



D V E A

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The Delaware Valley Eagle Alliance

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Left Bottom ..... © Benjamin Hayes, Photographer

Center ..... © Angie Vogel, Photographer

Right Top ..... © Provided by EarthEcho International  
Right Bottom ... © David Moskowitz, Photographer

## DISCOVERING NATURE



© Benjamin Hayes, Photographer  
North Lookout in the fall at Hawk Mountain Sanctuary.

## THE AUTUMN HAWK MIGRATION

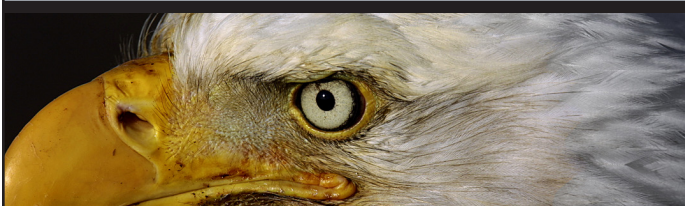
One of the best places in northeastern North America to view the annual autumn hawk migration is at Hawk Mountain Sanctuary. Located in Albany Township / East Brunswick Township along the Appalachian flyway in eastern Pennsylvania, Hawk Mountain Sanctuary is a prime location for the viewing of kettling (group of birds wheeling and circling in the air) and migrating raptors. An average of 20,000 hawks, eagles and falcons pass the lookouts during the late summer and fall every year.

Birds are identified and counted by staff and volunteers to produce annual counts of migrating raptors that represent the world's longest record of raptor populations. These counts have provided conservationists with valuable information on changes in raptor numbers in North America.

Founded in 1934, Hawk Mountain Sanctuary is the world's first refuge for birds of prey, an international center for raptor conservation, and a wonderful place to visit and spend time.

The 2,500-acre mountaintop preserve offers incredible scenic overlooks, eight miles of trail, a Visitor Center, native plant garden, and the Acopian Center for Conservation Learning.

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© John A. DiGiorgio, Photographer

## WE NEED YOUR HELP TO SPREAD THE WORD

The Delaware Valley Eagle Alliance depends on individuals and organizations who share our concern for wildlife and the environment.

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Delaware Valley Eagle Alliance / att: Yoke DiGiorgio  
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Email us at [yokedvea@gmail.com](mailto:yokedvea@gmail.com) for more information.

**Thank you so much for your generosity!**

Delaware Valley Eagle Alliance



White Rhino

© Photograph provided by International Rhino Foundation

# KEEP THE FIVE ALIVE

by Susie Ellis, Ph.D.

*Executive Director, International Rhino Foundation*

On September 22, thousands of people around the globe joined #TeamRhino on World Rhino Day. World Rhino Day provides the opportunity for cause-related organizations, NGOs, zoos, and members of the public to celebrate rhinos in their own unique ways to help “Keep the Five Alive.” For five years, African rhinos have been poached at a rate of three per day.

Overall, two-thirds of the world’s five rhino species could be lost in our lifetime. Rampant poaching by organized criminal networks, habitat loss, and factors ranging from inbreeding to invasive species are driving Africa’s black rhino and Indonesia’s Sumatran and Javan rhinos to the brink of extinction. Africa’s white rhino and India and Nepal’s greater one-horned rhino are also endangered; their survival still remains dependent on vigilant protection, monitoring, and management.

Ten years ago, roughly 20,800 rhinos roamed Earth. Today, rhino numbers hover around 29,500 – a 41 percent increase in 10 years. Despite this uptick, rhino populations are at the tipping point, barely keeping up with devastating losses from poaching. In Africa, criminals killed more than 1,100 rhinos last year. And two of the three Asian rhino species are quietly disappearing from Indonesia’s dense rainforests.

## White Rhino

The Government of South Africa and dedicated conservationists teamed up to bring the southern white rhino, a subspecies, back from fewer than 100 individuals in the early 1900s to roughly 20,000 today. White rhinos are the primary target of poaching gangs in Africa; births are just barely outpacing deaths. The death of the last male northern white rhino, the member of a functionally-extinct subspecies of white rhino, has recently garnered a lot of public attention. The subspecies had the misfortune of living in Sudan and the Democratic Republic of the Congo, where wild populations were decimated by militant armies. Sadly, by the time expert trackers determined that they were extinct in the wild, only a handful of zoo animals remained and none were capable of breeding. Today, only two non-breeding females are living out their days in a reserve in Kenya.

## Greater One-Horned Rhino

Thanks to strict protection by government authorities in India and Nepal, the greater one-horned (Indian) rhino has rebounded from fewer than 200 individuals to more than 3,550 today. The challenge is to use lessons from these two species to recover the three that are in desperate trouble.

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Continued from page 3

## KEEP THE FIVE ALIVE

### Black Rhino

Africa's black rhino is slowly coming back from horrendous losses. By 1993, fewer than 2,300 rhinos remained from populations numbering more than 65,000 in the 1970s. Today, black rhino numbers hover around 5,000 animals, but, like white rhinos, they are being particularly hard-hit by a poaching epidemic.

### Sumatran Rhino

In Asia, fewer than 80 Sumatran rhinos remain, and because the population has declined more than 70 percent in the past 20 years, it may well be the most endangered large mammal on Earth. Three small, isolated populations exist on Indonesia's Sumatra Island, plus a tiny handful of animals in Indonesian Borneo. Remaining populations are heavily guarded by anti-poaching units, and plans are underway to capture rhinos and bring them into large, semi-natural breeding facilities in an attempt to increase population numbers. Sumatran rhinos were declared extinct in the wild in Malaysia in 2015.

### Javan Rhino

Javan rhinos, numbering no more than 67 animals, are found only in Indonesia's Ujung Kulon National Park, where they are heavily protected. Ujung Kulon is situated just south of the site of Krakatoa, the volcano that cataclysmically devastated the region in 1883. "Anak Krakatau," or Son of Krakatoa, is active a short ways away from the original volcano. Another eruption could devastate this species' tiny population. The last Javan rhino in Vietnam was found shot with its horn hacked off in 2010.

**So what does this all mean?** First, we must remain vigilant. The successes of the white and greater one-horned rhinos could be wiped out if round-the-clock protection of these species is not continued. IRF funds protection and management of all five species and we are dedicated to ensuring these species don't go extinct. Secondly, the demand must be abated. China and Vietnam are the top two consumer countries; the demand sprung from a misconception that rhino horn has medicinal value. Rhino horn is primarily keratin, the same substance of our hair and fingernails. Demand for this useless product has been driven up for ill-conceived reasons.

For all five rhinos, the highest priorities are to bolster anti-poaching activities, to maintain intensive monitoring and active management of wild populations, and to intensify international pressure on range country governments to enforce their wildlife crime laws.

What is our most important obligation to rhinos? Ensure that what happened to the northern white rhino will never be repeated.



© Photographs provided by International Rhino Foundation

**TOP:** Greater One-Horned Rhino **CENTER:** Black Rhino **BOTTOM:** Sumatran Rhino

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## KEEP THE FIVE ALIVE

### STATE OF THE RHINO REPORT 2018

Each year, we release a State of the Rhino report to share milestones and stumbling blocks of the conservation fight to save rhinos. Highlights from the 2018 report:

Of the five species, the Sumatran rhino is the most in peril, with population numbers fewer than 80. Together with its Indonesian partner Yayasan Badak Indonesia (YABI) IRF has developed the Sumatran Rhino Sanctuary, located in Way Kambas National Park on the island of Sumatra. The successful breeding program there has led to plans to double the size of the sanctuary. Construction is now underway with the expanded breeding facility scheduled to open in Spring 2019.

In 2018, the death of the last male northern white rhino, a member of a functionally-extinct subspecies of white rhino, garnered a lot of public attention. This subspecies lived in Sudan and the Democratic Republic of the Congo, where wild populations were decimated by militant armies. By the time expert trackers determined that they were extinct in the wild, only a handful of zoo animals remained and none were capable of breeding. Today, only two non-breeding females are living out their days in a reserve in Kenya. Innovative and yet-unproven advanced reproductive technologies, like in-vitro fertilization, are being attempted.

Despite these statistics, rhino conservation has seen some spectacular successes. Ten years ago, roughly 20,800 rhinos roamed Earth. Today, rhino numbers hover around 29,500 – a 41 percent increase in a decade. The Government of South Africa and dedicated conservationists teamed up to bring the southern white rhino back from fewer than 100 individuals in the early 1900s to roughly 20,000 today. Thanks to strict protection by government authorities in India and Nepal, the greater one-horned, or Indian, rhino has rebounded from fewer than 200 individuals to more than 3,550 today.

***“This year, we’re at a critical point for rhinos. We must do what it takes to ensure they survive, or we will start losing species.” said Dr. Susie Ellis, executive director of the International Rhino Foundation. “Protecting the five species in range countries, cracking down on poaching, dealing with governmental corruption, stopping the demand for rhino horn, and securing habitats is the way forward.”***

For more information and to support the International Rhino Foundation and its ongoing efforts, please visit:

<https://rhinos.org/>  
<https://teamrhino.org/>



### RHINOS FACTS (*Rhinocerotidae*)

There are five different species of *rhinoceros* (often abbreviated to rhino), two native to Africa (White and Black rhinos) and three native to Asia (Greater one-horned, Javan and Sumatran rhinos).

**Three out of the five species are now considered to be critically endangered.**

All five species of rhinos can grow to weigh over 1000 kg (2200 lb); the White rhino (the largest) can weigh over 3500 kg (7700 lb); the Greater one-horned, Sumatran, and Javan rhinos are all much smaller in size.

**Rhinos have brilliant hearing and a keen sense of smell; however they are well known for having extremely poor eyesight.**

Life expectancy in the wild ranges approximately 30-45 years, depending on the species.

**Females and sub-adults maybe social, but bulls are typically solitary.**

Gestation lasts approximately 16 months, and mothers give birth to one calf every 2-3 years. Because of the poaching crisis, it is possible that rhino deaths in Africa may soon outpace births.

**Rhinos are often hunted by humans for their horns. Their horns are made of keratin, the same type of protein that makes up hair and fingernails in most animals including humans. Both African species of rhino and the Sumatran rhino have two horns, while the Greater one-horned and Javan rhinos have just one horn.**

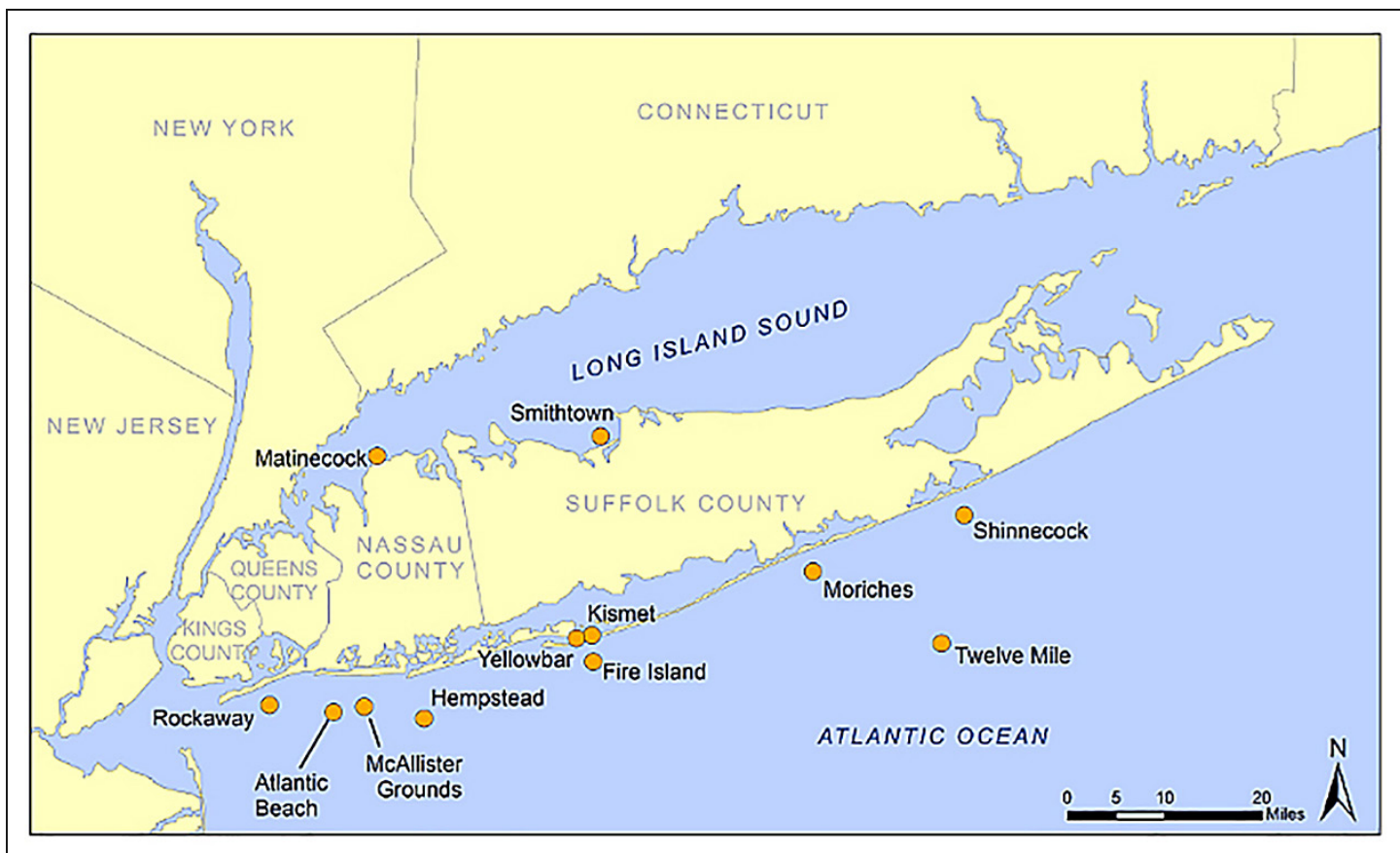
Both black and white rhinos are actually gray. They are different not in color but in lip shape. The Black rhino has a pointed upper lip, while the White rhino has a squared lip.

**Rhinos are herbivores (plant eaters), eating grasses, leaves, shoots, buds and fruits in order to gain the nutrients that it needs to grow and survive. The difference in lip shape is related to their differing diets.**

Black rhinos are browsers that get most of their sustenance from eating trees and bushes. They use their lips to pluck leaves and fruit from the branches. White rhinos graze on grasses, walking with their large heads and squared lips lowered to the ground.

#### **DID YOU KNOW?**

**The Black rhino probably derived its name as a distinction from the white rhino and/or from the dark-colored local soil that covers its skin after wallowing in mud; “White” rhinoceros is taken from the Afrikaans word describing its mouth - “wyd”, meaning “wide”. Early English settlers misinterpreted the “wyd” for “white”.**



© Map Chart provided by NYS DEC

## LARGEST ARTIFICIAL REEF EXPANSION IN NEW YORK STATE HISTORY

Earlier this spring Governor Andrew Cuomo launched the largest expansion of the Artificial Reef Program in state history, carried out by a multi-agency coordination and with recycled material from the Department of Transportation, Canal Corporation, and the Thruway Authority. Materials being used for additional reef structure include tug boats, barges, scows, clean concrete and steel, and recycled materials from the demolition of the Tappan Zee Bridge.

Artificial reefs are built out of hard, durable structures such as rock, concrete, and steel, usually in the form of surplus or scrap materials (e.g. vessels, dredge rock, and military vehicles, etc.). Before material can be deposited on artificial reef sites it must be inspected and cleaned of hazardous substances such as, petroleum products, asbestos, and PCB's.

DEC collaborates with multiple state and federal agencies to ensure the material to be reefed meets strict standards and is appropriate for use in the marine environment. These materials will support the development of six artificial reefs on Long Island off the shores of Smithtown, Shinnecock,

Moriches, Fire Island, Hempstead, and Rockaway.

Construction of New York's first artificial reef dates back to 1949. This latest initiative marks the state's first coordinated effort to stimulate the full environmental and economic benefits of artificial reefs and increase the biodiversity of these habitats for a variety of fish and lobsters.

Starting in May, deployments were made on the Shinnecock Smithtown, Rockaway, Hempstead, Fire Island, and Moriches Reefs. Materials deployed on these reef sites so far include surplus Erie Canal vessels, DOT steel, Tappan Zee Bridge demolition material and jetty stone with additional material to be deployed later this year. Additional reef sites will be developed in the future.

Materials are strategically placed to improve each reef site and to increase the diversity of New York's marine habitat, and boost Long Island's recreational, sport fishing and diving industries. They provide marine fish and other organisms, additional opportunities for shelter and foraging

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## LARGEST ARTIFICIAL REEF EXPANSION IN NEW YORK STATE HISTORY

and may increase productivity in the areas where they are placed. Anglers visit artificial reef sites to benefit from the increased fishing opportunities they provide. Divers also visit our reefs for nature observation, photography, and catching fish and lobsters.

Shortly after the material settles on the sea floor, the reef structure begins to fill with diverse marine life. Fish like blackfish, black sea bass, scup, fluke, hake, and cod move in to check out the new structure. Lobsters and crabs also take up residence on artificial reefs. Encrusting organisms like barnacles, sponges, anemones, mussels, and even temperate corals will attach to and cover the material.

Over time, the structure teems with sea life, creating a habitat very similar to a natural reef.

### Be a Volunteer Reef Angler or Diver

The DEC Reef Monitoring Program is looking for anglers and divers to share their experiences while visiting New York's artificial reefs.

Reef Angler surveys help the DEC Reef Program keep track of fish catches from year to year and monitor the effectiveness of the reefs.

Reef Diver surveys provide more detailed information about what is happening on the various artificial reefs sites. Divers can assist DEC by recording specific details of each dive, such as environmental conditions and types and numbers of reef inhabitants they see. The recorded information will help monitor the benefit of these reefs to the recreational fishing and diving communities while also documenting the local abundance of fish, lobsters, and other marine animals.

Furthermore, these observations will help the DEC to develop a more effective Artificial Reef Program that can enhance future diving and fishing opportunities in New York's marine waters.

For more information and to download "Artificial Reef Volunteer Diver and/or Angler Logs" please visit:  
<http://www.dec.ny.gov/outdoor/9211.html>

To Download the "Program and Reef Site Map Brochure":

[http://www.dec.ny.gov/docs/fish\\_marine\\_pdf/artificialreefbrochure.pdf](http://www.dec.ny.gov/docs/fish_marine_pdf/artificialreefbrochure.pdf)

### RESOURCES:

<http://www.dec.ny.gov/outdoor/7896.html>

<https://www.governor.ny.gov/news/governor-cuomo-launches-first-phase-largest-artificial-reef-expansion-new-york-state-history>



Photographs provided by NYS DEC

**TOP:** Photo by Jesse Hornstein / Material being deployed at Shinnecock Reef.  
**NEXT:** Photo by Christopher LaPorta / Blackfish residing on the Hempstead Reef now encrusted with mussels, sponges, anemones, etc.

**NEXT:** Wheelhouse of the sunken vessel Mandy Ray colonized by anemones, bryozoans, sponge, etc.

**BOTTOM:** Photo by Christopher LaPorta / American lobster protects its lair in one of the many rock piles on the Atlantic Beach Reef. Lobster easily blend in with the colonized reef rock which is also home to bryozoans, sponges and northern corals. Rock provides stable and durable reef building habitat for both structure associated finfish and crustacean species.



*Hemaris thysbe - Hummingbird clearwing moth*

© Elena Tartaglia, Photographer

# STRANGERS IN THE NIGHT MOTHS IN YOUR BACKYARD

by Elena Tartaglia, Ph.D.  
*Professor of Biology / Bergen Community College*

Between *The Silence of the Lambs*, *Mothra* vs. *Godzilla* and the fact that most people view them as sweater-eating, grain-infesting pests, moths have gotten a bad reputation. But in fact moths play critical roles in ecosystems and are a fascinating and diverse group of insects facing anthropogenic threats much like other fauna.

## Moth or Butterfly?

One of the main questions I am asked is “what is the difference between moths and butterflies?” The answer, as in much of science, is both simple and complex. Moths and butterflies both belong to the order Lepidoptera, which are named for their scaly wings. These scales provide distinctive wing coloration and patterns that enable the insects to recognize one another, as well as serving as predation defense and warning coloration in those species that contain toxins. Both groups undergo complete metamorphosis, having distinctive egg, larval, pupal and

adult stages. Lepidoptera contains somewhere around 180,000 species worldwide, with probably thousands of species yet to be described. About 160,000 species fall into the groups we consider moths, while the groups we consider butterflies comprise about 17,500 species. Evolutionarily speaking, there is evidence that moths evolved more than one hundred million years before the groups we consider butterflies, making butterflies essentially “younger” moths that are awake during the daytime.

Truly, the “differences” between moths and butterflies are somewhat arbitrary classifications that we as humans feel the need to impose on the biodiversity we encounter. If you must know whether the organism you’re looking at is a moth or a butterfly, here are a few characteristics to check (bear in mind, there are *always* exceptions):

Antennae: Butterfly antennae are generally club-tipped, meaning they have a small bulb on the end. Moth antennae

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## STRANGERS IN THE NIGHT / MOTHS IN YOUR BACKYARD



**LEFT:** *Citheronia regalis* - Regal moth **RIGHT:** *Actias luna* - Luna moth



© David Moskowitz, Photographer

are more variable, with some species having large feathery antennae, particularly in males and many having filamentous antennae.

**Temporal Activity:** Butterflies are diurnal, while most moths are nocturnal with a few diurnal and crepuscular species.

**Resting wing position:** Most butterflies rest with their wings upright on their backs (skippers being an exception here) while moths hold their wings folded or flat.

### Ecosystem Functions

#### Pollination

Of course moths comprise important components of food webs and provide food for a diverse array of predators. Besides this, one of moths' main ecosystem functions is their pollination services. Pollination is a mutualism: an ecological relationship where both partners benefit. The pollinator gets food in the form of nectar from the plant, while the plant gets to reproduce sexually, conferring genetic diversity that ensures adaptability. Fertilized plants produce seeds that grow into the next generation.

When a moth visits a flower, it gets a reward in the form of nectar. But what does a plant gain by employing moths rather than using bees, which are the most common type of pollinator? As adults, moths lack jaws; instead, they possess a proboscis, a straw-like mouthpart used for drinking liquid. Because of their inability to consume solids, moths don't eat any of the pollen that collects on their bodies when they visit flowers so any pollen on a moth has the potential to be deposited on the next visited flower, resulting in reproduction for the plant. Another reason why a plant might employ a nocturnal moth pollinator is because the majority of flowers are open during the day,

with very few species open at night. This means that night-flowering plants can potentially reduce the chances of receiving pollen from the wrong species, which won't lead to the production of seeds.

Moths can't visit just any flower to drink nectar. Because of their probosces, they must visit flowers with long, tube-like shapes. Since the majority of moth species are nocturnal, flowers they visit are usually white, pale yellow or pale pink – colors that are easily visible in the dark. Moth-pollinated flowers are also usually strongly scented, as moths have evolved excellent olfactory systems to locate flowers at night – some species can detect scents from flowers a few kilometers away!

#### Biomimicry

Some moths, most notably the Sphingidae family, are well known for their very fast, agile flight as well as their ability to hover. Those abilities are great for avoiding predators and zipping from flower to flower to get nectar. These flight dynamics are of interest to engineers and scientists working in the field of aeronautics who study the flight characteristics and wing structure of hawkmoths (and several other insects such as bees, flies, and dragonflies) to develop tiny devices called micro-aerial vehicles (MAVs), which are sometimes also called entomopters. MAVS can be used to remotely observe areas that may be hazardous for humans to enter, such as search and rescue missions, environmental monitoring, aerial photography and surveillance. The use of hawkmoth wings as models for MAVs is an example of biomimicry, the imitation of natural systems, elements or organisms to solve complex human problems.

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## STRANGERS IN THE NIGHT / MOTHS IN YOUR BACKYARD



*Automeris io* - Io moth

© David Moskowitz, Photographer

### Threats to Moths

#### *Habitat Loss*

The single biggest threat facing earth's biodiversity is habitat loss. Urbanized areas are expanding on a global scale and reducing habitat necessary for all flora and fauna, moths included. Though moths can exploit a wide range of environments, the worldwide destruction of forests, wildflower meadows and other habitats moths depend on reduces the availability of the host and nectar plants essential to moth life cycles.

#### *Light Pollution*

Many people are aware that moths are attracted to lights, and moth scientists often take advantage of this feature to study them. However, when this occurs across large scales – such as in highly light-polluted cities, the effects can be detrimental to moth populations. In recent years, cities have switched from traditional orange-hued streetlights that use high-pressure sodium bulbs to metal halide bulbs that produce bluish-white light. The wavelengths of light produced by these metal halide bulbs are more attractive to moths than traditional bulbs and these bulbs attract both more species *and* more individual moths. Flying around a light prevents moths from performing their natural foraging and mating behaviors. They waste energy and are also susceptible to predators that use lights as easy hunting grounds. Of course, streetlights are an important and necessary safety feature in populated

areas, but researchers suggest that switching to LED bulbs that produce single wavelengths of light may reduce the impacts on moth populations.

#### *Exhaust Fumes*

We know that moths are excellent at chemosensing – some species can detect female pheromones from miles away. Many pollinating moths, especially hawkmoths, use volatile chemical emissions from plants to locate flowers to visit to drink nectar. Just like with pheromones, they can detect these chemicals over several kilometers. Scientists have also found that competing odors from human pollutants like car exhaust can affect olfactory sensing in some moth species, inhibiting them from sensing floral odors. This finding has obvious conservation implications and researchers are investigating whether other insects are affected by odor pollution as well.

### How to “Moth”

#### *Light*

If you've become totally enthralled with the world of moths, as I have, you might want to take up mothing as a summer night activity. We can take advantage of moths' attraction to light to bring them to us for observation. While entomologists may never be one hundred percent certain why moths are attracted to light sources, it is hypothesized that they use celestial bodies, such as the moon, to orient and navigate.

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## STRANGERS IN THE NIGHT / MOTHS IN YOUR BACKYARD

When we create an artificial light source, moths may use this to orient instead, and fly to it. Nothing can be as simple as turning on your porch light and sitting back with a cool drink to observe your local diversity. You can also invest in a full-spectrum mercury vapor light setup available through several scientific equipment outlets. You will need to either have this setup next to a wall of some sort, or suspend an old bedsheet for the moths to come to rest on. A couple of caveats to using lights – many moth species are very late night foragers so don't get discouraged if you don't have silkmoths flocking in as soon as you set out the light at dusk. One option for observing the late night species is just leaving the light on all night and rising in the early morning to see what's present. This does, however, leave the moths susceptible to bird predation, so be sure to get up early enough to rescue them before the birds get to them.

### Bait

Moths are also attracted to fermenting scents, so moth observers often mix up a type of bait. The "recipe" calls for combining old fruits with a bottle of beer and letting it sit at room temperature for a few days. This bait can be painted onto tree trunks to attract moths. Another bait strategy is to re-purpose your bird feeding suet cage for the summer by filling it with fruits and hanging it from a tree (butterflies love this as well!)

### Gardening

Planting a garden is an ecologically-friendly strategy to attract moths. As mentioned earlier, moths are attracted to flowers with strong scents, light colors and tube shapes. In general, they will gather nectar from many of the same native flowers that butterflies visit. Here in the Northeast, good choices for nectar plants include herbs such as phlox, joe pye weed and bee balm and shrubs such as sweet pepperbush and mountain laurel. Moths also require larval host plants which may or may not be the same species they gather nectar from as adults. Host plants comprise a wide variety of our native flora from grasses to vines to hardwood trees.

### Identification

There's no getting around the fact that identifying insects can be extremely challenging. Traditional identification resources such as books are great and some good field guides to moths are Beadle's *Peterson Field Guide to Moths of Northeastern North America*, Holland's *The Moth Book: A Guide to the Moths of North America* and Wagner's *Caterpillars of Eastern North America: A Guide to Identification and Natural History*. More modern identification approaches include apps such as iNaturalist where users can upload photos that are matched algorithmically then verified by experts.

The important thing is not to be discouraged if you can't identify a moth, **just enjoy its uniqueness!**



*Dryocampa rubicunda* - Rosy Maple moth © David Moskowitz, Photographer

### NATIONAL MOTH WEEK

National Moth week is a citizen science project that invites people from all over the world to observe their local nocturnal biodiversity. The mission of our project is to gather data on global moth populations as well as increase awareness and appreciation of moths and other nocturnal organisms.

In 2012, a small group of moth enthusiasts frequently hosted moth nights at a local park in East Brunswick, New Jersey. We thought it might be fun to get as many people as possible across NJ to moth on a single designated night but quickly escalated to asking "Why not see if we can involve the whole world!?" So we set up a website and a Facebook page and were overwhelmed at how many people were eager to participate.

Since then National Moth Week, which is held in the last full week of July, has grown to hosting hundreds of events in dozens of countries.

To host an event or find an event near you, please visit:  
[www.nationalmothweek.org](http://www.nationalmothweek.org)

### Additional Resources:

<https://www.butterfliesandmoths.org/>  
<https://bugguide.net/node/view/15740>



© Photograph provided by EarthEcho International

# EarthEcho International Youth Leaders Convene in Washington DC

by Hannah MacDonald

*Youth Leadership Council Coordinator, EarthEcho International*

This past August, EarthEcho International brought together 32 young leaders brought from their Youth Leadership Council (YLC) and Water Challenge AmbassadorS (WCA) programs, ages 13-22, from across the world to Washington D.C. for the annual Leadership Summit!

The EarthEcho YLC is an outstanding group of environmental advocates and problem solvers who are committed to inspiring and empowering others to take action. Throughout the year, they work tirelessly to develop new programming with EarthEcho's staff to ensure our programs authentically

engage with young people as advocates and leaders. A core belief of EarthEcho International is that young people are the hearts and minds, not just the hands and feet, of the environmental movement.

The EarthEcho WCA represents a new initiative developed by the YLC. These young people hail from communities across the U.S. and have committed to taking action around water quality in their home communities. The WCA are participating in professional development to prepare them to lead



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## EarthEcho International Youth Leaders Convene in Washington DC

water monitoring events in 20 communities across the U.S. on Water Monitoring Day on September 18th.

The Leadership Summit provided an opportunity for these young leaders to work together to develop youth-led EarthEcho initiatives for the coming months, gain skills to help support their efforts and personal conservation work, and build connections with their peers and the EarthEcho team.

Prior to the Leadership Summit, YLC and WCA members were surveyed to determine their needs and interest in different professional development opportunities. Accomplished professionals in the fields of marketing, communications, advocacy, and diversity were brought together to provide comprehensive professional development for EarthEcho youth. YLC and WCA members gained skills to expand their work, strengthen their messaging, and promote EarthEcho programs as well as their own initiatives. Specific session topics included:

- Communications training
- Interview practice
- Event and campaign marketing
- Integrating inclusion and diversity
- Political advocacy
- Expanding work beyond community
- Social media branding
- Networking and career building

Each YLC committee worked alongside staff to develop an action plan for the coming year. Following planning sessions, committees shared their progress with the full YLC defining the steps and resources that were needed to move forward. Below highlights each of the committees' action plans.

### Water Challenge Committee

The Water Challenge Committee will continue their work on the "Water Challenge Ambassador" initiative. Thus far, the YLC committee has onboarded an inaugural class of 20 Water Challenge Ambassadors (WCA), created online content and blog posts, and has established mentor relationships between YLC mentors and WCA mentees. During the convening, the WC committee assisted WCA with planning and preparing for events held in their local communities on World Water Monitoring Day - September 18, 2018. Through World Water Monitoring Day, the WC committee plans to continue mentoring, update and finalize event plans, and create social media content. Following World Water Monitoring Day, the Water Challenge Committee will host professional development webinars for WCA including water policy and a career panel. In addition, the committee will develop a formal structure for the 2019 WCA program to onboard additional WCA members as



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**TOP:** Professional Development **BOTTOM:** Water Challenge Committee

appropriate.

### STEMExplore Committee

The STEMExplore YLC committee has taken leadership on the video contest component of the 2018 STEMExplore program expansion. The video contest will be written by youth, for youth and will allow girls the opportunity to further research a STEM career that inspires them and create a multimedia project highlighting their interests. EarthEcho International will provide the winning submission(s) - selected by the YLC members - with a scholarship prize of up to \$2,500. The committee is currently developing content to promote this contest to an audience of girls ages 13-18. YLC committee members will promote the video contest, recruit STEM Mentors, seek corporate sponsors for prize contributions for the video contest, and promote

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## EarthEcho International Youth Leaders Convene in Washington DC

virtual field trips.

### Expedition Committee

The Expedition YLC committee began working toward developing a tool or guide to reducing single use plastics as their project for the upcoming year. This guide will include examples that will empower youth to live a plastic free lifestyle. While the format for this guide has not been determined, it will be released concurrently with the teacher materials and films from EarthEcho Expedition: PlasticSeas in January 2019. Following the plastic-free guide launch, the committee will create a campaign and contest that promotes reducing single-use plastics use. The first draft of the Guide and a Social Media Toolkit are slated for release in October. The committee hopes that this type of tool will be developed annually with each EarthEcho Expedition.

### Washington D.C. Excursion

WCA and YLC members explored and experienced Washington, D.C. by a bike tour, a trolley ride or a comedy show at the Kennedy Center. Members were able to see monuments, establish friendships and enjoy an evening of fun.

We appreciate each YLC members' hard work, dedication and willingness to travel to Washington, D.C. for the Leadership Summit. The work that the YLC accomplishes each year in person sets them up for success for the rest of the year. Through the support of our generous sponsors at - The Curtis and Edith Munson Foundation, Northrop Grumman Foundation, and Dr. Lyndon Haviland, EarthEcho was able to connect 31 youth from four countries with the programs that engage them in taking action now for a sustainable future. We are grateful for their support.

#### ABOUT EarthEcho International

**EarthEcho International** is a nonprofit 501c3 organization founded by siblings Philippe and Alexandra Cousteau in honor of their father Philippe Cousteau Sr., son of the legendary explorer Jacques Yves Cousteau. Philippe Sr.'s belief in "a world where every single child can breathe fresh air, drink clean water, and walk on green grass under a blue sky" reflects EarthEcho's mission to inspire young people worldwide to act now for a sustainable future.

EarthEcho International empowers youth around the world through dynamic platforms that inspire action and positive change. Using 21st century tools and interactive resources, they are equipped to identify and solve environmental challenges starting in their own communities.

**For More Information:** <http://earthecho.org/>  
or email Hannah MacDonald at: [hannah@earthecho.org](mailto:hannah@earthecho.org)



© Photographs provided by EarthEcho International  
TOP: STEMExplore Committee CENTER and BOTTOM: Washington DC excursions



Team Collections Tent was a bustle of activity as scientists identified specimens and members of the public learned about findings.

© Nicole Slevin, Photographer

# UPPER DELAWARE RIVER BASIN BIOLOGICAL DIVERSITY

by Don Hamilton

*Natural Resources Chief / Upper Delaware Scenic and Recreational River / National Park Service*

Picture, if you will, a state-of-the art manufacturing facility in the Upper Delaware River Basin with thousands of moving parts, fine-tuned over the ages to most efficiently produce goods and services essential for human survival.

Such a “facility” would seemingly hold great value in our society, with a desire to document all of its working parts, understand the processes involved that function synergistically to produce those essential goods and services, and maintain its efficient production.

This “facility” does not exist inside any structure, is not one-of-a-kind, and did not cost millions of dollars to

construct. Rather, such entities exist all over the planet, and were here when we arrived on the scene.

Intact functioning ecosystems provide the goods and services (e.g. air, water, soil, plants, and animals) that sustain us. It is in our best interests to understand their components, and how they function together to produce those goods and services essential to human life.

Biological diversity, or biodiversity, refers to the variety of life on earth, covering the spectrum of unique species, genetic variation, and distinct ecosystems that support these varied species. Each organism in an ecosystem plays an important

role. Ecosystems are most efficient, productive, and healthy when the



© Evan Jenkins, Photographer  
<https://www.flickr.com/photos/evanjenkins/sets/72157661885315983>

Long-tailed weasel like the one above was live-trapped and released during the BioBlitz. These petite predators (about 8” long, with a 5” tail) help to control populations of rodents such as mice and meadow voles.

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## UPPER DELAWARE RIVER BASIN BIOLOGICAL DIVERSITY

biodiversity in them is high.

But sadly, biodiversity worldwide is declining faster than ever before due to an array of human-driven stressors, making it ever more important to study and manage species decline, and to document and better understand overall species diversity and function.

### The 2018 Upper Delaware BioBlitz

A BioBlitz is a means of getting a snapshot of biological diversity for a given location at a given time. While an in-depth inventory of various species in an area over multiple years would be desirable, the resources available do not often allow that kind of assessment.

At the 2018 Upper Delaware BioBlitz, teams of scientists, amateur naturalists, and volunteers gathered to collect, identify, and record every living thing they were able to on a demarcated 64-acre property along the West Branch and main stem Delaware River near Starlight, PA. This would be accomplished in a 24-hour period spanning Friday and Saturday, June 29-30th. Each team, consisting of a team leader and up to four additional members, focused on particular categories of life. For our BioBlitz, these included nine teams specializing in aquatic macroinvertebrates (aquatic insects, mussels, snails), birds, botany (plants), fish, fungi (mushrooms and molds), herptiles (reptiles and amphibians), terrestrial invertebrates (insects, worms, snails), mammals, and bryology (mosses, lichens and worts).

Teams were comprised of scientists from the Academy of Natural Sciences of Drexel University, East Stroudsburg University, the Stroud Water Research Center, the Delaware Highlands Mushroom Society, the Delaware Riverkeeper Network, the National Park Service (Eastern Rivers and Mountains Inventory and Monitoring Network, Upper Delaware Scenic and Recreational River, and Delaware Water Gap National Recreation Area), the Northeast Pennsylvania Audubon Society, the Pennsylvania Native Plant Society, the Sullivan County Audubon Society, Trout Unlimited, Wallenpaupack Area High School, and the Wayne County Conservation District.

A wide variety of specialized methods were used to collect and document the different species present, including netting, sighting, live-trapping, identifying by calls, light-attraction, acoustic monitoring and identification via sonogram, electrofishing, and examining under magnification. Efforts were made to release all animal life in the habitats where they were collected.

The public was invited to the site on Saturday to observe scientists identifying specimens, see what the various teams had collected, and participate in a number of guided walks and educational programs.



**TOP / BOTTOM:** © Dave Soete, Photographer  
**CENTER:** © Norm Trigoboff, Photographer

**TOP:** Youngster takes an interest in an American eel and other fish on display during the BioBlitz. **CENTER:** Some “dairying” ants found on the site were “farming” aphids, in a mutualistic relationship where the ants protect the aphids on the plants where they are feeding, and consume the honeydew that the aphids release when stroked by the ants with their antennae. **BOTTOM:** Despite its small size, this tiny fungus stood out..

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# UPPER DELAWARE RIVER BASIN BIOLOGICAL DIVERSITY

The preliminary results for the number of taxa identified at the conclusion of the 2018 BioBlitz were:

| Team                                                          | Species    |
|---------------------------------------------------------------|------------|
| Aquatic Macroinvertebrates (Aquatic Insects, Mussels, Snails) | 67         |
| Birds                                                         | 59         |
| Botany (Plants)                                               | 206        |
| Bryology (Mosses and Lichens and Worts)                       | 103        |
| Fish                                                          | 26         |
| Fungi (Mushrooms and Molds)                                   | 48         |
| Herps (Reptiles and Amphibians)                               | 15         |
| Invertebrates (Terrestrial Insects, Worms, Snails)            | 223        |
| Mammals                                                       | 18         |
| <b>Total</b>                                                  | <b>765</b> |

Some specimens, particularly invertebrates, continue to be keyed out and identified in the lab. At the time of this writing we were up to 844 species, including 42 species that were first occurrences (had never been documented before) in Wayne County, PA.

## Benefits of a BioBlitz

One of the greatest benefits of a BioBlitz, besides the valuable scientific data that it provides about local biodiversity, is the opportunity to highlight and share this information while engaging the public in such events. Enabling children and their families to meet the scientists in the field, observe their methods, see what they have collected, and learn more about biology in the context of the site goes a long ways towards developing awareness, understanding, and appreciation for these resources, and support for their protection. There has never been a more important time to connect with and create the next generation of nature lovers, supporters, and advocates.

## Value of Biological Diversity and Natural Capital

Biological diversity is the key to the maintenance of the earth as we know it, dividing labor and running the natural world with efficiency and precision, the way we would want it to be run. Diverse communities of living organisms become established in localities over time and act to efficiently enrich the soil, cycle nutrients, purify water, pollinate plants (including our crops) and create the very air we breathe – all ecosystem services that benefit and sustain us, which we could not easily or inexpensively re-engineer.



© Don Hamilton, Photographer  
Light drew in hundreds of night-flying insects, and a few entomologists.

As the least-developed section of the last major river on the Atlantic Coast undammed the entire length of its main stem, the Upper Delaware River's wild and scenic, largely ecologically intact, free-flowing character supports key components and processes that contribute to the superb natural resources found here. The predominately forested, biologically diverse landscape maintains its ability to produce exceptionally high quality water, an extremely valuable resource in today's world.

Something scientists and economists have gotten much better at in the last decade is the ability to assign economic value to ecosystem goods and services (natural capital). In a 2011 paper, Dr. Gerald Kauffman of the University of Delaware estimated that the economic value of the Delaware River Basin's ecosystem goods and services was \$21 billion per year in 2010 dollars, with a net present value (NPV) of \$683 billion discounted over 100 years. Perhaps it is this kind of information that will ultimately convince us of the wisdom in protecting our biodiversity and natural capital, and the ecosystem services they contribute to that make human life possible, into the future.

## For more information:

<http://www.upperdelawarebioblitz.com/>

<https://www.facebook.com/UpperDelawareBioBlitz/>



© Photograph provided by NJ STRAYS

# NO-KILL MOVEMENT

## Companion Animals in New Jersey

by Adriana Bradley  
Executive Director NJ STRAYS

We are NJ STRAYS, an Animal Welfare Organization located in Northern Jersey, that has focused its efforts on local companion animal saving through community outreach and assistance. Established in 2012 and as a *pet owner assistance* organization, our mission is to reduce shelter intake through education, advocacy and the promotion of local pet adoption. Following the path of organizations like Austin Pets Alive and Paws Chicago, NJ STRAYS is looking to create an impact in the local community spreading awareness about unnecessary euthanasia and implementing progressive ways of handling and sheltering companion animals. This progressive way sets its roots in the controversial No-Kill movement.

### Overview of No-Kill

"No-Kill" is not easily defined. The term No-Kill has been adopted by animal rights advocates across the country to express a position and to make a statement against

unnecessary euthanasia. In recent decades the term has been used by companion animal's supporters to fight unnecessary euthanasia inside pounds and shelter facilities - to end the killing of all animals who are not irretrievably suffering or aggressive, and the belief that an animal that can be helped through medical intervention or behavior modification is entitled to humane, life-affirming treatment.

When you think about animal rights, going back to the roots of ancient Greek philosophy or any ancient philosophy where our morality and ethical precepts rest, it will show that the human race has always considered the treatment of animals, as a part of the universal compassion for all beings. "Because one species is more clever than another, does it give it the right to imprison or torture the less clever species?" expressed Richard D. Ryder (British writer, psychologist, and animal rights advocate) when referring to animal rights. But it was not until the 1930's as the control

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## NO-KILL MOVEMENT Companion Animals in New Jersey



© Photographs provided by NJ STRAYS

of reproduction and overbreeding had escaped from our own hands decades before, the issue of euthanasia of companion animals became problematic and the center of the attention, and “lifesaving” efforts aroused.

No-Kill is a very straightforward concept: No-Kill. In spite, what is behind the movement, the path to the definition, is not a straight road. The lifesaving concept has been adapted and represented by many activists and in many different ways; from spaying and neutering efforts to community cat programs, all together in favor of life. The multi-path is and has been, very important to maintain the relevance of the concept and to ensure its survival and passage. Although the definition always remains, its adaptive essence has allowed generations to redefine the path and to adjust it to the constant changes of our knowledge and understanding of animals.

The No-Kill Movement is a universal compassionate way of thinking that criminalizes unnecessary euthanasia. This vision shows two different but complementary perspectives: first, the traditional movement against high kill shelters, place where the *taking- a - life* decision take place; the second one, an inclusive perspective where prevention, education, and community outreach play an important role when considering unnecessary euthanasia outside the shelter system.

Considering both perspectives, the No-Kill movement is leading the rethinking of ways to increase lifesaving and the abolishment of old practices that lead to the unnecessary euthanasia of innocent lives. Not only shelters but complete cities like San Francisco, thanks to the amazing work of Richard Avanzino and Austin with the amazing organization Austin Pets Alive, have been proving that lifesaving is not an easy path but not an impossible one.

### New Jersey's Animal Welfare

In New Jersey, animal advocates are currently fighting for a No-Kill policy and shelter reform that can secure life over death. New Jersey does not have the highest euthanasia rates (of dogs but cat numbers are alarming) however, animal welfare matters, regarding companion animals and even wildlife, are moving very slowly.

In New Jersey, a double phenomenon is occurring. First, the No-Kill mentality has not been adopted, and the unnecessary euthanasia continues as a control measure of overcrowded shelters; second, shelters and private rescues use the term No-Kill as a marketing slogan but have not adopted clear ways to increase lifesaving. Reasons behind the fear of adopting a No-Kill policy at the shelter level can be found in the challenges of reconfiguring an entire system and to the implementation of new ways of

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## NO-KILL MOVEMENT Companion Animals in New Jersey

saving lives versus the easy and fast way to clear space via euthanasia. Another reason can be found in the radicalism of the concept and the bad reputation the term carries due to misinterpretation.

The concept, the definition, is autological, but the path, as mentioned before, is multiple and adaptive, and must be to secure its survival. Most shelter facilities in New Jersey have created static structures and procedures on how to handle the intake problem; structures that are outdated and that respond to old-fashioned necessities and lack of knowledge about dog and cat behavior for example. It seems frightening to them to think outside their own traditions.

Currently, there is fragmentation within the state's animal welfare. Rescue organizations, trap neuter and return groups and shelters are working in separate ways. The focus remains on the massive transportation of animals and adoption as the only solution to the overpopulation and abandonment problem instead of prevention and education. Animal advocates are using legislation to secure the protection of companion animals. However, there is not enough support from the public due to a lack of awareness from families and pet lovers regarding this matter.

### Thinking Outside the Box

The progress within the animal welfare sector has been reflected in spaying and neutering to pet vasectomy; individual evaluations of playgroups; animal as pets to animals as individuals across the world. The No-Kill concept has opened the door to the conversation and reconsideration of old discussions. The challenge for all animal advocates, rescuers and pet owners in New Jersey is to find the ways, approaches and paths to achieving No-Kill.

NJ STRAYS has decided to build a progressive path towards prevention, education, and awareness by working directly with the community, outside the traditional shelter structure. There is no doubt that adoptions are a big necessity to increase lifesaving, but so is the creation of long-lasting solutions to the overbreeding and abandonment problem. It is clear, that the euthanization of companion animals is happening inside shelters. However, it is not a secret that as citizens and pet owners, we have a big responsibility in all animal welfare matters and that cruelty and suffering is happening outside facilities. Thus, the prevention of abandonment and cruelty is key for the animal welfare in any state, inside and outside the shelter.

NJ STRAYS is an organization that complements the work of rescue organizations and advocates and it is always looking to cooperate and work in conjunction with others. The No-Kill approach of the organization has been focused on the reduction of shelter intake through prevention and



© Photograph provided by NJ STRAYS

new alternatives for handling strays outside the shelter structure. This approach is only *one* way and a one piece of the large puzzle of New Jersey's animal welfare system. This path allows to make a difference in both animals and humans experience but also offers an invitation to the community to get involved in animal welfare matters. Our current services are free to the public and we are hoping to expand our efforts to new projects that can increase lifesaving.

Our work is only one piece of a huge puzzle; it is one way to respond to New Jersey's animal welfare current situation. As local necessities and policies change regarding companion animals, NJ STRAYS plans to evolve and adapt to upcoming challenges. In the meantime, we wear the No-Kill badge proudly, and we are hoping for more to join us in this crusade.

### For More Information / How to Get Involved:

<https://www.njstrays.org/>

<https://www.facebook.com/njstrays/>

<https://www.austinpetsalive.org/>

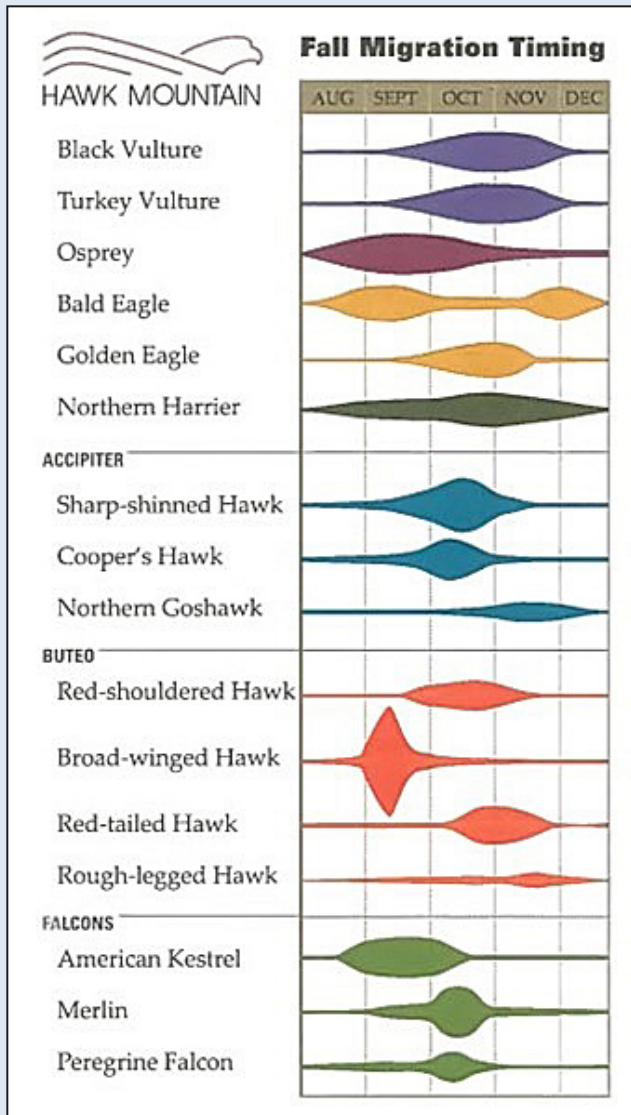
<http://www.pawschicago.org/>



Continued from page 2

## THE AUTUMN HAWK MIGRATION

# DISCOVERING NATURE



© Chart provided by Hawk Mountain Sanctuary

### Hawk Watching Tips:

Above chart provides relative timing for each species based on 80 years of data. Weather strongly affects the flight on any given day. Best flight conditions at Hawk Mountain occur one to two days after the passage of a cold front and on days with northwesterly winds. Binoculars provide the best views of passing migrants.

### For More Information:

<http://www.hawkmountain.org>  
[www.hawkmountain.org/raptorcount](http://www.hawkmountain.org/raptorcount)

### Additional Resources:

<http://www.hawkmountain.org/raptorpedia/peak-migration/page.aspx?id=348>  
[https://en.wikipedia.org/wiki/Hawk\\_Mountain\\_Sanctuary](https://en.wikipedia.org/wiki/Hawk_Mountain_Sanctuary)

## THE DELAWARE VALLEY EAGLE ALLIANCE

working towards the conservation of  
our wildlife and natural resources

### ABOUT US

The Delaware Valley Eagle Alliance is a 501 (C)(3) not-for-profit organization with a mission to increase awareness, understanding and promote conservation of our wildlife and the natural environment. We accomplish this through our publications, projects and programs.

We believe that raising awareness and understanding will change attitudes toward conservation and our natural resources. We are committed to this because we believe that it is essential to enabling all life to exist and prosper on Earth.

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### PROJECTS AND PROGRAMS

We are available to work closely with biologists and conservation groups to document ecological and wildlife research on rare, sensitive and endangered wildlife and environmental issues. We collaborate with communities and other organizations to develop and organize wildlife and environmental educational and entertaining programs.

### SUPPORT

The Delaware Valley Eagle Alliance depends on individuals and organizations who share our concern for wildlife and the environment. Our publications, projects and programs would not be possible without the generosity of our supporters and sponsors.

For more information and/or to make a tax deductible donation please email us at: [yokedvea@gmail.com](mailto:yokedvea@gmail.com) (or call 201-841-5168).

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