2022 Swiss Needle Cast Aerial Survey

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Survey procedures:

The observation plane flew at 1,500 to 2,000 feet above the terrain, following north-south lines separated by 2 miles. Observers looked for areas of Douglas-fir forest with obvious yellow to yellow-brown foliage, a symptom of Swiss needle cast (SNC). Patches of forests with these symptoms (patches are referred to as polygons) were sketched onto computer touchscreens displaying topographic maps or ortho-photos and the position of the aircraft. Each polygon was classified for a degree of discoloration as either "S" (severe) or "M" (moderate). Polygons classified as "S" had very sparse crowns and brownish foliage, while those classified as "M" were predominantly yellow to yellow-brown foliage with slightly denser crowns than those classified as "S". The survey area extended from the Columbia River in Oregon south to the north border of Port Orford, and from the coastline eastward until obvious symptoms were no longer visible.

Oregon utilized the national standard Digital Mobile Sketch Mapper for the SNC survey in 2022. The system syncs the data directly to a national database housed in the USDA Forest Service and makes for an easily consumable and robust system for collecting aerial survey data. With this new system, the area is recorded in much the same way as the previous digital system but incorporates some important changes, one being the metric used to record survey information. For defoliators such as SNC, we gain the area of the treed area affected in addition to the intensity of defoliation. This means that we can now record the intensity (severe or moderate) and the amount of the stand/polygon/area of interest that has damage. This is very useful for mixed stands with host and non-host species.

Results:

The survey was flown on June 1, 2, and 8, 2022, and covered 3,692,653 acres in the Oregon Coast Range (figure 1). Bud break was later than normal because of colder weather conditions, but the survey was delayed until much later than planned because of a staffing shortage, technical and administrative difficulties related to the aircraft, and contract delays. Despite this, symptoms remained visible to observers well after bud-break and into June.

The survey showed an increase in the area of forest with symptoms of Swiss needle cast compared to the previous 5 years, reaching an all-time high with 657,376 acres of Douglas-fir forests with obvious symptoms of Swiss needle cast (figure 2). As has been the case for the past several years, the easternmost area with obvious SNC symptoms was approximately 28 miles inland from the coast in the Highway 20 corridor, but most of the area with symptoms occurred within 18 miles of the coast. Figures 3 and 4 show the trend in damage from 1996 through 2022.

The Swiss needle cast aerial survey provides a conservative estimate of damage because observers can map only those areas where disease symptoms have developed enough to be visible from the air. We know Swiss needle cast occurs throughout the survey area, but discoloration often is not severe enough to enable aerial detection. The total area of forest affected by Swiss needle cast is far greater than

indicated by the aerial survey. The aerial survey does, however, provide a reasonable depiction of the extent of moderate and severe damage and coarsely documents trends in damage over time.

Acknowledgements:

The survey was conducted by the Oregon Department of Forestry Forest Health and Air Operations sections and was funded by the Oregon State University Swiss Needle Cast Cooperative, the USDA Forest Service Forest, and the Oregon Department of Forestry. Dan McCarron (ODF) piloted the plane. Christine Buhl (ODF) is the survey coordinator and primary observer. Other aerial observers were Sarah Navarro (USFS) and Gabriela Ritokova (ODF).

Additional Notes:

We appreciate any information regarding the accuracy or usefulness of the maps. If you have a chance to look at some of the mapped areas on the ground, please let us know what you observe. Please call Gabi Ritokova (503-978-2404) or Harold Stevens (503-302-4259) if you have questions, suggestions, or comments.

The GIS data and a .pdf file can be accessed via the ODF web page at:
http://tinyurl.com/ODF-ForestHealth

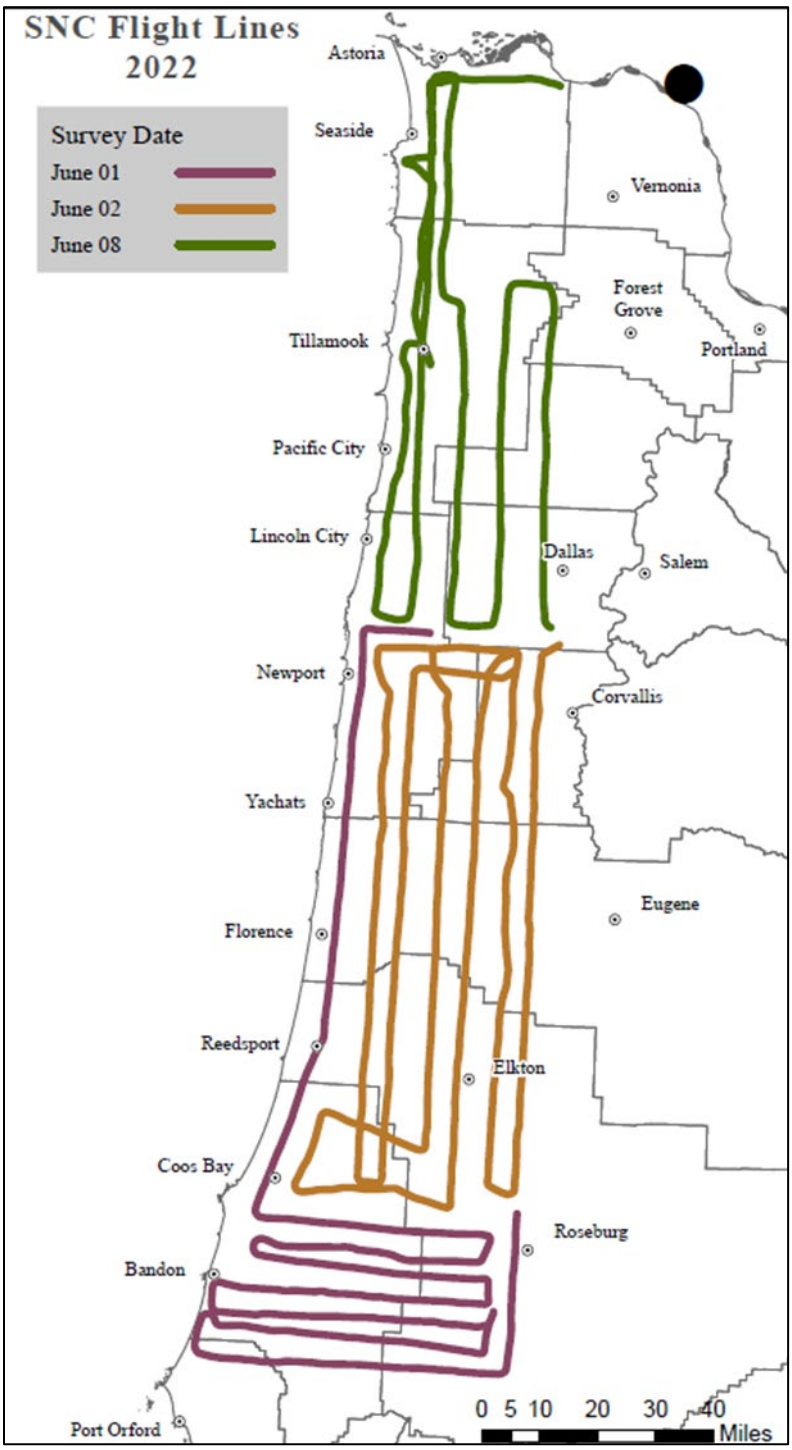

Figure 1. Area surveyed for Swiss needle cast symptoms, 2022. Flight lines are approximately two miles apart.

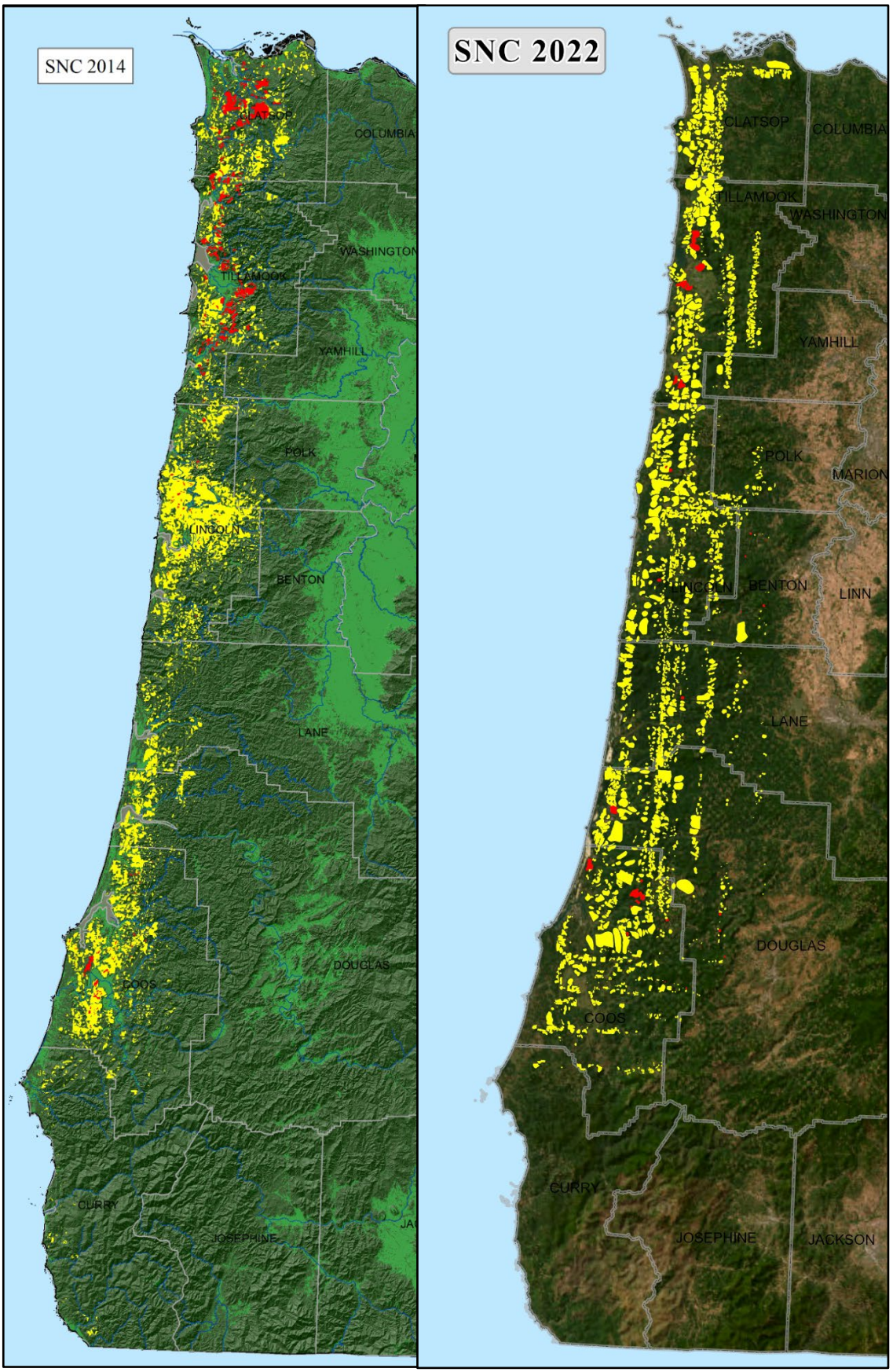

Figure 2. Areas of Douglas-fir forest with symptoms of Swiss Needle Cast detected in the 2014 and 2022 aerial surveys, Coast Range, Oregon.

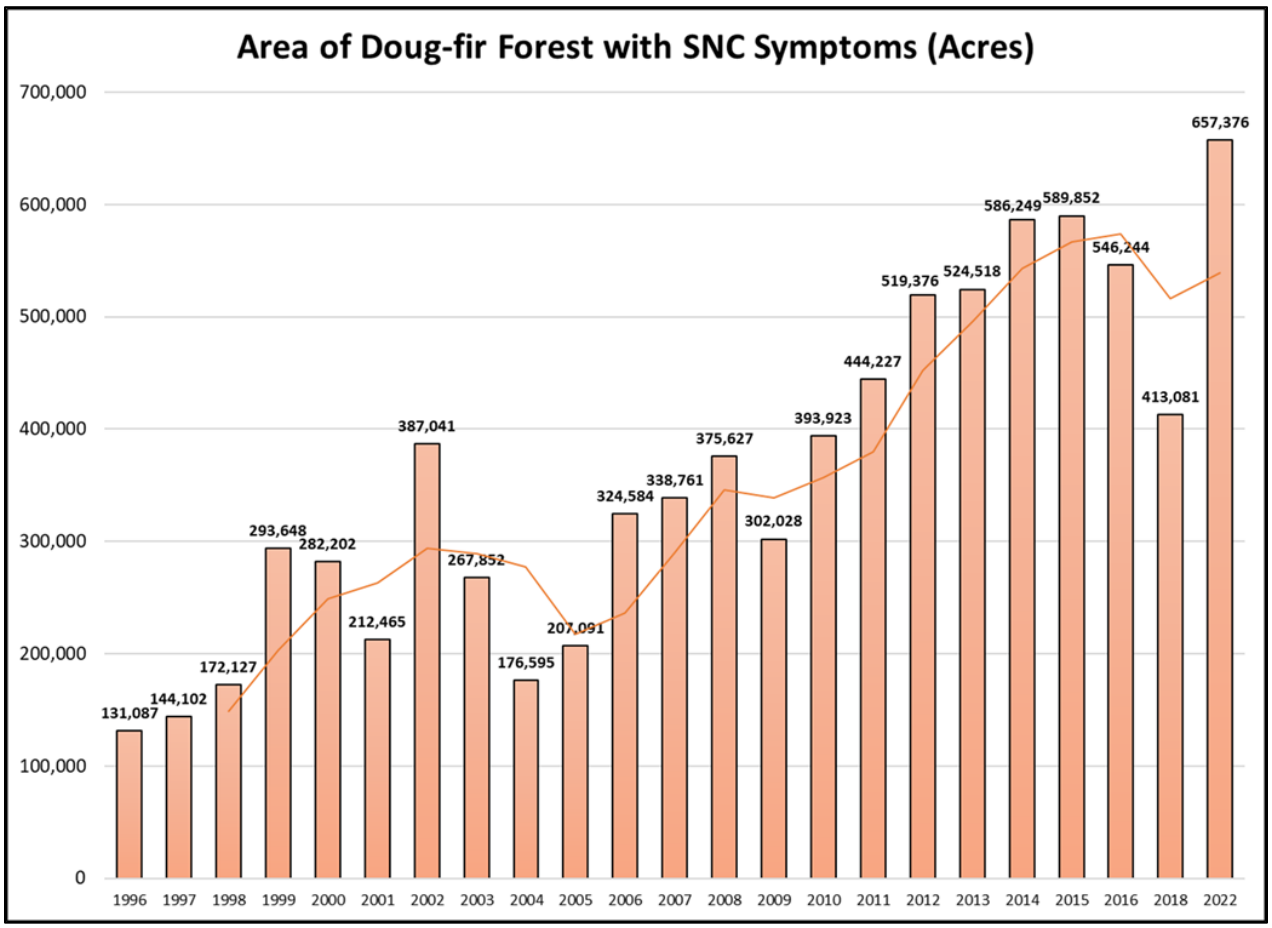

Figure 3. Area of Douglas-fir forest in western Oregon with symptoms of Swiss needle cast detected during aerial surveys conducted in April-June, 1996-2022. Trend line is 3-year rolling average. Coast Range, Oregon.

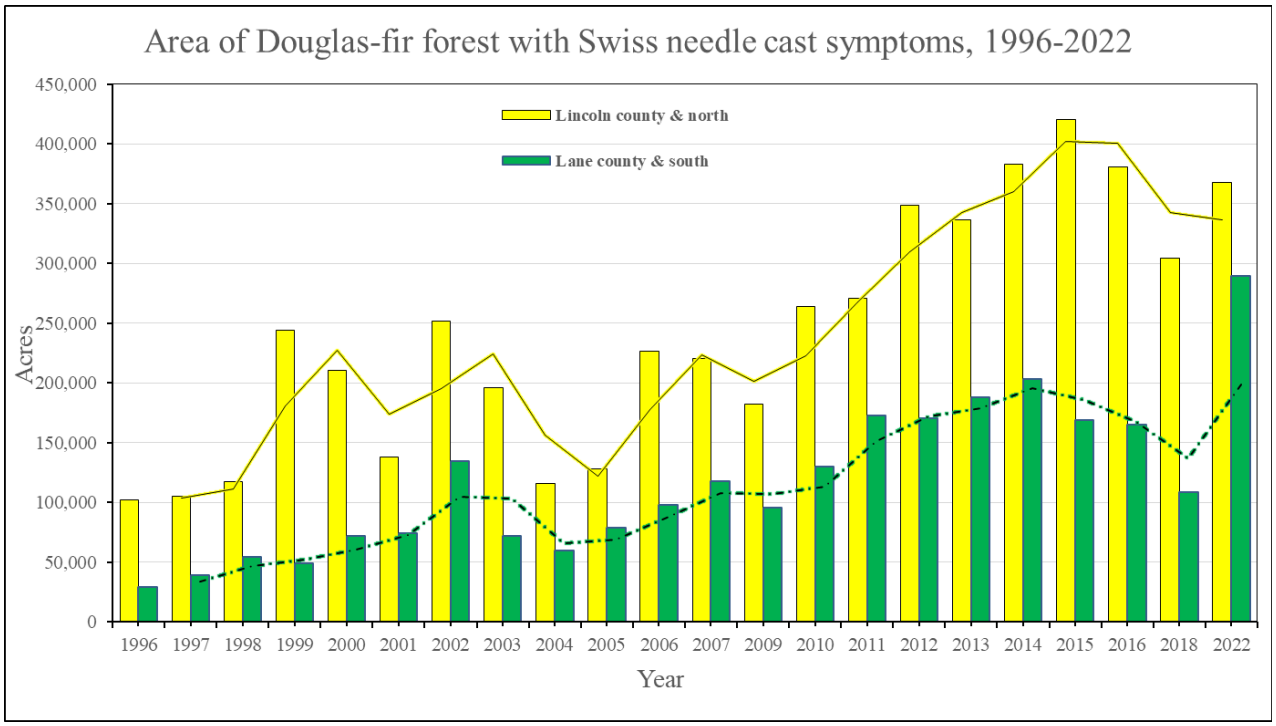

Figure 4. Area of Douglas-fir forest in western Oregon with symptoms of Swiss needle cast detected during aerial surveys conducted in April-June, 1996-2022; north and south halves of survey area. Trend line is 3-year rolling average. Coast Range, Oregon.