

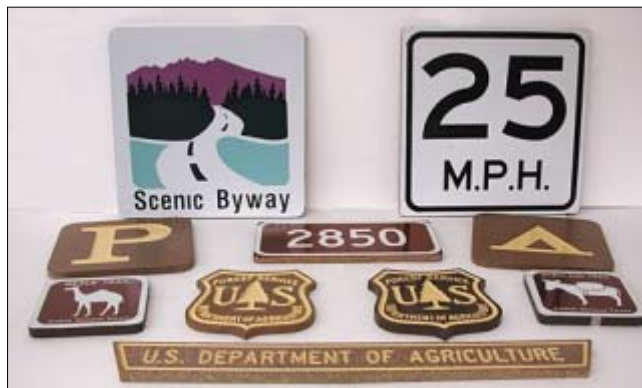


Wood–Plastic Signs Using Western Juniper



Throughout the 19th century, seemingly endless grasslands covered the Southwest. These grassy savannas were kept in balance largely through wildfires that periodically swept through vast areas. With settlement of the West and the resulting growth in population, an increased demand for meat resulted in rangeland being used as grazing areas for cattle and sheep. Although these grasslands were excellent for this purpose, overgrazing soon became prevalent. At the same time, fire-suppression methods improved. These factors created ideal conditions for the spread of juniper and pinyon and allowed them to encroach on the rangelands, creating millions of acres of small-diameter woodlands. In turn, this encroachment, now estimated at 60 million acres, resulted in a number of ecological problems, including lowering of the water table, reduction of rangeland, severe erosion, and pollution of streams and lakes. Finding an economical use for material from these woodlands may alleviate some of these ecological tensions.

Although these woodlands offer a tremendous underutilized resource, little can be done with it because of its limited economic value. Historically, juniper has been used for firewood and fenceposts, but the high costs of harvesting and processing have limited attempts to develop and utilize it further. Even commercial firewood operations are only marginally successful because of the labor-intensive nature of harvesting; and the relative availability and low cost of steel posts and treated timber have diminished the viability of using juniper for posts. To reverse these trends, a strategy to increase the value of the resource, principally by creating products of higher value, must be developed.



In an attempt to better utilize and add value to this resource, the Forest Products Laboratory has developed a composite panel made from juniper and recycled high-density polyethylene plastic. This 3/4-inch (1.9-cm) composite panel, produced through compression molding or extrusion technology, is currently being tested as a sign panel material. The sign's message can be either routed into the panel or printed on a highly reflective adhesive-backed surface and applied to the panel. Using this composite material for signs has been found to be effective in resisting attack from porcupines. Currently, damage from porcupines eating traditional plywood signs is extensive. Also, because the composite is a better energy-absorbing material than aluminum or plywood, damage from gunshots is reduced.

Preliminary tests on these composite panel signs have shown high moisture resistance, excellent dimensional stability, and stiffness adequate for this application. Test signs have been placed in national forests to assess long-term weathering effects and durability.

For more information, contact
James Muehl
USDA Forest Service
Forest Products Laboratory
One Gifford Pinchot Drive
Madison, WI 53726-2398
Phone: (608) 231-9391; Fax: (608) 231-9582
E-mail: jmuehl@fs.fed.us