

# ONE, TWO, THREE. WE'RE COUNTING MANATEES!

## USING DRONES TO IMPROVE MANATEE SYNOPTIC SURVEY ACCURACY

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### Situation

The Florida Fish and Wildlife Conservation Commission (FWC) uses airplanes to monitor Florida's manatee population.

- Data gaps along Springs Coast.
- Expensive to conduct.
- Poor quality images.

### Objective

By utilizing drones for manatee counts, we will increase count accuracy by 50% and reduce costs by 80%.

### Methods

December 2019 through March 2020:

- Three drone flights conducted after cold fronts.
- Drone was flown at an altitude of 150-250 feet during survey.
- Flights recorded and manatees counted on desktop computer.



Figure 1: Enhanced image to better show scars of manatee.

Using sUAS (drones) to monitor manatee populations is more cost effective and creates a higher degree of accuracy.

### Drone Flights:

- 251.6% increase in count accuracy
- 567.9% decrease in cost

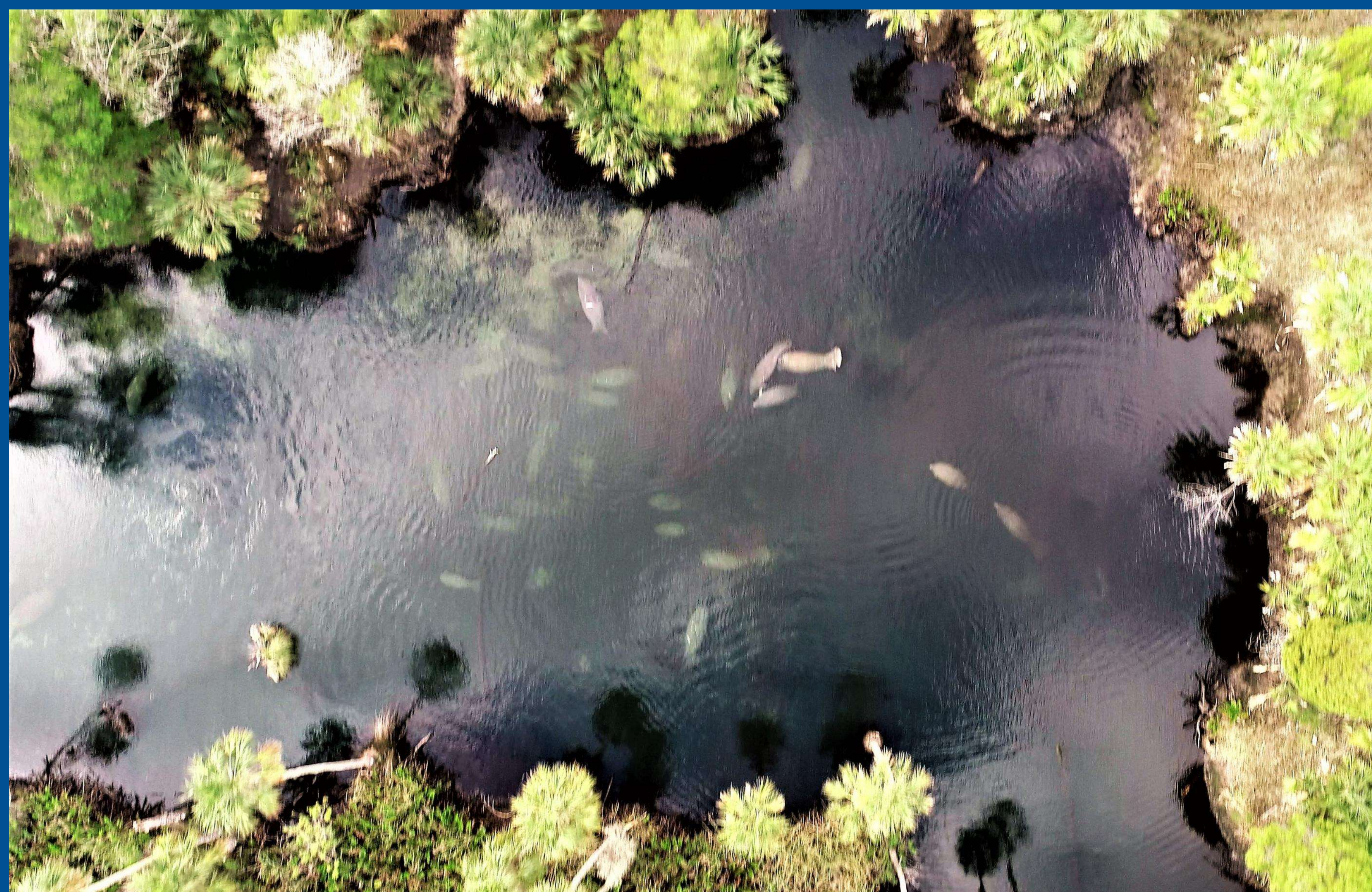


Figure 2: Spring-head of Jenkins Creek. This one image shows ~35 manatees congregating after a cold front.

### Results

- The average count (n=13 manatees) using traditional airplane surveys is significantly different than the average count employing drones (n=45 manatees) for the same area (pvalue=0.0003; t-test). Figure 2.
- Cost savings of \$2,338 when compared to traditional surveys.
- Identifying marks were clearly documented on most manatees captured on drone footage. Figures 1&3.



Figure 3: Enhanced image to better show scars of manatee.

### Discussion

More manatees were counted by using drones and at a lower cost than airplane surveys. While we could not do a direct comparison to 2020 data this demonstrates a promising utilization of technology to achieve both cost effectiveness as well as improving accuracy. The high image quality that leads to the ability to identify individual manatees was a pleasant surprise of this research.

