

Video	Audio
	<p>>>Narrator: The animal kingdom shows amazing diversity in the ways that species reproduce. From mating rituals to caring for young, each species has its own strategies for successful reproduction. And that's the difference between thriving and becoming extinct. Join us as we explore this fascinating topic. Coming up next!</p>
	<p>Georgia Outdoors Theme Song</p>
	<p>>>Narrator: Reproduction is essential to all forms of life. From the birds to the bees to the bears, reproduction is how a living organism ensures the survival of its species. By reproducing, a living organism can be sure that there is another individual of its kind to take its place when it dies.</p>
	<p>Animals can be grouped into those which give birth to living offspring and those which lay eggs. Livebearers include: some lizards and snakes, some fish, like sharks, and nearly all mammals, including the black bear. Black bears have 2 or 3 cubs and nurture them until they are about two years old. But what about mammal parents in our oceans? Right Whales migrate from the Bay of Fundi, which is part of Nova Scotia, to give birth in the warm waters off Georgia's coast. Because of overharvesting, today there are only about 300 Northern Right Whales left.</p>
	<p>>>Zoodsma: This is the only known calving area for right whales, for North Atlantic right whales in the world off the coast of Georgia and Florida... Last year's calving season was a uh tremendous success. There were 30 calves, a 31st calf was found up in the bay of Fundi. Um, that's the highest number of calves on record and we hope that this trend will continue in the future.</p>
	<p>>>Narrator: Animals who lay eggs include all birds, most amphibians and fish, and most reptiles, including...the alligator.</p> <p>Alligators enjoy spring courtship with unusual reptilian roars and vibrations. In the summer, the females lay 20 to 60 eggs in carefully constructed mounds by female which mom guards fiercely. The eggs give way to hatchlings in August and September. These Hatchlings remain in groups called "<u>Pods</u>" at least through their first winter and may stay in the vicinity of the nest for two to three years. Mom may defend the young until the next summer.</p> <p>Even though alligators produce multiple offspring each year...in the 1940's alligator populations began to decline</p>

	<p>because of unregulated and unrestricted harvest. Careful management has restored alligator populations</p>
	<p>>> Waters: Alligators really are a success story. Uh, alligators were once on the endangered species list. Um, and their population has rebounded up to the point where they are plentiful.</p>
	<p>>> Narrator: A species which cannot reproduce enough offspring will disappear for ever from the face of the Earth - it will become extinct. This has happened many times in the past. Ivory-billed woodpeckers once lived in the magnificent old-growth cypress forests of the southern U.S. Habitat loss has sealed their fate; these are the last individuals caught on film, in 1935.</p>
	<p>This has almost happened time and again. Two of our raptor species, peregrine falcons and bald eagles are both on Georgia's endangered species list.</p> <p>>> Ozier: When studying any kind of wildlife population, one of the big things we look at is the amount of reproduction, and so certainly if we don't have sufficient reproduction, we're going to see those populations dwindle. And a good example of that might be the American eagle. Back in the 50s and 60s, a lot of DDT use was affecting eagle populations across the country, not necessarily killing adult birds, but pretty much doing away with reproduction. And so what we did see was the old birds dying off, there was nothing to replace them, and so the populations pretty much dropped way, way down.</p> <p>>> Narrator: But thanks to recovery efforts, the populations of both species are making a comeback.</p>
	<p>To ensure more species populations do not become endangered, preventive measures are being taken, including the monitoring of populations.</p> <p>>> Ozier: Well the main reason why we want to monitor populations, well for some species is to make sure that they don't disappear. You know, a lot of them, such as eagle or a red cockaded woodpecker, or a bird that is very rare, if we can maintain a certain population, we can feel pretty good about it. But if we start seeing these populations disappear, then we know we have problems and we know we need to do something about it to make sure we keep those populations around.</p>

	<p>>>Narrator: One species being monitored is a shorebird called a red knot.</p> <p>>>Harrington: We were looking for a shorebird, which would illustrate a lot of the conservation issues we were trying to research. And red knots seemed to be the perfect candidate. And the reason that they were was because they were very long distanced migrants, so far as we knew. And then also because they tended to concentrate at particular places along the coast.</p> <p>>>Brown: The US Shorebird Conservation Plan was an effort to bring together all the states and all of the researchers at universities as well as the conservation organizations and develop a plan for action. And it also helps the Georgia DNR prioritize what their actions should be, in terms of which species are the most important, so things like red knots are a high priority in Georgia and American Oyster Catchers are a high priority here.</p> <p>>>Dowd: We've been out in the field for the last couple of days looking at the birds on Wolf Island, and trying to get an idea of how many red knot are there, and also looking at any birds that we can find that have color bands on them to try and identify what the bands are.</p> <p>>>Harrington: When trying to census the red knots and look for color bands, we use telescopes because with these we can focus in very, very closely to birds that we fairly far away from us. And of course you can't walk right up to a red knot and bend over and look at its color bands.</p> <p>>>Dowd: I think it's important that Brian and other people have an opportunity to do the research because it's part of an overall project to try and piece together the different pieces of shorebird migration from South America through North America, and then back again.</p>
	<p>>>Narrator: Another shorebird species under study is the eye-catching oystercatcher.</p>
	<p>>>Winn: Oyster Catchers are probably one of the most spectacular birds on the coast. Banding them lets us track them throughout the year. And because we're in touch with these other organizations, we're able to understand where the birds go.</p> <p>Two kinds of bands go on birds. These are color bands. The color bands will represent the country that the birds was banded in. these are US Fish and Wildlife Service bands; either aluminum or stainless steel band. The individual numbers will let you know exactly when it was banded, where it was banded.</p> <p>Oyster Catchers represent a large number of other birds in the estuarine and marine environments where they live. Particularly with nesting oyster catchers, they nest in very sensitive areas and we are interested in maintaining oyster catcher populations with the idea that other birds will also benefit from conservation activity focused on oyster catchers.</p>
	<p>>>Narrator: These biologists really do get into their work—they dive, snorkel, seine, fish, and fly for information on the species they study.</p> <p>Barb Zoodsma is part of a surveying effort which helps protect northern right whales from ship strikes while they are in the calving grounds. When whales with calves are spotted,</p>

	<p>ships are alerted so they can steer around the slow swimming pair.</p> <p>Migratory populations are complicated to survey. Many waterfowl, for example, spend part of their year in Georgia and part in Canada. In order to know how many waterfowl can be harvested each year, surveys are conducted.</p>
	<p>>>Balkom: When we are conducting mid-winter surveys here in the state it is usually just myself and a pilot, uh occasionally I will get a regional biologist to come with us, and that way he can get an aerial perspective or a new view of some of the habitats that he is in charge of managing. I keep a clipboard sitting on my lap during these flights. I will just put dots for each flock of birds that I see, I will put dots, and jot down you know if I saw 12 or 20 or 100.</p> <p>In GA, probably the number one breeding species in waterfowl that we have got is of course the wood duck. Most people are familiar with wood duck boxes. Uh, if you have got boxes, make sure that you have got a good predator guard on them to make sure that you've maintained those boxes from year to year.</p>
	<p>>>Narrator: Different species of animals reproduce at different rates.</p> <p>Many mammal species produce just one and sometimes two offspring at a time like humans and moose, horses, sheep and deer.</p>
	<p>Manatees produce just one calf at a time every 3 to 5 years...and nurse it for another 2 years...at this low birth rate it is hard for manatees to rebuild their suffering population...The manatee is listed as endangered with fewer than 2700 animals remaining. The English declared Florida a manatee sanctuary in the 1700's and hunting manatees became prohibited...but sanctuary from hunters has not protected the slowly reproducing manatee from speedboats, habitat loss, and water pollution.</p>
	<p>Some animals, like man's best friend, produce litters, while egg-layers like wild turkeys, produces clutches.</p>
	<p>>>Barnhill: After breeding the hen will seek out a nest site. They nest on the ground. They don't really build a nest. The hen will lay one egg per day for about 12 days until she completes the clutch, then she'll incubate the eggs for 28 days, and once incubation is through, all the eggs hatch about the same time.</p>
	<p>>>Narrator: Some animals, like mussels, produce hundreds of thousands of eggs at a time</p>
	<p>BECAUSE THESE FRESH WATER MUSSELS REMAIN STATIONARY THROUGHOUT THEIR LIVES, THEY HAVE DEVELOPED</p>

	<p>COMPLEX AND UNIQUE WAYS TO REPRODUCE. JUST AS HONEYBEES WORK TO HELP POLLINATE FLOWERS, MUSSELS USE FISH TO HELP DISTRIBUTE THEIR YOUNG.</p>
	<p>>> Skelton: Freshwater mussels require an intermediate host. The larval mussel has to attach either to a gill or the fin of a fish before it can complete its development. So the trick is, how do you get a larval mussel into a fish's mouth. Female mussels have developed fantastic strategies.</p> <p>>> NARRATOR: MUSSEL LARVAE IS PACKED INTO A THIN MEMBRANE BUILT TO IMITATE A WORM, SMALL FISH, OR ANYTHING THAT MIGHT LOOK APPETIZING TO THE UNSUSPECTING HOST. THESE LURES COME IN MANY SHAPES AND SIZES. FROM THE BEAUTIFUL TO THE BIZARRE. SOME LURES ARE QUITE CONVINCING, WITH MARKINGS AND SHAPES WHICH RESEMBLE FINS AND EVEN EYE SPOTS. UPON STRIKING, THOUSANDS OF LARVAE ARE RELEASED, SOME OF WHICH ARE SUCKED IN TO THE FISH'S GILLS. THE FISH THEN CARRIES THE YOUNG MUSSELS TO ANOTHER AREA.</p>
	<p>Biologist not only count species reproduction they also often play an active role in protecting species numbers. Striped bass get a helping hand from Georgia's Department of Natural Resources.</p>
	<p>>> Brewton: We're at Richmond Hill hatchery, and right now we're in the middle of our spawning, and we're making striped bass today. We'll take the fish and put it into the anesthetic in order to make the process a lot easier for the fish as well as ourselves. And once the fish is anesthetized, we will take the eggs from the female and put them into this big, huge looking salad bowl. After the eggs are in the bowl, we will put the sperm on top of the eggs. And then the eggs and the sperm will be mixed together and water added to initiate the fertilization process. From these dozen females that we have in the house today, we hope to produce a million one inch-long fingerlings for stocking in Georgia reservoirs.</p>
	<p>>> Narrator: Needless to say, for all these animals, eggs and sperm are not usually stirred together in big silver mixing bowl. Sperm can swim so fish and other water inhabitants simply release their eggs into the water:</p>
	<p>In order to mate, some land animals return to the water where they were hatched. Frogs start out their lives as tadpoles, and by the time they are adult frogs, will spend much of their time on land. As mature adults, they utilize a mating call distinct to each species. The leopard frog sounds like two balloons rubbing together, while a green tree frog</p>

	sounds like an electric buzzer. The chunky gray tree frog has a trilling call that is sometimes mistaken for a red-bellied woodpecker. Bullfrogs have a booming call and the spade foot toad is more crow-like.
	Mating calls are also used extensively by other animals like birds. The wild turkey gobbles to his mate and she will answer with a clucking sound. The songs we enjoy from songbirds are the way they communicate with other birds of the same species. Often these are mating calls.
	>>Ozier: Springtime is when things really start happening in the natural world. It's a time when life is being renewed. We often hear the birds singing and think of that as a sign of spring, and of course what the birds are doing is they are getting ready for nesting season. The males are trying to advertise their availability and they are trying to prove they are good providers to attract the females and hopefully reproduce. And so the bird songs are one sign of that.
	>>Narrator: Birds call to each other because mating for them involves copulation, which means the sperm is released INSIDE the female, so the male and female must come in close contact.
	Getting close can have its disadvantages as in the case of some insects and arachnids. A potential mate doesn't want to be mistaken for food! A carnivore like a spider will strike almost anything that touches it's web. This makes mating rituals important. Though other types of animals use mating rituals as well. Some birds, like these least terns, will give a fish to a potential partner to entice her to copulate.
	Mating rituals can also include smells. A male deer in rut will leave scent trails on trees and on the ground to advertise his availability to does in the area.
	Mating rituals can also involve color. Unlike the human species, male ANIMALS are usually more colorful like Painted bunting, peacocks, and cardinals.
	While birds eggs are fertilized inside the body, often both parents nurture the eggs once they are in the nest.
	Eggs are usually camouflaged to help keep them safe from predators

	As in the case of some shore birds, nests can be as simple as scrapes in the ground.
	>>Winn: The terns and the skimmers just scrape a little bowl in the sand and lay eggs right in the bowl. Uh the pelicans do bring in quite a bit of nesting material and they form what we know of as a nest. its really pretty amazing to see a scrape with very small eggs and to think that anything could actually survive out there.The colony has a defense system. 5 or 6 or 7 thousand pairs of terns can pretty much turn away any crow that comes in trying to steal eggs. Just watching the colonies themselves, royal terns on the ground nest within about a beak's length of each other. They nest very close to each other. royal terns lay one egg per pair. you are literally talking about thousands of chicks on the ground with thousands of adults flying in with fish, and somehow in this very loud, large mass of birds, they are able to find their individual chick and feed it and uh and move out.
	>>Narrator: Other colonial nesters, like egrets find comfort and convenience in rookeries.
	>>Klaus: a rookery is where the wading birds are actually nesting and they nest colonially. In some of these rookeries there may be more than 1000 nesting pairs. >>Narrator: Rookeries are a great way to protect young birds from ground predators. Another bird species which relies on rookeries is the endangered woodstork. North America's only native stork species, wood storks frequent the beaches and marshes of Georgia's coast,...but they prefer to nest together in trees.
	For all these birds, incubation of the eggs takes place. Incubation will last about 20 to 30 days depending on the species, then the hatchlings peck their way out in a process called pipping, which is hard work!
	Rather than the protective outer layer of an eggshell, mammals enjoy a warm gestation period inside a mother's womb. This can last anywhere from: 3 ½ weeks like a squirrel to 21 ½ for sheep, and even 48 weeks for a horse.
	Birth is a pretty amazing moment. Many baby animals, like

	piglets, are active just moments after birth.
	Others, like marsupials, have highly specific, instinctive, first behaviors. A baby opossum will crawl to a pouch and suckle on a nipple located there until big enough to hang around on his or her own.
	Different animals invest different amounts of time in raising their young. Beaver parents spend 2 years with their young, as do bears. Baby bats go out on their own just after one month. Most bird babies fledge after just days and leave the nest after just weeks.
	Hatchling sea turtles never spend any time with either parents...but, as adults, they will return to the beach on which they were hatched, if it is still there, in order to complete the life cycle by laying more eggs.
	>>Dodd: Although we really don't have any reliable estimate on how many hatchlings it takes to actually create a nesting female, there are estimates that have been published that range anywhere from 1 to 3 thousand hatchlings to ultimately make one nesting female. And that's part of their reproductive strategy. Produce a large number of hatchlings with very low survival. And ultimately the population relies on high adult survivorship.
	>>Narrator: Parents who do nurture their young, take their jobs seriously. Their young are, after all, their investment in the future. This killdeer parent is pretending it has a broken wing in order to distract a predator from its nest.
	And speaking of predators: Humans are the most likely predator for many animals as there are now fewer predators like Mountain Lions. But humans have learned to balance our predation. Hunting and fishing are now carefully monitored so that we don't extirpate any species
	Many animals do not look much like their parents when they are born. Insects and amphibians change their shape considerably. The Butterfly is perhaps one of the most amazing transformations in the animal world. After copulation, the female lays eggs on plant leaves. As soon as the caterpillars are hatched, they begin feeding on the host

	<p>plant, and for a couple of weeks, that’s all they do! The caterpillar forms a chrysalis. This is the pupal stage where their amazing transformation takes place. After about 14 days, the adult butterfly emerges.</p>
	<p>There is amazing diversity in the lifecycles and reproductive strategies of each animal species. How a tadpole becomes a frog or how a hatchling sea turtle knows to follow the light of the moon into the sea are wonderful mysteries indeed. Appreciating these mysteries is the first step toward ensuring we ‘ll always share the earth with bald eagles, and oystercatchers, and all the rest of the animal kingdom.</p>
	<p>Georgia Outdoors Theme Song</p>