Vintage maps give glimpse into refuge's past

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Julia Rosa has learned more about the Wichita Mountains Wildlife Refuge during her three-month summer internship than most people have in a lifetime.

Even longtime U.S. Fish and Wildlife Service employees like Deputy Refuge Manager Ralph Bryant say they've gained new knowledge and insights from her research.

The New Hampshire native recently earned her bachelor's degree in environmental science from Lynchburg College, Lynchburg, Va. Rather than return home to live with her mother and brothers and likely end up working in a restaurant, she chose to come here and volunteer her services at the refuge. She'd hiked here before and had also read about its opportunities for volunteering.

Rosa had had a one-semester class in Geographic Information Systems (GIS), the only course Lynchburg had on the subject, and she has learned more since starting her work in mid-May.

The basement of Refuge Headquarters is a storehouse of maps dating to the early 1900s, when the refuge was the Wichita Forest Reserve. Among those are photocopies that Rob Wood, a former assistant fire management officer here, brought back from the National Archives in Fort Worth, Texas.

Refuge officials needed to have the maps digitized in a format they could use on a computer. Rosa began by scanning in one from the National Archives and lining it up with the boundaries of the refuge and known section lines. The computer will rotate or stretch the map to make it fit with the points where the computer operator says the features should be.

"Since these were hand-drawn maps, a lot of them are kind of open to artist's interpretations of where they think things are or where they kind of guessed a river bends," Rosa said.

Most maps are an attempt to represent the earth's curved surface on a flat piece of paper. Because of the compromises necessary to do this, no single map can accurately depict acreage, mileage and direction. In this area of the country the Universal Transverse Mercator (UTM) is preferred. That method provides accurate measurements of area and to a certain extent distance, once the map is on computer, but direction is its weak point.

The multitude of maps, blueprints and documents provide a revealing look at refuge history. Rosa found that maps of the 1930s show the lakes to be much bigger than they are today. Some places were called by different names than they are now, so her work provides a cross-reference to writings from the past.

Some of her work documents plantings by the Civilian Conservation Corps (CCC) and others. She examined aerial photographs of the period to find physical evidence of the plantings, but she's also physically walked the areas marked on her map to find that, yes, there are still Osage Orange trees left from the stand planted long ago. In some places where a particular kind of tree was planted, the original stand is long gone but a single descendant has sprung up outside that location.

The plantings were done while the U.S. Forest Service was in charge of what was then called the Wichita Mountains National Forest and Game Preserve. Not a lot was known about invasive species in those days, and Rosa says all of the plantings that they did are of trees now considered to be invaders, such as the red cedars that refuge biologists of today try to eradicate.

"So it's definitely helpful to the biologists as well. They can know where these invasive plants were, when they were planted, how long they've been there," she said.

She scanned in 17 maps altogether this summer. One of her more fascinating projects combines all the antelope data into one poster depicting "Historic Distribution of Antelope in the Wichita Mountains." The poster shows multiple attempts to reintroduce pronghorn antelope into the Wichitas. The first was in 1910, the last in 1949, and her map not only shows where planners proposed to introduce them, but where they actually roamed, which was altogether different.

Mitch Meador/staff

Summer intern Julia Rosa of Portsmouth, N.H., explains how she used Geographic Information System (GIS) technology to scan in a 1939 map that shows where trees were planted on what is now the Wichita Mountains Wildlife Refuge.

Rosa ran across some emotional correspondence between the manager here and a Canadian who sent part of his antelope herd for the second attempt, only to learn that they had all died. A subsequent attempt to bring in a herd from New Mexico proved slightly more enduring, but eventually all these were lost as well.

The 1949 attempt was the largest, numbering roughly 70 animals, mostly fawns.

Another project consisted of 14 separate maps. One is the "raccoon map" showing the area inhabited by raccoons, opossums and red foxes. She combined all the shapes into one map so biologists can do an analysis on where they were. A 1932 proposal to reintroduce muskrats, which was apparently shelved, was included in this project.

"To have somebody come in who's willing to do this — it shows that although public use is a big part of this refuge and uses a lot of our volunteers, there is a volunteer job for everybody out here," refuge volunteer Carol Stayer said. "You're going to see things if you're sitting there scanning (maps). You're going to know things other people don't. So there is always something to do volunteering out here. Whether it's an hour a week or whether it's five days a week, you can get involved."

Volunteers are given the chance to do something they think is fun and that they want to do.

Bryant said what Rosa accomplished not only helps Fish and Wildlife biologists but also the management end of the refuge, too.

"For one, we don't have time to go back and read all the history of everything that went on. We know a little bit about it, just some key dates — that antelope were introduced at a certain time. We know that they didn't continue, that they eventually died out, but that's about all we knew. So having someone who can actually dedicate the time and really dig into all the old records that we could find and pull up the specifics is really good, because she's able to summarize it for us and bring it back up front," Bryant said.

Bryant said he learned a lot about the tree plantings and the history behind attempts to reintroduce antelope.

"It was good for me to know that they really tried hard, many different avenues of trying to reintroduce the antelope," he said.

Rosa is engaged to 2nd Lt. Patrick Darley, who was at Fort Sill to attend Field Artillery Basic Officer Leader Course and three short courses. Now that he's graduated, they will be moving to Fort Bliss at El Paso, Texas.