Chapter 9
The Raptor Center

RAPTOR RESEARCH AND REHABILITATION PROGRAM

The Raptor Center took root in 1974 as the Raptor Research and Rehabilitation Program in Haecker Hall on the St. Paul campus. In 1975 the program began receiving an annual grant of $5,000 from the U.S. Fish and Wildlife Service to support its work with endangered species such as the bald eagle and peregrine falcon.

In the early 1970s faculty member Dr. Gary Duke was conducting research on the digestive efficiency of grain-eating turkeys. When one of his veterinary students brought him four baby great horned owls, Duke saw an opportunity to expand his research to include avian meat-eaters. He obtained additional owls for his study through the Minnesota Department of Natural Resources.

Patrick Redig, a sophomore veterinary student and an avid falconer, offered to care for the resident owls as well as other birds. He began to repair their injuries and return them to the wild. He would eventually complete a Ph.D. in avian physiology under Duke, and he pioneered orthopedic and anesthetic techniques used by avian veterinarians today. He also began using live birds of prey to educate the public about raptor behavior, habitat, and threats to their survival.

MIDWEST PEREGRINE FALCON RESTORATION PROJECT

In 1981, there were two known nesting pairs of peregrine falcons on the Midwestern North American continent, southeastern Manitoba, and the Lake Superior basin of Ontario. In 1982 Pat Redig of The Raptor Center and Bud Tordoff of the University of Minnesota’s Bell Museum of Natural History launched the Midwest Peregrine Falcon Restoration Project. In cooperation with the Nature Conservancy and the falconry community, Redig and Tordoff obtained peregrine chicks that were bred in captivity and released into appropriate nesting sites on buildings, smokestacks, bridges, and cliffs. As of August 2003, there are 144 nesting pairs in 9 Midwestern states and adjoining Canadian provinces.

14 Many subsections of this chapter are taken directly from the website https://raptor.umn.edu/about-us/our-history but rearranged for clarity.
The peregrine falcon was removed from the Endangered Species List in 1999, a milestone in endangered species management success, contributed in large part by the work done by TRC and Tordoff in re-establishing the peregrine in the Midwestern states.

In 2008 Dr. Redig named Chair of Midwest Peregrine Society, responsible for continuing monitoring of the peregrine falcon population in the Midwest.

**THE RAPTOR CENTER NEW FACILITY FUNDED BY DON AND LOUISE GABBERT**

In 1988, TRC moved into a new facility constructed with funds donated by Don and Louise Gabbert of Minneapolis. The $2.5 million, 21,000 square foot facility is the only one of its kind in the world. Its educational programs reach more than 200,000 people annually.

In 2016 Minnesota Construction Association awarded Graham Construction the 2016 Award of Excellence for Renovation, Expansion, Or Tenant Improvement Project for the education and rehabilitation bird housing at TRC. The renovated visitor center opens to the public in 2018.

**PUF RAPTOR PROFESSORSHIP**

In 1990 TRC established a three-year veterinary residency program in raptor medicine. It is the only such program in the world. The PUF Raptor Professorship endowment was established with gifts of more than $25,000 from Katherine B. Andersen, Sarah J. Andersen, Bruce C. Dayton, the Phoebe W. Haas Charitable Trust, Mardag Foundation, Solly Robins, and the Donald Weesner Estate. Original gifts totaled more than $258,000 and have grown to over $612,000.

**LEAD POISONING IMPACT**

In 1991 lead was banned for hunting waterfowl owing to the research by Dr. Redig that showed a link between lead poisoning in eagles admitted to TRC and the ingestion of spent shot in waterfowl carcasses. The actual ban came about because of a lawsuit by the National Wildlife Federation for which Redig served as an advisor to the legal team.

In 1993 Dr. Redig was appointed to the California Condor Recovery Team, based out of the U.S. Fish and Wildlife Service in Sacramento, CA. In 1985, the California condor population had been reduced to 26 birds, of which only 9 remained in the wild. Birds were brought into captivity and were bred and managed by the San Diego Wild Animal Park and Los Angeles Zoo. Due to the continued impact of lead poisoning, re-entry to the wild was challenging. On April 11, 2002, for the first time in 18 years, a California condor egg laid in the wild was hatched in California’s Ventura County.

In 1999 The Raptor Center engaged in a study of lead poisoning in bald eagles along the Mississippi River. Dr. Redig had initiated a program of testing bald eagles for lead in 1976 such that every eagle admitted was evaluated. Over the years, the data painted a very clear picture of significant morbidity and mortality among eagles from lead poisoning, the source of which was spent ammunition in killed game and residues left in the field. The thrust of this effort was to gain a sense of the prevalence of exposure to eagles to lead at the population level. The results were astonishing.
80% of eagles trapped and assessed had elevated lead residues in their blood. This added considerable momentum to efforts that continue to this day at TRC to reduce the exposure of eagles to lead.

In 2003 Dr. Redig named chair of the Lead Mitigation subcommittee for the California Condor Recovery Team. He was invited by the U.S. Fish and Wildlife Service to head up an initiative to mitigate lead poisoning in California condors in southern California and Arizona. In addition to the California Condor Recovery Team, project partners included the California Fish and Game Department, National Rifle Association, National Shooting Sports, Safari International, and Wildlife Management Institute.

On November 8, 2006, The Raptor Center admitted a young, wild hatched California condor for treatment of a wing fracture; the bird was successfully released at the Grand Canyon after treatment.

In 2007 The bald eagle was removed from the Endangered Species List, another milestone in endangered species management accomplished in no small part by the 30+ years of work in rehabilitation, informing of public policy, public education, and research conducted by TRC.

In 2010 Dr. Luis Cruz completed his residency. His research projects included investigation of lead exposure from ammunition sources in bald eagles and stress hormone analysis in great-horned owls. With a grant from the Association of Avian Veterinarians, TRC conducted a study of the use of MRI to localize brain lesions from lead toxicity in bald eagles.

In 2011 The Clinical Wildlife Health Initiative completed a study looking at the prevalence of lead toxicity in five species of birds.

**RAPTOR BIO MEDICINE II & III PUBLISHED**

In 1993 The University of Minnesota Press published *Raptor Biomedicine II*, a book for which Dr. Redig was senior editor. Resulting from an international symposium held in Minneapolis in 1988, the book contained contributions from raptor veterinarians and biologists in 10 countries, from the United States to the United Arab Emirates. In 1998 *Raptor Biomedicine III* was published as a 10-year successor to Raptor Biomedicine II. Redig was an editor and the organizer of the symposium held in South Africa from which the papers published in this book were derived.

**RAPTOR REHABILITATION ENDOWMENT**

In order to support TRC's clinical work, The Raptor Rehabilitation Endowment was established in 1994 with gifts more than $25,000 from Katherine B. Andersen, Harriet S. Lykken, and an anonymous donor. This endowment has grown to $955,000 in 2020.

**TIE-IN FIXATOR REVOLUTIONIZES ORTHOPEDIC MANAGEMENT**

In 1995 Dr. Redig developed the tie-in fixator, a combination of internally and externally applied linked devices that stabilize fractures during healing. This device revolutionized orthopedic management of fractures in birds and is now used by veterinarians worldwide.
In 2003 Dr. Arnaud Van Wetter, a veterinary resident from Belgium, completed his clinical residency and graduate program. His research involved analyzing the elements and configuration of the tie-in fixator for fracture repair and optimizing the hardware used in this device.

In 2006 The University of Minnesota honors Dr. Redig for his pioneering work in avian orthopedics with the inclusion of the fixator that he developed on the Wall of Discovery, located along the U of MN Scholar’s Walk.

**SATELLITE TELEMETRY OBSERVATIONS**

In 1995 a field study was begun when The Raptor Center began using satellite telemetry to monitor the migratory routes, stopover sites, and wintering grounds of ospreys, bald eagles, and Swainson’s hawks nesting in North America. This educational tool integrated into a classroom and Web-based environmental education program called Highway to the Tropics. This research resulted in Audubon adding several locations to its Important Bird Areas listing.

**CARE AND MANAGEMENT OF CAPTIVE RAPTORS**

In 1981 TRC compiled the first edition of *Medical Management of Birds of Prey*. Revised in 1993, the spiral bound book was the first of its kind to help aspiring veterinarians with basic raptor care.15

In 1994 In collaboration with the Science Museum of Minnesota, The Raptor Center produced “Hunters of the Sky,” a 5,000-square-foot exhibit that provides a closer look at eagles, hawks, falcons, owls, and vultures and challenges visitors to confront their values and choices that threaten these extraordinary creatures. This award-winning project was funded through a grant from the National Science Foundation and the National Endowment for the Humanities; it toured for over 10 years before being permanently installed as an exhibit in Amarillo, TX.

Captive raptors are permanently disabled raptors held in permitted educational facilities. In 1996 TRC published a booklet titled *Care and Management of Captive Raptors*. In 2018 an updated version titled *Raptors in Captivity: A guide to care and management* was authored again by Lori Arent MS. In 2007, the U.S. Fish and Wildlife Service decided and today continues to recommend this ‘bible’ as the standard of care and keeping for all captive raptors.

In 2004 The Raptor Center’s environmental education program, begun by Dr. Redig, extended its reach through a partnership with the AmeriCorps Promise Fellow program. Grants supporting two Promise Fellows allowed TRC to connect with underserved children, create a youth service-learning program and expand volunteer roles.

In 2006 The Raptor Center’s professional education is expanded to include raptor care professionals and veterinary technicians. Based on 30 years of experience and two books, an annual workshop on the care and management of captive raptors is begun for raptor professionals. Also, wet lab and on-line classes for veterinary technicians in avian and wildlife medicine are begun.

In 2009 Spanish language program developed to expand reach of TRC’s education programming and an upgrade to digital radiography equipment thanks to a challenge grant from the Katherine B Andersen Fund of the St. Paul Foundation.

15 MVHM email from Lori Arent M.S. of TRC
In 2018 Partners for Wildlife (P4W), a new program working with wildlife rehabilitators and veterinarians, created and partnered with TRC. Internships, grants, outreach, and education all provided to vets and wildlife rehabilitators through P4W.

RESIDENCY AND GRADUATE PROGRAM BENCHMARKS

IN 1997 Dr. Elizabeth Stone completed her residency and graduate program with Dr. Redig as her faculty advisor. Her research on reproductive behavior and endocrinology of cockatiels improved understanding of reproductive behavior and mate choice in companion birds leading to improved methods of managing behavioral problems.

In 1998 Dr. Jannette Ackermann completed her residency and graduate program under Redig tutelage. Her research related to surgical repair of elbow luxation’s in raptors led to medical and surgical protocols for effectively treating this type of injury in birds.

In 2001 Dr. Richard Jones, from Wales, completed his residency and graduate program with Redig as his faculty advisor. His graduate work focused on the development of a surgical process to perform endoscopy guided vasectomy in immature birds. This process is now utilized in hybrid falcons to prevent reproduction and in young male cockatiels to prevent behavior problems.

In 2002 Dr. Jalila Abu, from Malaysia, completed her residency and PhD with Redig as her faculty advisor. Her research on the use of demineralized bone matrix in avian orthopedics has contributed to a growing body of knowledge used in both human and veterinary fracture repairs.

In 2010 Dr. Luis Cruz completed his residency, with his research including investigation of lead exposure from ammunition sources in bald eagles and stress hormone analysis in great-horned owls.

WEST NILE VACCINE DEVELOPMENT

In 2002 West Nile virus swept across the Midwest, killing wild and captive birds in significant numbers, including many endangered birds managed in captivity. In collaboration with collaborators at the University of Georgia and Louisiana State University, Dr. Redig began an effort to test and license a recombinant-DNA vaccine product developed by the Centers for Disease Control (CDC), which has already proved effective in test studies.

In 2004 Dr. Miguel Sagesse, a veterinary resident from Argentina, completed his master's thesis on West Nile virus vaccine and transfer of maternal antibody.

PATRICK T. REDIG PROFESSORSHIP

In 1999 a substantial gift from longtime supporters Doug and Wendy Dayton established the Patrick T. Redig Professorship in Raptor Medicine and Surgery at the University of Minnesota College of Veterinary Medicine.

CAREER RECOGNITION

In 2002 Dr. Redig received the Conservation Award from the Association of Avian Veterinarians for lifelong dedication to improving the welfare of the avian population.
In 2007 Dr. Redig retired as Director of The Raptor Center to refocus his efforts on conservation and ecology. The University of Minnesota College of Veterinary Medicine presented Redig an award for excellence in service.

In 2008 The Minnesota Veterinary Medical Association awards Dr. Redig its Outstanding Faculty Award for Service to the profession.

In 2008 The Duke Lecture Series is inaugurated - lectureship endowed by William and Betty Holleman in memory of Dr. Gary Duke.

In 2011 Gail Buhl, education program manager, Received the Roger Tory Peterson Award for Excellence in Interpretation. The Morris Animal Foundation awarded TRC a grant to assess the impacts of crude oil on reproduction of migratory birds in the wake of the Deepwater Horizon oil spill.

In 2015 Dr. Redig was given the T.J. Lafeber Avian Practitioner of the Year Award at the Association of Avian Veterinarians conference for advancing the quality of health care for companion birds.

**PONDER RECEIVES ASSOCIATION OF AVIAN VETERINARIANS AWARD FOR OUTSTANDING SERVICE AND COMMITMENT**

Dr. Julia Ponder DVM, MPH was named Executive Director of TRC in 2007.

2010 Dr. Julia Ponder received award from Association of Avian Veterinarians for outstanding service and commitment to advancing and promoting avian medicine and stewardship.

**GALAPAGOS ISLAND HAWKS**

The Raptor Center worked on a project to protect Galapagos hawks on the Galapagos Islands. The hawks, which are endemic to the Galapagos Islands are being brought into captivity during an effort to eradicate invasive rats from 10 small islands in the Galapagos Archipelago. The center’s role is to provide consultative input on the project, veterinary expertise with raptors, and care and management of the hawks during their time in captivity. Dr. Julia Ponder, executive director, spent 6 weeks in the Galapagos actively managing the birds and providing veterinary care.

2010/2011 Galapagos National Park, the Charles Darwin Foundation, and Island Conservation asked TRC to work with them to design and implement a mitigation plan to protect Galapagos hawks during a project to eradicate invasive rats on ten small islands in Galapagos.

**WILDLIFE HEALTH INITIATIVE**

In 2008 Funded by grant from LCCMR (Legislative Citizens Commission on Minnesota Resources), TRC developed tools for monitoring health data from wildlife. Building on this work the Clinical Wildlife Health Initiative was launched in 2010. The long-term goal of this initiative is to create a national strategy for standardized collection of data based on defined medical terminology.
collected by a network of professionals in wildlife clinics. Public Health and Policy benefit by broadly including wildlife as part of the One Health Initiative. 16

Dr. Ponder took on a new role in the CVM leadership with a transition from director in 2019. She will be remembered for her strong community connections that strengthened fundraising and communications. With amazing donor support her shared vision of a permanently funded raptor-oriented chair was established in 2019. She also continued her involvement with TRC’s Partners in Wildlife.

The Raptor Center’s third director starting on January 1, 2021 and Patrick T. Redig Endowed Faculty Chair in Raptor and Ecosystem Health is Victoria Hall, DVM, MS, DACVPM. Her wide experience in public health includes her recent work as Veterinary Epidemiologist for the National Zoo and as a Public Health Officer for the Smithsonian Institution’s COVID-19 response. She has previously responded to outbreaks involving multi-drug resistant tuberculosis, measles virus, and Zika virus as the CDC Epidemic Intelligence Service Officer. TRC continues to expand its reach internationally by addressing complex health challenges.

16 https://raptor.umn.edu/about-us/our-research/clinical-wildlife-health-initiative