



The Young Naturalists

More than 100 years ago, a few curious teenagers formed a group to study and explore wild things around the small city of Minneapolis.

TROMP! TROMP! TROMP! On a chilly evening in March 1875, seven teenage boys clattered up the stairs to a bedroom in a big Victorian home near downtown Minneapolis. A little wood-burning barrel stove heated the room. A large cabinet held wooden trays of stiff, feathered bird skins. Some trays had skins of mice. Stacks of dried wild plants, pressed flat and glued to paper sheets, were tucked into corners. Boxes of snail shells, mussels, fossils, and animal bones lined shelves and the window ledge.

The boys gathered in a circle, eager to hear researched reports from each other. They had formed this group to study nature in 1874 and called it the Young Naturalists' Society, also known as the YNS.

The YNS members took their scientific work seriously. Sometimes their other friends poked fun at them and sent them bogus plant or animal specimens to identify. They took the teasing as good fun. They had each other, and they believed the study of nature was necessary to understanding the world.

By Sue Leaf ~ Illustrations by Bill Reynolds

Sharing Discoveries

Thomas Roberts, president of the YNS, called the meeting in his bedroom to order. Secretary Clarence Herrick read the minutes from the previous meeting. Treasurer Frank Clough reported on the society's finances—that is, how much of the members' monthly dues of 10 cents had been saved or spent. Then the boys settled into the meeting's heart: sharing discoveries about the natural world.

Their faces were bathed in the rosy light of gas lamps as they listened to three reports. Frank told how he had researched white-tailed deer. The large mammals

lived in the woods near lakes Calhoun and Harriet, but they were becoming less common there as people cleared more land for farms and houses. Rob Williams filled members in on snakes.

Thomas discussed the 12 species of birds he'd encountered that winter. He thought that the white-breasted nuthatch and the blue jay were the most common. He had also seen both downy and hairy woodpeckers and one owl. Just recently, he had discovered a large flock of pine grosbeaks by Lakewood Cemetery near Lake Calhoun.



YNS Goals

The young naturalists had several goals. They wanted to study and promote the love of natural science. They emphasized exploring the woods and prairies around them, collecting plants and animals and preserving them as

records for future use. In one report, Clarence wrote of the importance of their firsthand observations. Scientists first observe and then make theories—generalizations based on what they and others had observed.





Four Founders

The Young Naturalists' Society was the brainchild of Thomas Roberts and Clarence Herrick. The two had met in grade school when they sat side by side at a double desk. Clarence often got the pair in trouble by drawing funny chalk pictures on his school slate.

Clarence loved roaming the woods and meadows around his family's farm. Minnehaha Falls was a favorite spot to find plants such as yellow lady's-slippers and maidenhair ferns. After his father gave him a microscope, Clarence began taking water samples from nearby lakes and looking through the microscope at the small animals and plants living in the water. He liked to study and draw the pond creatures.



Rob Williams' father owned a bookstore and was the librarian at the Minneapolis Athenaeum, a private library owned by subscribers. The inquisitive teens had easy access to the many books there. The athenaeum had a copy of the famous artist John James Audubon's *Birds of America*, which Thomas enjoyed studying.



Thomas' father also encouraged his son's love of nature. The two took long buggy rides out into the country, looking for birds and wildflowers. One destination was Lake Johanna, which had a big colony of passenger pigeons before those birds became extinct. Another special spot was Fort Snelling at the junction of the Mississippi and Minnesota rivers. At the slow pace of a walking horse, their trip to Fort Snelling took the better part of a day. In spring and fall, they could see migrating ducks and geese gathered to rest and feed in the river's backwaters.



A fourth member, Frank Clough, was chiefly interested in geology. His reports were usually on topics such as rocks, volcanoes, oceanic tides, and glaciers. But it was Rob Williams who, in 1876, reported on copper mining in the Lake Superior region—a topic that is back in the news today.



Exploring and Collecting

Because Thomas was wildly enthusiastic about birds and already had started a collection of bird skins, the society first focused on recording birds. All the boys knew how to handle a shotgun. An experienced birder had taught Thomas how to make a study skin by removing the dead bird's internal organs, replacing them with cotton batting, and attaching an information label. The feathered form could then be measured and examined.

Within six months, the society owned many specimens of birds, including snow buntings, passenger pigeons, hawks, and warblers. Although today it seems very wrong to shoot songbirds, that was how people in the 1800s studied birds to gain accurate information. Binoculars were not yet invented. Today

only researchers with special permits are allowed to kill songbirds.

The boys also collected and identified mammals, insects, shells, rocks, fossils, and plants.

Pressed Plants

Plants were easy to collect. The boys explored prairie patches and tamarack bogs. Lakes had aquatic plants growing in the water near shore and on the land along the shore. They collected plants near Fort Snelling in a large oak savanna, a place where oak trees grow amid prairie grasses.

When the teens collected a plant, they noted the location where it was growing, and they included roots and flowers, if possible. Then they placed the plant specimen on a sheet of paper

and flattened and dried it in a plant press to preserve it. This could be done quickly, but it took longer to figure out what species they had collected.

To identify the species, plant experts called botanists often examine small flower parts, and these can be tricky. The young naturalists had no skilled botanists to help them. Soon they had a backlog of unidentified pressed plants numbering in the hundreds.

List Makers

The YNS members wrote down the common and scientific names of plants and animals they saw and collected. When Thomas observed birds, he also made notes on hearing the bird's song and seeing what the bird ate, how it searched for food, and where it roosted

as it rested. In his first report on the YNS species list, Clarence said the members had seen and recorded 122 bird species, 13 insects, and 10 plants.

The young state of Minnesota had started official lists of plant and animal species native to Minnesota. The YNS members used the state lists to check their own list. Sometimes they found a species that state scientists had not yet discovered and listed. For example, Thomas identified a Blackburnian warbler.

At one of their weekly meetings, Clarence brought up bird lice and how the tiny pests had come to be, or evolved. The young naturalists were able to discuss evolution because they had read scientist Charles Darwin's ideas about how different animal species evolved.



Water lily by Emma Roberts, 1885.

Wildflower Artist

While Thomas Roberts pursued birds, his sister, Emma, explored wildflowers. Like Thomas, she rambled the countryside with their father in a horse and buggy. The delicate colors and dainty forms of wildflowers delighted her. She did watercolor paintings of them. One year she presented Thomas with some of her wildflower paintings. He was thrilled with the gift. He showed the paintings to a botanist, who praised the scientific accuracy of Emma's work.

Emma took art lessons in New York City and became a professional artist. Her wildflower paintings were included in Minnesota's display at the World's Columbian Exposition in Chicago in 1893. Now the University of Minnesota owns her paintings.

Naturalists Forever

The Young Naturalists' Society lasted four years. What happened to the members and their large collections of plants and animals?

The pressed plants were all identified and mentioned in an official state report in 1883. "Catalogue of the Flora of Minnesota" by Warren Upham reported the young naturalists had collected about 500 specimens.

Clarence Herrick, Rob Williams, and Thomas Roberts studied science at the University of Minnesota. Clarence graduated and published several papers based on his YNS pond study. He wrote and drew illustrations for *Mammals of Minnesota*,



A drawing from Clarence Herrick's *Mammals of Minnesota* depicts two of Minnesota's three weasel species.

an official report from state scientists. He studied in Germany, became a college professor, and later became president of the University of New Mexico.



Rob Williams surprised his friends and family by heading to Montana to become a shepherd in 1879. While there, he collected birds and plants, including mosses. Next, he traveled to South America to collect mosses in the Andes Mountains. After that, he worked at the New York Botanical Garden as a world expert on mosses.

Thomas Roberts went to medical school and became a family doctor. He continued to watch birds. He bought a camera in 1898 and became

a wildlife photographer. He wrote a famous book called *The Birds of Minnesota*, fulfilling a dream first hatched in the YNS.

Later in his life, Dr. Roberts taught ornithology, the study of birds, at the University of Minnesota. He helped found the university's Bell Museum of Natural History. He donated the YNS bird skins to the museum. A Canada warbler collected by Thomas in 1875 is specimen number 1 in the museum's bird collection. V

NOTE TO TEACHERS

Find links to teachers guides for this and other stories at www.mndnr.gov/young_naturalists.

The Bell Museum of Natural History offers classroom tools and a wealth of other activities and resources for teachers. Learn more at www.bellmuseum.umn.edu.