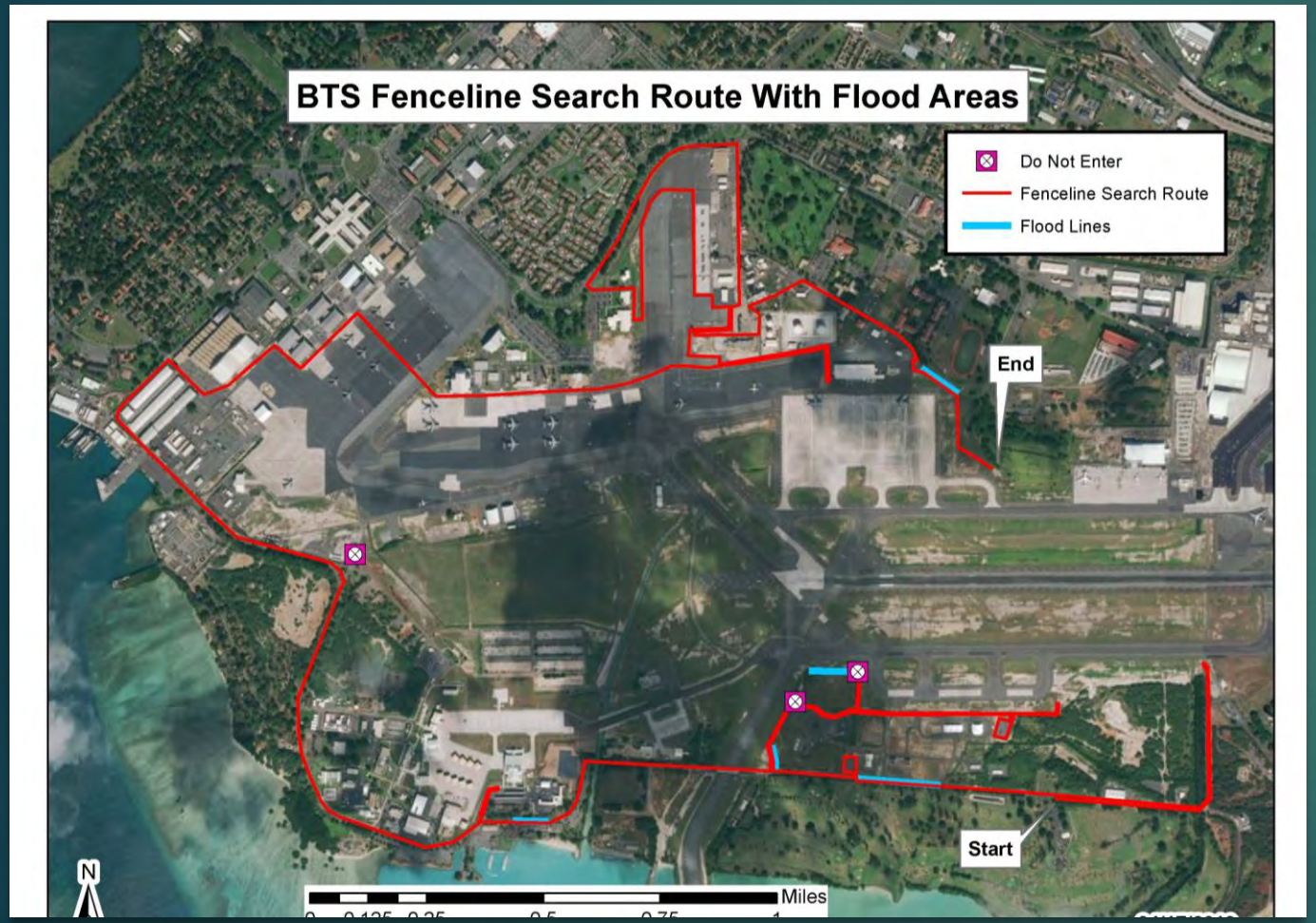
DKIIA & Hickam BTS Traps

BTS Flight Inspections

- The BTS flight inspections are for cargo, aircraft, and vehicles originating from known BTS locations. These inspections may include our BTS trained dogs.
- Inspection data is collected using Survey 123



Fence Line Searches



HDOA PQB BTS Employee Training Program

- The BTS training program is for PQB employees and consists of two sections.

  1.Oahu: for BTS classroom sessions and search preparedness

  2. Guam: for hands on handling and capture.

Snake in grass Guam

BTS capture data is collected using Field Maps. Field Maps is able to collect data offline when there is no cell coverage and upload to the server once a connection is established.

Invasive Species

Field Maps are used to collect points where invasive species are captured. Additional data such as trap locations for invasive species can also be taken.

If there is a report of an invasive species such as a skunk, PQB can use GIS to check on past data and prepare a response.

Skunk Captured at Honolulu Pier

- June 22, 2022

Department of Agriculture

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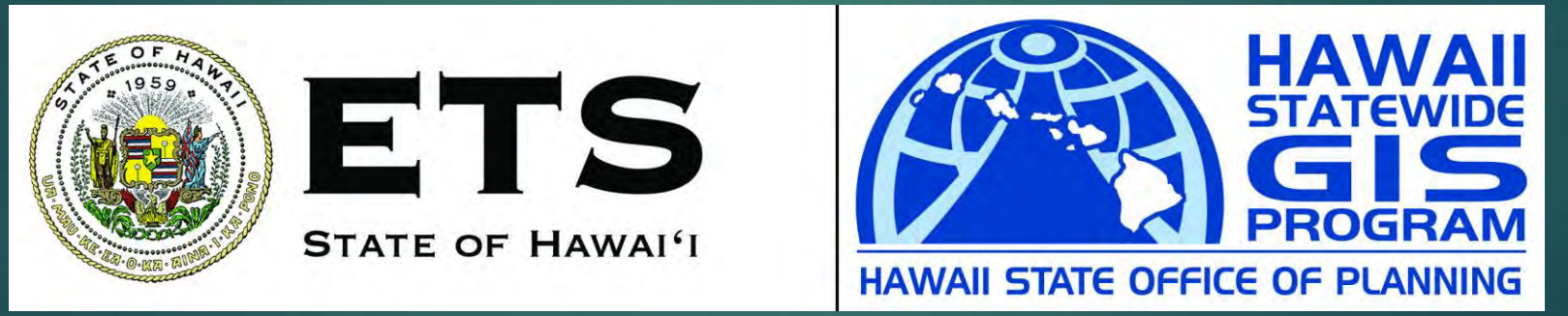

Arthur Buto, Joan Delos Santos, & Christine Chaplin