

Prepared in Cooperation with the Klamath Tribes Natural Resources Department

A Partnership Between the USGS and the Klamath Tribes to Apply Structured Decision Making for Chronic Wasting Disease Management

Project Overview: The Klamath Tribes (TKT) are the Klamath, Modoc, and Yahooskin Paiute peoples, and are the first peoples of the land, having lived in ancestral lands of Oregon and California since time immemorial. Members of TKT have rights to hunt, fish,

trap, and gather, including the harvest of mule deer (*Odocoileus hemionus*) and elk (*Cervus canadensis nelsoni*) within the 1.19 million acres of their Reserved Treaty Rights Area (fig. 1; Klamath and others, 1864).

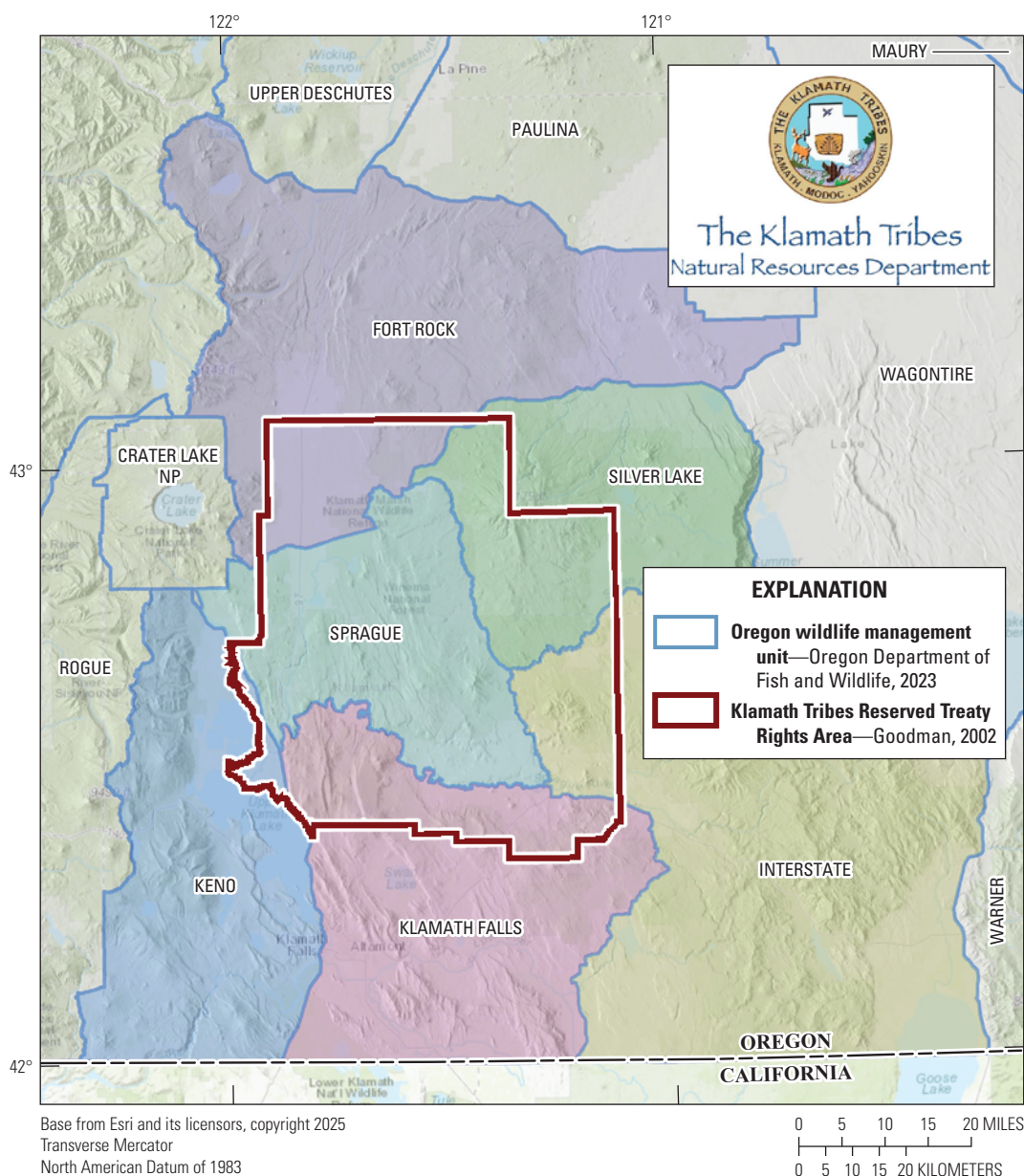


Figure 1. Map showing six Oregon wildlife management units within the Klamath Tribes Reserved Treaty Rights Area.

Anthropogenic changes threaten the well-being of mule deer and elk and of the Tribes that rely on them. Today, these species are a primary protein source for TKT. They are traded within TKT and among other Tribes and provide materials for cultural and sacred items such as regalia. However, mule deer numbers have been declining across the western states for the past several decades because of multiple stressors, including persistent and frequent drought and wildfires, habitat loss and degradation, vehicle mortality, and increasing barriers to migratory movements between summer and winter ranges (fig. 2; Jensen and others, 2023). The migratory movements of mule deer, which allow deer to access the best available seasonal habitats, put them at risk of another potential stressor—infection with chronic wasting disease (CWD; figs. 3A, B). Chronic wasting disease is a fatal prion disease of deer that has been detected in 36 U.S. states. It was detected in free-ranging mule deer in northern Idaho in 2021, prompting the Tribes to initiate a planning process for CWD surveillance, prevention, and response measures to preserve and protect the deer and elk within the Reserved Treaty Rights Area.

In 2023, the Klamath Tribes Natural Resources Department began to develop their CWD plan by incorporating preliminary input provided by the Klamath Indian Game Commission (KIGC) and working with scientists from the U.S. Geological Survey (USGS). This collaborative effort includes the application of structured decision making and the development of mathematical models to analyze potential CWD management strategies. The result will be a transparent assessment that incorporates TKT values throughout the process and can inform place-based management of the cultural, natural, and physical resources upon which the Tribes depend. In addition, this process may provide

opportunities for broader coordination by natural resource management agencies to work together to ensure the long-term health and sustainability of deer and elk populations within the Reserved Treaty Rights Area and throughout the state of Oregon (fig. 1).

Klamath CWD Management Planning Process— Timeline and Goals

Phase 1—Scoping (2023)

- ◆ The USGS facilitated conversations with TKT Natural Resources Department to develop a shared understanding of the scope and scale of the CWD management planning process, build relationships between USGS and TKT Natural Resources Department staff, and understand the complexities of the social-ecological system of mule deer, elk, environment, and peoples of the region.

Phase 2—Preliminary Evaluation of CWD Management Strategies (2023 and 2024)

- ◆ TKT Natural Resources Department and USGS worked together to rapidly analyze the performance of CWD management strategies over the next 10 years. The spatial scope was focused on the Klamath Tribes' historically ceded territories, with a particular focus on the Reserved Treaty Rights Area.



Figure 2. A mule deer buck walks across a landscape recently scarred by wildfire. Multiple stressors, including drought, habitat loss, and disease, may drive changes in mule deer populations. Image from Klamath Tribes Natural Resources Department. Used with permission.

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Figure 3. Photographs taken by game cameras in the Klamath Tribes Reserved Treaty Rights area illustrate how use of communal watering locations may facilitate disease transmission, as they are used by many species, including, *A*, elk and, *B*, mule deer. Images are from Klamath Tribes Natural Resources Department. Used with permission.

- ◆ The strategies included actions to prevent, surveil for, and respond to CWD, as well as initiatives to engage Tribal members in conversation about the potential dangers of CWD.
- ◆ TKT Natural Resources Department and KIGC identified fundamental objectives that represent the values of the Tribes with respect to mule deer and elk. They include:
 - Maximize sustainable populations of mule deer in the Reserved Treaty Rights Area.
 - Maintain a sustainable population of elk in the Reserved Treaty Rights Area.
 - Minimize the risk of CWD spread into and among the mule deer and elk herds that occupy and (or) migrate through the historic ceded territories.
 - Maximize tribal community outreach to communicate CWD risks and regulations.
 - Minimize the resources required to implement CWD and elk and (or) deer management.
 - Maximize opportunities for Tribal members to exercise treaty rights to hunt, fish, and gather, and to practice cultural activities
 - Maximize the spiritual, physical, and mental health and well-being of TKT members.
- ◆ TKT Natural Resources Department developed five potential CWD management strategies that varied in their intensity of response to CWD before and after detection. Included in the strategies are actions that affect mule deer directly (for example, modifying availability of communal watering locations or guzzlers; [figs. 4A, B](#)), their habitats, and human relationships with deer.
- ◆ TKT Natural Resources Department and USGS developed preliminary estimates of the relative performance of each strategy against the seven objectives using a combination of expert elicitation and simplified mathematical models to predict CWD spread after introduction.

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Next Steps—Revisiting the Preliminary Evaluation and Plan Drafting (2025 and beyond)

Given the insights gained through the preliminary evaluation, TKT Natural Resources Department are revisiting the major elements of the plan. The USGS is supporting those efforts by preparing more advanced mathematical models to better represent real-world dynamics and predict the potential effects of the considered alternatives.

- ♦ The five strategies will be refined to incorporate the insights gained during the preliminary evaluation and to better align them with the scope of the Tribes' desired CWD management plan.
- ♦ The USGS is developing methods to predict how well each alternative may achieve the Tribes' objectives over the next 10 and 20 years, given the uncertainty of when CWD will arrive in the historic ceded territories.
- ♦ TKT Natural Resources Department will continue to work with TKT advisory committees.
- ♦ USGS will support TKT Natural Resources Department in providing technical details to support the drafting of the CWD plan and implementing its education and surveillance efforts.

References Cited

- Goodman, E., 2002, Protecting habitat for off-reservation tribal hunting and fishing rights—Tribal comanagement as a reserved right: *Environmental Law*, v. 30, n. 2, p. 279-361 accessed June 4, 2024, at <https://www.jstor.org/stable/i40128928>.
- Jensen, W.F., Bleich, V.C., and Whittaker, D.G., 2023, Historical trends in black-tailed deer, mule deer, and their habitats, in *Ecology and management of black-tailed deer and mule deer of North America*: CRC Press, p. 25–42, accessed May 3, 2024, at <https://doi.org/10.1201/9781003354628-3>.

B



Figure 4. A, Image of mule deer in the Klamath Tribes Reserved Treaty Rights Area. B, A communal watering location also known as a guzzler. Images are from Klamath Tribes Natural Resources Department. Used with permission.

Klamath Indian Tribe of Oregon, Yabuskin Band of Snake Indians, Modoc Tribe, Huntington, J.W.P., and Logan, W., 1864, Treaty between the United States of America and the Klamath and Moadoc Tribes and Yahooskin Band of Snake Indians, Oct. 14, 1864, 16 Stat. 707: Washington, D.C., 5 p., accessed May 3, 2024, at <https://treaties.okstate.edu/treaties/treaty-with-the-klamath-etc-1864-0865>.

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