



Natural Resources Conservation Service  
U.S. DEPARTMENT OF AGRICULTURE



# SOIL SCIENCE AND RESOURCE ASSESSMENT

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# Soil Science and Resource Assessment (SSRA)







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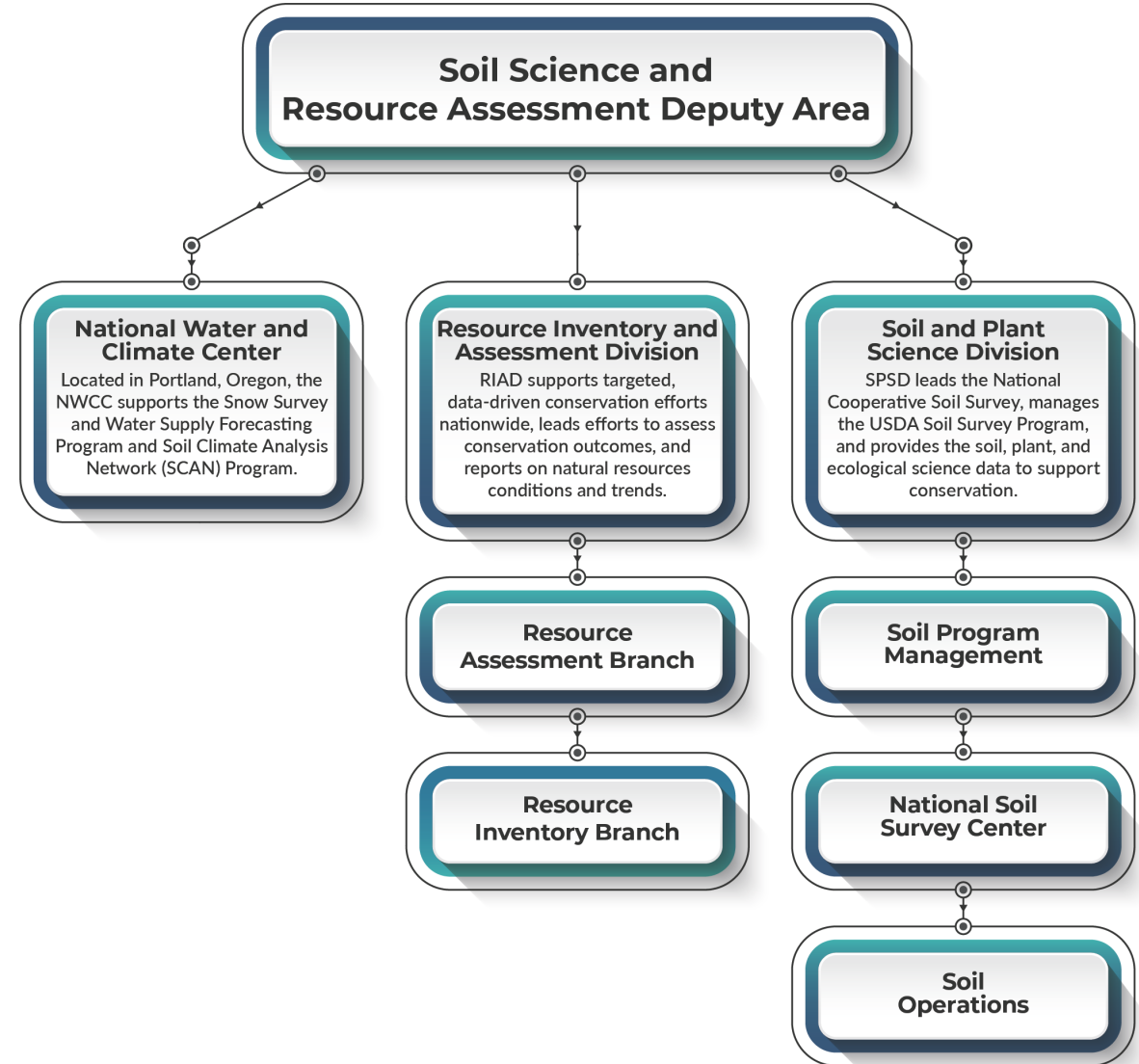
## Who we are:

- More than 540 employees across the U.S. providing key resources to support science-based, data-driven conservation.
- Includes:
  - Soil and Plant Science Division (SPSD)
  - National Water and Climate Center (NWCC)
  - Resource Inventory and Assessment Division (RIAD)



# SSRA Structure

- **Supporting** Conservation Delivery.
- **Supporting** Conservation Planning and Technical Assistance.
- **Informing** Program and Policy Decisions.
- **Serving** Partners and the Public.







*Photos: Farm Security Administration*





## Supporting Conservation Delivery

# National Cooperative Soil Survey

Fulfills legislative mandate to:

- Inventory the soil resources of the U.S.
- Interpret and share the soil information.
- Promote use of soil surveys for community planning and resource development issues related to both farm and non-farm use.

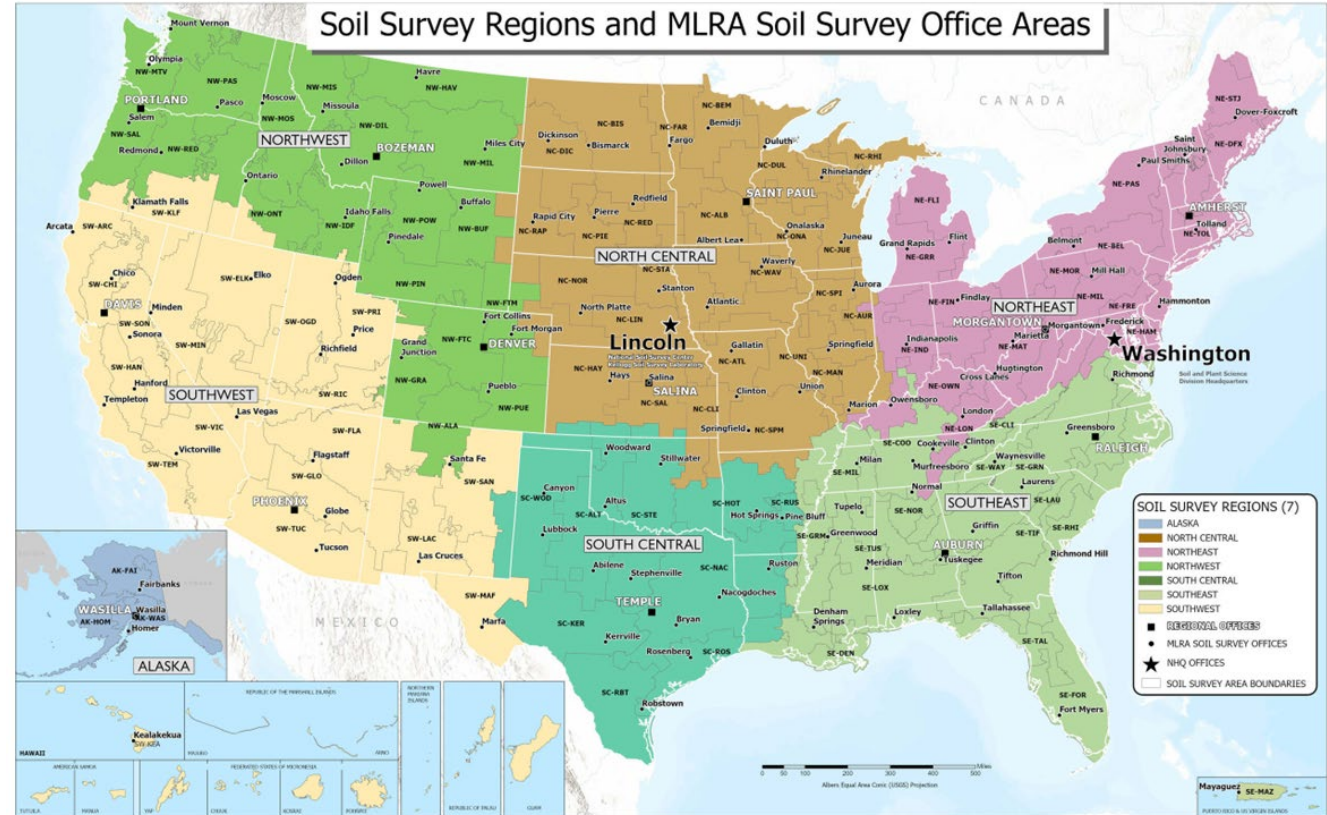




Supporting Conservation Delivery

# Regional Soil Survey

- 122 Major Land Resource Area (MLRA) offices across seven Soil Survey Regions
- National Soil Survey Center, and the Kellogg Soil Survey Laboratory.
- Data through Web Soil Survey, Soil Data Access, Ecosystem Dynamics Interpretive Tool, Conservation Assessment and Ranking Tool, and Conservation Desktop.







## Supporting Conservation Delivery

# Online Resources

- Web Soil Survey is a one-stop shop to a wealth of free, soil information along with soil maps, properties, and interpretations.

[websoilsurvey.nrcs.usda.gov](http://websoilsurvey.nrcs.usda.gov)

- Soil Data Access is a suite of web services that allows advanced users to submit custom queries and stream data into software.

[sdmdataaccess.nrcs.usda.gov](http://sdmdataaccess.nrcs.usda.gov)





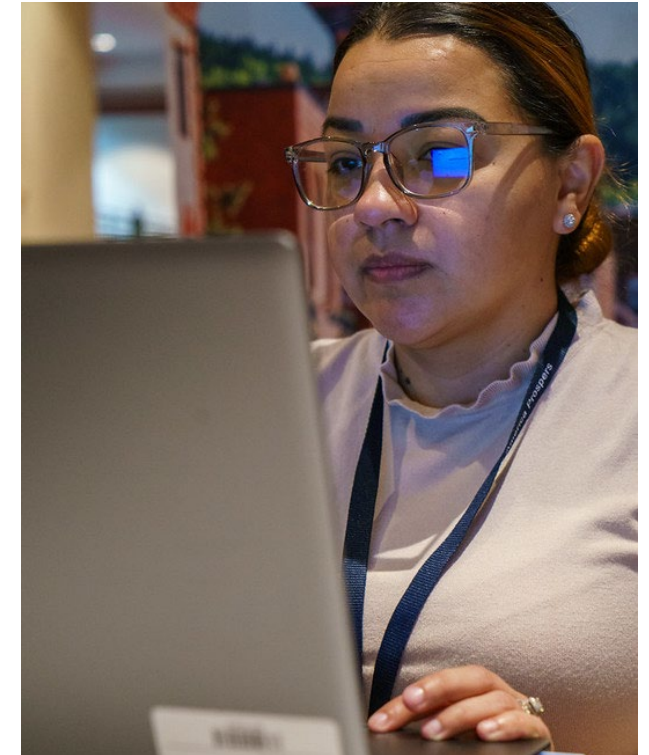
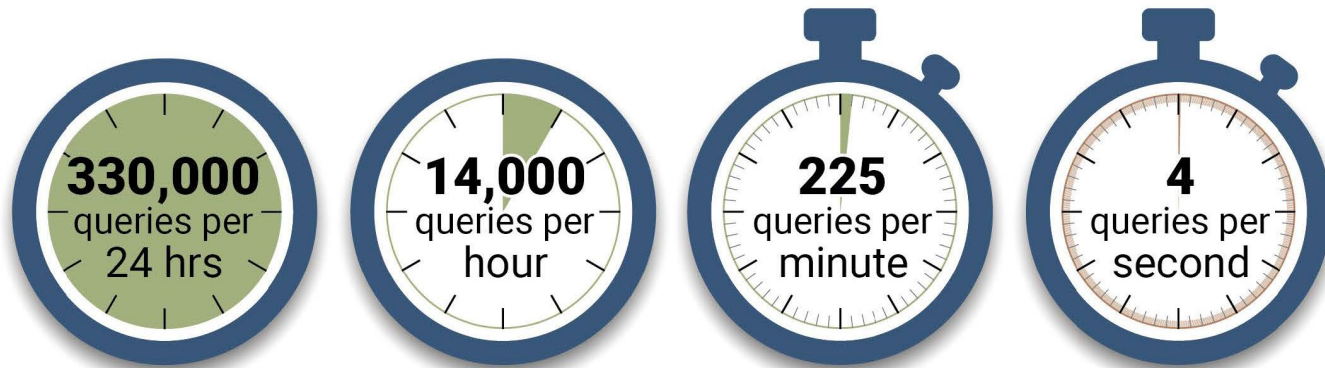


## Supporting Conservation Delivery

# Online Resources

### Soil data is in high demand and critical to conservation!

- Conservation partners and the public accessed SPSP's soil data through Soil Data Access over **120 million times** in FY2023.
- In 2023, our soil and plant science data supported **3.5 million Web Soil Survey users**, including 1,766 new customers.





## Supporting Conservation and Technical Assistance

# Dynamic Soils Hub and State Collaboration

- Dynamic Soils Hub expands capacity to model and report on soil properties.
- Hub developed to rapidly respond to customer requests for science-based soil property data.
- At state level, collaboration with state conservation staff to support CIGs, CSP, EQIP, and soil health efforts.
- Soil sensitivity index to rate soils based on their sensitivity to nutrient runoff.

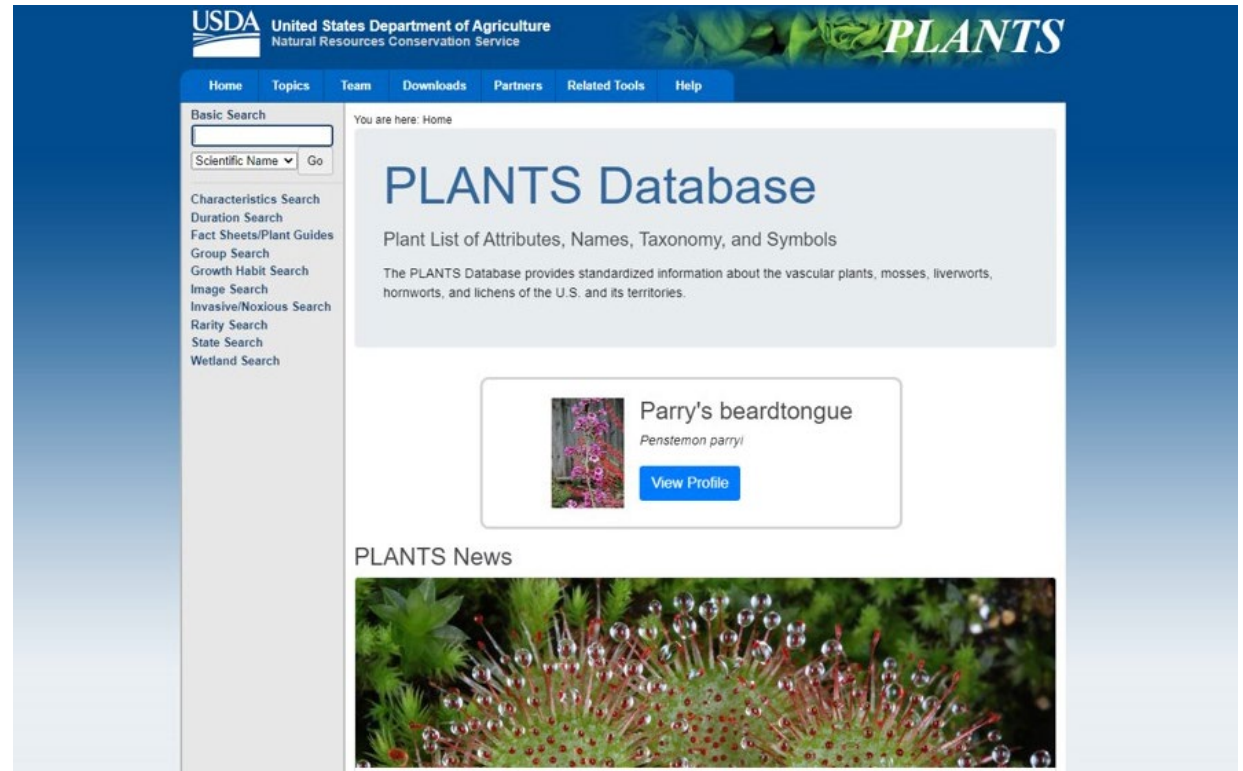




## Supporting Conservation Delivery

# USDA PLANTS Database

- National Plant Data Team curates and maintains the USDA PLANTS database, which includes more than 40,000 species.
- Customers from 243 countries accessed the PLANTS database more than 4 million times in 2023 to identify plants.
- NRCS staff use the database to view cover crop plants, culturally significant plants, and identify the wetland indicator status for wetland.

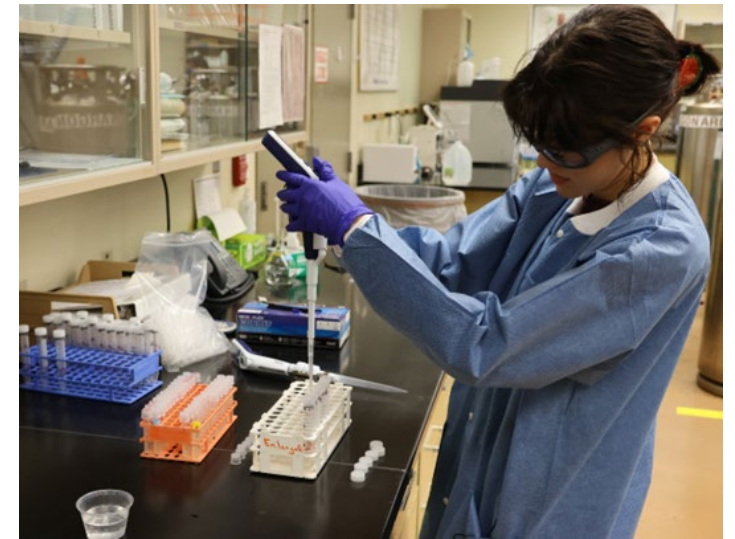




## Supporting Conservation Delivery

# Soils, Ecological, Botanical Databases

- Manages national soils, laboratory, ecological, and botanical databases - the largest, highest resolution of natural resource inventory data in the world!
- The world-renowned Kellogg Soil Survey Laboratory in **Lincoln, Nebraska**, provides data and standards for state and resource soil scientists.
- Laboratory staff conduct analyses requested by NRCS state conservation staff and provide data that supports conservation activities involving soil health, wetlands, and ecological sites.





Supporting Conservation Planning and Technical Assistance

# Technical Soil Services

- More than 400 SPSD staff provides Technical Soil Services to assist all states and territories through technical consultations, highly erodible land (HEL) determinations and appeals, off-site wetland determinations, NRCS engineering plans, and outreach.





Informing Program and Policy Decisions

# Conservation Planning Tools



SPSD's soil and ecological information is foundational to two key NRCS implementation tools conservation planners use:

- Conservation Desktop
- Conservation Ranking and Assessment Tool



This provides science-based approaches to conservation.

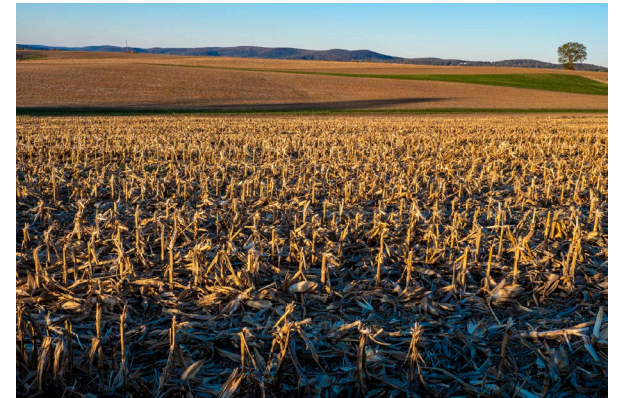




## Supporting Conservation Delivery

# Conservation Effects Assessment Project

- Our Conservation Effects Assessment Project, CEAP, is led by NRCS to **evaluate and inform voluntary conservation** efforts across the nation's working lands.
- CEAP provides the science backing needed by NRCS, our conservation partners, and the farmers, ranchers, and forest landowners we collectively serve to:
  - **Identify how and where to invest conservation resources** most strategically.
  - **Evaluate the effects of conservation actions** and **identify conservation outcomes**.
  - Leverage lessons learned from these findings to **strengthen future conservation delivery**.

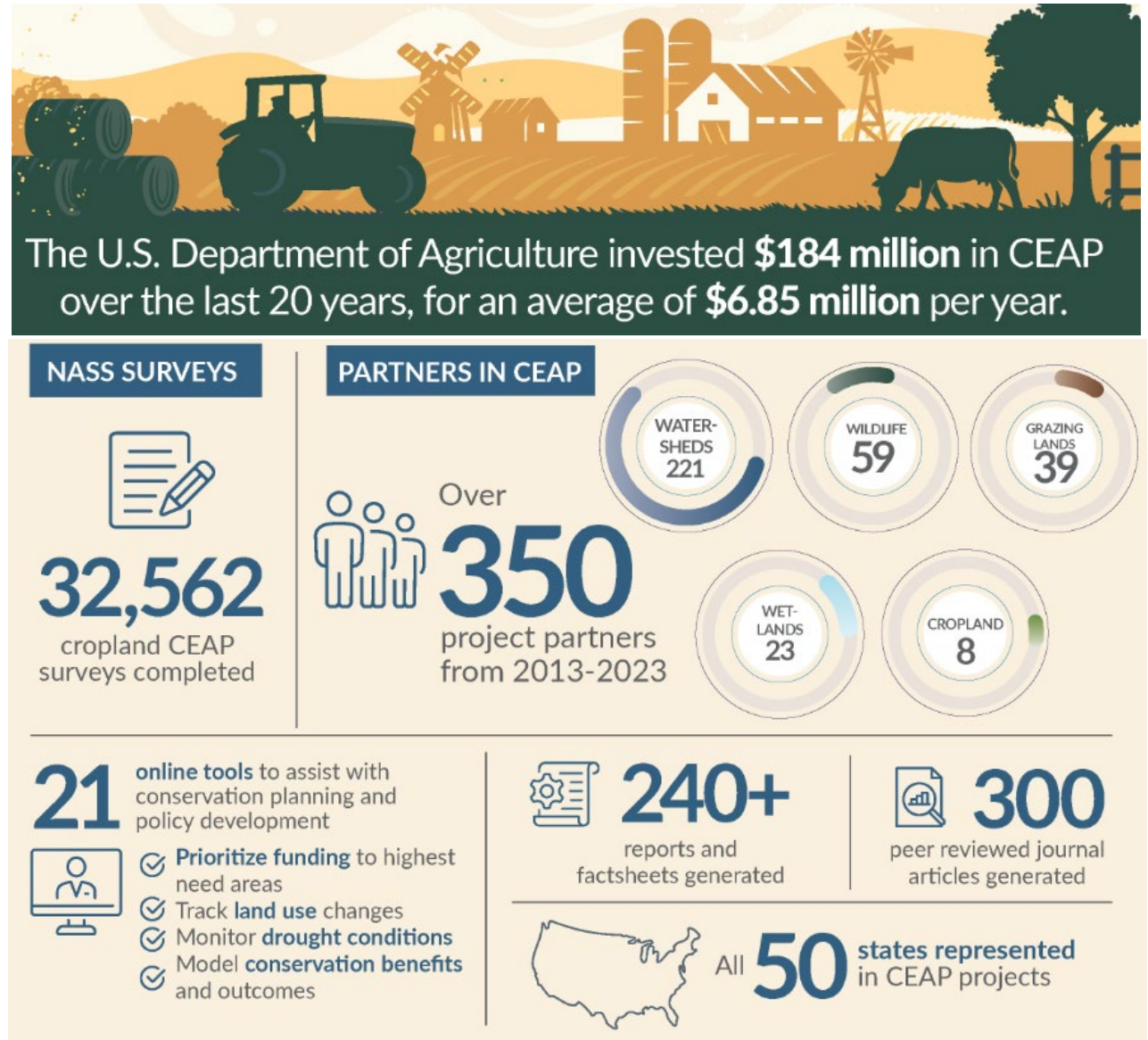


Supporting Conservation Delivery

# Areas of Focus

CEAP quantifies and reports on trends in conservation practices, and associated outcomes, over time. This is done through assessments that focus on:

- Croplands
- Grazing Lands
- Watersheds
- Wetlands
- Wildlife







## Supporting Conservation Delivery

# CEAP Cropland Assessments

- Quantify the effects of voluntary conservation efforts across the nation's cropland at both regional and national scales.
- Farmers have completed more than 35,000 CEAP cropland surveys over the past 20 years.
- The latest Cropland Assessment identified a nationwide increase in soluble nitrogen and phosphorus losses from cropland fields over a 10-year period. These findings **inform NRCS's focus on SMART Nutrient Management Planning.**





## Supporting Conservation Delivery

# CEAP Grazing Land Assessments

- Evaluate the effects of conservation practices across the nation's grazing lands, and areas where enhanced conservation can address natural resource concerns.
- Provide web-based tools that enable ranchers, other land managers, and conservationists to assess past or current land conditions and plan strategic conservation goals.
- A recent example is the **Rangeland Brush Estimation Tool**, which ranchers and other land managers may use to quickly estimate woody plant canopy cover and assess woody encroachment on western rangelands.







## Supporting Conservation Delivery

# CEAP Watershed Assessments

- Bring together researchers, conservation partners, and producers to deliver findings that support both productive agricultural lands and environmental benefits.
- Inform effective management practices and science-based conservation efforts.
- Deliver findings to **advance water quality efforts, including for key areas** such as the Western Lake Erie Basin and Chesapeake Bay **and key focuses** such as legacy phosphorus.





## Supporting Conservation Delivery

# CEAP Wetland Assessments

- Quantify the effects of voluntary conservation efforts for wetlands located in agricultural settings at both regional and national scales.
- For example, a recent study identifies key strategies for maximizing the water quality benefits of agricultural wetlands to reduce nutrient loss to surrounding waterbodies
- This **supports conservation goals both locally and for terminal waterbodies** like the Great Lakes and Gulf of Mexico.







## Supporting Conservation Delivery

# CEAP Wildlife Assessments

- From the sage grouse in the west to rare turtles in the east – and many species in between – CEAP wildlife assessments inform voluntary conservation solutions that benefit both wildlife and working lands nationwide.
- Answer questions that are critical to effective conservation delivery, such as key threats to at-risk turtles or the effects of cover crops on grassland birds.
- **Support effective spatial targeting of conservation efforts and provide science backing**, including for the Working Lands for Wildlife Frameworks for Conservation Action.

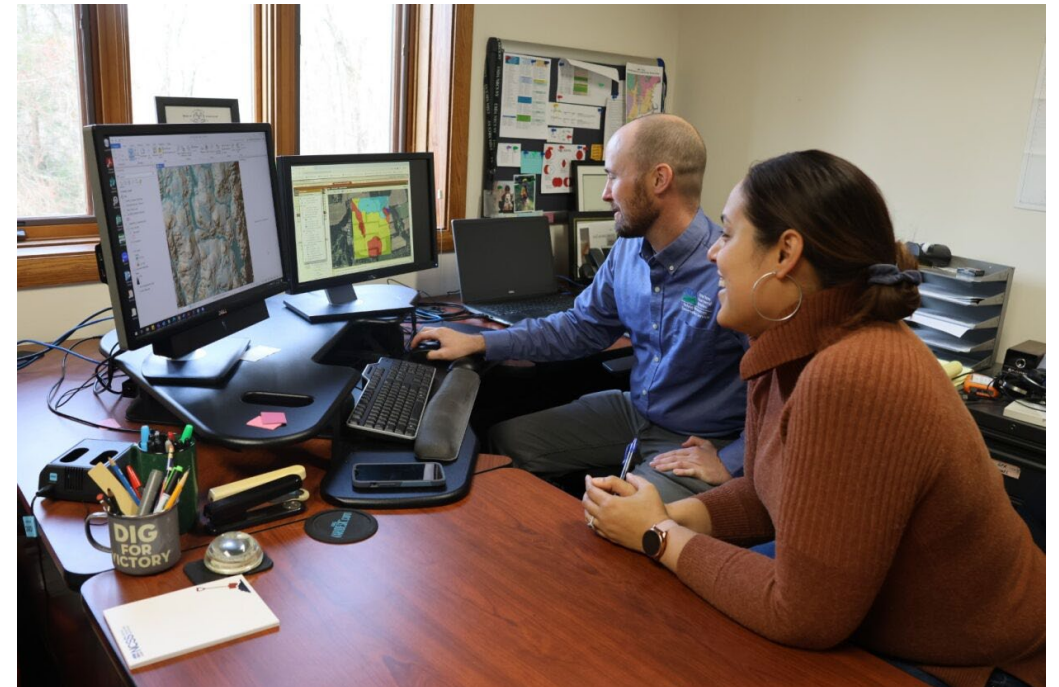




## Serving Partners and the Public

# Conservation Outcomes Webinars

- RIAD hosts free one-hour webinars to provide key findings, data, and tools to support producers and partners in pursuing voluntary conservation efforts across the nation's working lands.
- Feature CEAP scientists and other subject matter experts speaking on a diversity of topics.
- Upcoming **webinar on April 25** will deliver new findings on the effects of cover crops on grassland birds. **Learn more:**  
**[nrcs.usda.gov/conservation-outcomes-webinar](https://nrcs.usda.gov/conservation-outcomes-webinar)**.







Serving Partners and the Public

# National Resources Inventory (NRI)

- RIAD is responsible for the **National Resources Inventory (NRI)**, a statistical survey of land use and natural resource conditions and trends.
- Since 1977, NRI has sampled **3 million points** and is the nation's largest and longest survey of non-Federal lands.
- Data from the NRI provide the foundation for shaping major agri-environmental policy and land use decisions nationwide.





Supporting Conservation Delivery

# National Water and Climate Center



- The National Water and Climate Center (NWCC), located in Portland, Oregon, supports the Snow Survey and Water Supply Forecasting Program and Soil Climate Analysis Network (SCAN) Program.
- Responsible for producing and disseminating accurate and reliable water supply forecasts and other climatic data to its wide variety of users.

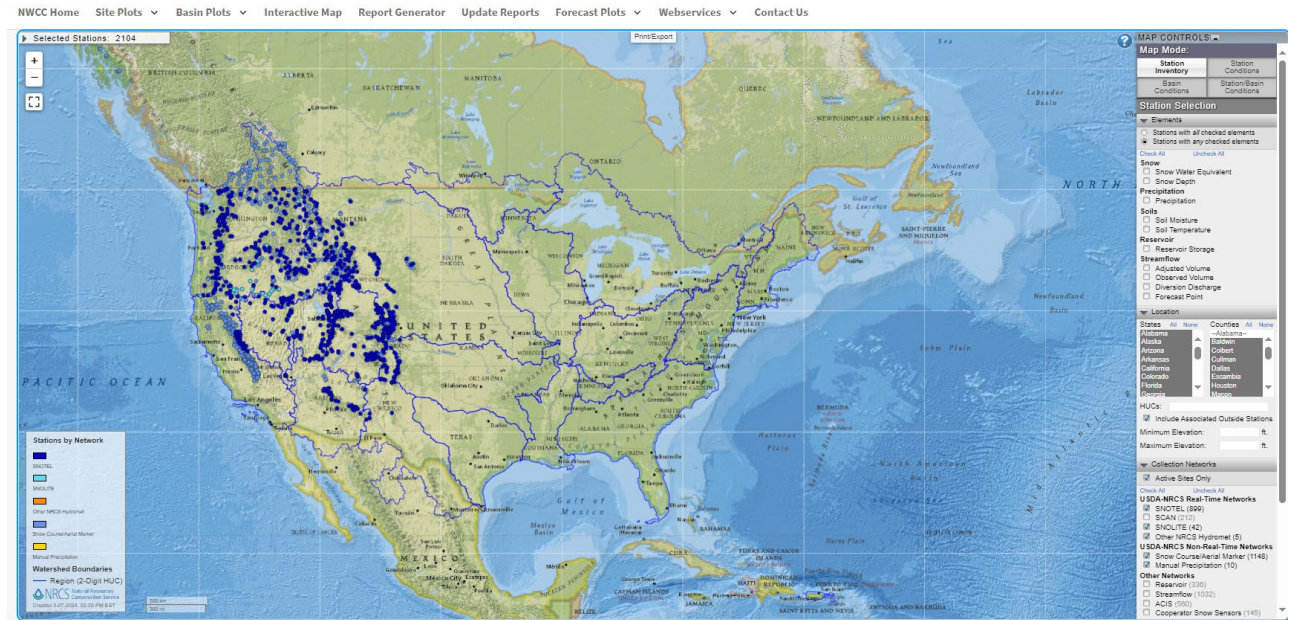




Supporting Conservation Delivery

# National Water and Climate Center

- National Water and Climate Center collects water and climate data from over 4,500 remote data collection sites located across North America, including over 2,100 **SNOTEL, SNOLITE, and snow course locations.**
- Data helps farmers, communities, and governments manage the water available more effectively and efficiently.





## Supporting Conservation Delivery

# Soil and Climate Networks

- 200+ **Soil and Climate Network (SCAN)** sites and 20+ **Tribal Soil Climate Analysis Network (TSCAN)** sites in 45 states and territories.
- All sites collect and record atmospheric data hourly that is available on the web and through multiple web services.
- Public can access and download near real-time soil data, reports, products, and resources:  
[www.nrcs.usda.gov/resources/data-and-reports/soil-climate-analysis-network](http://www.nrcs.usda.gov/resources/data-and-reports/soil-climate-analysis-network)





Informing Program and Policy Decisions

# USDA Climate Hubs

- Established in 2014 by Sec. of Agriculture Vilsack.
- Develop and deliver science-based information and technologies to natural resource and agricultural managers.
- Help enable climate-informed decision making, reducing risk, and building resilience to climate change.

[climatehubs.usda.gov](https://climatehubs.usda.gov)

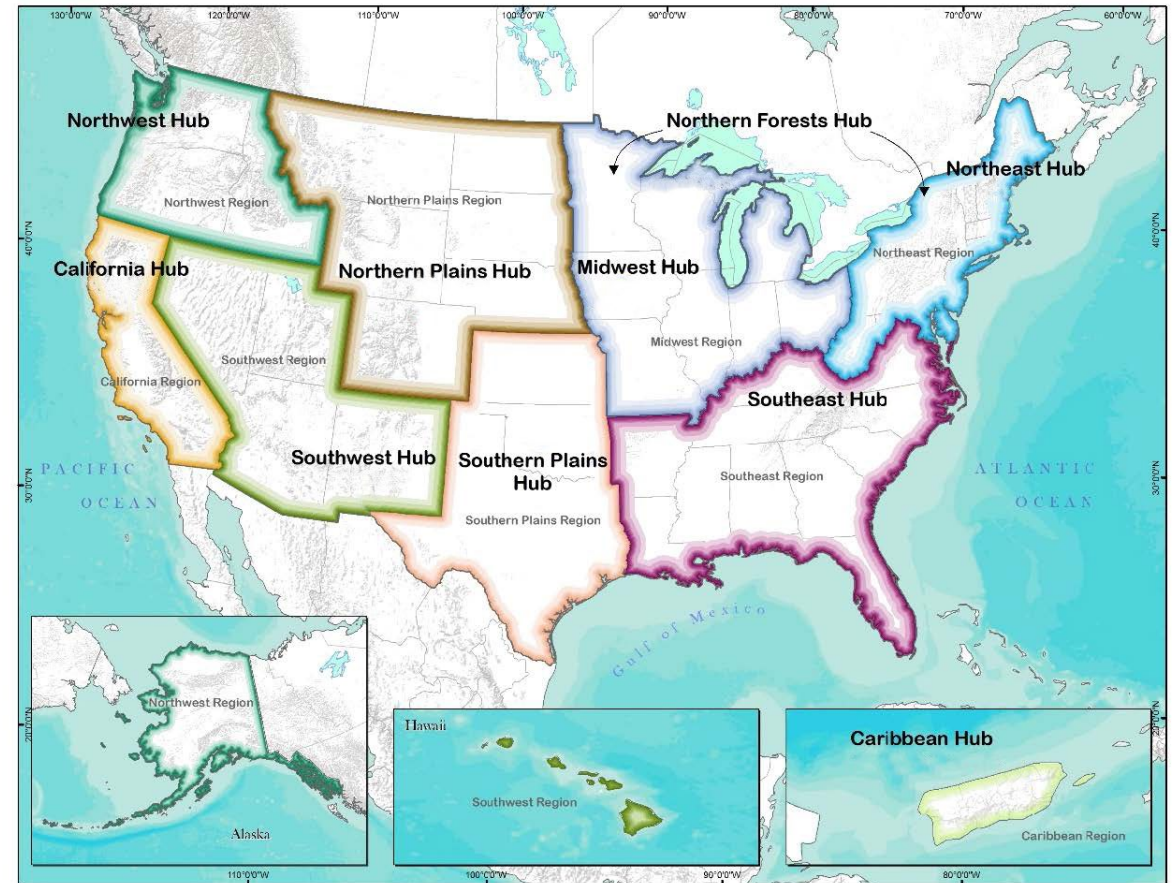




## Informing Program and Policy Decisions

# USDA Climate Hubs

- 10 regional hubs across U.S., including and International Hub.
- Connect partners including:
  - Federal
  - State
  - Tribes
  - Cooperative Extension
- Leverage USDA investments to increase adoption of climate-informed adaptation strategies on agriculture and forested lands through education and outreach.







# Questions?



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