

Alaska High School Students Integrate Forest Ecology, Glacial Landscape Dynamics, and Human Maritime History in a Field Mapping Course at Cape Decision Lighthouse, Kuiu Island, Southeast Alaska

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Alaskan 10th and 11th graders earned college credit at Cape Decision Lighthouse as part of a 12-day, summer field research experience. Students and faculty flew to the southern tip of Kuiu Island located 388 km south of Juneau. Kuiu is the largest uninhabited island in southeastern Alaska. This field-based, introduction-to-research course was designed to engage students in the sciences and give them skills in technology, engineering, and mathematics. Two faculty, a forest naturalist and a geologist, introduced the students to the use of hand held GPS receivers, GIS map making, field note-taking and documentary photography, increment borer use, and soil studies techniques. Daily surveys across the region, provided onsite opportunities for the faculty to introduce the high schoolers to the many dimensions of forest ecology and plant succession. Students collected tree cores using increment borers to determine “release dates” providing clues to past wind disturbance. They discovered the influence of landscape change on the forest by digging soil pits and through guided interpretation of bedrock outcrops. The students learned about glacially influenced hydrology in forested wetlands during peat bog hikes. They developed an eye for geomorphic features along coastal traverses, which helped them to understand the influences of uplift through faulting and isostatic rebound in this tectonically active and once glaciated area. They surveyed forest patches to distinguish between regions of declining yellow-cedar from wind-disturbed spruce forests. The students encountered large volumes of primarily plastic marine debris, now stratified by density and wave energy, throughout the southern Kuiu intertidal zone. They traced pre-European Alaska Native subsistence use of the area, 19th and 20th century Alaska Territorial Maritime history, and learned about the 21st century radio tracking of commercial vessels by the Marine Exchange of Alaska from its many stations that include the Cape Decision Lighthouse. The students produced preliminary maps in ArcGIS and journals in Indesign, using laptops in a field camp GIS lab, powered by solar cells, at the Cape Decision Lighthouse. They presented the results of their research at a university convened Discover Design Research Forum in Juneau, at the end of their field work. The course was co-sponsored by the University Alaska Southeast, the Juneau Economic Development Council, and the Cape Decision Lighthouse Society.

<http://www.uas.alaska.edu/ddr/modules/cape-decision.html>