Researchers map 33 new big game migrations across American West

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Creating chains of connected landscapes is critical for the conservation of large mammals, such as these pronghorn, who live in ecosystems fragmented by roads and other human infrastructure among the Wind River Mountains. Credit: United States Geological Survey, Public Domain.

A new set of maps that document the movements of ungulates was

published today in the fourth volume of the Ungulate Migrations of the Western United States. The maps in this collaborative U.S. Geological Survey report series reveal the migration routes and critical ranges used by ungulates, or hooved mammals, in the western U.S., furthering scientists' understanding of the geography of big game migrations.

The new volume, "Ungulate Migrations of the Western United States: Volume 4," documents 33 mule deer, pronghorn and elk herd migrations in collaboration with the wildlife agencies of Arizona, California, Nevada, New Mexico, Utah, Washington, Wind River Reservation, Wyoming and, for the first time, the states of Oregon and Colorado and the Pueblo of Tesuque in New Mexico.

With this latest volume, the report series includes details and maps of the migrations and seasonal ranges for a total of 182 unique herds across 10 states.

"We've now mapped nearly two hundred migrations of mule deer, pronghorn, elk and other ungulates across diverse landscapes, from the high alpine Rocky Mountains to the temperate rainforest of the Pacific Northwest and the desert ecosystems of the American Southwest," said Matt Kauffman, the report's lead author and a wildlife biologist with the USGS Wyoming Cooperative Fish and Wildlife Research Unit at the University of Wyoming.

"I'm impressed with how the team has worked together to adopt a standard set of methods to create robust migration maps of these ungulates across the West."

Ungulates migrate throughout the American West each spring and fall to access the most nutritious plants and avoid deep snow. But as the human footprint in the West expands, these species increasingly face obstacles such as new subdivisions, energy development, impermeable fences and

high-traffic roads on their long journeys.

By mapping their migrations, scientists provide critical information—like where migrations overlap with existing and potential obstacles—to managers, policymakers, NGOs and private landowners working to minimize impacts on wildlife.

Mule deer taking Deer 255's route must cross nearly 200 fences annually on their seasonal migrations. Credit: Joe Riis

"To best conserve and protect the habitat used by migrating elk, mule deer, moose and pronghorn, we have to know exactly where these

species move across the landscape," said Blake Henning, chief conservation officer at the Rocky Mountain Elk Foundation.

"That's why this mapping work is so important—it's to ensure their future health and well-being. We support and greatly appreciate the USGS and collaborating states and Tribes for leading this highly collaborative and globally significant effort."

The new report highlights how migration maps can be used for conservation and management amid changing landscapes. For example, when solar farms are built in an ungulate's range, they can negatively impact habitat and create barriers to movement for resident and migratory animals.

The maps featured in the report series have previously been used to inform leasing decisions for oil and gas development, and they can also provide a key resource to help site future renewable energy projects that minimize effects to critical habitat.

"By using these migration maps and data, the Arizona Game and Fish Department was able to have informed conversations with landowners and solar developers about managing for wildlife corridors through a planned solar facility," says Jeff Gagnon, statewide connectivity biologist at the Arizona Game and Fish Department. "These efforts will hopefully allow ungulates to continue their seasonal migrations."

In addition to managers from the respective state wildlife agencies, co-authors on the fourth volume include the U.S. Forest Service, U.S. Fish and Wildlife Service, National Park Service, Bureau of Land Management, Navajo Nation Department of Fish and Wildlife, Pueblo of Tesuque Department of Environment and Natural Resources, and Shoshone & Arapaho Tribes Fish and Game, among other partners. Maps of each herd were produced in collaboration with state and Tribal

experts by cartographers from the USGS and the InfoGraphics Lab at the University of Oregon.

The Corridor Mapping Team, established in 2018 in response to Department of the Interior Secretary's Order 3362, is a state-Tribal-federal partnership working to map ungulate migration corridors with standard techniques. The first three volumes in the Ungulate Migrations of the Western United States report series were published in 2020 and 2022.

More information: Matthew Kauffman et al, Ungulate migrations of the Western United States, volume 4, (2024). DOI: 10.3133/sir20245006

To explore migration routes and ranges, visit the interactive www.westernmigrations.net portal, or download the map files from www.sciencebase.gov.

Provided by United States Geological Survey

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