

**“ANIMAL SOCIETY”**  
Episode 08 “Fish”  
Final Timecoded Script

**SERIES INTRO:**

**001** 00:00:01:00 00:00:02:11  
Across our world, we live

**002** 00:00:04:08 00:00:05:06  
In cities

**003** 00:00:05:13 00:00:06:12  
And villages

**004** 00:00:08:04 00:00:10:00  
All part of a greater whole

**005** 00:00:11:03 00:00:12:12  
But we’re not alone

**006** 00:00:14:17 00:00:16:03  
They come in herds

**007** 00:00:17:23 00:00:18:19  
Hives

**008** 00:00:19:18 00:00:20:19  
And swarms

**009** 00:00:21:12 00:00:22:07  
Prides

**010** 00:00:22:18 00:00:23:07  
Packs

**011** 00:00:23:18 00:00:24:12  
And pairs

**012** 00:00:24:21 00:00:26:00  
Living in nature

**013** 00:00:26:12 00:00:28:06  
Members of society

**EPISODE INTRO:**

**014** 00:00:37:11 00:00:39:20

Among the most prevalent animals on earth

**015** 00:00:40:02 00:00:42:24

Existing across more than two thirds of our planet

**016** 00:00:43:10 00:00:45:09

In nearly every body of water

**017** 00:00:46:10 00:00:47:06

Fish

**018** 00:00:47:21 00:00:50:24

They are a widespread group of fully aquatic animals

**019** 00:00:51:08 00:00:53:15

At over 33 000 species

**020** 00:00:53:17 00:00:57:00

They are also the most diverse group of vertebrates in existence

**021** 00:00:57:05 00:00:59:09

Divided into hagfish, lampreys

**022** 00:00:59:18 00:01:01:20

And cartilaginous and bony fish

**023** 00:01:02:02 00:01:05:24

Ranging in size from the whale shark, at over 46 feet long

**024** 00:01:06:07 00:01:09:09

To the dwarf pygmy goby at less than half an inch

**025** 00:01:10:02 00:01:13:00

They feed on anything between algae and seaweed

**026** 00:01:14:04 00:01:17:07

To other fish, crustaceans and marine mammals

**027** 00:01:17:11 00:01:20:02

Coming in all numbers and social structures

## **SEGMENT 1:**

**028** 00:01:20:24 00:01:24:01

Most fish being shoaling or schooling fish

**029** 00:01:24:09 00:01:36:23

A loosely defined group defined by social structure rather than genetic kinship, most well-known shoaling and schooling fish being tuna, herring, anchovy, snapper, mackerel and jackfish

**030** 00:01:37:16 00:01:42:19

Unlike simple aggregations of fish, being a general term for any larger group of fish

**031** 00:01:43:06 00:01:47:22

Shoaling is defined as any group of fish that stay together for social reasons

**032** 00:01:48:07 00:01:56:00

Wherein they may relate to each other in a loose way, each fish swimming and foraging independently while still aware of the other members of the group

**033** 00:01:56:09 00:02:00:24

While schooling fish are a group that swim in the same direction in a coordinated manner

**034** 00:02:01:11 00:02:04:15

The members of the group being of the same size and species

**035** 00:02:04:21 00:02:11:03

As well as being precisely spaced from each other, undertaking complicated swimming patterns as a coordinated group

**036** 00:02:12:17 00:02:19:07

Schools of fish taking on various shapes of long thin lines, squares or ovals for longer migrations

**037** 00:02:19:20 00:02:24:07

While fast moving schools often take the form of a pointed wedge to reduce drag

**038** 00:02:24:13 00:02:29:05

Shoals, by contrast, tend to take on a circular or oval shape above all

**039** 00:02:29:14 00:02:34:17

Shoaling fish are additionally often able to shift into a coordinated school for migration

**040** 00:02:34:23 00:02:42:02

With schools of fish likewise frequently reverting back to loosely held together shoals for feeding or evading a nearby predator

**041** 00:02:42:10 00:02:45:00

Changes that can occur within seconds

**042** 00:02:46:08 00:02:53:23

One quarter of all species shoal all their lives while an additional 15 000 species shoal for only part of theirs

**043** 00:02:54:08 00:02:58:18

Ranging in size, appearance and behavior nearly to the same extent as all fish

**044** 00:02:59:01 00:03:07:09

Though most common schooling and shoaling fish are small, silver colored fish with eyes located on either side of their head, to keep track of their nearest neighbors in the school

**045** 00:03:07:23 00:03:10:13

Most schooling and shoaling fish being forage fish

**046** 00:03:10:17 00:03:13:10

The main prey of larger predators such as barracudas

**047** 00:03:13:20 00:03:14:11

Sharks

**048** 00:03:15:04 00:03:16:03

And sea birds

**049** 00:03:16:11 00:03:24:02

The typical forage fish being small, compensating for their small size by forming medium-sized to large schools, occasionally of monumental scales

**050** 00:03:24:14 00:03:36:12

Such as those of the north Atlantic herring, amassing in numbers of tens of millions of individuals, forming schools several square miles large, becoming among the largest aggregations of animals and animal phenomena in the world

**051** 00:03:37:02 00:03:40:18

Rivalled only by the great wildebeest migration in their sheer biomass

**052** 00:03:42:06 00:03:52:06

Such massive aggregations of fish typically being the result of seasonal migration, many smaller schools forming enormous superschools as they alternate between spawning, feeding and hatching grounds

**053** 00:03:54:07 00:04:04:09

Most being pelagic, staying out in the open ocean, though they may occasionally be coastal fish, freshwater fish, demersal fish who stay near the bottom or reef fish, staying near coral reefs

**054** 00:04:05:14 00:04:08:09

Fish school and shoal serves multiple purposes

**055** 00:04:09:04 00:04:15:06

Such as increasing the hydrodynamic efficiency of the fish, conserving body heat through proximity and cooperation in tasks

**056** 00:04:17:24 00:04:23:02

Since the vast majority of fish are cold-blooded, their body temperature dependent on the surrounding water temperature

**057** 00:04:23:06 00:04:28:15

Though some larger active swimmers such as tuna may hold internal body temperatures higher than their surroundings

**058** 00:04:29:02 00:04:32:17

The primary purpose of schooling and shoaling being safety in numbers

**059** 00:04:32:23 00:04:40:09

Increasing their defense against predators through better predator detection and lessening the chance of individual capture in a dilution effect

**060** 00:04:41:10 00:04:49:07

Wherein a school at large may be prone to being attacked by predators, the mass groupings of fish may lead to lessening chances for each individual being eaten

**061** 00:04:52:10 00:04:54:15

As well as through predator confusion effect

**062** 00:04:54:20 00:05:02:15

Predators such as sharks and other larger predatory fish commonly being overwhelmed by the appearance of a school, unable to pick out and hunt a single individual

**063** 00:05:04:18 00:05:12:10

Both confusing them visually through their identical appearance within the school, as well as confusing the electrosensory systems of predatory fish that hunt in the dark

**064** 00:05:12:24 00:05:17:07

Appearing to their pursuer as a single large animal rather than a group of smaller ones

**065** 00:05:18:01 00:05:24:04

Schooling fish may also utilize a variety of predator avoiding behaviors, swarming around and splitting up when directly attacked

**066** 00:05:25:02 00:05:26:14

Or forming bait balls

**067** 00:05:26:19 00:05:31:02

When small schooling fish group together in a temporary tight ball formation

**068** 00:05:31:15 00:05:36:24

Exposing the least number of fish on the outside or surface of the ball, protecting the majority within

**069** 00:05:37:06 00:05:44:21

The result of a combined individual behavior of each fish rushing to get behind each other when cornered, rather than deliberately coordinated through communication

**070** 00:05:45:04 00:05:48:01

As most schooling fish are highly limited in communication

**071** 00:05:48:08 00:05:52:06

Commonly only using simple body language to indicate intent, fear and aggression

**072** 00:05:53:01 00:05:57:16

Consisting of rapid alternating movements or twitching, as well as simple swimming patterns

**073** 00:05:58:10 00:06:02:19

Instead, their coordination behavior is derived from instinct, rather than a learned behavior

**074** 00:06:03:11 00:06:09:03

Schooling fish exhibiting extraordinarily specialized response systems, cued primarily to visual stimuli

**075** 00:06:10:01 00:06:17:10

Most schooling fish exhibiting faint "schooling marks" on their shoulders or tails, often in the form of visible stripes that are unique to each individual

**076** 00:06:17:22 00:06:22:13

Enabling the exact formation of the school to stay consistent and intact through long migrations

**077** 00:06:22:18 00:06:29:06

Each member keenly aware of the fish in front of them, above, below and on either side, constantly moving in conjunction with their kin

**078** 00:06:31:18 00:06:40:08

Though the overall movement of the school commonly lacks clear leadership, instead being motivated by the will of the group, guided in unison as the combined will of each individual

**079** 00:06:41:00 00:06:44:23

Schooling also increases foraging success and the success of finding a mate

**080** 00:06:45:07 00:06:51:03

As most schools and shoals consist of individuals of the same age and size, though of both genders

**081** 00:06:52:11 00:06:56:01

Enabling minimal courtship rituals and precise mating seasons

**082** 00:06:57:14 00:07:01:04

Schooling fish commonly traveling to a so-called spawning ground for mating

**083** 00:07:02:12 00:07:07:18

Most fish using external fertilization, forming temporary pairs known as spawning pairs

**084** 00:07:08:17 00:07:15:17

The female laying her eggs either in the open or in hidden crevices for the male to inseminate while passing over them in close succession

**085** 00:07:18:09 00:07:21:05

With most fish having multiple partners each season

**086** 00:07:22:03 00:07:28:06

Or, as with a few species of ray-finned fish, using internal fertilization, males inseminating the females directly

**087** 00:07:28:10 00:07:29:21

Giving live births

**088** 00:07:30:12 00:07:38:02

Once born, or hatched, the young fish emerge as either small larval young sometimes known as fry, or as miniaturized copies of their parents

**089** 00:07:38:17 00:07:42:14

Soon forming schools or shoals with their siblings and the young of other fish

**090** 00:07:42:17 00:07:45:20

As fish are frequently hatched in huge numbers of hundreds

**091** 00:07:47:05 00:07:56:07

Since typically after the initial spawning, the eggs and hatchlings are left entirely to their own devices, often leading to extremely high mortality rates within their first few years

**092** 00:07:56:11 00:07:58:22

Continuing with many smaller fish until adulthood

**093** 00:07:59:23 00:08:04:08

As many marine predators have learned to adopt counterstrategies to prey on schooling fish

**094** 00:08:11:06 00:08:15:16

Lifespans of schooling fish varying considerably, between a few months to several years

**095** 00:08:16:02 00:08:18:07

The average being between 5 to 10 years

**SEGMENT 2:**

**096** 00:08:32:13 00:08:34:20

One specific kind of schooling fish are salmon

**097** 00:08:37:15 00:08:40:19

Closely related to trout, char, whitefish and grayling

**098** 00:08:41:24 00:08:45:13

Salmon are a family of schooling fish found throughout the northern hemisphere

**099** 00:08:47:03 00:08:49:23

Existing both in freshwater bodies and the ocean itself

**100** 00:08:51:03 00:09:01:07

Divided into 8 main species, 7 existing across the Pacific Ocean, 1 in the North Atlantic and 1, the Danube salmon, existing exclusively in the Danube basin of mainland Europe

**101** 00:09:02:24 00:09:09:21

They are distinct for their relatively large size, from the smallest, the pink salmon at 20 inches long, weighing as little as 3 pounds

**102** 00:09:11:09 00:09:17:04

To the largest, the Chinook or King salmon, which can grow to almost 5 feet long, weighing over 100 pounds

**103** 00:09:18:13 00:09:22:13

They are primarily carnivorous, young salmon feeding on insects and other invertebrates

**104** 00:09:22:20 00:09:25:23

While adults may eat other fish, squid, eels and shrimp

**105** 00:09:27:08 00:09:30:12

Only the sockeye salmon feeding exclusively on plankton

**106** 00:09:31:23 00:09:38:23

Commonly found either in schools or shoals of varying numbers, though they may also be found alone, depending on the current stage in their life cycle

**107** 00:09:41:06 00:09:47:06

As they go through a series of distinct phases throughout their life, dictating their behavior, habitats and appearances

**108** 00:09:47:14 00:09:50:05

Changing both in color and shape of body and head

**109** 00:09:50:21 00:09:54:09

They are driven to coordinate their behavior by instinct and body language alone

**110** 00:09:55:01 00:10:05:03

Their migration guided entirely by their keen sense of smell, allowing them to navigate to and from familiar areas by detecting chemical cues in the water unique to each body of water

**111** 00:10:05:18 00:10:08:05

As unlike other fish, they are anadromous

**112** 00:10:08:19 00:10:11:14

Born in freshwater bodies such as rivers and streams

**113** 00:10:12:02 00:10:14:05

They live most of their lives in salt water

**114** 00:10:14:14 00:10:16:20

Foraging the ocean until reaching maturity

**115** 00:10:17:16 00:10:20:06

At which point, their appearance begins to change

**116** 00:10:20:24 00:10:25:17

Many salmon changing color from a blue-grey to a bright orange, red or pink color

**117** 00:10:26:18 00:10:29:21

Many males also undergoing drastic physiological changes

**118** 00:10:30:17 00:10:37:20

The shape of their head becoming more elongated, developing a pronounced curve or hook known as a kype on either the lower jaw or both

**119** 00:10:39:00 00:10:41:12

Taken as a sign of virility and maturity

**120** 00:10:41:17 00:10:46:17

Male pink salmon and sockeye salmon also developing prominent humps on the front end of their spine

**121** 00:10:47:16 00:10:50:18

Believed to distract predators from the more vulnerable females

**122** 00:10:51:23 00:10:56:05

As well as ensuring the salmon doesn't spawn in waters shallow enough to freeze over winter

**123** 00:10:57:06 00:11:00:06

After reaching maturity, the salmon then return to freshwater

**124** 00:11:00:15 00:11:02:13

A phenomenon known as a salmon run

**125** 00:11:03:17 00:11:10:00

The time when salmon come together in large numbers to migrate from the oceans and swim to the upper reaches of rivers to spawn

**126** 00:11:11:05 00:11:14:08

Often returning to the very stream they were once born in themselves

**127** 00:11:15:10 00:11:20:23

With only a small percentage of all salmon unable to find their native river and instead colonizing a new area

**128** 00:11:21:12 00:11:25:21

It is a journey often undertaken only once in a salmon's life prior to death

**129** 00:11:26:15 00:11:32:18

Often filled with many dangers, with prespawn mortality rates varying greatly, up to 90% in some instances

**130** 00:11:34:03 00:11:38:24

Due to high water temperatures and river discharge rates suffocating the exhausted salmon

**131** 00:11:39:06 00:11:43:00

Or parasites and disease affecting the salmon seasonally or locally

**132** 00:11:43:11 00:11:48:14

As well as due to predation by animals such as eagles, otters and in particular, bears

**133** 00:11:50:15 00:11:56:04

Who often seek out salmon-rich rivers in advance of their run, waiting in ambush as the school rushes towards it

**134** 00:11:57:04 00:12:00:23

As such, salmon is often considered a keystone species in many of their environments

**135** 00:12:02:01 00:12:13:18

Salmon runs significantly supporting a wide array of animals, transferring crucial nutrients from the ocean into the forest ecosystem through predation and predator excrement, forming the soil for the forest itself

**136** 00:12:15:17 00:12:19:19

The salmon negotiating the waterfalls and rapids upstream by leaping or jumping

**137** 00:12:20:01 00:12:22:22

Even able to make jumps as high as 12 feet in the air

**138** 00:12:25:05 00:12:34:03

Once the salmon arrive at the far reaches of the river, they begin to search for a shallow fast-flowing gravel-filled area of the river where they may prepare their nest, known as a redd

**139** 00:12:35:06 00:12:42:06

A shallow depression in the soil and gravel, created by the female's tail, lifting gravel to be swept downstream by creating a low pressure zone

**140** 00:12:44:24 00:12:50:00

There, the female lays her eggs, or roe, in numbers of up to 5000 per individual

**141** 00:12:51:02 00:12:56:13

Each egg, either red or orange, being the size of a pea, covering an area of up to 30 square feet

**142** 00:12:58:04 00:13:03:16

One or more males will then pass over the roe to deposit his sperm, or milt, over the eggs

**143** 00:13:05:01 00:13:09:07

The female then covering the eggs in a thin layer of gravel before preparing another redd

**144** 00:13:10:17 00:13:16:15

Each female capable of making 6 to 7 redds, all in all depositing up to 35 000 eggs

**145** 00:13:17:07 00:13:20:14

Covering an area of over 200 square feet per individual

**146** 00:13:21:02 00:13:28:05

Males may then defend their redds by violently warding off other males, butting them and biting them with canine-like teeth they develop upon maturity

**147** 00:13:29:03 00:13:32:07

As well as using their kype to bite and hold fast opponents

**148** 00:13:33:16 00:13:37:11

The condition of the adult salmon deteriorates rapidly in fresh water however

**149** 00:13:38:14 00:13:42:05

The adults soon dying from immunosuppression and organ deterioration

**150** 00:13:43:03 00:13:49:07

With only 5 to 10 % of Atlantic salmon being able to return to the ocean to recover and be able to spawn again

**151** 00:13:50:16 00:13:56:20

The carcasses of salmon post-run accumulating in the river estuary, providing a significant food source for the river ecology

**152** 00:13:58:06 00:14:01:21

The eggs soon hatch into what is known as alevin or sac fry

**153** 00:14:02:09 00:14:05:03

Where the baby salmon has grown around the remains of the yolk

**154** 00:14:06:13 00:14:12:22

Soon growing into what is known as parr, or juvenile salmon distinct for their vertical stripes used for camouflage

**155** 00:14:13:24 00:14:18:05

The parr then stay in their natal stream for anywhere between 6 months to 3 years

**156** 00:14:19:15 00:14:27:14

Though the stream is relatively protected from predation, up to 90% of the fry or parr do not survive due to starvation, injury or disease

**157** 00:14:28:13 00:14:32:23

Those who survive then enter the next stage of the salmon lifecycle, the smolt

**158** 00:14:34:11 00:14:38:01

Distinguished for their bright, silvery color with scales that are easily rubbed off

**159** 00:14:38:15 00:14:44:03

Spending their time in the brackish water of the river estuary while their body chemistry adjusts to salt water

**160** 00:14:46:11 00:14:52:03

Once they reach between 6 to 8 inches in length, they swim out of the river entirely and into the open ocean

**161** 00:14:53:16 00:14:57:09

Schooling as post-smolt juveniles for their first year in the sea

**162** 00:14:57:18 00:15:02:18

Though even in the open ocean, they remain vulnerable to predation from other fish, seals and sea lions

**163** 00:15:04:06 00:15:08:11

Soon looking for deep-sea feeding grounds to sustain them as they mature into full adults

**164** 00:15:10:02 00:15:17:22

After which, they may spend up to 4 more years as adult ocean salmon, building up body mass and reproductive capacity until they're ready for their own salmon run

**165** 00:15:20:10 00:15:25:08

Lifespans for salmon commonly being between 2 to 8 years on average, depending on the species

### **SEGMENT 3:**

**166** 00:15:41:03 00:15:42:00

Sharks

**167** 00:15:43:13 00:15:46:06

Among the most diverse and unique family of fish

**168** 00:15:46:17 00:15:49:05

With over 470 species recorded

**169** 00:15:50:01 00:15:53:06

They can be found in every ocean in every part of the world

**170** 00:15:54:01 00:15:56:23

Some even living in fresh water lakes and rivers

**171** 00:15:58:02 00:16:02:10

They range in size from the rare dwarf lanternshark at 8 inches in length

**172** 00:16:03:03 00:16:10:05

To the whale shark, the biggest species of fish in existence, at up to 46 feet long, weighing 66 000 pounds

**173** 00:16:11:24 00:16:16:14

Among the oldest groups of animals, the first sharks evolved over 400 million years ago

**174** 00:16:16:22 00:16:20:03

They are closely related to rays, skates and chimaeras

**175** 00:16:20:19 00:16:25:06

All unique among fish for having a skeleton made out of cartilage rather than bone

**176** 00:16:26:02 00:16:28:03

Making them lightweight and very flexible

**177** 00:16:28:10 00:16:31:04

Ideal for hunting, as they are all predators

**178** 00:16:32:04 00:16:36:03

Preying on anything from invertebrates and crustaceans to mammals and other fish

**179** 00:16:37:01 00:16:40:20

Many being apex predators in their habitat, such as the great white

**180** 00:16:41:10 00:16:44:20

The shape of their jaws and teeth indicative of their preferred prey

**181** 00:16:45:15 00:16:49:08

Some having developed flat teeth to crack the shells of crustaceans

**182** 00:16:49:16 00:16:55:22

While others have a set of razor sharp teeth that are continuously replaced throughout their life as they often break off into their prey

**183** 00:16:57:13 00:17:03:17

More general feeders, such as the great white, combining sharp teeth with a massive bite force of up to 4000 pounds

**184** 00:17:04:05 00:17:05:20

Easily able to crush bone

**185** 00:17:07:10 00:17:13:04

Most sharks are additionally fast swimmers over short distances, being sprinters rather than long-distance swimmers

**186** 00:17:14:03 00:17:17:16

Some reaching speeds of up to 30 miles per hour in short speed bursts

**187** 00:17:18:02 00:17:19:21

Preferring surprise attacks

**188** 00:17:21:02 00:17:24:07

Hunting using primarily their sense of smell to detect prey

**189** 00:17:24:18 00:17:27:24

Easily able to detect even the smallest drop of blood in the water

**190** 00:17:28:11 00:17:31:14

Even able to determine the exact direction and distance from it

**191** 00:17:32:06 00:17:34:22

They also use an acutely developed sense of “hearing”

**192** 00:17:35:15 00:17:40:24

Through a small opening on each side of the head, connected to a series of openings all along the length of the skull

**193** 00:17:42:02 00:17:51:23

Used to detect vibrations in the water generated by movements, changes in surrounding water temperature, as well as electrical fields generated by all living organisms through muscle activity

**194** 00:17:52:07 00:17:55:13

Having the most sensitive form of electrolocation found in nature

**195** 00:17:56:19 00:18:00:17

Able to sense prey even in pitch black conditions while buried on the ocean floor

**196** 00:18:03:13 00:18:07:03

As well as using the electromagnetic field of the earth itself to navigate

**197** 00:18:08:04 00:18:11:23

Some species migrating for hundreds of miles with no fixed territories

**198** 00:18:12:11 00:18:18:14

Also using a powerful sense of eyesight, highly sensitive in low-light conditions with excellent depth perception

**199** 00:18:18:22 00:18:24:00

Though all species are believed to be fully color blind, only able to see shades of green or grey

**200** 00:18:26:03 00:18:33:02

Most sharks are highly solitary, varying between roaming the seas over vast distances, as with the larger species of apex predators

**201** 00:18:33:09 00:18:35:14

Travelling on average 50 miles a day

**202** 00:18:36:17 00:18:39:22

Or leading more sedentary lifestyles, as with most species

**203** 00:18:40:19 00:18:42:17

Lying in wait of nearby prey

**204** 00:18:43:00 00:18:45:10

Or patrolling a specific small area

**205** 00:18:45:24 00:18:50:08

A few hunting in pairs or smaller non-permanent packs when prey is abundant

**206** 00:18:50:19 00:18:55:13

Only a few species, such as the hammerhead, forming larger schools of hundreds of individuals

**207** 00:18:56:01 00:18:59:02

Often seen as a large swarming group that's always in motion

**208** 00:19:00:04 00:19:03:17

As most sharks swim consistently to pass water through their gills

**209** 00:19:05:11 00:19:13:01

Since breathing through flexing their musculature to draw water in can often be more energy consuming for a shark than swimming and gliding through the water

**210** 00:19:14:13 00:19:19:23

Some, such the great white, have even entirely abandoned the sedentary method as a means for breathing

**211** 00:19:20:03 00:19:24:18

Being forced by necessity to keep swimming so as not to drown, even while sleeping

**212** 00:19:26:14 00:19:29:02

Communication between sharks is highly limited

**213** 00:19:29:16 00:19:32:14

Consisting mainly of body language and swimming patterns

**214** 00:19:33:09 00:19:40:10

Most keeping their distance to other individuals, only coming together over mating season, which may occur once a year for most larger species

**215** 00:19:41:20 00:19:44:00

While with others no fixed period is given

**216** 00:19:45:08 00:19:50:06

Mating is rarely observed, being the only time for many species that they congregate in any number

**217** 00:19:50:14 00:19:52:20

Normally only in pairs and small groups

**218** 00:19:53:06 00:19:55:11

Many being both polyandrous and polygynous

**219** 00:19:56:08 00:19:58:11

Many males mating with many females

**220** 00:19:58:21 00:20:00:16

Preceded by a courtship period

**221** 00:20:01:15 00:20:03:14

The male swimming alongside the female

**222** 00:20:04:08 00:20:07:00

Biting her and gently ramming her to show interest

**223** 00:20:07:14 00:20:10:21

Biting down also to secure a fixed position for mating

**224** 00:20:11:14 00:20:17:16

Mating then occurs through internal fertilization, either by swimming parallel to each other or curling around each other

**225** 00:20:17:22 00:20:21:05

Allowing the male shark's claspers to enter the female's cloaca

**226** 00:20:22:19 00:20:30:23

After mating, the male leaves to continue foraging for food or returns to its territory, taking no part in tending to the female during their gestation period

**227** 00:20:31:12 00:20:37:22

Though cases of asexual reproduction has been observed when a female has not successfully found a mate during mating season

**228** 00:20:38:11 00:20:44:06

Through a process of parthenogenesis, wherein the female generates the genetic material for her young all alone

**229** 00:20:45:18 00:20:49:12

Effectively reproducing as a series of genetically identical clones

**230** 00:20:50:15 00:20:54:17

Unlike most bony fish, sharks produce a small number of well-developed young

**231** 00:20:55:07 00:20:58:06

As opposed to larger numbers of poorly developed young

**232** 00:21:00:03 00:21:04:00

Sharks display three distinct ways of bearing their young, depending on the species

**233** 00:21:04:19 00:21:12:04

Most being ovoviviparous, their eggs hatching in the oviduct of their mother's body while glands inside the oviduct provide nourishment for the embryos

**234** 00:21:13:19 00:21:19:14

The young are then born alive and fully functional after a gestation period varying between 6 months up to 2 years

**235** 00:21:21:04 00:21:28:07

The first embryos to hatch frequently engaging in cannibalism, eating the other embryos, often leading to a single large pup being born

**236** 00:21:29:23 00:21:36:09

Some species, such as horn sharks and catsharks, are oviparous much like other fish, laying external eggs in the water

**237** 00:21:37:22 00:21:44:14

The embryo being protected by a leathery egg case, known as a mermaid's purse, which may be hidden in crevices for protection

**238** 00:21:45:22 00:21:51:24

While a few species, such as hammerheads and bull sharks, are fully viviparous, being highly similar to mammalian gestation

**239** 00:21:53:19 00:21:58:10

Maintaining a placental link to a fetus and giving birth to a live, fully functional young

**240** 00:21:59:15 00:22:04:11

After the eggs have been deposited, or after being born, the young are often entirely abandoned by their mother

**241** 00:22:06:08 00:22:09:18

Forced to seek out a territory of their own and hunt for themselves

**242** 00:22:10:16 00:22:15:10

Many juvenile sharks falling victim to other predatory fish, including other mature sharks

**243** 00:22:16:16 00:22:24:22

They grow rapidly within their first year, gaining weight substantially through consistent feeding, many species having a high metabolism rate, necessitating constant hunting

**244** 00:22:25:11 00:22:31:08

Sharks mature slowly relative to other types of fish, taking between 10 to 30 years for some species

**245** 00:22:31:23 00:22:38:04

With average lifespans being around 40 to 60 years, some species well exceeding 100 years

**OUTRO:**

**246** 00:22:41:04 00:22:44:06

Though sharks, unlike schooling fish, tend to be found alone

**247** 00:22:45:16 00:22:49:06

They are, much like salmon, tuna, sardines and anchovies

**248** 00:22:49:21 00:22:52:04

An essential component in their ecosystem

**249** 00:22:53:01 00:22:55:17

Keystone species and apex predators alike

**250** 00:22:56:06 00:22:57:14

Whether in the open ocean

**251** 00:22:58:09 00:22:59:23

Or in rivers and lakes

**252** 00:23:00:20 00:23:02:03

Protected by the school

**253** 00:23:02:15 00:23:04:06

Or hunting by themselves

**254** 00:23:05:06 00:23:08:04

Each phase of their lifecycle a crucial link

**255** 00:23:08:08 00:23:10:19

Every individual part of a greater whole

**256** 00:23:11:05 00:23:13:20

All members of an animal society

**METRICS:**

**023** 00:01:02:02 00:01:05:24

Ranging in size from the whale shark at over 14 meters long

**024** 00:01:06:07 00:01:09:09

To the dwarf pygmy goby at only a centimeter long

**050** 00:03:24:14 00:03:36:12

Such as those of the north Atlantic herring, amassing in numbers of tens of millions of individuals, forming schools several square kilometers large, becoming among the largest aggregations of animals and animal phenomena in the world

**101** 00:09:02:24 00:09:09:21

They are distinct for their relatively large size, from the smallest, the pink salmon at 50 centimeters long, weighing as little as 1.4 kilograms

**102** 00:09:11:09 00:09:17:04

To the largest, the Chinook or King salmon, which can grow to almost 1.5 meters long, weighing 60 kilograms

**137** 00:12:20:01 00:12:22:22

Even able to make jumps as high as 3 meters in the air

**141** 00:12:51:02 00:12:56:13

Each egg, either red or orange, being the size of a pea, covering an area of up to 3 square meters

**145** 00:13:17:07 00:13:20:14

Covering an area of over 18 square meters per individual

**160** 00:14:46:11 00:14:52:03

Once they reach between 15 to 20 centimeters in length, they swim out of the river entirely and into the open ocean

**171** 00:15:58:02 00:16:02:10

They range in size from the rare dwarf lanternshark at 20 centimeters in length

**172** 00:16:03:03 00:16:10:05

To the whale shark, the biggest species of fish in existence, at up to 14 meters long, weighing 30 metric tons

**186** 00:17:14:03 00:17:17:16

Some reaching speeds of up to 50 kilometers per hour in short speed bursts

**197** 00:18:08:04 00:18:11:23

Some species migrating for hundreds of kilometers with no fixed territories

**201** 00:18:33:09 00:18:35:14

Travelling on average 80 kilometers a day