

Video

Audio

>>MALE NARRATOR: Some creatures come out when the sun sets. This is the time when they can see best, hunt best and stay the safest. There are also a few fun activities for humans that only take place... after dark ...coming up next.

>>Narrator: When the sun goes down some animals wake up. Not all creatures sleep through the night like you and me. Classified as nocturnal, these animals prefer the cover of darkness for their activities.

>>Heimmer:

A nocturnal animal is an animal that sleeps in the daytime and then is awake and active primarily during the night.

A diurnal animal would be an animal like us that is active in the daytime and typically sleeps at night.

>>Narrator: Nocturnal animals are varied. This diverse group includes reptiles, mammals, fish, insects, and even the rare human. But we'll get to that later....

**Daytime Georgia is crowded with animals making their way in the world... hunting, nesting, and migrating. So, animals with the right nighttime adaptations have a rich ecological niche available to them – but these animals have to find food in the dark and in order to do this some have developed a highly-advanced sense of smell or specialized hearing abilities such as echolocation. Others acquired eye adaptations for improved night vision**

>>Heimmer: Of course, Georgia is full of different nocturnal animals. We have many types of different owls here in Georgia, which are wonderful nighttime predators, birds of prey. We have mammals that we might see from time to time in our yard, like skunks and opossums and raccoons. Different things that maybe we don't see in the daytime, but once in a while if we're out at night, we may actually catch a glimpse. Ah, things like toads also are active at night, and they're out there hunting things like crickets.

Bats, of course, come out at nighttime to feed on insects here in Georgia, so they're great helpers. Also, fox might often be spotted in more woodsy areas. Bobcats are another kind of rare sight to see, but they're out prowling around at night. And, even your house cat is a nocturnal animal. We sometimes adjust their schedule a little to coincide with ours, but they naturally would prefer to be active at night.

Alligators are an animal that people don't often think of as being nocturnal because usually when we see them, we see them in the daytime out basking and soaking up the sun's warmth. But, they do most of their hunting and feeding at night.

>>Waters: Uh, alligators were once on the endangered species list. Um, and their population has rebounded up to the point where they are plentiful. And

you know we have a lot of alligators in Georgia now

>>Martin: The alligator occurs in Georgia south of the fault line. They're found in a wide range of habitats. We have them throughout the marshes, but also in town areas in ponds, both in man-made ponds and natural ponds. You can find them in drainage, ditches, and canals that go through some of the residential areas. They tend to be somewhat solitary. The males do; they come together and reproduce in the May/ June time frame. Generally the nests are located along tributaries that run up into the marshy, grassy area. They build a mound of vegetation and in that mound is where they lay eggs there. Success of the young is about 20%. They're about 8-11 inches long when they first hatch out. Predation is a factor: raccoons, larger turtles, birds, other alligators will actually feed on the young. The young themselves feed on small prey and then as they get larger, they are, of course, carnivorous, umm they're going to feed on larger fish, young hatchling birds, pretty much anything that they can get a hold of. Which is why a lot of times we're concerned within residential areas if given the opportunity to take a domestic animal such as a dog that strays to the water's edge or swims in the water, they potentially will.

>>Heimmer: One way we can actually see alligators at night is to have a flashlight. They have an eye shine, kind of what we might think of a cat having, where we can spot them in the water just by shining a light towards their eyes.

**>>Narrator: The most notable feature of nocturnal animals is the size of their eyes. Large eyes, with a wider pupil, larger lens and increased retinal surface can collect more ambient light. For example, an owl's eyes fill over one half its skull.**

>>Heimmer: A lot of animals do have a special coating in the back of their eye that reflects light, and this is something that helps them to make the most of the light that is available to their eye during the nighttime. And, it's something that helps them to see much, much better than, than people would with a much lower light level than we would. be able to see in.

One great thing to go try at night when you want to go spot nocturnal animals is to take a flashlight and hold it right around your eye level, and if you shine it in the grass, perhaps, or in the bushes, you may see all kinds of eyes looking back at you that you didn't realize were there, things like spiders and frogs and, perhaps even larger things like opossums and bobcats or house cats.

**>>Narrator: Even with these specializations nocturnal animals see mostly crude shapes, outlines and no color. But what happens to these night-time specialists during the day? For most nocturnal animals the answer is to keep largely inactive during the day to avoid over-stimulating their highly sensitive eyes although most nocturnal animals also have specialized pupils to shut out damaging bright light.**

**The large eyes of small mammal are part of what make these creatures so appealing to humans. We think that they are soo cute... until one creeps into our backyard.**

>>Waters: Fact is that coyotes are virtually state wide and there is a healthy population of them and they are here to stay.

**>>Narrator: These night-active critters hunt small rodents, rabbits and squirrels. Their hunting grounds are varied and may even include your backyard. Some day you may wake to find the evidence of the previous night's hunt.**

>>Waters: A lot of times, especially in subdivisions, there are the gutter down spouts attached to a black plastic pipe that runs under ground and drains somewhere else, and of course you have provided a good habitat for rodents; that's a good place for rodents to hide and coyotes have a real keen hearing and uh they hear little rodents crawling around in those pipes and it is not uncommon for them to dig them up. Simple solution to that is, put a piece of wire on the end of it. Keep the rodents out, you won't the coyote digging up your yard. Or the neighbor's dog for that matter.

**>>Narrator: The red fox has a diet similar to the coyote and can also be found in most of Georgia. They are nocturnal mostly in the summer months however and are more active during the daytime in the winter and fall. Unlike the gray fox, the red fox is an introduced species in Georgia. The gray fox differs from the red fox in that they prefer a more forested habitat and they are particularly adept at climbing trees.**

**Another way that nocturnal animals are night-adapted is with an increased and or specialized sense of hearing.**

>>Heimmer: Many frogs in Georgia are active at night, and a lot of times the sounds we hear at night, sometimes we might think it's insects, but a lot of times it's frogs calling to each other. Um, during the breeding season, frogs will come down, usually to a source of water, and do what's called chorusing, which is when all the males get together and sing to attract the females. And, so, certain times of the year, especially after a nice rain, this can get so loud it's almost deafening.

>>Jensen: When you are out there in the wild looking and listening for frogs, you rarely ever encounter a situation where you've got just one species calling, there's usually a multiple, multiple species calling at the same time, loud choruses of all species going at the same time.

>>Heimmer: Each species of frog in Georgia does have it's own very unique call, and, ah, scientists can recognize a frog just by hearing its call, takes some practice, but they are very distinctive. And, then, of course, the females of that particular species, that is how they locate and find the males. Also, different calls that the males make, and they don't all make just one call, they have different calls that mean different things. Um, some can be an intruder alarm or defensive call, where others are kind of a long range call to call to the females and attract them.

**>>Narrator: But even animals that you wouldn't associate with having good hearing and good senses of smell are also nocturnal. For instance some turtles are nocturnal.**

>>Heimmer: In Georgia we have many different types of turtles that really inhabit all different parts of our state. We have turtles that live in the water, um, in fresh water and in salt water. We have turtles that live primarily in forests and undergrowth, some that live in very dry habitats, like the gopher tortoise, who's

actually a burrowing tortoise. So, there's really a great deal of variety, and looking at turtles you can always tell a little bit about where they live by looking at the type of shell that they have. Is it flat and light weight and streamline, well, perhaps that turtle lives in the water. Ah, turtles that spend more time on land are going to have a thicker, more highly domed shelled. That might be good for protection, but it wouldn't be so good for swimming because, of course, it's much heavier.

**>>Narrator: A classic example of a high-domed land-living tortoise is the Gopher Tortoise.**

>>Heimmer: Gopher tortoises are actually our state reptile, and they're prevalent down in South Georgia where they do live in very dry habitats. And, in this habitat they're digging burrows that can be up to forty feet long in some instances. And, so, in the burrow, of course, it's providing great shelter for the gopher tortoise where he can get away from predators, get out of the bright sun, get away from thunderstorms, and he's also, by building these burrows, providing a lot of shelter for other animals that share his habitat. Many other animals will live either in abandoned gopher tortoise burrows or they will share one the gopher tortoise still actually uses. Ah, diamond back rattlesnakes are one of the animals that will be found in gopher tortoise burrows. They're providing a lot of great protection, a good service, for all the animals that live in their habitat.

**>>Narrator: One turtle of interest that does live in water, and one that we don't get to see too often is the alligator snapping turtle. These creatures spend almost their whole lives in water but females will emerge once in while in search of a nesting location.**

>>Heimmer: But, mostly, they're going to stay in the bottom of lakes and rivers. And, they camouflage very, very well down there. Sometimes they may even have algae growing on their back to help them look just like, perhaps, a rock in their environment. And, they are our largest fresh water species of turtle, reaching sizes of upwards of two hundred pounds, um, their shell can be about two feet long from front to back, and they could live, ah, perhaps, over sixty years. So, they're really an interesting presence here in Georgia.

**>>Narrator: Another interesting presence in Georgia is the sea turtle. Every species of these marine favorites are either threatened or endangered.**

>>Heimmer: They come up on beaches during the night and will dig a hole and lay sometimes over a hundred eggs. And, they look, basically, ping-pong balls in sized and shape. And, they will then bury them back with beach sand, and the mother will haul her body back into the water. Now, she, it's kind of out of place on land, she's built very well for swimming in the ocean, diving to deep depths, and swimming long distances. But, on land they are very slow and awkward. That's why nighttime is a safer time to come out onto the beach.

**>>Narrator: The cover of darkness is important to not only the mother sea turtles but also for the baby hatchlings. Scientists believe that sea turtle hatchlings use the light of the moon as a guide to the ocean water.**

**Other marine animals are nocturnal too.**

>>Heimmer: Some invertebrates like sea anemones and corals only open up and come out to feed during the night.

>>Narrator: **Of the three hundred and sixty eight species of shark found worldwide at least 19 occur in Georgia. Sharks can see color and have the same light-reflecting retinas that other nocturnal animals possess—giving them increased night vision. This allows many sharks to be night active and to prey on marine species that use the night for resting. Sharks will be spotted during the day as they ever don't really sleep and they never stop swimming.**

>>Belcher: If you were to pick a time of day to swim in the water, you want to avoid, basically, the time of day where you're at low light.

>>Narrator: **Other nocturnal animals will sometimes be spotted during the day. This doesn't always mean that something is wrong with the animal...though sometimes it can be an indicator of illness. If you see a nocturnal animal-- keep your distance and they will almost certainly keep theirs.**

>>Heimmer: One animal that we sometimes see around our houses, kind of creeping around at night, are raccoons. They love to come and take advantage of a food source that we've sort of created for them, one would be our garbage, and another would be the pet food that we leave out, perhaps for our cats. And so raccoons have learned to really take advantage of this food source.

>>Waters: A lot of our nuisance wildlife complaints revolve around pet food. Uh people typically feed their cats on the back porch and a raccoon or a possum will of course take advantage of a free meal if they get a chance, you know, it's easy enough to modify what you do, maybe feed the cat in the morning.

>>Heimmer: One common animal to see here in Georgia that also comes around houses sometimes at night are, are opossums, and they are, of course, the only marsupial that lives in North America, meaning that their babies are born in very undeveloped state and finish completing their development inside the mother's pouch. Ah, they do have what's called a prehensile tail, which means they can use it like an extra hand or foot to help them to climb and to grip onto things. The mother can even use her tail to help carry nesting material when she is building a nest for the babies. They're very good climbers; um, they have the ability to use their, their claws to go up into trees, and a lot times that's where they hide during the day. But, at night they're definitely around looking for food.

>>Narrator: **Reviled by many is the Beaver. An industrious builder of dams the beavers is generally active at night when it waddles up stream banks in search of leaves, twigs, the inner bark of sapling trees, and herbaceous plants to eat and build with.**

>>Dudeck: Beavers in urban environments are always seen as nuisance wildlife when this actually is not the case. Beavers damming is actually extremely beneficial because the flooding causes wetlands to occur and honestly over half the endangered species in the world have spent at least some part of their life in

a wetland environment. And this is also good for purification of rivers and streams going through wetland environments...when you think of wetlands you have the cattails in it, and cardinal flower, but you also have the toads and lizards and fish and crawfish and things like that.

**>>Narrator: Beavers are more commonly found in the northern reaches of Georgia, but the armadillo, once only found in the southern region, is known seen as far north as Athens.**

>>Dudeck: They are insect eaters primarily, also other invertebrates like earthworms and things. They rely almost completely on their sense of smell. They always have their nose, kind of, rooting under leaves, um, very active animals. They're always searching and looking; they have a fast metabolism, so they have to eat a lot of little insects to keep themselves going. And, so, mostly they're going to be, as I said, relying on their sense of smell. Sight is sort of something that they don't really give much consideration to.

**>>Narrator: Armadillos are active mostly at dawn, at dusk and during the night, though they will sometimes been seen out and about on cloudy days.**

**Of course, a program about nocturnal animals just isn't complete without discussing the bat. Bats are the only members of the Order Chiroptera. They are the only mammals that fly and they have a specialized sense or hearing call echolocation. Echolocation is basically a type of sonar that helps bats determine what the object is, how near it is, and whether it is moving.**

>>Ozier: There are three species of bats on the Georgia protected species list. And two of these are actually on the federally endangered species list as well. The federally endangered ones are the Grey bat and the Indiana bat.

>>Putnam: The most common bat that you might see is probably the Pipistrelle, and unlike the gray bats, which roost in dense clusters of individuals with thousands of bats in a tight cluster on the wall, pipistrelles are very solitary, it's a solitary little creature, and it'll cling to a formation like this or in a little nook or cranny or out cove and you seldom see more than one at a time. The neat thing about them is that you can often see them with a little bit of condensation on the fur, and they sort of sparkle when you look at them.

>>Heimmer:

Being nocturnal has a lot of advantages. First of all, they're filling in niches that are left vacant when the animals that are active and feeding on those particular things during the day go to sleep. Ah, of course, most insects are active at night. So, that gives insect eating nocturnal animals a great opportunity to feed on those.

**>>Narrator: Perhaps the most-spotted night-active insect is the moth...and the lepidopterists that study these creatures.**

>>Adams: My interest in lepidoptera started probably about the time I was two years old. My mother she stuck a net in my hand, and I guess she created the monster that I am today, in a sense, because my interest from there just grew and grew and grew.

I'm not sure that you can explain an obsession like this. It's just always fascinated me, and I think the reason why moths fascinate me, there's just tremendous diversity in the moths, and that's really what's probably gotten me interested is because it's always new. It's always fun. It's always fascinating.

>>Heimmer: We're all used to seeing moths, especially maybe around our porch lights outside because they are attracted to the light.

**>>Narrator: Using a traditional butterfly net James will visit locations such as gas stations and convenience stores that are open late at night to observe, and sometimes collect, moth specimens. But James Adams also takes this method it a step further. Using a 1K lamp and a white sheet James sets up a mini moth laboratory right in his backyard.**

>> Adams: Why are moths attracted to lights? Um, there are several schools of thought. One is that before electric lights came around, the lights that moths have to navigate by are up. Moths can see stars; moths can see the moon. And, so what they do is they fly along keeping light above them. And that's actually one of the thinkings about why they come to these electric lights. And, indeed, you'll what some of the moths come in and they'll spiral around the lights, and the idea here is that what they're doing is they're flying along and they're keeping it above them so they turn. And, no it's above them, but no it's back there so they turn. And, they keep turning, and they keep turning and it basically brings them into the light. And, once they get to the light, and it's so bright, now it's daytime. And, so they settle down and just stay there. We can hypothesize all we won't, but we can't ask the moths, well, why are you coming to lights tonight?

Most people have this misconception that moths are ugly. You know, moths are ugly; butterflies are beautiful; moths are ugly. Well, that's certainly not the case. There are plenty of moths that are strikingly beautiful, reds and greens and yellows and just wonderful colors.

Georgia really is a very diverse state as far as leperdoptera is concerned.

Overall, the state of Georgia, probably when all is said and done, will have over three thousand different species of leperdoptera recorded for this state, which is got to be about the richest state east of the Mississippi. Now, it doesn't hurt that Georgia is a big state, either. I mean, it's a big state in terms of land area. And so that, of course, contributes to being able to find a lot of different species here. But, still, it's an incredibly diverse state.

**>>Narrator: A diverse state indeed. Georgia is home to a variety of natural habitats each associated with plants and animals unique to Georgia and the Southeast. Some are common and well understood and others...live under the cover of darkness... But all have their special place in the natural world.**

**>>Narrator: Homo sapiens, are for the most part, a diurnal species. But some folks like the cool evening, the crisp night air...and some like the night sky!**

**>>Narrator: In the fall of 2003, Mars was as closer to the earth than it had been in over 60 thousand years. Fernbank Observatory, in Dekalb**

**County, operating after normal hours so that the public might have a chance to see the red planet through the largest telescope in the southeastern United States. Unfortunately, the night is starting off a little cloudy.**

>>Anthony: I'm going to be very discouraged if I don't get to see it because it's almost like a once in a lifetime to see Mars in my life. And, probably the next time I'm going to get to see it I'm going to be fifteen or sixteen years old or have my wife and my children already.

>>Dylan Delatorre: I really want to see Mars. I really think this going to be neat.

>>Sarrazine: Mars recently has gone through opposition, which means it's on the opposite side of the earth from the sun, and it's also at this time a lot closer than it normally is and you can see the polar icecap. You can start to see a little bit of the surface detail.

**>>Narrator: Of course there is more to look at in the night sky than just Mars.**

>>Sarrazine: When I'm up here and we might look at what we call open clusters of stars where you're going to several thousand stars, ah, through the eyepiece at once, um. If there's a good nebula up, we'll take a look at that, any of the popular planets, and definitely the moon. Everybody always wants to look at the moon when they come up.

**>>Narrator: A telescope the size of this one is not a necessary tool to enjoy the night sky.**

>>Sarrazine: A lot of times we tell people maybe some of the state parks where the lighting is, cut down quite a bit. Up into the North Georgia Mountains would be another excellent place to go for stargazing. Any place where you are getting away from the big city lights would be best.

**>>Narrator: And that is exactly where we're headed.**

>>Cirincione: The Atlanta Astronomy Club is a group that will get local astronomers, amateur astronomers together to observe the night sky. Another thing we like to do is we like to bring our programs to the public.

>>Curruthers: We're at the Unicoi State Park, and we have, ah, this, I believe, is our fourth year we've come back to Unicoi. We do what we call our Georgia Astronomies and State Parks or GASP event.

So what I'm going to do in my program is talk about amateur astronomers are interested in looking at...

**>>Narrator: The program begins with a slide presentation about the basics of the night sky.**

>>Curruthers: I talk about, the kind of objects we see in the sky because everyone thinks immediately stars and they if they don't realize or they that there's a lot of other things besides stars to look at.

**>>Narrator: After the program park visitors are invited to come outside and take peek through the Club members' telescopes. To join them we've covered our camera lights with red film on the advice of Angela from Fernbank Observatory.**

>>SARRAZINE: Well, the reason that we tell you to get a red flashlight is because the red light doesn't tend to ruin your night vision. It takes the average person after they've looked at bright, white light about seven mints to become fully dark adapted to where you can really see well in the dark.

**>>Narrator: Now it's time for the fun to begin! This portion of the GASP event is exciting for everyone.**

>>Hijink: I was always interested in astronomy. I moved here about a year ago, and I thought about a good, new hobby. And, well, this is it. It's neat 'cause I was looking at Mars the last few months, and you could see it come closer, growing into view. And, now, it's starting to go away again.

>>Macumber: Um, I like everything. I like everything from the moon to, ah, galaxies, star clusters, even watching meteor showers. It's just nice to get out in nature and do this stuff and camp. That's what's fun about it.

**>>Narrator: Well, it's time to say good night to our nocturnal friends, all of them, the alligators, the raccoons, ...and the night owls.**