ECOLOGICAL DROUGHT MANAGEMENT CHALLENGES

Understanding drought impacts to fish, wildlife, their habitats, & people

NATIONAL & REGIONAL CLIMATE ADAPTATION SCIENCE CENTERS

ALASKA

- Larger, more frequent wildfires
- Less snowpack & earlier melt
- Rapidly warming winters & springs

NORTHWEST

- More frequent wildfires
- Less snowpack & earlier melt
- Warmer winters & hotter summers

NORTH CENTRAL

- Competing water demands
- More rain, less snow
- Diverse seasonal warming trends across the region

GREAT LAKES

- Competing water demands
- Changing river flows & lake levels
- Impacts to forests & timber production

NORTHEAST

- More rain, less snow
- More intense short-term droughts
- Rich biodiversity at risk

PACIFIC ISLANDS

- More severe wildfires
- Invasive species are spreading
- Rich biodiversity at risk

SOUTHWEST

- Larger & more severe wildfires
- Competing water needs
- Forests are dying

SOUTH CENTRAL

- Competing water demands
- Rapid drought development
- More extreme & expensive drought & flood cycle

SOUTHEAST

- Competing water demands
- Changing water flows
- Rich biodiversity at risk

ECOLOGICAL DROUGHT IS:

Drought that impacts fish, wildlife, their habitats, & people

HOW OUR WORK IS DIFFERENT

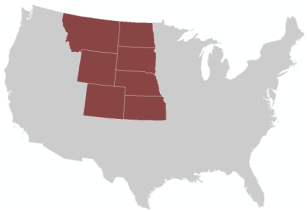
- Drought can change ecosystems, with **implications for human communities**
- But these **ecological impacts of drought** are not typically examined
- We are identifying how drought impacts ecosystems to **support adaptation planning**

Learn more:
casc.usgs.gov/science/ecological-drought

Symbols courtesy of the Integration and Application Network, University of Maryland Center for Environmental Science (ian.umces.edu/symbols/)

USGS science for a changing world

ADDRESSING MANAGEMENT CHALLENGES: NORTH CENTRAL REGION



KEY CHALLENGES

► Competing water demands (municipal, agricultural, ecological)

► More rain, less snow, and earlier spring melt

► Diverse seasonal warming trends across the region

DROUGHT WORK

► Identify how changing climate conditions drive drought in the region

► Assess drought impacts on wildlife, habitat, and livelihoods

► Help communities and ecosystems adaptively manage and prepare for drought

CONTACT US

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usgs.gov/casc/northcentral

Learn more about these projects:

usgs.gov/casc/ecodrought

DROUGHT IN THE NORTH CENTRAL: AT A GLANCE

Drought is a naturally occurring feature of climate in the North Central region. However, as **the frequency, severity, and duration of droughts increase**, wildlife and important habitat like forests may be pushed beyond their ability to recover.

Average temperatures in the North Central have **increased approximately 1.8°F (1.0°C) over the last five decades**. Temperatures are projected to continue to increase, with larger changes occurring in winter, spring, and fall.

HELPING TRIBES PREPARE FOR DROUGHT

OUR SCIENCE: Working directly with tribal managers to develop planning tools that will improve drought preparedness and response on the Wind River Indian Reservation, WY. Tools include assessments of drought vulnerability, quarterly drought summaries providing a snapshot of current and forecasted drought conditions, and a reservation-wide Drought Management Plan.

IMPACT: Helping tribes better plan for major and micro drought periods, which heavily impact resources and livelihoods. These tools are already being used by the reservation to make informed water allocation decisions.

"As we move through time and the populations increase around us, we understand how sacred this part of the planet is…But we need to take care of it. And that's why we need professionals to do that, and professional support like USGS, North Central Climate [Adaptation] Science Center…" - From interview with a Wind River stakeholder

Learn more: https://go.usa.gov/xQJF2

TOOLS TO SUPPORT ADAPTIVE LAND MANAGEMENT

OUR SCIENCE: Worked closely with management groups in southwest Colorado, including ranchers, Trout Unlimited, watershed managers, conservancy districts, and others to develop tools to support adaptive land management in the region in the face of changing climate conditions.

IMPACT: Several local groups are already incorporating the identified adaptation strategies, vulnerability assessments, and climate scenario reports developed as part of this work into their management approaches.

USERS: BLM, Gunnison Field Office ● USFS ● NPS ● Ute Mountain Ute Tribe ● Southern Ute Tribe ● CO Parks & Wildlife ● CO State Forest Service ● CO Natural Heritage Program ● USFS San Juan ● Private landowners

Learn more: https://go.usa.gov/xQJFj