U.S. Fish & Wildlife Service Volume 1-19

Yreka Fish and Wildlife Office

Winter - Spring 2019 Newsletter

IN THIS ISSUE

Notes from the Field Supervisor

The mission of the U.S. Fish and Wildlife Service (Service) is "working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people."

The sentiment behind this mission is both purposeful and inspirational. Yet, it is far too broad in scope for any one agency or organization to tackle alone. For this reason, the Service relies heavily on collaboration. In this edition of the Yreka Fish and Wildlife Office (Yreka FWO) newsletter, we highlight a few of the many partnerships that are central to achieving our mission in Siskiyou County and the mid-Klamath Basin area.

The City of Yreka has been an excellent partner in our efforts toward recovery of the Yreka phlox, which was listed as endangered under the Endangered Species Act (ESA) in 2000. Yreka phlox is the official city flower, and is depicted in a stained glass window at Preservation Hall in Yreka.

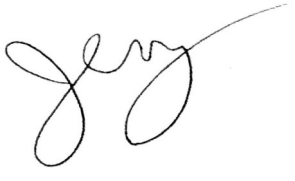
When a species is added to the endangered species list it means the species is in need of help to survive. But preventing the need to list a species is also a top priority of the Service. A good example of this is the Siskiyou mariposa lily. In partnership with the Klamath National Forest and the Bureau of Land Management, the Service developed a conservation strategy for the Siskiyou mariposa lily, which is currently under implementation. We have been able to avoid listing the Siskiyou Mariposa lily and the conservation strategy is playing a major role in our efforts to protect this sensitive flower species, which was once a candidate for ESA protection.

A key part of that strategy is to project the lily from threats, and the partner that plays a central role in helping to protect the lily is the Siskiyou County Department of Agriculture. The County is tasked with controlling and managing invasive weeds such as dyer's woad, or as it is known locally, "Marlahan Mustard." This invasive weed is such a major threat to both the Yreka phlox and the Siskiyou mariposa lily, and we are very thankful for all the County does to help protect these local treasures.

In this edition, you'll also learn about our partnership with Inter-Tribal Student Services (ISS) to organize special retreats for both tribal and non-tribal members to nurture a renewed understanding and appreciation of the natural world based on traditional and cultural practices.

Another area where we work closely with partners is in monitoring important natural resources. As you'll read in the coming pages, ensuring sustainable fisheries is a great example of collaborative work conducted with a variety of partners including agencies, tribes, watershed councils, natural resources centers and local volunteers. Both spring and fall chinook salmon are experiencing declines so monitoring their populations and providing the data to federal and state fisheries management organizations is critical.

In the words of our fisheries biologist, Serena Doose, the Yreka FWO works with "other passionate partners to restore fish passage and create habitat, one conversation and one handshake at a time."



Jenny Ericson
Field Supervisor

Of Weeds and Warriors: Protecting Native Plants

Since 2006, the Siskiyou County Department of Agriculture (County) has partnered with the Yreka FWO and the Klamath National Forest to conserve two native plant species: the Siskiyou mariposa lily and the Yreka phlox.

The County also takes a leading role in coordinating activities of the interagency Siskiyou County Weed Management Area which is instrumental in protecting native plants and controlling invasive plants.

The County works to conserve many native plants including the lily and the phlox. Both of these species are found in limited areas near Yreka, CA. They are considered endemic species because they are found nowhere else in the world.

The Siskiyou mariposa lily prefers open rock outcrops and talus, and is restricted to three isolated ridgetops in the Klamath-Siskiyou Range. In 2013 a conservation agreement, which guides efforts to conserve the lily, was created between the Service, Klamath National Forest and the BLM-Medford District Office. Coordinated efforts such as this resulted in the Services decision to remove the Siskiyou mariposa lily from the group of species that are considered candidates for listing under the Endangered Species Act (ESA).

Yreka phlox is tough, preferring serpentine soils where it is difficult for most plants to survive. It is the official flower of the city of Yreka and is known from only five locations in Siskiyou County. A recovery plan from 2006 outlines the steps needed to recover and remove Yreka phlox from ESA protection.

Common and widespread in Siskiyou County today, dyer's woad was originally introduced in the 1880's from Europe to the Scott Valley west of Yreka, reportedly in straw used as packing material for a piano. Since then it has spread throughout much of the western United States.

The plant is named dyer's woad because of its use in dying textiles and as a paint pigment. The fruits release chemicals that can prevent the germination of seeds of other species.

Competition with the invasive and insidious woad is the biggest threat to the survival of the Siskiyou mariposa lily, and to a lesser extent the Yreka phlox. In response, the County developed a program for removing woad and yellow-star thistle year after year from private lands and roadsides within the lily's habitat.

Over the years, the County has been relentless, passionate and unflagging in their determination to rid their lands of its most pernicious weeds and take appropriate conservation measures on behalf of the Siskiyou mariposa lily and Yreka phlox. We credit Siskiyou County for their role in helping protect these two native species.

Future weed management efforts include manual, mechanical and biological control methods. The County obtained a permit to introduce a type of fungal rust that specifically targets dyer's woad, and is beginning their second season of field testing.

Jodi Aceves, Siskiyou County senior deputy agricultural commissioner, praised the partnership.

"It's exciting to be a part of the inter-agency effort in removing the Siskiyou mariposa lily as a candidate for protection under the ESA," said Aceves, "and to help protect the unique Yreka phlox for future generations."

- Nadine Kanim, fish and wildlife biologist; Gina Glenne, Deputy Field Supervisor

Above: Jodi Aceves, Siskiyou County agriculture department, with a dyer's woad plant. Credit: USFWS

Top: A field of yellow dyer's woad, an aggressive weed, encroaches on native plant habitat and competes with agricultural crops. Efforts by the County to remove woad help conserve Yreka phlox and the rare Siskiyou mariposa lily (pictured on the cover). Credit: Steve Dewey/Utah StateUniversity

Yreka Phlox: Path to Recovery

Yreka phlox, *Phlox hirsuta*, occurs in only five locations in the world, all located within Siskiyou County near Yreka, California.

This phlox is a low-growing perennial plant with a woody base (a sub-shrub) producing brilliant splashes of deep pink to white-pink blooms in early spring. Yreka phlox has smooth-edged petals (which distinguishes it from other phlox in the area with notched petals) and is covered with tiny stiff or "hirsute" hairs.

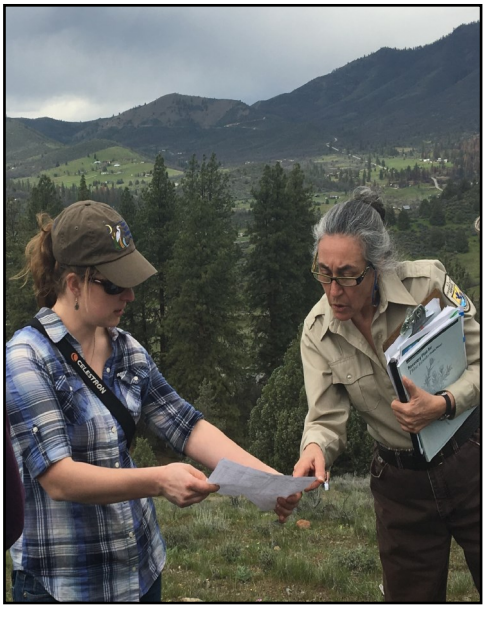
The plant is found on serpentine soils rich in magnesium and iron and is uniquely adapted for life in these harsh conditions.

Yreka phlox was first described in 1899 by Elias Nelson based on a collection from 1876 by Edward L. Greene, a priest at Saint Laurence's Episcopal Church (now Preservation Hall) in Yreka.

In 2000, Yreka phlox was listed as federally endangered under the Endangered Species Act, due to several factors, including alteration of its habitat, the small number of plants and a limited range making it vulnerable to extinction from random natural events such as fire, drought and disease.

In 2008, the Yreka Phlox Recovery Team authored a plan outlining steps and strategies needed to recover the species.

This collaborative recovery plan was written by state and federal agencies and organizations including the Yreka FWO, the California Department of Fish and Wildlife, the U.S. Forest Service, the City of Yreka, local timber companies, the California Native Plant Society and university researchers.



The pride of the City of Yreka in their efforts to save this little plant is evident by their designation in 2009 making Yreka phlox the official city flower.

Strong support to recover Yreka phlox exists throughout the community–from timber companies to city and county governments to local residents.

For example, the Siskiyou County Department of Agriculture removes invasive plants, such as dyer's woad from phlox sites (*see Of Weeds and Warriors, page 2*). The city of Yreka constructed berms to prevent off-road vehicle access within phlox habitat. The Siskiyou Gardens, Parks and Greenways Association, along with the city and California Conservation Corps hosted a site cleanup as part of local Earth Day activities.

Effective partnerships continue to make progress in protecting the Yreka phlox from existing threats.

Public participation is vital to the successful long-term conservation of Yreka phlox. Several local agencies and organizations offer hands-on opportunities to learn about or become involved in this effort through annual events and activities scheduled during the year.

For more information on how you can help to continue the conservation of Yreka phlox, contact the Yreka FWO for details.

- Susan Sawyer, Klamath Basin public affairs officer

Left: Becca Reeves and Nadine Kanim, Yreka FWO biologists, discuss plant identification near phlox sites on China Hill during the annual 'Phlox Walk' in April. Credit: USFWS

Top: Yreka phlox in bloom at China Hill near Yreka, CA. Credit: Serena Doose/ USFWS

Absent or Undetected?

To see, or not to see . . .

Surveys are sometimes used to study how wildlife moves through and uses its habitat. When population sizes are small or the sampling effort is limited, biologists may fail to detect animals even when they are present.

In the summer of 2017, Dr. Michelle Reilly, former biologist with the Yreka FWO, began working with Dr. Eric Tsakiris, a course leader at the U.S. Fish and Wildlife Service National Conservation Training Center (NCTC), to develop a class to help biologists account for those animals missed during surveys.

This accounting method is called "occupancy modeling." It is used to determine the spatial distribution of a species while accounting for imperfect detection (missing an animal when it is in fact there). An example is the Shasta salamander (*right*) which lives under rocks and in the crevices between rocks, where it can be hard to find (*center, right).* Because this species is often difficult to locate doesn't mean it's not there. The proposal to raise Shasta Dam and increase water storage capacity may impact the area where this salamander lives, making this an important issue.

If biologists miss a lot of animals while conducting surveys, they may mistakenly conclude the habitat is not important for the species. This could result in the species' mismanagement, which can be particularly problematic for rare species.

Dr. Colin Shea, a biostatistician with the Fish and Wildlife Research Institute in Florida, served as the co-instructor with Reilly.

The course is being offered this May at NCTC in Shepherdstown, West Virginia.

- Dr. Michelle Reilly, fish and wildlife biologist and Susan Sawyer, Klamath Basin public affairs officer

Above: The Shasta salamander (top) is difficult to survey due to its mostly underground existence in steep, unstable rocky outcrops (center), where it may not be easily detected. Credit: Gary Nafis

Left: The elusive, and completely imaginary Raccowl, used as an example for the occupancy modeling training course to illustrate that an animal may exist yet go undetected in a survey area. Credit: USFWS

Ensuring Sustainable Fisheries

Chinook salmon are the most abundant salmon in the Klamath basin. Also known as king salmon, they are the largest species of Pacific salmon and are highly prized by anglers.

The Klamath River has two distinct groups, or runs, of chinook salmon: spring and fall. Runs of fish are named for the season that they re-enter the rivers after maturing in the ocean.

Though they enter the river at different times, both spring and fall chinook spawn, or reproduce, in the fall. Spring chinook have experienced serious declines and were recently proposed for listing under the California Endangered Species Act (CESA). Currently they are only found in the Salmon River and Trinity River, both tributaries of the Klamath River. Fall chinook are much more abundant, widespread, and represent the largest salmon fishery in the Klamath River.

Fall chinook populations have been closely monitored for decades to ensure a sustainable fishery.

Each October since 1986, fisheries crews from numerous organizations raft, snorkel and wade approximately 700 river miles of suitable chinook spawning habitat throughout the Klamath Basin, downstream of Iron Gate Dam. The crews survey the Shasta, Scott and Salmon Rivers, the main stem of the Klamath River and many of the smaller tributaries.

Partners in this collaborative effort include state, federal and local agencies; Native American Tribes; watershed councils and natural resource centers; and local volunteers including high school and middle school students.

The goals of the survey effort are to:

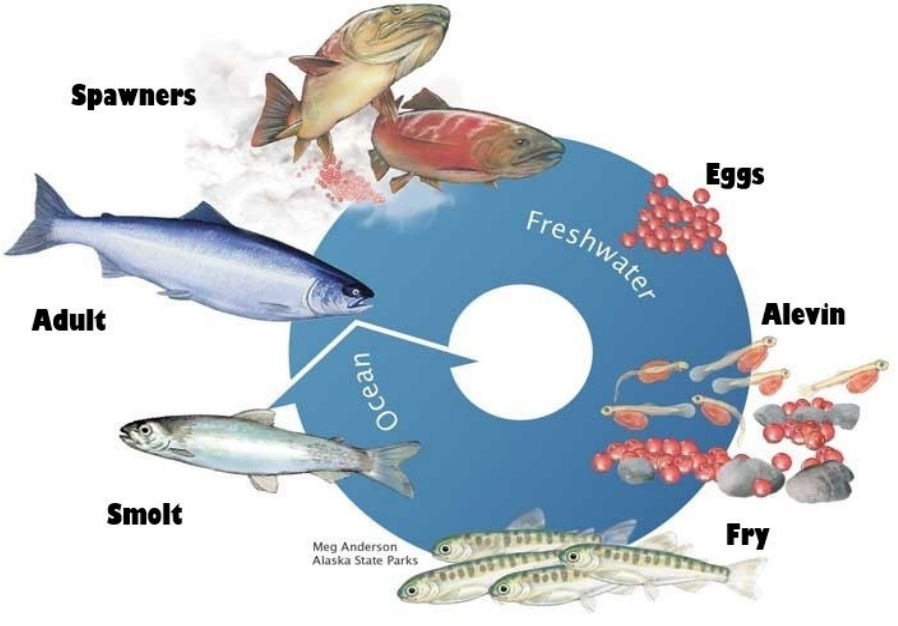
- Estimate the number of naturally spawning fall chinook salmon
- Determine the age of fish in the run
- Determine where and when spawning happens
- Determine the contribution of fish produced by Iron Gate Hatchery
- Locate and count redds (spawning nests built by salmon)

Federal and state fisheries management organizations use this data to estimate the abundance of salmon in the ocean, to determine tribal and recreational harvest levels and to estimate the escapement (the amount of fish that "escape" commercial or recreational fisheries and return to spawn). Without having a long-term, high quality dataset to establish fishing harvest limits and set fishing season quotas, it would be difficult to maintain a fishery and still have a healthy population of fish for years to come.

Since 1986, the Yreka FWO has been instrumental in funding this critical data collection effort and supporting the numerous organizations involved. In fact, the Yreka FWO was created in part to administer the Klamath River fall chinook surveys.

Although the congressional legislation that authorized survey funding expired in 2006, the Yreka FWO and other partners prioritize funding this important assessment. Fall of 2018 marked the 32nd year these surveys have occurred.

- Serena Doose, fish and wildlife biologist



Top: Fall chinook salmon carcass collected during the annual escapement survey. Credit: Serena Doose/USFWS

Left: Pacific salmon life cycle diagram created by Meg Anderson, Alaska State Parks.

What is GIS and How is it Used?

Imagine sitting at the kitchen table, looking at a map of your property. Think about how much information is represented on that well-worn, two-dimensional surface: property boundaries, easement lines, streams, utilities, roads – the list goes on. Each type of information represented on the map is an example of spatial data, or data that is tied to a physical location.

Without a geographic reference to know where a stream exists in relation to the roads in your neighborhood, this data would be meaningless. A geographic information system (GIS) stores this type of spatial data and allows us to visualize, analyze and interpret the data to better understand relationships, patterns and trends.

The Yreka FWO uses GIS every day to achieve our mission of working with others to conserve, protect, and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people.

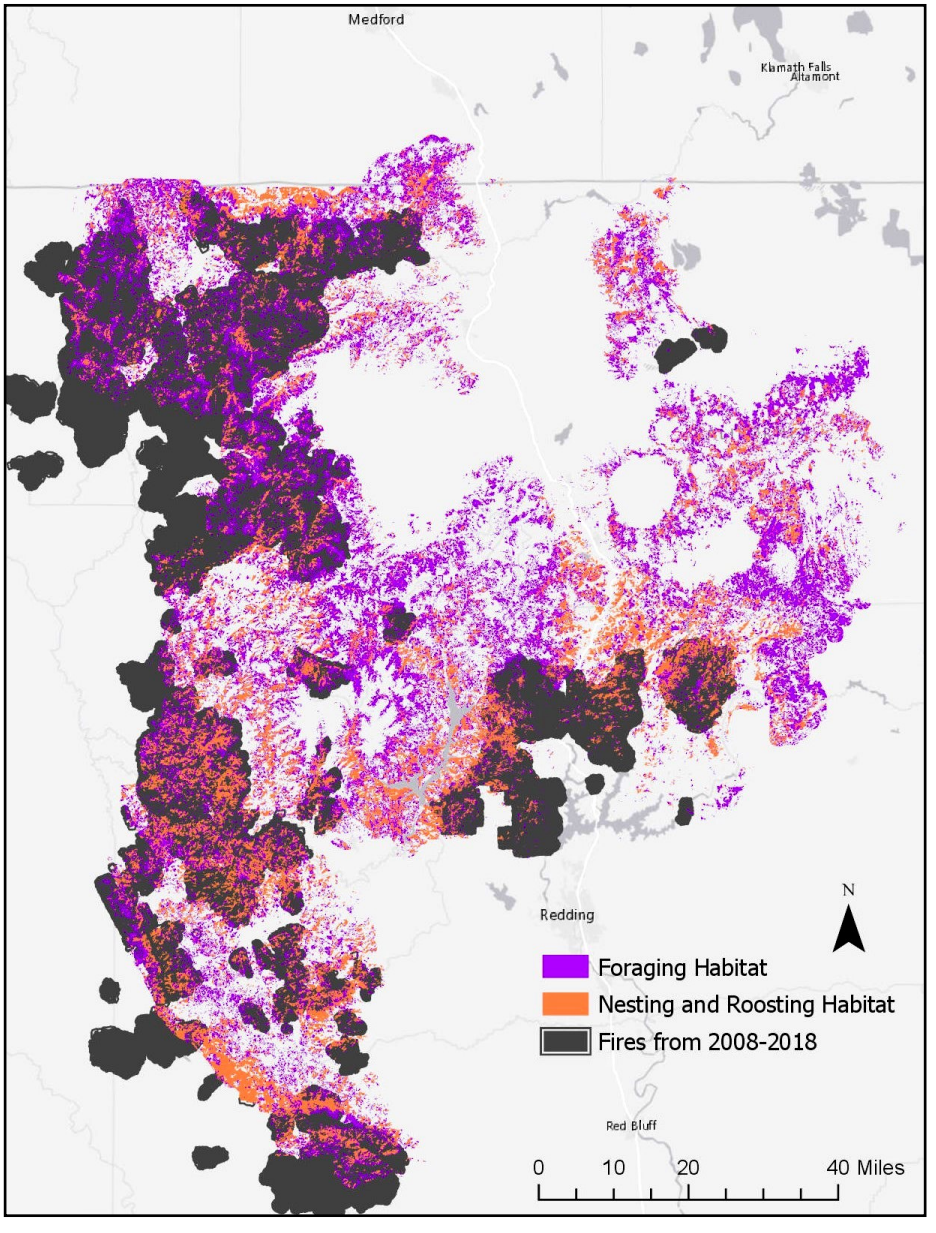
Having a system that identifies relationships between northern spotted owl habitat where wildfires have occurred allows for the conservation of an ecologically important species while improving management of wildfires and the species.

GIS also provides an understanding of activities that occur within tribal boundaries, allowing for important and necessary coordination with tribes regarding potential impacts.

With the capabilities that GIS provides, we can understand how underlying geology may affect groundwater, in the context of a project to enhance habitat for both culturally and recreationally important cold water fish.

The use of GIS is a cornerstone for effective conservation work. The Yreka FWO strives to constantly improve and enhance these capabilities and has established a GIS committee that regularly engages in GIS discussions on a regional scale.

- Serena Doose fish and wildlife biologist



Above is a map created from a GIS exercise. The image depicts existing northern spotted owl forage (purple) and nesting (orange) habitat while considering the impacts of recent wildfires in northern California. Credit: Shaughn Galloway/USFWS

Connecting People with Nature Events

Science Week - Serena Doose, biologist with the Yreka FWO, participated in the Beaver Creek Science Week event, teaching science to twelve junior high school students from Seiad Valley and Klamath River elementary schools.

During the event, Doose shared her passion and expertise with the students as she led the macroinvertebrate station with Alex Corum, Karuk Tribe fish biologist.

The event was a collaboration with students from the Yreka High School Natural Resource class, the Karuk Tribe, National Marine Fisheries Service, and the Mid-Klamath Watershed Council.

Together, Doose and Corum taught students about the importance of aquatic insects as indicators of riparian ecosystem health. Lessons were taught using hands-on activities, such as collecting and identifying specimens and determining water quality based on the insects found in streams.

During the career awareness session, Corum and Doose shared what led them on the path to their current positions as fish biologists.

Laura Jaffe-Stender, Project Coordinator for the Watershed Council, said one of the highlights was the close collaboration of the three schools, all located within the Klamath Basin, yet miles apart from each other.

"It was impressive to see how the high school students took charge of leading the lessons," said Jaffe-Stender. "I feel their instruction will have a lasting impact on the elementary students."

Agriculture Awareness Day - Did you know that pollinators are responsible for bringing us an estimated 1 out of every 3rd bite of food people eat? And that pollination of agricultural crops is valued at $10 billion a year in the United States, and $3 trillion a year globally?

In May, 2018, Becca Reeves and Sheri Hagwood from the Yreka FWO introduced these amazing facts when they taught about the biology and essential role of pollinators in agriculture to hundreds of 4th grade students from 19 different schools throughout Siskiyou County at the 25th annual Agriculture Awareness Day held at the Siskiyou Golden Fairgrounds.

Activities included pollinator life cycles and their role in producing much of our food. Pollinators are a topic of concern locally and nationally, especially with the sharp decline in native bee and western monarch butterfly populations.

Students learned about a variety of agricultural commodities, careers and technology that affect their lives. Presenters included representatives from local, state and federal agencies, and businesses and agricultural producers.

Agriculture Awareness Day co-coordinator, Jacki Zediker, remarked how important this event is to the local community.

"Agriculture is a vital part of everyone's life, but until you make it come to life, its importance can be overlooked," said Zediker. "Through this annual event, we help youth make an early connection to agriculture and understand its effect on their lives."

- Jen Jones, fish and wildlife biologist

Above: Sheri Hagwood, Yreka FWO biologist, at the pollinator activity station during the Agriculture Awareness Day event. Several hundred 4th grade students attended the hands-on activities. Credit: USFWS

2019 FWS Guided Nature Walks

TOPIC	DATE	TIME	LOCATION
Yreka Phlox	April 3	12-2pm	China Hill
Birds	May 15	9-11am	Upper Greenhorn Park
Pollinator Plants	June 19	10am-12pm	Yreka Community Garden
Beavers	July 17	10am-12pm	Oberlin Trailhead
Monarch Waystations	August 21	10am-12pm	Upper Greenhorn Park
Bats and Cave	September 11	6-8pm	Barnum Cave

Tribal Restoration Retreats: Traditional Fishing and Smoked Salmon

Through traditional and cultural practices, the next generation of wildlife conservationists are working with local tribal community members to nurture a renewed understanding and appreciation of the natural world.

On two weekends in September 2018, the Yreka FWO Klamath Basin Tribal Coordination Program partnered with Inter-Tribal Student Services (ISS) to provide two Tribal Restoration Retreats for residents of the Lower Klamath Basin. The ISS is a locally formed organization that assists and supports tribal students pursuing higher education goals in northern California, primarily at Humboldt State University.

Participants had the opportunity to learn from and engage with federal and tribal staff at each retreat. The events included presentations and demonstrations in the field, learning about on-the-ground projects and ongoing research activities.

The teaching was done from the perspective of tribal practitioners using the Klamath River and its natural resources.

The first retreat took place at Ah Pah Village near Blue Creek, California, where participants were taught about the process of smoking salmon. This process is based on cultural activities and subsistence harvest practices carried out by the tribes, and is directly tied to the value of wildlife conservation.

For the second retreat participants met at Ishi Pishi Falls for a campout hosted by Karuk tribal members. The events of this weekend taught participants about the importance of traditional fishing practices and how they represent the heart of the tribal relationship with the environment.

Watching Ron Reed, traditional fisherman, and his sons work as a team to maneuver around boulders along the river's edge in search of good spots for dip-netting salmon was symbolic of how engaging with natural resources strengthens both family and culture.

By bringing agency professionals, college students, high school students and faculty together, these retreats offered participants from all backgrounds an opportunity to improve their appreciation of the unique natural resources of the Klamath Basin and their important ties to Tribal culture.

- Trevor Super, Native American program specialist

Above left: Eldon Kinney and Dixie Blumeshine, Humboldt State University students, season and string fresh salmon for hanging in the smoke house at the Ishi Pishi campout. Credit: ISS

Center: participants at the Ishi Pishi tribal retreat experienced hands-on traditional fishing taught by Karuk tribal leaders. Credit: Serena Doose/USFWS

Left: Eldon Kinney and Vincent Diaz prepare salmon strips for the smoke house at the Ishi Pishi campout. Credit: ISS

We are Yreka FWO: Dr. Michelle Reilly

Each newsletter, we introduce a member of the Yreka FWO team. This issue, we feature Dr. Michelle Reilly, a fish and wildlife biologist who worked on habitat conservation plans (HCP), candidate conservation agreements (CCA) and strategic habitat coordination.

Reilly recently accepted a promotion within the Service as a course leader for the National Conservation Training Center and also as a wilderness training expert at the Arthur Carhart Wilderness Training Center in Missoula, Montana.

Reilly grew up in a small town in central Pennsylvania. When in grade school, she spent summers attending biology and ecology classes offered by a local university.

"My mother noticed my interest in the natural world and had the great foresight to enroll me in multiple sessions," Reilly said. "I grew bacteria in the lab and discovered macroinvertebrates in stream beds. This piqued my interest in the sciences."

Following those interests in college, Reilly traveled to Brazil to study ecosystem monitoring and biodiversity management. The program focused on field-work, visits with non-governmental organizations and indigenous peoples and lectures by researchers and biologists.

After returning to college, Reilly earned a Master of Science degree in Environmental Science and Policy and a Ph.D. in Conservation Biology. From 2016 - 2017, she served as a visiting professor at New Mexico Highlands University while conducting research in wildlife behavioral ecology.

In January 2017, Reilly came to the Yreka FWO, primarily working with Sierra Pacific Industries to develop a HCP for the northern spotted owl and to implement a CCA for fisher (a cat-sized relative of the weasel).

She also worked to implement strategic habitat coordination, identifying areas important for connectivity for fisher and its smaller relative the marten.

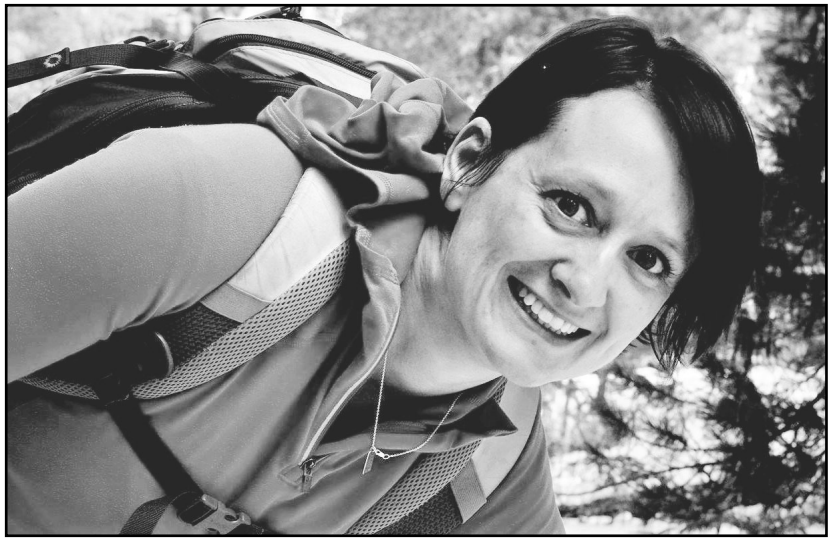
Reilly particularly enjoyed the diverse projects and the support of her supervisors in research and grant development, saying her biggest accomplishment was closely tied to her favorite part of the job.

"As the Yreka FWO strategic habitat coordinator, I successfully applied for grants related to connectivity for the fisher and marten in the Klamath Basin," Reilly said. "Working with Conservation Biology Institute to conceptualize a landscape-scale ecological product for stakeholders was very exciting and rewarding."

As advice to anyone considering a science career, Reilly said being diligent and staying curious are important qualities.

"Continue to explore and remember science is a process," she said. "The most talented scientists I know still have a sparkle in their eye; remember not to lose that."

- Susan Sawyer, Klamath Basin public affairs officer



Above: Reilly holds a fisher recovering from anesthesia after being trapped during the Stirling, California fisher translocation project in 2017.

Left: Michelle Reilly will put her passion for the outdoors to work as a wilderness training expert at the Carhart Wilderness Training Center in Montana.

Species Spotlight: Siskiyou Mariposa Lily

The Siskiyou mariposa lily (*Calochortus persistens*) is a rare species of lily found in northern California and southern Oregon.

This small beauty inhabits the rockiest portions of ridge tops and edges where soils are shallow, dry, rocky, and acidic. These areas are well drained and therefore, after snowmelt, are dry in early spring.

Siskiyou mariposa lily is known to exist at about nine sites scattered on the Gunsight-Humbug Ridge in Siskiyou County, California, and in one population on Bald Mountain near Ashland, in Jackson County, Oregon.

The lily is an herbaceous (non-woody) perennial growing from a bulb with a single, basal leaf extending upward that can grow up to eight inches high.

The plant has one to two large showy, pink to lavender bell-shaped flowers with a yellow fringe at the base of the petals.

With its limited distribution, localized impacts can be problematic. These include competition from invasive (non-native) weeds such as dyer's woad (*Isatis tinctoria*), wildfire and fire suppression activities, habitat disturbance and off -highway vehicle use, among others.

At one time, the Siskiyou mariposa lily was a candidate species for listing under the federal Endangered Species Act (ESA). However, in 2015, because of ongoing conservation efforts (see Of Warriors and Weeds, page 2), the Service determined impacts were not significant enough to justify protection under the ESA.

The most recent effort to protect the Siskiyou mariposa lily is a conservation agreement between the Yreka FWO, the Klamath National Forest and the Bureau of Land Management.

The agreement identifies completed, ongoing and future actions to remove or reduce impacts to the lily.

This continued management of the Siskiyou mariposa lily is a partnership success story we expect to continue into the future.

- Susan Sawyer, Klamath Basin public affairs officer

Above: The Siskiyou mariposa lily blooms in rock talus on ridge tops and slopes in northern California and southern Oregon. Credit: USFWS

Below: Hand-pulling dyer's woad before it blooms is one of the methods used to eradicate this aggressive weed from Siskiyou mariposa lily habitat. Credit: USFWS

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Photo of dyer's woad, an invasive weed which competes with native plants such as Yreka phlox and Siskiyou mariposa lily (on the cover). Credit: USFWS