

A wide-angle photograph of a rocky landscape. The foreground is dominated by large, dark, glassy obsidian rocks of various sizes and shapes. The middle ground shows a vast field of smaller, similar rocks extending towards a line of dense evergreen trees. In the background, rolling hills and mountains are visible under a clear blue sky. The overall scene is a natural setting of an obsidian field.

# A Brief Overview of Obsidian Sources Documented in the Ceded Lands of the Confederated Tribes of the Grand Ronde

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# What is Obsidian?

- Glassy volcanic rock without crystalline structure
- Breaks in predictable manner forming sharp edges, allowing for the production of stone tools
- Highly valued commodity in pre-historic societies, sometimes being brought many hundreds of miles from its place of origin
- Hundreds of obsidian sources across the west

# What is Obsidian Sourcing?

- Obsidian sourcing is an analytical technique used to determine the geologic point of origin of a piece of obsidian
- Sourcing is made possible because obsidian chemistry typically has a low variability within a single source of obsidian, but high variability between sources
- There are several techniques used today for sourcing obsidian, for this talk we will be focusing on the method known as “Energy Dispersive X-ray Fluorescence” or EDXRF

# EDXRF – How does it work?

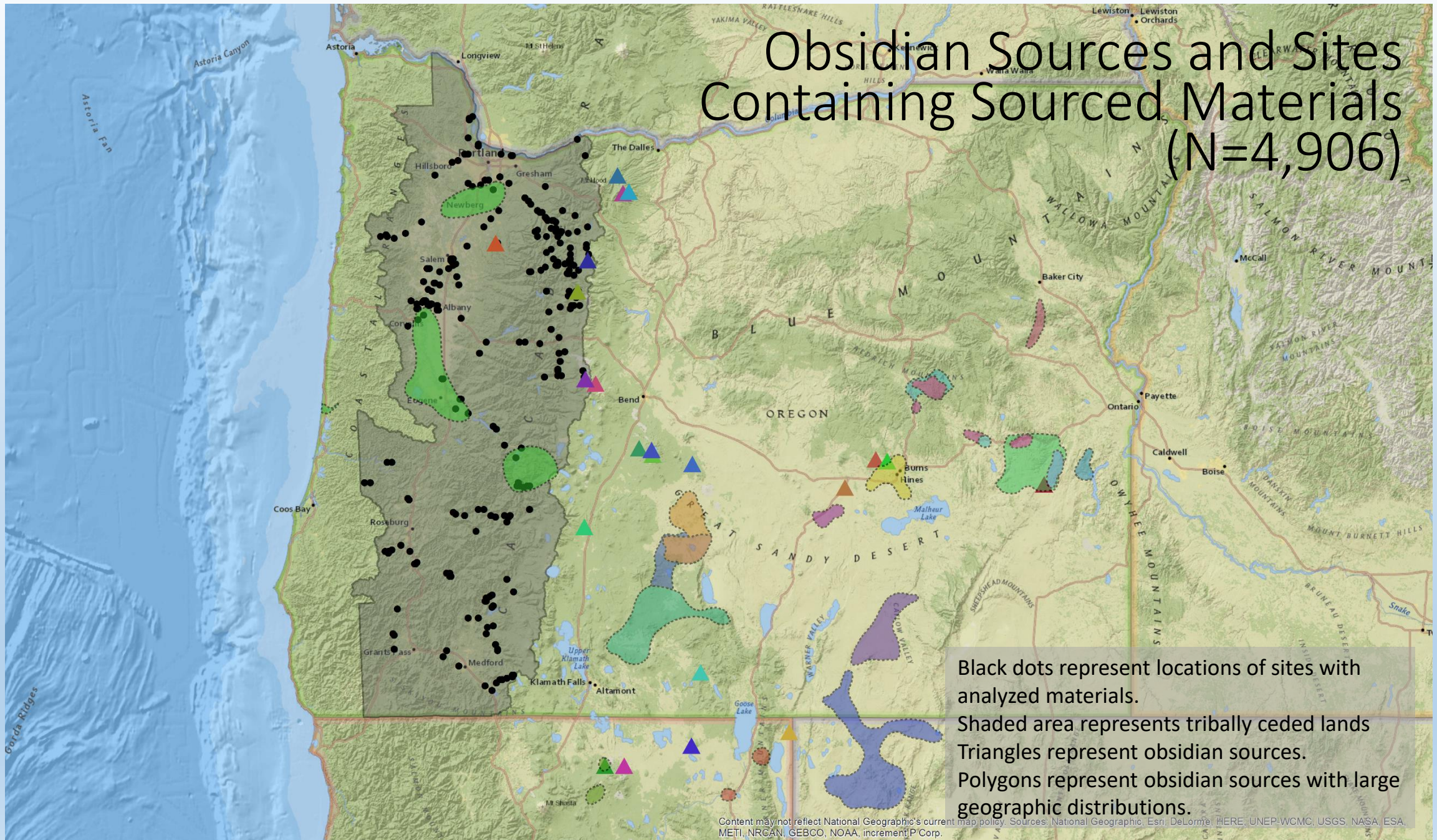
- A sample is placed into an EDXRF spectrometer
- X-rays are generated via either a X-ray tube or a radioactive isotope
- X-rays interact with the atoms in the sample, and energy is released (fluorescence)
- Different elements have different fluorescent energies. When we look at the fluorescence released we can tell what elements are in the sample and at what concentrations
- These results tell us the elemental “recipe” of a particular sample
- With these results we can make a database of the recipes of all known obsidian sources and then compare unknown samples (artifacts) to the database

# Sourcing Today

- Archaeologists and geologists, chemists, and others have been working for years to characterize these sources
- Over the last two decades, Craig Skinner (and recently myself) with Northwest Research Obsidian Studies Laboratory (NWROSL) has analyzed over 130,000 obsidian samples across the west
- Out of these, around 4,900 artifacts have been analyzed from many sites across the Ceded lands of the Confederated Tribes of the Grand Ronde
- Forty-five distinct geologic sources of obsidian are represented



# Obsidian Sources and Sites Containing Sourced Materials (N=4,906)

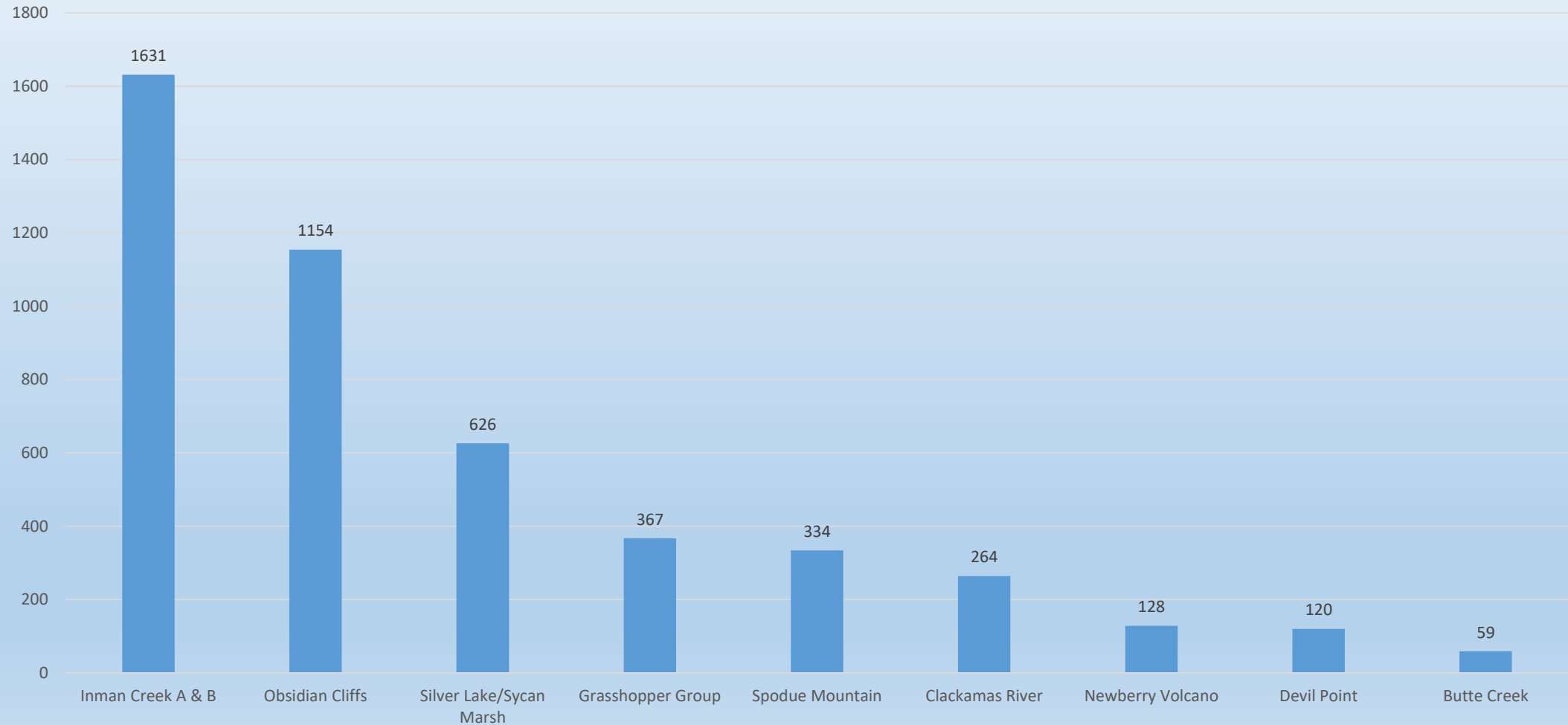


Black dots represent locations of sites with analyzed materials.  
Shaded area represents tribally ceded lands  
Triangles represent obsidian sources.  
Polygons represent obsidian sources with large geographic distributions.

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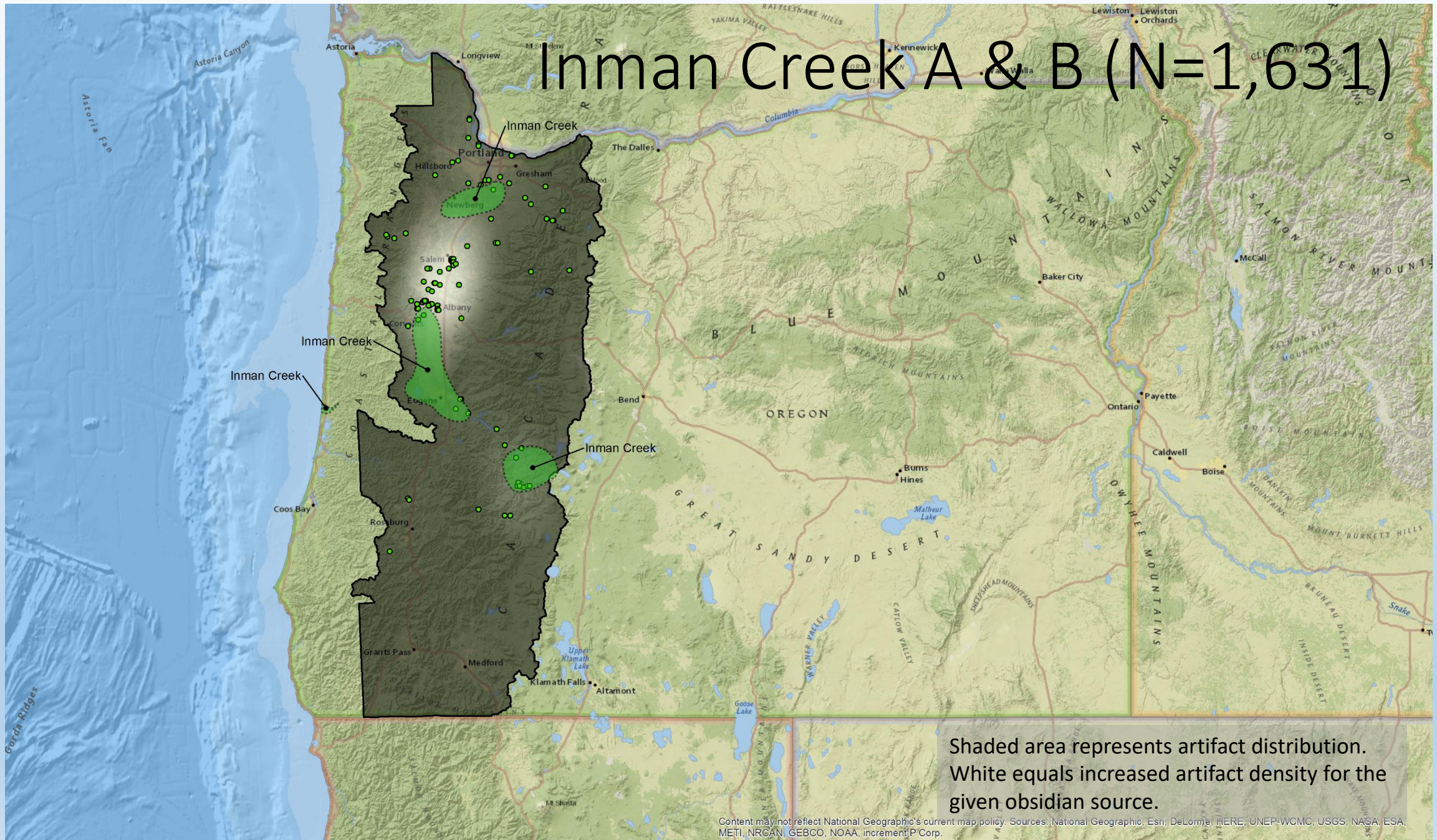


# Ten Most Commonly Seen Obsidian Sources





# Inman Creek A & B (N=1,631)

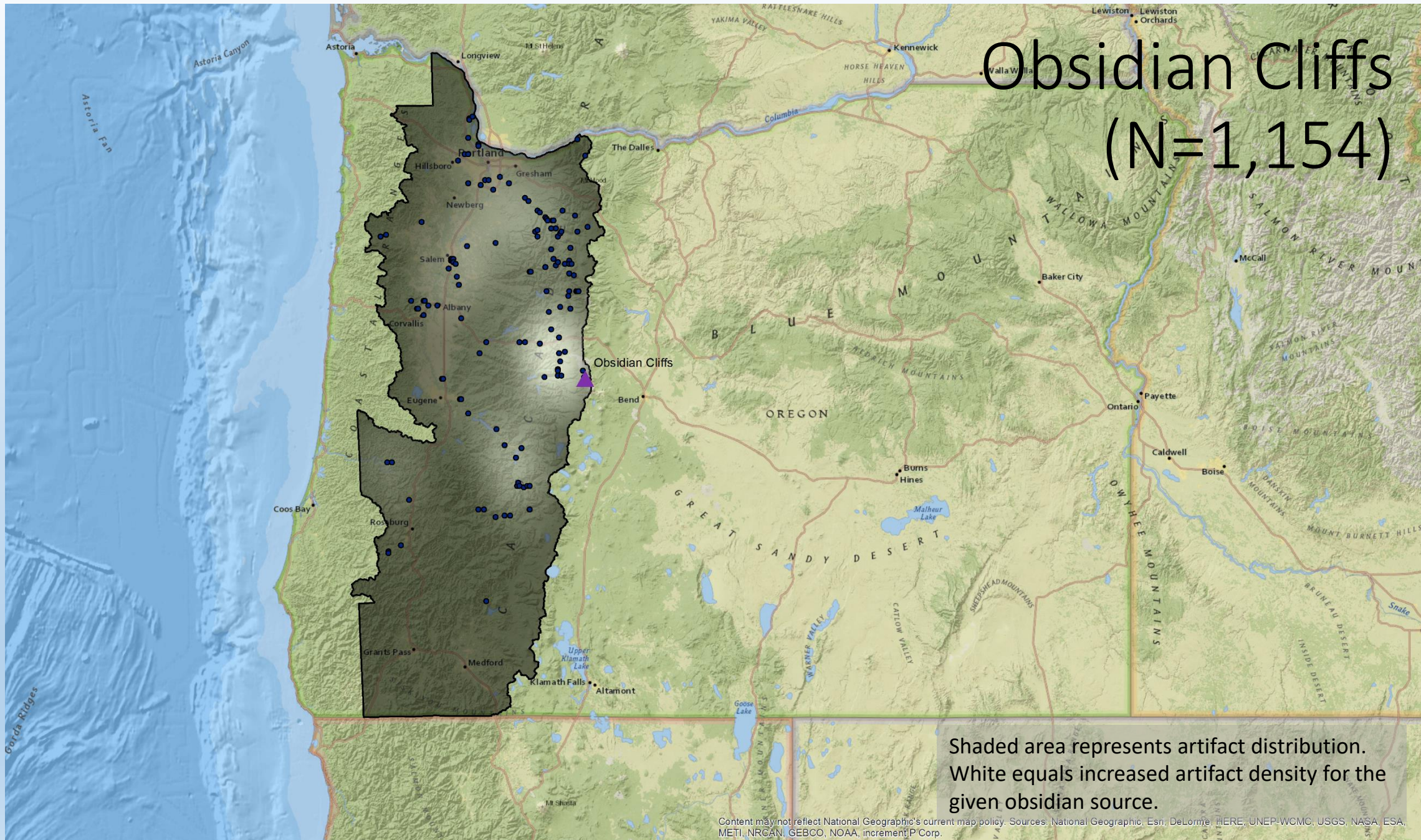


Shaded area represents artifact distribution.  
White equals increased artifact density for the given obsidian source.

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# Obsidian Cliffs (N=1,154)

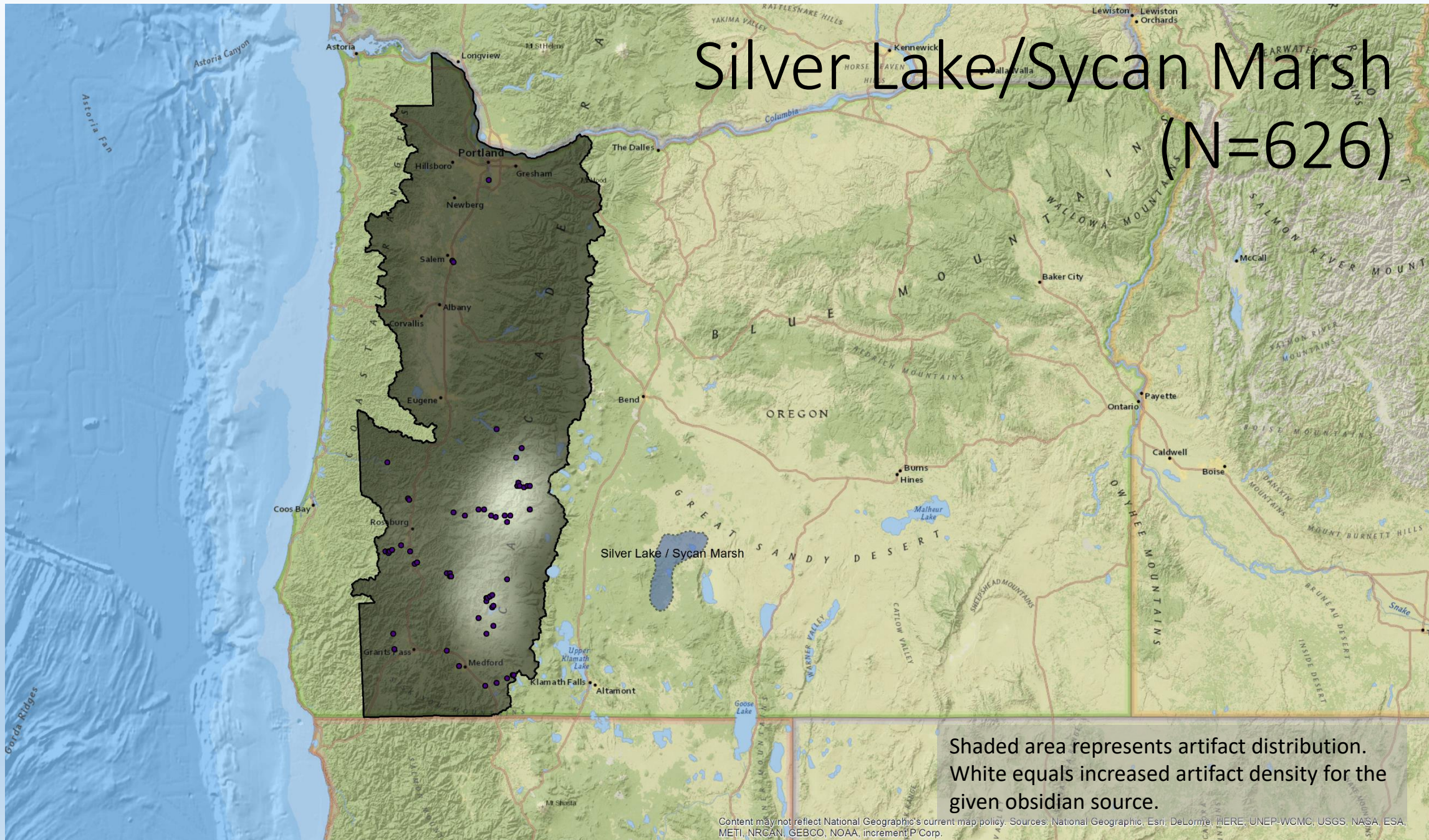


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# Silver Lake/Sycan Marsh (N=626)

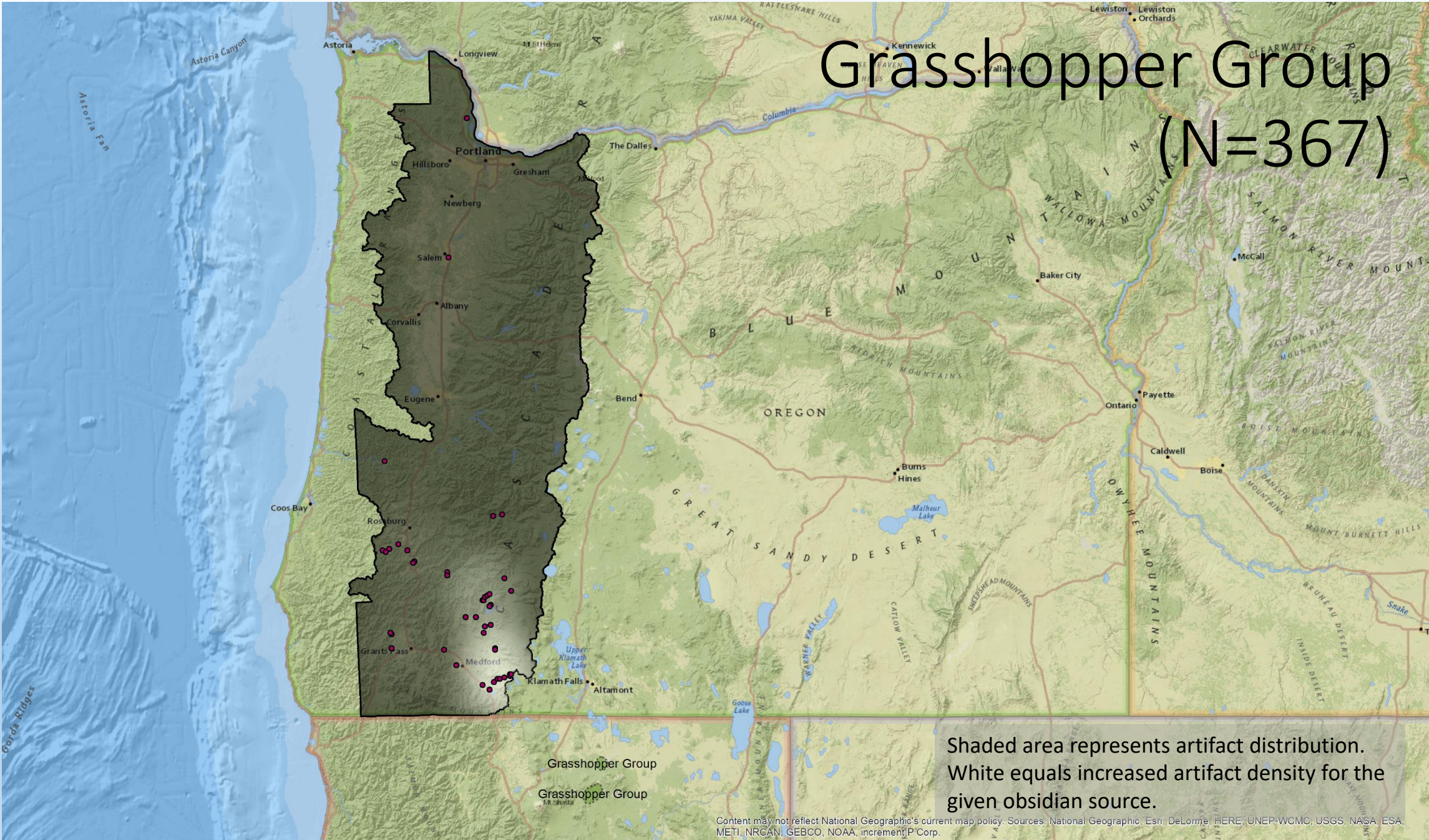


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# Grasshopper Group (N=367)

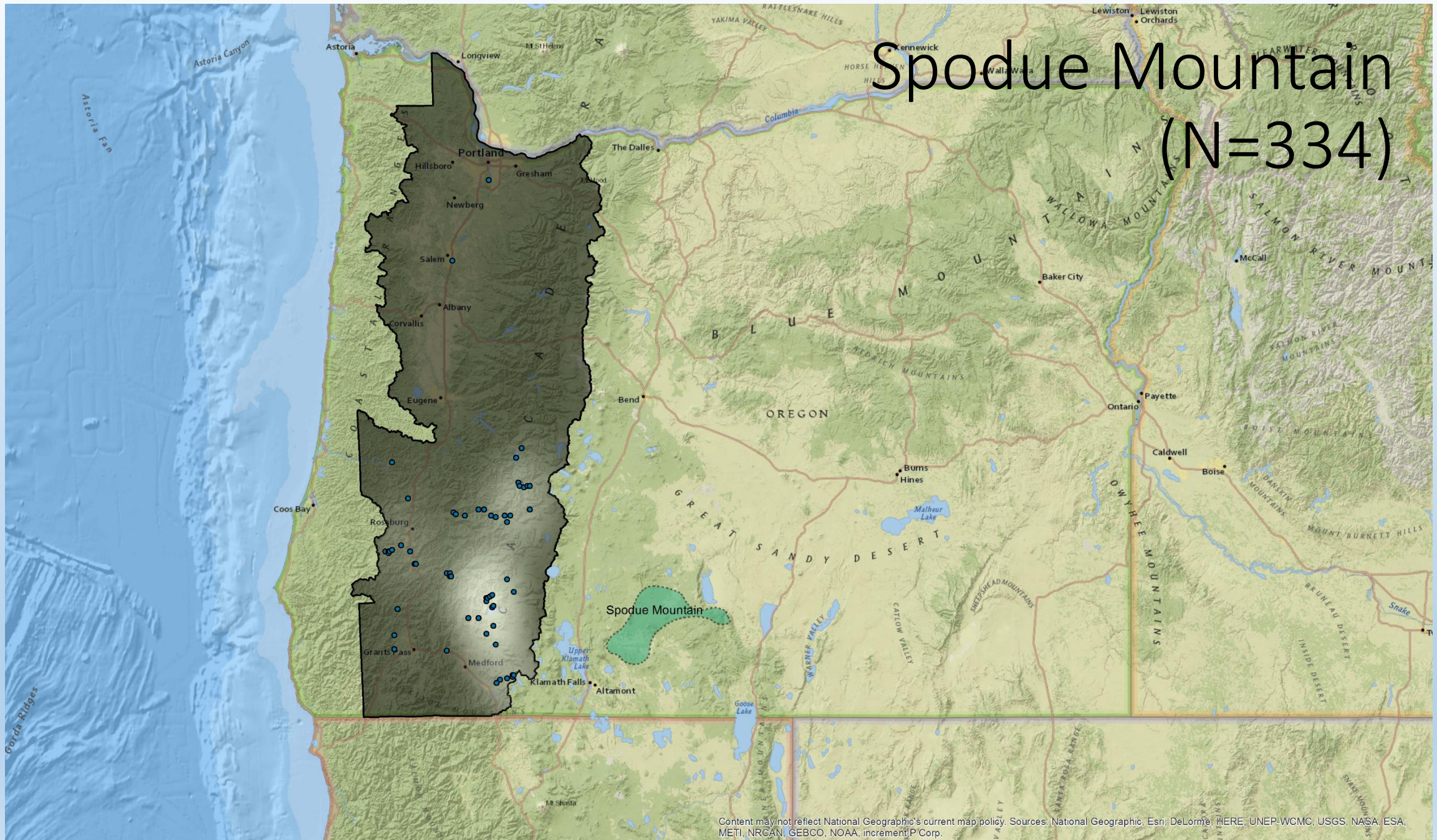


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# Spodue Mountain (N=334)



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# Clackamas River (N=264)

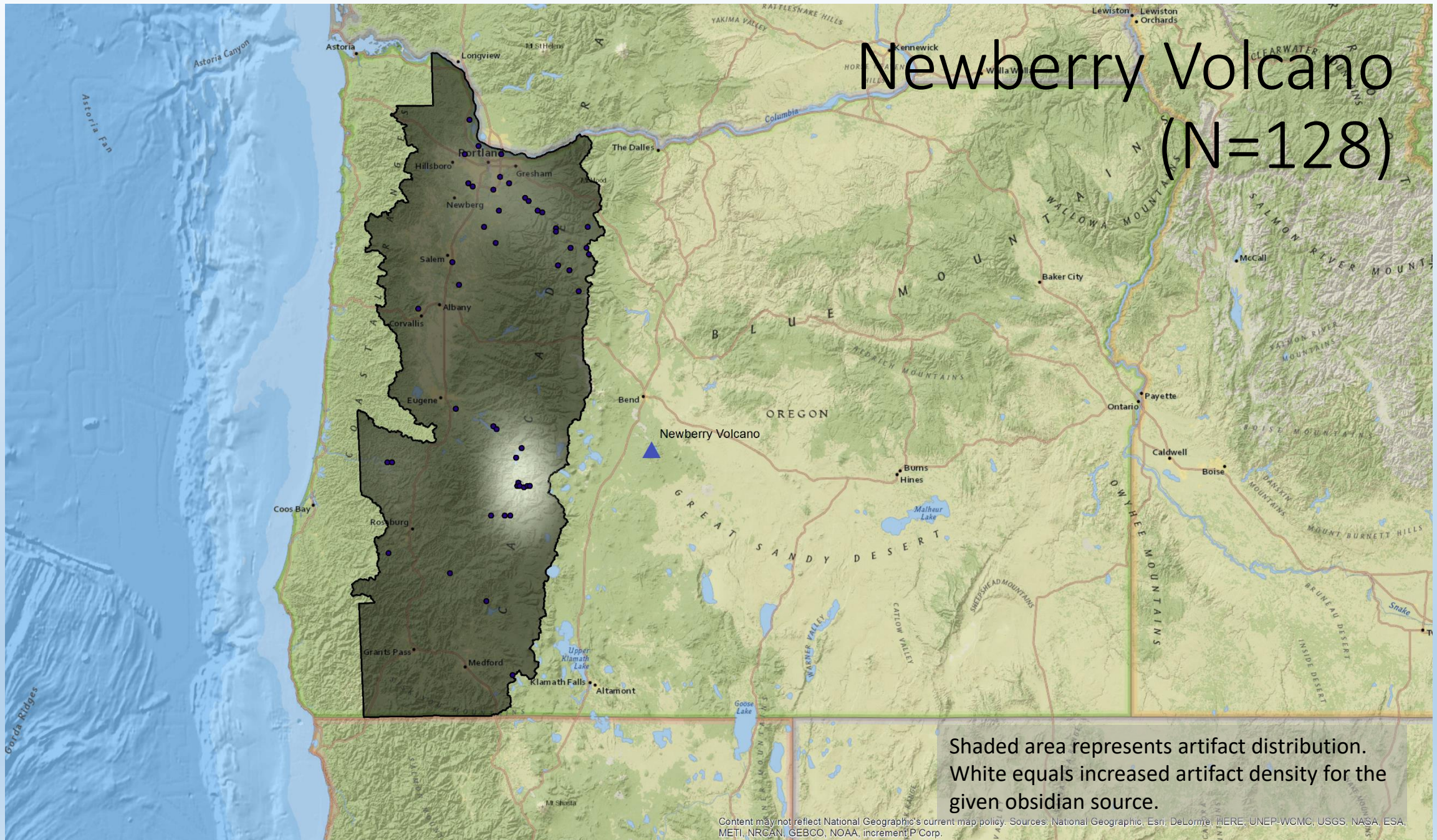


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# Newberry Volcano (N=128)

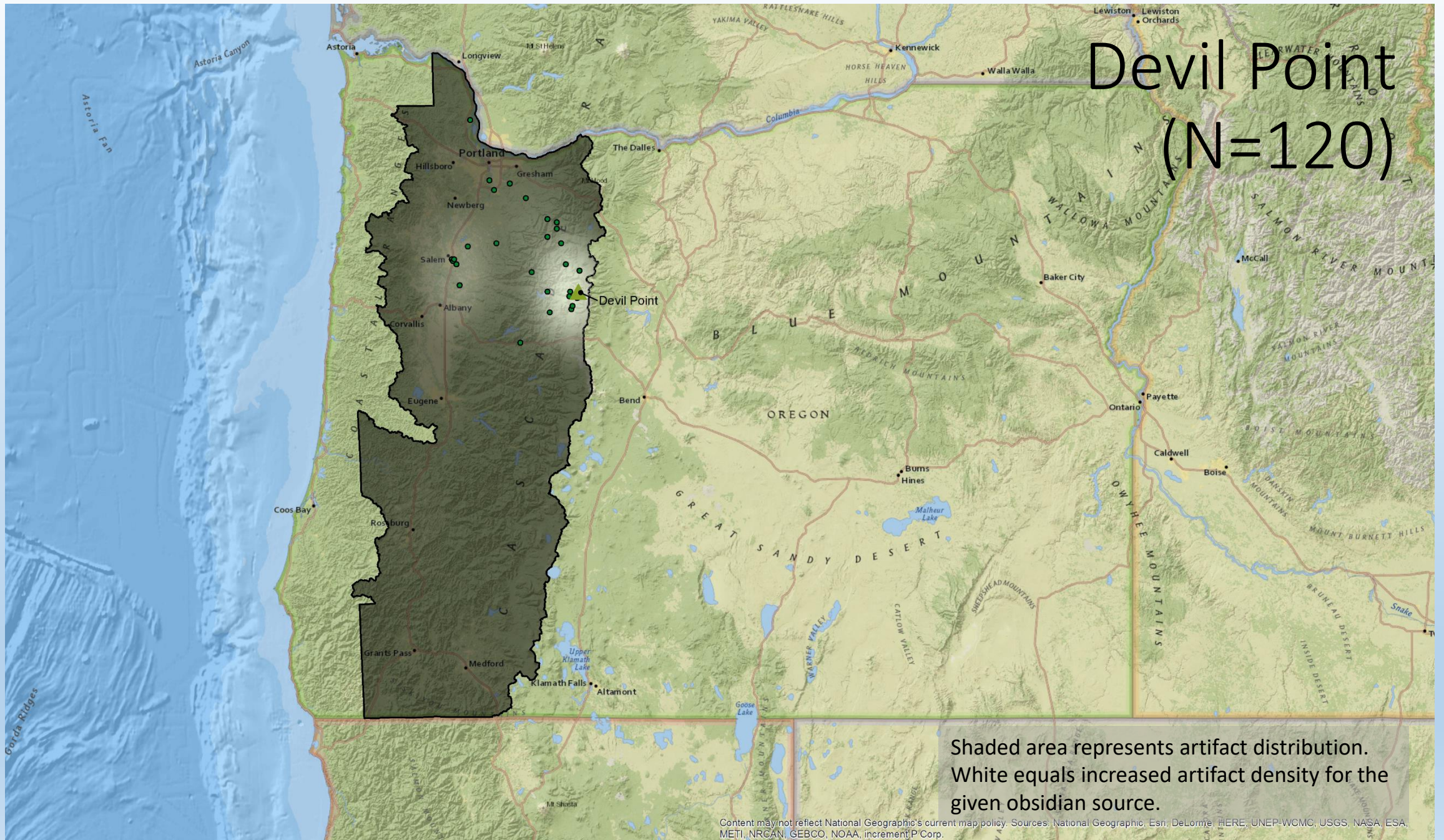


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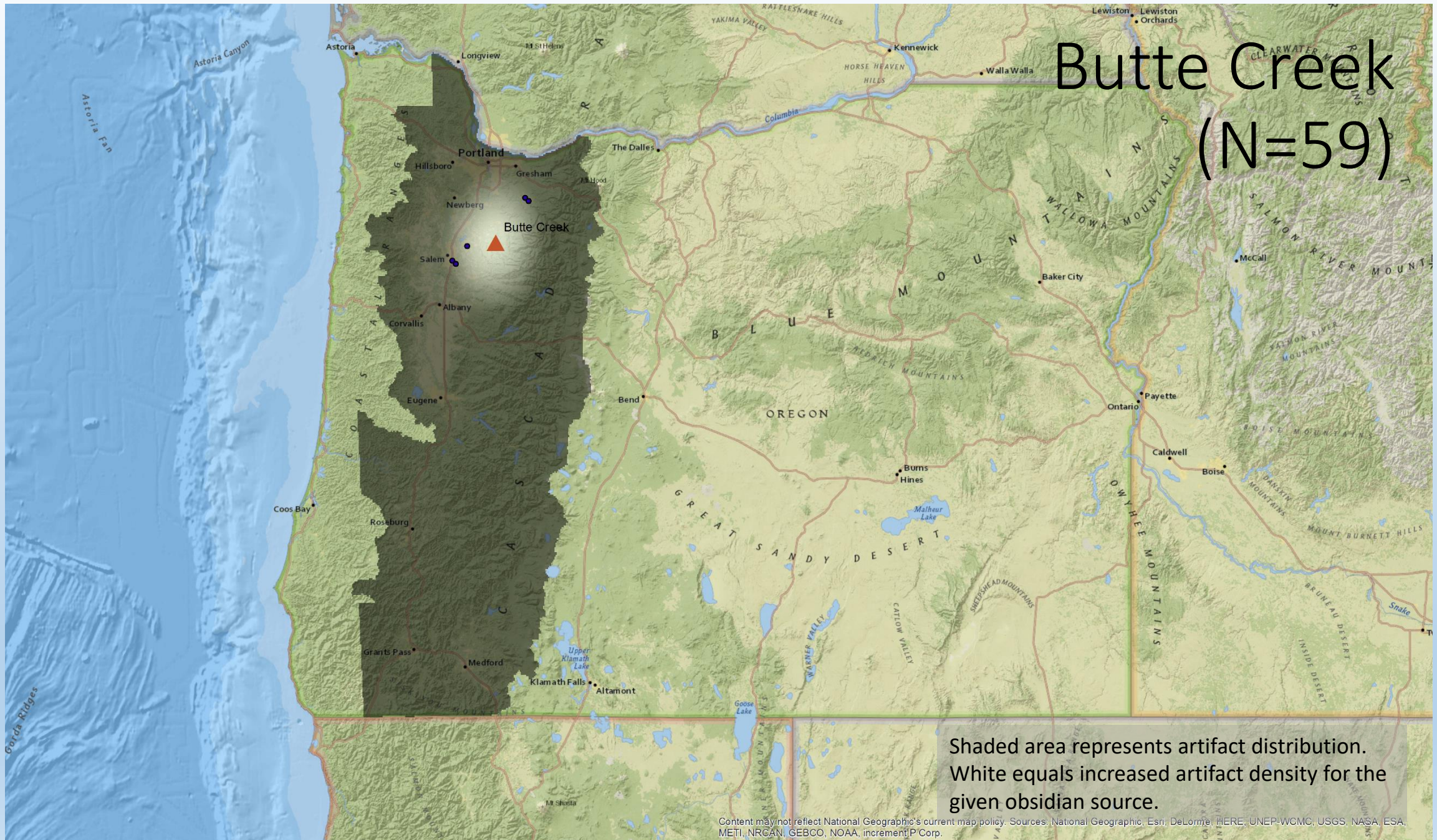
# Devil Point (N=120)



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# Butte Creek (N=59)



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# All Sources Documented on Tribally Ceded Lands



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