

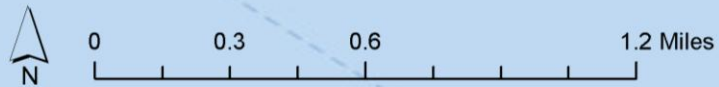
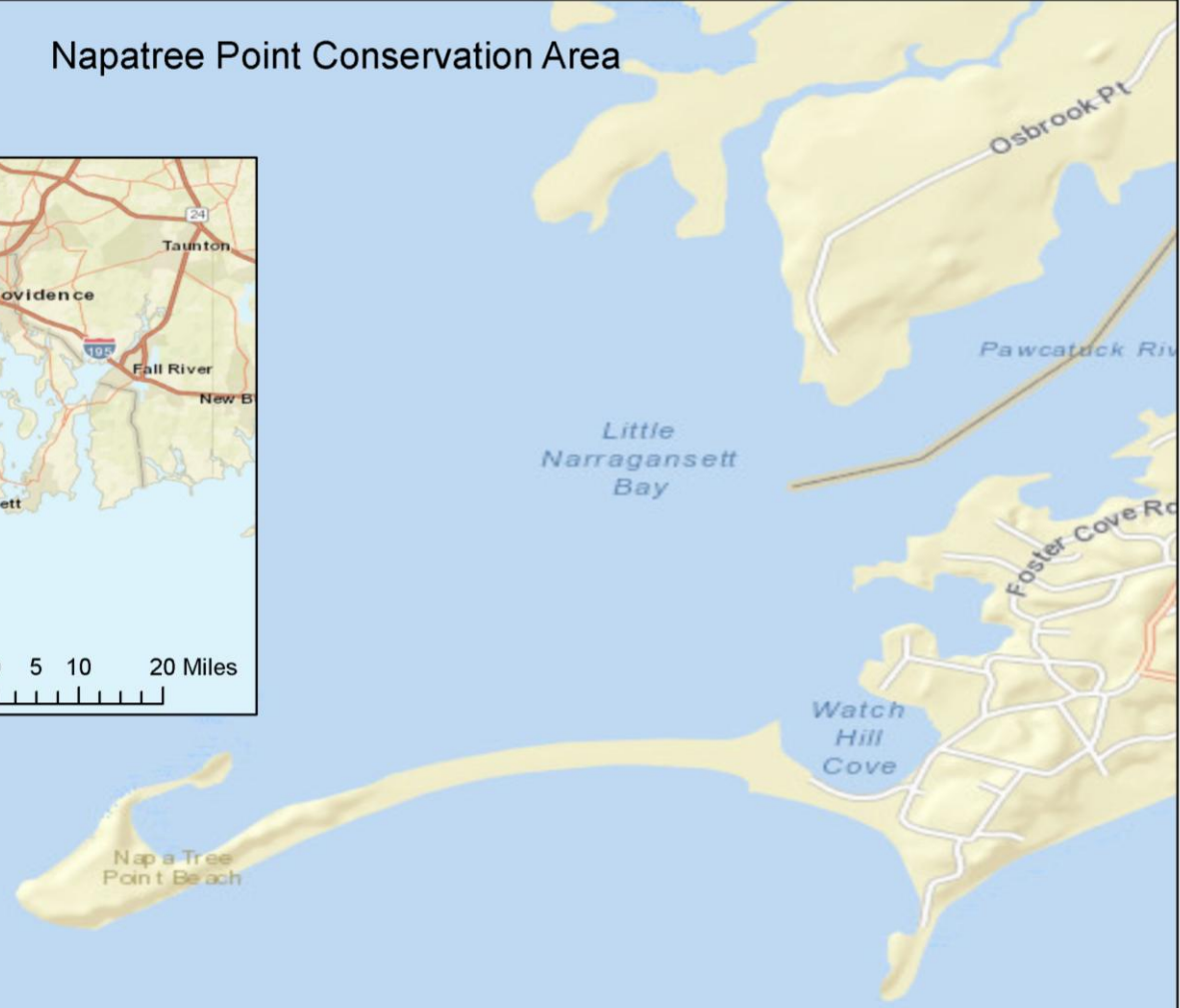


Utilization of a Small UAS for Natural Resources Mapping

UNIVERSITY OF RHODE ISLAND ENVIRONMENTAL DATA CENTER



Napatree Point Conservation Area



Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors,



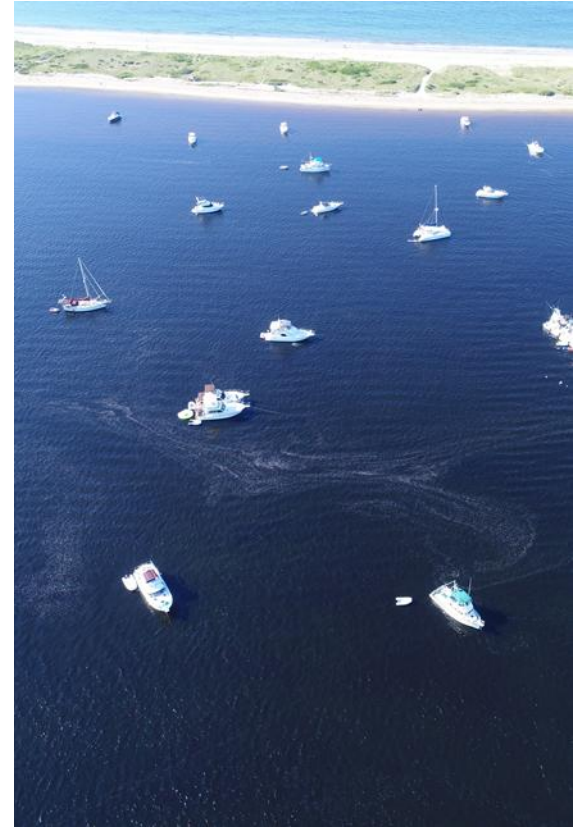
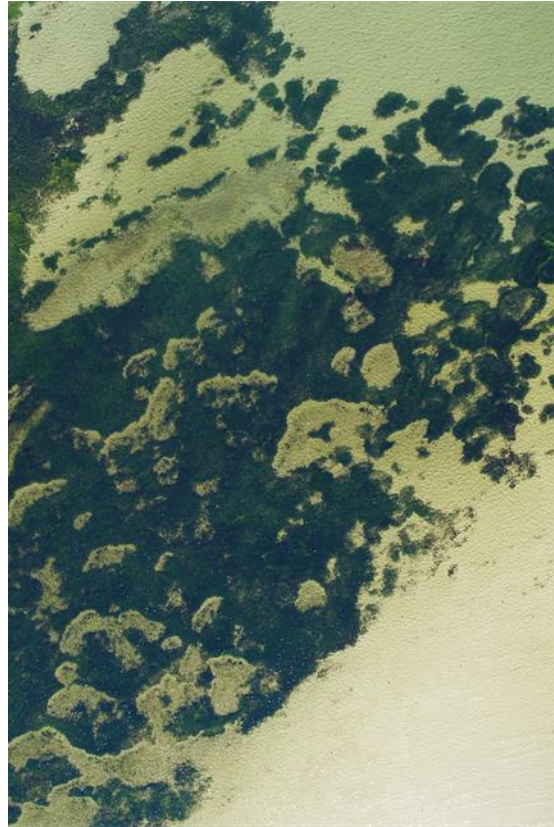
Oystercatcher



Least Tern



Piping Plover



Project Missions

Consumer vs Commercial UAS



Image sources: <https://www.newswire.com/news/gdu-launches-advanced-byrd-worlds-only-folding-and-modular-consumer-15219214>
and <https://www.landviewdrones.com/copy-of-firefly6-sl2p-1>,

DJI Phantom 4 Pro

- Camera
 - 1" CMOS sensor
 - 84° FOV
 - 20 MP
 - 4K video
- Aircraft
 - Max flight time – 30 min
 - Max speed – 45 mph
- Cost
 - ~ \$1,400





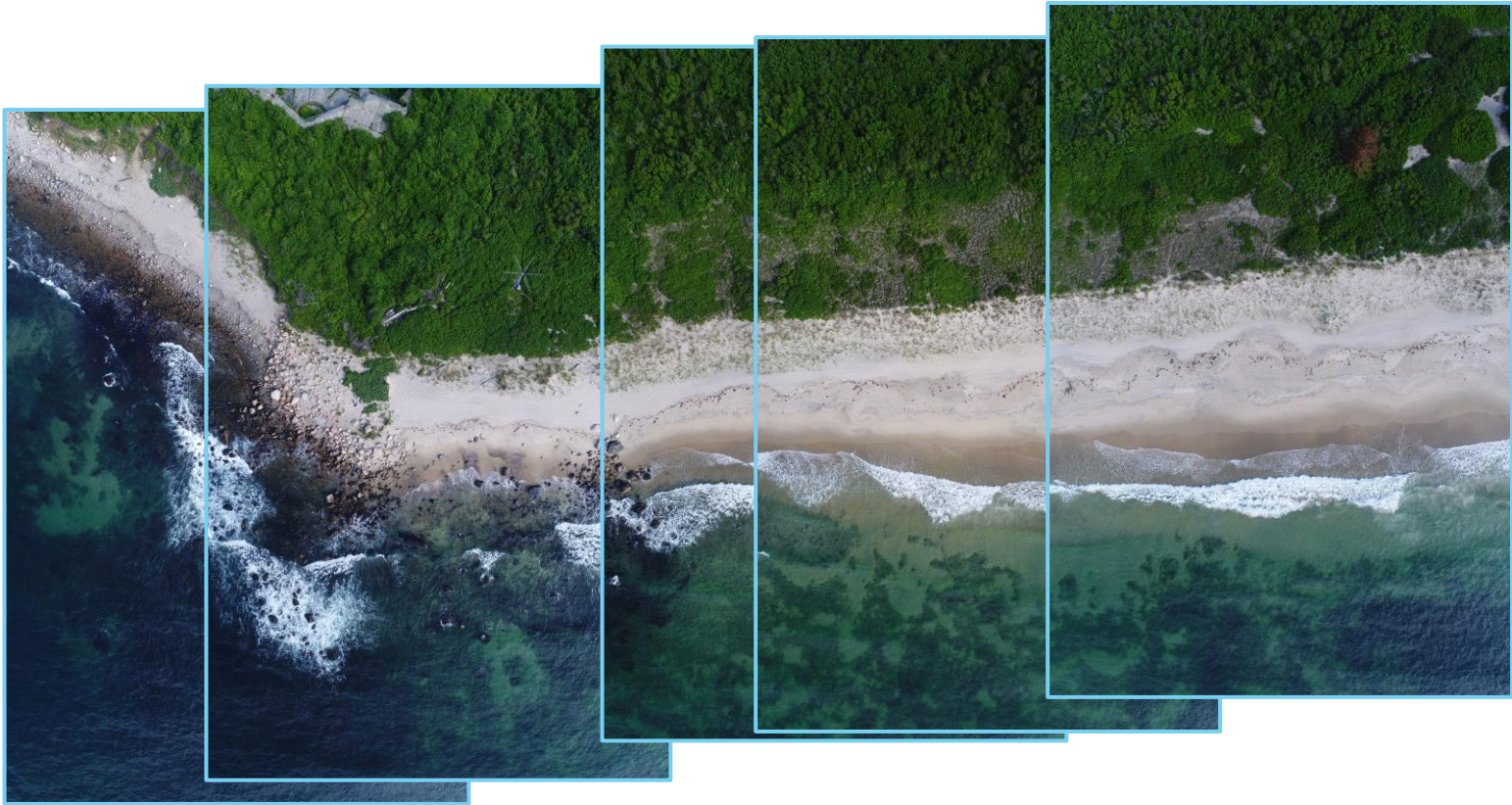
Controlling the Phantom 4 Pro

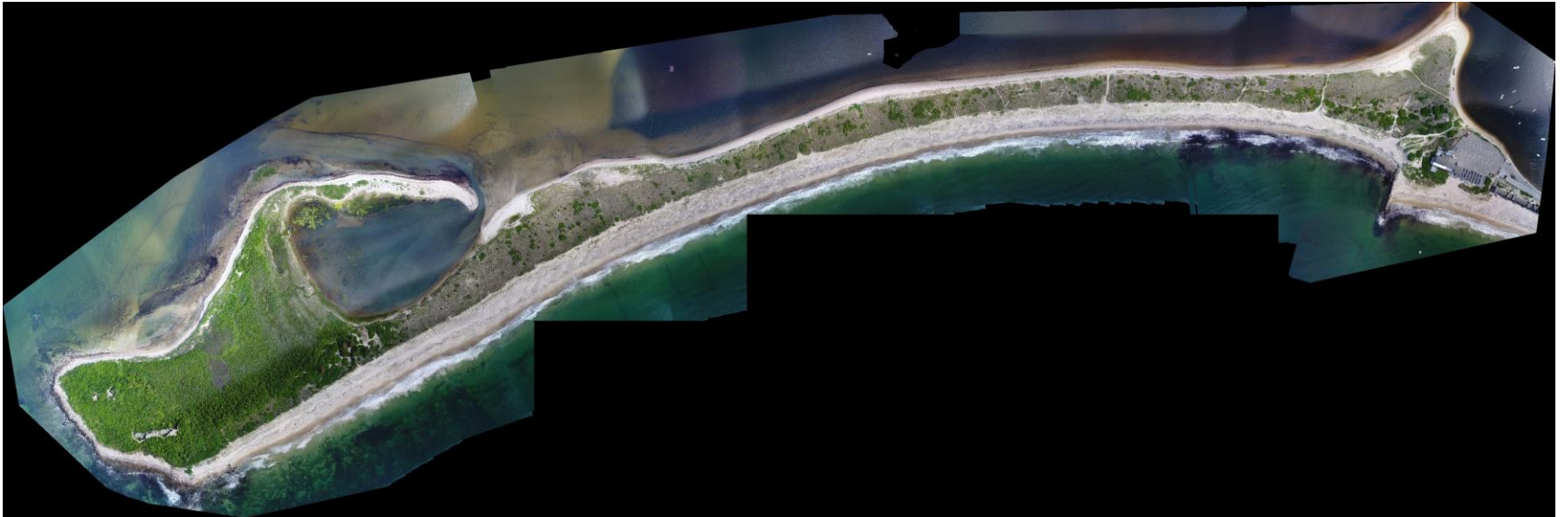
Images: 606
Points: 2302
Storage: 3.02 GB



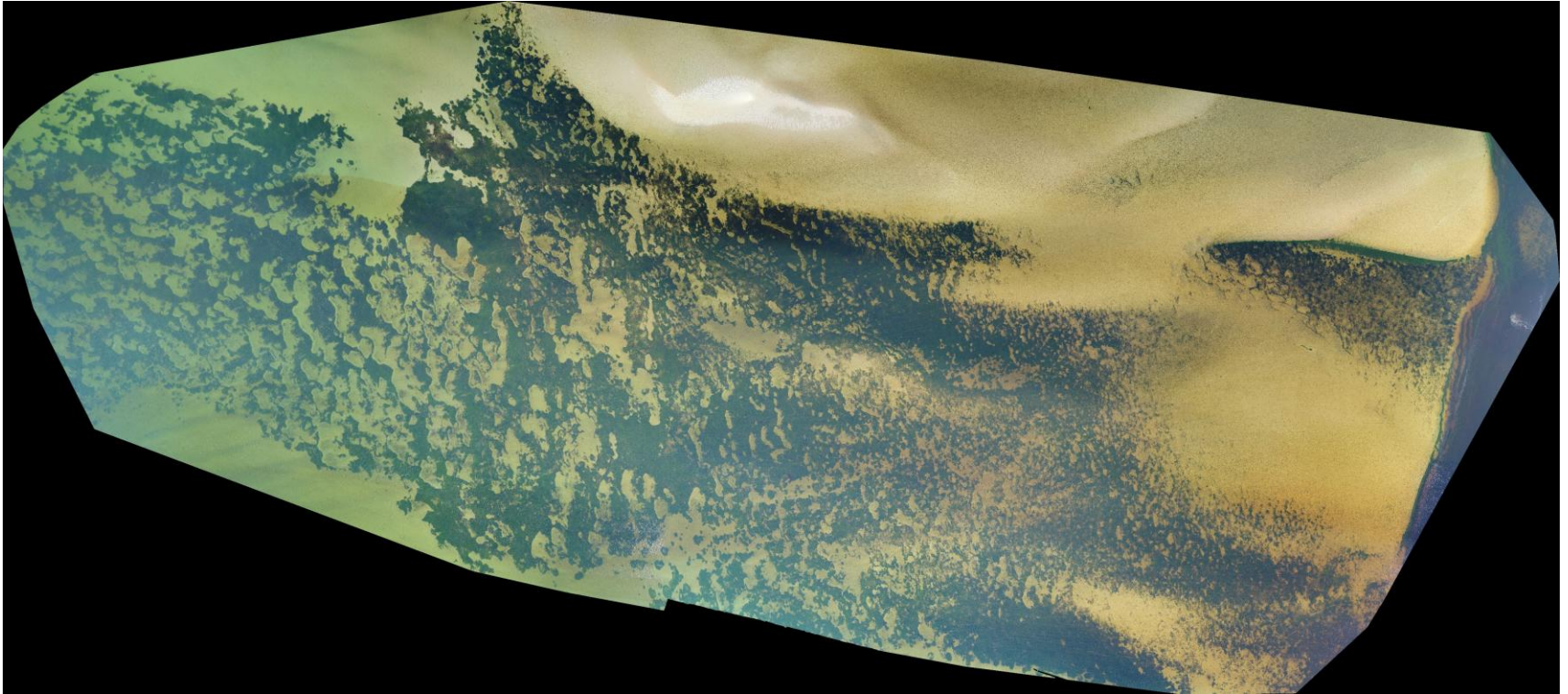
Linear Top Down Mission for Baseline Mapping

Individual Images

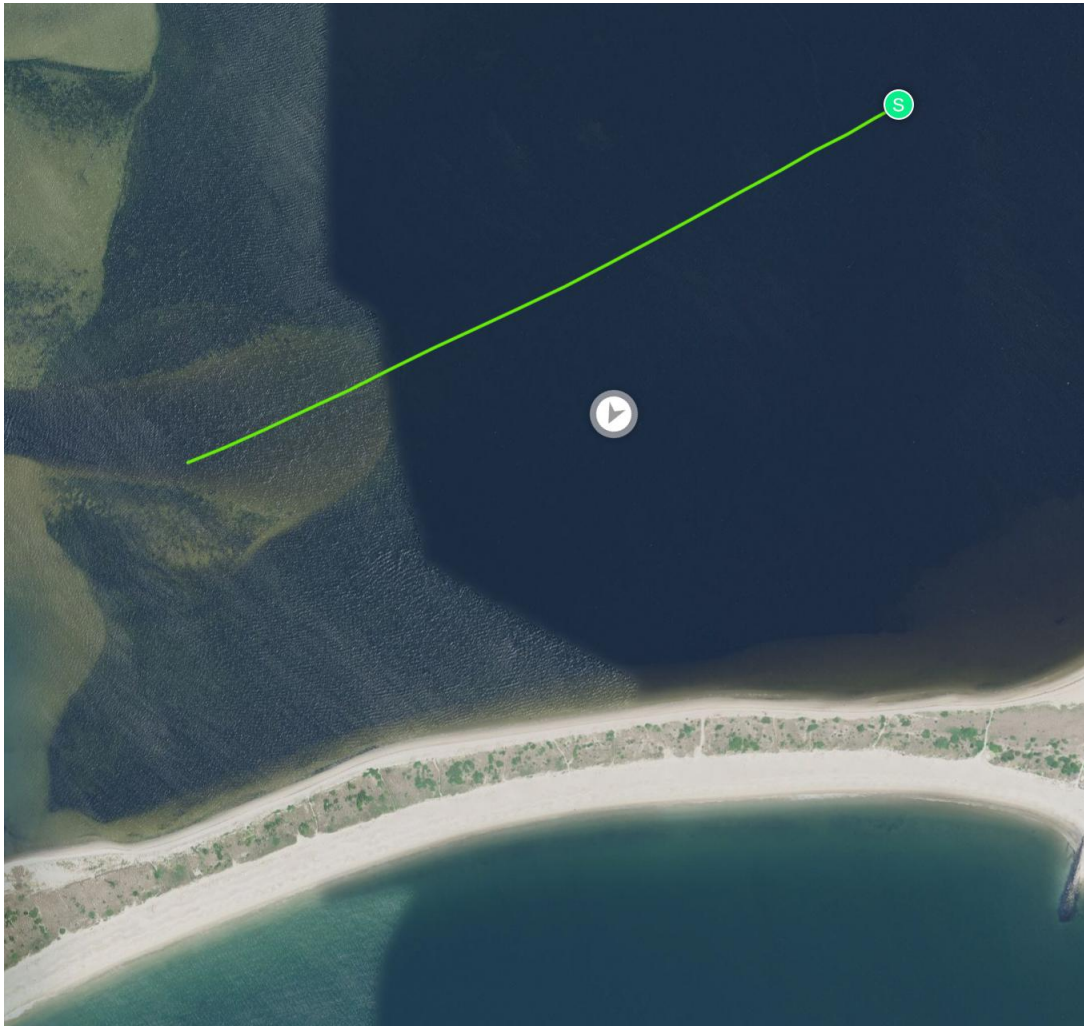




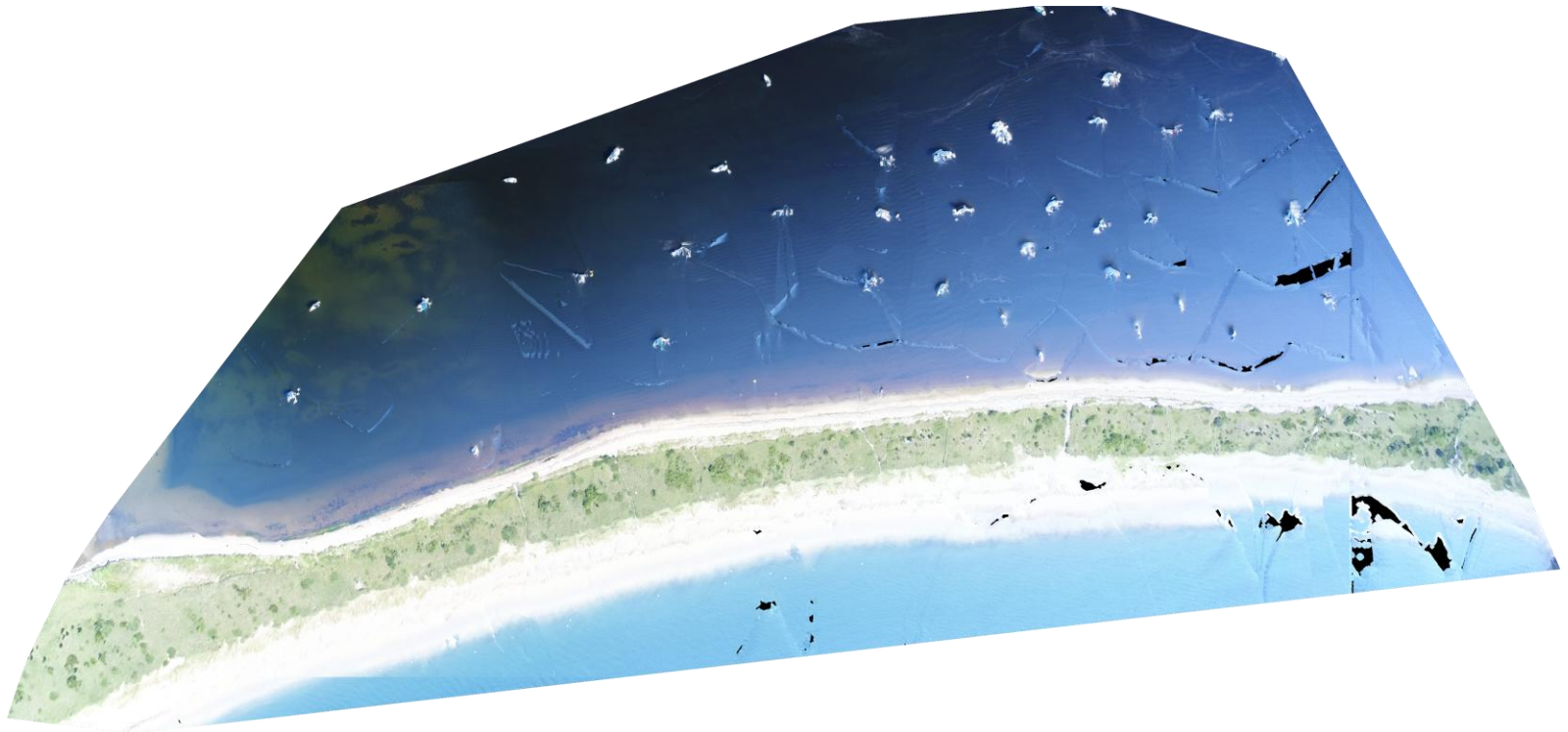
Orthomosaic Generated by Pix4Dmapper



Orthomosaic Generated by Pix4Dmapper



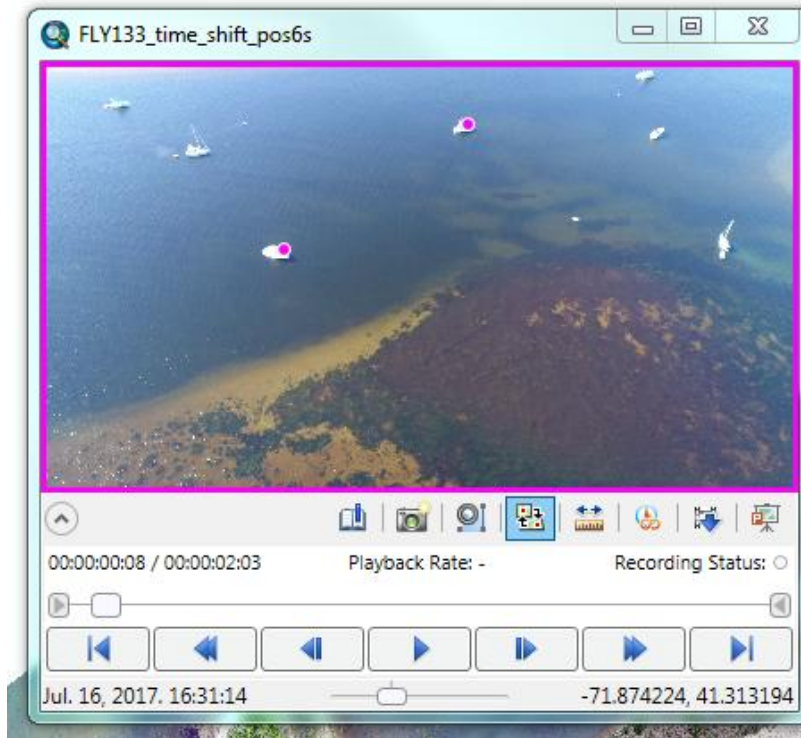
Oblique Missions for Boat Anchorage Mapping



Orthomosaic from Oblique Images

UNIX Time Stamp	Heading	Pitch	Roll	Sensor Latitude	Sensor Longitude	Altitude	Horz FOV	Vert FOV	Azimuth	Camera Angle	Yaw
1500222660000000	174.8404585	0	0	41.31419382	-71.87500671	109.232765	72	57	0	-40	0
1500222661000000	174.8374052	0	0	41.31419516	-71.87500451	109.174835	72	57	0	-40	0
1500222662000000	174.8598047	0	0	41.31419615	-71.87500423	109.11291	72	57	0	-40	0
1500222663000000	170.0287557	0	0	41.31419668	-71.87500479	109.07702	72	57	0	-40	0
1500222664000000	169.8231951	0	0	41.31419706	-71.87500566	109.1785	72	57	0	-40	0
1500222665000000	169.861275	0	0	41.31419715	-71.87500648	109.04296	72	57	0	-40	0
1500222666000000	170.3642917	0	0	41.31419713	-71.87500718	109.081215	72	57	0	-40	0
1500222667000000	172.4324385	0	0	41.31420203	-71.87500146	109.18826	72	57	0	-40	0
1500222668000000	172.6808126	0	0	41.31421072	-71.87496919	109.19713	72	57	0	-40	0
1500222669000000	173.0071691	0	0	41.31422398	-71.87490871	109.2244	72	57	0	-40	0
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1500222673000000	171.5933359	0	0	41.31431307	-71.87454121	109.29162	72	57	0	-40	0
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1500222678000000	171.4697135	0	0	41.31442174	-71.87407985	109.18641	72	57	0	-40	0

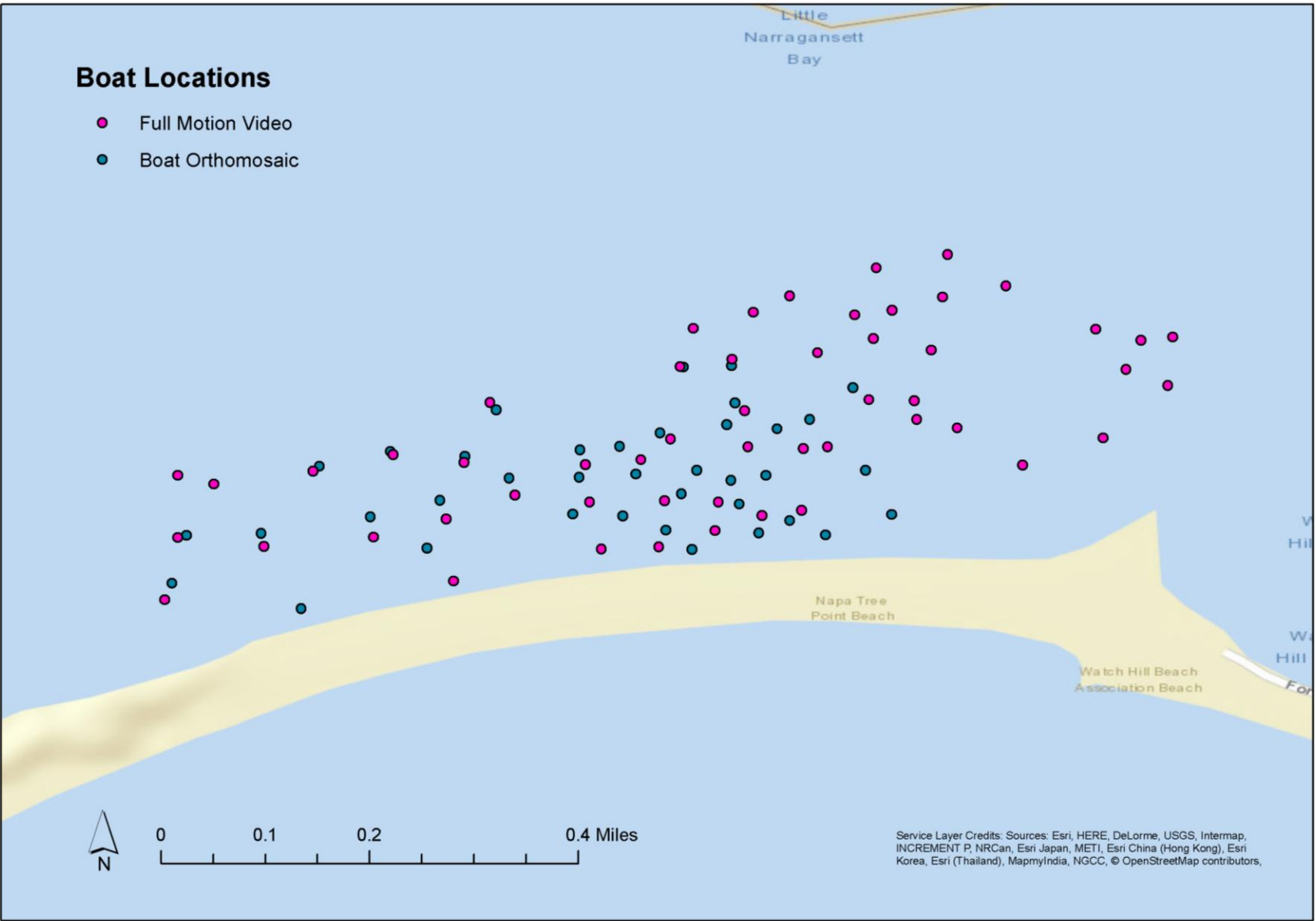
Video Metadata



ArcGIS Full Motion Video

Boat Locations

- Full Motion Video
- Boat Orthomosaic





Acknowledgements



Questions?

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