

**“ANIMAL SOCIETY”**

Episode 13 “Marine Invertebrates”

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** 00:00:38:01 00:00:39:16

Deep in oceans and lakes

**015** 00:00:40:11 00:00:42:07

We find marine invertebrates

**016** 00:00:43:00 00:00:45:22

A group as widespread and complex as all invertebrates

**017** 00:00:46:15 00:00:51:17

They are a diverse group of distantly related families and species sharing but a few common traits

**018** 00:00:52:08 00:00:56:01

The primary signifier being the total absence of an internal skeleton

**019** 00:00:56:18 00:00:59:01

Coming either in gelatinous or fleshy forms

**020** 00:00:59:19 00:01:03:06

Or with a hard calcified surface texture or exoskeleton

**021** 00:01:03:23 00:01:08:13

While a great many species are active and highly mobile and recognizably animalistic in behavior

**022** 00:01:09:13 00:01:12:15

The majority of marine invertebrates are generally highly sedentary

**023** 00:01:14:01 00:01:17:16

Spending most of their lives in the same location with minimal locomotion

**SEGMENT 01:**

**024** 00:01:20:01 00:01:26:06

One of the most common and essential forms of marine invertebrates in fact often being mistaken as completely inanimate

**025** 00:01:27:01 00:01:27:19

Corals

**026** 00:01:28:14 00:01:33:19

A unique group of primitive invertebrates identified by their distinct outward appearance known as a polyp

**027** 00:01:34:04 00:01:41:10

A small round animal fixed on the ocean floor, with a central oral cavity of sorts surrounded by a ring of tentacles of varying size and shape

**028** 00:01:41:24 00:01:47:12

Lacking any advanced sensory organs, nervous system or intelligence, they operate entirely on instinct

**029** 00:01:48:01 00:01:50:15

They evolved over 500 million years ago

**030** 00:01:51:00 00:01:56:04

Individually polyps may range in size from less than a quarter of an inch in length to over a foot across

**031** 00:01:57:00 00:02:00:06

They can be found in nearly all tropical and subtropical waters

**032** 00:02:00:14 00:02:04:06

With some species surviving even in much deeper or colder temperate waters

**033** 00:02:04:22 00:02:08:12

Corals are often partially predatory, feeding on either fish or plankton

**034** 00:02:08:20 00:02:12:04

Which can be caught by the stinging tentacles surrounding their oral cavity

**035** 00:02:12:13 00:02:17:03

Paralyzing their prey, pulling it into its mouth, digesting it and expelling it the same way

**036** 00:02:17:13 00:02:23:20

Though they commonly acquire most of their nutrients and energy from photosynthetic microorganisms living within their tissue

**037** 00:02:24:02 00:02:26:10

A group of algae known as dinoflagellates

**038** 00:02:26:14 00:02:29:08

The algae existing in a symbiotic relationship with the polyp

**039** 00:02:29:14 00:02:32:04

Providing energy to the coral through photosynthesis

**040** 00:02:32:09 00:02:36:16

In exchange for consuming carbon dioxide and waste products excreted by the polyp

**041** 00:02:36:21 00:02:39:22

Though this process may sometimes put significant strain on the polyp

**042** 00:02:40:04 00:02:46:24

Leading to the polyp sometimes ejecting the algae if put under additional environmental stress such as temperature changes or pollution

**043** 00:02:47:08 00:02:51:08

Saving the polyp temporarily until conditions change and the algae are regained

**044** 00:02:51:15 00:02:55:11

Though if stressful conditions persist, the coral dies out from starvation

**045** 00:02:55:16 00:03:00:22

A phenomenon known as coral bleaching, as the algae are also often responsible for the coloration of corals

**046** 00:03:01:00 00:03:04:17

Leading many corals to turn white or grey upon expelling their algae

**047** 00:03:04:21 00:03:10:14

Many polyps secreting a hard circular substance known as corallite under their skin, giving the coral its name

**048** 00:03:10:19 00:03:12:06

Made out of calcium carbonate

**049** 00:03:12:11 00:03:17:22

Forming a hard exoskeleton around its base, permanently attaching the polyp to the solid surface underneath it

**050** 00:03:18:03 00:03:23:04

Radiating outward from its center, the corallite leaves only a small opening for the oral cavity

**051** 00:03:23:12 00:03:26:05

Causing it to be incredibly dense and immensely strong

**052** 00:03:26:09 00:03:32:19

Adding additional corallite to the outer layers over time, extending the base upward while keeping the living tissue at the top

**053** 00:03:33:02 00:03:37:00

To build up closer to the surface to receive more sunlight for photosynthesis

**054** 00:03:37:07 00:03:42:00

They are most commonly found in large colonies of dozens, if not hundreds of individual polyps

**055** 00:03:42:05 00:03:45:22

Either horizontal across a surface in mounds or plates along the sea floor

**056** 00:03:46:03 00:03:49:04

Or in vertical branching patterns not unlike plant life

**057** 00:03:49:08 00:03:53:03

With their massive corallite deposits occasionally forming large coral reefs

**058** 00:03:53:10 00:03:56:05

Often in waters with few other sources of nutrients

**059** 00:03:56:11 00:04:05:03

Built up over hundreds, even thousands of years of corallite deposits as corals instinctively built taller and taller structures to further approach the sunlight

**060** 00:04:05:12 00:04:09:06

As ocean levels have gradually risen in the wake of the last glacial period

**061** 00:04:09:15 00:04:13:15

With most reefs having been formed by volcanic islands subsiding underwater

**062** 00:04:13:23 00:04:17:15

Fringing reefs surrounding the island forming a shallow lagoon as a result

**063** 00:04:17:19 00:04:19:21

Often called the rainforests of the seas

**064** 00:04:20:10 00:04:24:21

Coral reefs not only function as a large superstructure for the coral colonies themselves

**065** 00:04:24:24 00:04:28:16

But also functioning as a diverse marine ecosystem in and of itself

**066** 00:04:30:07 00:04:37:02

While coral reefs only make up a tenth of a percent of the ocean surface, they are home to over a quarter of all marine life

**067** 00:04:38:15 00:04:45:08

The intricate layers and branching structures of the corallite allowing highly nutritious spaces for microorganisms and other polyps

**068** 00:04:46:01 00:04:51:05

Further providing habitats for all kinds of fish, mollusks, sponges, worms and crustaceans

**069** 00:04:51:18 00:04:54:17

Even though they are seldom directly preyed upon by other animals

**070** 00:04:54:21 00:04:59:01

Its continuous lifecycle providing further habitat construction for other animals

**071** 00:05:00:09 00:05:06:09

Coral reproduction may be either asexual or sexual, depending on the current stage in the coral's life cycle

**072** 00:05:07:00 00:05:11:22

With indirect sexual reproduction being the most common, using a method of broadcasting spawn

**073** 00:05:12:10 00:05:16:05

Most corals being hermaphroditic, containing both sperm and eggs

**074** 00:05:16:08 00:05:19:14

With the majority of all hermaphroditic corals being broadcasters

**075** 00:05:20:01 00:05:28:02

Each individual polyp releasing a mixture of eggs and sperm, known as gametes, into the water to be caught by the current through a synchronous spawning

**076** 00:05:28:16 00:05:31:20

Mixing with the gametes of other polyps for fertilization

**077** 00:05:32:11 00:05:38:17

Even with multiple species entering into the same synchronous spawning, determining the time to release gametes through environmental cues

**078** 00:05:39:08 00:05:42:10

While a few species are brooders, only releasing sperm

**079** 00:05:43:08 00:05:46:17

Which then sinks onto the waiting egg carrier polyps below

**080** 00:05:47:14 00:05:51:13

Both methods occasionally leading to a hybridization of coral species

**081** 00:05:52:13 00:05:56:06

With hybrids unlike other, more complex animals, being fertile as well

**082** 00:05:57:05 00:06:01:11

Multigenerational hybridization eventually leading to new speciation of corals

**083** 00:06:02:10 00:06:07:24

After spawning, the fertilized egg and sperm then fuse to enter into a larval form known as a planula

**084** 00:06:09:08 00:06:14:13

A small, often pink elliptical shape and with only primitive means of instinctive locomotion

**085** 00:06:15:16 00:06:19:08

With most species seeking light to utilize photosynthesis for growth

**086** 00:06:20:06 00:06:22:04

Prior to attaching to a hard surface

**087** 00:06:23:02 00:06:27:03

A process which usually takes only 2 to 3 days, but may take up to 2 months

**088** 00:06:27:16 00:06:32:20

Once the larvae lets itself sink to the ocean floor, it attaches itself to the nearest hard surface

**089** 00:06:33:04 00:06:35:13

After which, asexual reproduction begins

**090** 00:06:36:05 00:06:44:10

Polyps may reproduce by budding, wherein a smaller individual polyp begins as an outgrowth from an adult polyp, either from the oral disc or from its base

**091** 00:06:45:03 00:06:49:14

Slowly distancing itself from the original polyp and developing its own discreet body parts

**092** 00:06:50:00 00:06:50:23

Or by division

**093** 00:06:51:14 00:06:53:06

Where the polyp splits in two

**094** 00:06:53:16 00:06:57:13

And both halves regenerate the lost tissue to become as large as the original

**095** 00:06:58:05 00:07:02:03

Both methods forming a so-called coral head group within a larger colony

**096** 00:07:02:20 00:07:05:23

Though some coral heads may expand to significant sizes

**097** 00:07:06:16 00:07:10:16

Even to the point of becoming the equivalent size of an entire colony on its own

**098** 00:07:11:06 00:07:14:18

Making each individual polyp capable of producing an entire colony

**099** 00:07:15:07 00:07:18:13

Whole colonies additionally being able to reproduce asexually

**100** 00:07:19:06 00:07:21:14

Forming two genetically identical colonies

**101** 00:07:22:02 00:07:24:18

Either by fission, bailout or fragmentation

**102** 00:07:25:07 00:07:30:16

Fission being most common, the entire colony splitting in two during the early stages of its development

**103** 00:07:31:04 00:07:34:08

While bailout occurs when a single polyp abandons the colony

**104** 00:07:35:03 00:07:37:24

Typically either in an early stage of the calcification

**105** 00:07:38:06 00:07:40:05

When the polyp may detach more easily

**106** 00:07:40:14 00:07:42:05

Or by lengthy outgrowths

**107** 00:07:42:14 00:07:47:24

Fragmentation being individual polyps forcibly broken off from the colony by storms or other disruptions

**108** 00:07:48:07 00:07:52:22

The asexually produced offspring remains genetically identical to the original polyp

**109** 00:07:53:05 00:07:57:22

Polyp lifecycles abandoning the linear progression of stages found with most other animals

**110** 00:07:58:05 00:08:00:19

Instead progressing by any and all means available

**111** 00:08:01:03 00:08:05:10

Life spans varying between 2 years for the average polyp up to hundreds of years

**112** 00:08:05:18 00:08:13:06

As polyps continue to grow and generate new living tissue as long as it continues to successfully maintain a symbiotic relationship with their algae

**113** 00:08:14:04 00:08:18:14

Colonies continually renewing themselves, surviving up to thousands of years

**SEGMENT 02:**

**114** 00:08:31:13 00:08:35:18

Few marine invertebrates are as commonplace or as recognizable as the jellyfish

**115** 00:08:36:17 00:08:39:08

Found in every ocean on the planet, at every depth

**116** 00:08:40:06 00:08:45:11

They are primarily marine animals, though some may also be found in freshwater lakes and ponds

**117** 00:08:45:16 00:08:50:11

They are among the oldest living groups of animals, having evolved over 700 million years ago

**118** 00:08:50:20 00:08:53:08

They have remained largely unchanged since then

**119** 00:08:53:18 00:08:56:02

All closely related to corals and anemones

**120** 00:08:56:07 00:09:02:19

They are as diverse as they are widespread, being spread out across 4 classes, dozens of families and hundreds of species

**121** 00:09:03:04 00:09:09:24

With additional groups such as the Portuguese man o' war and comb jellies often being confused or conflated with the true jellyfish

**122** 00:09:10:03 00:09:12:02

Though they are only distantly related

**123** 00:09:13:03 00:09:22:14

They may range in size from less than a tenth of an inch in diameter to nearly 7 feet across, with their tentacles and mouth parts becoming as long as 120 feet for some species

**124** 00:09:23:20 00:09:35:01

Their primary form being immediately recognizable for their soft bodies and gelatinous umbrella-shaped bell and trailing tentacles known as their medusa form, being the last life stage of most jellyfish

**125** 00:09:36:02 00:09:40:11

As jellyfish development typically occurs in phases, which may vary between species

**126** 00:09:41:03 00:09:45:02

Commonly ranging from fertilized eggs to a larval stage known as planulae

**127** 00:09:45:23 00:09:49:15

Being free floating gelatinous blobs searching for a permanent feeding site

**128** 00:09:50:17 00:09:54:18

Once attached to the sea floor, the jellyfish goes through a lengthy polyp stage

**129** 00:09:55:03 00:09:59:22

Most polyps being only millimeters in size and often indistinguishable from coral polyps

**130** 00:10:00:13 00:10:03:13

Jellyfish polyps may be either solitary or colonial

**131** 00:10:03:24 00:10:08:17

With colonial polyps sharing a single stomach cavity through what is known as strobilation

**132** 00:10:09:11 00:10:17:05

Feeding continuously for a period of months, sometimes even years, with the transition from polyp to fully formed jellyfish often being seasonally linked

**133** 00:10:17:18 00:10:23:07

When the climate is found to be favorable, usually in the warmer months, the polyp will then trigger the next stage

**134** 00:10:24:07 00:10:27:13

A fleeting ephyra, a free-swimming partially formed medusa

**135** 00:10:29:11 00:10:36:13

It then develops into a full-sized medusa shortly thereafter, growing steadily until fully reproductive, continuing until its death

**136** 00:10:37:13 00:10:41:12

While a few species may go directly from egg to medusa or from egg to polyp

**137** 00:10:42:24 00:10:45:01

Skipping the intermediate steps entirely

**138** 00:10:46:03 00:10:52:07

These drastic transformations are made possible through their physical simplicity, consisting of up to 98 percent water

**139** 00:10:54:02 00:11:01:03

Their soft bodies containing the absolute minimum of required organs, often being partially or almost completely transparent as a result

**140** 00:11:02:16 00:11:05:24

Lacking any form of digestive, respiratory or circulatory system

**141** 00:11:06:11 00:11:15:08

Having only a loose network of nerves as opposed to a central nervous system, enabling a basic sense of touch through a distributed net of independent nerve cells throughout its body

**142** 00:11:16:12 00:11:21:22

With some species also having light-sensitive organs that can enable them to differentiate night from day

**143** 00:11:23:06 00:11:30:04

Their bodies instead primarily being composed of a gastrovascular cavity where digestion takes place and nutrients are absorbed

**144** 00:11:30:15 00:11:35:03

As well as crude muscle rings for locomotion for the mobile stages of their life cycle

**145** 00:11:35:20 00:11:39:11

Making jellyfish among the most energy efficient swimmers of all animals

**146** 00:11:39:16 00:11:45:04

Moving through the water by radially expanding and contracting their bell-shaped bodies to push water behind them

**147** 00:11:48:24 00:11:55:08

Though they only have limited control over the precise direction of their movements, most willingly floating along with the ocean current

**148** 00:11:57:13 00:12:05:00

In their medusa form, jellyfish also exhibit a varying degree of articulated tentacles, threads and oral arms as a means of drawing food in

**149** 00:12:06:03 00:12:13:04

As medusa are exclusively carnivorous, feeding on plankton, crustaceans, smaller fish and fish eggs as well as other jellyfish

**150** 00:12:14:09 00:12:25:16

Hunting passively by using their tentacles as drift nets, with most species additionally having the ability to sting their prey through thread-like tentacles with specialized stinging cells known as nematocysts

**151** 00:12:26:08 00:12:29:16

Piercing the skin of its victim to inject various forms of venom

**152** 00:12:30:12 00:12:34:01

Either inducing paralysis or death in their intended prey

**153** 00:12:35:10 00:12:39:15

Stinging their prey into submission and bringing them into their gastric cavity for digestion

**154** 00:12:39:23 00:12:42:07

Expelling the remains through the same opening

**155** 00:12:42:22 00:12:46:23

Some being considerably deadly even to large animals as a means of self-defense

**156** 00:12:47:15 00:12:53:11

While many polyps are either plankton feeders or even survive by photosynthesis, much like their coral counterparts

**157** 00:12:53:24 00:13:00:01

Despite having little to no means of communication whatsoever, jellyfish may still be found in huge numbers on occasion

**158** 00:13:01:03 00:13:04:23

Aggregations of jellyfish often being known as blooms or swarms

**159** 00:13:05:16 00:13:08:16

Sometimes making up hundreds of thousands of individuals

**160** 00:13:08:22 00:13:11:16

Often linked to prey abundance or favorable climate

**161** 00:13:12:04 00:13:16:04

Jellyfish being able to survive even in the most oxygen-deprived waters

**162** 00:13:16:10 00:13:18:05

Unlike other plankton-feeders

**163** 00:13:19:04 00:13:24:18

Large congregations of jellyfish is often also a direct result of an often fast reproductive cycle

**164** 00:13:25:24 00:13:31:20

With generations being born, passing through the phases of their life cycle and reproducing repeatedly in a single area

**165** 00:13:33:24 00:13:39:20

Jellyfish may reproduce both sexually and asexually, with male, female as well as hermaphrodite individuals

**166** 00:13:40:08 00:13:46:07

Given enough food, most medusa spawn daily, usually synchronized within groups at either dawn or dusk

**167** 00:13:47:15 00:13:51:05

The males releasing sperm alongside the females who release their eggs

**168** 00:13:51:10 00:13:56:04

The unprotected eggs becoming fertilized in the very same instance and quickly enter the larval stage

**169** 00:13:57:10 00:14:04:01

Or, as with moon jellies, the sperm will enter the female's body directly where it develops through its larval stage before dispersal

**170** 00:14:04:22 00:14:11:14

Once developed into a polyp, they may then reproduce asexually by budding, or growing genetically identical clones as outgrowths

**171** 00:14:11:21 00:14:16:01

Producing both additional polyps as well as ephyrae or other larval forms

**172** 00:14:17:08 00:14:21:13

While a few species can reproduce asexually by budding from the medusa stage as well

**173** 00:14:21:21 00:14:26:08

Such as by fission, where an individual may electively or forcibly be split in two

**174** 00:14:26:18 00:14:29:21

The tissue of both halves regenerating to form a whole

**175** 00:14:30:23 00:14:37:10

Jellyfish lifespans can vary considerably, with polyps lasting for years while some medusae may only last for mere days

**176** 00:14:37:15 00:14:38:24

Or even a few hours

**177** 00:14:39:08 00:14:42:00

While a handful of species may effectively be immortal

**178** 00:14:42:13 00:14:46:11

By being able to revert back to the polyp stage even after reproducing

**179** 00:14:46:19 00:14:50:05

And once again emerging as a medusa when conditions allow

**180** 00:14:51:00 00:14:54:17

Though most large coastal jellyfish last on average 2 to 6 months

**181** 00:14:54:22 00:14:57:19

The biggest threat to jellyfish being in their medusa form

**182** 00:14:58:00 00:15:00:10

As the polyps are seldom targeted for predation

**183** 00:15:01:08 00:15:09:07

The threat stemming primarily from other jellyfish, some of which may specialize in preying on other species of jellyfish, though cannibalism may also occur

**184** 00:15:09:15 00:15:13:02

Other predators may include tuna, sea turtles and sharks

**185** 00:15:13:19 00:15:18:23

Though these instances are rare with jellyfish in most areas being the top predators of their habitat

**186** 00:15:19:07 00:15:27:10

Not only feeding on fish eggs and smaller or juvenile fish, but also being a formidable competitor for food resources to larger marine animals as well

**SEGMENT 03:**

**187** 00:15:41:06 00:15:42:07

Octopuses

**188** 00:15:42:14 00:15:43:23

Also known as octopodes

**189** 00:15:45:03 00:15:50:09

With over 300 species described, they make up the largest majority of cephalopod molluscs

**190** 00:15:51:13 00:15:54:19

A group also including squids, cuttlefish and the nautiloids

**191** 00:15:55:05 00:15:59:06

Further related to snails and slugs, along with clams, oysters and scallops

**192** 00:16:00:03 00:16:06:11

They are immediately recognizable for their large almost entirely soft body, devoid of any internal shell or bone

**193** 00:16:07:18 00:16:11:11

The only hard part commonly being a bony beak made out of chitin

**194** 00:16:12:17 00:16:20:01

As well as their 8 characteristic arms, usually with suction cups, distinct from the longer feeding tentacles of squids and nautiloids

**195** 00:16:21:05 00:16:25:11

Used both for locomotion across the sea floor by walking as well as for swimming

**196** 00:16:26:07 00:16:31:08

Though octopuses may also utilize jet propulsion of water as an alternate means for swimming

**197** 00:16:33:02 00:16:40:09

Forcibly ejecting a stream of water sucked in through the gills by a series of muscles, coming out through two muscular siphons for precise aiming

**198** 00:16:41:06 00:16:43:17

Enabling a fast escape or pursuit

**199** 00:16:44:15 00:16:53:06

Octopuses range in size from the largest, the giant Pacific octopus, confirmed to weigh up to 150 pounds, with a full body length of nearly 10 feet

**200** 00:16:53:24 00:16:59:18

To the smallest, the Octopus Wolfi, weighing less than a twentieth of an ounce at less than an inch in length

**201** 00:17:00:10 00:17:05:07

Females of all species being typically larger, sometimes by an extreme difference in size

**202** 00:17:06:07 00:17:11:03

The blanket octopus female at 6 feet long being nearly 100 times longer than the male

**203** 00:17:11:23 00:17:14:06

Weighing nearly 40 000 times the weight

**204** 00:17:15:04 00:17:18:17

Octopuses may also inhabit a wide variety of marine environments

**205** 00:17:19:11 00:17:23:11

Including coral reefs, the open ocean and the ocean floor itself

**206** 00:17:24:09 00:17:27:20

Able to adapt to nearly any climate, from inhabiting polar waters

**207** 00:17:28:16 00:17:32:22

To hydrothermal vents with temperatures exceeding 300 degrees Celsius

**208** 00:17:33:18 00:17:37:15

Most able to survive out of water for extended periods of time as well

**209** 00:17:38:12 00:17:45:10

Though they are exclusively found in saltwater environments, unable to cope with the osmotic change of staying in a non-saline environment

**210** 00:17:46:10 00:17:51:19

Unlike squids, most octopuses also notably lack a hard bony mantle encompassing the head

**211** 00:17:52:19 00:17:56:06

The octopus mantle instead remaining almost entirely gelatinous

**212** 00:17:57:12 00:18:02:16

Enabling the octopus to squeeze itself into nearly any small crevice or crawlspace to avoid detection

**213** 00:18:03:09 00:18:08:20

Only a few deep water species retaining a small internal shell and fins on either side of their heads

**214** 00:18:10:00 00:18:21:24

Despite being among the most intelligent of all marine invertebrates, with significant pattern recognition behavior, long-term memory capabilities and problem solving skills, including primitive tool usage and dexterity

**215** 00:18:23:08 00:18:29:22

As all are exclusively predatory, feeding on a variety of fish, crabs, prawns, marine worms, clams and squids

**216** 00:18:30:04 00:18:31:16

Even other octopuses

**217** 00:18:32:13 00:18:35:18

Using a variety of tactics to trap and manipulate their prey

**218** 00:18:36:12 00:18:39:01

All species also being venomous to varying degrees

**219** 00:18:40:03 00:18:44:23

Most commonly injecting their prey with a paralytic agent before dismembering it with their small beaks

**220** 00:18:45:16 00:18:50:24

Hunting strategies varying, but commonly consisting of some form of ambush or brief active pursuit

**221** 00:18:51:24 00:18:58:19

The octopus lying in wait among corals or on the ocean floor, waiting for suitable prey to pass by close enough to provoke it to attack

**222** 00:18:59:11 00:19:04:08

Wrapping its arms around its prey and quickly piercing its skin with its horny beak to inject the venom

**223** 00:19:05:09 00:19:08:00

Many species also having the ability of camouflage

**224** 00:19:09:11 00:19:13:05

Using specialized reflective skin cells known as chromatophores

**225** 00:19:13:10 00:19:17:16

Containing many different colored pigments allowing it to reflect light of differing wavelengths

**226** 00:19:18:18 00:19:22:07

Thus controlling its color, patterning and apparent opacity at will

**227** 00:19:23:07 00:19:28:19

Additional musculature in their skin allowing significant changes of surface texture as well in some species

**228** 00:19:29:08 00:19:32:07

Able to take on the appearance of seaweed, corals and rocks

**229** 00:19:32:24 00:19:34:03

Both to ambush prey

**230** 00:19:35:04 00:19:36:02

And to communicate

**231** 00:19:36:06 00:19:42:11

Unable to use any form of vocal communication, instead relying on changing intricate color patterns to signal intent

**232** 00:19:42:22 00:19:45:23

Though the primary use of this camouflage is to avoid predators

**233** 00:19:46:08 00:19:51:08

Most octopuses also able to eject a thick, blackish ink in self defense when cornered by a predator

**234** 00:19:51:15 00:19:56:00

Enabling it a means of escape by blocking its pursuers vision as well as olfactory sense

**235** 00:19:56:08 00:19:59:13

Some octopuses also able to perform arm autotomy

**236** 00:19:59:21 00:20:05:05

Or the voluntary detachment of one or more of its arms to distract a predator when under direct attack

**237** 00:20:05:18 00:20:12:08

Most octopuses are highly solitary, rarely socializing in any significant way with other octopuses outside of mating season

**238** 00:20:12:18 00:20:16:00

As most octopuses are also highly aggressive and opportunistic

**239** 00:20:16:10 00:20:19:05

Many species not being above cannibalism for sustenance

**240** 00:20:19:13 00:20:22:21

Mating season of octopuses varies greatly between species

**241** 00:20:23:04 00:20:26:05

Many species only being able to mate once before dying

**242** 00:20:26:14 00:20:30:17

Typically occurring shortly after maturity at between 1 to 3 years of age

**243** 00:20:31:00 00:20:35:02

Typically initialized by the male, it may approach the female in one of two ways

**244** 00:20:35:12 00:20:38:07

Either by mounting her by grabbing all of her arms at once

**245** 00:20:38:13 00:20:42:19

Common with species with shorter arms where the male is of nearly equal size as the female

**246** 00:20:43:00 00:20:46:17

Or by reaching over to the female only with their specialized mating arm

**247** 00:20:47:01 00:20:49:04

Typically being the third arm on the right

**248** 00:20:49:11 00:20:54:12

Allowing him to keep the rest of his body at a distance to more easily avoid being victimized by the female

**249** 00:20:54:17 00:21:02:01

The male then uses the mating arm, also known as a hectocotylus, to transfer packets of sperm from his reproductive organ into the female's siphon

**250** 00:21:02:14 00:21:09:20

The arm may then sometimes detach from the male's body, remaining in the female's mantle cavity to ensure fertilization occurs while the male escapes

**251** 00:21:10:07 00:21:14:09

Particularly common among species where the male is significantly smaller than the female

**252** 00:21:14:22 00:21:20:22

Some species even able to detach the mating arm prior to mating, the arm making its way by itself to the female's siphon opening

**253** 00:21:21:10 00:21:25:05

Most males who survive the encounter live only to die a few months later

**254** 00:21:25:17 00:21:30:24

While some species may engage in territorial mate guarding behavior, mating repeatedly before egg laying

**255** 00:21:31:17 00:21:36:20

After fertilization, the female establishes a rocky den in an underwater cave or crevice

**256** 00:21:37:11 00:21:42:06

Where she lays on average between 20 000 to 400 000 eggs over the course of several days

**257** 00:21:42:21 00:21:48:01

With the incubation period lasting for 5 to 8 months, during which time the female carefully tends to her eggs

**258** 00:21:48:12 00:21:51:08

Cleaning them and blowing water over them to aerate the eggs

**259** 00:21:51:19 00:21:56:12

To ensure proper embryonic development, all the while foregoing any foraging behavior

**260** 00:21:56:23 00:22:01:04

Leading to its eventual death from starvation shortly after the hatching of her eggs

**261** 00:22:02:06 00:22:08:01

The baby octopus emerge as miniaturized versions of its parents, often pale in color or transparent and very small

**262** 00:22:09:02 00:22:13:01

The hatchlings of even the largest species being no bigger than a grain of rice

**263** 00:22:13:21 00:22:22:20

Growing incredibly quickly as their cold-blooded nature also allows the young to convert nearly all consumed energy into body mass rather than attempt to regulate body temperature

**264** 00:22:24:03 00:22:

The vast majority of all hatchlings die however within the first few weeks of life, often less than a dozen survive longer than a few months

**265** 00:22:32:04 00:22:38:20

The average life span of most octopuses being 1 to 3 years, with only a few species extending up to 5 years in the wild

**OUTRO:**

**266** 00:22:40:05 00:22:41:03

Octopuses

**267** 00:22:41:22 00:22:43:08

Just like coral polyps

**268** 00:22:44:03 00:22:45:04

And jellyfish

**269** 00:22:46:15 00:22:49:11

Form a central component in their marine environment

**270** 00:22:50:20 00:22:52:17

Either as predator or prey

**271** 00:22:54:11 00:22:56:24

Or even just as a creator of their own habitat

**272** 00:22:58:13 00:23:01:13

Sharing their lives with thousands of other marine animals

**273** 00:23:03:01 00:23:04:03

Large and small

**274** 00:23:06:06 00:23:08:02

Every part of their life cycle

**275** 00:23:08:22 00:23:11:19

An integral element in the circle of life at large

**276** 00:23:13:13 00:23:14:22

Each of them a member

**277** 00:23:15:24 00:23:17:12

Of an animal society

**METRICS:**

**030** 00:01:51:00 00:01:56:04

Individually polyps may range in size from less than half a centimeter in length to over 30 centimeters across

**123** 00:09:13:03 00:09:22:14

They may range in size from less than 2 millimeters in diameter to 2 meters across, with their tentacles and mouth parts becoming as long as 36 meters for some species

**199** 00:16:44:15 00:16:53:06

Octopuses range in size from the largest, the giant Pacific octopus, confirmed to weigh up to 70 kilograms, with a full body length of nearly 3 meters

**200** 00:16:53:24 00:16:59:18

To the smallest, the Octopus Wolfi, weighing less than 2 grams at 2 centimeters in length

**202** 00:17:06:07 00:17:11:03

The blanket octopus female at 180 centimeters long being nearly 100 times longer than the male