

## 2016 FOREST HEALTH HIGHLIGHTS: NEBRASKA NATIONAL FOREST

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- A hail storm passed over the Nebraska National Forest at the end of June 2016, and caused severe damage to many of the ponderosa pine within impacted stands (**Fig. 1**). Many trees were stripped of their foliage by the hail, or the branches were so damaged by the impact of the hail that the foliage has since died. Mature trees appeared most severely affected, but all size classes showed signs of hail impact. The extent of foliar and branch damage varied, in some patches trees had few discolored needles, while the crowns of trees in adjacent areas were completely red.
- Without prior knowledge of recent weather events, hail damage can appear similar to Diplodia shoot blight and canker disease when observed from a plane during aerial detection surveys. During our aerial surveys, some areas damaged predominantly by hail were recorded as Diplodia shoot blight and canker disease (large areas marked in purple immediately northeast of highway 385 and Antelope Road intersection, south of Chadron) (**Fig. 4**).
- Ponderosa and jack pines that retained healthy foliage after the hail storm may continue to discolor next year if they are infected by Diplodia shoot blight and canker (Fig. 2). Pines under stress from the hail impacts or secondarily from disease may be attractive and susceptible to pine engraver beetles (Fig. 2)



**Figure 1.** Ponderosa pine affected by hail south of Chadron, NE.

- Pine engraver beetle (*Ips* sp.) combined with fire are the most damaging agents in ponderosa and jack pine. Aerial detection survey identified about 600 acres of pine engraver beetle damage in ponderosa pine in the Pine Ridge Ranger District; other districts were not flown (**Fig. 2 & 4**).



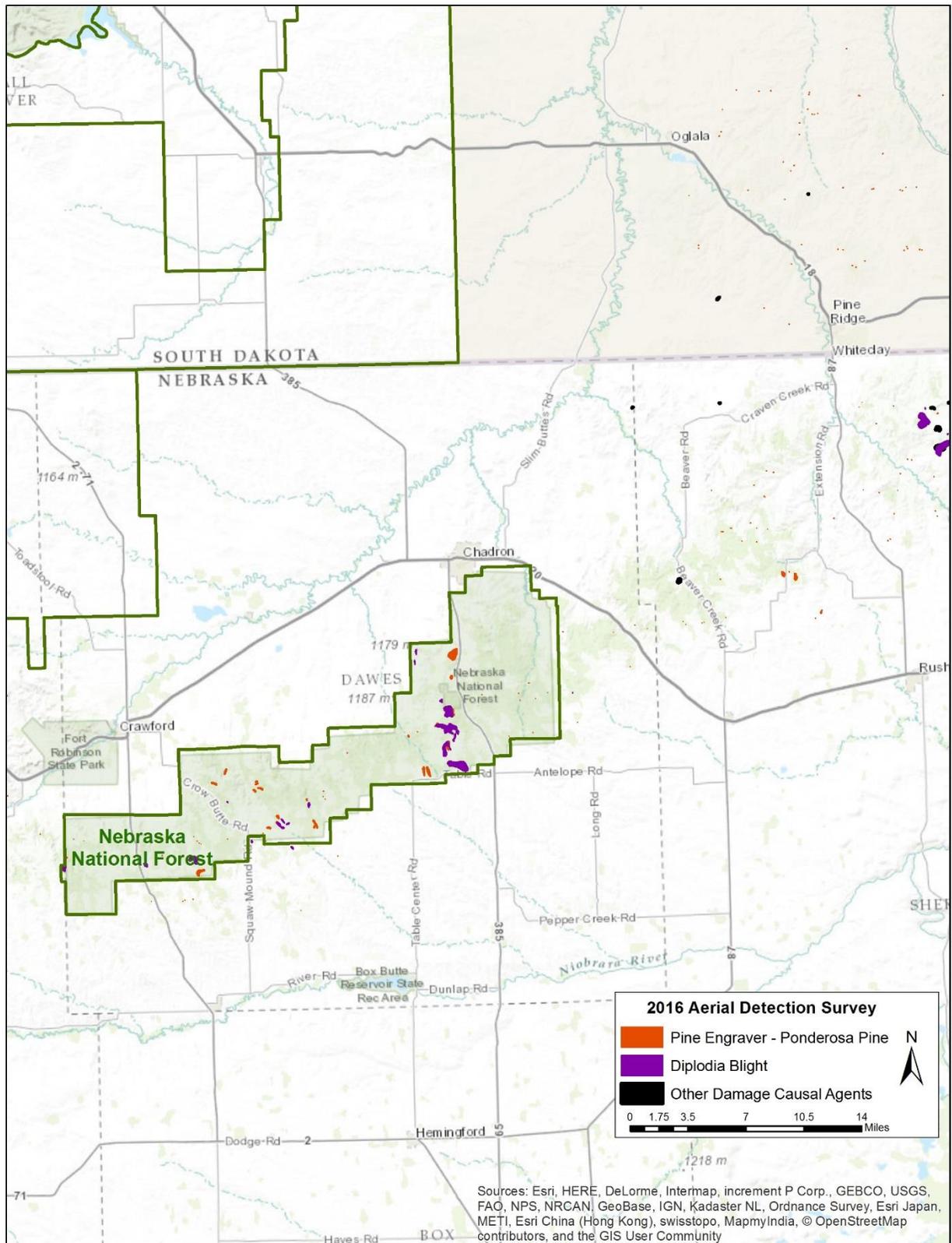
**Figure 2.** Diplodia shoot blight and canker disease (left) and pine engraver galleries (right).

- Damage agents in conifers at the nursery include *Diplodia pinea*, *Fusarium*, *Phytophthora*, and *Pythium*; and occasionally *Phomopsis*. Damage agents in hardwoods at the nursery include black-knot and shot hole in *Prunus*; and occasional foliage diseases including Anthracnose; powdery mildews; Melampsora rust on cottonwood; rusts on *Ribes*; and Gymnosporangium rust ("cedar apple rust") on *Amelanchier*, *Malus*, and *Crataegus*.



**Figure 3.** Fall colors in bur, swamp white, and red oaks at the nursery.

- Diseases at the nursery are controlled with proper watering practices, healthy plants, and timely control applications to reduce significant loss (**Fig. 3**). Animal damage is minimized with deer fence and woven electric fence for small mammals. Weeds at the nursery are being controlled with mowing, hand-pulling, and herbicide to maintain weed free fields as well as wind-breaks.



**Figure 4.** Aerial detection survey map of Nebraska National Forest, 2016.