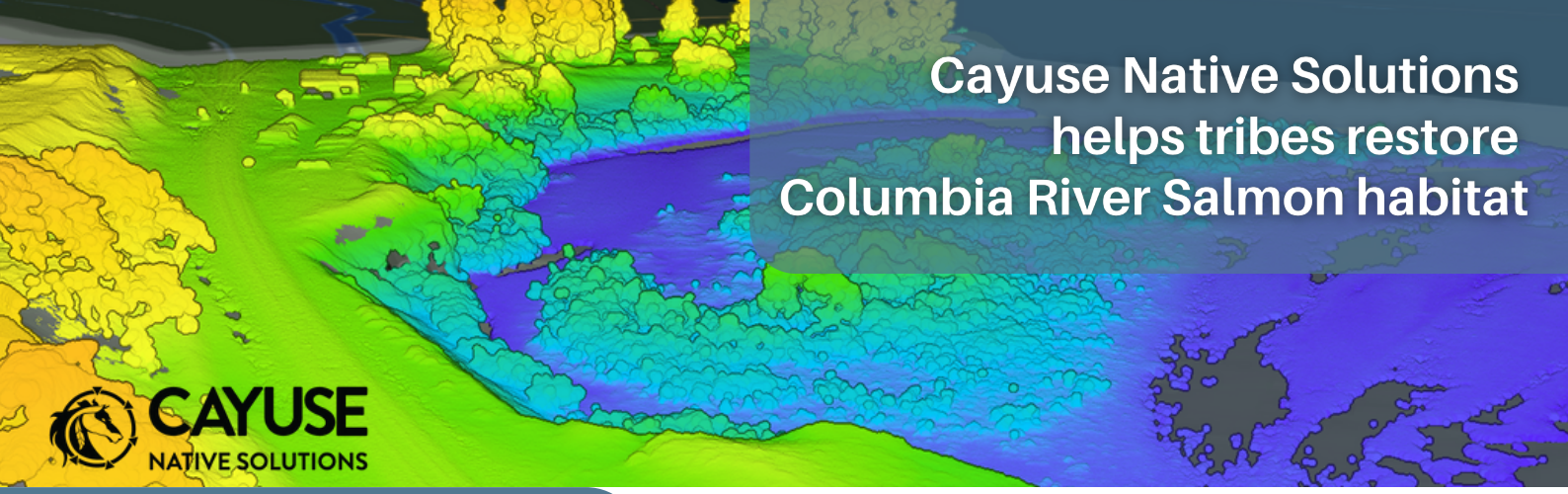


Cayuse Native Solutions helps tribes restore Columbia River Salmon habitat

THE CHALLENGE

Ongoing sediment build up threatens salmon populations by degrading habitat. Columbia River Inter-Tribal Fish Commission (CRITFC) and habitat managers at its member Tribes need useful data to make informed decisions about habitat management.

Data collected with drones helps assess the sedimentation and its impact on salmonids, Pacific lamprey and cold-water refuges at the mouth of the Klickitat River on the Columbia River.

OUR SOLUTION

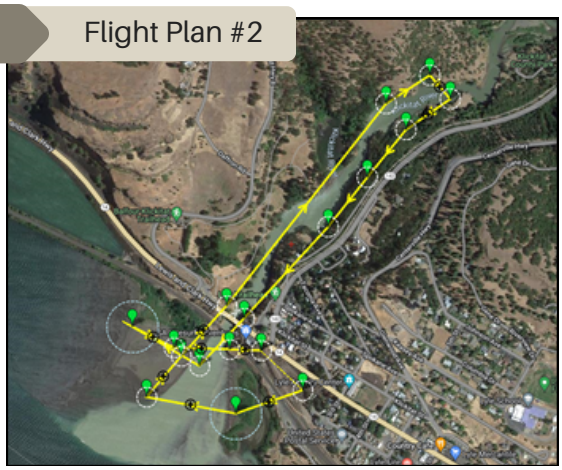
Using Unmanned Aircraft Systems, Cayuse Native Solutions collected LiDAR and imagery data of the site. Cayuse worked with CRITFC to understand the data needs and nature of the research to ensure the correct data was captured. The Cayuse drone team scouted the area and developed two flight paths to collect the needed data quickly, safely and accurately all within FAA Part 107 regulations. The data collected will support plans to reshape the delta to better support salmon survival in the Klickitat delta and upriver on the Columbia.

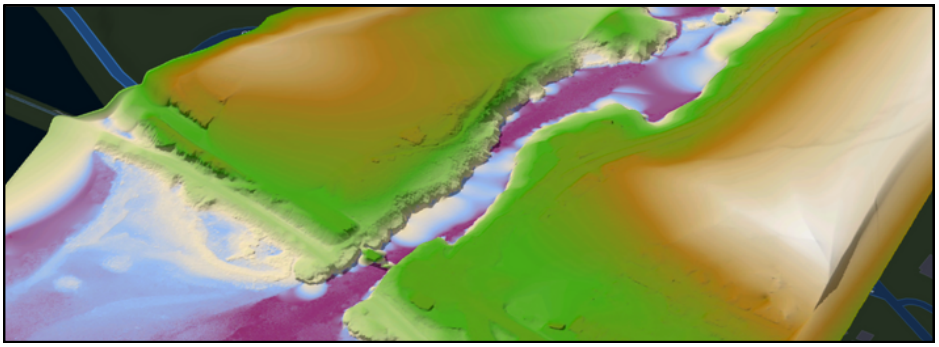
THE HIGHLIGHTS

- Using drones for LiDAR surveying allows for greater flexibility in survey timing, which was important for scheduling the survey to match low water levels on the river.
- The LiDAR data collected provides coverage of shallow areas at the tip of the delta that were missed by previous USGS LiDAR surveys that used manned, fixed-wing aircraft.
- UAS captured topography of vegetated wetlands to the east of the delta that would have been difficult to survey using boat-based methods.
- When integrated with boat-based bathymetry for deeper areas of the river delta, this shallow water bathymetry will provide a basis for modeling the current conditions in the Klickitat delta.

Flight Plan #1

Flight Plan #2





RESULTS

Cayuse provides essential data for Columbia River Salmon Restoration

7.5 G of Data Collected

3x increase in accuracy providing 43 Million+ data points

5x increase in point density compared to prior manned aircraft collected LiDAR data from 2009, providing greatly improved level of detail

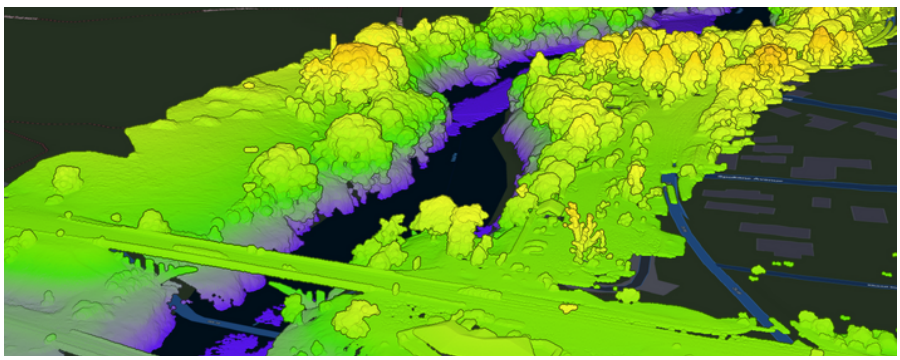
Software included Yellowscan proprietary LiDAR software and Esri ArcGIS

Total acres scanned: 100+ acres

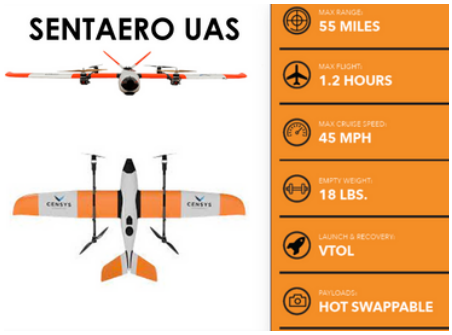
Data gathered: LiDAR based topographic survey

THE TOOLS

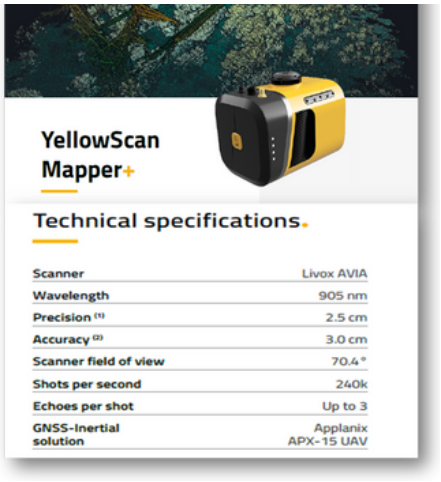
Cayuse Native Solutions was on site for less than a day flying a Sentaero fixed wing drone equipped with a Yellowscan Mapper+ LiDAR sensor over 100+ acres of rugged terrain with steep incline in rocky, treed covered terrain rising from the river. Surveying at low water with LiDAR provided a way of very efficiently capturing what is effectively bathymetry at high resolution and with less effort and cost than boat-based bathymetric surveying.



1 **Sentaero Fixed Wing Drone**



2 **Yellowscan Mapper**



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