Mapping the Invasive Plant Gorse

An aerial survey special project

September 2014

Background

Gorse (*Ulex europaeus*) is an invasive shrub native to Europe that was intentionally introduced to Bandon in the 1870s. It is related to the well-known forestry weed, Scotch broom, and has similar biology and impact. Like Scotch broom, seeds of gorse survive decades in the soil and are easily transported via heavy equipment. Unlike Scotch broom, gorse has thick, sharp spines and is very prone to fire due to high natural oil content. Gorse was responsible for burning nearly the entire town of Bandon in 1936.

Gorse is an invasive shrub from Europe. It creates impenetrable thickets and is highly flammable.

Although the epicenter of gorse in Oregon is along the south coast between Bandon and Port Orford, populations have turned up as far north as the Columbia River and high into both the Coast and Cascade ranges. Because it is a prolific seed producer, once this plant establishes a new population, it is extremely hard to eradicate.

Aerial Survey

We recently conducted a special mission to map the occurrence of gorse along a survey route in Coos and Curry counties. Aerial surveys by ODF staff are conducted annually to assess forest insects and disease on 28 million acres in Oregon, but this marked the first time an invasive plant was mapped using the Sketchmapper technology. Funding for the mission was provided by a BLM National Fire Plan grant. Partners included Curry County, Curry Wildfire Preparation Team, Wild Rivers Coast Alliance, Oregon State University, Oregon Department of Agriculture, Oregon Parks and Recreation, USFS, BLM and other members of the Gorse Action Group.

The survey was conducted in mid-March of 2014 when gorse was in full bloom. The yellow flowers create a clear signature that is easily detected at a survey elevation of 1,000' above the surface.

W. Williams

Left to right: Pilot Steve Larsen, Forest Entomologist Robbie Flowers, and Survey Specialist Danny Norlander standing next to the agency's Partenavia Observer aircraft.

The potential for gorse to spread to other parts of Oregon is very high. To report this weed, call Oregon's invasive pest hotline: 1-866-INVADER or visit www.oregoninvasivehotline.org. Information on other invasive species can be found through the Oregon Invasive Species Council (www.oregoninvasivespeciescouncil.org).

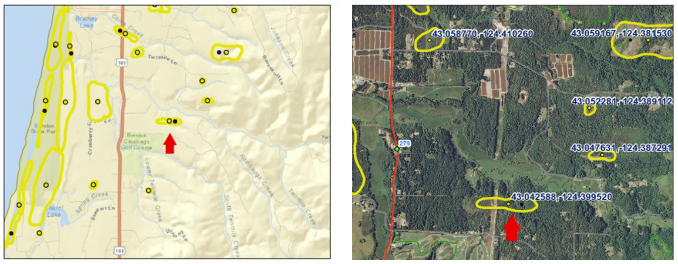
Mapping gorse, cont.

Dense patches of gorse are common scenes outside of Port Orford. (W. Williams)

W. Williams

Robbie Flowers uses Sketchmapper to record gorse populations. The tablet computer is loaded with the latest aerial imagery for georeferencing.

W. Williams



D. Norlander

Top: View of a gorse infestation from the aircraft.
Bottom: Various map products can be produced after GIS data has been processed.

Polygons of gorse were recorded on tablet computers in ArcMap, and gorse populations were estimated as either < 50% or ≥50% cover. Since no other plant produces yellow flowers in the early spring, misidentification was unlikely; still, 15% of the polygons were ground-truthed to assess accuracy of the survey.

Results

Overall, we recorded 181 polygons and 6,231 acres of gorse within the 300,000 acre survey area. Gorse polygons ranged from 0.2 to 720 acres with an average of 34 acres. Fifty percent of the polygons and 4,350 acres of mapped gorse were in the high-density category. Very little Scotch broom was detected during the ground surveys, and overall, the accuracy of polygon size and location was very good. We provided our cooperators with a GIS layer of our results along with a report of our findings and various paper map products, and 142 geo-referenced digital photos in a Google Earth kmz file.

All of materials listed above are publically available on the web:

https://www.oregon.gov/odf/forestbenefits/Pages/foresthealth.aspx#invasives

In summary, we used a collaborative approach to map a damaging forest invasive species with aerial survey technology. ODF welcomes similar projects from cooperators in the future.

For further information about the Oregon Department of Forestry's aerial survey mapping or invasive species programs, call or email:

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