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Preface

Discovery School formed a relationship with Turnbull National Wildlife Refuge (TNWR) in 1999, when classes participated in riparian restoration by planting trees. In the spring of 2003, refuge staff solidified a partnership with Discovery and arranged for the school to monitor a section of the stream reach by adopting an abandoned enclosure area and continuing restoration there. For eight years, 3rd and 4th grade students planted, cared for, and measured the growth of trees in this enclosure area. Using money from the 2007 Sea World/Busch Gardens Environmental Excellence Award, students built and expanded the enclosure area along Pine Creek.

Teachers at Discovery School incorporated the “work” at Turnbull into their science curriculum. The data collected monthly helped determine the best places to plant trees along the seasonal stream. One of the extensions of this study was having students create informal guidebooks of the animals they saw at the refuge during their visits.

In 2009, Refuge staff received a grant from the U.S. Fish and Wildlife Service to partner with Discovery School to develop a field guide of birds commonly found at Turnbull geared toward elementary school students. To help younger students relate to using a field guide, the Refuge asked if the students could draw pictures of selected native bird species and write a summary for each species. Their drawings would be paired with actual photos donated by local professional photographers. The guide would be organized by habitats found on the Refuge. K-6 students throughout the Inland Northwest will use this guide when they come to take part in field trips at the Refuge.

Turnbull National Wildlife Refuge hosts one of the largest and most diverse environmental education programs in the region, reaching 6,000-8,000 students annually. It is the hope of the U.S. Fish and Wildlife Service and Discovery educators to instill a sense of wonder and enthusiasm for the natural environment through the use of this guide.

Sandy Rancourt, Visitor Services Manager, TNWR
Molly Zammit, Teacher, Discovery School

Introduction

The educational relationship joining Turnbull National Wildlife Refuge and Discovery School is a natural. An outdoor classroom allows students to follow the basics of reading, writing and arithmetic to the understanding of stewardship and the value of planting a tree. Birds and bugs have a way of stimulating curious eager minds.

For three decades I've harvested Turnbull's fertile ground for stories and information of interest to newspaper readers of all ages. In 2002, U.S. Fish and Wildlife Service biologists casually mentioned a trumpeter swan that had been returning alone to the refuge for decades after losing his mate in 1988. I was intrigued, prompting refuge biologists to dig into their files. Together we realized the cob was the oldest documented resident of the refuge and one of the longest-living trumpeter swans on record.

I dubbed the swan Solo in a column that revealed his remarkable life. The name stuck and the story struck a chord. Thousands of wildlife enthusiasts were following Solo's saga years later when he came full circle. In 2009, the geriatric swan paired with a mate and sired the first clutch of trumpeter cygnets in 22 years. Solo taught the masses a lesson in wildlife biology as well as a thing or two about commitment, determination and achievement.

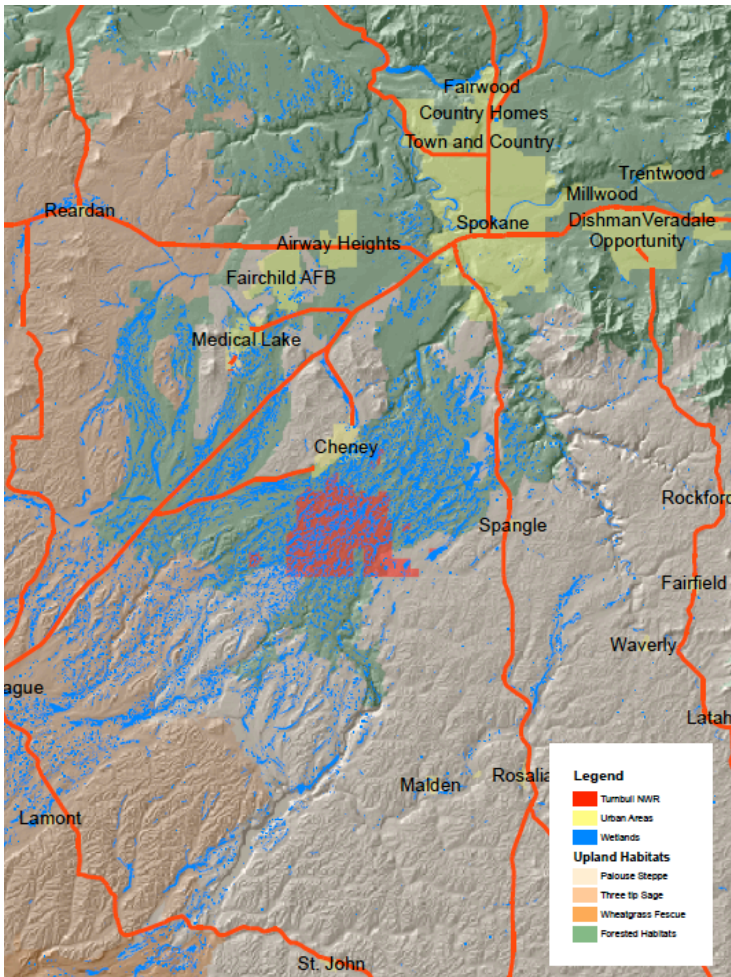
And he's just one of countless stories to be found in the protected refuge scablands south of Cheney.

Turnbull is the confluence of wildlife professionals, gifted photographers, curious wildlife watchers, creative teachers and enthusiastic students. So is this book. The following pages illustrate that learning is the sum of observation and research and collaboration. It's a product of fresh air.

--Rich Landers, Outdoors editor
The Spokesman-Review

Geology of Turnbull National Wildlife Refuge

More than 12 million years ago, lava erupted from big cracks in the rocks and flowed across Eastern Washington creating many layers of basalt rock that can be up to 10,000 feet thick and covers 15,000 square miles. Mountains and the Columbia, Spokane, and Snake Rivers surround the area. The wind blew in soil (also called loess), which covered the area. Ash was also blown in after volcanoes in the Cascade Range would erupt. In the Palouse, an area south of Spokane, the soil is 200 feet thick in some places. At Turnbull you will find that there is only a thin layer of soil where plants and trees can grow. That is because thousands of years ago great floods came through Eastern Washington.



Channeled Scablands to Wetlands

Approximately 20,000 years ago, glaciers covered eastern Washington. They created a dam that was about 2,000 feet tall and at least 10 miles long. This dam blocked the Clark Fork River, which flooded the valley where present day Missoula, MT is today. This created a lake called Lake Missoula that was some 2,000 feet deep and covered 3,000 square miles of land.

At some point the ice dam collapsed and the water from Lake Missoula emptied out and flooded Eastern Washington, the Columbia Gorge and Willamette Valley in Oregon. The floods washed away the soil and carved channels and depressions in the basalt that later became lakes and ponds including those at Turnbull. Various eruptions from the Cascade volcanoes dumped layers of ash on Eastern Washington. The ash plugged the channels and depressions in the basalt and water filled them, forming the wetlands.

The photo below is the channeled scablands at Dry Falls, near Coulee City, Washington.



Forest



Ponderosa Pine Forest

The pine trees seen at Turnbull are called ponderosa pine, which are the only kind of pine trees found in this scablands area. They form the canopy of the forest. The forest has many kinds of smaller shrubs, which form the understory of the forest. You will find grasses like Idaho fescue, and shrubs like snowberry, Wood's rose, bearberry, and Oregon grape. Other larger shrubs found are serviceberries, chokecherry, golden currant, and elderberry.

Fun Fact: You will see many tall ponderosa pines that have fallen over. Why do you think that happens?