Opening Video: Why we Hawkwatch? Josh Haas, compiler. Friday 8:30 am.

To launch the 50th anniversary conference, and in celebration of hawk migration sites everywhere, HMANA volunteer Josh Haas, and Program Director, Julie Brown, solicited entries and snippets of video from sites across the network that might answer the question why we hawkwatch? Or why is your site special? This fun and celebratory video showcasing HMANA's 50 years and many sites HMANA supports was compiled from entries sent from many sites across the continent. Don't miss it!

Plenary Address, Friday 9:30 am

Clay Sutton. Author. Cape May, New Jersey.

NORTHWEST WINDS: Shifting Winds: Winds of Change or Winds of Hope?

Clay Sutton will reflect upon his own 50 years of watching hawks, primarily at Cape May, New Jersey, but also at many of the key raptor watches throughout North America and beyond. He relates "What a long, strange trip it has been," and how in his wildest dreams he never expected to see, in his lifetime, the changes that he has witnessed. Many changes have been good and for the better, and some not so much. We have benefitted greatly from emerging resources and have been the benefactors of amazing advances in optics, information, and technology. We have all seen changes in the composition of raptor flights, and changes in the very expectations of what we may see. We have experienced significant shifts in the migration phenology and winter ranges of hawks. But what hasn't changed is the energy, dedication, and enthusiasm of those who annually staff their posts, climbing to mountain outcrops, urban overlooks, sandy beaches, and lighthouses at land's end to

monitor and celebrate the annual passage of birds of prey. Clay will conclude that the 21st Century may have brought great changes, but that shifting winds will never diminish the need, or our passion, for what we do.

Keynote Banquet Address, Saturday 8 pm:

Ernesto Ruelas Inzunza. Professor of Biology. Universidad Veracruzana, Veracruz, Mexico

Raptor Migration in the Neotropics: Three Decades of Discovery.

At the end of the 20th century, the map of raptor migration monitoring sites in the Americas was a large cluster of dots heavily concentrated in the northeastern United States and southeastern Canada. At that time, the network of watchsites in the Intermountain West was under development and its research outcomes—together with those of a handful of places on the West Coast—had just finished illustrating a continent-wide picture of raptor migration in North America. Towards the south, however, not much was known, as if migrants simply disappeared in a largely white map that included a good portion of their migration routes and the places where they spend the non-breeding season. Panama was the only well-known site where large aggregations of raptors could be tallied during intercontinental migrations. Some places, such as Veracruz and Tonalá in Mexico, the Pacific coast of Guatemala, several places in Costa Rica, and a few other localities had been recorded as of importance, but little to no hawkwatching had taken place there. In short, the Neotropics, the bird-rich biogeographic realm that roughly extends from the United States-Mexico border to the southern tip of Argentina, was largely unknown. Over the last three decades, Dr. Ruelas I. has witnessed the filling of the Neotropical raptor migration map and the development of a better understanding of migration ecology and conservation. In this presentation, he will tell the story of how raptors migrate in the Neotropics, how they use and rely on thermals for efficient flights, what species are involved in these migrations (from the massive flights of Broad-winged Hawks and Turkey Vultures to the little-known movements of Hook-billed Kites, Gray Hawks, and Common Black Hawks). He will review what we know today and the most intriguing unknowns (such as intra-tropical migrations), and threats to raptor conservation. Lastly, he will discuss the challenge and promise of developing a network of migration monitoring sites for the Neotropics—the gigantic task of launching, staffing, funding, and sustaining the much-needed cadre of Latin American hawk-watchers devoted to track and conserve one of the most spectacular animal migrations on earth.

Friday and Saturday Speaker ABSTRACTS for HMANA 50th Anniversary Conference (listed alphabetically)

Barber, David. Friday 3:30 pm. Movement Ecology of Turkey Vultures in North America. (Hawk Mountain, barber@hawkmountain.org).

Turkey Vultures are the most widespread vulture and the most abundant long-distance raptor migrant in the New World. Despite their abundance, the movement ecology of turkey vultures remains understudied. Hawk Mountain tagged its first turkey vulture with a satellite tag in 2003 in Pennsylvania. Since then, we've tagged 66 additional turkey vultures throughout their North American range. Turkey vultures vary widely in their migration strategies among populations, but they also share some commonalities. We'll discuss what we've learned about turkey vultures after following them the last two decades.

Brandes, David. Saturday 8 am. Winds of Change in the Northeast United States: Implications for Fall Migration Counts. (Lafayette University, brandesd@lafayette.edu)

It is indisputable that Earth's climate system is changing; however, local and regional shifts in weather that might impact hawk migration dynamics and migration counts are not well documented, and some studies have suggested a recent slowing of atmospheric circulation. Moreover, anecdotal observations at hawk watch sites indicate that weather patterns have changed in recent decades, possibly resulting in decreasing counts that have been observed at many sites in the region. In this presentation, I use hourly daytime data collected at FAA weather stations to investigate long-term trends in wind speed and direction in the northeast US region, including sites located around the Great Lakes, in the central Appalachians, and in New England. I show that there are indeed widespread decreases in mean surface wind speeds in the region, primarily through decreases in the frequency of higher wind conditions from the prevailing flow directions and increases in the frequency of lighter wind conditions, although this general pattern varies from site to site. I suggest that these changes mean that migrating hawks are less likely to be concentrated at low altitudes along leading lines and diversion lines. Changes in migratory behavior may also be occurring as temperatures increase and milder winter conditions become more prevalent in the region. Together these two mechanisms could explain some of the decreasing trends in migration counts observed in the region.

Domenech, Rob. Friday 2:45 pm. The Golden Eagle Highway: Tracking Eagles Captured Along Montana's Rocky Mountain Front. (Raptor View Research Institute,rob@raptorview.org)

The presentation will include a brief history of Raptor View's long-term Golden Eagle research (when it started and why), blood heavy metals analysis (i.e., blood-lead levels) in GOEA sampled in west-central Montana, a summary of wing-tag encounters, and an

overview of our satellite telemetry movements of Golden Eagles, with some individual stories of satellite-tracked individuals.

Etterson, Matt. Saturday 9:30 am. The History and Future of Raptor Migration Stations for monitoring environmental contaminants and impacts on Raptors. (US Environmental Protection Agency -Great Lakes, Etterson.Matthew@epa.gov) With L. Goodrich.

Use of organochlorine pesticides in North America rapidly increased following WWII, greatly impacting apex predators, especially raptor populations. Researchers and hawk counters at the relatively few migration stations operating then were among the first to hypothesize that these chemicals were harmful to raptors and other wildlife. Subsequent toxicity studies verified these hypotheses and lent support to efforts to ban DDT use in 1972. Other organochlorine bans followed, but not before some raptor populations were devastated. Since then, hawkwatching has grown in popularity and is now recognized as the most efficient way to monitor populations of these often-secretive species. Many hawkwatches also run banding stations, which have made many further valuable contributions to our understanding of environmental contaminants and their effects on birds. In this presentation I will briefly review the integral place for raptors and migration sites in studying environmental contaminants, highlighting with research on Hg and per- and poly-fluoralkyl substances (collectively PFAS). Special consideration will be given to reviewing recent, ongoing, and future work at Hawk Ridge.

Goodrich, Laurie. Friday 10:45 am. The First Hawkwatch: Hawk Mountain and HMANA's Roots. (Hawk Mountain, Pennsylvania, goodrich@hawkmountain.org)

The roots of HMANA can be traced to a Pennsylvania mountain named by hawk shooters as Hawk Mountain. In September 1934, Maurice Broun, a newly hired warden for Hawk Mountain, began recording the numbers of hawks migrating past Hawk Mountain daily along with weather conditions and other birds. His long-term notes or journal represent the first scientific hawk migration count conducted anywhere. These data were used for conservation advocacy and for scientific reports and publications including papers in The Auk. Data from Hawk Mountain changed the knowledge about raptors including documenting the eastern Golden Eagle population. Several HMANA founders trace their own roots in raptor migration study to this Pennsylvania site, e.g., Joe Taylor, Mike Harwood, and others. In this talk we will revisit how migration counts first were started, the early days of the first hawkwatch, and how data were first used to show population trends in raptors by Rachel Carson and others.

Kolbe, Steve Friday 4:15 pm. Using Common Nighthawk migration counts to monitor global population trends. (Univ. of Minn. Duluth, kolbe023@d.umn.edu).Coauthors: Gerald Niemi, Annie Bracey, Matthew Etterson, Alexis Grinde.

With average annual counts of ~18,000 individuals, the fall migration of Common Nighthawks (*Chordeiles minor*) along the north shore of Lake Superior is the largest known concentration of this species in the world. Migration counts of nighthawks have been conducted for three weeks each year from 2008-2024 in Duluth, Minnesota. This daily evening count has elucidated the weather variables that most often lead to large flights: lighter, westerly winds, and warmer temperatures, conditions not often associated with autumn migration. Results from this study also suggest that the addition of systematic nighthawk monitoring sites elsewhere in North America could greatly increase our ability to produce robust population trends for this charismatic and declining species. We hope this talk will inspire other hawkwatches to contribute to this effort by conducting Common Nighthawk migration counts of their own!

Niemi, Gerald. Friday 11:30 am. 52 Years and Counting: Hawk Ridge Raptor Research and Education. (Biology, U of MN-Duluth, gjniemi@gmail.com); Other Coauthors: Janelle Long and Janet Green.

Prior to 1940, Hawk Ridge was primarily known by local gunners who used the migrating raptors as target practice. The Duluth Bird Club, now Duluth Audubon Society, was instrumental in publicizing and working to stop the illegal shooting in the city. In 1972-73 activists from Duluth Audubon with Duluth City Planning staff and the Nature Conservancy established public ownership of the land. The Duluth City Council then approved a trust agreement for the land with Duluth Audubon. Informal counts of raptors had begun in 1951, but the official start of systematic counting and banding of raptors at Hawk Ridge was in 1972 with a naturalist program initiated in 1974. The Friends of Hawk Ridge, a subcommittee of Duluth Audubon, was established in 1979 and in 2004 the Hawk Ridge Bird Observatory was organized and currently manages the 365 acres as a public nature reserve on behalf of the City of Duluth. This review will highlight the initiation and growth of activities at Hawk Ridge over the past 75 years.

Oleyar, Dave and Hoffman, Steve. Friday 12:15 pm. Forty-five Years of Counting Migrating Raptors in Western North America: What Have We Learned?

Founder of HawkWatch International in 1986, Hoffman will chronicle efforts to develop an expansive raptor migration monitoring network throughout the western U.S. over the past 40+ years. These studies have yielded important scientific information about the species composition, timing, movement patterns, health and long-term trends of more than a dozen raptor species that migrate through western North America. En route from northern

breeding grounds (many originate in Alaska and northern Canada) to spend the non-breeding period in more southern climes (as far as south as Argentina!), these apex aerial predators serve as valuable indicators of largescale ecosystem health and change. Steve will summarize key findings from these extensive monitoring efforts, emphasizing the potential value of these long-term data sets for evaluating future climate change impacts on not only our majestic raptors, but also on overall ecosystem health and biodiversity.

Oleyar, Dave. Friday 2 pm. Assessing Population Status of North American Diurnal Raptors Using Migration and Winter Counts. (HawkWatch International, doleyar@hawkwatch.org). Coauthors: Laurie Goodrich, David Brandes, Julie Brown, Jason Sodergren, and Danielle Ethier.

Using spring and fall migration trend data from the Raptor Population Index analyses (n= 76 counts sites) paired with winter CBC trend data at the state and province level, we evaluate continental and regional patterns in trends of North American diurnal raptors over the last 30 years using indices to summarize trends from multiple count sites, or states and provinces. Long-term trends at the continental level show widespread declines in the number of American Kestrels, Northern Goshawks, and Rough-legged Hawks counted both during migration (1999-2019) and in the winter (1996-2019). Cooper's Hawk, Osprey, Red-tailed Hawk, and to a lesser extent Northern Harrier and Sharp-shinned Hawk, experienced declining migration counts but increasing winter counts over the last 30 years, indicating potential shifts in migratory behavior. Bald Eagles, Peregrine Falcons, Turkey Vultures, Black Vultures, and Merlin show increasing long-term migration and winter counts indicating growing populations at the continental scale. Recent trends (2009-2019) showed a reduced intensity in both migration and winter declines for counts of Northern Goshawk, Rough-legged Hawk, and American Kestrel compared to the long-term dataset and Sharp-shinned Hawks joined this group as species with evidence of recent declines on migration and in the winter. We also explore regional variation in the trends for some species, with higher declines in the eastern part of the continent. Finally, we include some preliminary results from the most recent RPI analyses which include data through fall 2023.

Spaul, Robert. Saturday 11 am. Hawkwatching for All: Improving Inclusion, Diversity, Equity and Accessibility at the Hawkwatch, a panel discussion *(with Ryan MacLean Greenwich Audubon Center, CT*). spaul.robert@gmail.com

The panel discussion will aim to highlight creative and inclusive ways to engage broader audiences in hawkwatching, consider ways to make hawkwatch sites more accessible to disabled communities, and propose ways to make sites and hawkwatching communities more welcoming to marginalized communities. The conversation will aim to be non-

confrontational but will not avoid discussing past or ongoing mistakes in the hawkwatching model of community science. After an introduction from each of the panelists, a respectful discussion between the panelists and the audience will commence to further examine ways to make hawkwatching more inclusive, diverse, equitable and accessible.

Slabe, Vince. Saturday 10:15 am. Lead exposure of raptors in North America: State of the science and examples of successful mitigation programs. (The Peregrine Fund, slabe.vincent@peregrinefund.org)

Lead poisoning is documented throughout North America in predatory bird populations. Studies show that ingestion is the most common route of lead poisoning for raptors and the source of this metallic lead is often from fragmented rifle ammunition. As a result, conservation organizations have been promoting the use of non-lead ammunition for hunting and scientists are interested in determining if the use of non-lead ammunition can reduce rates of mortality in species such as California condors and golden eagles. Vince will discuss the current state of the science regarding lead poisoning of raptors including recent scientific evidence that shows lead poisoning is limiting population growth of some species. Also, he will discuss current non-lead ammunition distribution and education programs and their effectiveness as an outreach tool to positively communicate with hunters and as a mitigation tool to offset eagle fatalities from other anthropogenic causes of mortality.

Vallejo, Esther. Saturday 8:45 am. Endangered Journey: The threat of illegal hunting to raptor migration in Colombia. evvallejos@gmail.com

Colombia is part of the migration corridor used by thousands of raptors. The country is an important stopover and roosting area for long-distance raptor and songbird migrants. In central Colombia, the hawks are threatened by illegal hunting, mostly Swainson's and Broad-winged Hawks, during the spring and the autumn. Since 2020, the project "Conserving migrating Raptors in Colombia" collects data through the hawkwatches "Iguasitos Tolima" and "Tolima Raptor Count", and from community participation, learning about raptor flocks, roosting areas, and poaching. In this talk we'll consider the causes, awareness, local laws and other factors that can help us to have a better understanding of illegal raptor hunting in Colombia that persists nowadays.

Saturday Afternoon Workshop Descriptions and Speakers.

Engaging the Community: Stories from Watching the Skies Together. Saturday 1 to 3 pm.

Moderator, Kara Haas, Michigan State University and creator of the Michigan Raptor Migration Teaching Network (karahaas@msu.edu).

During this session, Michigan, Pennsylvania and Minnesota-based educators will share their experiences, activities, lesson plans and frameworks they use to connect local communities with raptor migration. We hope to inspire and support you in working with educators and youth at your site and in your community. This session will include four short presentations:

1. An overview of the Michigan Raptor Migration Teaching Network (MRMTN) and how these newly cultivated resources are being shared in Michigan and beyond with Kara and Josh Haas
2. Bringing Raptor Migration to Michigan Schools with Bethany Burnett (4th grade, Allegan Public Schools), Cindy Stultz-Eichbauer (High School, Allegan Public Schools); Russell K. Columbus (High School, Monroe Public Schools) and Richard Bacolor (Science Ed Consultant, Wayne Regional Education Service Agency) participants from the Michigan Raptor Migration Network's Learning Community
3. Farmland Raptors in the Classroom with Bracken Brown (Hawk Mountain)
4. Faces of Hawk Ridge Education Programming with Margie Menzies (Hawk Ridge)

Two of the talks focus on a new HMANA initiative, The Michigan Raptor Migration Teaching Network (MRMTN). The MRMTN supports K-12 educators in experiencing and sharing the science of raptor migration with Michigan students. The program curates and shares teaching materials, supports professional learning opportunities to develop and pilot lessons inspired by Michigan's raptor migration and helps count sites connect with local schools. Kara will share how the group was conceptualized and how this framework might work at other sites.

Raptors In Winter Workshop, Saturday 3:15 to 5:15 pm.

Moderator, Vic Berardi, HMANA winter raptor survey committee. (Illinois, VBirdman@aol.com)

HMANA compiles data from a growing number of winter raptor surveys continent-wide. In this workshop, two invited speakers will give talks on the latest research on wintering

raptors, with discussion moderated by Chair of the Winter Raptor Survey committee, Vic Berardi.

Raptors in Winter Speaker Abstracts:

Alioto, Nick. Migratory Routes and Wintering Ecology of Red-tailed Hawks that migrate through Michigan. (Michigan State University & The Mackinac Straits Raptor Watch aliotoni@msu.edu**).**

The Red-tailed Hawk (*Buteo jamaicensis*) has a cross-continental range in North America with 16 subspecies currently recognized. The Mackinac Straits located in northern Michigan separate Lake Michigan and Lake Huron creating an important migratory bottleneck used by tens of thousands of raptors during spring and fall migration, including the Red-tailed Hawk. During spring migration, this species moves through the Mackinac Straits in the largest documented concentrations observed for the species. Despite the common occurrence of this species little research has directly focused on their full cycle migratory movements. To help resolve this knowledge gap we deployed 45 GPS/GSM transmitters during spring migrations spanning 2021-2024 in the Straits of Mackinac. Here we present on the findings describing the fall migratory routes and subsequent wintering areas of this population which contribute to a better understanding of Red-tailed Hawk migration in eastern North America.

Paprocki, Neil. Rough-legged Hawk (*Buteo lagopus*) migration, wintering, and population ecology. (Univ. of Idaho, neilpaprocki@gmail.com**)**

The Rough-legged Hawk (Buteo lagopus) breeds throughout arctic and subarctic regions of North America and winters throughout southern Canada and the coterminous United States, with no spatial overlap between breeding and wintering areas. Christmas Bird Count and Migration Site data suggest the species is declining as well as shifting winter distributions northwards. Furthermore, winter range shifts influence regional population trends such that careful interpretation of trends is needed for all migratory species. We deployed GPS transmitters on nearly 200 Rough-legged Hawks from 2014 – 2024 to better understand the species migratory behavior. We trapped and deployed transmitters on hawks on the wintering grounds, breeding grounds, and during migration throughout the species' entire North American range. Movement data has provided invaluable information on Rough-legged Hawk migration and wintering ecology, and factors influencing how far and how consistently individuals migrate. We will present results from our movement ecology study that will improve our understanding of continent-wide population trends and distribution shifts.