

Volume 3, Issue 7

Summer 2007



NEWSLETTER OF THE
TAMARAC INTERPRETIVE ASSOCIATION

Tamarac Highlights

Darner Dragonfly Dreams



National Wildlife Refuge Association 2007 First Place Winner taken by Dick Henry at Tamarac National Wildlife Refuge

Wildlife photography is one of the six priority wildlife dependent public activities on wildlife refuges along with wildlife observation, environmental education, interpretation, hunting, and fishing. Dick Henry has repeatedly captured spectacular photos of Tamarac NWR that he has submitted to the Tamarac photo contest and now the National Wildlife Refuge Association contest. His Darner dragonfly photo provides great detail of an insect species, but simultaneously illustrates photography as art with purple colors delicately

blurred by the intricate patterns of the wings. The back cover page of our newsletter features Dick Henry's photo of a fox cub on guard duty. Note the focused attention of the fox wrapped in the lush forest greenness of Tamarac. We interviewed Dick Henry and you can read about his nature photography on page 10. Maybe you'll be inspired to bring your camera along on your next trip to the Tamarac National Wildlife Refuge and enter your photos in the 2007 Tamarac Photo Contest.



Become a Friend JOIN TIA

Individual, Family, Seniors: \$15.00
Student: \$10.00
Patron: \$100.00
Life Member: \$250.00

Members receive a mailed copy of our quarterly newsletter, invitation to member-only tours and events, and a ten percent discount at our gift shop. Your membership fee is only a part of the funds we use each year in the support of the Tamarac National Wildlife Refuge. Additional contributions are welcome.

2007 Annual Meeting Report

By Ruth Olson

The Annual Meeting of the Tamarac Interpretive Association was held in the Detroit Lakes library on Tuesday, June 12. The 28 members present were entertained by Cecil and Liz Ballard with a display and quiz about native plants and herbs. For each plant they told a very interesting short history of its ancient use.

Board officers for the next year were elected: President -Rosie Greenland, Vice-President -Ron Jenson, Secretary -Theresa Haney, and Treasurer -Wayne Olson.

New board members Don Blanding and Ron Jenson were introduced. Don will chair the Advocacy Committee and Ron will chair the Publicity and Marketing Committee. (Penny Nielsen and Nancy Moulden left the board during the year.) George Weatherston completed his three year term and plans to focus on volunteering as refuge tour leader. Lana Engbloom will replace George, but chair the Education Committee.

The By-Law change deleting 6.1.5 section b) was approved unanimously,

There were brief reports by the committee chairmen and remarks by Barbara Boyle and Kelly Blackledge.

After the meeting we all enjoyed a pot-luck dinner. There are wonderful cooks in the TIA membership!

More TIA News at www.tamaracfriends.org



Tamarac Interpretive Association 2007-2008 Board of Directors. L-R: Denis Mudderman, Ruth Olson, Wayne Olson, Donna Stewart, Theresa Haney, Lana Engbloom, Don Blanding, Rosie Greenland, and Ron Jenson. K.B.



Tamarac Interpretive Association, Inc.

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(218) 847-2641 extension 21
Website: www.tamaracfriends.org, E-mail: tia@tamaracfriends.org

The Tamarac Interpretive Association is a 501(c)3 organization whose mission is to facilitate activities and programs that interpret, protect and restore the natural and cultural resources of the Tamarac National Wildlife Refuge.

Annual memberships are: Student - \$10, Individual/Family - \$15, Patron - \$100, and Life Member - \$250. Membership dues are paid annually October 1st. Members receive four newsletters a year, invitation to special tours, and a 10% discount in the Tamarac gift shop.

Rosie Greenland, President	Detroit Lakes, MN	Term Expires 2008
Ron Jenson, Vice President	Ogema, MN	Term Expires 2009
Theresa Haney, Secretary	Rochert, MN	Term Expires 2009
Wayne Olson, Treasurer	Detroit Lakes, MN	Term Expires 2010
Ruth Olson	Detroit Lakes, MN	Term Expires 2009
Donna Stewart	Rochert, MN	Term Expires 2010
Denis Mudderman	Rochert, MN	Term Expires 2008
Don Blanding	Detroit Lakes, MN	Term Expires 2008
Lana Engbloom	Ogema, MN	Term Expires 2010

Refuge Advisors to the Board

Barbara Boyle, Tamarac Refuge Manager	218-847-2641
Barbara_Boyle@fws.gov	
Kelly Blackledge, Tamarac Visitor Services	218-847-2641
Kelly_Blackledge@fws.gov	

Denis Mudderman, Newsletter Coordinator, Webmaster: tamaracweb@yahoo.com
Becky Hastad, Newsletter Editor: rhastad@tvutel.com

Tamarac Highlights is a publication of the Tamarac Interpretive Association serving both TIA and the Tamarac National Wildlife Refuge. *Tamarac Highlights* is published four times a year, mailed to members and made available as an electronic PDF on our website. The deadline for articles for the Fall 2007 *Tamarac Highlights* is August 20. Please discuss article ideas in advance with the newsletter coordinator (tamaracweb@yahoo.com).

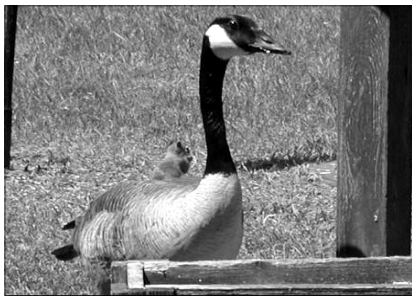
Credits: Carl Brender wolf print reproduced by permission. Photo of Dick Henry provided by Dick Henry. First board painting on page 3 by Mary Laabs. Front banner photo of Showy Lady Slipper by Denis Mudderman. All photos initialed D.M. by Denis Mudderman and K.B. by Kelly Blackledge. All other photographs credited with the photos.



TIA 2007 Fundraising Raffle

Buy a ticket-
\$5 each

1st. Prize: Carl Brender's Wolf Print, \$750.00 retail value; **2nd Prize:** \$50.00 gift certificate to Tamarac Gift Shop; **3rd Prize:** *The Sibley Guide to Birds* book autographed by David Allen Sibley- \$45.00 retail value. All proceeds will be used by TIA in its mission to support the refuge. Purchase tickets at the Tamarac gift shop or from board members. Drawing Oct. 6.



D.M.

Meet Gerti, a frequent visitor to the visitor center bird feeders this spring. It turns out his/her spouse was sitting on eggs in a nest nearby. Lately the whole family has been visiting, enjoying corn and fallen bird feed. One sunny, early June weekend, relatives visited with their children and it was a fun time basking on the grass and snacking at the feeders.

Designing the TIA Logo

By Rosie Greenland

Rosie designed the TIA Logo in 2004 as part of a logo design competition.

When designing the logo for Tamarac National Wildlife Refuge my first thought was to put in it a wolf or a pair of wolves because we have resident packs on the refuge. Then, I remembered the first trumpeter swans were released at Tamarac in 1987. The number has grown to 21 pair. So the focus became the swan. I set the swan on a lake with Tamarac trees in fall color behind it. Many people don't realize the Tamarac tree turns golden in the fall and its foliage falls off leaving a bare tree. (A few people have cut them down thinking they were dead.) A birch tree and more evergreens in the skyline finish the scene.



The border has the name of our friends group, Tamarac Interpretive Association, and the address, Rochert, MN. The "comma" is a bear track, another resident of Tamarac.

TIA collects Central Market, Detroit Lakes, We Care Stickers.



TIA's first board of directors in 1992.

The First TIA Board

By Nancy Moulden

The first board was begun in 1992. President Byron Kinkade, Vice-President Frank Greenough, and Secretary-Treasurer Nancy Moulden were the officers and sole members. Park Ranger Betsy Beneke was instrumental in organizing the Tamarac Interpretive Association and provided the inspiration to get things started.

A small number of volunteers joined and helped stock and run the bookstore. Many of the beginning items were crafted and donated by members. A craft committee (Fran Hoppert, Kay Hartness, Jenny Scherzer, Betsy Beneke, Nancy Moulden, and Margaret Kent) met periodically to make seasonal items to sell. Birdhouses, feeders, plaques and signs were donated by Norm Carroll.

The Board met twice a year, in June and October. The latter was the annual meeting for members to attend. At one of the meetings Betsy surprised the board by presenting them with a caricature done by local artist Mary Laabs. This picture hung in the visitor center for quite a few years and now hangs in the visitor center storage area/TIA office.

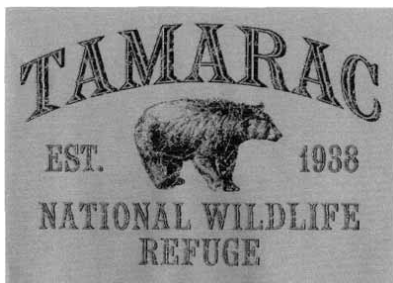
Refuge System Funding Update

The House Interior Appropriations Subcommittee unanimously passed a "marked up" House Appropriations Bill to provide \$451 million for the Refuge System, \$56 million more than was proposed for fiscal year 2008. The \$451 million is the amount needed. No further news yet from the Senate Interior Appropriations Subcommittee on the overall budget bill.

Tamarac Wildlife Gifts and Bookstore



Two great new Tamarac tee-shirts!

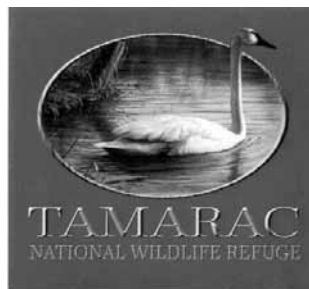


Black silk-screen on grey, brown, or red tee-shirt

\$15

\$18
for
XXL

Many other great new products and books!



Colored silk-screen design on red, green, or black tee-shirt

Not all colors in stock for all sizes

10% Discount for TIA Members



Volunteering at Tamarac NWR



K.B.

2006 Volunteer of the Year:

Wayne Olson

Wayne Olson has been volunteering since 2003. In 2004, he became a TIA board member. Since then, he has accumulated over 365 hours. With his business background, he took on the challenging role of TIA treasurer. In this rapidly growing organization, he has taken on the job of determining a budget that reflects both the mission of TIA and Tamarac National Wildlife Refuge. He also took on a more prominent role as gift shop manager and buyer. His enthusiastic shopping skills have been put to good use in the bookstore. He has also provided a wealth of retail knowledge to a refuge staff of wildlife and natural resource specialists. His thoughtfulness and humor have been greatly appreciated during this transition.

Volunteers' Milestone Achievements in FY 2006

Recognized at the May 1, 2007 Volunteer Awards Banquet

25 Hours: Penny Nielsen, Donna Stewart, Jim Stewart, Dan Shodean, Laura Boyle, Del Bergseth, Warren LaVoi, Miriam Moen, Liz Ballard, George Read, David Anderson, Bradley Bremer, Fred Drenkow, Dean McBride, Alan Turcotte, Ron Jenson, Dave Squires

50 Hours: Penny Nielsen, Donna Stewart, Dave Squires, Del Bergseth, Warren LaVoi, George Read, David Anderson, Alan Turcotte, Ron Jenson, DeWayne Gnadt

100 Hours: Rosie Greenland, Denis Mudderman, Becky Hastad, Ruth Olson, Ron Jenson, Penny Nielsen, Diana Malvick

200 Hours: Sharyl Gnadt, Denis Mudderman, Diana Malvick, Wayne Olson, Ruth Olson

300 Hours: Denis Mudderman, Lois Brantner, Alice Kiehl, Wayne Olson

400 Hours: Gary Hawthorne, Denis Mudderman, George Weatherston

500 Hours: Jim Holter

600 Hours: Nancy Moulden

700 Hours: Ruth Dienst

800 Hours: Bob Burke

Denis Mudderman also reached milestones for **500, 600, 700, 800, 900, and 1000 hours.**

Gary Hawthorne (left) presents the 2006 Volunteer of the Year Award to Wayne Olson.

Reliving my Youth being a Tamarac Volunteer

By Wayne Olson

I am reliving my youth, thanks to Tamarac Wildlife Refuge and Tamarac Interpretive Association. I grew up in the small town of Drayton, North Dakota, which is on the Red River. Growing up, we practically lived on the river or in the woods along it. We would build huts in the woods and build rafts (some not very buoyant) and fish in the river. What a great way to live, and now I have Tamarac to keep me in tune with nature! I've had a busy and full life, so when I cross the border into Tamarac, my whole being seems to relax and a peace settles over me. It is nice to see only what nature provides and not just buildings. It is so enjoyable to notice different animals and try to identify the many species of birds. Identification is the hard part for me, as I am still an amateur!

My education is in marketing, and as a young man, I owned my own clothing and general merchandise store. When the opportunity arose to manage the TIA gift shop, I jumped at the chance. The interaction with the many volunteers that staff the gift shop is so enjoyable. They all have great ideas and such wonderful attitudes. With our Fish and Wildlife Foun-

dation grant we will be updating and simplifying inventory control and general operations. It will be a new learning process for all of us.

Our intent is to go to bar coding/reading making it easier for the volunteers and for inventory control. The whole process could still be a year in the making but what a wonderful step it will be!

In the past two years, my wife Ruth and I have made at least one trip each year to the Gift Market in Minneapolis, looking for new ideas and merchandise. We hope to continue, as each time we see something different. When we travel, we like to visit other refuges and always check out their gift shops. With the help of our great volunteers and the Tamarac Refuge Staff, it is my goal to make the Tamarac Book and Gift Shop the best one possible for its size. As you know we are very limited in space so we must go for unique and quality goods. We would like to be known as the best nature-related gift and book shop!

So, as I said—Tamarac and TIA are helping me relive my youth and for that I am most grateful. Thank you!!

Volunteering at Tamarac NWR



Ron Jensen installs a new accessible scope.

What are you going to do when you retire?

By Ron Jensen

I wish I had kept track of the number of times I was asked, "What are you going to do when you retire?" Most people predicted I would be back at a full time job within weeks. It's been over 1½ years now, and the questions have changed. They want to know how I can be so relaxed and, even, healthy-looking. I just smile at them and say, "I volunteer; and, if you don't, you should try it!" I choose to spend most of my volunteering at Tamarac because it is a change of pace from the business world I came from. It's kind of fun to get the hands dirty, or see the light in the eye of a grade school student as you explain some of nature's wonders. It is enjoyable to work with the dedicated staff at the refuge. I am sure there are other agencies that need volunteers, also. Give it a try; I'm sure you will like it!

Alice Kiehl, Visitor Center Hostess

Alice Kiehl has been volunteering as a Visitor Center host at Tamarac for five years. Alice lives just 9 1/2 miles away on a farm where she and her husband used to run a dairy and grain operation. They now contract out the farm work. During those farming days Alice also worked at a bank in Detroit Lakes.

In 1966 they began spending winters in Florida. Alice began volunteering in 1985 starting with meals-on-wheels. That same year she began volunteering at the Greenleaf Golf and Convention Center, in Haines, Florida, with their visitor services. In the early 1990's she also worked with merchandising at Cyprus Gardens. When Alice and her husband retired she began volunteering at Tamarac.

Helping at Tamarac as visitor center hostess, Alice greets visitors, answers questions, rings up sales, works with the gift shop, starts movies, and keeps the visitor area in order. Having spent most of her life on a nearby farm, she enjoys the open outdoors of Tamarac and the short drive. She is entertained by the occasional school group. She said that one recent school group had a kid who felt it necessary to touch almost everything in the gift shop, while another entire group of first graders were so well-behaved that she was sure that the teacher prepared them before they came.



Alice Kiehl welcomes visitors at Tamarac.

Read John Peterka's article about the special tour given during the 2007 volunteer orientation:
www.tamaracfriends.org

FALL OPEN HOUSE

September 29, 10 am to 4 pm
Full Details in the
Fall Newsletter



Volunteer Hours Count Up

By Janice Bengtson, Refuge Park Ranger

On May 1st Tamarac National Wildlife Refuge celebrated the accomplishments and dedication of its volunteers at its annual volunteer banquet held at the Speak Easy in Detroit Lakes. The theme for the evening centered around the 100th anniversary of the birth of Rachel Carson, one of the world's foremost leaders in conservation. In the spirit of her book *The Sense of Wonder*, awards were given out to those volunteers reaching certain milestones. Tamarac volunteers have shared their sense of wonder with our many visitors and in conversations with the refuge staff. Whether they are leading a refuge tour, teaching children how to view and respect wildlife, welcoming visitors at the front desk, counting loons, or building wildlife ob-

ervation decks, they are making a difference in the lives of our visitors and, in turn, the wildlife that call Tamarac home.

On a national level, the USFWS volunteer program was initiated in 1978 under the Wildlife Improvement Act and was later enhanced through the Volunteer and Community Partnership Act of 1988. This act was reauthorized in 2004 – and enabled the refuge system to expand its volunteer program with an emphasis on environmental education and community based partnerships with Friends Organizations. The program has grown substantially over the years. In 1982, there were 4250 volunteers. In 2005, there were over 38,000 volunteers who donated over 1.5 million hours valued at 25 million dol-

lars! In 2006, Tamarac had 209 volunteers (including groups) donate over 3860 hours valued at over \$25,000.00. Currently we have 56 volunteers who donate their time on a regular basis. Recognition of hours follows national guidelines starting at 25 and 50 hours with increments of 100 hundred hours up to 1000 hours. After 1000 hours the scale then moves up to 500 hour increments. Volunteers who have reached 500 and 1000 hours are eligible to be nominated for the Assistant Regional Director's Award and the Regional Director's Award, respectively. A national volunteer of the year is selected every year by the National Wildlife Refuge Association and the National Fish and Wildlife Foundation. (Read expanded article on www.tamaracfriends.org.)



My Adventure at the Tamarac NWR

Letters and Art from Frazee First Graders

I saw a deer bone and I learned that a beaver can chop 400 trees in one summer. I learned that poop is called scat. - Seth

I saw a chipmunk. I learned to be nice to animals. I learned that an old tree is called a snag. I saw a big eagle. Thank you. - Carter.

I learned about wolves and other animals and not to cut their homes down. The boy frogs are singing to the girl frogs. We saw gopher mounds on the hill. I saw forest habitats. The beaver movie was so awesome! - Darcy

I saw a hawk flying over the bus. I heard the frog singing. I learned about beavers and scat. - Nathaniel.



By Seth

I learned about planting pine trees. I heard the male frogs singing a song to the lady frogs in the pond. I learned about ant hills. I learned how trees grow. I also learned about deer scat. I saw ducks in the pond. - Aida

Thank you for the wonderful day. My favorite thing was the visitor center. The bald eagle was cool. It was fun. I hope I come again. - Logan



By Carter



By Peyton

Sunday Movie Schedule



2 pm



July 22: Strange Days on Planet Earth – The Predators; **July 29:** Strange Days on Planet Earth – The Invaders; **August 5:** Global Warming: The Signs and the Science; **August 19:** Mino-Bimadiziiwin: The Good Life; **September 2:** Wolves at Our Door; **September 9:** Bears



Guided Refuge Tours

Every Thursday from 10-12 noon until the end of August



Tamarac NWR Interpretive Program

Sunday, July 8, 2:00 pm
The Secret Lives of Bears

Join Ranger Janice Bengtson to find out about the unique lifestyle of bears. Learn about some amazing adaptations this creature has acquired over thousands of years of evolution. You'll get to touch a bear paw and hear them "talk."

Saturday, July 14, 10:00 am – Noon
Guided Refuge Tour

Join one of our volunteer guides for an informative and fun adventure on the refuge. Search for wildlife and learn about the natural and cultural history of Tamarac. Meet at the visitor center.

Sunday, July 15, 2:00 pm
Kayak Tour



Join Kayak enthusiasts Kelly B. ledge and Refuge Volunteer Cheryl Didier for a kayak cruise on a favorite refuge lake. Learn about future wildlife management plans while searching for wildlife during this special time of year. Meet at the visitor center and caravan to the lake. Bring your own kayak or canoe. Life jackets are required.

Friday, Aug. 10, 9:00 – 11:00 pm
Owls, Howls and Shooting Stars

Join astronomy enthusiast Denis Muderman and Park Ranger Kelly Blackledge for an evening of star gazing. During this moonless night, catch sight of the Perseid Meteor Shower! While gazing upward, we'll listen for and identify creatures of the night including owls. We'll also take a tour of the wild summer constellations including two bears, an eagle and a swan. Bring a flashlight, a lawn chair or blanket. Meet at the visitor center to caravan to observation site.

Sunday, Aug. 12, 2:00 pm
The Scoop on Poop

For Kids of all ages! We may not see all the critters we want to on the refuge, but they leave plenty behind! Discover the wonders of scat! You'll even get to create your own animal scat to take home.

Saturday, Aug. 18, 10:00 am – Noon
Guided Refuge Tour

(See July 14 tour description)



Barbara Boyle at Wauboose Lake Access ^{D.M.}

Tamarac National Wildlife Refuge was established as a sanctuary for breeding and staging waterfowl and other migratory birds. The series of connected lakes, wetlands and marshes, along with extensive wild rice beds, is ideal habitat for waterbirds – ducks, swans, loons, grebes, terns, and rails. But nature is not always predictable. There are droughts, storm events or heavy snowfalls, all of which affect the quality of habitat available for birds and other wildlife associated with wetlands. So a water level management plan was developed as guidance for maintaining a functioning ecosystem. Since waterbirds are an extremely important resource of Tamarac's, the basic purpose of the plan is to enhance the area's natural ability to grow wild rice. Since 1959, management tactics have tried to stabilize water levels so that the growth of wild rice would benefit waterfowl by providing brood cover and food for migrants. This generally involved moving high spring runoff through the refuge lakes as rapidly as possible and maintaining stable water levels throughout the growing season.

Tamarac National Wildlife Refuge is in a unique position at the top of two watersheds – the Ottertail River which

originates in Elbow Lake and the Buffalo River which begins in North Tamarac Lake. These rivers flow through the twenty-one lakes and multiple marshes of Tamarac Refuge. The refuge is considered a shallow lakes system, which is a system of lakes generally less than 15 feet in depth. The rivers drain from the west and south portions of the refuge to eventually join the Red River of the North which flows into Hudson Bay.

As they exit the refuge, they obviously flow into other lake systems – Cotton, Height of Land, and Buffalo—to name a few of the nearest. Thus, to be a good neighbor, we need to form relationships with all who share a similar goal of a healthy lake system. These partnerships serve to enhance the scenic splendor, conserve the natural resources, improve water quality and promote the recreational opportunities that Lakes Country in general has to offer.

So, how is Tamarac Refuge improving its neighborly relations? Like the rivers that flow out of the Refuge, we are engaging more beyond the Refuge boundaries. In an effort to better inform our neighbors as to who we are, what we do and what we can do together, we have employed several strategies. Over the past year we have participated in several Lake Association Meetings, even hosting one meeting. We have written articles for Lake Association newsletters. We have given presentations on our management

Tamarac NWR hosts Public Forum to seek input on Comprehensive Conservation Plan

July 23 (Monday), 4 p.m. to 8 p.m.
At the Tamarac NWR Visitor Center

July 24 (Tuesday), 4 p.m. to 8 p.m.
At the Minn. St. Community Technical College, Detroit Lakes

July 25 (Wednesday), 4 p.m. to 8 p.m.
Clear Water County Courthouse, Bagley, MN.

20 minute presentation each day at 5:30

We want to hear from you.

activities or interpretive programs on wetlands and wildlife in general. We are attempting to better define how Tamarac Refuge fits into Becker County and the Lakes Country Scenic Byway's Recreational Plans. We have given demonstrations on beaver dam removal. Most recently, we have been invited to participate in the Buffalo-Red River Watershed District Lakes Area Planning Team. We view all these activities as opportunities to forge new relationships and develop lasting friendships. If you would like to learn more about Tamarac Refuge's water management activities, please call for a chat or stop by for a visit and a cup of coffee.



Last year a fire danger sign was installed at the intersection of highways 29 and 26. Fire danger ratings are determined after review of the Canadian Burn and National Fire Danger Rating System (NFDRS) Indices. The NFDRS system is used by fire management agencies to assess current danger at local levels. The system is the

Monitoring Fire Danger at Tamarac NWR

- Low:** Fires are not easily started.
- Moderate:** Fires start easily and spread at a moderate rate.
- High:** Fires start easily and spread at a fast rate.
- Very High:** Fires start very easily and spread at a very fast rate.
- Extreme:** The fire situation is explosive and can result in extensive property damage.

keystone of interagency fire danger predictions and provides quantification of risk elements that are critical for daily decisions regarding firefighter resource placement, staffing, appropriate suppression responses, and strategic decisions at local and national levels. The most important value among those provided by this data is consideration for firefighter safety.



Refuge Kicks Off Long Term Water Quality Study

By Lowell Deede,
Tamarac Refuge Biologist

2007 marks the first year of what the refuge hopes will be a sustained program to learn more about lake and river ecology on Tamarac National Wildlife Refuge. In May, staff and volunteers began collecting water transparency and water chemistry data on eight sites along the Egg, Ottertail and Buffalo rivers and three sites on Blackbird, Pine and North Tamarac lakes.

As an essential partner in this monitoring effort, the Minnesota Pollution Control Agency (MPCA) has several volunteer surface water monitoring programs that the refuge is participating in, the Citizen Stream Monitoring Program (CSMP) and the Citizen Lake Monitoring Program (CLMP).

The CSMP effort records water transparency, appearance and recreational suitability in relation to rainfall and water level about once per week throughout the summer. Tracking water transparency can serve as a basic indicator of stream health. MPCA has established that streams with greater than 60 centimeter readings have excellent transparency and likely have excellent water quality. To date, transparency readings have been in excess of 100 cm at all stream sampling

sites on the refuge.

The CLMP records water transparency at a lake's deepest point by lowering a Secchi disk until it disappears in the water column (see photo below). At this point the water depth is recorded to the nearest 1/2 foot and is an indication of how well light penetrates into a lake. It also provides an indirect measurement of the amount of suspended material in the water, which, in many cases, is an indication of the amount of algae present. Observations about the physical condition, suitability for recreation and color of the lake water are also recorded.

In addition to these basic recordings, stream and lake samples are collected once each month throughout the summer and are analyzed for specific parameters. Stream samples are tested for nitrate and nitrite nitrogen, ortho phosphorus, total phosphorus and total suspended solids. Lake samples are tested for ortho phosphorus, total phosphorus and chlorophyll a. The July lake samples will also be tested for color, turbidity, total suspended inorganics, alkalinity, chloride, nitrites, total Kjeldahl nitrogen and a phosphorus/nitrogen ratio will be calculated to provide a more comprehensive analysis of each lake's status. Excluding labor, the cost for this sampling is about \$2500.00 in a budget that is limited in discretionary

spending.

Future plans call for expanded sampling of all 32 lakes and wetlands that are annually surveyed for loons, grebes and terns. We also need to map the aquatic vegetation for these basins, inventory invertebrate abundance and calculate the acreage, density and production of wild rice throughout the refuge.

We're looking to partner and share the information gathered with other interested state, federal and tribal agencies, local watershed groups, lake associations and others. Of course, this program could not be sustained without assistance from volunteers. A hardy few have already participated in special training and have begun assisting with the water sampling.



Photo by Wayne Bringer



Photo by Lowell Deede

Wayne Bringer lowers a sechhi disk to record water transparency on Blackbird Lake. The smaller photo above right shows Lowell Deede taking a water sample using a two-meter integrated column sampler. GPS is used to return to the same position in the lake for each measurement.

Why measure phosphorus?

By John Peterka, Volunteer

Phosphorus is an important nutrient controlling the growth of phytoplankton, small algae that live in lake water (phyto=plant; plankton=small organisms that live in open water). Phytoplankton and other green plants are at the base of a lake's food chain; it is the level of their production that determines the fertility or eutrophic state of a lake. Green plants combine energy from sunlight with phosphorus and other nutrients (primarily nitrogen and carbon), producing the organic matter used by other members of the lake ecosystem, including fish.

In the refuge, measurements of concentrations of total phosphorus (the sum of soluble phosphorus and particulate phosphorus) in three lakes will be used along with other measurements to help evaluate the lakes' eutrophic, or fertility levels.

Logging, Agriculture and Wildlife Move Water



By Lowell Deede,
Tamarac Refuge Biologist

The earliest, and possibly the most significant, water manipulations on Tamarac National Wildlife Refuge occurred decades before the area ever became a refuge. They were spawned by the commercial logging ventures in the rich pine forests along the Ottertail, Egg and Buffalo river systems. Dams were built to capture river flows and raise water levels until the spring thaw when water was released to flush and drive the logs toward saw mills in Frazee and Richwood. One troublesome spot was the shallow Rice Lake at the refuge's southeastern boundary. A ¾ mile diversion ditch was dug by the Nichols and Chisholm Lumber Company in 1908 and 1909 to divert the logs to Height of Land Lake. Low water levels and the sloughing of bank sides caused the ditch to be abandoned only one year later in 1910.

As settlers moved into the area, agriculture became the dominant industry and county ditches were dug to carry the water away and improve the area for hay production and farming. County Ditch 19 was dug to drain Mud and Balsam Lake water into Tamarac and Tamarac water into Momb, Rock, Rice and eventually Buffalo Lake. Then came the great drought period of the 1930's and many lakes and marshes went dry. Tamarac Lake levels receded until the remaining water was confined to the deeper north bay. Duck numbers were dwindling and refuges like Tamarac came into existence during this period.

One of the first major themes for the new refuge was to put water back on the land to benefit waterfowl. The Civilian Conservation Corps camps and Works Progress Administration built water control structures to do just that. In 1940 Dry and Flat lake structures were built and in 1941 the Chippewa structure and dike were completed (see photo). Following World War II the Two Island structure was finished, which completed the first phase of structure development at Tamarac.

Phase two of the water management structures resumed in the 1960's when new structures were placed at Balsam,



Lowell Deede discusses water control at the Chippewa Lake structure.

K.B.

Ogemash, Rice and Lost lakes. A new pump station and dike to separate North Tamarac from South Tamarac Lake were completed. This project created a more shallow South Tamarac Lake for waterfowl breeding and fall resting areas. A structure at Flat Lake was also completed at this time.

As each water control structure became functional, "approved" elevations were established for each lake and resulted from Fish and Wildlife Service

Engineering discussions with refuge staff. The approved elevations were generally based on flooding a majority of a pool to a depth of four feet or less. Some elevations were altered over time to benefit the vegetative composition and wildlife utilization of the pool.

Wild rice has always been the most important indicator species for Tamarac's water management program. Controlling water levels allows better, more consistent, wild rice production.



Tamarac Lake is one of four lakes open for fishing on the Tamarac NWR. New signs were installed at all lake accesses this spring.

D.M.



Dick Henry - Nature Photographer

By Denis Mudderman



Dick Henry, E-mail: richardwheny@msn.com

Dick Henry, from Bemidji, has been entering photos in the Tamarac photo contest and winning for three years. In March, his fame became national by winning first place in the National Wildlife Refuge Association annual contest.

Dick has been doing more serious photography for about five years. He takes many of his photos in the Bemidji area where he lives. Each year he makes six to seven trips to Tamarac. Starting out with a Sony DSC-S75 camera, he now uses a Canon EOS 20D with a macro lens (for

close-up photography) and a telephoto lens. Dick enjoys close-up photos of insects, birds, and reptiles more than landscapes or other subjects. He first entered photos in the Tamarac NWR photo contest in 2004, and all together he has won 3 first prizes, 2 second prizes, and 1 third prize. Last year he entered photos into the National Wildlife Refuge Association annual contest and none of his photos won or was included in the 200 photos selected each year for the NWRA refuge photo library. Last March it was announced that his "Darner Dragonfly" photo (page one) won first prize out of 2,200 photos submitted. Five other photos were selected for the photo library. (See all six on our TIA website.) His prizes included 8x24 Merlin binoculars, a bird feeder, and Houghton Mifflin field guides.

Dick Henry's winning "Darner Dragonfly" photo was taken last July hiking around the field north of Pine Lake along the auto tour. The dragonfly was rather lethargic and wasn't disturbed by multiple photos with a macro lens. The photo of the fox cub on guard duty (page 12)

was taken with a telephoto lens off County Road 126 near the south end of the refuge.

Frogs have been a favorite subject for the photos submitted to the Tamarac NWR photo contest. Dick Henry won first and third place in 2005 with two frog photos. Last year his green frog photo won second place. That frog was sitting in a day lily soaking up the sun near the parking area for the ski trails.

Dick recommends getting out to Tamarac with your camera in the early morning or late in the day. Besides being better times for viewing wildlife, the lighting for photography is also better. Certainly, nature photography involves luck, but Dick Henry says that you have to create your own luck by getting out frequently, looking, and trying different things.



Injured Eagle Taken to Raptor Center

Last April, two male eagles were in aerial combat for territory north of Height of Land Lake ending with the loser plummeting to the ground. Refuge staff were notified and they retrieved the injured eagle (bottom right). Janice Bengtson drove the eagle to Park Rapids to rendezvous with a state licensed raptor rehabilitator from Bemidji. When the eagle was taken out for transfer from its dog kennel in the Park Rapids McDonald's parking lot, it put on quite a show. The final destination for the eagle was the Raptor Center in St. Paul, MN.



Injured eagle K.B.

Whose Piece (peace!) ?

By Jim Jasken

Who owns a piece of woods is not so simple as checking whose name is on the tax statement. It would be nice if it were.

The Johnson's bought the perfect forty—good road and a fine old growth stand of sugar maples. The neighbor's forty, a quarter mile to the north, is laced with trails. The four kids and their buddies exercise every corner of the property on their cycles and ATV's. There can be roaring and whining at any hour. Small engines "own" the entire area, including the Johnson's airspace.

The Baker's from Minneapolis retired to their dream fifty acres—a building site on a knoll and acres of marsh wrens and raptors in the low sections—the perfect contrast to the scramble of their working days. The two trips to view and negotiate the property were on a south wind. Unbeknownst to the Bakers, a half mile to the northwest, beyond the bog land, lay a commercial hog operation. With every northwest wind the Baker's retirement spot is "owned" by the pigs.

The realtor failed to mention that a quarter mile to the west of Bill and Ellie's dream vacation property a boondocks party house—the residents known well to the local sheriff—is the site for much unpredictably-timed raucous activity. The residents have no apparent source of income. Drug and alcohol noise "own" this entire neighborhood.

So who owns the big chunk of woodland known as Tamarac Refuge? Is it the eagle? The beaver? The white-tail? How about the wolf?

Consider this: even if it just might be the mosquito or the tick, woods just don't get any better than Tamarac. It is all of ours to visit in the peace of the wood country. No neighbors, no taxes. It's just that simple!

Jim Jasken is a Tamarac Volunteer who helped in the construction of the Black-bird observation deck. Read other Jim Jasken writings on our website at www.tamaracweb.org in Stories.

Hiking The North Country Trail Through Tamarac



By Denis Mudderman

Stretching 5,000 miles from Allegheny State Park in New York to Lake Sakajewia in North Dakota, The North Country National Scenic will pass through Becker County and the Tamarac National Wildlife Refuge. When completed, this trail established by Congress, will be the nation's longest hiking trail, longer than the more familiar Appalachian Trail. No land is being purchased, but the route goes through state and federal lands where possible. The trail is managed by the National Park Service, which has so far certified 1,800 miles of trail.

The vision for the trail is a premier foot path, no more than 4 feet in width, and in the winter, open for snowshoeing and cross-country skiing. The path of the trail enters Becker county in the NE just west of Co. 37 and follows the north/south continental divide running between Juggler and Bad Medicine lakes, then east of Many Point and Round lakes. It will drop off of the divide and enter Tamarac in the vicinity of Co. 26 or a little further south. The precise route within Tamarac is undecided, but supporters of the trail hope it can pass near the visitor center and a variety of Tamarac natural resources. Leaving Tamarac, it would go through Hubble Pond and by Frazee. The route south of Hwy 34 will be dependent on private property owner cooperation.

Supporting the work in creating and maintaining the trail is the North Country Trail Association. The NCTA promotes

2007 Tamarac Photo Contest Changes

The 2007 Tamarac NWR photo contest will feature a new professional division with two categories: "Wildlife," and "Other" (photos including plants, scenic, and recreation). Amateur division continues with five categories for Wildlife, Plants, Scenic, Nature's Abstracts, and Recreation. The overall grand prize is \$75 cash. Prizes for each category are First place: \$25 cash; Second: \$15 gift certificate; and Third Place certificate and ribbon. Contest rules have been modified since last year. Deadline for entries is August 31, 2007. Pick up the contest flyer at the Tamarac Visitor Center or on the TIA website: www.tamaracfriends.org.



the trail to local agencies, businesses, the public and media. They also create maps, do advocacy, and work on the trail route within the plus or minus 10 mile path established by congress. Coordinating volunteers is a major effort. The local Laurentian Lakes Chapter of NCTA focuses on the route through Becker County. This chapter is responsible for developing and maintaining the trail from the Nicollet and Eagle Scout Trails intersection in Itasca State Park through Clearwater County to the Becker - Ottertail County border.

The final route through the Tamarac National Wildlife Refuge will be in-

cluded in the process of the refuge's Comprehensive Conservation Plan as it is completed over the next two years.

For more information about the North Country Trail, the Laurentian Chapter, volunteering, or membership contact:

Ray: Phone 573-3243

E-mail: highpines@arvig.net or

Matt: Phone 844-4601

E-mail: MattDavis@northcountrytrail.org

Additional Information can be found on the following websites:

www.northcountrytrail.org

www.nps.gov/noco

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Tamarac National Wildlife Refuge
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Rochert, MN 56578

Website: www.tamaracfriends.org

Phone: 218-847-2641 extension 21

*Tamarac Interpretive Association's mission
is to facilitate activities and programs that
interpret, protect and restore the natural
and cultural resources of
Tamarac National Wildlife Refuge.*

Refuge Website:
www.fws.gov/midwest/tamarac



A fox cub is on guard duty at the south end of the Tamarac National Wildlife refuge. Photograph by Dick Henry. (See article on page 10.)