

PRESENTED BY LUIS CRESPO  
SOUTHEASTERN PUERTO RICO  
PROJECT TEAM LEADER  
AMIGOS DE LAS TORTUGAS  
MARINAS, ATMAR INC.

2024 WIDECAST AGM



# UAV-DRONE FOR NIGHT PATROLS

# WE ALL “TORTUGUEROS” KNOW THAT NIGHT PATROLS:

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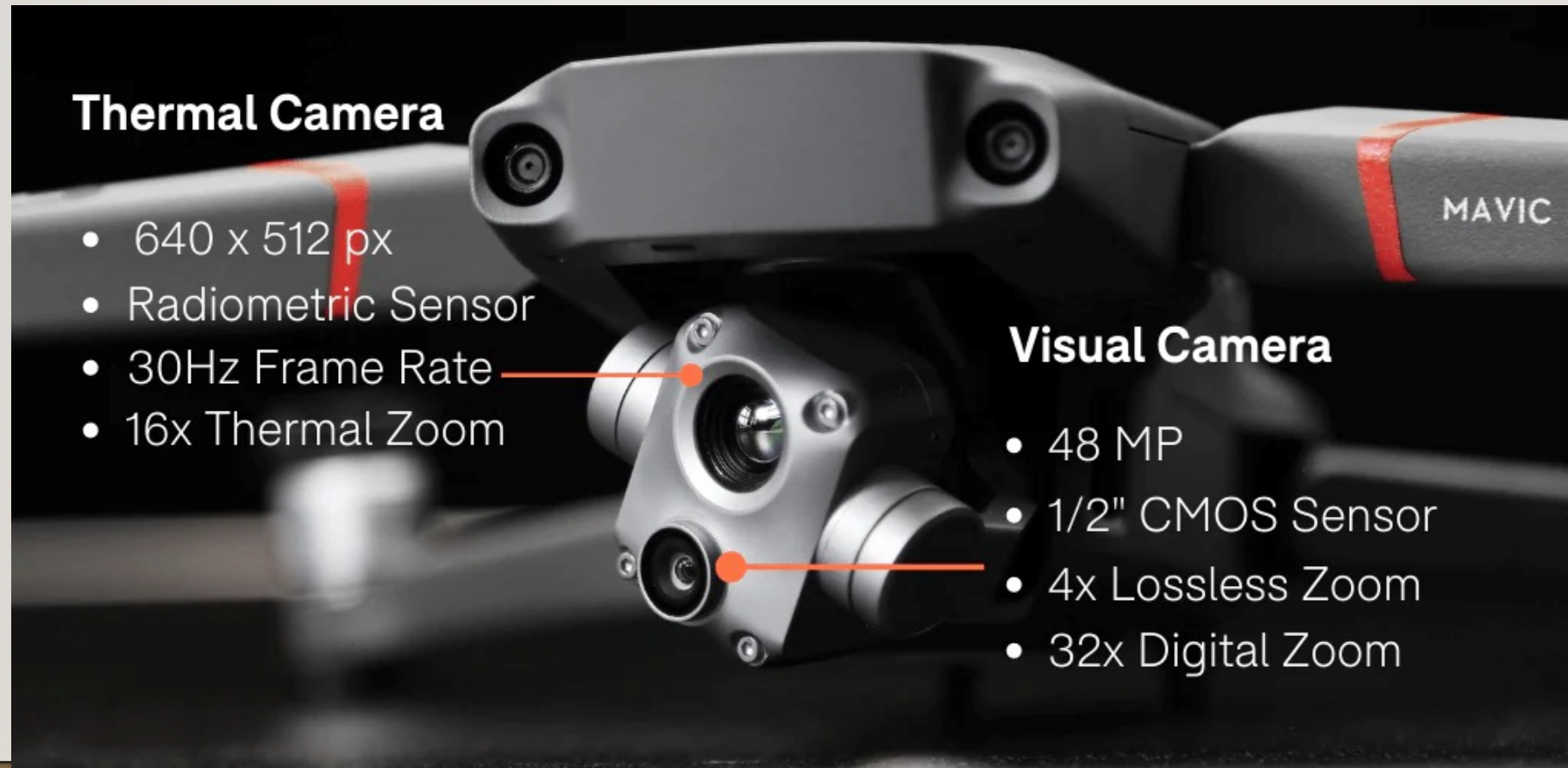
- Present security issues to personnel on the beach.
- Is a physical demanding activity.
- Sometimes we don't have enough personnel or volunteers.
- We use vehicles like ATVs, but it also present some issues:
  - Noise
  - Impacts on the beach
  - Vehicle maintenance

And then someone said: let use a drone, and they saw that the drones are good... and they keep to use drones but...



# DRONE MODEL USED IN OUR PROJECT

## DJI MAVIC 2 ENTERPRISE ADVANCED DUAL







## WHAT IN THE BOX:

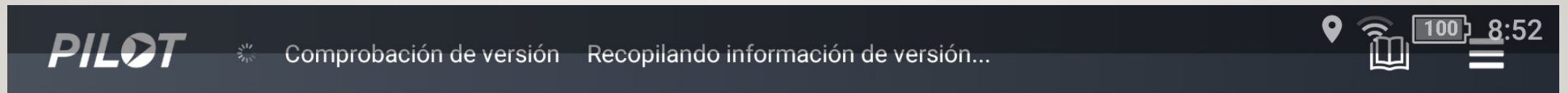
- Protective carrying case
- Controller
- Blades
- Battery & charger
- Beacon
- Speakers
- Spotlight

Extras needed: we use 5 batteries

- Fly more kit
  - 2 batteries
  - Multi battery charger
  - Blades



# LET SEE SOME SCREENSHOTS FROM THE CONTROLLER

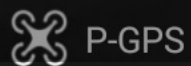


- Control remoto conectado.

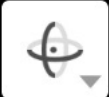




In Flight (GPS)



30:25



IR 1X



FFC

DIVIDIR

VISIBLE



IR x1



2X

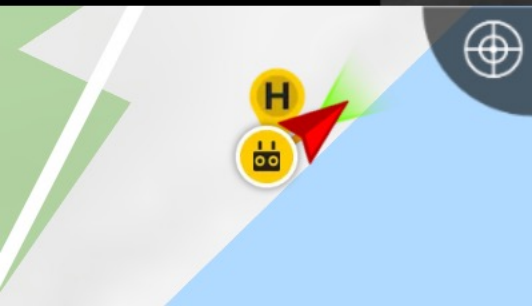
VISIBLE 1.0X

MENU

-15



00:00:00



D 42m

A 19.3m

V. H. 0km/s

V. V. 0km/s

SD 05:51:12

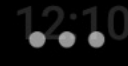
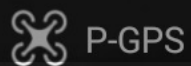
NE 052°

+17.983040, -65.906981

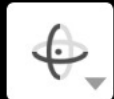




In Flight (GPS)



29:37



IR 1X



FFC

DIVIDIR

VISIBLE

+

IR x1

-

+

2X

VISIBLE 1.0X

-

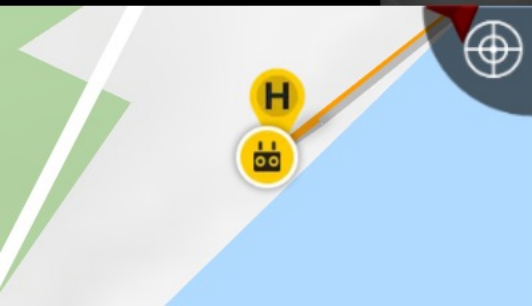
MENU



-15



00:00:00



D 171.5m

A 19.3m

V. H. 0km/s

V. V. 0km/s

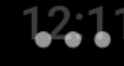
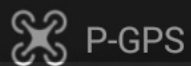
SD 05:51:12

NE 044°

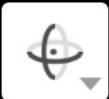
+17.983787, -65.906036



In Flight (GPS)



29:15



IR 1X



FFC

DIVIDIR

VISIBLE

+

IR x1

-



2X

VISIBLE 1.0X

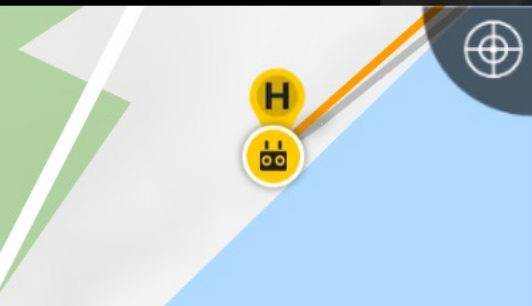
MENU



-15



00:00:37



D 301.4m

A 19.2m

V. H. 0km/s

V. V. 0km/s

SD 05:50:22

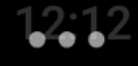
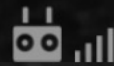
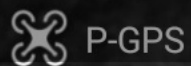
NE 044°

+17.984628, -65.905173

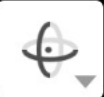




In Flight (GPS)



25:35



IR 1X



FFC

DIVIDIR

VISIBLE

+

IR x1

-

+

2X

VISIBLE 1.0X

-

MENU



00:02:20



-90



H

SD

D 349.1m

A 18.2m

V. H. 0km/s

V. V. 0km/s

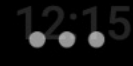
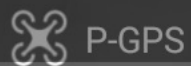
SD 05:48:09

N 350°

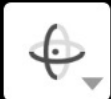
+17.984919, -65.904842



In Flight (GPS)



22:15



IR 1X



FFC

DIVIDIR

VISIBLE



IR x1



2X

VISIBLE 1.0X

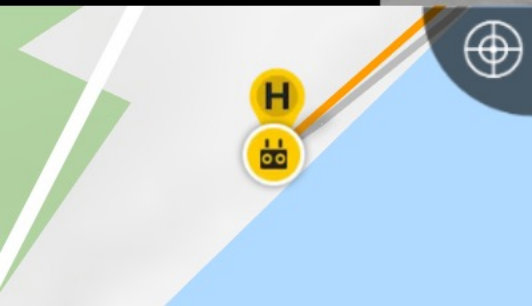
MENU



00:00:39



-90



H



D 347.6m

A 4.5m

V. H. 0km/s

V. V. 0km/s

SD 05:45:47

N 343°

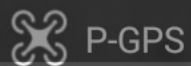
+17.984898, -65.904839



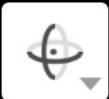




In Flight (GPS)



19:34



IR 2X



78,4°F

DIVIDIR

VISIBLE

+

IR x2

-

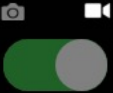
+

2X

VISIBLE 1.0X

-

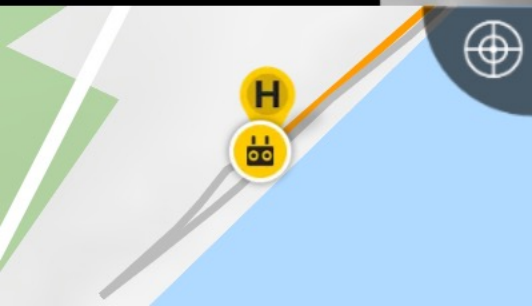
MENU



00:00:20



-67



D 593.8m

A 8.3m

V. H. 0km/s

V. V. 0km/s

SD 06:17:45

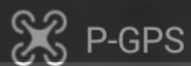
NW312°

+17.986343, -65.903067





In Flight (GPS)



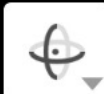
HD 2.4G

67%

88

12:07

19:22



IR 2X



FFC



84,3°F

DIVIDIR

VISIBLE

+

IR x2

-

+

2X

VISIBLE 1.0X

-

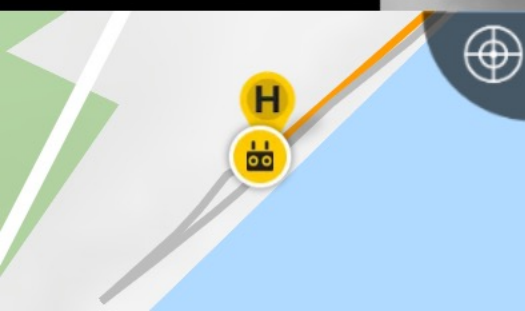
MENU



00:00:30



-67



D 593.9m

A 8.2m

V. H. 0km/s

V. V. 0km/s

SD 06:17:33

NW312°

+17.986344, -65.903067

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**LET SEE SOME VIDEOS**





















# ADVANTAGES

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- Easy of use and low maintenance.
- Detect turtles faster than walking volunteers.
- More time to work with the turtle.
- Identify the stage of nesting process.
- Can detect metal markers and transmitters.
- Can detect some scars and injuries.
- Know the distance from landing site and the turtle.
- Identify possible predators and poachers.
- Possibilities for research.



# DISADVANTAGES

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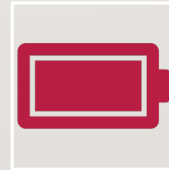
- Can't fly in the rain



- Can't fly with strong wind, our drone 18 km/h



- Batteries are a limiting factor



- Cost, our drone cost was \$8,300



- Backup method needed- walk, ATV...



## RECOMMENDATIONS

Be sure to comply with local law.



Always have a Visual Observer-VO.



Don't fly over people.



Don't fly too low or too high, we use 20 m altitude, but it depends on characteristics of the beach.



Don't fly too fast, we fly our UAV 13-16 km/h(10 mph)

When flying low and close over the turtle turn off navigational lights and keep the drone behind the turtle out of her vision zone.

Practice, don't fly the UAV at night on the beach until you are confident using it.

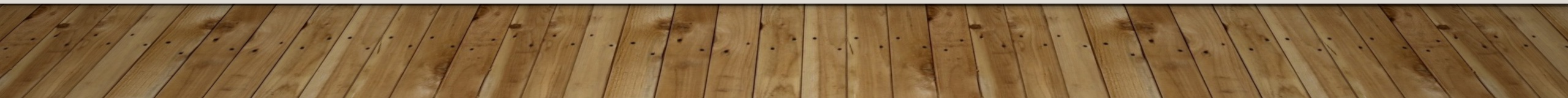
Always check weather radar before each flight.



# SOME U.S.A FAA REQUIREMENTS

- 
- Register your drone with FAA.
  - License: Trust(recreational) or Commercial.
  - For night flights a beacon visible from 3miles is mandatory.
  - Remote ID signal compliance- is like and electronic drone license plate.







2023-05-15 20:52:44  
-65.90469 +17.98504



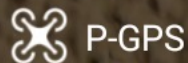








In Flight (GPS)

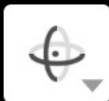


HD 5.8G

89%



27:21



2023-06-28 08:06:13  
+18.084101 -65.796824

DIVIDIR

IR

VISIBLE 4.0X

ISO  
100

Shutter  
1/500

EV  
0



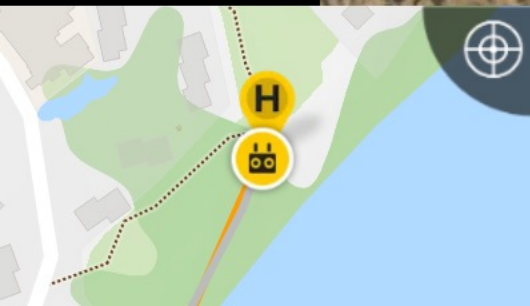
MENU

8X

VISIBLE  
4.0X

-53

2X



D 391.8m

A 24.6m

V. H. 0km/s

V. V. 0km/s

SD 9243

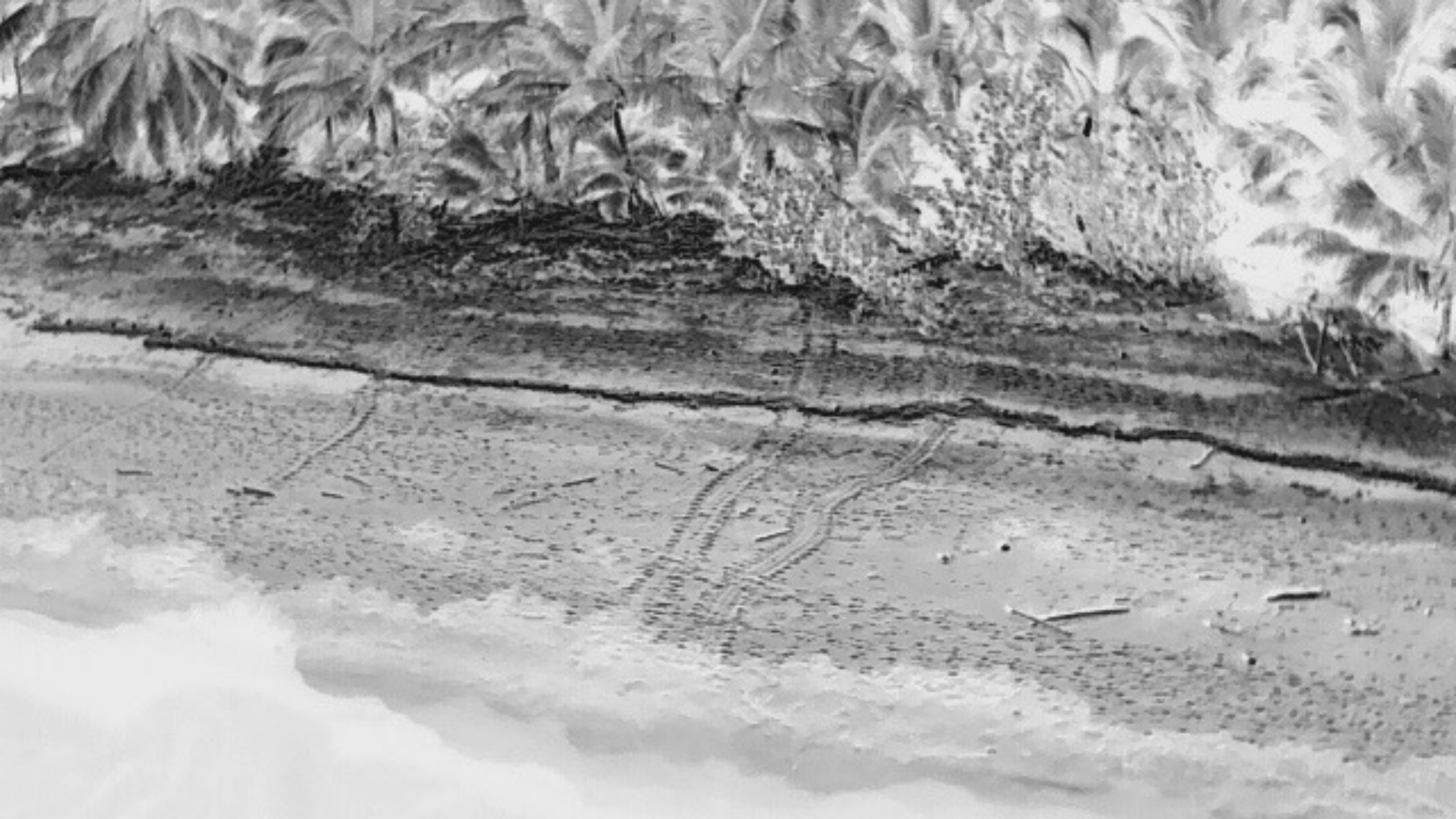
SW 204°

+18.084101 , -65.796824















## THANKS TO:

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- The acquisition of this UAV was possible thanks to a grant from Marine Conservation Action Fund(MCAF) at the New England Aquarium.

Marine Conservation  
Action Fund at



**New England  
Aquarium**

*Protecting the blue planet*