PROJECT NATURE NEWSLETTER

PROJECT NATURE

DECEMBER, 2019 ISSUE

Events

Coffee, Cocoa & Birds
Blendon Woods Metro Park - Nature Center
21st & 22nd December 10:00 am - 2:00 pm
Drop by and enjoy a steaming cup while watching birds at our viewing window

Lantern Stroll
Sharon Woods Metro Park - Schrock Lake Restrooms
21st December 5:30 pm - 6:30 pm
Candle lanterns will light the way on a 1-mile stroll through the woods on the winter solstice

Solstice Walk
Inniswood Metro Gardens - Garden Entrance
21st December 6:00 pm - 7:00 pm
Join for a guided walk in celebration of the longest night of the year

Winter Solstice Hike
Clear Creek Metro Park - Park Office
21st December 4:30 pm - 6:00 pm
Celebrate the shortest day of the year and catch the sunset on a 2-mile family friendly hike to Lake Emily. Warm up with hot chocolate afterwards.

Outdoor Adventure - Winter Solstice Bike Ride
Scioto Audobon Metro Park - Picnic Area
21st December 5:00 pm - 7:00 pm
Celebrate the shortest day and longest night of the year with a Winter Solstice Bike Ride! As a group, we'll cover basic bike safety and tips for night riding before heading out on a 13 mile bike ride along the Scioto Trail. Bring your bike, helmet, and dress for the weather.

Weekly Bird Hike
Scioto Audobon Metro Park - Grange Insurance Center
21st & 28th December 10:00 am - 11:30 am
Hike with experienced birders to find and learn about birds

Backyard Birds Open House
Highbanks Metro Park - Nature Center
28th December 11:00 am - 1:00 pm
Enjoy the birds visiting the feeders, and learn how to tell them apart. We might see Pileated Woodpeckers, Blue Jays, sparrows, hawks, and more.

120th Annual Christmas Bird Count
Prairie Oaks Metro Park - Park Office
28th December 8:30 am - 10:30 am
Calling all birders of every level, including first-time birders! Come participate in the nation's longest-running community science bird project that fuels Audubon's work throughout the year.

Coffee, Cocoa & Birds
Blendon Woods Metro Park - Nature Center
28th & 29th December 10:00 am - 2:00 pm
Drop by and enjoy a steaming cup while watching birds at our viewing window

47th Annual Winter Hike Series
Blacklick Woods Metro Park - Ash Grove Picnic Area
4th January 10:00 am - 12:00 pm
Take a 2- or 4-mile walk through the woods and meadows. Hot drinks and snacks provided.

Events

Woodpeckers at Blendon Ravines
Blendon Ravines - 5280 Cambria Way
4th January 10:00 am - 11:00 am
Search for 6 species of woodpeckers on a 1.5 mi off-train hike through the Blendon Ravines property. Meet at 5280 Cambria Way. Park along the street.

Owls Prowl
Battelle Darby Metro Park - Indian Ridge
4th January 5:00 pm - 6:00 pm
Lure in owls using calls on a 1-mile hike

Lantern Hike
Highbanks Metro Park - Nature Center
4th January 6:00 pm - 7:30 pm
Learn about some of the ways animals share romance on a lantern-lit walk through the forest

Blacklick Woods in Winter Display
Blacklick Woods Metro Park - Nature Center
4th - 5th January 8:00 am - 6:00 pm
Discover what plants, animals and fungi can be found in the coldest months of the year

Weekly Bird Hike
Scioto Audobon Metro Park - Grange Insurance Center
4th, 11th & 18th January 10:00 am - 11:30 am
Hike with experienced birders to find and learn about birds

First Sunday Winter Birding Series
Highbanks Metro Park - Nature Center
5th January 9:00 am - 10:30 am
On the first Sunday of the month, take a 2.5 mile hike to look for winter birds. All skill levels welcome. Limited amount of binoculars available.

Wildlife Hike
Battelle Darby Metro Park - Cedar Ridge
5th January 1:00 pm - 2:30 pm
Take a 2-mile hike and look for winter animal activity

Preparing for Winter Hiking
Highbanks Metro Park - Nature Center
5th January 1:00 pm - 2:30 pm
Join Outdoor Source for a class on how to prepare for hiking and camping in cold weather. Learn about layering, footwear, insulated jackets, sleeping bags, and more!

Bird Feeding Basics
Blendon Woods Metro Park - Nature Center
11th January 1:00 pm - 2:00 pm
Learn about preferred foods & feeder styles of Ohio birds, watch for some common winter visitors, and make a simple feeder to take home

47th Annual Winter Hike Series
Sharon Woods Metro Park - Maple Grove Bulletin Board
11th January 10:00 am - 11:00 am
Enjoy a 2- or 4-mile hike through fields and forests. Hot soup and drinks served.

Events

Harriers & Short Ears
Battelle Darby Metro Park - Nature Center
11th January 5:00 pm - 6:00 pm
Visit the wetland on a guided hike, looking for Harriers and Short Eared Owls on a short Prairie Hike

Winter Tree ID Walk
Three Creeks Metro Park - Confluence Area
12th January 2:00 pm - 3:00 pm
Learn to identify trees by their twigs and bark

Project FeederWatch
Blendon Woods Metro Park - Nature Center
11th & 12th January 10:00 am - 2:00 pm
Help collect data for this important citizen science project that tracks trends in winter bird distribution and abundance. No Experience necessary!

Project FeederWatch
Blacklick Woods Metro Park - Nature Center
12th January 2:00 pm - 4:00 pm
Help us count birds visiting the feeders to collect population data for scientists. No Experience necessary!

47th Annual Winter Hike Series
Prairie Oaks Metro Park - Darby Bend Lakes
12th January 2:00 pm - 4:00 pm
Enjoy a 1, 3, or 5-mile hike around the lakes, through the prairie and along the banks of Big Darby Creek

Domestic Versus Wild

All domestic animals (as well as plants) were wild at some point in time, several generations ago! While there is no hard definition of wild versus domestic, a general distinction between the two is as follows. A wild plant or animal lives its entire life without needing any assistance from humans, whereas domesticates rely on humans for survival. Domestication is the process of adapting a wild plant or animal for human use. Wild plants and animals have evolved through the process of natural selection, whereas their domestic counterparts have been artificially selected and bred to suit human needs. Hence, even though domesticates carry the same genetic signature as their wild ancestors, their overall genetic makeup is significantly different. Domesticates have genetically adapted over generations to live alongside humans. Domestication of both plants and animals allowed humans to move from being hunter-gatherers to the ability to produce their own food through agriculture and cattle farming.

Darwin described the process of natural selection in two of his famous works — ***On the Origin of Species,*** *and* ***The Descent of Man,*** **and** ***Selection in Relation to Sex***. He also published another work titled ***The Variation of Animals and Plants Under Domestication***, in which he elaborated on the evolutionary process through artificial selection. As the names suggest, natural selection is driven by environmental factors whereas artificial selection is completely unnatural in that it is a consciously effected process. Sexual selection is the natural process where the strongest and fittest individuals of a species compete for mating rights to pass on their genes to the next generation. Artificial selection, usually for the purposes of domestication, involves selective breeding where either mates are chosen by humans (***prezygotic***) or only the most successful offspring is allowed to reproduce (***postzygotic***). Prezygotic selection is a much stronger and a significantly accelerated evolutionary process than postzygotic selection. If only the least aggressive and most human-tolerant individuals of a certain species are allowed to mate, these genetic traits like reduced fear of humans and friendliness are more likely to be prevalent in future generations. Animal domestication has been mostly prompted by three different reasons, and hence can be classified into three main groupings: domestication for companionship (pets like cats and dogs), farm animals for food (livestock such as cows, sheep, and pigs), and working or draft animals (e.g. horses, donkeys, and camels).

Domesticates exhibit several characteristic traits regarding their physiology, morphology and behavior. All domesticates largely share one common characteristic — tolerance of proximity to

humans or an outright lack of fear of them. Physiological and physical traits of domestic mammals, particularly pets, include being giants (e.g. Saint Bernard breed of dog) or dwarfs (e.g. Chihuahua), wavy or curly hair, shorter or rolled tails, and floppy ears among others. Many of the physical characteristics of domestic pets make them appear like the younger version of their wild ancestors — a feature called ***neoteny.*** Neoteny refers to the retention of juvenile traits such as soft fur and floppy ears. In other words, it's almost like a puppy that never grows up! Other physiological modifications that domestic animals, particularly farm animals, have from their wild cousins include growing quickly to maturity and multiple fertility periods in a single year — called ***polyestrousness***. Among behavioral traits, domesticates tend to have modified psychological responses affecting mood, emotion, affiliative behavior, and social communication. Domestication also leads to a major modification in diet. For example, while its wolf ancestors are purely carnivorous, a dog's diet is more diverse and includes many non-meat meals — similar to its omnivorous human friend. Consequently, dogs produce more proteins involved in starch digestion and fat metabolism compared to their wolf ancestors. These physiological, morphological as well as metabolic changes lead to significant dependence of domesticates on humans!

Domestication - A Chronological History

Dogs

The earliest domestication is believed to be of the dog (from its ancestor — the wild wolf). Archaeological evidence as well as molecular studies indicate that domestication of the dog started in Middle East, Asia. Initiated over 15,000 years ago in the late ***Mesolithic*** (an archaeological term for a period in human prehistory, also known as the Middle Stone Age), the most accepted theory is that humans were still nomadic hunters and gatherers, and some wolves that were less afraid of humans, ventured close to the human camps scavenging for food. The relationship gradually grew from a simple tolerance of one another to becoming mutually beneficial, with the wolves initially serving as guards or sentinels, warning of any approaching danger. As more time passed, these wolves, living alongside humans, started to deviate genetically from the rest of the larger wild population by the process of natural selection at first, and later by artificial selection when the friendlier and less aggressive wolf pups were taken as

pets, and finally the proto-dog was selectively bred. While dogs have been living with humans for several thousand years, the modern day dog breeds are a mere 3,000 - 4,000 years old. Ancient Egyptians may have been the first to breed dogs. In ancient China, dogs were bred to look like lions — a symbol of Buddhist faith. In the 18th century, purebred dogs had become a status symbol among the elite and wealthy. Today there are approximately 400 different breeds of dogs as recognized by the Dog Breeders Association.

Agriculture

For over 100,000 years, humans remained nomadic hunters and gatherers. As the Mesolithic period was coming to an end, humans began to find alternative ways of living. Evidence of humans changing their way of living from nomadic to a more sedentary lifestyle for the first time is found in the region known as the ***Fertile Crescent*** — a region in the present day Middle East, some 12,000 years ago. This region is believed to have been rich in plants with edible seeds, grains and fruits. Wild cattle, sheep, horses, deer and gazelle flourished. The area was so bountiful that the inhabitants had to make very little effort and short forays from their base camp to gather food. This resulted in more permanent settlements, and movable camps gave way for semi subterranean pit-houses. Cattle were domesticated. Hunters and gatherers developed tools such as sickle and grinding stones to thresh and process wild grains. Then sometime between 11,000 and 10,000 years ago, there is believed to have been a cold and dry period — called the ***Younger Dryas*** — which forced humans to rely on cultivated grass and legumes. This event perhaps triggered a major shift from hunting and gathering to cultivating. Humans ultimately domesticated plants, and agriculture was born, ushering the humanity into the ***Neolithic*** (or New Stone Age), and this period of time in the Fertile Crescent is known as the ***Neolithic Revolution***. It can be argued that the Neolithic farmers were the first geneticists, who were able to manipulate the genetic diversity in plants and animals for their own benefit. Ancestors of many of today's barnyard animals were herd-living herbivores who followed a dominant individual through their territory. This behavior of these animals was exploited by the Neolithic peoples by controlling or replacing the alpha individual and gaining control of the herd. Animals that naturally lived in a herd could be easily adapted to live in close proximity and in confinement. These animals had a flexible diet, grew fast and would freely breed in the presence of humans. They were just perfect for domestication. This could be called a watershed moment in the human existence that gave humans an unprecedented edge over all other species and was responsible for the rapid rise and success of human civilization from that point forward!

Cats

Domestication of cats occurred through a very different process. Archaeological evidence, including Egyptian cat mummies and ancient Romanian cat remains, dates cat domestication between 3,500 - 9,500 years ago. Cat domestication is also believed to have started in the Fertile Crescent. Cats were an unlikely candidate for domestication. All felines have a very limited metabolic ability to digest anything except proteins. Behaviorally, cats are solitary creatures. There is no logical reason of their utility to the early agricultural human community. DNA studies indicate that unlike the domestication of dogs and other farm animals, cats were domesticated by the process of ***self-domestication***. The most plausible theory is that the first barn cats perhaps figured out an easy way to find mice in the grain storehouses of the early human farming communities, and were simply tolerated by humans, who didn't mind getting rid of the mice that were destroying their stored grains. Over time, they gradually diverged from their wild cousins. In other words, cats wandered into human civilization, chose to stay and domesticated themselves! Historical DNA studies show that up until the 18th century, the genetic makeup of the domestic cat was not very different from its wild counterpart. It was only in the 19th century that people started to selectively breed cats, mostly for their appearance, to create fancy cat breeds.

Domestic versus Tame

Often the two terms are used interchangeably, but there's a big difference between *tame* and *domestic*. Taming is a conditioned modification in the behavior of one or few individuals of a given species, while the rest of the population of that species remains wild. This modification occurs within the individual animal's life span. Domestication, on the other hand, is a permanent genetic modification of a lineage of an artificially bred species. Tameness is a degree of calm and lack of aggression as well as fear. Many animals can be tamed to live or work alongside humans and generally benefit from their presence. For example, animals like lions and tigers raised in captivity can be tamed (such as in zoos and circuses), but not domesticated. Similarly, the Asian elephants may have been living with humans for thousands of years, but they are not domestic. Although they can breed in captivity, most elephants are captured from the wild and then tamed. Moreover, they are not selectively bred, mainly because of their long reproductive cycle.

Conversely, not all domestic animals can be tamed. Examples of such animals are chickens, Spanish fighting bulls, and honey bees.

Feral

A domestic animal that is (intentionally or unintentionally) released back into the wild and quickly adapts to fend for itself is called *feral*. Similar to taming, it is the modification in behavior and not genetics in the feral animal. In both cases, behavioral change precedes any potential change in genetics.

However, a tamed or a feral animal could be the start of a long evolutionary genetic change in either direction — towards domestication or wild, respectively.

Fun Facts!

- Most dogs are born with the understanding of the unique human gesture of pointing — something even animals that are known to be the smartest, such as apes and whales, need to be painstakingly taught.
- Dogs instinctively choose the company of human beings over their own species.
- Over the many generations of domestication, domestic horses have been able to suppress their natural fear of predators, so they can be used in war, patrol and even parades.
- The domestic cat is born with a very specific call in its vocabulary, which it uses only with humans. The adult cat "meows" only to humans! Kittens meow to let their mother know they're hungry, but once they grow up, they no longer meow to communicate with other cats. To interact with its fellow-species, the cat "yowls". The adult cats meow to people in order to greet them, attract attention, ask for food or to ask to be let in or out.
- Cats are the only domesticate that are social under domestication — with both people and other cats — but solitary in the wild.
- Finally, a rather interesting point to note is that while species of both flora and fauna are going extinct all over the world at an unprecedented rate, primarily due to habitat loss, no domestic species has gone extinct to date!

Mixing Domestic With The Wild

Over the course of several thousand years and many more generations, domesticates have significantly diverged genetically from their wild ancestors. In appearance and behavior, they may be different from their wild counterparts, but instinctively they still have many of the same traits as their ancestors. We have made domestic animals a part of our world now and hence they do not belong in the wild anymore. Consequently, a domestic animal negatively impacts wildlife. The two pets that cause the maximum damage to the wildlife are dogs and cats, when left unchecked by their human owners.

Impact of Dogs

Numerous studies and scholarly research have concluded that dogs cause a significant disturbance to the wildlife. There are an estimated one billion feral and free-ranging dogs worldwide and are said to threaten nearly 200 species all over the world. Nature parks often reserve certain trails on which dogs are not allowed. Even on the trails where dogs are allowed, it is usually required by the parks that the dogs be on leash. The evidence for the negative impact of dogs on native wildlife is overwhelming and undeniable.

1. Perhaps the most significant impact dogs have on the wildlife is displacement of wildlife. Presence of dogs causes most wildlife to move away from the area. The displacement could be temporary, but also permanent if the presence of dogs is constant in the region. The displacement is both spatial as well as temporal. In other words, a dog's presence on a park trail could cause the wildlife to move away from areas close to the trail. Most animals are extremely sensitive to smell and even the scent of dog urine and feces can cause the wildlife to avoid the area. Hence, the effect of dog's presence lingers on long after the dog has left the area.

   The most profound effect of the displacement of wildlife is that it effectively reduces the available habitat for the wildlife. It also reduces our viewing experience of the wildlife when we visit the parks. Studies on dog-specific impact on a variety of animals including reptiles, shorebirds, waterfowl, songbirds, small mammals, deer and other carnivores, have found that dogs cause wildlife to move away. The reason for this is that the wildlife consistently sees dogs as predators. This makes sense since domestic dogs are distant relatives of wolves — a top predator!

The impact of unleashed dogs is certainly much stronger than on-leash dogs in the extent to which the wildlife is displaced.

2. In addition to causing a displacement of the wildlife, dogs also create a significant stress on the wildlife. Since the wildlife sees dogs as predators, their presence forces them to be more alert and hence, stressed. Stress response is a functional response of an animal to an external stressor, such as a change in outside conditions like seasonal change, food availability or a sudden disturbance. Stress response of an animal is an evolutionary defense mechanism that causes a release of specific hormones and a sudden increase of the heart rate, triggering the animal to respond quickly to the threat. But this comes at a cost. Staying alert reduces an animal's regular feeding, sleeping, grooming and breeding activity. Consistent presence of dogs creates a chronic and long-term stress among the wildlife, forcing them to stay alert at all times.

3. After all dogs are natural predators and they can't help their predatory instincts. Feral and free-ranging dogs chase and kill a number of wildlife species including small mammals, deer, fox, and reptiles. In a study in Canada, it was found that dogs were the top three predators of the white-tailed deer fawns. A study in Chile found predation and harassment by feral dogs for the majority of larger terrestrial mammals, including three species of deer. Studies have shown that feral and free-ranging domestic dogs have contributed to the extinction of almost a dozen animal species all over the world, including the New Zealand quail.

4. Feral dogs transmit diseases to wildlife including rabies and canine distemper, affecting from small animals such as opossums, skunks, weasels and squirrels to large canines such as cougars.

5. Dog feces — whether from feral dogs or from pets whose owners would fail to pick it up after them and dispose of it — enter our waterways through stormwater, contributing to serious pollutants, such as the E. coli bacteria.

One might ask '*if dogs impact wildlife, don't humans too?*' The answer is yes, but not nearly to the same extent. Almost all studies have conclusively found that people with dogs have a greater impact on the wildlife than people without dogs in nature parks. The two primary reasons for this are that one, humans haven't been predators in the strict sense of the word, and at least the wildlife doesn't see humans as predators the same way as it sees dogs. The second reason is the

unpredictability of dogs as compared to humans, which makes their impact on the wildlife much greater. Studies have shown that some wildlife species are able to adapt to predictable and non-threatening disturbance, such as people walking on a trail in a park. Thus the wildlife learns what is and isn't a potential threat, which helps in reducing their overall stress response.

Impact of Cats

Domestic cats rank number one in human-introduced predators of native wildlife (dogs rank third). In the US, there are an approximate 148 - 188 million domestic cats — between one-quarter and one-third of the world's domestic cat population. Of these, 60 - 100 million are feral cats. Another 60 million or so are free-ranging or outdoor pet cats. These non-native predators kill an estimated 1.5 - 4 billion birds every year in the US alone. They kill an additional 6 - 22 billion small mammals each year. In North America, feral and outdoor pet cats are the second largest cause of bird deaths after habitat loss. Cats hunt and kill instinctively, even when well-fed. Just like dogs, cats also cause stress responses in wildlife, which negatively impacts the wildlife.

It must be emphasized that it's only the feral and free-ranging or outdoor pet cats, and not the indoor pet cats, that pose a threat to the native wildlife.

One of the management practices employed by some is the Trap-Neuter-Release (or TNR, for short), in which a feral animal is captured, then vaccinated, spayed or neutered, and then released back in the wild. In theory, this method works; in practice, it is not effective and numerous scientific studies have shown several complications with this method. Consequently, Cornell Lab of Ornithology — one of the nation's leading research and conservation institutes for birds — does not support TNR as a management approach. The National Association of State Public Health Veterinarians also advocates against the practice of TNR. Even certain animal welfare groups, such as People for the Ethical Treatment of Animals also oppose TNR.

The best solution is to be educated and informed about the problem and keeping our cats indoors (and also, not feeding feral or stray cats). Cats can also be trained to walk on a leash. Keeping cats indoors is not only beneficial to the environment, it's beneficial to the cats too. Outdoor cats live a shorter life — of about two years on average — compared to indoor cats. Outdoor cats are susceptible to catching (as well as spreading) diseases and can get injured or killed by a vehicle-collision or by another predator, such as coyote.

Epilogue

While the thousands of years of domestication has resulted in several genetic modifications in domestic animals compared to their wild ancestors, it hasn't always been able to suppress the millions of years of evolutionary instincts they possess. What's more, the rest of the wild world still sees no difference between domesticated animals and their wild cousins. Another way to look at it is that the animals and the plants in the wild are working together in an intricately interconnected web of ecosystem, with every species playing an important role in the smooth functioning of the system. When we domesticate a plant or an animal, we "pluck" them from the ecosystem and make them a part of our world, which, unfortunately, is "disconnected" from the wild ecosystem. While these domesticates are certainly serving a great purpose in our world and our lives in numerous ways, including being a faithful companion and friend, they are not a part of the wild anymore and hence no longer serve a role in the ecosystem.

This, by no means, implies that the blame lies on our dearest furry friends, nor that we need to give them up. Absolutely not! The responsibility rests entirely on us humans, because we caused this problem in the first place, when we did not act responsibly or were under-informed. Our pets are precious to us and are our family members whom we love as much as the rest of our family. But just like our beloved pets have different needs than our human family members, they have a different impact on the world outside.

The environment is already under stress for a myriad of other reasons. This is one very simple action we can take to help the environment by being responsible about our pets and keeping them away from the wild!

To subscribe to the newsletter or for any questions/comments/feedback, please email Rajat Saksena
Ohio Certified Volunteer Naturalist
saksena.6@osu.edu

Project Nature logo designed by Sushil Narsian, Indus Design
indusdsign@gmail.com
http://indusdsign.com/