FROM THE DIRECTOR

Dear Friends,

It’s always rewarding to finish a project, especially one that has been five years in the making. TRC’s new bird housing—made possible entirely through generous donations—is everything we had hoped for and more.

The materials and design are sustainable and more comfortable and engaging for the birds, the public, the staff, and the volunteers. The new housing is easier to clean, which makes it easier to care for our patients and much-loved education birds. The new Douglas Dayton Education Wing also allows for more visitors, which we are always delighted to see.

Because it takes fewer hours and less energy to maintain the mews and rehabilitation pens, our patients benefit from less human disturbance. The birds seem to be more content, and the staff and volunteers have more time to devote to the broader issues that face us all, such as avian flu; the impacts of lead, pesticides, and other contaminants in the environment; and other hazards facing humans, raptors, and other animals.

As we all know, change can sometimes be slow. As you’ll read in this issue of Raptor Release, TRC cofounder Dr. Patrick Redig and others continue to teach hunters about the danger of lead ammunition in the environment, an ongoing endeavor.

At other times, change can be surprisingly swift, such as this year’s highly pathogenic avian flu. The disease swept across the country, devastating the Midwest turkey industry and raising questions about the role of wild birds in the disease as well as the risk the disease poses to raptors.

These and other issues continue to require our attention and efforts if we are to make the world a healthier place for raptors, humans, and other animals.

Your donations of time, money, and supplies continue to be the backbone of The Raptor Center and allow us to persevere in our mission and goals. Please join us at the Fall Raptor Release on September 26, when we will return several rehabilitated birds back to the wild.

As always, thank you for your generous support.

Sincerely,

Julia Ponder, D.V.M.
Executive Director
New bird housing is a big win for all

By Fran Howard

With sick and injured raptors now recovering in the new rehabilitation pens and the education birds settled in their new mews in the Douglas Dayton Education Wing, it’s clear that the design and execution of TRC’s new bird housing has been groundbreaking.

The culmination of five years of hard work—which included fundraising, research, countless meetings, design and development, and execution—has been truly amazing.

“The new housing is safer and more comfortable for the birds, more comfortable and engaging for the public, and much easier to clean and work in for the staff,” says Lori Arent, clinic manager. “The new housing is also sustainable.”

Traditionally, captive bird enclosures have been made of wire mesh and wood. However, University of Minnesota building standards prohibit the use of wood in new structures unless a fire suppression system is part of the project, which was cost-prohibitive for this job. This required TRC staff, university personnel, and hired consultants to be creative. In the end, the “no wood” requirement was a blessing in disguise.

For months, TRC staff, including Arent, executive director Dr. Julia Ponder, staff veterinarian Dr. Michelle Willette, and education program manager Gail Buhl, met weekly with MSR Architecture, Graham Construction, university engineers and facilities staff, and other stakeholders.

After much discussion, the team chose to build the pens and mews with a steel structure, vinyl-coated mesh, and plastic panels similar to the kind used in showers and bathtub surrounds but designed for outdoor use.

Covered human pathways leading to the outdoor rehabilitation pens not only protect visitors, staff, and volunteers from inclement weather, says Arent, but the sidewalks don’t need to be cleared of snow in winter.

“The plumbing and drainage were also improved,” Arent says. “Now, water and snowmelt flow away from the pens instead of ponding in the low spots. Before, there were two hose connections. Staff and volunteers would have to haul 100-foot hoses from connection to connection. Now, there are six connections, and the hoses are much shorter.”

Two other improvements are also notable. First, the floors of the education mews were leveled so that rounded pea gravel can be evenly distributed throughout the enclosures. Before, Arent says, the steep grade of the education area caused the rounded pea gravel, which is easy on birds’ feet, to slide downhill, exposing much rougher river rock, which is no longer used in either of the two areas. The doors to the mews were also widened, so that maintenance work, such as replacing worn perches and exchanging pea gravel, could be done more easily.

“It doesn’t take as long to clean the new enclosures,” says Arent. “And if we are in and out quickly, it creates less of a disturbance for the birds.”

TRC’s new bird housing is not only more comfortable for the birds, the public, the staff, and the volunteers, but it is also easier on the environment because the new sustainable materials are resistant to rust, rot, and insect damage and should last for generations of birds.

Fran Howard is a St. Paul-based freelance writer specializing in science, conservation, and veterinary medicine.
Raptor Housing Update

By Amber Burnette

While TRC staff and volunteers are thrilled with the new bird mews, our ambassador birds had the biggest stake in the outcome, and from what TRC can see, they couldn’t be happier. Here’s a fanciful look at the education birds’ reaction to the construction process and their new mews.

Artemis, the peregrine falcon

“I heard the unfeathered staff say that they will not miss the stairs or the shovel brigades after a snowstorm. I don’t know about that, but I love tucking my toes under my feathers when it snows. My fellow winged ambassadors and I will still enjoy access to the variable Minnesota weather, but the new mews will make it easier for visitors, volunteers, and staff to stay warm and dry.”

Gladdie, the bald eagle

“The partially open roof design of our new mews allows us to be very engaged with the sights and sounds in our surroundings. The other day I noticed some newly fledged American crows flying overhead. I couldn’t keep my eyes off them.”

Lois, the great horned owl

“The outer siding of our new housing is visible from the area where we get ready to go to programs. It looks very much like overlapping feathers, which I approve of, although they are all square and the same color. I much prefer the color, pattern, and shape diversity of my own feathers. I can also see the shape of the roof over the whole area. The ceilings over the human walkways are solid. I never minded snow on my head, but I know the volunteers and staff will appreciate not having to knock snow off mesh ceilings like they had to do before.”

Maxime, the bald eagle

“The new drainage system will help keep our areas clean and free of ice and water all year long. It has pea gravel on top, which will keep my talons filed. I am the biggest eagle at TRC, and when I jump down from my perch onto the pea gravel, it cushions my jump and feels good on my feet when I walk around. I am not sure why the unfeathered staff would want to walk on the cement of that sidewalk.”

Darter, the American kestrel

“While our new housing was being built, I was perched in the lobby, which gave me the perfect vantage point to see everything that was going on. I could see the roof that will keep rain and snow off the human pathways in the rehabilitation bird area. I do not understand, though, why humans don’t welcome a good rain bath. It does wonders for my feathers.”

Whisper, the barn owl

“I went outside recently to enjoy my mouse lunch and saw the new housing that was built for me and my fellow ambassadors. I like it—some sun, some shade, and a view of the moon at night! There was careful attention paid to the dimensions of each mew and to make sure there are no sharp corners to hurt us. I hope you come and visit me in my new home.”

They like it!
At press time, the clinic was in the midst of its busiest season of the year. Young broad-winged hawks and Cooper’s hawks were fledging, and young eagles, merlins, and red-tailed hawks found themselves in an aerial world with a steep learning curve for survival. The clinic had already admitted 50 more birds (480) than the previous year, and it looked like the trend would continue through the end of summer.

The new outdoor enclosures are now full of patients, and it is exciting to be able to house a wider variety of species outside. Species such as long- and short-eared owls, broad-winged hawks, and barred owls, which previously could not be housed outside safely, are now benefiting from fresh air and increased space as they convalesce. The new design provides the birds with more privacy, keeping them calmer. The enclosures have solid sides with built-in ventilation panels and a viewing window in each door. It is common to peek in and see one of the patients resting a foot—a true sign of comfort. The number of enclosures also increased because the space is now being utilized more efficiently.

Cleaning the enclosures is also much easier due to the materials chosen and improved plumbing. A favorite feature, however, is a special door installed in one of the pens, which is used to put in food for live training. This allows the birds to focus immediately on the food instead of the human disturbance. It is working great! How do we know? TRC staff members are now able to view activities in four pens through the aid of strategically placed cameras. These cameras also allow staff to observe and learn more about the patients’ behavior and any interactions with each other when multiple birds are housed together. The cameras were made possible in part by a grant from the Institute of Museum and Library Services (IMLS), the primary source of federal support for the nation’s 123,000 libraries and 35,000 museums. IMLS also contributed substantially to the renovation of the rehabilitation mews.

**Patient update**

The Spring 2015 issue of *Raptor Release* featured an adult female red-tailed hawk that had been shot and suffered from lead toxicity. Over the past several months, she molted in a new set of wing and tail feathers and moved into one of the new outdoor enclosures. She had a test flight in early August, and her efforts looked promising. Although she tired quickly, her flight mechanics were normal. She will require a significant amount of reconditioning, but she is finally on the last leg of her journey to reclaim her life in the sky.

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**Patient highlights**

Although every patient is special, with its own story, it is hard not to stand back and admire species that are rare to the clinic. Here are three birds—all species of open country—that recently spent time convalescing at the clinic:

**PRFA 15-404**: A juvenile female prairie falcon recovered in Duluth, Minnesota, with a dislocated collarbone. *Photo by Amber Burnette*

**GOEA 14-688**: A second-year male golden eagle recovered last winter in Mankato, Minnesota, with a fractured wing and leg. *Photo by Lori Arent*

**NOHA 15-445**: A juvenile male northern harrier recovered from the Walmart parking lot in Duluth, Minnesota, with a healed clavicle fracture and fresh head trauma. *Photo by Lori Arent*
Donors play critical role in TRC’s work

By Ellen Orndorf

The Douglas Dayton Education Wing is now open. Thank you to the many loyal donors who made this dream a reality. This project was funded entirely with philanthropic support. Please look for stories in the future on how TRC is evolving to address the environmental challenges that raptors face in the 21st century and how your support can make a difference.

Help max the match in November

Mark your calendar for Give to the Max Day, Thursday, November 12. All gifts to The Raptor Center, up to $52,000, will be matched by loyal donors: the WM Foundation, Rachel Hollstadt, and the Sarah J. Andersen Fund of the Hugh J. Andersen Foundation.

Funds raised on Give to the Max Day are crucial in helping TRC provide care and treatment for injured and ill raptors. Please join other supporters of TRC to keep eagles and other raptors soaring. Go to http://tinyurl.com/TRCGiveMN2015 to give online.

For more information about making a gift, or to learn about other ways to support TRC, please contact Ellen Orndorf, TRC’s development officer, at 612-624-8457 or eorndorf@umn.edu.
What’s new in education?

By Amber Burnette and Gail Buhl

As always, TRC’s education department has been busy developing programs and partnerships as well as making sure that both the education birds and visitors to TRC have first-rate experiences. Here are a few of the projects that have kept the education staff engaged the past six months:

New hutches
A shop teacher at Minnesota’s Hopkins High School and Brett Schulze, a TRC volunteer, asked whether TRC had a project the shop class could tackle. Given the new housing area for the education birds, new hutches were needed for the smaller birds, such as the American kestrels and eastern screech owl, to seek shelter from weather. The class built four hutches, each with a small heating unit. The students’ legacy will live on, not only because they dated and autographed the hutches, but also because the class has signed up to make more hutches next fall.

Enhancing visitor experience
With the education and rehabilitation bird areas completed, TRC is now moving forward with plans to enhance its public areas. TRC offers educational opportunities that engage visitors in discovering the natural world that all animals, including humans, share. There are also plans to make the clinical and rehabilitation areas more accessible to the public, using cameras and multimedia to encourage a deeper exploration of TRC’s work.

New website
TRC’s website has a new look. Navigation is easier, content is easier to find, and it is now optimized for mobile devices. There are also new online education program request forms. You can still find the site at TheRaptorCenter.org.

Raptor Lab
The University of Minnesota’s Learning Technologies Media Lab and TRC have partnered to develop a new online learning environment called Raptor Lab, which models the process of scientific investigation in real-world settings. Students use active role playing to assume a scientific career in wildlife rehabilitation. They then team up to share their own inquiry-based investigations online. TRC conducted teacher workshops in July to solicit input on the curriculum, which will be pilot tested this year in several schools. The project is funded by the Minnesota Environment and Natural Resources Trust Fund. When finished, Raptor Lab will be made available to students across Minnesota as well as throughout the nation and even internationally.

Meet Violet, the American kestrel
Violet was admitted to TRC’s clinic in August of her hatch year, 2012. She had been out of her nest cavity for only a few weeks when she collided with a vehicle. In addition to a fractured right coracoid, she was dehydrated and had trauma to her right elbow. Permanently unable to fly, the kestrel became a member of the education team. She recently received a name, Violet, which refers to a unique adaptation that some scientists think American kestrels possess to help them locate prey. Mice and small rodents, which are part of a kestrel’s diet, often leave a urine trail that reflects ultraviolet (UV) light. A visual pigment in the cones of kestrels’ retinas absorbs UV light, perhaps allowing them to see this part of the spectrum. Photo by Amber Burnette

In memory: Juneau the peregrine falcon
Juneau, one of TRC’s ambassador peregrine falcons, has been humanely euthanized. At 17, she started to display neurological signs and pathological changes in her cardiovascular system. Her condition quickly declined. Since joining the education department in 1998, Juneau had participated in more than 3,875 programs with 116,340 participants. Photo by Amber Burnette

Amber Burnette is TRC’s program associate and blog master. Gail Buhl is education program manager at TRC.
TRC on front lines of lead poisoning and bird flu

By Fran Howard

Over the past year, TRC has continued to deepen its long-term commitment to making the environment healthier for bald eagles and other raptors by educating deer hunters and other stakeholders about the hazards of lead ammunition. At the same time, the health of the environment took center stage with an outbreak of avian influenza. As a result, TRC is increasing its stake in wildlife surveillance in an effort to discover whether there is an intermediate step involving humans in the spread of the avian influenza viruses from wild birds to poultry operations.

Progress on lead

“We have made considerable progress over the last several years in having open and positive conversations with deer hunters and others about the hazards of lead ammunition,” says Dr. Patrick Redig, co-founder of TRC. Eagles typically are exposed to lead when they ingest spent ammunition while feeding on the remains of deer and other animals left in the field.

Last fall, in partnership with the Minnesota Chapter of The Wildlife Society and the Minnesota Department of Natural Resources (DNR) Nongame Wildlife Program, TRC provided hunters with the opportunity to compare fragmentation of lead bullets to copper ammunition. These clinics were held at three shooting ranges throughout the state.

Redig and Carrol Henderson, head of the DNR’s Nongame Wildlife Program, also made several presentations about the use of alternative ammunition at chapter meetings of the Minnesota Deer Hunters Association.

While these presentations were favorably received, TRC continues to admit high numbers of lead-poisoned eagles. From September 2014 through March 2015, 15 out of 75 bald eagles admitted to TRC were suffering primarily from lead poisoning; 12 died or were euthanized, and three were released. Another three were admitted with significant levels of lead along with a major traumatic injury as the primary cause of admission; two have been released.

To combat this persistent problem, The Wildlife Society, Nongame Wildlife Program, TRC, and several other partners have committed to holding more “Alternative Ammunition” shooting clinics this year.

“This approach appears to be the most effective, though not necessarily the most efficient way of gaining acceptance of the suitability of copper ammunition for hunting deer and nonlead ammo for hunting other species,” says Redig.

The Raptor Center has resubmitted a proposal to the Legislative-Citizen Commission on Minnesota Resources to broaden the scope and scale of the Alternative Ammunition clinics and is looking for other funding options to expand outreach in this critical area.

Meanwhile, Kate Henry, a graduate student from the University of Minnesota Duluth, will conduct research on whether the shooting clinics are successful in changing hunters’ attitudes about the use of alternative ammunition.

The role of wild birds in influenza

A new highly pathogenic avian influenza hit Minnesota with a vengeance this year. The economic damage to the state is estimated at more than $310 million, according to a recent study by University researchers. In total, more than 2.5 million birds, primarily turkeys, in Minnesota alone died of the disease.

“While the conventional wisdom is that waterfowl, especially dabbling ducks, are the silent carriers of the virus, the finding of influenza in a Cooper’s hawk strongly suggests that some passerine species (regular prey of the Cooper’s hawk) may also carry the virus,” says Redig.

So far the virus has been discovered in one Cooper’s hawk, one snowy owl, one European starling, and a small group of black-capped chickadees in the Midwest, but raptors appear to be very susceptible to the disease primarily through ingestion of infected prey.

TRC has been collecting blood samples from five raptor species most likely to encounter the influenza virus while ingesting contaminated prey—bald eagles, peregrine falcons, red-tailed hawks, Cooper’s hawks, and great horned owls. To date, Redig notes, there has been no indication of influenza in any of these birds.

Over the next two years, using funds from Minnesota’s Rapid Agricultural Respond Fund, TRC will conduct large-scale surveillance on free-living ducks and raptors admitted to its clinic in an effort to discover how the virus circulates in the wild.

Fran Howard is a St. Paul-based freelance editor and writer, specializing in conservation and veterinary medicine.
Sharing our neighborhoods with wildlife

By Sue McCarthy

Welcome to Subirdia: Sharing Our Neighborhoods with Wrens, Robins, Woodpeckers, and Other Wildlife
by John Marzluff, with illustrations by Jack DeLap
Yale University Press, 2014, $30

What happens to the animals when wild lands are turned into developments? The question may seem simple, but John Marzluff, author of Welcome to Subirdia, found some surprising results during his long-term research on the effect of urbanization on bird species and populations in the Seattle area. Does land development affect species diversity and sustainability? One conclusion he reached was that the greatest diversity occurred as he moved from the city center to the suburbs. There was also more bird diversity in the suburbs than in the wilder, forested areas outside the city. Thus, he coined the word “subirdia” to describe what he found.

Marzluff found that extinctions were rare, but 25 percent of the small forest birds had declined in numbers as subdivisions grew. These were the avoiders. The exploiters, the American crow and house finch, and the “fab five” (European starling, mallard, Canada goose, rock pigeon, and house sparrow) replaced the avoiders and increased in number. But the largest group of all was the adapters. He considers the suburban ecosystem to have a “wonderful diversity of bird life that is fragile, though sustainable.”

Sue McCarthy is an avid reader and longtime volunteer at TRC.

Thank you, volunteers

No conversation or newsletter about the new bird housing would be complete without a sincere thank you to TRC volunteers, who set up alternate housing for TRC education birds while the new space was being built. This involved transporting the birds as well as all the perches and other furniture, bath pans, etc. Since the move occurred during Minnesota’s winter months, these hearty souls donned coats and boots and walked back and forth from TRC to the alternate housing several times a day. Birds still needed to be fed and their areas kept clean, and intense cleaning needed to happen daily for birds temporarily housed in the owl, eagle, and falcon auditoriums so TRC could remain open to the public. Clinic volunteers also readied the new flight pens.

The many skills of TRC volunteers are truly amazing. They even helped during the planning and design stage by offering advice based on years of experience with the birds. The flight and transport crews were incredibly flexible during construction, when access to parking was much more difficult. Their willingness to change their routine and communicate with their crews, as well as with the staff, proved that staff and volunteers are truly a team with a single purpose.

Finally, after already giving so much of themselves, many volunteers offered financial support for the new construction. Thank you, volunteers!
Around The Raptor Center

Staff news
Dr. Devin Tunseth, from the United States, and Dr. Irene Galan Lecona, from Spain, finished their clinical internships this summer. In September, TRC will welcome new clinical interns Dr. Anna Kathleen MacAulay, from Canada, and Dr. Ernesto Domínguez Villega, from Mexico.

In June, Dr. Julia Ponder, executive director, successfully defended her master of public health thesis, “Assessing the Risk of Rodent Eradication in Galápagos from a One Health Perspective: Implications for Public Health, Food Safety, and Food Security.”

On the road
Dr. Irene Galan Lecona attended the Association of Avian Veterinarians conference in San Antonio, Texas, in August, presenting a paper she coauthored with Dr. Kristin Barn cord on “Cardiac Evaluation in the Bald Eagle (Haliaeetus leucocephalus).”

Education and outreach
The Basic Raptor Rehabilitation Workshop was held May 5-8, with 20 workshop attendees from 13 states. Web-based tools developed for the Raptor Academy were piloted as pre-workshop modules.

In May, Dr. Julia Ponder, Gail Buhl, education program manager, and TRC ambassador birds appeared on Minnesota Public Radio’s “Science Night” with Kristi Curry Rogers, paleontologist and associate professor at Macalester College, and David Fox, paleo-ecologist and associate professor at the University of Minnesota.

They discussed the connections between dinosaurs and modern-day raptors. Ponder was also a cohost, planner, and leader of a two-day, TRC-cosponsored workshop on invasive species in the Galápagos held at the University of Minnesota Institute on the Environment.

Dr. Michelle Willette co-taught a University of Minnesota Public Health Institute course, “Emergency Preparedness and Response for the Managed Wildlife Community.”

TRC partnered with Rockford and Murray Middle Schools in May to provide students with hands-on learning opportunities—including what it is like to do a physical exam of a raptor patient and how bird banding teaches scientists about the environment. The visits were part of an ongoing curriculum integration program to create opportunities for school children to deepen their engagement with environmental topics.

“Wizarding World of Wildlife,” “Grossology,” “Biomimicry,” “Enraptured with Raptors,” and “Raptor Vet” were topics at this year’s summer camps for children ages 8 to 15.

Grants
Dr. Michelle Willette secured two grants: a Grant-in-Aid of Research, Artistry, and Scholarship for “Is The Raptor Center an Effective Wildlife Disease Surveillance Tool?” and a Population Systems grant, “Incorporating Captive Avian Collections into Minnesota’s Avian Influenza Response Planning.”

Student research
Using TRC’s clinic patient database, Kaitlyn St. Charles, an undergraduate in the Department of Animal Science and TRC volunteer, is investigating the connection between lead levels in bald eagles admitted to the clinic and their reason for admission. The results of the study may serve as a foundation for future TRC research.

In the field
TRC staff provided consultations on preparedness and response to organizations caring for captive wildlife, instigated surveillance activities, and worked with poultry counterparts to better understand this spring’s unprecedented outbreak of avian influenza. Dr. Julia Ponder and Dr. Patrick Redig were invited to make a presentation on avian influenza to the Legislative-Citizen Commission on Minnesota Resources.

Each year, TRC contributes to the longstanding monitoring of the Midwest peregrine falcon population in May and June. Peregrine chicks are banded and receive a physical exam, and blood samples are taken for a DNA databank.

Stay connected!
Keep up with the latest news at The Raptor Center and College of Veterinary Medicine on the Web!

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• www.TheRaptorCenter.org
• www.cvm.umn.edu

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• TheRaptorCenterNews.blogspot.com
Upcoming events

Fall Raptor Release
Saturday, September 26
10 a.m. to 3 p.m.
Carpenter St. Croix Valley Nature Center, Hastings, Minn.
See rehabilitated raptors released back into the wild, meet some of TRC’s winged ambassadors, and take part in family-friendly presentations and activities, including apple-picking, apple-tasting, and free hay-wagon rides. Meet Esther the Eaglet author Christie Gove-Berg, who will be signing copies of her book. Please bring your used inkjet printer cartridges to support Recycling for Raptors. This is a zero-waste event. Please leave pets at home.

Youth RaptorCorps
Starts Monday, October 12
This service-learning club is designed for budding naturalists in grades 5-8 who are interested in helping raptors and the environment. Each meeting includes an opportunity to see live raptors and learn about their natural history, the environment these birds share with other animals, including humans, and how people can affect these birds in a positive way. Participants also engage in service-learning projects to support TRC’s mission. Learn more and register at TheRaptorCenter.org.

Raptor Tails
Tuesdays, October 13, 20, and 27
Raptor Tails is an activity-oriented learning experience about raptors and their environment for children ages 3 to 5. Children hear stories, take part in activities, and get to meet a live raptor. The goal of this program is for preschoolers to develop a positive relationship with raptors and the environment. Learn more and register at TheRaptorCenter.org.

Give to the Max Day
Thursday, November 12
On Give to the Max Day, people come together in a heartwarming show of philanthropy. Give to the Max Day is one of TRC’s largest fundraisers, and it all takes place within 24 hours. To give, go to http://tinyurl.com/TRCGiveMN2015.

Contact us

Donations
Gifts, endowments, estate gifts, and grants:
Ellen Orndorf, 612-624-8457 or eorndorf@umn.edu

Adopt-a-Raptor program:
Amber Burnette, 612-624-3391 or burne018@umn.edu

Educational programs
Field trips, outreach programs, and events
612-624-2756
raptored@umn.edu

E-mail
raptor@umn.edu

Events calendar
TRC public events calendar
http://tinyurl.com/TheRaptorCenterCalendar

Fax
612-624-8740

Front desk
Injured raptors; general information
612-624-4745

Gift shop
TRC’s online gift shop offers raptor-themed items such as clothing, books, toys, and jewelry. Go to www.TheRaptorCenter.org and click Shop.

Mailing address
1920 Fitch Ave.
St. Paul, MN 55108

Recycling for Raptors
To learn about drop-off locations, e-mail trcink@umn.edu.

Social media
Facebook: www.facebook.com/TheRaptorCenter
Blog: www.TheRaptorCenterNews.blogspot.com

Volunteer opportunities
Volunteer positions and upcoming training sessions
Nancie Klebba, nklebba@umn.edu, 612-624-3928, or trcvol@umn.edu

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Raptor Release
The Raptor Center

Volume 34 Number 2
Fall 2015

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