

the JOURNAL

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Our Mission and Purpose: Is to improve, aid, and encourage competency in the art and practice of falconry among interested persons; to provide communication among and to disseminate information to interested Members; to promote scientific study of the raptorial species, their care, welfare and training; to promote conservation of the birds of prey and an appreciation of their value in nature and in wildlife conservation programs; to urge recognition of falconry as a legal field sport; and, to establish traditions which will aid, perpetuate, and further the welfare of falconry and the raptors it employs.

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Protecting and Serving FALCONRY IN NORTH AMERICA SINCE 1961



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Greetings Members,

Welcome to 2020! WOW, NAFA has been here protecting your rights as a falconer since 1961! Incredible! I want to thank all those who worked so tirelessly this past year to make being a member of NAFA such a rewarding experience. A huge **thank you** has to go out to our amazing board of volunteers who work unselfishly behind the scenes daily to keep your rights as a falconer intact.

I am proud to say, since taking over as NAFA's Editor, I have produced 1,260 pages of material for all of you to read and view. Of course, none of this would have been possible without the dedicated members who sat down at their computers to create the articles and stories that have filled these hundreds of pages for you to enjoy. For those of you who have yet to contribute, remember all of us have experiences to share, whether they are educational or humorous. We would love to hear from you. Take a moment and shoot me a note with your article and photos, and I'll see what I can do to make you famous! =)

In the meantime, have a safe rest of your season. Remember to be kind, caring, and pursue this noble sport at only the very highest level.

Dan Milner

HIGH ARCTIC

I N S T I T U T E

BY KURT K. BURNHAM

PHOTOS TAKEN BY KURT AND JENNIFER BURNHAM, JACK STEPHENS,
BRIDGER KONKEL, JEFF JOHNSON, AND ALEX PAIEMENT.

As the temperatures start to drop and the tundra begins to brown our 2019 field season in northwest Greenland draws to a close. It was a great season and we accomplished nearly everything we had hoped. We now start the long process of going through the ~300,000 photos taken by cameras at falcon nests, ~25,000 photos from cameras set on islands and at bird colonies, banding results, geolocator results, etc. As we have a chance to analyze these data we will provide periodic updates on our Facebook page for all of you to follow along:
www.facebook.com/HighArcticInstitute

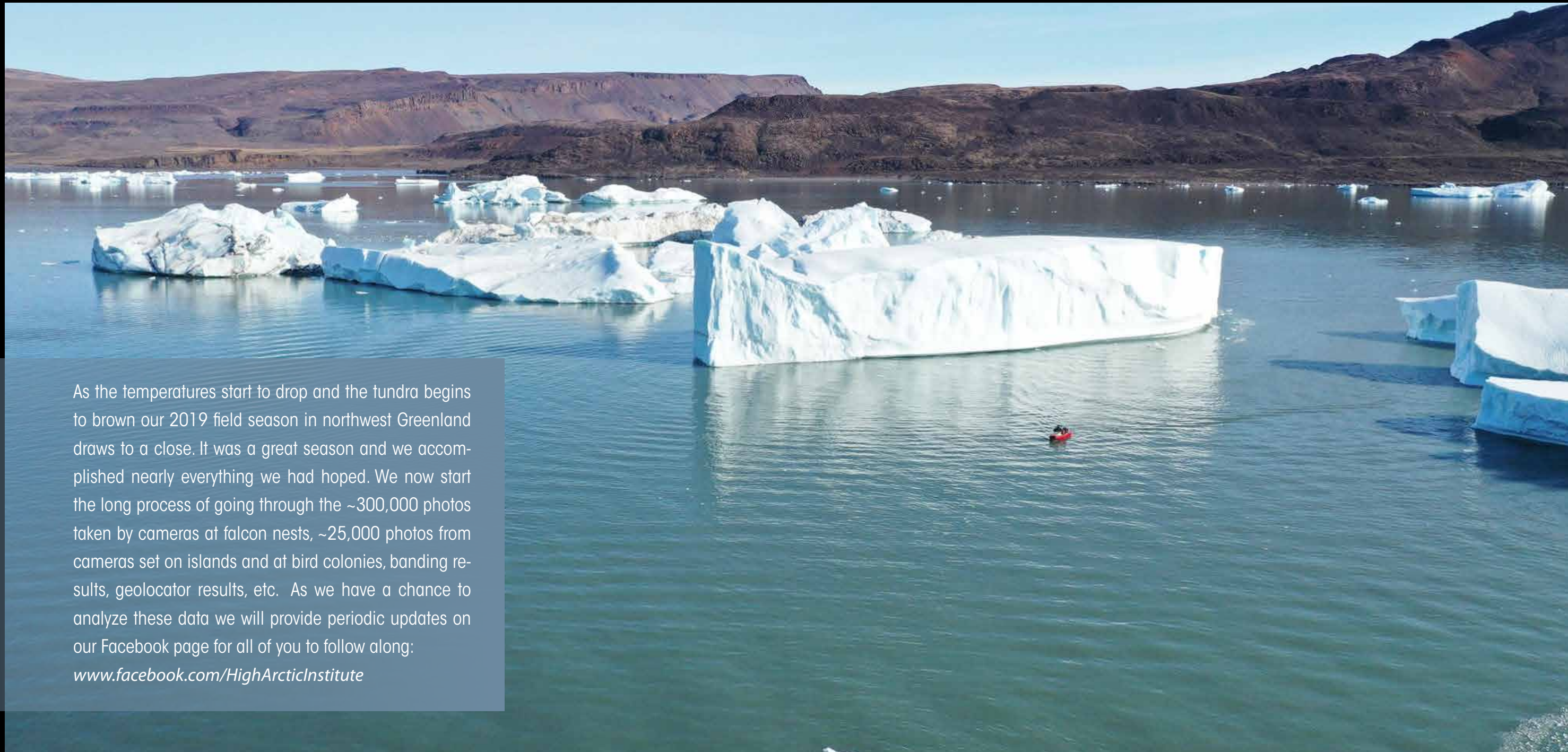




PHOTO SEQUENCE OF NESTING PEREGRINES IN THULE AREA.

TOP IMAGE: FEMALE SITTING EGGS WHILE THERE IS STILL SNOW AND ICE SURROUNDING HER.

MIDDLE IMAGE: YOUNG HAVE HATCHED AND ARE BEING FED BY FEMALE. NOTICE THE GOVERNMENT AND COLOR BANDS ON THE FEMALE IN THIS PHOTO. THIS ALLOWS US TO IDENTIFY INDIVIDUAL BIRDS FROM YEAR TO YEAR.

BOTTOM IMAGE: YOUNG ARE GETTING CLOSE TO BEING FULLY FEATHERED OUT AT EYRIE.



Thule Area, northwest Greenland (76.5° N, 68.7° W), 5 August 2019 – The still air is shattered by the piercing cack of a pair of peregrines as I and the rest of the High Arctic Institute field team approach the top of the cliff. Ropes are quickly tied off, climbing harnesses checked and double checked, and we begin our descent down the cliff face. A short distance from the nest and the falcon duet is joined by a chorus of four, 20 day old chicks. A few minutes later the cacophony begins to subside and in front of me sit the four peregrine chicks, bookended by two wide-eyed boys, my sons. This is their first time in a peregrine nest and it marks the third generation of Burnhams to study falcons in Greenland. It is hard to believe this is my 29th consecutive summer in Greenland, the changes my life has gone through in that span, the changes that Greenland has gone through during that time.

In the 1990s our field season in northwest Greenland would start in mid-July and the coastline would be full of pack ice. Now field seasons start in late June and the coastline is virtually ice-free. Over



LEFT: JEFF AND HANNAH BANDING THIS YEARS EYASS FALCONS.
TOP: WHITE GYR FALCON FEEDING HER YOUNG.
ABOVE: GYR CHICKS STARTING TO FEATHER.

this same period a warm day has gone from temperatures in the low 40s to high 60s, with a new record high temperature set almost every summer. Even our time camping in the field has changed. I used to enjoy a quiet and relaxing evening of cooking dinner with the field team. Those days are now gone, replaced by the incessant buzz of swarms of mosquitoes, a new addition to the far north



in the last 15 years. Most interestingly to me though are the changes the local bird populations have undergone during this period, specifically falcons.

Research on peregrine falcons in Greenland first started in 1972 in central-west Greenland (67.0° N, 50.7° W) under Bill Mattox, founder of the GPFS (Greenland Peregrine Falcon Survey). My late father, William Burnham, was part of the initial field teams (1972–1977) and spent months each summer backpacking around the area looking for peregrines. After the 1977 field season he began working for The Peregrine Fund, many years later becoming president. In 1991 he returned to Greenland, this time accompanied by me (age 16), and we spent two seasons as GPFS field team members.

By the summer of 1993 his interests had shifted farther north, and The Peregrine Fund created the High Arctic Institute to study populations of peregrines and gyrfalcons in the High Arctic of northwest Greenland. My annual participation, interest, and enthusiasm in Arctic falcon research continued unabated, including studying Greenland falcons in graduate school and becoming Arctic Projects Director for The Peregrine Fund. Shortly after my father's death in 2006, I founded the High Arctic Institute, with the support of The Peregrine Fund, as a not-for-profit corporation independent from The Peregrine Fund.

The High Arctic Institute's mission is to continue with the falcon research first started by Bill Mattox and my father in central-west and northwest (hereafter referred to as Thule) Greenland, respectively. Current research is primarily focused in the Thule area, with falcon surveys and research occurring on an annual basis. To better understand the diverse High Arctic ecosystem in the Thule area we have also expanded our research to include most all bird species occurring in the area, with an emphasis on species which are rare and occur at very low densities.



JUVENILE GYRFALCON AT THULE AIR BASE.



We believe these species are the most likely to be impacted by current rapidly changing environmental conditions and will likely serve as environmental barometers going forward.

Our research is based out of Thule Air Base (a U.S. Air Force Base) in northwest Greenland, which provides us with weekly military flights to and from the High Arctic and a logistical hub to conduct our research from. Ice-free land and cliffs are predominantly found along the coast, with most inland areas covered by Greenland Ice Sheet. Weather can be severe, with winds in excess 100 mph and snow storms possible during any month of the year. The “breeding window” is one

of the shortest on earth, with birds laying eggs shortly after arriving and young beginning to migrate south shortly after departing the nest.

What is the High Arctic and what makes it so unique? The High Arctic is a region at the most extreme northern edge of the Arctic (e.g. Spitsbergen, northernmost Russia, northern Canada, and northern Greenland). In these areas vegetation is extremely sparse, with no trees and most plants growing prostrate, rarely getting above a few inches in height. During the summer the sun is up 24-hours a day, simply doing lap after lap around the sky and never going below the horizon. The winter is the



opposite, with up to three months of continuous darkness.

The Thule area is home to the healthiest populations of birds and mammals (land and sea) left in Greenland. An estimated 30–60 million Dovekies (a small seabird that only breeds in the High Arctic) nest in the area along with hundreds of thousands of thick-billed

murre and black-legged kittiwakes. Common eiders are also abundant, with the largest colonies consisting of between 4000–5000 nests. Additionally, the area is the northern breeding limit for many bird species (e.g. Atlantic puffins, Arctic terns, great cormorants, etc.). These species commonly occur in very low numbers, with only a handful of pairs present in some years; including the most northern breeding population of peregrines in the world.

The idea of gyrfalcons and the High Arctic tend to go hand-in-hand. Most people think of a majestic white gyrfalcon perched high up on a cliff surveying the tundra as caribou feed below. When people think of peregrines though, they tend to have a different perception...perched on cliffs in the western U.S., on the bluffs of the Mississippi River, on bridges and buildings throughout the U.S. (and world).

The High Arctic? 800 miles from the North Pole? Icebergs and glaciers? Not things most people associate with peregrines, which makes sense, because peregrines are not historically native to the region and are a relatively new species to the High Arctic.

In 1818 the first European explorers visited the Thule area, documenting and collecting the wildlife they observed, including gyrfalcons. In the years that followed numerous other expeditions have visited the area, again documenting and even collecting gyrfalcons. It was not until the early-to-mid 1900s though that were peregrines observed, and even then, they were only documented sporadically. Documentation of regularly nesting peregrines in Thule took place in the 1980s, although only at a single location, and even today peregrines are generally unknown to local Inuit, though gyrfalcons are readily identified.



Since 1993 the High Arctic Institute has conducted systematic surveys for peregrines and gyrfalcons throughout the Thule area, with our primary study area of approximately 500 miles of coastline established in 2001. Each summer we travel by boat to survey as much of the 500 miles coastline as possible, with storms, fog, and pack ice reducing the amount of coastline we can survey in some years. When occupied nests are found we collect as much information as possible, including data on nesting chronology, reproduction, and prey. In some years we have also captured and tagged the adults with satellite transmitters. More recently, we have begun installing nest cameras, providing us with much more detailed information than we have ever been able to collect in the past.

Since 2001 the number of occupied peregrine nests has dramatically increased in our study area from an average of four per season from 2001 to 2006 to an average of eleven from 2015 to 2018. The number of occupied gyrfalcon nests has remained relatively stable, with an average of approximately six nests occupied per season from 2001 to 2018. Of the 20 different cliffs where gyrfalcons have historically nested, five have recently been used by peregrines. In the few years when both falcon species have occupied the same cliff, peregrines have always appeared to be dominant over gyrfalcons, aggressively stooping and even striking the gyrfalcons whenever they take flight.

Peregrines eggs in Thule hatch on average in mid-July, and as late as



the first half of August. In comparison, peregrine eggs in the Midwest U.S. hatch in early-to-mid May, well over two months earlier. Using data from satellite transmitters on peregrines we can see that in the first part of May peregrines nesting in Thule have barely begun their return migration and are usually still in Central or South America. Gyrfalcon eggs in Thule hatch even earlier than

peregrines, usually in mid-June, with adult gyrfalcons arriving at nests as early as mid-April.

Weather conditions during incubation and young rearing can be severe in Thule. When gyrfalcons begin egg laying the temperatures are well below freezing, the ocean is frozen, and snow is abundant. It is not uncommon to visit a cliff early in the season and

find an adult female incubating eggs while completely covered in snow with just her head visible. One advantage gyrfalcons have is that in Greenland they frequently nest under large overhangs, which provide protection from inclement weather. Our research has shown that these well-protected nests sites are of critical importance to the species. Carbon dating of built-up guano indicates that some nests have been used by gyrfalcons in the Thule area for at least 650 years. To the south, research from central-west Greenland shows even longer use, with some nests used by gyrfalcons for at least 2,500 years! Although nesting later in the summer, peregrines face severe conditions as well with snow always possible and winter setting in shortly after young have departed the nest.

Peregrines in Thule nest farther north than any other peregrine population and they have one of the longest migrations ever documented for falcons. Peregrines from Thule winter throughout South America, traveling up to

15,000 miles roundtrip while spending up to four months out of the year on migration. In contrast, gyrfalcons from Thule remain in the Arctic throughout the winter, moving south to winter in southern Greenland. Most surprising though is our research on gyrfalcons tagged with satellite transmitters in east Greenland. Some of these individuals displayed a previously unknown behavior in gyrfalcons; wintering on icebergs along the sea ice edge far from land. One individual spent 40 consecutive days over the ocean, likely resting on icebergs and feeding on seabirds and sea ducks which are commonly found along the ice edge in winter.

Our annual falcon surveys of the Thule area have also provided us with an opportunity to collect data on other breeding birds in the area and identify additional research priorities. For example, in 1999 while surveying for falcons we also collected data on the location of Arctic tern colonies and the number of individuals present. Ten years later, as

we continued to pass by these same colonies each summer, we noticed many were either vacant or had very few individuals present. This led to the creation of an annual Arctic tern survey that started in 2009 which has shown a significant decline in pairs of Arctic terns and numbers of colonies.



Although the Thule area is extremely remote and suffers little from human disturbance, external factors have the potential to negatively affect local bird populations. Our research also includes work with pollutants, such as mercury, a toxic heavy metal which is produced by coal fired power plants at more southern latitudes and which bioaccumulates in the Arctic.



Results have shown that some top of the food chain avian predators in the Thule area have highly elevated levels of mercury in

their blood (peregrines have the highest levels), which has been shown to cause a wide range of reproductive and cognitive problems. Our research on migratory movements of Atlantic puffins, parasitic jaegers, and black-legged kittiwakes has helped to identify key wintering areas, some of which need protection from development.



Waterfowl populations are also rapidly changing throughout our research area. During a common eider duck survey in 2009 we counted over 20,000 nests, 5.4 times more than only 11 years prior. While impossible to know the exact reason for this increase, it is likely a combination of hunting restrictions put in place by the Greenland Home Rule Government and earlier sea ice breakup, which has been shown to have a positive effect on eider reproduction. During our research in Thule we have also noted species new to the area, including the first observation of a Ross's goose and the first confirmed breeding by lesser snow geese in Greenland. We also documented the first observation of northern pintails in north Greenland along with increasing numbers of both greater snow and Canada geese, in addition to more frequent observations of what



were once considered rare or uncommon species of waterfowl.

Why the changes? Why are we seeing species in Thule which used to only occur farther south? The likely answer is a rapidly changing climate. More specifically, the lengthening of the breeding window. As has been well documented across the Arctic, temperatures are rising and sea ice is breaking up earlier and re-forming later each year. As a result, spring is earlier, summer is longer, and fall is later.



How does this affect birds? Take peregrines for example. In the mid-to-late 1900s they sporadically occurred in the Thule area, likely successfully raising young in some years but more frequently failing due to cold temperatures and the severe climate. However, the climate moderates, adults can arrive and nest a little earlier, weather is warmer and more stable during the incubation and young rearing period, and in the fall young can spend a few extra weeks learning to hunt and survive on their own before

migrating. Basically, the climate starts to much more closely resemble that of more southern areas in Greenland, where peregrines and many other species thrive. While peregrines increasing their range and moving north might seem good to those of us that love falcons, it's not good news for the planet.

As we finish banding the four peregrine chicks and readying ourselves to rappel the rest of the way down the cliff I look into the

eyes of the peregrine chicks and my young sons. Their fates are intertwined. The changes in the Arctic we read about in the news are real and are occurring faster than can be imagined. I have seen them. I have lived them. There is no debate. There is no discussion. Look at the falcons if you need further proof. The gyrfalcon, endemic to the Arctic, now faces increasing competition from an invading peregrine population which is moving farther north each year. Some scientists now wonder if gyrfalcons will become a relic of the past by the end of this century, or perhaps exist only in the extreme far north of Greenland.

Although the futures of humans and falcons are intertwined, only we can change that future. Despite the Thule area being 800 miles from the North Pole its future depends on us and the decisions we make here and now in our lives. The future of gyrfalcons may well also depend on us, and I want to be sure that they are still around for a fourth generation of Burnhams to see.

To find out more about their research or donate to the High Arctic Institute visit www.higharctic.org. Follow them on Facebook at www.facebook.com/HighArcticInstitute to see more great photos, travel along with them during their 2020 summer field season in the Thule, or to donate and help support their research.



NEW IDEAS ABOUT THE OLD MYTHS

BY MARTIN GELEYNSE

Goshawks have captivated the imagination of falconers for millennia. It isn't just their size, speed and versatility, but their dramatic style that makes them so desirable. In addition, goshawks are elusive, deep woods creatures, difficult to find in the wild. Their volatile population cycles and aggressive nest defense only add to their mystique and allure.

I am a long-winger through and through. I have never flown a goshawk, and probably never will, yet

every March I put on my snowshoes and trek through the forests of southern Ontario with other members of the Ontario Hawking Club in search of these gray ghosts. The rush you feel when you finally hear that distant *kak kak kak*, after hours of slogging through the snow and playing recorded calls is not unlike the one you feel when your young bird takes its first head of game, or your old bird has a particularly spectacular flight. It's addictive, something you want to do over and over again.

GOSHAWKS

PHOTO: JACOBO QUERO

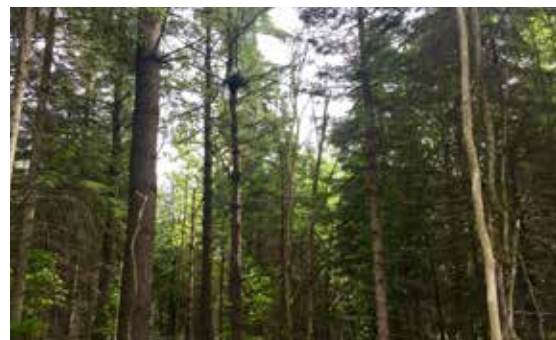


PHOTO: DOUG WILSON

Since 2012 it's a feeling we have had collectively 163 times at 54 different sites within 80 miles of Toronto, a city of nearly 3 million people. The Ontario Hawking Club started "Project Goshawk" in response to a decision by the Ministry of Natural Resources and Forestry not to include goshawks in the province's new falconry wild-take policy. Our objectives were to counter the vague concerns of a few regional biologists and to demonstrate that we could be valuable conservation partners by providing information and "boots on the ground" to

facilitate monitoring as well as additional research.

A little background: Ontario is a huge province of over 415,000 square miles. The vast area of northern Ontario is predominantly a land of rock, lakes and trees with few roads. This unbroken boreal forest is quintessential goshawk habitat and no doubt there are a lot of goshawks up there. The much smaller area of southern Ontario includes large urban centers, such as Toronto, Canada's largest city, as well as intensive agricultural areas. Woodlots



in the south are typically small and often isolated. Even the larger forests are crisscrossed with roads and fragmented by farmland. This is definitely not what most people, or the literature, describe as typical goshawk habitat, yet we are finding birds there.

Project Goshawk built on the observations of falconers during the 1980's and 1990's. At that time, several groups of falconers independently discovered that pine stands in southern Ontario were very attractive nesting habitat for all three accipiter species; each with slightly different tree age and height preferences. One group made a hobby of finding goshawks and documented over 80 sites. Virtually all of them were in publicly owned and managed pine stands that had been planted on abandoned farmland. We did not understand it at the time, but the forest management activities contributed directly to their



occupancy by goshawks.

We already knew when Project Goshawk started in 2012, that most of the sites from the 80s and 90s were now unoccupied. We identified new potential sites using Google Earth and aerial photography available on county

websites. We divided these sites among 5 or 6 search teams. The teams fanned out into the target areas in early and mid-March, prior to egg-laying, to broadcast recorded alarm and breeding calls at each site. In March there is usually 1 to 3 feet of snow on the ground and some roads are closed. Snowshoes are essential. Any sites we couldn't get to in March were visited in June. Earlier experience indicated that goshawks are unresponsive from April to late May when they are on eggs or brooding.

As of 2019, we have collected 8 years of occupancy data. The first year we discovered 19 active nests. The next year we had 29 active sites; our best year. By 2018 we had identified a total of 54 sites. In combination with the data from the 80's and 90's we now have information on over 130 goshawk nest sites. From this data, a few patterns emerge; some of which challenge the conventional wisdom on goshawks.



PHOTO: DOUG WILSON



PHOTO: DOUG WILSON

about the presence of the birds! We have found nests within sight of busy roads and houses and in one case the homeowners were unable to use their backyard swimming pool without being attacked!

Observation #5: Goshawks have a strong preference for white and red pine plantations.

This preference is so strong that virtually all our sites are in managed pine plantations. Although we know that in areas of continuous forest further north, goshawks often nest in aspens or maples, this seems to be very rare in our study area. All of the forest managers that we have spoken to are familiar with goshawks, and they also concur with this observation.

The plantations were established on abandoned farmland by county foresters. The pines provide shade for more valuable hardwood species and the management objective is to ultimately turn the pine stand into a hardwood forest over the course of a 100-year rotation. To facilitate this, the stands are thinned every 15-20 years starting at 35-40 years of age. This thinning is very important to the establishment of suitable goshawk nesting habitat. We have never found birds in the private, unmanaged pine stands that are also scattered throughout the study area.

Project Goshawk started out as a political exercise, but it has evolved into much more than that. With the support of NAFA's small grants program and the Falconry Fund, the Ontario Hawking Club is hoping to expand and formalize its data collection. Next year we will begin conducting standardized survey transects in more northern "natural" forests to compare occupancy there with the pine plantations of southern Ontario. Also, since counties are no longer acquiring land for reforestation, we hope to get an understanding of what will happen as the existing plantations mature and are converted to hardwoods. Without the pines, we expect the birds will be harder to find, but will they actually be less common?

The political and conservation objectives of falconers are inextricably linked. By being active conservationists and citizen-scientists, we can provide valuable information that helps to protect the wildlife we love and depend on, while simultaneously creating a positive narrative for falconry.



Observation #1: Our data does not support the idea of a "traditional goshawk nest site".

In southern Ontario goshawk sites are typically occupied for between 3 and 7 years. Some sites are abandoned when the pine stand is thinned, but sometimes they remain occupied after thinning and very often a site is abandoned for no apparent reason. Goshawks move around. If you consider that almost none of the sites occupied in the 80's and 90's are occupied today, yet we find a similar number of birds overall, it is difficult to support the idea of a "traditional nest site". The more time you spend checking old sites, the fewer birds you will find. One important corollary to this is that studies attempting to infer a population trend by tracking site occupancy over time will invariably show a (false) decline.

Observation #2: Goshawks will nest in younger forests.

One often-repeated concern, particularly in relation to western North America, is that goshawks require old-growth or mature forests. In contrast, most of our goshawks are nesting in managed forests that are between 55 and 80 years old. Some are using the remnants of pasture fence lines as plucking posts!

Observation #3: Goshawks will nest in surprisingly small forests.

Although many of our sites are in areas of contiguous forest in excess of 2000 acres, a surprising number are in forest areas less than 600 acres. Our smallest site was just over 100 acres of pine and mixed forest surrounded by brushy swamp and open farmland. The birds raised young 3 years in a row. Several other sites consist of 300 to 500 acres of contiguous forest.

Observation #4: Goshawks are tolerant of civilization...to a point

The managed forests in which nearly all of these birds nests are public areas, many of which are used extensively by hikers, bikers, ATVs, horse-back riders, etc. At two sites, forest managers actually posted signs warning the public





PEREGRINE SURVEYS

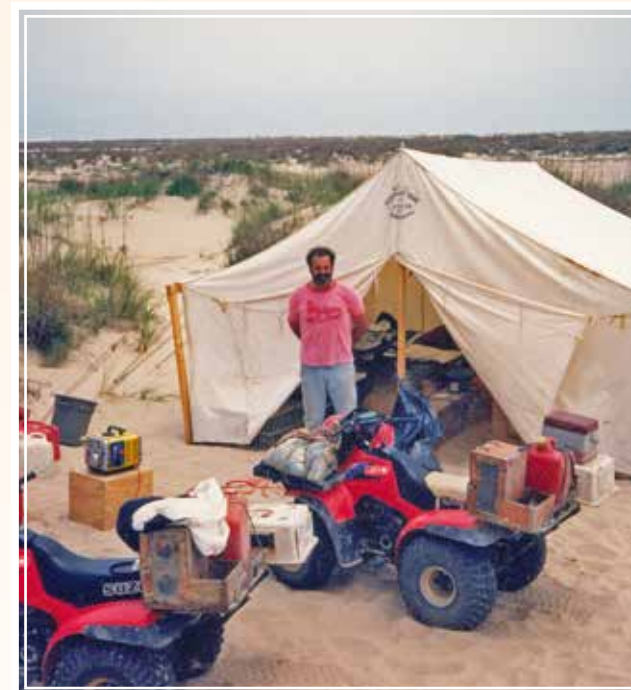
AT ASSATEAGUE AND PADRE ISLANDS

BY MICHAEL YATES

In the autumn of 1938 Al Nye and Bill Turner discovered a concentration at Assateague Island, Maryland, of a previously-unrecognized race of migratory Arctic nesting peregrines. Al captured the first there in 1939, and Clay White formally described the *Falco peregrinus tundrius* subspecies three decades later. In the interim, tundra peregrines trapped on coastal beaches became the gold standard in development of American longwing falconry as the Eastern anatum peregrine population failed and disappeared.



MIKE WITH AL NYE (1915-1992) ON THE 50TH ANNIVERSARY OF HIS FIRST CAPTURE AT ASSATEAGUE



NORTH PADRE CAMP, 1987

At the 1965 Madison conference documenting the peregrine's decline and foreshadowing its protected status, Jim Enderson advocated the collection of coastal migration data as population indices. Falconry take of peregrines was prohibited at Assateague after 1969, and in 1970 Scott Ward and Bob Berry established a standardized survey there that continues uninterrupted to this day. Scott then partnered with Bill Mattox and Bill Burnham to launch the Greenland Peregrine Falcon Survey (1972-1998), and in 1977 established with Ken Riddle the Padre Island Peregrine Falcon Survey. Spring surveys began at Padre in 1979 with the discovery of large concentrations staging during northward migration, and the Padre surveys have continued to the present. Earthspan was formed by survey principals as a not-for-profit to conduct research that included these migration studies.

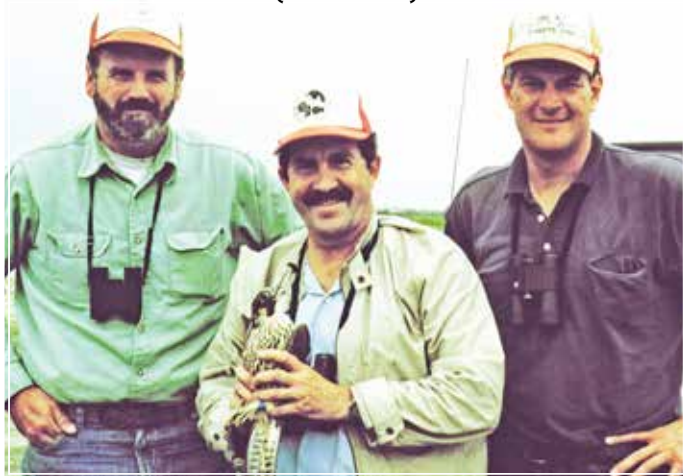
A Maryland native, I was able to trap peregrines at Assateague and on the Virginia and North Carolina



SCOTT WARD AND BOB BERRY



BRIAN McDONALD (1927-2018), DAVE JAMIESON, AND JIM RICE (1913-1989)



MIKE, SCOTT WARD, AND BILL SEEGAR

coasts for the final few years of their availability in the 1960s. My best game-hawk ever was a tundra falcon that ruled the Eastern Shore winter cornfields and ponds. I was fortunate enough to count as friends some of the early legends of eastern American falconry and beach trapping such as Al Nye, Jim Rice, Corny McFadden, Brian McDonald, Steve Gatti, Lou Woyce and Bob Berry. Steeped in the lore of beach trapping and the esteem of peregrines, I sought ways to be of service to them. When Bob moved to Wyoming and could no longer partner with Scott at Assateague in 1977 I stepped into his very large shoes. In 1981 Bill Seegar joined us and since Scott's departure in 1990, Bill and I have carried the torch. I first joined the Padre Island spring survey in 1982 and have directed that effort for the past 15 years. Ken Riddle turned the fall and spring surveys over to our sorely-missed brother Tom Maehtle in 1985, and Tom passed the fall baton to Gregg Doney two decades later.

My motivation in conducting these migration studies and spending parts of 14 summers with the Greenland survey was to assure that good data were available to document a hoped-for recovery and support a renewed harvest of peregrines for falconry. There was so much more in



TOM MAECHTLE (1958-2016) WITH SATELLITE-TAGGED HAGGARD TIERCEL

store, as the scope of the studies expanded with our imaginations and technology development. Bill Seegar launched a project in his Department of the Army day job that developed and miniaturized satellite-received transmitters for birds. The goal for us, of course, was to track peregrines globally. In 1984 a bald eagle was successfully tracked with a large prototype and in 1990 we were able to field the first weight and size-appropriate unit on a gyrfalcon in Greenland. In 1993 we began tracking peregrines with transmitters that relayed Doppler-derived location estimates via satellite. These were later followed



DRAWING BLOOD

by even smaller units that collected and relayed GPS locations by satellite and those that relayed those locations via cellular tower. In fielding almost a hundred such units at the migration surveys and in Alaska, Canada, Mexico, South America, Greenland and Russia we were able to define migration routes, strategies, and habitats critical to peregrines and associated species.

We collect blood and feather samples from migrating peregrines for investigating genetics, contaminants, and emerging pathogens. Our blood

SCOTT WARD AND JIM RICE





MIKE AND LOU WOYCE (1928-2009)

archive numbers in the thousands of samples, and is an invaluable resource in analyzing retrospectively the onset and progress of environmental threats. We employed samples to document the progressive reduction to insignificant levels of DDE (the

metabolite of DDT) in peregrine tissues. In recent years we have studied infectious pathogens such as West Nile Virus and Avian Influenza in partnership with U.S. Government entities. In partnership with Pete Jenny and the Peregrine Fund, we used our samples to document a significant spike in Polycyclic Aromatic Hydrocarbons from crude oil in peregrines after the 2010 Gulf oil spill. We recently documented mercury levels in virtually all peregrine feathers, and provided samples whose genetic diversity supported estimates of Arctic populations that far exceed those falconry harvest levels were originally based upon.

So how have those modest aspirations that set me and my colleagues on this path worked out? Our data are unparalleled and have been used to document the peregrine's recovery and its removal from the List of Endangered Species, representing the bulk of tundra peregrines banded within the continental United States since the establishment of the Bird Banding Laboratory by the Department of the Interior. Almost 55,000 man-hours have been expended in observing over 70,000 peregrines and capturing nearly 16,000. Based on our data we submitted comments in early 2008 on the harvest En-



ABOVE: MIKE AT PADRE, SPRING 2019

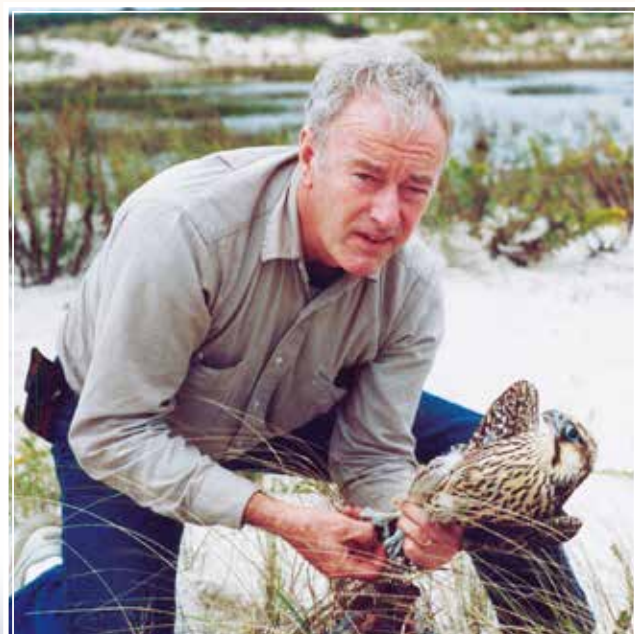
BELOW: KAREN AND MIKE YATES AT ASSATEAGUE

vironmental Assessment that justified a liberal take of tundra peregrines by falconers. The Fish and Wildlife Service ultimately approved a much lower take, but in 2017 our continued studies allowed us to again confirm the sustainability of a much-increased harvest. The continuation of this work is critical to the falconry harvest plan, as long-term studies such as ours are essential to monitoring the stability of wildlife populations. This is particularly true in light of rapid changes that may occur due to contaminants, infectious diseases, habitat loss, climate change, and other factors. By the long-term and standardized nature of our studies, we have established levels of observation in stable populations that would quickly raise future concerns if not achieved over a several-year period. So long as tundra peregrine populations remain sustainable, our data provide the evidence that falconry harvest remains justified.

I never expected to amass a fortune in the pursuit of falconry and research,

None of the peregrine work could ever have been as successful had not most of the principals and volunteers themselves been falconers."

BILL MATTOX



RANDY TOWNSEND, SAM LINDBERG, AND TOM MAECHTLE



and thus have not been disappointed. The gratification I've received, however, has been more than ample compensation. The closest friendships and best experiences of my life have been shared with falconers, other biologists, and family in the field. Although I've sacrificed the best autumn game hawking window for the past 42 years in favor of the surveys, I have been otherwise rewarded by singular experiences and the knowledge of repaying the gifts falconry and the peregrine have given me. The seven day a week, 14-hour survey grind melts away when I am witness routinely to incredible pursuits by wild peregrines few ever have the chance to see. Sometimes I am even fortunate enough to be holding the performer in my hands minutes after the show. At Assateague in the fall and Padre in the spring Bill Seegar and I have seen and done what we could only have dreamed in our youth, and become brothers with each other and our survey peers. We've shared it all with some of our heroes (particularly Rice, McDonald and Woyce; I now carry some of Brian's ashes with me wherever I trap). We've also shared the experience and culture with our families and friends, and made converts and lasting friendships with like-minded locals along the way.

None of the peregrine work could ever have been as successful had not most of the principals and volunteers themselves been falconers. Who else would actually have done this without a profit motive? Every one of them has our sincere thanks, as do our stalwart supporters, most of whom are falconers or have strong falconry ties. Bob Berry, Jim Weaver, Willard Heck, Ruth Mutch, Chris Pfister, Pete Widener, Carl Thelander, Dwight Haldan, and the Peregrine Fund come immediately to mind. NAFA has for years given what it could through Small Grants, and the American Honda Motor Company and the Rockwell Foundation have helped with other needs. The Peregrine Fund and Earthspan have also recently embarked upon an expanded relationship to address common goals in partnership. 🦅

We would welcome your help as we conduct our 50th year of peregrine research.
See Earthspan's website: (www.earthspan.foundation) **and our Padre Survey Facebook page:**
(<https://www.facebook.com/PadreIslandPeregrines/>), and we wish you the very best game hawking!

Editor's note: I would like to call upon all NAFA members to help support these people and donate what you can to this noble cause! These men and women have worked tirelessly **for decades** to preserve and study the peregrine falcon, so the least we can do is reach in our pockets to support their time and ongoing efforts. All donations are greatly appreciated and tax-deductible. **Your support matters.** Please help to assure the continuation of these programs with your tax-deductible donation to Earthspan (Tax ID 91-1662610). See above website to donate today.



ABOVE: CATHERINE WIGHTMAN
BELOW: RUTH MUTCH



ABOVE: MIKE AND BILL SEEGAR CLOSE DOWN THE SPRING 2019 PADRE SURVEY
BELOW: HIGH TIDE IN THE NARROWS AT SOUTH PADRE



NORTHUMBERLAND CROW FALCONS

BY TULA STAPERT

PHOTOS: TULA STAPERT, JIMMY ROBINSON, NELLIE FAULKS, MARY ANN ROGERS

CELEBRATING 25 YEARS OF SPORTSMANSHIP



Dr. Nick Fox OBE and his wife Mrs Barbro Fox have used horses for hawking from time to time since 1968 with goshawks and in 1991 they started to work out a plan to hawk from horseback at crows. Both are experienced riders and enjoy hawking from horses. In their search for suitable hunting ground they decided to have their base in Northumberland because of the open terrain.

In 2017 the NCF celebrated their 25th anniversary. According to Nick Fox: "The pinnacle of hawking is the high flight, at a cunning quarry such as the crow, in a beautiful landscape such as Northumberland, on horseback, with friends to share the enjoyment and hence multiply it".

For the past 16 years I have been visiting Northumberland principally in search for more expertise and to widen my horizon as a crow falconer from the Netherlands. As a member of the British Falconers' Club I received their *Journal* and read about this group of crow falconers on horseback under the guidance of Nick Fox, whom I had

never met before. After making contact I was invited to join them in Northumberland, a gesture which has not only been most appreciated but also given me the opportunity to go to England. This remote place near Haltwhistle at Wealside farm, has been a good decision for me. I finally could exchange knowledge on the classical way of crow-hawking which was scarce in my country. The keywords have been enjoyment and sportsmanship with the Northumberland falconers and has stayed that way throughout the many seasons I have visited them. Through these years I have been able to see the development of modern forms of high flights in classical falconry yet still sustaining the most daring and difficult forms of falconry.

"To start such an enterprise of maintaining a group of falconers on horseback came forth from a simple desire to go hawking on horseback", according to Nick Fox.

"Only I realized that you cannot do it on your own and you need a team"



"The pinnacle of hawking is the high flight, at a cunning quarry such as the crow, in a beautiful landscape such as Northumberland, on horseback, with friends to share the enjoyment and hence multiply it" ~ Nick Fox

The NCF is not a club and therefore has no board or annual journal and the members only have to pay their dues by assisting with the yearly landowners BBQ. Nowadays they ask for a donation towards the Air Ambulance, known as a cap in hunting circles. One cannot become a member but can only be asked and will receive a button for the green jacket the falconers wear during hawking. The format Nick Fox used was modelled on that of British fox-hunting and the Old Hawking Club.



Northumberland

Fox-hunting in England was done from horseback using hounds where the fox is legally not game but vermin, so there is no charge to hunt them. This is in contrast to shooting where you pay for the day and you shoot on one's estate. For fox-hunting you need to keep the country open, which means you need permission from several landowners who's land borders each other to make an exciting and continuous hunt. A fox hunt can carry over several estates and permission is crucial for smooth running of the hunting day.

Crow-hawking has adopted much of its format from fox-hunting. As in fox-hunting members' coats are uniform and help the land-owner identify who is on his field. NCF adopted a green coat, which has been traditional in falconry for 250 years. Of course the land-owner has been asked in advance what day the falconers are welcome. The hosting land-owners are generally very hospitable and living in such a remote area they are often going out of their way to entertain the group with their delicious



sandwiches and homemade cakes, washed down with a swig of brandy or a good glass of wine. The entire family is engaged at this day and they often have opened the numerous gates and come on their quads to see the spectacle of crow-hawking.

Inch by inch Nick Fox has been looking around at Northumberland for suitable hunting ground. By visiting every land-owner and getting to know them he received permission from about 100 farmers. In Northumberland the farms are big, around 1600 acres which allows the possibility of having "open country" for crow-hawking.

In honor of the landowners each year there is a BBQ held at Wealside farm, the base of the Northumberland Crow Falcons. At these events everybody offers their specialties. The mews are not only cleaned but decorated with green branches and balloons and the dancing floor appears where a band with old folk music plays and everybody has to learn to dance and they do - children and grownups all together.

Northumberland is in the North East of England,

bordering on Scotland. Famous is Hadrians Wall which was built by the Romans in 122- 127 AC as the Roman Northern border to protect them against the invading tribes like the Picts from the North, later known as the Scots.

One of the most well preserved Roman forts is Vindolanda which I had the pleasure of visiting to develop my historical education. Vindolanda is a Roman fort and a civil settlement at the wall of Hadrianus. Vindolanda was located at the 'Stanegate' (old English for stone road), the military road along the wall of Hadrianus.

Another historical point is Bewcastle built in 670 AC as a monument for its last lord. His gravestone is engraved with a falconer sporting a falcon on the fist. Through history the country and its residents have gone through war and plundering but has now become a very popular place for the active tourist who likes to walk Hadrians Wall. The seemingly endless landscape which exposes in the autumn light so many tweed colors, the unseen bogs, hills in various shapes, making it a stunning and daring country; a real challenge to go on horseback.





Carrion Crow or Corby

(from French: Corbeau)

Up until the 1700s there is little mentioned in the literature about rook-hawking and even less on crow-hawking. Rook-hawking as we know it, is spring rook hawking with long-winged hawks such as Peregrines and which does not appear to have been practiced to any extent in earlier times. Roger Upton has extensively explained how rook-hawking has been performed during different seasons with eyasses, passage or hacked hawks and with different species like Saker, Gyrfalcons or Peregrines, either male or female. But nothing on crow-hawking or on how it was done.

According to Upton, crows were more easily taken by a willing hawk than rooks. They are less likely to take to the air, but prefer to make for the nearest cover. He did acknowledge the danger of taking a crow, because they will fight to the very last. The crow as a prey is chosen because of its availability and being a nuisance to the land-owner. In the South there was no more land to go on horseback for rooks or crows and the historical Salisbury Plain has been turned into a military terrain with lots of barbed wire.

Northumberland has its own difficulties but had enough vast country to see the flight and get to the falcon in time to assist when it has caught its prey. "I prefer a single crow to a flock of crows. Falcons kill too easily when the crows are in a flock," according to Nick.

In Northumberland there are mostly Carrion Crows (*Corvus corone*) which weigh about 550- 650 grams. They are tough crows who have to survive in a rough countryside and the young crows are good flyers by August when the season for the NCF begins. "I don't like to hawk in spring-time when the crows have their young, because the orphaned young will starve", said Nick Fox.

Bombproof horses

One of the reasons to hawk at this time of the year is that it is the most suitable to go on horseback. The hoofs of the horses have to endure a lot on the rugged ground and many a time the blacksmith has to come to supply new shoes which they lose during hawking. Nick Fox is a registered farrier himself and formerly did most of the horses but is now inclined in some cases to call a blacksmith. For classical



crow-hawking you need a team. You need at least two horses and a car as back up. The horses have to be bombproof, sturdy, in excellent condition and have to be able to deal with the falcons and lures. Nick's horse, Buckskin, is an Anglo Arab and still going steady despite his 28 years. Five hawking horses are kept on the farm and Members bring their own horses. As a visitor and an accomplished rider you may be offered to ride with them. It is Mrs Barbro Fox who is the driving force behind the horses and was up until last year the Field Master who had to deal with the inconsequential chatter from the visitors, direct them to the right place and take care of the picnic. On a windy day, the shouts over the walkie talkies were sometimes so disturbing it was a miracle how she collected the crowd together again. Sometimes there were so many visitors on horseback it was nearly impossible to lead the crowd. For a maximum enjoyment a good field is 12 horses.

Falcons, big is not better

The choice for a falcon was one that had to fulfil the requirements to do the job, which was to obtain a ringing flight over a long distance, to be obedient, reliable and give good sport. If the falcon is too big





it intimidates the crow who will look for cover, a smaller falcon is less obvious and may be noticed at the last moment and the crow will start to climb. The ideal hunting weight is around 800-900 grams. Only Spitfire the male Peregrine /New Zealand falcon with his 450 grams could haul down any crow, jackdaw or rook depending on his mood and almost every slip was successful. In the course of time insights changed but also the training tactics which today gives the falcons an even better head start to the season. The slips are from a considerable distance and can be more than 500 meters to give the crow the chance to start to climb, when cover is not in sight.

The moment the crow starts to dive, the horses move in to

chase the crow out of cover into the open where the only way to escape is into the air. Flying out of the hood on horseback gives you one of those rare moments to witness the exhilarating high flight and thinking that you are back in time and share the same passion as so many people did hundreds of years ago.

From lure to rocrow

Training starts in Wales where the falcons are taken up in July. They have a lighting programme so they molt earlier and most of them are ready when the season starts. Before Fox had big flight pens, the birds were trained in the conventional way. Nick Fox is a leading breeder and all of his birds go to the Middle East where clients requested birds that were the equal of wild birds. Falcons

were wild hacked in Northumberland but after several seasons Nick switched to hack pens. Kites, balloons and pole lures were tested but the real solution was the flight pen and just down to earth hawking experience. With these methods, the season started slowly because the birds needed more exercise. In order to get them fit we hawked every day and this was the time for me to learn the most and have the most fun. We hawked with the hawking van and twice a week there were mounted meets. By the end of the season you could select the best birds who would return the next year as the prime flyers. Their names were carefully chosen and the birth of a name when the falcon caught its first prey was worth celebrating. A tea-break on the spot would be

the appropriate thing to do while the falcon took its time eating its prey.

In 2014 the Robara, a mechanized flight replica of a Houbara, was introduced in Abu Dhabi at the Falconry Festival and a new step into falconry was introduced. As with all new developments the idea was not initially embraced by everyone. I heard some really awful comments but Nick Fox persevered with his idea that the robara could uplift the burden from the often trapped and smuggled live houbara. To broaden its horizon he started making the roprey into any prey species to be used as a training technique.

GPS systems entered the falconry world which could finally give flight performance to monitor the sport but also gave more safety into retrieving a bird fast especially in need. Together with the roprey you think you have entered into a space shuttle, but to fly a roprey you need a lot of practice. The great advantage as a falconer is that you know how to fly the roprey so that it behaves like a real prey, and not to outfly the falcon. As an advanced pilot you start using the flying skills to give as much challenge to the falcon so he will gain height and learn how to stoop.

The amount of exercise you give in a very short time has an enormous impact on both the flying performance and techniques of the falcon. Most of the falcons will kill at their first flight at a real crow. On the days they don't hunt, exercising is relatively simply done and controlled. My last visit in 2018 in Northumberland, we had two meets in one week and the other days we trained 20 falcons. Some of them were reserved for the clients in the Middle East, some were trained and will go to the breeding chambers or to be used for hawking.

The meet, the grand finale

My last visit in August was one of those with extremely beautiful circumstances, exceptionally good weather, not too hot not too hot, not too many horses, plus a great team of falconers.

During my visits over the years I have encountered many falconers who were in charge of the mews. Often they were students or interns who came from all over the world with varying degrees of experience. The strict protocol of the day and the exercise

gave me the possibility to engage directly with handling of the falcons.

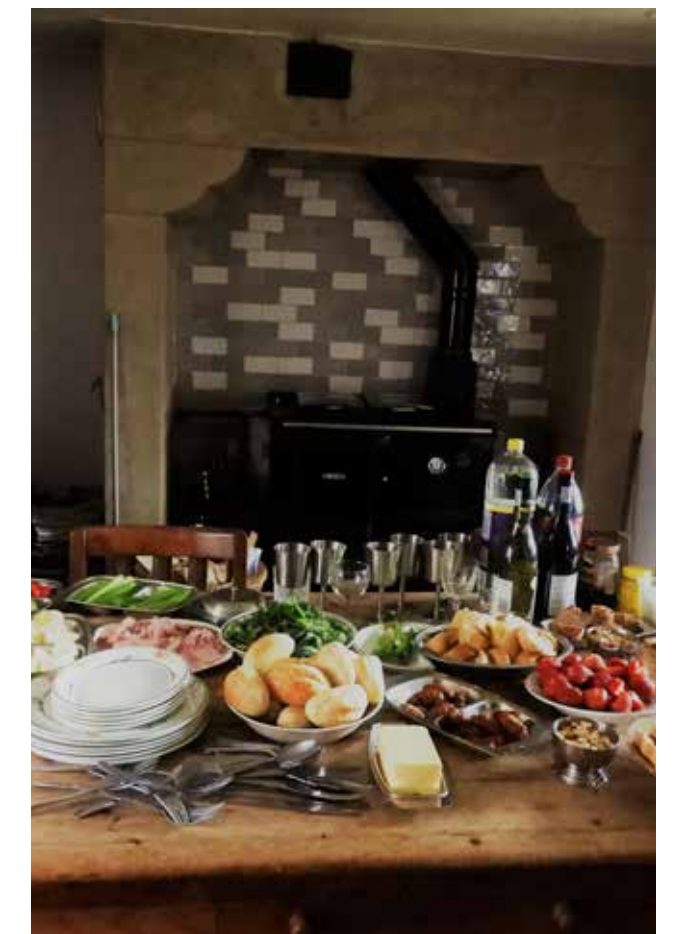
In the beginning we hunted every day. During the week there were two mounted meets and the rest of the time we would hawk by car. You would wake up, jump into your boots until the evening when you are sleepy from the day and (wine) and pull off your boots. This year the mounted meets were three times a week and the rest of the week exercising with the Rocrow.

For me it felt like I was Alice in Wonderland and every year it is different. What has stayed with me is the discipline to excel, so it is hard work to achieve the goals to have a meet where everybody from the visitors on horseback to followers on quads or in cars enjoy a good flight and great sportsmanship.

Literature:

NICK FOX: CLASSICAL FALCONRY

ROGER UPTON: PRINCIPLES AND PRACTICE



NAFA MEET 2019



The 2019 NAFA Field Meet Is In The Books!

It was another great NAFA meet this year in the small, welcoming town of Great Bend, Kansas.

Falconers were out hawking sunup to sun-down each day of the meet, chasing ducks, cottontails, squirrels, and jacks. The presentations were well attended and featured great opportunities for attendees to learn new skills, see upcoming features in technology, and learn more about the history of falconry. The city was delighted to host the meet and sponsored breakfast at the hotel, to include serving it and thanking falconers for coming.

The banquet garnered excitement as well with great raffle items including a GPS system, the original meet painting, \$1,000 cash and more. The featured speaker was Dr. Pat Redig who shared his experiences with raptor healthcare and falconry. Doug Pineo was recognized for his many contributions to falconry and awarded a lifetime membership.

We hope you'll join us next year in Kearney, Nebraska for the 2020 International meet!



2019 NORTH AMERICAN FALCONERS ASSOCIATION
FIELD MEET
GREAT BEND, KANSAS

OUR DEEPEST APPRECIATION TO AN OUTSTANDING FIELD MEET TEAM:

CHAIR PERSON: **Ryan VanZant**

MEET PRINT ARTIST: **Stacy Markley**

REGISTRAR: **Corey Roelke & Dani Brown**

VENDORS: **Chris Ly**

WEATHERING YARD: **Brandon Borquist**

MEET PIN & LOGO ARTIST: **Phil Salvati**

MEET PHOTOGRAPHERS: **Phil and Gayla Salvati & Steve Chindgren**

RAFFLE: **Krista Langevin**



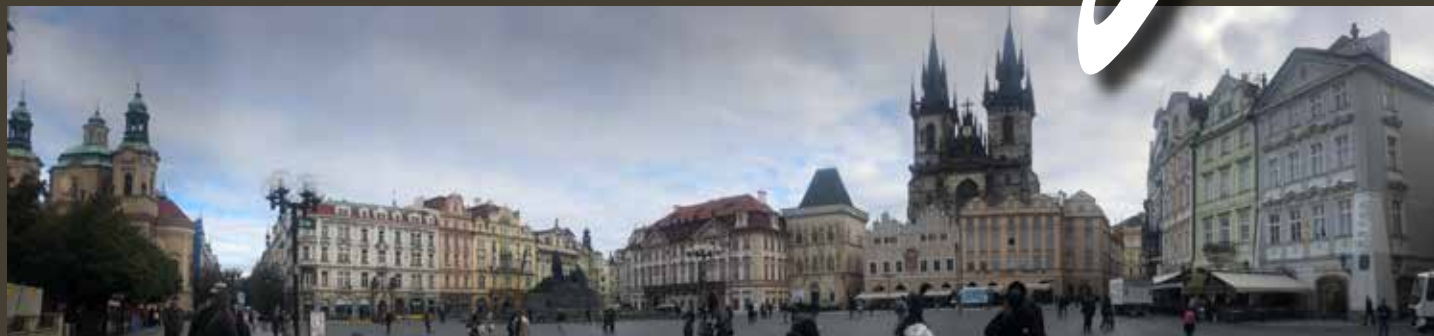






Falcons

IN THE CZECH REPUBLIC
OPOCNO 2018
BY JENNIFER CAMPBELL-SMITH / ABIGAIL DUVALL



We arrived in the town center of Opočno in the blue-grey of early evening on October 3rd, the four of us unfolding ourselves from cramped quarters in our tiny, but dependable rental car. We had spent several busy days prior to arriving in Opočno exploring the historic streets and buildings of Old Town Prague. Our drive had not been direct; we had stopped along the way to clandestinely harvest some “road apples” from a few of the myriad apple, plum and pear trees growing alongside the narrow, winding roadways of the Czech countryside. A brief stop had also been made at the Kutna Hora, a macabre artistic arrangement of the bones of some 50,000 people and one

of the most popular tourist attractions in the country. After sorting out what building the registration was in and checking ourselves in, we found our way to our housing for the duration of the meet, a local boarding school. The rooms were clean, bright and airy, with windows opening out over a small orchard overlooking a broader swathe of green in the further valley and hills.

Unpacking our things and resting briefly, we were soon met by our friend Marek Mateucha. To simply state that Marek is energetic would not be sufficient—he seems able, by some magic, to be in six places at once, and it can be difficult to keep track of where he is at any given moment unless slowed

by the presence of good beer. I had first met Marek at the Third International Festival of Falconry in Al Ain, Abu Dhabi, in 2011. He had since been to visit Jenn, Zack and I in New York and Maryland several times while working on business. Marek had always implored us to come to Opocno, and this year we had finally made it a reality. While Marek is not a falconer, he has been photographing for the Klub sokolníků ČMMJ (Czech Falconry Club) and other falconry events for many years. Marek introduced us to Páv Lučičník and Sarka Bejdova. The three of them were our regular companions for the duration of the meet.

We went to the Restaurace U Slunce, which was a cozy restaurant serving local Czech fare, for dinner and beer (one cannot have a Czech meal without beer!) and trialed some different forms of Czech liquor, though the becherovka was so potent as to be nearly undrinkable. Ironically, it is used as a way to cure upset stomachs, which was demonstrated to us when a traveling companion indeed had her upset stomach remedied by this potent herbal drink. In contrast, a bright green peppermint flavored spirit

called zelená was quite drinkable. Alcohol was to be a focus of nearly every event, from the sweet, sugary and mildly bubbly burčák to the sinus-clearing burning of slivovitz, or rocket fuel as Marek proudly called a bottle of it that he pulled from the trunk of his car. It would start with a shot in the morning and end with beers and more shots in the evening.



The morning following our arrival in Opocno was representative of those which came thereafter. We arose early to have a simple breakfast in a building across a small courtyard from our quarters. As bread and sliced meats and cheeses were part of the selection offered, and others were making sandwiches, we prepared a sandwich to later consume in the field. Though fresh fruit was offered, it was often easier to come across fresh plums and apples still on the trees while hawking! We had to walk up a small hill through the town of Opocno, turning right once we reached the small plaza in the center of the town. Here we could find our way by sound alone, for the calls of the eagles and goshawks, and the jingling of bells was audible at a distance. The weathering area was set up on a large grass lawn overshadowed by stately trees. Divided into three parts, the falcons, eagles, and hawks were all weathered separately. The eagle area was the most crowded of all, with some twenty to thirty eagles set upon perches of all shapes and sizes. In total, an astounding 52 eagles were flown at the meet.



Changes in the management of land within the Czech Republic have led to declines of hare and other small game populations, though roe deer are still abundant. In contrast, a total of 25 falcons represented the longwings and 21 goshawks, 1 sparrowhawk, 9 harris hawks and 2 red tails represented the shortwings and broadwings. Falconers and visitors were free to wander through the weathering area (which was guarded with signs warning anyone entering that they take their safety in their own hands), looking at birds and talking about the hunting to come.

Falconers soon began picking up their birds and heading towards the Opocno castle, where they traditionally gather in the courtyard each day for opening and closing ceremonies. This was our first glimpse of the castle, and a

better setting for a falconry meet could not be found. Set at the edge of a hill overlooking a Bohemian valley, the castle has a stunning Renaissance courtyard with arched balconies dating from the 1500's nestled between boxy baroque side wings. With the voices of the falconers and their birds echoing off the stucco walls of the courtyard, glimpses of traditional muted green and brown hunting attire, and the resonant jingling and jangling of equipment, it was almost as if we had gone back in time. Ceremonies each morning included a speech from the club president and local representatives, and playing of hunting horns. The list of countries represented by falconer attending the meet was impressive and included the Czech Republic, Italy, England, Scotland, Slovakia, Serbia, Austria, Croatia, France, Mexico, Hungary, Germany, Belgium, Chile, the Netherlands,

and those of us from the USA. The gathering of peoples from such a diverse array of countries, all united by a passion for falconry, was awe-inspiring, giving one a feeling of shared kinship rarely found elsewhere. We may not have spoken the same language, but we all spoke "falconry" and that was enough.

On the first morning, we had some brief confusion as we tried to sort out who we needed to follow as the groups began to disperse towards the hawking fields. The field meet organizers assign falconers to specific groups that will be hunting together, and designate where they will go during the day. These distances are anywhere from 10 minutes away to an hour. Fortunately Marek helped us to find the leader of the group we were going to spend the day with and we found our car in the courtyard, watching as eagles were put into the trunks of cars and backs of vans.

At last we were on our way to the field! Or so we thought. The cars and trucks of falconers followed one after another down the shoulderless Czech country lanes until reaching a small town or village, where they would abruptly stop and enter a pub. To our astonishment, beer and goulash (gravy and meat soup, usually roe deer or beef) was immediately ordered and consumed at a leisurely pace into the mid-morning. Soon after, a representative of the town and local hunting area where we were assigned would come to speak



to the hunters, wish them well on their hunt, outline what kind and how many of each quarry could be taken, and thank them for their visit to the town. Now it was truly time for hunting! The hunters and associates, warmed by the alcohol and goulash, piled back into their cars and drove further yet into the fields. The timing for these morning events in the village and hunting can best be defined as "organized chaos" and the signal that it is time to hunt has yet to be clearly defined to us.

On our first and second days of hunting we elected to follow two different groups of eagle hunters. The hunting groups were generally split into eagles, hawks, and falcons, though some hawk groups might have an eagle or two, and each group was accompanied by the game master of each area to be sure falconers didn't go over

their game quotas for the group, and to give local insight on the areas where game was most likely to be flushed and where we were allowed to walk. Having seen many falcon and hawk flights at home, all of us wished to focus on the eagle flights, and the chance to see pursuits of roe deer. The roe deer are generally 20-50 pounds, much smaller than the whitetails and mule deer we were more familiar with. Often bedded down in reeds, tall grass, or standing crops, the deer need to be flushed reasonably close for a flight to take place. We took to the field in a single line extending nearly 200 feet and began marching. The sugar beets were interminable and tedious to walk through, the hard, rounded tops and leathery leaves making it treacherous terrain. Wheat and fresh-ploughed soil made for easier but less fruitful walking. When a deer flushed, the closest falcon-

er released his eagle and gave call, running hard after his bird. If an eagle binds to a deer, the ensuing struggle frequently ends with the eagle left alone, panting hard in billowing clouds of dust, blood-stained feet clenching loose hair and soil. The best analogy from North American falconry would be a red-tail or other similarly-sized hawk binding to a jackrabbit, where a bird must manipulate its feet skillfully to keep ahold of wildly struggling and bucking prey. Much in the same way, binding to the head and neck is the hallmark of an experienced bird, used to dealing with large quarry.

One of the closest flights we witnessed was when Jenn pushed a roe doe out of a bed of dried grass in a gully below the positioned eagle hunters. The startled deer ran, mouth agape and tongue askew, mere feet from



beaters and falconers, and an eagle was released soon after. The female eagle quickly gained speed and bound to the deer within 50 feet of the flush. Though the falconer was near, the eagle and doe somersaulted from the force with which the eagle hit it, throwing dust and dirt into the air. The eagle, which had bound to the hindquarters of the deer, let-go and rebound several times to take control of the head, though the falconer reached them just in time, for the deer had jumped into the air and thrown the eagle off-balance once more. Gaining control of the deer, the falconer quickly dispatched the deer and allowed the excited eagle to eat the lungs and heart before trading her off. The falconer was congratulated with handshakes and cheers by several members of the hunting party.



The eagle hunting parties started out fairly organized and within a single line, but often spread out across great distances as the day progressed. This allowed some falconers further back or near the edge of the fields to take slips at deer which had been pushed from those further ahead or towards the center of the field. Many of the deer that were taken were at such a distance from us that it required binoculars to be sure of whether quarry had been taken.

Hunting with a mixed group of a red-tail, a Harris' and many goshawks (and two eagles just in case



roe were spotted) involved a much tighter field, as we attempted to flush hare at our feet. Sometimes a hare would be spotted before it was flushed, a beaded glistening eye the only betrayal of its soil-colored camouflage. The spotter would call out "zajíc!" or "hare!" and all motion would cease as all eyes scoured the soil in front of the caller. In this case, a more inexperienced hawk was often given the slip, especially if the hawk had not previously been entered. These flights began mere feet from the falconer and quite close to onlookers, yet even so most hares escaped with flying leaps and back-flips, or by furious kicks which forcefully dislodged even hawks which had tightly bound. On at least one flight, the hare broke free just as the falconer reached the goshawk, and despite a valiant flying dive by the falconer, the hare raced away to freedom, leaving falconer and goshawk together in the dust.

Once the day's hunting was over, either signalled by the golden light of sunset or once the game quota was reached, the hunting party would assemble at the same town pub at which we had gathered in the morning. More beer would be purchased, perhaps

with some small snacks, as everyone assembled in a grassy area to lay out and honor the game caught that day. The same representative of the town and game master from the morning would say words and play the hunting horn to honor the game. A representative of the meet would then thank the town representatives and give them a gift on behalf of the Opocno to foster goodwill for future meets. Finally, those who took game would pay the town for the animals taken with prices varying between pheasants, hares, and roe deer.

After local exchanges were complete, dusty, weary falconers and spectators made their way back to their lodging to rest and clean up from the day's efforts. After an hour respite, we once again made

our way up the hill, over the cobble roads, and into the Opocno castle for the evening ceremony. All game taken was laid within a rectangle made of pine boughs in the center of the courtyard, and a summary of the events of the day and game taken was made by the club president, and hunting horns played once more to honor the game. The castle was perhaps most breathtaking in the evening, when the yellow-orange glow of the lights hung within each arch of the courtyard provided illumination against the growing purples and greys of twilight.

At this point locals and spectators could buy the game, instead of the falconer, if the falconer was willing to let them have the meat. It wasn't uncommon for falconers to allow spectators to buy their

take. During October and November many different countries throughout Europe have their annual meets. Many European falconers take extended vacations and travel to these different meets for two or more months. Transporting multiple roe deer and being able to preserve them while on the road for this amount of time can prove difficult and spoil the meat, making it best to share the game taken with others.

After we were dismissed, we made our way through the lantern lit streets back to the cozy Restaurace U Slunce for dinner and beer, then on to the local pub for more Czech alcohol and exaggerated hunting stories (which of course grew greater and greater as the night progressed) until we felt like retiring back to our warm





and welcoming rooms for much-needed sleep in preparation for another day of breakfast, weathering yard, castle, small village pub, hunting, small village pub, rest, castle, food, and drink again.

On one of our final evenings at Opocno, we attended a social evening held by the falconry club. The social evening was held outdoors in the walled

courtyard of an old monastery, with wooden benches set up between two large white canvas tents. Of course this event involved plenty of alcohol, especially slivovitz! We spoke with falconers from across Europe while enjoying goulash, fresh roasted pig, a variety of Czech appetizers and desserts, and listening to a traditional band play Czech country music. And of course, there was beer. In fact a lady and gentlemen dressed in traditional Czech attire, dubbed the Booze Faeries by us Americans, wandered around offering either alcohol-soaked pastries or shots of slivovitz. Marek, wanting us to get the full experience of the Opocno meet, requested that the club president ensure we have a good time. This usually manifested in the president seeing us, yelling "Americanos!" in a jolly Czech accent, and shuffling the shot-glass-wielding Booze Faerie in our direction for imbibing. This happened enough that some of us had to politely refuse to take more shots, but Brenda Lyons did the USA proud, shrugging off six



beers, six shots of slivovitz, and a glass of wine, with no hint of a hangover in the morning. As of breakfast the next morning, which she attended early and bright-eyed, she was an honorary Czech.

The final evening of the meet all game was laid out for a final time in the pine boughs, horns were played, the week's events were highlighted, and we were all wished a good year. In total, 120 falconers had hunted, of which 30 were from abroad.

One hundred and sixteen head of game were taken - 53 hare, 34 pheasant, and 29 roe deer. The next morning, serenaded by the songbirds outside our balcony, overlooking the orchards, we packed our things and swept our room. It was hard to say goodbye to the idyllic little town of Opocno, but we left with wonderful memories and new friendships.

If anyone should wish to visit the meet in Opocno, the event takes

place yearly in October and is open to international falconers. There are many flights to Prague, which is a popular tourist destination, and Opocno is only about a 1.5 hour drive from there. We found a car rental to be quite reasonable and driving on the roads quite safe despite a propensity for speeding (some of us felt quite at home with this, but our poor little underpowered car felt otherwise). We cannot recommend the meet highly enough! 

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Our thanks to Marek Mateucha for being an incredible host, translator, guide and friend. Hope to see you stateside again soon! And to traveling companions Zack Smith and Brenda Lyons for always being up for yet another adventure. Finally, thank you to Zuzana Richtrová for helping us to obtain some information from the official Czech club report on the meet.





The Stoop of the PERLIN

BY ISRAEL MATSON

A dust cloud trails the convoy of eight vehicles moving through the prairie hills northwest of Great Bend, Kansas. A gentle breeze whisks it away as the lead vehicle slows and brings the group to a halt between a tilled field and a cut plot bordered with tall, wild grasses. Near the back of the procession, we prepare to get out, but then there's some commotion ahead and the line u-turns, one by one. Ahead of us in a height-adjusted Tesla Model X, Robert Bagley & the Marshall Radio team cross the shallow ditch bordering the road, driving across the turned soil of the field before regaining the road, it's comical. A few minutes later and the convoy has returned to the opposite border of the same field. This time, everyone starts getting out.

All I know about what's going on came from Zane Muhlestein excitedly suggesting we join the party departing the NAFA meet hotel. "Daniel Murray is flying his perlin, he caught a bird yesterday and is going for them again today. I'd love to see that. This is a rare opportunity!" With no other plans, I hop in his truck and here we are. Because of how uncommon they are, I'd never really given the peregrine/merlin cross much thought, my only knowledge of them really comes from a talk given by Louise Engel at the 2018 Utah Merlin Meet raffle, where she discussed flying her perlin on large flocks of starlings in Canada. Interesting, but micros have never really been "my thing."

This time, however, my interest was piqued. A "jack" (male/tiercel) perlin on small game from a pitch is what Zane was saying was about to go down, and I wanted to see it. Perlin crosses are uncommon, I personally only know two people flying them currently, the aforementioned Louise in Canada and now Daniel Murray—here about to fly his before our very eyes. Granted, I'm not really in the loop regarding these types of exotic crosses. With no personal breeding experience, I can't posit that actually producing them is difficult, though I'd assume it's not easy with the exaggerated biological differences between a peregrine falcon which we'd usually refer to as being among the "large long-wings" and a merlin which is what we generally classify as a "micro." It's keeping them alive that seems to be the hard part, or so the rumors go.



Five seasons of hard hawking seems to have earned this male perlin named "Stinger" the status of the odd one out. It's also earned him quite the reputation. From the first day of the 2019 NAFA meet, there was buzz being generated about him. But more broadly, you're hardly involved in the falconry community if you haven't heard mention of Stinger the Perlin. It's one thing to possess an exotic raptor with a reputation for getting eaten by everything from red-tailed hawks to Cooper's hawks, it's an entirely different thing to fly them, and hunt them hard. It's daring, it's macho, and the excitement of the crowd assembling along the edge of the road pointing and holding phones out as Stinger explodes into the sky is a testament to that fact!



DANIEL MURRAY WITH "STINGER" COURTESY OF CHRISTIAN HAGENLOCHER

Apparently they become target number one for nearly every other raptor and animal within several miles of anywhere they are being flown. My interest is piqued because I want to know why that could be... Why would this cross be singled out more than a merlin or tiercel peregrine?

Five seasons of hard hawking seems to have earned this male perlin named "Stinger" the status of odd one out. It's also earned him quite the reputation. From the first day of the meet, there was buzz being generated about him. But more broadly, you're hardly involved in the falconry community if you haven't heard mention of Stinger the perlin. It's one thing to possess an exotic raptor with a reputation for getting eaten by everything from red-tailed hawks to Cooper's hawks, it's an entirely different thing to fly them, and hunt them hard. It's daring, it's macho, and the excitement of the crowd assembling along the edge of the road pointing and holding phones out as Stinger explodes into the sky is well placed.



PHOTO OF "STINGER" ON THE WING, COURTESY OF CHRISTIAN HAGENLOCHER

It's captivation from the first wingbeat. I've never seen anything fly like this. Frankly, I don't quite know what I'm seeing. In terms of appearance of the bird, it's literally what you'd imagine a peregrine/merlin cross would look like, it's built like a mixture of both,

and appears slightly smaller than a tiercel peregrine. But its wingbeat and zeal is hard to explain, both the pattern of its motions and also the power with which it races forward defies what my brain has come to expect of falcons. It's unbridled torque and passion, in a small, inconspicuous package. Within seconds Stinger has darted out low across the rough-cut field and then arcs with breathtaking speed directly up into the array of melded pink hues of the earlier azure, big-country sky.

At this point I've pieced together why Daniel and the leaders at the front of the line had repositioned the convoy the way they did. Previously, potential prey birds had been seen in this area and they had merely stopped to glass the corner of the field to make sure the birds were indeed still here. Then we'd driven the far way around so as not to disturb them quite yet, but also to put Stinger in the best position to do his work. The area we were now hunting was at the foot of a hill, near the intersection of two dirt roads. Runoff had formed ditches running down the hill and along the road making it unsuitable for farming. Tall prairie grasses had grown here unchecked. This is the type of habitat small birds love, as they can move from feeding in the adjacent fields into the cover of the tall grass. Daniel instructs the onlookers willing to participate to form a line to flush the birds from the field, where they'll then have to make a hasty dash for cover under the menacing watch of Stinger. Overhead, Stinger's presence has the birds frozen in fear. But with less than a hundred yards of open field between where they are holding tight, Daniel informs us they're going to have a slight advantage today.

I'll take liberty to expose my ignorance here. Observing the stage being set before me, I was fully expecting the perlin to take a "pitch" (whatever that is for a perlin) before getting off a single stoop which, accounting for the nature of falconry, he'd most likely miss, and that would be it, show's over. How wrong I was.

In just a few seconds Stinger is nearly 300 feet above us, with the line of flushers moving into the field. I couldn't believe the breakneck speed with which he'd circled up, gobbling altitude like gravity doesn't exist. This is a fit falcon! Then to a chorus of excited cries, a bird is up and rapidly making its escape diagonally away from the group, then another one flush-

es and cuts straight through the group, flying over the cars and opposite the intended direction! Like a guided missile, Stinger locks on to the first one, and cranks down in a dazzling stoop, nearly plucking the hapless prey from the air, except the safety of the grasses proved too near as the bird bailed into cover, inches from its demise. "Everybody freeze and let him remount!" Daniel calls out, and sure enough Stinger is already nearing 200 feet, the momentum from his stoop propelling him halfway back to pitch before he even needs further wing pumping for height. The line begins moving again, and at this point I am struck with my own theory for why everything wants to eat perlins.

Again this may be totally off-point, but as it stood out to me so strongly standing there watching it I now convey my theory here... At pitch, this perlin flies like a flicker, or some other sort of other small prey bird. A set of rapid beats with a sharp upward trajectory, then wings set tightly to the body in a gentle downward swing, then rapid pumping back up, then set and almost falling downward. Evidently an effective way to maintain pitch, but resoundingly appearing more like a prey species than a predatory bird. It seems bizarre, and is definitely attention grabbing. I could imagine a red-tailed hawk a mile away would instantly have his attention pulled towards this erratic flying bird. I'd attribute it to the strange biomechanics of two distinctly different falcons being artificially crossed, it definitely is not natural. In the wild, unnatural is not tolerated.

But Stinger has survived for five legendary seasons and today's exemplary performance by him showcased his efficiency and proved his mettle. He's not just a survivor, he's a thriver. "HO HO HO!" and several more birds are flashing up from before the group and beelining towards the ditch! Again Stinger doesn't hesitate, instantly making calculations and picking his best shot out of the three targets, grabbing some speed on the go with several quick, jerking wingbeats before locking into bullet-form for a searing stoop on the second bird to mount up. Something about this bird earned his selection. Maybe it was the slowest flyer. Maybe it hesitated, or exhibited some behavior only detectable to the lighting-fast analytical mind of a seasoned falcon. Either way it too almost met its fate before plunging haphazardly into the ditch, a hair's breadth from the clutches of the falcon—the wind of the stoop

by had tumbled the bird in a somersault into cover, shaken, but safe.

G-Forces, anti-gravity, logic-defying whatever, Stinger was somehow already back up to pitch. Invigorated by his second near miss and unfazed by the amount of energy exerted so far, Stinger scanned the group of humans now rising from a crouch and moving again. This was everything Stinger lived for, that much was clearly evident. In two words I would describe Stinger's style of hunting as "gracefully erratic." In thrilling fashion he'd launch one, two, three more stoops on birds which were ever closer to cover as the group continued across the field. Stinger seemed to be here, there, everywhere, but then always back up to a pitch of what looked to me of at least 150 to 200 feet.

It's a compelling facet of falconry, all this adrenaline and excitement, but yet taking place in so serene an environment. Standing apart from the crowd, the subtle breeze carries the cool evening air across my skin, bringing with it soft scents of dry soil and the remains of harvested crops. An oil pumpjack slowly

churns, a garish contrast to the gentle landscape, but yet somehow not out of place before this picturesque Kansas sunset. Nearly to the tall grasses rising from the drainage ditch, the group of falconers—many of them strangers to each other—work in unison with Daniel Murray and his falcon, all of their individual worries and cares forgotten, enraptured in the moment. Soaking in their shared passion and appreciation for the art. From a distance away, it appears surreal. To quote Tim Jessell, "falconry shows us that there's still a bit of magic in the world."

Stinger commands my attention as he sizzles past me, making short work of the distance between himself and the lone bird that had held tight before flushing behind the group and heading the opposite way. But again, the cover forming a 90° angle into the corner of the field worked against him, with the panicked prey skimming low to the ground in a tight banking turn, throwing the heavier falcon into a slightly wider turn which would buy just enough space for cover to be reached. Stinger continued in his turn, crossing the area where the bird had put

THE GROUP CROUCHES AS STINGER MOUNTS BACK UP TO PITCH, IPHONE PHOTO COURTESY OF ROBERT BAGLEY



KANSAS SUN SETTING OVER THE CONVOY OF FALCONERS AND ENTHUSIASTS GATHERED TO WATCH DANIEL MURRAY'S "STINGER", IPHONE PHOTO COURTESY OF ROBERT BAGLEY.

in twice, as if frustratedly marking the spot, before cruising over and upwards back over the group.

I've never seen anything like this. Eight stoops, each time regaining pitch, with what appeared to be no adverse effect on his stamina and energy. For a falconer, especially a long-winger, this was addicting, this was the drug of the stoop administered over and over again. This is why legendary falconers Steve Chindgren, Dr. Pat Redig, Frank Taylor, Doug Pineo, and so many others at this meet were in attendance to watch Stinger's prowess. This is why Robert Bagley brought the Marshall Radio team out to watch this little guy, enabled and secured by the micro-transmitter sporting the Marshall logo about his leg. This was high-stakes, high-reward falconry, supercharged. This little falcon was a showboater, but with a track-record to back up his flashy antics and style of flight. There were so many times where I would look over to catch Robert shaking his head in disbelief, a smile plastered on his face.

High octane fun, pure and unadulterated. Following several more stoops, Daniel Murray conceded that

his hunch on the nearness of cover being too great an advantage for the prey was correct, and Stinger zipped down to claim his reward on the lure. Having made a kill the day before, there was no sense in pushing any longer, Stinger would rest up and take one tomorrow. Which he did, by the way.

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Everybody that shares the privilege of watching Stinger work his magic will be moved by him. Mentally, emotionally, spiritually, this dynamic little hybrid's larger than life attitude and charisma will win anybody's heart, and leave you with a sense of gratitude for having witnessed his artwork... each stoop, turn, lift, another brushstroke of his masterpiece across the canvas sky. 

LIFE AND DEATH

in the ANTHROPOCENE

By Nate G. Bricker



En route to my preferred hunting grounds with Sioux, my red-tailed hawk, I frequently find myself scanning the light poles, fence posts and electric lines for the hawks and falcons that perch there. During these drives, I often contemplate how humankind has shaped the raptor's journey. Beyond death from starvation, predation, miscalculation, and disease, raptors face a host of anthropogenic threats that complicate their existence. Roadways, wind turbines, electrocution, lead exposure, changing climate, habitat loss, and other manifestations of our presence in this world have inextricably entangled humankind in the affairs of other living things. Our continued population growth and global alterations impact most, if not all, of what remains of the wild. Those wild creatures not fortunate enough to adapt meet their fate quickly—including raptors.

With the sun barely cresting the horizon, the first few bars of light bathe the landscape in subdued amber hues. I can tell many of the birds this day are in their first year. New to the world, they are just now learning of the harshness that is the winter and life to come—a harshness many will not survive. The time for things that slither, the hoppers in the grass, and all the critters that have made up the raptor's easy diet are now quickly disappearing. It will not be long before winter snows blanket the northern landscape and introduce a more brutal reality. Mother Nature is beautiful, but she is indifferent. Death comes swiftly for those that fail to adapt, and good fortune is often nothing more than a fleeting apparition. Every day is a struggle to validate one's existence. Survival for wild birds of prey is a never ending game of chance where life and death are but one mishap or "misflap" away.

What fate, I wonder, might have befallen Sioux had she not blessed my deception of monofilament nooses with her talons? These thoughts hit me hardest when I see those young birds sitting by the highway in hopeful anticipation, knowing many will never make it to adulthood. Life in the natural world is difficult enough—life in the Anthropocene involves a level of complexity in which many more raptors will not survive.

I took Sioux from the wild in 2015 for the purposes of falconry. I like to think this relationship between hawk and human not only improved her odds of survival but mine as well. She gets to perfect her skills as a huntress while I get

the stress reduction and physical activity of being out in nature and facilitating her hunting opportunities. Sioux will be with me until 2021 when I plan to release her back to the land and sky from which she came. After five years of flying in my company, and providing me with rare access to her wild world, Sioux will once again fly free of anklets, jesses, glove, and scale.

During our time together Sioux has certainly perfected and diversified her predatory craft, a necessary step toward her long term survival. However, being an accomplished predator is only part of her survival equation. My greater concern for Sioux is the rate at which our own human shadow upon the natural world grows. Until we curb population growth and slow the rate at which we alter habitats and consume natural resources, I can only surmise that Sioux will encounter more of that which makes an already staggering 70% death rate for yearling raptors a conservative rather than liberal estimate.

The following vignettes describe what fate in the Anthropocene might have looked like for a bird named Sioux had our paths not crossed and had falconry not been a viable and temporary diversion in her life's trajectory.

RAPTOR'S JOURNEY

Well into September, Sioux has begun a journey necessitated as much by the harvesting of crops and the tilling of fields as by the plummeting mercury and snows that will soon follow. The time has come to move south and fol-

low the genetic impulse to migrate. In harmony with the natural cycles, this is a journey synchronized perfectly with the disappearance of easy prey. The lizards and snakes have gone subterranean for the long sleep, while the rats and mice are following the food indoors and underground. Survival for the vermin means tunneling beneath the white crust of winter or retiring to the barns and silos for their nourishment and protection. For a Red-tailed hawk like Sioux, this means adaptation in the face of starvation. It's time to "hawk-up" and learn to hunt the larger and more difficult species that have thwarted her efforts thus far. It's not that Sioux is ill-equipped for the task, nor is it a question of ability. The truth is, she's just not had the incentive to go all-in and commit talon and wing to a match that could just as easily end her life as sustain it.

Driven from her parent's territory in the time-honored tradition of red-tailed parenting and raptor rearing, combined with the urge to migrate, Sioux is on the wing and on her own for the first time. Fully fledged and predator equipped, Sioux has all the hawk requisites to establish herself as a pinnacle predator in this wild world. With the spread of her wings and fanning of tail feathers, she lofts a thermal and departs to lands unknown. For the first time, she feels the burden of hunger that food begging and juvenile-calling will no longer satisfy. The anxiety resulting from an empty crop and stomach are overwhelming. Starvation is a new and desperate feeling. She is fully absorbed by that legendary raptor mindset of unflappable confidence and



aggressive tenacity. This is the kind of moxie that will one day test her mettle in the pursuit of game two, three, or more times her size. The more rapacious she becomes, the more inclined she will be to risk life and limb in pursuit of newly untested and sometimes dangerous quarry. Feast or famine, fight or flight, the trials ahead will become Sioux's own "David and Goliath" story. A two pound, hollow-boned bird of unflappable feathered determination and daggered talons versus the steely sinew, and hardened muscle of an 8 pound jack rabbit built for survival, evasion, and escape. If successful, she will have earned her red tail feathers by making it to her first molt. The ocher-colored plumage, a sign she has mastered the craft of life and survived the trials of death, show she has earned the right to bequeath her genes to the next generation of red-tail hawks.

Leaving her home near the Missouri Breaks in Montana and headed south, Sioux has already started pursuing other game. She's had good success of late on cottontail rabbits and ground squirrels, not to mention a pheasant and a ground-bound grouse. The jacks, however, have been a different story. Plentiful both in her ancestral lands and

on her journey thus far, they continue to remain beyond her grasp. Big, fast, cunning, and survival-smart, the larger jack rabbits are more than she cares to hunt so long as the other prey species remain plentiful.

For Sioux and her wild brethren, there is more to think about, more to survival, than just finding enough to eat and avoiding other predators. Sioux will have to contend with the continual reverberation of anthropocentric tremors in a world increasingly racked by our own human progress. This is an epoch when the dominant influence on the earth's climate and environment comes not in the wake of natural phenomena but from our own human hand.

Thermal-hopping, Sioux soars across the Montana prairie. As a buteo she is perfectly adapted for this type of effortless flight. Wings spread and tail fanned, she surfs the updrafts and thermals with ease. While the territory is new, Sioux's evolutionary design as a soaring hawk gives her a sense of control in these unfamiliar skies. A light dusting of snow models the expanse below. A colony of well-traveled prairie dog holes indicates recent ac-

tivity, but for Sioux nothing remains topside at the moment. The chirping and posturing that had attracted Sioux's attention were the alarm calls that alerted the colony to the presence of death from above—from Sioux. In time she will develop her own strategies for successfully hunting prairie dogs, but for now their calls and antics are mostly an inconvenience and impediment to a full crop.

A COLLISION COURSE

Exhausted from a day on the wing, the convenience of telephone poles and fence rows becomes a welcome reprieve. The posts provide Sioux with excellent platforms from which to evaluate her next move and scan for other prey. Flying light, but not yet famished, the pangs of hunger have her undivided attention. She's learned these manmade features are just high enough to give her a good vantage point from which to ply her trade and develop her skills as a predator. In a landscape mostly void of trees and other elevated features, these manufactured additions to the natural topography are a welcome respite and helpful prop from which to procure life's necessities. In fact, their frequent proximity to the 4.18 million miles of roads—enough to travel to the moon and back nearly 9 times—is an added bonus. These elevated platforms located in proximity to our roadways, or, as I like to call them, "the black zones of death," combined with the rubbish discarded by careless drivers, quickly become a recipe for disaster for birds like Sioux. This featureless terrain, spotted with elevated perches, pavement platters, and buffets of the unfortunate, seems to be the ideal place for a hungry hawk. But as Sioux will learn, looks can be deceiving.

From her pole-perch, Sioux notices movement in the grass. Perhaps a subliminal twitch of ear or flash of fur. Regardless of whatever it was that caught her attention, it was simply too subtle to decipher and certainly not enough to blindly commit her talons. Sioux leans forward in raptor anticipation, and bobs her head to adjust focus. Predator or prey? Suddenly, a cottontail bursts from cover and out into the open scampering across the blacktop. The rabbit's mad dash quickly becomes a scenario that changes from the innocuous to a series of compounding life and death decisions for nearly all involved. The explosion from cover commits the rabbit not just to the unanticipated raptor overhead

but to two speeding automobiles vectoring on a collision course with both raptor and rabbit. Everyone is committed. The vehicles are moving too fast to change course or slow down. The rabbit, out in the open and committed, realizes he's made a poorly timed dash for cover. Sioux, tunnel-visioned by hunger and seeing only an opportunity for an easy meal, is on the wing. A miscalculation now could be catastrophic for any or all involved.

At the last moment Sioux realizes her path to the rabbit, impaired by the speeding vehicles, is a deadly one. The screeching of brakes, a perceptible thud, and then the kind of silence only death brings. One car speeds on and the other slows to a gradual stop, as driver and passenger glance about attempting to decipher the consequences of their impact. Too close to call, the humans are unclear of the outcome. Behind them, life streams from the cottontail onto the roadway, and to their left, a red-tail hawk regains her perch on a telephone pole. A quick rouse with a back and forth shuffling of tail feathers, Sioux has just encountered her first real brush with death. In her quiver of experiential wisdom this will be a lesson that will inform her of the risky relationship she and other animals have with our roadways. In fact, the U.S. Fish and Wildlife Service estimates that as many as 340 million birds are killed annually by vehicles plying the 4-plus million miles of roadways across North America. That's an astounding 80 bird deaths per mile of road. Sioux, for the time being, is beating the odds. Lessons of luck are a part of the life equation for all of us and birds of prey are no different. Sioux's journey is just beginning.

ELECTROCUTION & GOLDEN DRAGONS

Farther South, Sioux's flight path takes her out over the sage-covered plains of Wyoming. Below her, more poles, fences and the other encumbrances of the Anthropocene blanket the landscape. With caution she circles out over a row of telephone poles and power-lines probing what appears to be a good area for finding her next meal. Unknown to Sioux, she has just entered the territory of an intolerant resident golden eagle. This golden has killed her kind before and will certainly try to do the same to Sioux if she is not keenly alert. Sioux scans the sage and other grasses for signs of prey. The good news is that there are no roads to complicate the



predator/prey equation. In no time a rat reveals itself a short distance away near a wildlife guzzler. Wings tucked to her side in a controlled stoop Sioux makes quick work of the hapless rat. Alas, Sioux's hunting behavior and trespass have not gone unnoticed. She's been spotted by the eagle overlord who now has plans of his own for the distracted, young red tail.

Dropping from the clouds nearly a thousand feet overhead, the golden is upon her in seconds. The eagle's talons dangle down for the final approach. Sioux is in the cross hairs of a formidable predator and only seconds away from a bad life choice. The rat was easy pickings but Sioux may now pay with her life for her indiscretion and lapse of awareness. Young hawks, it seems, are prone to such haste. As a wild bird, however, she is keenly aware of what eagles are capable of. Abandoning the last morsel of rat, Sioux times the eagle's approach. Only hundredths of a second separate life from death and in that moment the eagle's needle sharp talons rake through her breast feathers as Sioux launches sideways, her own talons spread in defense of the eagle's cutlery.

Sioux leaps into the air, a slight head wind giving her the quick lift she desperately needs. Wings pumping with the overdrive of a fuel injected adrenaline

rush, Sioux is in the fight and flight of her life. Not missing a beat, the eagle pushes off the ground and launches in pursuit. Using the inertia from his stoop, the eagle springs upward with surprising speed and agility, makes a quick banking turn and closes the distance between himself and his feathered quarry. The eagle's powerful flight, combined with seasoned strategies for dealing with such interlopers, now places him mere wingbeats away from terminating Sioux's life and affirming his reign atop the food chain.

In a frantic attempt to disrupt the eagle's momentum, Sioux quickly assesses her options and makes for the poles and powerlines. This will be her last and only chance to slow the eagle down and change her destiny. She rises easily between the powerlines, her shorter wing span a tangible advantage at this juncture, but the eagle is now within striking distance. Only a wingbeat away from his quarry, the eagle spreads his pinions and brings his talons to bare. Sioux braces for impact. A terrifyingly bright flash, followed by an unsettling crack and pop bring the chase abruptly to an end. Contacting the powerlines with its massive wings, the eagle has been electrocuted.

Glancing back, Sioux glimpses a smoldering, lifeless adversary cartwheeling to the ground. These

are the kinds of moments and experiences that forever etch themselves deeply into a young hawk's mind. Never again will she mistake easy prey for safe prey, or poles with lines as mere obstacles of the Anthropocene. Powerlines and the hazard they present to Sioux and her winged brethren are not to be trifled with. Lesson learned. Sioux makes for the sky putting as much distance between herself and the dead eagle as possible. Because of outdated power grids and electrical transmission systems, birds die needlessly from our own neglect. In the wake of our own shortsightedness as many as 14 million birds could be dying every year from electrocution, collision with power lines, and our complacency—far fewer than from golden eagles. Big brains are helpful, but only if we use them to solve the problems that plague our existence.

WHIRLING WINGS OF DESPAIR

And so the journey continues. A bit wiser, more cautious, and certainly more confident in her own abilities, Sioux is beating the odds where others have already failed. It's a long flight ahead but she is slowly but surely developing skill sets and situational awareness that will help her survive in the time of humans. The winds are howling and she's enjoying the push south from Wyoming towards Utah. Having covered close to one hundred miles, Sioux is ready to start hunting again.

In the distance a forest of white towers and rotating blades populate a desolate bluff. Their pres-

ence is becoming increasingly familiar on the western plains as our love affair with energy seems insatiable. Not only do turbines trademark nature with our human handiwork, but they also disrupt ancestral flyways and contaminate viewscapes. Many of the same geographical features that funnel the winds and buoy the wings of birds churn the blades of turbines to generate electricity. Thus the thermals and air flow that make flight easier for birds can also make it more dangerous. Unlike Sioux's earlier exposure to electricity, these human structures are generating power rather than transporting it. Instead of electrocution, impact with rotor blades becomes the threat. Forests of electricity generating turbines, more than 57,000 by some estimates, now dot the landscape from coast to coast, and their blades kill as many as 300,000 birds annually. The production of energy comes at great cost to our environment and to the birds that find themselves in harm's way. Of all the places where nature feels our presence, the skies have remained one of the safest, but now even birds can't seem to rise above the fray of our existence.

Soaring, Sioux now finds herself above a wind farm in search of her next meal. Oblivious to the danger wind turbines present, she is enticed by the promise this landscape holds. She circles up on abundant air currents forced skyward by the topography to gain perspective and avoid detection by potential prey. All she has to do is keep her wings fully extended and tail feathers fanned. The winds and

updrafts will do the rest. It's good to be a red-tail. Then, suddenly, there it is! A jack rabbit on the move. The grazing mule deer below must have startled it into its characteristic dash for life. The rabbit, bounding out in the open, entices Sioux into her raptorial mindset as a predator. Sioux has yet to successfully catch a jack rabbit, but from this height this one seems smaller and the conditions appear right to give it a try. Sioux flexes her tail feathers, pulls her wings to her side, and pitches into a dive. The wind begins to hiss as she builds speed. At this angle her trajectory will take her right into the maze of churning turbine blades. She is unaware of the danger they present and sees only the rabbit. Nature's equivalent of a laser-guided missile, every measure of Sioux's attention is transfixed on her prey. She is on a collision course with destiny. Then, just ahead, a loud thwack, followed by an explosion of feathers. Her momentum carries her forward into the oncoming menace of the following blade. She cranks her tail and wings so hard she momentarily loses lift and control, and narrowly misses the oncoming rotor blade. Regaining her composure and in command once again, she levels out unscathed except for a few ruffled feathers.

Unknown to Sioux, there was another bird of prey in the sky with the same idea. Another juvenile red tail was intent on making a meal of the same rabbit. Fortunately for Sioux, the mistakes of another have given her a new lease on life and taught her a valuable lesson about living in



the Anthropocene. Uniform forests of white trees with spinning branches are to be avoided, regardless of prey, regardless of easy flying.

THE LEGACY OF LEAD

By the time Sioux arrived in Utah she had become proficient at hunting the jack rabbits that had befuddled her early on. The confidence born of her eventual success with jacks also allowed her to consistently add the likes of careless pheasants and distracted prairie dogs to her wild buffet. With key life lessons under her wings, she has been able to pursue a menu of diversity in a variety of climactic conditions. All that slithers, creeps, crawls, flutters, and hops is now under her purview. Sioux is well on her way to earning the red tail feathers of her first molt and beating the odds so many of her kind will not.

With the life skills of an experienced red-tail, Sioux is anxious to return to her home lands of

Montana and begin searching for a mate, claiming territory, and raising her own brood. Departing Utah and heading north on her return journey home, Sioux is fast coming into season and managing all the new challenges associated with maturity.

Everything for Sioux seemed to be on track to begin life as an adult, except for a cruel twist of fate that had begun Sioux's insidious demise even before departing Utah. Quite by accident, Sioux had come upon an unnatural stash of freshly killed jack rabbits. If there was anything the other events of her journey had taught her it was to be cautious, and to approach with care and reserve. On that fateful day, however, Sioux circled overhead checking for hazards and predators before lighting on a nearby dead tree. Then, after careful examination, and with all known threats assessed, she presumed the dead rabbits were safe for the taking. With that fateful decision a cascade of physiological events began to compound. Un-

fortunately, Sioux's death would become a slow and confusing journey home. Her fate had been sealed by the careless actions of human hunters who, unlike her, killed for entertainment rather than survival. They did not consume the rabbits they killed; rather, they piled them up and left them in the field as a testament to their prowess and short-sightedness.

What Sioux didn't know and couldn't know was that the toxic residue of spent ammunition cloaked in the bodies of the dead rabbits had become the equivalent of ticking time-bombs. A fragment of lead the size of a grain of rice is toxic enough to kill 3 or 4 adult bald eagles. Sioux, one-fifth the size of an adult eagle, has consumed a lethal dose of lead in just one meal of discarded, target-shot rabbit. Game killed for entertainment and abandoned in the field by careless hunters is an heirloom of our apathy. According to estimates from the Humane Society, roughly 10 million to 20 million animals die from unintentional lead exposure each year.

Our continued use of lead munitions rather than non-lead alternatives, combined with a proclivity for using live game as targets, is quickly becoming a significant part of our disregard for nature and legendary human fallibility. Predators, scavengers and foragers alike are inadvertently placed in the crosshairs of our complacency. The shot that killed the rabbit will now also play its part in Sioux's demise. It may be illegal to shoot a bird of prey, but it's entirely acceptable to allow Sioux to die from the same bul-



let that killed the rabbit. Shot or not, culling or consuming, lead kills and hawks like Sioux aren't the only ones impacted.

Sioux's return north to the Missouri Breaks in Montana will be a relatively uneventful affair. The adventures that filled her journey south have informed her well. Sioux is capable and confident. Resolute in her pursuit of prey, she is proficient at taking everything within the scope of a red-tail diet. If not for the lead toxins in her system she would be perfectly fit and of sound mind.

But during her return journey north Sioux has started to lose her balance while perching and even in flight. The liver and kidney damage from the lead leaching into her system is causing added physiological malfunctions. Everything from difficulty breathing, to lethargy, to dehydration and weakness have become a part of her reality. In fact, while passing through Wyoming on her return flight

home, the opportunity for an easy meal of white-tailed jack rabbit cost her dearly. Clinging to life, as any animal would, the jack rabbit did not succumb easily to Sioux's predatory prowess. Sioux was too compromised to apply the quick death grip she had mastered earlier in her journey. Instead, the bounding jack dragged, kicked, and clawed its way through sage, rock and thorn to its inevitable end. While eventually successful in subduing the rabbit, her success came at a cost. Sioux's miscalculation and inability to quickly gain a terminal grip on her prey resulted in a bruised wing, broken tail feathers, and stymied confidence. For the duration of her journey, and now her life, Sioux can only pursue smaller prey. Bewildered by her deteriorating condition, Sioux is quickly succumbing to the life-threatening injuries imposed by the lead ingested two months earlier. Her promise, her life on this earth, is now defined by days rather than years. She will soon become a legacy of humankind's neglect,

an unfortunate statistic, another data point in the 70%.

WHITEOUTS AND WIPEOUTS

Exhausted from her journey home, Sioux has finally reached the Missouri Breaks. But rather than being filled with hope and promise as one might expect, she is confronted with the challenges of climate change and habitat loss—the final two nails in Sioux's coffin.

Sioux has gone three days without food. Normally this would not be a serious problem for an accomplished red-tail this time of year, but she is compromised. An unseasonable drop in temperatures and the resulting whiteout coalescing with lead poisoning and starvation are now quickly becoming the perfect storm. The snow has fallen steadily for the past twenty hours and the winds are stiff. Engulfing the landscape in a blanket of white, deep drifts cover the ground and smaller sage.

Temperatures drop to single digits each night and the wind chill reaches sub-zero. Sioux has tried several times to grab sage grouse, the only potential food still available. For a bird weakened by life in the Anthropocene, Sioux is out of her league. But she continues to try. It is all Sioux can do. Seriously drained of the energy she needs to sustain longer flights, Sioux has inadvertently tied herself to this place. She is trapped by the harsh realities of nature and the unintentional impacts of humankind. Earlier in the month there was still a healthy population of cottontail rabbits and jacks, a once-abundant food supply. But in the past weeks human hunters have all but wiped them out. With the cottontails and jacks mostly gone, the humans moved on, but Sioux could not. She stayed because this was her home, because she was too weak, because this was all she had left, and because there was always food—always. In her short lifetime this place had brought nothing but joy, nothing but success.

Sioux sits atop her favorite roosting tree, feathers ruffled by the wind, vision blurred by the snow, and all she can do is wait. All she can do is hope. With the gradual passing of time she is getting weaker, more desperate and depleted. The icy grip of an unseasonably cold storm has changed everything. For Sioux, that grip gets tighter with the passing of each hour. The cottontails are gone and the mice and voles are now tucked in tunnels safely beneath a crust of freshly fallen snow. Nothing moves across this landscape now. Everything is

braced for survival. The anguish of hunger is unbearable. As the sun drops to the horizon Sioux does not realize that this will be her last night. This will be her last sunset, something Mother Nature has known for some time.

As the sun drops below the horizon the temperatures plummet. This will be Sioux's coldest night yet. The frost from Sioux's breath covers her face in a mask of white. She shivers in uncontrollable spasms waiting for the break she needs. It does not come.

All that remains of hope rests in the rising sun and the chance that a new day will give her one more opportunity to catch the game she so desperately needs to survive. The snow now covers her. Sioux is too weak to rouse and nearly comatose. She is drifting quietly and anonymously toward death. One foot tucked up under her breast-feathers for warmth and the other gripping her favorite branch, a branch her talons had graced from the day she left the nest. This tree, this perch, always gave her security. From this branch she could see her world and all that lay before her. This had been a good place for her until now. The shivering stopped, her head nestled beneath feathers, Sioux takes her last shallow breath before falling with a splay of wings and a soft, dull, thud in the drift of snow piled beneath her tree. A brief splash of white, her beautifully feathered body now entombed in her final icy resting place, Sioux will grace the skies no more.

When the snows eventually melt and the ground thaws, a

few young boys, the same ones who depleted Sioux's hunting grounds of rabbits, will come to the base of her favorite tree in pursuit of a lone surviving cottontail. In their search for the rabbit they will uncover what remains of Sioux. To them she will be just another hawk, a bird none of them had known, a bird none of them would have recognized as a distinct individual whose fate was intertwined with their own. They will, perhaps, pull a few feathers from her decaying body as souvenirs, never once stopping to consider her plight, nor their hand in it.

TODAY

Each of these musings, while fictional in nature, represent the realities that birds of prey now face. Life for raptors like Sioux is often a daily struggle for survival. Our human advancement and expansion across the globe has complicated the lives of wild things. Progress unquestioned becomes a double-edged sword. The blade that cuts the path of our own future while cutting off the paths of others is really no future at all, but an ill-conceived fate of a different name. Changing climates, lead poisoning, collision, electrocution, careless hunting practices, loss of habitat and starvation are just a few of the burdens promulgated by our existence. I often wonder what Sioux's fate might have been had she not flown from my fist. Would she have become a statistic, one of those 70% who fail life's test in their first year of life?

Falconry has provided me with a unique window through which

to consider conservation in a way that would not otherwise have been possible. It has also given Sioux the additional time and experience needed to improve her survival in a hostile world.

My relationship with Sioux not only helps me understand more clearly what is at stake, but it reminds me on a daily basis of my responsibility to safeguard her future, and, in so doing, my own. Conservation is a conversation I have with myself and others every day. It's never a fight that is over. Through falconry, Sioux's presence in my life has made that conversation more poignant and the fight more relevant.

My only lament in our falconry relationship is that I could not convey to her the dangers posed by life in the Anthropocene. What I know however, is that falconry has given Sioux a chance to perfect her hunting skills without the looming presence of death. This, combined with the repetitive hunting opportunities provided in the falconry equation, has allowed Sioux to reach her full potential as an accomplished aerial huntress.

For any wild thing, riskier behavior is often the tangible manifestation of hunger. The more ravenous an animal becomes, the more likely it is to risk life and limb to silence the voice of starvation. I believe fal-

conry has given Sioux the opportunity to develop the skills necessary to assuage the impact hunger plays in the trajectory of her life. I know for a fact Sioux is now capable of procuring everything available in a red-tail hawk's diet. Falconry has been instrumental in making that reality possible.

Until the spring of 2021, when I will release Sioux, we will have a bit more time together, time to perfect our skills, time to learn from one another, and always time to fly. And so we continue. Sioux, my red-tail hawk of 4 years, stoops and rises from the sage. The chase begins. The jack evades her first advance but she has enough momentum to get the height needed, wing over, and make another run. This time she hits hard. Silence. I run toward the cloud of dust and tangles of greasewood just in time to see the jack rabbit hightailing it to safety and Sioux thrashing a tuft of fur in frustration. In their first year of life, roughly 70% of all raptors succumb to Mother Nature's trials and our own human intrusions. I have come to see falconry as a second chance, a chance for birds like Sioux to better perfect the skills needed to survive. It is also a chance for falconers to consider the role they play in conserving both predator and prey as well as the healthy ecosystems and habitats upon which we all depend.





EARLY TRAINING FOR YOUNG ACCIPITERS

TEXT & ILLUSTRATIONS BY NICOLE PERRETTA

One of the challenges of raising an eyas Accipiter is how to work with it during the brancher stage. The young hawk is not fully flighted, nor conditioned enough to catch wild game, and its weight can not be lowered due to growing feathers. They do best if trained in the field on a daily basis beginning at the brancher stage, as this is a crucial stage in their early development. This is a method I use to train a young hawk until they are physically and mentally developed enough to pursue wild quarry.

Quarry Lure and Anti-Carrying

You'll first start by training the eyas to eat off a quarry lure or a frozen carcass of the type of game you will be hunting. It can be a frozen bird or rabbit, or a lifelike lure. It is helpful if this lure is rather large so the hawk can not hold it in one foot or cover it with its entire body. Begin introduction of the quarry lure by feeding the eyas off of it at home a few days in a row before introducing it in the field. The

developmental stage where the eyas is feathered, but not yet comfortable perching, is a perfect time to introduce this lure.

To begin field training, the brancher needs to be able to ride the glove without faltering, and has been conditioned to be transported in a hawk box (Giant Hood). Even if one plans on hood training the hawk, teaching them to transport in a box during early development is ideal. It is not uncommon for a young Accipiter to refuse the hood, and having a back up transport plan is paramount.



Fear-based habits like box banging, are often caused by not conditioning the eyas to the box early enough.

The first field lesson for a young Accipiter is training it to leave your glove for their food. To begin, hide the lure or frozen carcass behind a bush or tussock of grass. Then pick up bird from the transport box, and walk slowly towards the hidden lure and happen upon it. Lower the glove so the hawk can see it and allow it to hop down onto it. At first, you will want to garnish the lure with a small piece of meat, or a pile of tidbits. If left ungarnished at this ear-



ly stage, the bird may not understand what to do. Tying a small piece of meat and having them drop down on to it, will quickly teach them the value of the quarry lure. After a few weeks of training, the lure can be ungarnished.

In the beginning, the quarry lure should be tethered to a short weighted line. This will establish anti-carrying conditioning. The eyas will learn that nothing in their feet can be carried. It is common for a young eyas to become possessive of the quarry lure, especially when it has food tied to it. In the early stages, you are pretty much standing over the quarry lure, or merely just a few feet away when they first see it. Although you will want to back up a bit after the hawk leaves the glove, they will feel possessive since you were so close to the quarry lure to begin with. This may cause the bird to want to drag it under a bush. Having the lure short tied to a heavy weight will prevent the habit of carrying to develop.

After a few days of dropping down onto, or flying a few feet to the quarry lure, you'll want to create more distance. Start by placing the lure farther away by 1 to 5 foot daily increments, depending on the bird's

willingness. Once the bird is leaving the glove, and flying or running 20 feet towards the quarry lure, it is time to make the quarry lure start to move away from you. Accipiters do not notice stationary quarry very well at a distance. Even a rabbit or quail hidden only 30 feet away in a bush can escape notice by an accipiter. They are stimulated by movement. So when using an unmoving object like a quarry lure or frozen carcass, we must make it move if the bird is going to notice it at any distance. Because of this, if a stationary quarry lure is placed too far away, the bird may not see it. When this happens, one has to walk towards the lure for the bird to notice it, thus losing the distance progression you are trying to accomplish. For this reason, when wanting the bird to fly any good distance towards the quarry lure, it is time to implement a lure pulley, a.k.a, drag lure.

Pursuit Training

To make the lure move, you'll want to set up the quarry lure on a pulley. When the line is pulled, the lure moves away from you and the hawk. Many things will work as a pulley anchor, like a large post, stake, or an eye bolt. At one end of the pulley line attach a hand weight so the bird can not drag the lure away. At the other end of the line, tie a clip or carabiner so the lure can be quickly detached from the pulley line when it is time to bag it.



When setting up the pursuit lure, start by placing the frozen carcass/quarry lure about 10 feet from the stake, hidden behind a bush or tuft of grass. Carefully dole out more line and continue walking backwards so you are at least 20 feet away from the hidden lure. Make sure the line is taut. Then, set the weight on the ground. Next, get the bird from the vehicle, and slowly walk to the training area. Pick up the weight from the ground with your free hand,

and pull the line gently. The lure will suddenly appear from cover and creep towards the pulley. The bird should immediately leave the glove to fly after it. Then, gently pull the line or walk backwards, so that the lure is slowly pulled to the anchor, just as your bird grabs it. Next, reel in any slack in the line onto the weight, so the lure line has no give whatsoever, and the lure is held fast to the pulley anchor. The weight on the lure line prevents the hawk from being able to drag the quarry lure, and reinforces anti-carrying. This also makes training to transfer easier as the bird has no choice to let go of the quarry lure in order to have the transfer item.

The distance from the lure can be increased every day as the bird develops and grows stronger. You can start with 5 to 10 feet daily increments. You can also increase the distance the lure is placed from the pulley anchor. This will allow the bird to chase the lure longer before capture. The maximum distance to be achieved will be determined by how much line you can manage. Once anti-carrying is established, a lure machine, drill motor, or other motorized reeling device can be implemented as an advanced stage to manage long lines easier. A remote controlled lure machine is my preference as it presents the most natural type of "flushes" of a ground quarry lure, with minimal falconer involvement. Over time a bird will be wise to hand pulling of the line and will anticipate the lure. A lure machine will make managing distances easier, and allow for faster lure speeds that are beneficial to the conditioning of a young Accipiter. With the right field and the aide of a lure machine, you can create long distance, and fast chases to further the bird's conditioning. If one is going to be pursuing flighted quarry only, a lure machine is not necessary. Once they can pursue the lure pulley at a 100 feet, and transfer training has been established, it is time to cease ground lure chasing, and start launching flighted birds. Flighted bird training is a process that involves additional anti-carrying and endurance conditioning that I can address in another article in the future.

Transfer training

Accipiters can become possessive when they are on a kill or have large amounts of food in their feet. This possessive state of mind may encourage heavy mantling and aggression in a young hawk. For this reason, the hawk is better behaved when

transferred off of quarry vs. feeding up on the kill. It is easier to begin transfer training using a non live quarry lure or frozen carcass. A non-live lure is easier to condition the hawk to transfer off of because it does not encourage the footing response. A warm, wiggling live animal or bird is a difficult thing to give up for a young hawk. Because of this, you first want to establish a habit of transferring the hawk from a prey item that is not alive. A lifelike lure or frozen quarry that is impossible for them to break into, makes the transfer item you offer that much more desirable. Through repetition, they will become so accustomed to transferring from the non-live lure, that once quarry is taken in the future, they will transfer easily. I incorporate transfer training congruently with quarry lure introduction and lure pulley conditioning.

The method that has proven to work very well, is a multiple transfer technique, I call "Piece Mealing". The premise is, the smaller amount of food they have at any one time, and the more engaged they are in working towards multiple small meals, the more behaved they will be. The idea is to spread out their entire session's ration over a series of transfers. There are 5 stages of transfers to this method. These transfers move in a progressive line that starts with the bird flying towards a quarry lure, and has them transferring multiple times back towards the direction of the parked vehicle and to their box. You essentially create a "breadcrumb" trail of transfers to get the bird working back towards the vehicle. Each transfer is done in a way where then falconer keeps their distance from the feeding bird. This creates trust and develops pristine manners.

Step 1. Quarry Lure

Transfer training begins on the very first day you present the quarry lure in the field. The eyas has just dropped down upon the lure and is eating the small amount of food tied to it. First, let the bird finish eating while you stand at a distance. Step back or walk away, and be no closer to the bird than 10 feet. Standing too close while they have something clenched in their feet will make them more possessive. You want to give them their space to calm down from a distance. Keep, an eye on them, yet do not stare at them directly. It is better look at the ground and watch them peripherally. It is normal at this stage for them to mantle a little, or droop wings.

Step 2. Plate

Once the bird has finished eating, you will want to walk about 5 feet in front of the bird to set down your first transfer. This first transfer, is group of small tidbits on a flat plastic plate. This first transfer plate of tidbits contains ¼ of the bird's meal. The reason to use tidbits vs. a chunk of meat, is that tidbits stimulate them to eat. They are easy to pick up with their beak and they begin to eat quickly. Chunks of meat can cause possessiveness. Any amount of food they can hold in their feet, initiates a possessive response. It can become so powerful of a response, that the bird will mantle and get into a trance and refuse to eat at all, despite hunger or weight.



I have found that a golf disc, or soft plastic plate with a grouping of tidbits placed in it, is quite desirable as a means to transfer them off of quarry. The plate keeps the tidbits from getting dirty, and keeps the food from drying out in debris. I prefer the very first transfer item to be the disc/plate versus a leather lure, as it gives the bird an opportunity to eat quickly and lessens the desire to possess. Once a bird starts eating, it thinks less about possessing. Transferring directly from the quarry lure to a traditional leather call back lure, transfers the possessive mental state right along with it. A leather lure can be gripped, and instead of eating, they prefer to foot the lure and mantle. Offering a plate as the first transfer item, breaks the possessive mindset cycle.

The first times you try to transfer to the plate, the

bird will most likely try to carry the frozen carcass/quarry lure with them to the transfer plate. It is not uncommon for them to hold the quarry lure in one foot with leg extended behind them, while lunging toward the transfer plate. If they do that, in the beginning, the plate might need to be moved in closer so they are more enticed to let go of the lure to get both feet on the plate. Sometimes being just out of reach is more enticing. Of course too close and they can reach and eat without letting go of the lure, or they can have a hold of both, which needs to be avoided of course.

On a daily basis, you will want to place the plate farther away each time you transfer the bird off the quarry lure. Your goal will be to inch the plate away from the quarry lure a bit every day, so when you want to pick up the quarry lure to place it in your bag, the bird will be far enough away that it is less likely to want to fly back to it. During the early phase of this training, the plate is very close, and if they notice you pick up the quarry lure, they may react negatively. Because of this, you only have enough time to disguise it in the early stages of training. I do so by covering up the frozen carcass/quarry lure with a hand towel or other cloth. Covering the quarry lure/frozen carcass will prevent the bird from returning to it when it is finished eating off the plate. Increase the distance the plate is set away from the quarry lure in small increments, beginning at 1 foot a day for the first week, then moving 2-3 feet a day after that. The goal will be to be able to set down the plate 20 feet away from the quarry lure and have the bird leave it and run or fly over to the plate. Twenty feet is a respectable distance that will allow one time to detach the lure from the weighted line and bag it before the bird is finished eating the tidbits. Be mindful of days in where the bird may be in a bad mood, as picking up the quarry lure may cause aggression. Covering it up and walking away from the bird is your safest measure.

Step 3. Recall Lure

The next item in the transfer line-up is a standard leather call back lure. As soon as the bird is finished eating the tidbits on the plate, set down the leather call back lure that has a small chunk tied to it. The piece that is tied to it, should be small enough that it can not be grasped by the bird's foot. Baby birds usually do well the first week training when it is set 5



to 10 feet from the plate. This lure should also have a heavy weight attached at the end to prevent the bird from carrying it to the next transfer. This allows you to walk away and give the young hawk space to eat, without worrying about lure carrying. This makes ease of transferring to the next item easier, as the lure can not be dragged over to it. In the beginning stages, it is best to leave the plate on the ground and pick it up later. The lure is placed so close to the plate, it will cause lure possession issues if you crowd the bird to walk behind the bird to pick it up. Plates without food are rarely returned to.

This step is where you will combine transferring with recall training. Every day, set the leather lure further away from the bird, and work back towards the parked vehicle. Like standard recall training, give an audible cue when you set down the lure. Increase this distance slowly by 1 foot a day for a young bird not able to sustain flight. Once the bird is flying, the increments can be further, 5 feet or so a day. The goal will be to have the bird leave the plate and fly at least 100 feet to the lure.

Step 4. Transfer Plate # 2

The next step is to transfer the bird off the leather lure and onto another plate that you have stored in your game bag. Set down a plate with a spread of



tidbits in front of the bird when it has just finished feeding off the call back lure. At first place the plate about a foot or two away. The bird may try to drag the lure to the plate, but the heavy weight will prevent it from doing so. At first the bird may be reluctant to let go of the lure, but eventually it will leave it go eat off the plate. In the beginning, the plate will be too close to pick up the lure without the bird becoming possessive. You may for the first days, have to walk away and pick up the first plate, put some tidbits on it, and set it down a few feet in front of the bird, soon as it is finished with eating off the second plate. This will buy you space to pick up the lure without the bird doubling back. Once the bird is leaving the lure for the second plate at a distance of 20 feet, you should be safe to just walk around the bird and stealthily unclip the lure from the weight and bag it.

Step 5. Perch and pick up

The next step is getting the young hawk to hop up to a portable perch. Most young accipiters do not want to be picked up off the ground. They especially do not like to be scooped up. Chasing or forcing a young Accipiter on the glove can cause permanent fear of the glove or falconer. They are still pretty wobbly at the brancher stage and are not capable of a steady hop. During this stage, it is best to have an intermediary step.

A hawk's instinct is to fly off or go hide in a tree or bush after they eat, so you want to get them into the habit of hopping up to something near the ground after a meal. You will want to bring a portable perch in the field for the first few weeks of training. Set up the lure pulley and portable perch in the training arena before each session. Each transfer will slowly coax the bird to the perch and vehicle. After the last transfer plate, the bird should be within 5 feet of the perch. When the bird finishes the last tidbit on the plate, place a tidbit on the perch and cue the bird by tapping the perch. The bird should then hop to the perch for the tidbit. The bird may then feak or rouse. Once the bird is relaxed, it can be gently coaxed onto the glove.

During initial transfer training, it is easier if the young hawk is on a creance. What the creance does is allow the bird to calm down and relax on the



perch before you pick it up. It also allows the bird to be kept as heavy as possible to keep behaviors smooth until a steady routine is established. An eyas that is sharp will not be tolerant of any sort of transfer training. A very plump eyas may however decide to fly off and feak in a tree after eating. Without a creance, the bird might take off with a crop. Clipping the a young hawk up while it is still eating can cause negative behaviors. Harsh mantling that causes feather breakage, and footing being the most common. With the creance, one can allow the bird time to switch gears from eating to relaxing without being nervous about potential loss.

For late taken eyases or those that have developed an adversity to the glove, you may need to place a small tidbit on the glove in order to pick them up off the perch. A small tidbit that is offered after the bird has consumed a good amount of food already should have no negative outcome, especially for a nervous bird.

Pick up from Ground

Once the bird is well past hard penning, is flying strongly to the lure quarry lure, transfers well, and is hopping or stepping up from the perch to the

glove, it is time to eliminate bringing the perch into the training area. Transitioning from hopping or stepping up from the ground to the glove can have varying levels of ease or difficulty. If the bird is not fearful at all, they can make the transition easily.

So when you feel they are ready, it is time to eliminate bringing the perch into the field. So, once they are finished with the final transfer meal on the plate, kneel or sit down beside them. Hold the glove up in front of them at the same level as the perch would be, and place a tidbit on the glove. The bird should hop up if it has a good appetite. A nervous or heavy bird may need your patience. Sometimes, one has to sit with the gloved hand resting just above the ground for long periods of time the first day or two the perch is removed. Make sure you and the bird have shade or cloud cover, and time to spare. If the bird refuses the glove, the bird may not be hungry enough to hop up to the glove and you may need to place the perch back in the field for several sessions more until appetite can be adjusted.



Putting a tidbit on the glove has to be done when the bird is not in a hunger frenzied state of mind. You will know the bird will be ok with putting a tidbit on the glove when it is eating all the transfers without mantling. If the bird is mantling badly, then you will want to wait until it is at a higher weight (or at higher blood sugar levels), before placing a tidbit on the glove. Some falconers may be nervous about placing any amount of food on the glove for an eyas accipiter. You will know it is ok if the bird is in a non-possessive, calm state. When they are calm

and satiated from a good meal, a small tidbit on the glove at the end of training should not cause any negative behavioral issues.

Once you have the bird on the glove, it is time to clip it up. You'll want to have the bird safety secured for the walk back to the vehicle. I use a stretch of parachute cord that is attached to my game bag with a carabiner at the end to clip birds up. This way the bird has plenty of slack to hop into the box with.

Returning to the Vehicle

Technically, returning to the vehicle is step 6 in the transfer segment, as it involves placing a tidbit on the box perch. Although it seems simple, returning to the vehicle is something that needs to be conditioned. A young Accipiter can learn to resent the



glove and the falconer after it eats, if it sees no benefit from being picked up and carried back to the vehicle. The bird by nature, just wants to fly off and sit in a tree with its foot up after eating. If they feel you are a hindrance in that desire, they will grow resentful and even fearful of you. Accipiters not conditioned to return to the vehicle can develop a habit of baiting off the glove on the way back to the vehicle. Often a tiring is used to get the bird to ride calmly back to the vehicle. Although it does work, it also makes the bird develop harsh mantling over the glove and in some species, sticky footedness on the glove. To be able to walk the bird calmly back to the vehicle, without food on the glove, you want to trick the bird into thinking that the training session is not over yet. You want to instill in them that after the hunt, there is one more place to go to get more food, and stepping up from the perch (and eventually from the ground), and riding on your glove towards the vehicle, is the key to getting there. Placing a tidbit in the box makes the bird look forward to riding on the glove back to the vehicle.

Accomplishing this mindset begins with early conditioning. The perfect training area is one where the vehicle can be parked closely, so during early training, it is within 30 feet of the training area. A brancher aged eyas has not learned patience yet, so the training area must be close to the vehicle. This keeps the bird engaged after the last transfer, and eager for the final stage.

Once you have the bird on the glove, smoothly walk back to the vehicle. In the beginning, leave the hatch or tailgate open so the act of opening up the vehicle does not spook the bird. Hold the bird in a manner it can not see the box well, and sneak a tidbit inside onto the box perch. Next, open the box door wide, and move your gloved hand so the bird sees the tidbit and hops in the box for it. Once the tidbit has eaten, slowly close the door and the session is over.

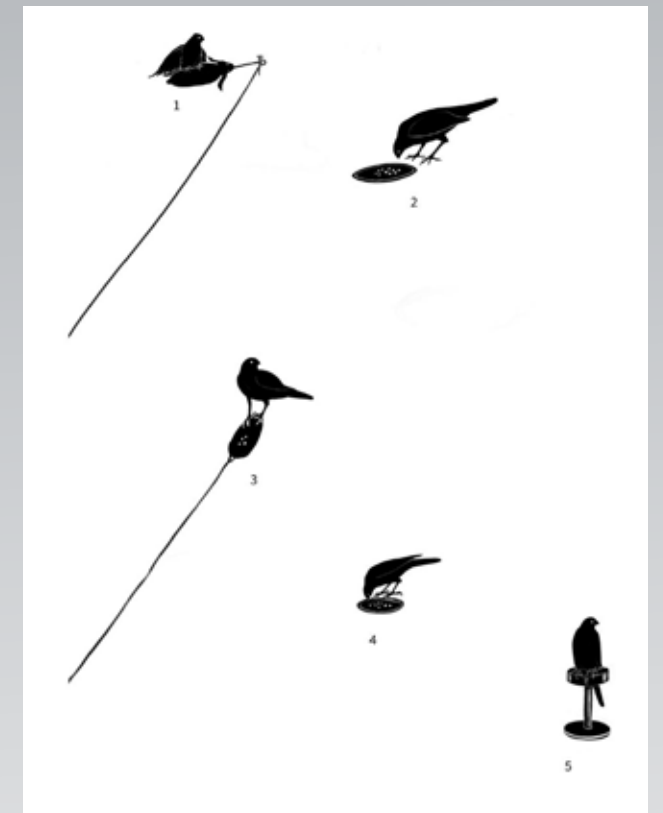
If the box's perch is closer towards the front, and your bird's tail is too long for the door to shut, you will need to wait until the bird turns around before closing the box door. Some birds refuse to turn around, and the tail will not allow the box to close, so in this case an additional step needs to be added. You will want to place a tidbit in the back of the box, as well as the perch. That way, they will first hop to

the perch for the first tidbit, then will hop to the back of the box for the second (AstroTurf lining is preferable if you feed in the back of the box). While the bird is eating on the box floor with back turned, sneak another tidbit onto the perch. Even if they do not hop up to the perch to eat the last tidbit, they are now facing correct direction. You can slowly close the door, allowing a crack of light, and the bird should hop to the perch. As soon as a bird is settled on the perch in the box, I gently mist the bird with a squirt bottle before closing the door. This gives them hydration after a summer workout, and keeps them calm for the ride home. It may also signify a closure to the training session in their minds.

If the bird shows fear of jumping into the box, you may need to add a small group of tidbits onto the perch. Give a little less food at each transfer, so you have more left over to add to the final step. Some late taken eyases may need more food motivation to return to the box. Also be mindful of noise and vibration when you close up your vehicle, as slamming of doors can cause them to spook. You want being in the box to always be a positive experience for them.

Conclusion

This method is a first step to training a young eyas accipiter. I train eyases with it during the entirety of their first summer so they can mentally mature before dropping weight. Once the bird begins hunting wild game regularly, it is less important to take so many steps in transferring. You can develop your own transfer routine once the young hawk is taking wild game. This method can also work to smooth out aggressive behaviors in an older bird. There are a lot of nuisances to training an eyas Accipiter such as reading body language, managing weight, metabolism, blood sugar, flighted quarry training, and entering on wild game, that can not be addressed at this time. Hopefully this article can help point the new Austringer on the right path to starting a properly conditioned eyas. Seeking the help of experienced Austringers is paramount to being successful at hunting with an Accipiter. I encourage anyone wanting to fly one for the first time to find knowledgeable people to learn from.



Trapping PASSAGE PEREGRINES

in the Mississippi Alluvial Valley

BY HEATH GARNER

Trapping peregrine falcons for the past 10 years in the Mississippi Alluvial Valley has provided new insights about where they can be found and how to trap them. Decades of research at nest sites and along their migratory corridors of the east coast, Assateague Island, and South Padre Island have provided some applicable insights, but provided little information on how to find these nomadic birds during their migration through the heartland of the United States. This article is not intended to be a scientific, peer-reviewed paper, but rather a culmination of anecdotal information collected by Chris Price, Greg Seaton, Steele Clemons, and myself. This cumulative effort has led to a search image, or formula, that has led to trapping success for falconers in Arkansas, Tennessee, and now Louisiana since peregrine falcons were opened to take in 2009.

Historic Efforts

Books and articles addressing peregrine trapping through the years involved either laying on beaches, driving on beaches and throwing harnessed pigeons, or ridge-trapping on migratory bottlenecks around the great lakes or northeastern U.S. By 2009, peregrines had made a come-back with increasing incidental numbers reported on utility poles and dead tree snags by birders and falconers alike. So, we

basically started out like trapping red-tailed hawks or Cooper's hawks with bal-chatri traps, driving the roads with harnessed pigeons loaded and ready to throw for pole- or tree-sitting peregrines. After driving several thousand miles around the "natural state" and never throwing a pigeon for a peregrine the first year, we had to rethink our approach. Several tips by birders with questionable

identification skills led us to merlins and kestrels, however some positive IDs started becoming consistent on where these birds were spotted. One common location throughout the years was the U.S. Fish and Wildlife Service (USFWS) Bald Knob Wildlife Refuge (NWR). While this property has what most would expect from a southern NWR (natural swamps and woodlands), it is really dominated by

row-crop agricultural activities including soybean and rice production. The caveat being that all of this crop is either not harvested or is manipulated after harvest to promote habitat for migratory shorebirds and waterfowl.

While these consistent sightings were tempting to pursue, raptor trapping has not been allowed on this



NWR. However, the conditions there and the consistent presence of migratory peregrines provided our first true insight on finding peregrines in the MAV.

During 2010, a former employee and colleague of mine started sending me photos of peregrines on his family farm irrigation reservoir in southeast Arkansas (a large 600+ acre reservoir) that had mostly dried up that summer due to drought. This created perfect conditions to support massive numbers of teal, wading birds, and shorebirds; the prey base for migrating peregrines. Chris Price and I spent the better part of the last two weeks of the season trying to trap there using thrown pigeons and bownet-blind sets. After sighting over 35 falcons there during those efforts, our learning curve was still sharp, and we were unsuccessful. Storms, changing water and muddy con-

ditions, combined with surrounding woody cover and inaccessible farmland proved to be limitations we couldn't overcome before the passage peregrine season ended that year. It did, however, give us additional information and data to support a formula brewing in our minds after two years of effort.

Passage peregrine season in 2011 would teach us additional lessons in peregrine migration through the MAV. The Mississippi River had breached several levee locations along the southern MAV during the summer months, with a lot of the eastern region of the MAV holding water that typically was dry during the early fall season. With the number of peregrines spotted in the southeastern part of the state, not too far from the Mississippi River, we were convinced these birds were primarily following the river system

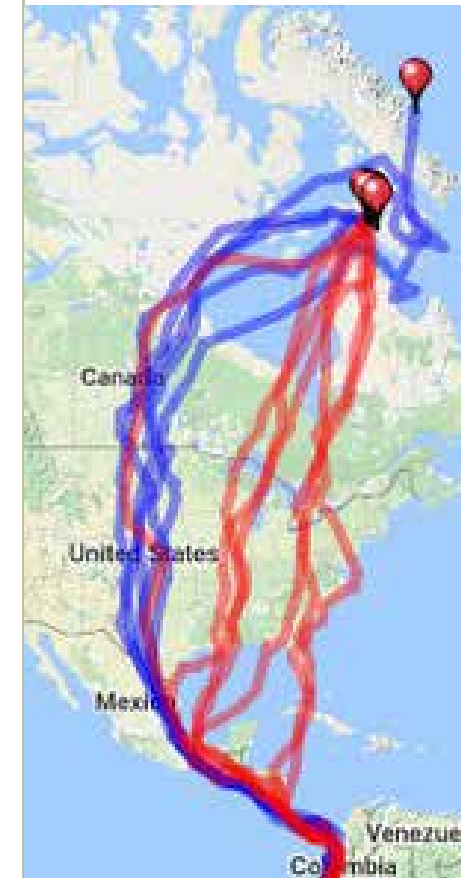
towards the Gulf of Mexico. We found some farmland that had flooded that summer just inland from a large sandbar on the Mississippi River about 45 miles north of our peregrine trapping location the previous year. We knew that shorebirds and early migratory waterfowl were the key components that produced the number of peregrines observed the year before. We also knew that if these mudflat/shoreline conditions existed along the river, there must be shorebirds and subsequently peregrine falcons. After spending the first two weeks of the season on this site (sometimes setting up camp for multiple day trapping efforts) we decided on one thing; we were wrong. No shorebirds (except for a few killdeer) showed up and only one merlin had been spotted the first day we set up the trapping station. About that time of disgust and acknowledged defeat.



We learned of another spot that birders had repeatedly reported peregrines about 20 miles west-northwest of Memphis. Benwood Lake had been converted to agriculture years ago. But, because of the Mississippi River flooding event earlier that year, it had re-filled during the summer months and was drying up; creating a large 120+ acre mud flat. The late Jeff Wilson (a notorious birder from the Memphis, TN area) had been watching rare shorebirds, wading birds, and waterfowl feeding on the food produced by the mudflat all season along with the eagles and falcons attracted by them. We again relocated the bownet trapping station and focused our efforts there for the remaining two weeks of the trapping season. Several peregrines made fly-by attempts at our lure pigeon but we were once again unsuccessful in getting a committed passage bird into the trap.

The shorebird formula was hard-drilled into our minds during the 2012 passage peregrine season. The consistent predictor of occurrence was concentrated foraging areas (i.e. shorebirds). During that year, I went up in a former apprentice's airplane with him searching for shallow water, or flooded agricultural mudflats in the northeast Arkansas area. We marked several from the air using GPS which had waterfowl and shorebirds present and I revisited those locations on the ground in following days. One spot was located only 10 minutes from my house, so I checked it first. JACKPOT, a harvested rice field that had the stubble burned and rolled/flattened, and subsequently flooded (via irrigation well) to provide blue-winged teal

hunting opportunities (which coincides with the first week of passage peregrine season in Arkansas). Rice fields tend to provide better conditions due to their prolonged irrigation/inundation during the summer growing season that promote macro-invertebrates to attract shorebirds.



A couple hundred teal were present, along with thousands of migrating least sandpipers, pectoral sandpipers, lesser and greater yellow-legs, long-billed dowitchers, and killdeer. While glassing all of the bird life on the 25th of September, a passage peregrine made its appearance and sent every bird on the ground into a panicking murmuration. On-going harvest activities on adjacent fields, constant traffic of associated equipment, and target field saturated conditions prohibited

setting a bownet and blind system.

Concurrently, Greg Seaton had applied our shorebird and mudflat habitat formula to commercial fish farms (prevalent throughout the lower MAV). Fall drawdowns of ponds in preparation for winter and maintenance create conditions conducive to supporting thousands of shorebirds. The larger the operation, the more shorebirds are supported. Fish farm sites both provided both dry areas (levees and dirt roadways) and firm-enough mud pond bottoms for setting bownet traps and blinds. So, Greg was blind trapping and I was "beach trapping" by throwing harnessed pigeons from a moving truck on perimeter farm roads into the manipulated rice field as peregrines presented themselves. On September 27, 2012 I caught the first peregrine falcon in Arkansas with a thrown harnessed pigeon on this site. A few hours later (after I had called and reported the capture to our state falconry coordinator), Greg captured another peregrine on the fish farm mud flat. Unfortunately, we only had one "tag" for the state that year and I had filled it. However, Greg continued to try and trap migrating merlins (also found to key in on these shorebird concentration habitats) throughout the season with multiple peregrines making attempts on his bait pigeons and starlings before the migratory season ended.

It took three years, but we had finally figured it out.....at least the basics. Subsequent years of trapping using bownet systems and blinds continued to yield positive results in Arkansas with



peregrines captured annually on fish farms, drained reservoirs, and agricultural fields every year every year but 2016 including the first in Louisiana in 2019).

Influences of Weather on Migration and Timing

Keep in mind the previous and following observations are anecdotal and not based on statistical analysis or data sets. However, success trapping peregrines in the MAV has varied annually, along with numbers of peregrines observed at trapping sites. While trying to figure this out is like deciphering the chaos theory, some key indicators seem to have had consistent influence on success. These include local weather patterns, and overall North American weather systems during the migratory season. Obviously, repro-

ductive rates and nesting success also influence numbers of peregrines migrating in any flyway, but this factor is purposely not addressed in this article because those numbers themselves are highly variable within the peregrine nesting range.

It is well known that migratory birds, including raptors, utilize frontal boundaries for a migratory boost. These fronts can be weak, not extending below St. Louis, Missouri, or strong "Alberta Clippers" with cold air masses generating in central Canada and dropping all the way to the Gulf of Mexico. The latter are usually associated with changing jet stream patterns during the fall of the year. Peregrines will migrate when their food source is depleted, regardless of weather patterns; they are following the food south. However, infrequent cold fronts tend to slow that migratory push, as well as spread out the movement across the Central, Mississippi, and Atlantic Flyways. Conversely, if these fronts are within 3-5 days of each other, peregrines are "funneled" south between the pre- and post-frontal boundaries.

Another strong factor influencing migratory chronology (timing) through the MAV is east coast hurricanes. Hurricanes forming in mid-late September southeast of Florida and moving along the Atlantic coast towards the north seem to divert more northeastern peregrines through the eastern Great Lakes and down the Mississippi Flyway instead of the Atlantic. This was evident between years when "Island Girl", a wild peregrine outfitted with

a long-term GPS transmitter by Southern Cross Peregrine Project from 2009-2015 migrated down the Mississippi Flyway and when she did not. In years with Atlantic hurricanes, Island Girl made her way to Arkansas, along with high numbers of passage peregrines. Some of those years, strong cold fronts in the central U.S. bringing strong storms along with them, coincided with Atlantic hurricanes, pushing Island Girl (and likely other peregrines) all the way over and around to the Central Flyway. During years with no Atlantic storms, Island Girl made her way down the Atlantic Flyway. Coincidentally, we noticed low numbers of peregrine observations during the trapping season when she did not utilize the Mississippi Flyway.

Timing of peregrine falcon observations at trap sites was also affected by geographic location and frequency of frontal systems and storms across North America. During "normal" years, with Atlantic hurricanes and upper Midwest low pressure systems, the peak numbers of passage peregrine observations and capture rates is September 27-October 5 in the lower MAV. Over 90% of passage peregrines trapped in Arkansas have been between these dates. However, during years of low frontal frequency, lack of Atlantic hurricanes, and frequent storms in the Great Lakes region, the peregrine movement south seems delayed with peaks shifting 5 to 10 days into October. Additionally, peregrine observations were lower in those years, indicating higher dispersal during migration across the Atlantic and Central flyways.

Trap Sets and Locations

Our lessons learned on good shorebird habitat with problematic trap presentations in 2010, combined with successful blind and bownet sets with multiple peregrine attempts and captures since 2012, provided some beneficial data on what conditions to look for on sites that did provide shorebird habitat (and actual shorebirds utilizing that habitat). Peregrines have now been trapped within the MAV on pseudo mudflats created by large commercial fish farming operations and on row-crop agricultural areas manipulated to create similar, shallow water habitats.

Trap sets within the "bowl" of fish farm ponds seemed to yield similar observation numbers and trap passes compared to trap sets on fish farm levee roads or manipulated agricultural fields. However, trap commitment has not seemed as consistent with levee/road sets compared to agri fields and within the fishpond bottom itself. This is apparently due to the concentration and shear number of shorebirds concentrated in these open water areas. Peregrines

making passes at levee sets would repeatedly shift attention back to flocks of shorebirds panicking at their presence. Conversely, sets with the lure pole and pigeon (or starling) in/on the pond/mudflat as close to the water's edge as possible tended to gain and keep the attention of peregrines making first attempts at shorebirds.

Consistent shorebird habitat management is non-existent within most parts of the MAV. Agricultural crop rotations within the region between soybeans and rice on areas that provide wintering waterfowl habitat vary annually. A manipulated agricultural field (primarily rice fields) that produced shorebirds and peregrines last year will rarely present the same conditions in the following year. Similarly, commercial fish farms do not necessarily draw down ponds every year, and if they are large enough to need to, it is rarely the same pond year to year. Additionally, annual rainfall varies within the 30 days of passage peregrine season and though fields or ponds may present perfect conditions the week before the season opens, they may be completely inundated due



to localized thunderstorms or widespread frontal systems the following week. These shifts in land use and management make searching for potential trapping locations an annual event. Early landowner outreach, attentiveness to crop harvest timelines, and back-up locations are all imperative to securing a good trapping location.

Similar to the annual variation in land use, natural mudflat habitats associated with immediate riverine floodplains (that have also produced peregrines throughout the past 10 years) also have variation based on rainfall and river elevations. Two such areas come to mind that are both associated with the Cache River system of northeast Arkansas. While these natural areas are much more aesthetic and typically support similar numbers of shorebirds and waterfowl, they are even more problematic due to their natural hydrologic cycles. There is no levee or road system associated with them for dry access and their lack of hydrologic control (flashboard risers, screwgates, levees themselves, etc.) make them highly volatile sites for long-term trap sets. These

sites can have even more dramatic water rises, resulting in not only too much water for shorebirds, but flooding to the point that your blind may be under water.

When searching for the right spot with optimum conditions, all of these factors should be taken into consideration: shorebird presence, control of water elevations, blind and lure pole placement. If all of these are addressed, you have some assurance that water elevations will be optimum for shorebirds throughout the season, attracting migrating peregrines and increasing your chances of trapping a passage peregrine falcon in the MAV. 

