

An Invitation To Join Hawks Aloft Worldwide: Hawk Mountain Sanctuary's Raptor Migration Atlas Project

by Laurie J. Goodrich, Jim Brett, Cathy Viverette,
and Keith L. Bildstein

Abstract—*Hawks Aloft Worldwide* is Hawk Mountain Sanctuary's global conservation initiative designed to protect the world's migrating raptors. In its first phase, the initiative is identifying and compiling the first global atlas and directory of internationally important raptor migration watch sites. In its second phase, *Hawks Aloft Worldwide* will be providing training to help local organizations generate practical and effective conservation programs. The initiative's long-term goal is to forge a global grass-roots coalition to protect raptors and their essential habitats throughout their migratory journeys. Hawk Mountain Sanctuary invites members of the Hawk Migration Association of North America to join this worthy endeavor by providing data on important raptor migration watch sites in the Americas and elsewhere.

Introduction

In 1934, Maurice Broun and Rosalie Edge stood atop a windy, rock-strewn, mountain sanctuary lamenting the gunshot-tattered birds winging past, and the ones undoubtedly fallen before. Buying a mountain had not stopped the bloodshed; the conservationists' work had only begun.

Sixty years later, much has changed and much remains the same. Protection is won, thousands of hawk enthusiasts fan the countryside, and hundreds pioneer new migration flyways. But, these birds' penchant for flying poses us a new challenge.

Many threats currently facing migratory raptors—acid rain, global climate change, contaminants, shrinking biodiversity, habitat destruction and alteration, etc., may not even have been identified then—let alone worried about. Today, all of the above represent chronic global threats to the world's migratory birds of prey. Clearly, raptor conservationists have their work cut out for them.

Moreover, the lesson of Maurice and Rosalie, a lesson learned by shorebird biologists and others again and again echoes clearly. You cannot protect migratory birds by protecting them in one part of their range. We cannot protect birds just on their wintering and breeding grounds, migration, resting, and feeding sites are also important. If we wish to observe thousands of Broad-winged Hawks (*Buteo platypterus*) each fall we must care about the forests of Quebec, Colombia, and much of what lies in between. Our conservation battle has only begun.

Nowhere does the ecological reality of an interdependent biosphere require a broader conservation approach than in the protection of the world's

133 species (Kerlinger 1989) of migratory raptors—many of whose seasonal movements exceed entire continents. Historically, most attempts to protect migratory raptors have been limited to local actions focused on acute threats at individual sites. Indeed, Hawk Mountain's founding in response to the wholesale shooting of raptors in the Central Appalachians typifies this approach (Broun 1949). But while such local actions are as important now as ever, today's increasingly diffuse and chronic global threats necessitate new cooperative strategies as well (Bildstein et al. 1993).

With this in mind, Hawk Mountain Sanctuary recently launched an ambitious global conservation initiative, *Hawks Aloft Worldwide*. The brainchild of Sanctuary curator Jim Brett and former Sanctuary director Stan Senner, *Hawks Aloft Worldwide* can best be described as an international raptor migration atlas project (Senner and Brett 1989, Bildstein et al. 1993). The initiative seeks to formalize the Sanctuary's long-standing role as mentor to raptor conservation organizations and grass-roots activists throughout the world by using Hawk Mountain's integrated conservation approach as a model to mobilize a global network of competent and self-sustaining local conservation programs.

Project Goals

Specifically, *Hawks Aloft Worldwide* seeks to protect migratory raptors by:

- collecting critical scientific information upon which to base practical and effective international conservation efforts;
- training local scientists and conservationists;
- working closely with existing non-governmental organizations and governmental agencies to ensure that *Hawks Aloft Worldwide* is fully integrated into national and regional conservation efforts; and
- forging a global grass-roots coalition to protect raptors and their essential habitats throughout their migratory movements.

Hawks Aloft Worldwide consists of two equally important phases. Phase I of the project, which is already underway, is identifying and compiling the first global directory and atlas of raptor migration watch sites, highlighting those sites of international importance. Inclusion in the atlas will confer special status to these sites, strengthening local conservation efforts and stimulating the development of economically viable and ecologically sustainable centers of conservation and ecotourism.

Phase II of the project will develop instructional materials and provide training to help local organizations generate the competent and productive conservation programs that are needed to sustain the first phase of the initiative. Given the ambitious nature of this aspect of the project, initial efforts in this area will focus on Latin America, especially Mexico, where we have cooperated with local organizations since 1991.

Hawks Aloft Worldwide has been enthusiastically endorsed both by the World Working Group for Birds of Prey and Owls, and the Raptor Research Foundation, which have cited the project for its potential "to stimulate public interest in raptors and their habitat...to stimulate migration-related research...to help identify what is not known about the distribution of migrating raptors...to enhance opportunities to raise funds for projects at migration sites... [and] to benefit local economies through increased visitation to the sites."

Hawks Aloft Worldwide: Phase I

Knowing where and how raptors migrate is an essential prerequisite for their conservation (cf. Lubchenko, et al. 1991). *Hawks Aloft Worldwide's* atlas of raptor migration watch sites is modeled after the International Union for Conservation of Nature and Natural Resources' well-received *Directory of Neotropical Wetlands* (Scott and Carbonell 1986). Copies of the atlas, which will be produced as a lost-cost paperback, will be distributed to all project participants, and to appropriate government agencies and non-governmental organizations in countries of importance to the project.

The Results

The greater part of the atlas will consist of a series of country reports grouped by continent. Each country report will begin with an introduction summarizing the status of raptor conservation

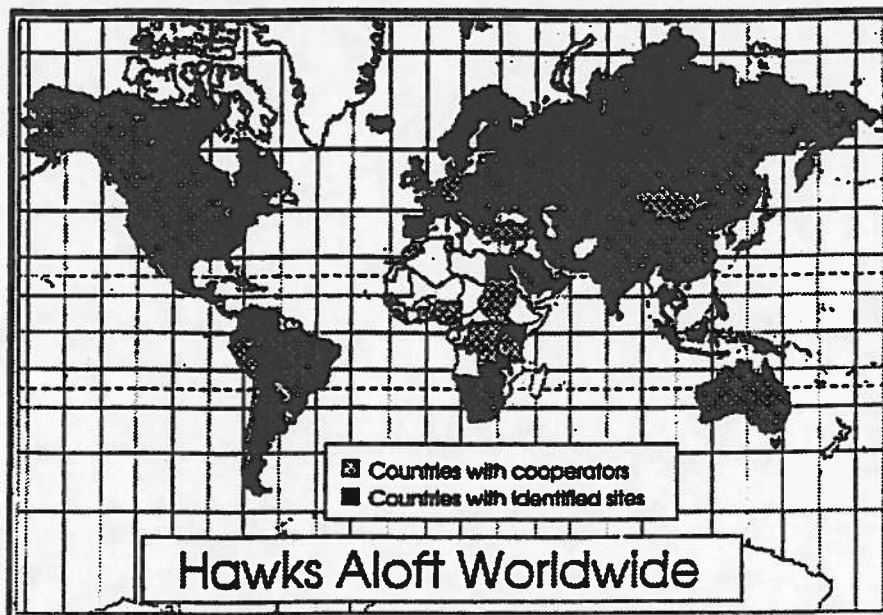


Figure 1. Distribution of *Hawks Aloft Worldwide's* cooperators and identified watch sites by country.

in that country, including information on the legal status of raptors and major threats to their well-being. Each introduction will be followed by an inventory of all known migration watch sites in the country, together with a map depicting their locations.

Site descriptions will include directions to the site, information on habitat associations, land tenure and use, degree of protection, threats to hawks and eagles, ongoing research and conservation efforts, relevant literature, and the name and address of the local contact organization or individual, along with a summary account of raptor migration at the site.

The atlas will open with chapters on the biology and geography of raptor migration, an overview of the project network and registry concepts, and conservation strategies for migrating raptors. The book will include an extensive bibliography of the English language raptor-migration literature.

The work will provide the scientific underpinnings needed to effectively focus monitoring, research, education, and protection efforts on locations that have been designated as sites of international importance to hawk migration and conservation.

Why Should I Participate?

Imagine one day your boss has decided to send you to Bulgaria in the middle of October. "Hawk migration season," you muse, "I wonder how I'd find out where the good spots are?" Or imagine someday your favorite quiet, rural hawk watch spot becomes the government's favorite site for a new and improved scenic highway (true story), or 3,000 ton per day hazardous waste incinerator. How do you provide the needed data on its relative importance as a migration route in the state, country, or world? It could be one of the top ten known sites for Golden Eagle migration. But, how could you prove it? Wouldn't it be nice to have a reference to turn to?

As important as what the atlas will compile is what it will not. Perhaps when you search the chapter on Bulgaria, you discover there is a suspected migration route of Imperial Eagles right where you will be, but no one has fully documented it yet. You could be that pioneer.

The Network Inaugurated

Hawks Aloft Worldwide has named 15 internationally recognized authorities to serve on a Technical Advisory Board. The board is assisting Hawk Mountain personnel identify key sources of information, as well as reviewing site descriptions within their areas of expertise. They will also propose criteria for an eventual registry of internationally significant migration watch sites.

From 1991 through fall of 1993, more than 1,500 letters of inquiry were mailed to more than 116 countries on six continents. Each addressee was sent a letter inviting them to participate in the project, together with a *Hawks Aloft Worldwide* Data Sheet for completing a site description. To date, more than 150 individuals in 39 countries have responded to this initial mailing with completed data sheets detailing the geographic locations, migration activities, environmental characteristics, monitoring efforts, and current threats to hawks associated with sites along many of the major migratory corridors of the world (Figure 1).

On the basis of these descriptions, *Hawks Aloft Worldwide* staff have already drafted over 100 site descriptions, more than 80 of which describe migration watch sites outside of North America. Some potential collaborators have agreed to supply additional information soon. Although some of these sites are already well documented in the scientific and conservation literature, many, including several candidates for inclusion in an international registry of sites of global importance to raptor conservation, are previously undescribed and unknown to the world before now.

Hawks Aloft Worldwide: Phase II

Training for both basic scientists and local conservationists is sorely needed in many of the countries through which hawks and eagles migrate (Soule and Kohm 1989). *Hawks Aloft Worldwide* will train local conservation organizations and activists (1) to affect action at critical sites through education and advocacy, and (2) to help develop such sites as economically sustainable centers of ecotourism. With supporting training and materials, network members will be better equipped to establish local sites as important biological and conservation resources, helping assure the integrity of critical migration corridors.

The philosophy of the project is to work with existing organizations, and to assist and unify local and regional groups, not to create new ones. As participation in the migration project increases, and as important new watch sites are found, Hawk Mountain's existing internship program will be used to train selected individuals from such groups, as well as local grass-roots activists.

Given the ambitious scope of Phase II of the project, our efforts in this area will focus primarily in Latin America for the next several years (Senner and Fuller 1989), where we have already identified a number of potentially significant watch sites (Figure 2). Perhaps the best way to describe how this aspect of the project will be accomplished is to briefly outline our activities in establishing a raptor migration watch site in central Veracruz, Mexico.

In 1991 and 1992, in cooperation with Hawkwatch International of Albuquerque, New Mexico; and Pronatura, and ECOSFERA of

Veracruz, Mexico; and using its own funds, Hawk Mountain launched a research and education project focused on the migration of hawks through central Veracruz. Veracruz was chosen both because anecdotal reports had suggested substantial fall and spring migrations of several North American migrants in the region (Thiollay 1980, Smith 1985, F. Tilly and E. Ruelas-Inzunza, pers. comm.). Moreover, two young Mexican conservationists, both graduates of the Sanctuary's internship program, were already in Veracruz, and both possessed the levels of expertise and enthusiasm needed to develop a raptor migration watch site in the area.

The Veracruz Project had five objectives: (1) to describe the local raptor migration, and to assess its value in monitoring continental populations of Broad-winged Hawks (*Buteo platypterus*), Swainson's Hawks (*Buteo swainsoni*), and other species; (2) to assess migrant habitat needs; (3) to establish the foundation for environmental education using the spectacle of raptor as a focus, (4) to develop links with important conservation organizations in Mexico, and (5) to use the site as a testing facility for bilingual training materials that will be developed during the next two years.

The 1991 project monitored the spring migration of more than 400,000 raptors representing 17 species. The 1992 project, funded primarily by the National Fish and Wildlife Foundation and Center for the Study of Tropical Birds, monitored the movements of more than 2.5 million fall migrants, more than twice as many as had been recorded during Hawk Mountain's first 57 years of observation! In fall of 1993, counters recorded over 2 million raptors. More importantly, by the fall of 1992, project participants had developed a series of educational brochures, posters, and teacher workshop guides focusing on the migration, and were offering programs in environmental education for primary school children in Veracruz, as well as workshops for their teachers, and programs in the community. Although Hawk Mountain Sanctuary, Hawk Watch International and ECOSFERA had earlier assumed leadership roles for the Veracruz Project, the Mexican conservation organization, Pronatura, is currently directing the project.

During the next two years *Hawks Aloft Worldwide* will continue to work with the Veracruz Project, using it as a test site for the development of a generalized set of bilingual (Spanish-English) training materials that will be made available to network participants elsewhere in Mexico, and throughout Latin America. Training materials will consist of information on how to: monitor raptor migration, conduct research on habitat associations during migration, establish on- and off-site education programs, develop a migration site for ecotourism, and establish effective programs for educating legislators and affecting changes in government conservation policy.

An Invitation to Join the Effort

A Fall 1991 mailing to HMANA members requesting information on raptor migration at watch sites in North America yielded data forms on 77 sites (Table 1). If your site is already on the list, we thank you for your help. If your site is not on the list, please let us know and we will send you a data form and place you on our newsletter mailing list.

If you know of a site that is not on the list other than your own, and know someone who might be able to provide information on it, please send us that individual's name, or let them know about this important project. Also, if you know of sites outside of North America that you feel we may have overlooked, please send us information on that site, as well.

If you have not already done so, we ask you to join us in this effort to protect the world's migrating raptors. *Hawks Aloft Worldwide* cooperators describing significant sites of concentration will be listed as contributing authors in the atlas, and all will receive a gratis copy of the work. In addition, we are currently amassing a reference library on raptor migration world-wide, the bibliography of which will be sent to all participants.

Some people have written to suggest we should just look up information on their site in HMANA's journal. Unfortunately, this approach is too slow and would not provide most of the important data we need. For example, HMANA does not publish the latitude and longitude, describe the site location and conservation threats, or historical record days and years. Only you can provide this and other essential information.

The atlas is only as useful as the data it portrays. If confidentiality is a concern, we will safeguard your exact location. The migrating raptors that provide us so much joy and wonder surely deserve the time it will take. Please, look over the list (Table 1 on the next page). If your site is missing, make a pledge to complete a data form before 1995 and put your site on the map. A revitalized adage comes to mind, "think globally, act locally." With a *Hawks Aloft Worldwide* atlas in hand, global protection for migrant hawks through local action could happen. Maurice and Rosalie's dream of protecting these magnificent migrants will be realized.

Hawks Aloft Worldwide Personnel

Hawks Aloft Worldwide is a team effort on the part of four Hawk Mountain staff members, and a number of correspondents and cooperators. Keith L. Bildstein, the Sanctuary's director of research, is overseeing production of the atlas, and is in charge of gathering data on Asian, Caribbean, and Central and South American sites. Sanctuary curator, Jim Brett, acts as liaison with the Technical Advisory Board, and is gathering information on African sites. Conservation ecologist, Laurie Goodrich, acts as liaison with the Hawk Migration Association of North America, and is gathering data on Canadian, Mexican, and U. S. sites. Staff Biologist Cathy Viverette, is amassing published sources of migration information, and gathering data on European sites.

All can be contacted by writing them at *Hawks Aloft Worldwide*, Hawk Mountain Sanctuary, RR 2 Box 191, Kempton, PA 19529-9449; or by calling (215)756-6961. We look forward to hearing from you.

Acknowledgments

Hawks Aloft Worldwide would not be possible without the support of hundreds of cooperators, present and former Sanctuary interns, several of



Figure 2. Locations of 11 previously undocumented watch sites in Latin America. (1) Veracruz, Mexico; (2) Izabal, Guatemala; (3) Paso de Portachuelo, Venezuela; (4) Parque Nacional Archipiélago de Los Roques, Venezuela; (5) Combeima Canyon, Colombia; (6) Estacion Biologica Cuybeno, Ecuador; (7) Olon, Ecuador; (8) Salinas, Ecuador; (9) Concepcion, Bolivia; (10) Ilha do Cardoso, Brazil; and (11) Estancia Santa Teresa, Argentina.

**Table 1. Hawks Aloft Worldwide
North American Sites—January 1994¹**

CANADA

British Columbia

Becher Bay Headlands

Manitoba

Patricia Beach Provincial Park

St. Adolphe

Windy Gates/Pembina Valley/Brown's Hill

Ontario

Beamer Memorial Conservation /Grimsby

Cranberry Marsh

Holiday Beach

Hawk Cliff

MEXICO

Veracruz

UNITED STATES

Alaska

Dry Lake

Arizona

Lipan Point-Grand Canyon

Nankowep Creek

California

Carrizo Plains

Golden Gate—Marin Headlands

Colorado

Dinosaur Ridge

Connecticut

Botsford Hill

East Shore Park

Huntington State Park

I-84 Overlook

Kimball Hill

Lighthouse Point Park

Whippoorwill Hill

Indiana

Indiana Dunes

Iowa

Macbride Nature Area

Louisiana

Calcasieu Lake

Maine

Harpswell Peninsula/Casco Bay

Maryland

Fort Smallwood Park

Massachusetts

Bolton Flats

Spruce Hill

Michigan

Lake Erie Metro Park

Port Huron

Whitefish Point

Minnesota

Hawk Ridge Nature Reserve

Mississippi

Fort Hill

Knight's/Oxford

Montana

Bridger Mountains

Hauser Lake

Rogers Pass

New Jersey

Boonton

Cape May Point State Park

Delaware River Gap National Recreation Area

Kittatinny Mountain

Raptor Banding Stn.(PROW)

Montclair

Oko Jumbo

Raccoon Ridge

Sandy Hook

Nevada

Goshutes Mountains

New Mexico

Manzano Mountains

Sandia Mountains

New York

Ames and Carr Hill Roads

Beaver Meadow Audubon Center

Braddock Bay

Fort Tilden

Franklin Mountain

Orient Point

Ripley Picket Line

North Carolina

Mahoghany Rock Mountain

Pennsylvania

Alleghany Front/Central City

Cornwall Fire Tower

Council Cup

Hawk Mountain Sanctuary

Militia Hill/Fort Washington State Park

Penn. State University—Hazelton Campus

Second Mountain

Tuscarora Summit (Pulpit)

Wildcat Rocks

Rhode Island

Sakonnet Point

South Carolina

Bird Mountain

Texas

Bentsen State Park

Smith Point

Utah

Wellsvilles Mountains

Virginia

Snickers Gap

Washington

Cape Flattery

Hart's Pass/Slate Peak

West Virginia

East River Mountain (in VA too)

Wisconsin

Concordia University

whom are still working actively on the project, and Sanctuary staff and volunteers. Ernesto Ruelas Inzunza and Stephen W. Hoffman were pivotal in establishing the Veracruz Project, and Sharon Gaughan and Evodia Silva Rivera organized the educational initiative. *Hawks Aloft Worldwide* and the Veracruz Project have received financial support from the Laurel Foundation, World Wildlife Fund-U. S., USFWS-SEDECOL Joint Committee, National Fish and Wildlife Foundation; Center for the Study of Tropical Birds, Inc.; The McLean Family Contributionship, The Prospect Hill Foundation, and the membership of Hawk Mountain Sanctuary Association. In-kind donations for the Veracruz Project were received by Raptor Research Foundation, Houghton Mifflin Co., National Geographic Society, Birder's Exchange-Manomet Bird Obs., Cutler Camera and Bushnell Optics, Inc. We thank Nancy Keeler for help with earlier versions of the paper. This is Hawk Mountain Sanctuary contribution number 18.

References

Bildstein, K. L., J. Brett, L. Goodrich, and C. Viverette. 1993. Shooting galleries: migrating raptors in jeopardy. *American Birds* 47:38-43.

Broun, M. 1949. *Hawks aloft: the story of Hawk Mountain*. Cornwall Press, Cornwall, New York.

Kerlinger, P. 1989. Flight strategies of migrating hawks. University of Chicago Press, Chicago, Illinois.

Lubchenco, J., et al. 1991. The sustainable biosphere initiative: an ecological research agenda. *Ecology* 72: 371-412.

Scott, D. A., and M. Carbonell. 1986. A directory of neotropical wetland. IUCN, Cambridge; and IWRB, Slimbridge, England.

Senner, S. E., and J. J. Brett. 1989. A proposal to create a registry of sites of international importance to raptors, especially on migration. Pp. 33-37 in *Raptors in the modern world* (Meyburg and Chancellor, eds.). World Working Group on Birds of Prey and Owls. Berlin, Germany.

Senner, S. E., and M. R. Fuller. 1989. Status and conservation of North American raptors migrating to the neotropics. Pp. 53-58 in *Raptors in the modern world* (Meyburg and Chancellor, eds.). World Working Group on Birds of Prey and Owls. Berlin, Germany.

Soule, M. E., and K. A. Kohm. 1989. Research priorities for conservation biology. Island Press, Washington, D. C.

Hawk Mountain Sanctuary

RR 2, Box 191

Kempton, Pennsylvania 19529-9449

TABLE 1. Hawks Aloft Worldwide

¹ List only includes sites that have completed HAW data forms.