

FISHERIES AND AQUATIC HABITAT SOLUTIONS

Skagit River, WA lidar point cloud data classified by return

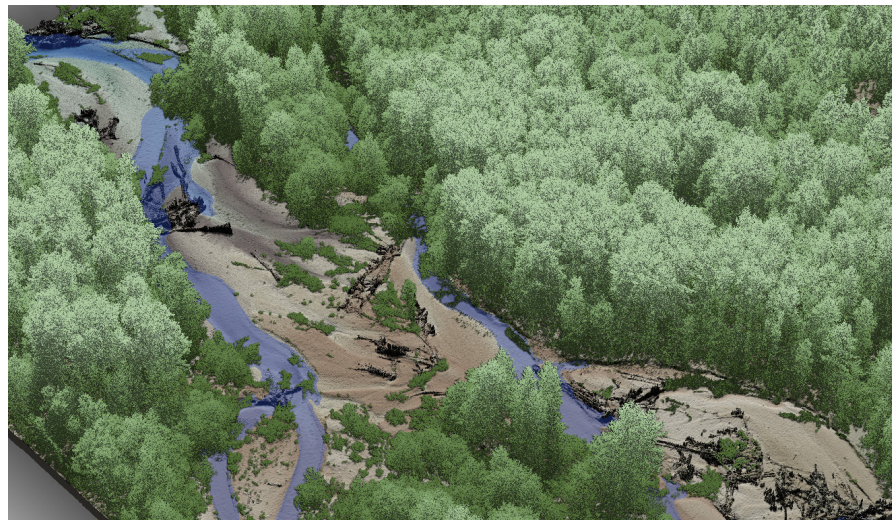
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NV5 EDGE

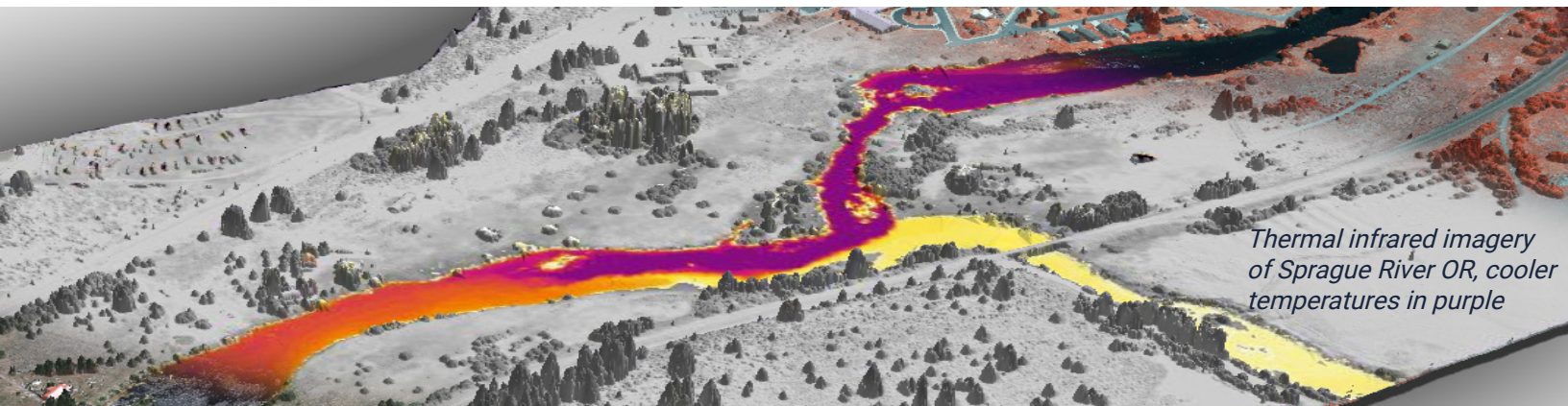
We provide invaluable expertise and consultation on the appropriate remote sensing technology, specifications, accuracy and resolution requirements, and data products for any aquatic system. Let our experience and expertise match the best technological solution to your mapping needs.

Why NV5?

NV5 offers a suite of remote sensing services and analytics that empower decision making for fisheries and aquatic science. Our bathymetric and terrestrial lidar provides unprecedented detail on floodplain geomorphology and vegetation of streams, rivers, and watersheds. Multi-spectral and hyperspectral imagery allows for detailed classification of land cover and benthic habitat. And thermal infrared imagery illustrates the in-stream distribution of stream temperature to further understand the dynamics of fish habitat.



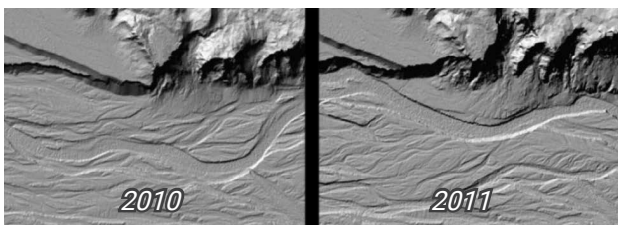
Dungeness River, WA in-stream woody debris classified from topo-bathymetric lidar



Thermal infrared imagery of Sprague River OR, cooler temperatures in purple

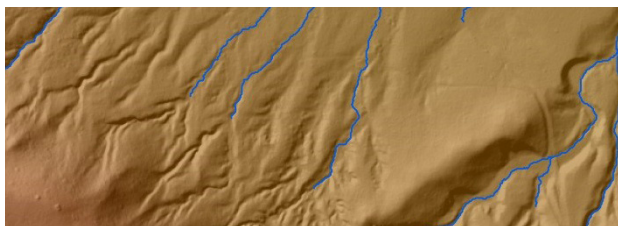
Good Data Leads To Better Decisions

APPLICATIONS



GEOMORPHOLOGY

Multitemporal lidar collection provides valuable intel the distribution and movement of sediment via erosion, deposition, incision, and slope failure. Understanding geomorphology provides valuable insight on spawning, breeding and wintering grounds for fish. Lidar collected on the Toutle River, WA (left) illustrate stark changes in the stream bank and river channel during river recovery.



CHANNEL CHARACTERISTICS

Understanding depth, pool-riffle sequence, sinuosity, connectivity, aspect, slope, flow dynamics, drift patterns, and water drainage networks is central to effective watershed-scale fisheries habitat and restoration planning. We have also developed a lidar-driven methodology to update the National Hydrography Dataset (NHD) and improve hydrologic flow modeling and stream network maps (left).



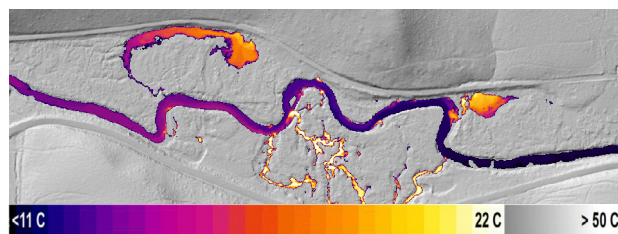
BENTHIC HABITATS

Mapping and characterizing benthic habitats (sea grass, coral reefs, oyster beds, wetlands) allows scientists and managers to identify and more effectively manage these habitats and resources. Bathymetric lidar and sonar provide a valuable underwater perspective, as illustrated by lidar derived oyster bed mapping along coastal California (left).



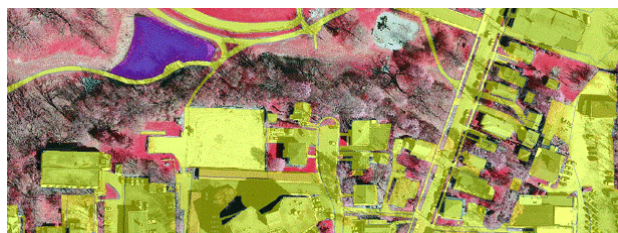
IN-STREAM FEATURES

With new analytical tools to post-process lidar and imagery, we can elucidate stream features such as bottom substrate types, distribution and dimensions of woody debris (left), and structure of riparian vegetation, all elements of vital importance to the health of river ecosystems. Additionally, our services reduce the need for labor-intensive field measurements.



THERMAL CHARACTERISTICS

NV5's Thermal Infrared Imagery (TIR) technology has helped scientists, managers, and planners identify aquatic temperature regimes, thermal refugia for fish, ground water influx, thermal springs, geothermal activity, and pollutant discharge. As illustrated on the Sprague River, OR (left), locations of cold water (blues) refugia for fish are evident.



LAND COVER

High-resolution imagery enables comprehensive analysis and classification of vegetation, wetlands, ponds, streams, and impervious surfaces (roads, urban structures). For a recent land cover mapping effort using 6" resolution imagery for Chester County, PA (left), NV5 Geospatial achieved 98% land cover classification accuracy.