RECLAMATION
Managing Water in the West

U.S. Department of the Interior
Bureau of Reclamation

Fossils in 3D: Making Ancient Bison Bones Available to the World

[Music]

Nicholas: The big project that we're doing right now is of course the Bureau of Reclamation Bison Scanning Project. This is a way for anyone in the world to access these collections and do research or learn about these objects.

Nikki: The Idaho Museum of Natural History is scanning the Bison latifrons Reclamation collection here at the museum into three-dimensional computer models. Those will then be able to be used for research and teaching tools.

Jenny: Reclamation's Snake River Area Office was awarded a grant from the Interior Museum Program of the Department of Interior to enable the virtualization of part of our collections. We were able to use that grant to contract with the Idaho Virtualization Lab and the Idaho Museum of Natural History to help bring us one step closer to making our fossil specimens available to everyone.

Leif: The Bureau of Reclamation has been one of our longest-standing and most important relationships, in terms of our collections. Our collections here at the Idaho Museum of Natural History are really, really rich in vertebrate fossils that are collected primarily from the American Falls Reservoir, which is managed by Reclamation.

Jenny: At Reclamation, we manage water in the west. That's irrigation, flood control, hydropower, flows for fish, and it's also natural and cultural resources. The lands Reclamation oversees have a rich history, and our Museum Property Program manages the vast collectible resources that are found on these lands. And they're managed ***for the public's use and benefit***. Not only do we protect and preserve these collections, we want to make these interesting and important objects available to everyone as broadly as we can.

Mary: I have over 150,000 elements stored in this room. 80 percent of that is from federal lands in Idaho. And divided amongst the different agencies. Reclamation has just under 18,000 elements, but they probably take up 50 percent of my storage space here because of the largeness of some of it.

[music]

Jenny: For this project, we wanted to highlight some of the most impressive and scientifically important fossils, and that's why we chose to scan a significant amount of the *Bison latifrons* specimens in our paleontological collection.

Nikki: Bison latifrons—big, giant bison, really big horns. The males that we have out on display at the Idaho Museum of Natural History, can measure up to nine feet, tip to tip.

Leif: The kinds of fossils we're talking about here, the Bison latifrons or any animal that's a large vertebrate animal with a backbone, those are collected only under permit. There's only so many bones out there. We want to preserve this for not my kids, but my kids' kids' kids' kids. We want to keep these forever.

Nicholas: As part of our jobs as custodians with these is to ensure that they're receiving the best proper care, the best curation, research is being actively done with the collections, and to make sure that as we're archiving these we're archiving them with the best possible tools of the trade. The 3D scan itself is the truest form of the archive that we produce. We can expose it to nothing more than light, and then take that data and produce effectively the same thing through other manufacture methods. So it's safer on the object in terms of replication. These things can be milled, they can be produced out of RenShape Foam or wood or metal or 3D printed in plastic. The reach of this research is global. Anybody with access to a computer once this database is finished will be able to get online and access this shaped data.

Mary: And we have researchers come in from across the world to come here and do their research. I'm real excited about having it in a 3D environment. That's going to be incredible and open these collections up to researchers and also to be used as an education tool across not only the country, but the world.

Leif: We can create something bigger than the sum of its parts. We can create this vision of a virtual museum, where anyone can access this material at any time.

Jenny: Even though these animals are extinct, they are still extremely important. If scans of these specimens get into the right scientific research hands, or into the right elementary school student hands, they could offer possibilities for us to better understand both this species' existence, and their ultimate disappearance, and how we can apply that information to our own species.

Mary: This is our history. It is how we fit in the world. And instead of us looking out at the world, here's an opportunity for the world to look in on Idaho and see what a wonderful place Idaho is, and what it was 10,000 years ago, a million years ago, or even farther back.