



# Land Cover Change within Philmont Scout Ranch due to the 2018 Ute Park Fire

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Color Infrared Images of Philmont before and after the Ute Park Fire

**Introduction and History**

The Ute Park Fire began in late May of 2018 and was initiated by unknown causes within the small community of Ute Park located in Cimarron Canyon in Northern New Mexico. The fire burned over the course of several weeks, covering over 35,000 acres of land. The majority of the burn area lay within Philmont Scout Ranch, a prominent summer camp owned and operated by the Boy Scouts of America. Because of the extremely dry year leading up to this event, and the substantially overstocked forests in this area, a fire of this type was expected. However, the speed and total area in which the fire burned took many by surprise. It was extremely fortunate that this fire began just days before participants were scheduled to arrive for the summer, as it would have been dangerous to have people in the mountains so far from help when the Ute Park Fire occurred. Due to the extent of the damage and risk for further harm because of the lack of rainfall, Philmont closed down for the summer of 2018. This marked the first year the ranch had been inoperable since its creation in 1938.



Dean Cow cabin as it appeared before the fire



The remains of Dean Cow cabin, the only staffed camp to be destroyed by the fire



A firefighter cuts fire line on the Ute Park Fire

**Methodology**

A landcover classification was created using Landsat 8 satellite imagery with the intent of mapping the area of the Ute Park Fire both before and after the burn with an eye towards the restoration of Philmont Scout Ranch. The goal was to provide an accurate assessment of forest conditions present before the burn occurred as compared to the area post fire to estimate a landcover classification breakdown of the entire burn area by cover type. This was accomplished using traditional supervised classification remote sensing methodology in ERDAS.

**Results**

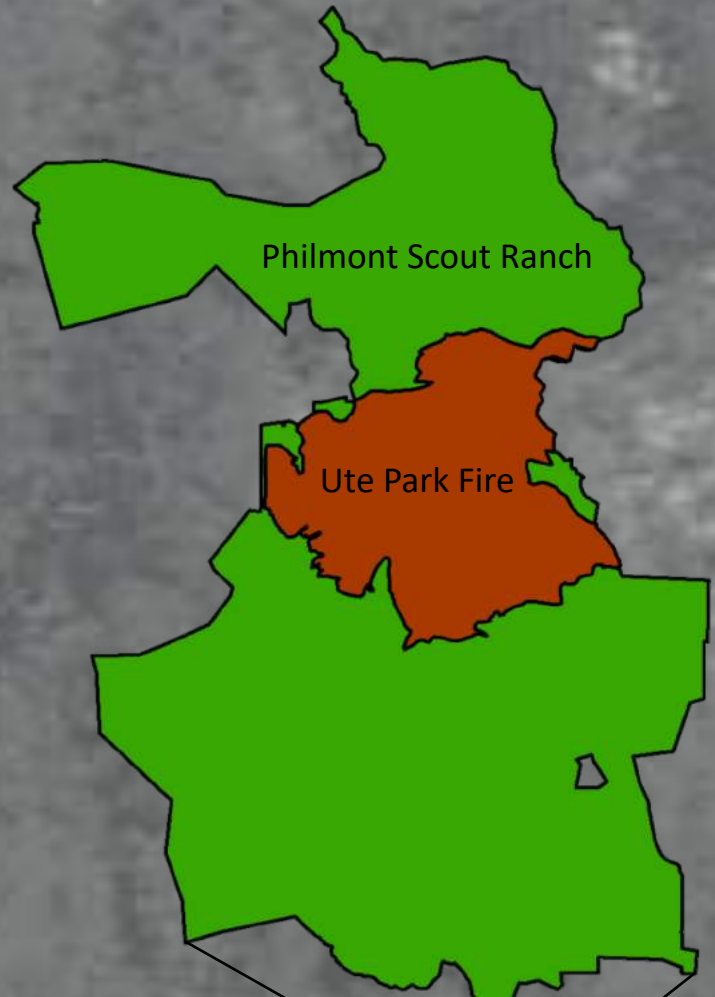
The landcover map tracked changes in cover type in terms of acres within the area of the Ute Park Fire. Most notably are the bare earth and water land cover types, which increased in size. The pine forest cover type dominated the land within the burn zone before this fire, and due to its high basal area, it is unsurprising that it was the most heavily reduced cover type after the fire. The loss of pine forest accounts for the clear majority of all burn area, with hardwood being the second most reduced, consisting mainly of scrub oak and aspen.

**Discussion**

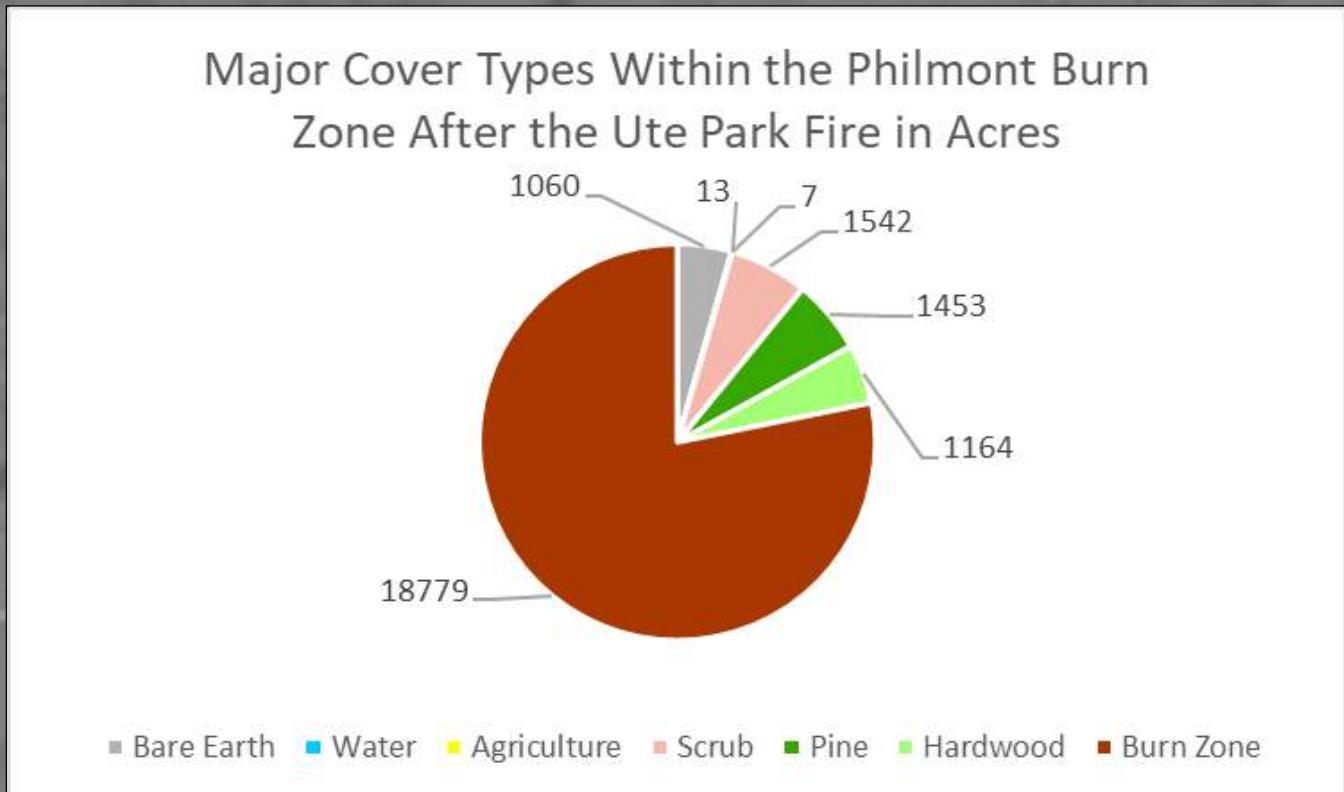
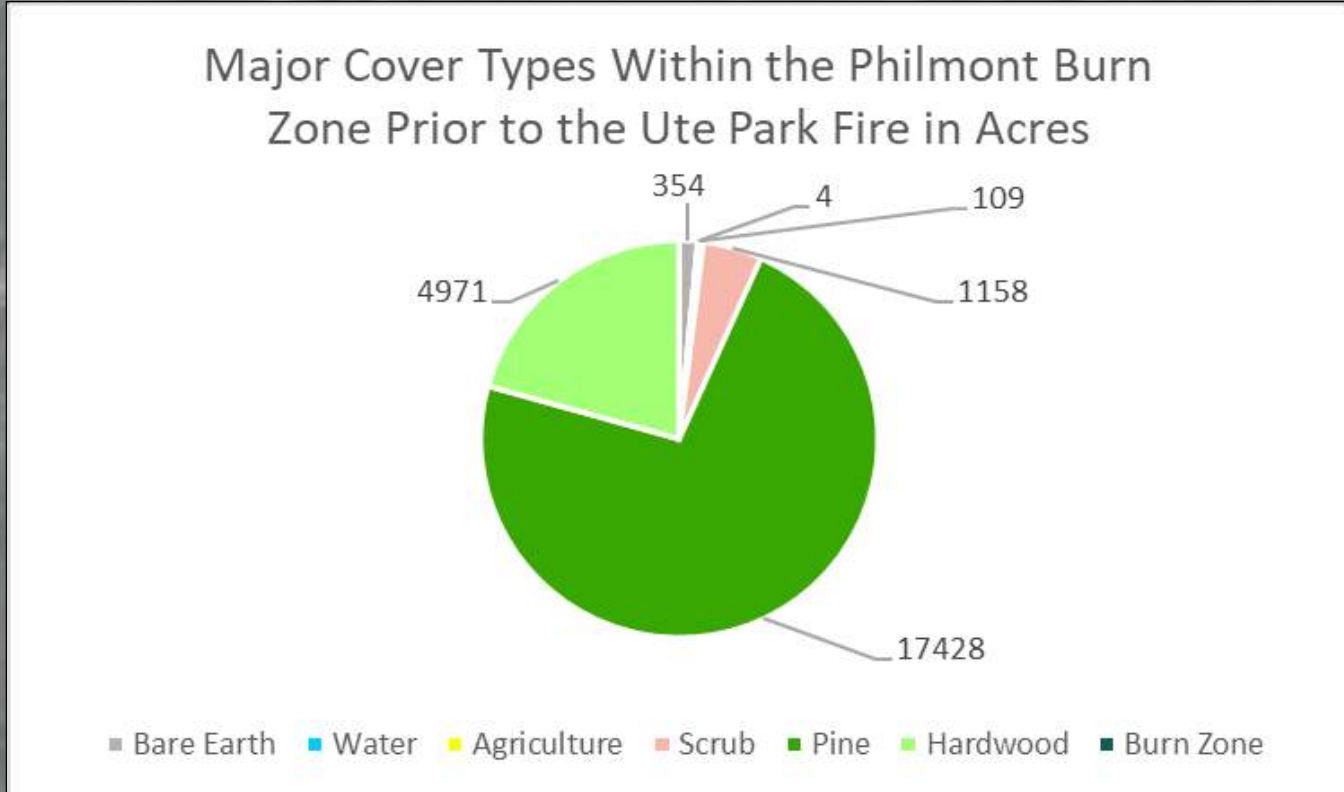
The primary cover type affected by the Ute Park Fire was mature pine forest. Comprised primarily of ponderosa pine, limber pine, and piñon pine, this fire climax ecosystem was overstocked as a result of fire suppression and lack of logging. This made it particularly vulnerable to the impacts of a fire such as this one. As a result of this fire and within weeks of its conclusion, Philmont improved their approach to fire management. They did this by establishing thinning programs around all backcountry camps to reduce fuel loads in their immediate vicinity and provide a defensible space around cabins. They also began large scale timber stand improvement projects which began with corridor thinning around roads to create natural barriers to fire growth. Finally, they are combatting post-fire erosion by felling trees to use as berms within the burn zone.

Table 1. Philmont Land Cover Types by Acreage before and Aafter the Ute Park Fire

| Year       | Bare Earth | Water | Agriculture | Scrub | Pine   | Hardwood | Burn Zone |
|------------|------------|-------|-------------|-------|--------|----------|-----------|
| 2017       | 354        | 4     | 109         | 1158  | 17428  | 4971     | 0         |
| 2018       | 1060       | 13    | 7           | 1542  | 1453   | 1164     | 18779     |
| Net Change | 706        | 9     | -102        | 384   | -15975 | -3807    | 18779     |



New Mexico



Land Cover Classifications of Philmont before and after the Ute Park Fire

