

## Conservation Status of *Texosporium sancti-jacobi*

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The crustose lichen, *Texosporium sancti-jacobi*, was first discovered about 1880 near San Diego, California, so it has been known to science for a long time. However, it was essentially forgotten or overlooked from the time of its discovery until the 1960s, when it was still known from just a couple of California collections. In the early 1980s, Roger Rosentreter found *Texosporium* south of Boise, Idaho, but because of its rarity and extremely limited documentation in the literature, it took several years to identify this unusual lichen. Its identity was confirmed in 1984, when it was found to be identical to the California material from San Diego and Pinnacles National Monument. In 1990, I found *Texosporium* west of Redmond, in central Oregon, and it was subsequently found the following year less than five miles away. Jean Ponzetti found one clump of *Texosporium* on a Nature Conservancy preserve in central Washington in 1997.

The common name for *Texosporium*, a monotypic genus, is woven-spore lichen. The spore is unique among lichens. The ascus essentially dissolves and the free hyphae (paraphyses) wrap around the spore, giving it a woven textured appearance. In the last ten years of extensive botanical work in southern Idaho, the 12 sites within a 25 mile radius of Boise still comprise the extent of its range in Idaho.

I have to admit that *Texosporium* is a pretty obscure lichen. It is usually found on clumps of organic material, especially clumps of dead *Poa secunda* (Sandberg bluegrass). *Texosporium* typically grows in "old-growth" *Artemisia tridentata* var. *wyomingensis* (Wyoming sagebrush) sites with perennial bunchgrasses such as *Agropyron spicatum* (bluebunch wheatgrass), *Sitanion hystrix* (squirreltail grass), and *Stipa thurberiana* (Thurber's needlegrass), although it also occurs in at least two *Chrysothamnus nauseosus* var. *consimilis* (rabbitbrush) sites that last burned more than thirty years ago (Rosentreter 1986). *Bromus tectorum* (cheatgrass) is typically a minor component of the community. In Oregon, *Texosporium* grows either on rabbit dung or humus, but in California it is only known to grow on dung. The one small clump found in Washington was growing on humus.

One of the Oregon locations is within a Bureau of Land Management Research Natural Area (RNA) that has never been grazed. The site is dominated by bunchgrasses with very little sagebrush present. The RNA has become a popular destination due to its scientific value as an ungrazed relict, and unfortunately, human visitation has increased, with potential impacts to the *Texosporium*.

By far the greatest threat in Idaho is range fires across the Snake River Plain. In 1996 alone, fires burned over 700,000 acres in southern Idaho, with several hundred thousand acres in BLM's Lower Snake River District. Three of the fires burned through *Texosporium* sites. While *Texosporium*'s response to fire has not been studied, it is assumed to respond poorly. Historically, in a pre-cheatgrass, pre-livestock grazing, extended fire interval environment, the species could presumably maintain populations, but whether it can under present environmental conditions is dubious.

A rather extensive inventory of suitable habitats from Idaho through Nevada and into California was conducted by McCune and Rosentreter (1992). While they found no significant new populations, they did successfully relocate the Pinnacles National Monument sites. People with a lichenological background have continued to look in Oregon for the past several years, but all attempts have been unsuccessful. For this reason, we feel that *Texosporium* is truly a rare species, and not simply overlooked because of its obscure appearance.

The Snake River Birds of Prey National Conservation Area, where several *Texosporium* populations are known, has continued to experience large fires over the last twenty or more years. The number of sagebrush stands has declined drastically, and rehabilitation efforts have either been unsuccessful or marginal at best at restoring native vegetation.

Several of the *Texosporium* sites in Idaho are on small isolated tracts (usually 40 acres) of public land that are nearly surrounded by housing developments. The boom in landscape rock collecting has had an impact on *Texosporium* on at least one of these isolated tracts. For example, a BLM parcel near the large Columbia Village subdivision has been heavily impacted. The parcel is proposed for exchange, but even if the agency retained it in public ownership, management would be nearly impossible without a fence. And this would not alleviate the high potential to burn.

In summary, I think the outlook for this species in the Idaho portion of its range is gloomy. To

further exemplify this, a recent *Texosporium* discovery east of Boise is immediately adjacent to the new Micron freeway interchange. While the Idaho Department of Transportation cooperated last year in helping to flag the *Texosporium* area for avoidance, it is only a matter of time before this parcel will be developed. For BLM to purchase the land is out of the question, as the land values associated with such high development potential properties is astronomical.

To conserve what remains of this species and its habitat, the BLM, U.S. Fish and Wildlife Service (USFWS), and the Idaho Army National Guard have drafted a Conservation Strategy that outlines potential protection measures. We need to implement several of the actions proposed by this document, and the sooner the better. I have worked with a Boise State University student to transplant *Texosporium* from the freeway interchange site, but unfortunately the transplant sites burned last year (1996). For all of the reasons outlined above, *Texosporium* was recently added to the "Red Listed Lichens of the World," a list of 33 globally rare lichen species developed by an international group of lichenologists. I believe *Texosporium sancti-jacobi* needs to be re-listed by the USFWS as a federal candidate species, which it was until February 1996, when broad sweeping changes were made in candidate species policy. The basis for this is continued loss of habitat, particularly in Idaho, and the low number of sites known regionally as well as globally. *Texosporium* appears to be more secure in Oregon and California where it is found in relatively protected management areas, though populations are extremely small. Additional inventories in Washington and Nevada are critically needed.

## References

- McCune, B., and R. Rosentreter. 1992. *Texosporium sancti-jacobi*, a rare western North American lichen. *The Bryologist* 95:329-333.
- Rosentreter, R. 1986. Compositional patterns within a rabbitbrush (*Chrysothamnus*) community of the Idaho Snake River Plain. Pages 273-277 *In*: Proceedings - Symposium on the biology of *Artemisia* and *Chrysothamnus*. E.D. McArthur and B. Welch, compilers, USDA Intermountain Research Station Gen. Tech. Report INT-200.

## Questions and Answer Session

1. *What percentage of the species' habitat was destroyed by fire in Idaho this year?*

Approximately 20% of the known Idaho sites burned in 1996.

2. *What percentage of the habitat has been surveyed?*

I would say a large percentage in Idaho. However, it is difficult to survey all the numerous canyon slopes where habitat appears suitable. People look for *Texosporium* when they are out, but still don't find it. The Shoshone and Burley Resource Areas are possibilities. We probably need to check more in these areas, but don't really have the personnel to do it.

3. *Is the Island RNA the only site in Oregon?*

No, there is one more site about 5 miles away. I might add that there are graduate students doing microbiotic crust studies in that general area but none have found *Texosporium* to date.

4. *Is it always found on organic matter?*

Yes, at least I have not found it growing directly on the soil surface. It is usually on clumps of organic matter. We have not found it on rabbit dung in Idaho, but we have in Oregon and California. Might be good to have wildlife biologists check for it on dung.

5. *How does it stabilize on organic matter?*

Who knows? There are still many unknowns.

**Texosporium**

- Extant in 1996
- \* Historical sites

**Figure 1**

Known world distribution of *Texosporium sancti-jacobi*. Solid circles indicate populations confirmed in the last few years. The star near San Diego indicates historical populations that have probably been extirpated. Small empty circles are major cities.

The map was developed from a Goode basemap, copyright University of Chicago Press.

