



Journey to Planet Earth

Transcript for Episode 11: The State of the Planet's Oceans

Complete Version

Journey to Planet Earth is produced by

**Screenscope, Inc.
4330 Yuma St, NW
Washington, DC 20016**

[Opening Tease]

Next on Journey to Planet Earth:

We're coming on board to conduct a marine fisheries inspection.

You got a firearm aboard?

We have a violation.

The way whales for example move back and forth. How are they going to figure out where to move when the climate changes?

We know that the temperatures have gone up but to see this rapid response has been a surprise to the science community.

If sea-level rise is three feet it will cover close to half the rice land in Bangladesh.

For the poor boundaries don't really matter. When they have to survive, they will scale any boundaries.

This place attracts whale sharks. We swim right into the school of these things so you're just looking around and it's just solid fish. It's just unbelievable.

There were dolphins flying over there and a whale shark under us. It was incredible.

MATT DAMON (On-Camera)

I'm Matt Damon. All this and much more as we investigate the State Of The Planet's Oceans.

[Series Title]

[Fade-out/Fade-in]

Major funding for Journey to Planet Earth was provided by the National Science Foundation: "America's Investment in the Future," and the Arthur Vining Davis Foundations: "Dedicated To Strengthening America's Future Through Education." Additional funding was provided by the Munson Foundation and the National Marine Sanctuary Foundation.

[Fade-out/Fade-in]

(Fly Thru Space)

Since the first of time, before we even thought of time, our ancestors dreamed of wandering the universe. After years of longing we finally ventured into the solar system, searching for signs of life, even echoes of earlier civilizations. But now that we have gazed upon far-off worlds we may have found our answer. Turning homeward, past familiar heavenly neighbors, we now see ourselves in ways our ancestors never could have dreamed of -- a blue planet, covered with water and the promise of riches beyond anyone's imagination.

(Opening Titles)

We begin our story in a small town near the crossroads of the Atlantic and the Mediterranean. They call Aveiro the Venice of Portugal. Visitors flock here because of the picturesque location, a series of canals and bridges set against classical architecture dating back to the sixteen century. But for those who call Aveiro home, for those who treasure its traditional way of life, they know that it is famous for more than its quaint buildings and scenic canals. Four hundred years ago this was where the world's largest long-distance fishing fleet set sail for North America.

(Historical Footage)

Though aided by the navigational skills developed by early explorers, the crossing was never easy, especially when the fleet reached the treacherous waters of the North Atlantic. But when the boats finally arrived at the fishing grounds off Newfoundland and New England, what they found was the richest cod fishery in the world.

Each morning the fishermen set out in one-man dories. For the next ten hours they hand-lined for cod. Just before sundown the dorymen returned to the mothership to unload the day's catch and then spend many more hours cleaning and salting the cod. Though the work was hard, this was a proud way of life that helped feed the world for centuries.

(Modern Fleet)

As word spread about the size of the fishery, fleets from all over the world joined the hunt. Every year the size of the fleet got bigger and every year the size of the catch increased. Towards the end of the 20th century over three billion pounds of Atlantic Cod were pulled each year from the fertile waters of the North Atlantic. What happened next was unimaginable. Nets started coming up empty. It turns out that the fleet was catching cod faster than they could reproduce and by the end of the 20th century one of the largest fisheries in the world collapsed.

CARL SAFINA

Blue Ocean Institute

It's human nature to kind of overdo a good thing and fisheries have done that repeatedly. The history of fisheries is pretty much boom and bust. You find one thing and you drive it down, deplete it and find some new thing, drive it down and deplete.

MATT DAMON (On-Camera)

Can you imagine, after feeding the world for hundreds of years, we showed our gratitude by nearly wiping cod off the face of the earth? Today the species is on the verge of extinction. And for the fishermen of Aveiro, the consequences have been devastating.

(Graveyard Of Boats)

Here along the city's commercial waterfront nearly eighty percent of Portugal's long-distance trawlers rust away in watery graves. When the cod fishery collapsed, Aveiro's economy also collapsed.

(Raking for Snails)

A nearby tidal basin offers scant opportunities for unemployed fishermen and their families. At low tide hundreds fan out across the mud flats, trying to scratch out a meager living. They have been at it since daybreak, raking through the exposed seabed, searching for small clams and snails.

Ricardo Oliveira worked the North Atlantic cod fisheries since he was a teenager. He is joined by his wife Selena and daughter Marcia. Though they work side-by-side, parents and daughter live in two different worlds. Ricardo will do anything to keep the traditions handed down from generation to generation. Marcia, however, like most of Aveiro's younger generation, doesn't feel strongly tied to those traditions. She is seeking work in town or even in Lisbon. This would be the first time a member of the Oliveira family will abandon a seafaring way of life.

When the tide begins to rise, everyone gathers the day's catch before bringing it to the wholesale market. Nearly a decade after the collapse of the cod fishery the people of Aveiro remain economic victims of a mis-managed industry. As the Oliveira family heads for shore they know they have very few employment opportunities, especially if they want to cling to their culture, to the memories of a life tied to the sea.

ALVARO GARRIDO

University of Coimbra

We must care about this memory. It's important in a point of view of preserving our cultural heritage, our cultural heritage, our identity; the Portuguese identity is strongly connected with the seas, with sea culture. But we have a problem now.

(Wholesale Fish Market)

The problem is all about money. Though there's always fierce bargaining the fishermen can't escape the fact that they are paid by the kilo and on a good day a family can earn only twenty-five dollars. Today will not be a good day.

(Witch's Bar)

The locals call this the witch's bar. It is a favorite spot for out of work cod fishermen or for those too old to labor on the mud flats. Most afternoons they gather to play cards with old friends and share stories about an unlimited bounty that suddenly disappeared.

Later in the day, perhaps after a few drinks, their thoughts become more wistful as they think about how the collapse of a fishery changed the very heart and soul of Aveiro, from a thriving seaport to nothing more than a tourist attraction -- nothing more than a city of memories. On some days the old timers may even think about relatives and friends, those who emigrated 3,000 miles to the west, to the United States, to a city called New Bedford Massachusetts.

(New Bedford Docks)

They came here by the tens of thousands and for over three centuries Portuguese whalers and cod fishermen did well. To an outsider New Bedford still looks like a thriving city. But if you take a closer look it soon becomes clear that it's anything but thriving.

(Fishermen's Club)

The members of New Bedford's United Fishermen's Club have much in common with the patrons of the Witch's bar back in Aveiro. They speak the same language and celebrate with great passion an independent way of life. Unfortunately they too are victims of the collapse of the cod fishery. Today New Bedford has one of the highest rates of unemployment in the country. Many fishermen are angry and often ask each other in frustrated candor: how could we have ever let the cod disappear? Dave Martins is looking for answers.

(Fishing Boat)

Dave is a research biologist with the University of Massachusetts. He often goes out with local fishermen, trying to find out exactly what went wrong.

DAVE MARTINS

We go out and measure and tag fish and release them into the ocean. It's critical that we can understand more about where fish travel, how far they travel and as well as the growth of fish.

Ultimately scientists discovered the answer, the fishermen of New Bedford were simply too good at catching fish.

DAVE MARTINS

I think no one really realized that cod were going to collapse and stay down for so long.

CARL SAFINA

If the water wasn't there hiding all these things that we're doing, a lot of us would really be appalled, just as we were appalled when we learned about the fact that the buffalo herds were being destroyed, the fact that the flocks of passenger pigeons, and water fowl that darken the skies were no more. It's the same exact mentality. It's just moved away from the land into the sea.

MATT DAMON (On-Camera)

But what we sometimes forget is that the impact of losing a fishery goes well beyond economics. All too often when a fishing fleet shuts down an entire community dies with it.

Historic District

To survive New Bedford is trying to remake itself into a tourist attraction. Its historic district has been restored to the way it looked when Herman Melville shipped out of here in 1847. In the middle of the old town stands the Seamen's Bethel. It inspired Melville to write a scene that was recreated in the 1956 screen adaptation of his novel *Moby-Dick*.

(Scene from Moby Dick)

Herman Melville's words still have much to say about those who challenge the natural order of the sea.

Preacher

I fear the Lord cries Jonah, the God of heaven who has made the sea and the dry land. Again the sailor's mark him. Now behold Jonah, taken up as an anchor and dropped into the sea. Into the dreadful jaws awaiting him.

(Seamen's Bethel)

Today the Seamen's Bethel is a popular tourist attraction. Though its pulpit is a modest recreation of a movie set, the chapel's ancient walls are authentic. Filled with Portuguese names and ghostly memories this is the "wall of the disappeared" and these are the names of the people who sailed away and never came back. But if New Bedford becomes nothing more than a tourist attraction, like Aveiro, we will have lost something far more precious than a fishing fleet.

ANDREW LIGHT

George Mason University

We are a people of the sea and when that gets lost it would be as important a loss as if for some reason we lost our relationship with the land. We certainly don't want to lose the forms of knowledge that we have gained over hundreds and thousands of years of having some kind of relationship with the oceans and with the seas.

MATT DAMON (On-Camera)

The loss of the Atlantic cod is also a cautionary tale for fisheries around the world, especially now that scientists have discovered that we are consuming the final ten percent of the planet's large fish. Just think about that, ninety percent of our large fish are already gone. This raises a fundamental question that is at the very heart of our investigation: is it within our power to undo the damage that we have already done?

(Aerial of Tortugas)

About 70 miles off the coast of Key West Florida, surrounding a chain of small islands called the Dry Tortugas, are the fertile waters of the only barrier reef in North America.

(Reef life)

This is an ecosystem that provides refuge to over 280 species of fish. Its lush sea grass meadows are safe feeding areas for hundreds of endangered sea turtles. Fueled by the nutrient rich ocean currents of the Atlantic and the Gulf of Mexico, the waters of the Tortugas are a dense whirlpool of biodiversity, including important spawning grounds for commercial fish species-

(Destruction of Reef)

But not very long ago the reefs all along the Florida Keys began to suffer as increased boating activities, population pressures, and over-fishing overwhelmed the health of the entire marine ecosystem.

(Scientific Surveys)

That's when scientists began studying fish populations and coral reef habitats. They soon realized that unless something was done quickly one of the richest and most biologically diverse marine ecosystems in the United States could turn into a barren wasteland. To reverse the trend in 2001 the Tortugas was declared a 200 square-mile national marine sanctuary.

BILL EICHBAUM

WWF

Marine protected areas and networks of marine protected areas are one of the most important tools that we have to protect the basic biological richness of the seas and secondly in places where that richness has been depleted, to allow opportunities for the biodiversity and the productivity to return.

(Reef Life)

And that's exactly what happened. Coral reefs and fish populations rebounded and the Tortugas became one of the most successful marine reserves in the world.

(Law Enforcement Montage)

A key element of that success is a high-speed law enforcement vessel called the Peter Gladding. Its mission is to patrol the waters of the Dry Tortugas to ensure that the sanctuary remains unharmed. Everyone on board is heavily armed.

RAUL LOPEZ

How are you doing captain? Nice to see you again

The crew is prepared for any situation.

RAUL LOPEZ

Kenny, you want to check the catch? All right. Fish and wildlife. *Habla Español?* I got a firearm here.

KENNY BLACKBURN

You got a firearm?

RAUL LOPEZ

Hey Captain, we're going to check all this stuff back here. Send somebody.

Though they've been on patrol for only a few hours the crew has already boarded nearly a dozen boats.

(Shrimp Boat Boarding)

Protecting a marine reserve is no easy task. To succeed it takes money, lots of it, and highly skilled law enforcement personnel. Six hours into his shift the captain, Joe Scarpa, spots a commercial fishing vessel about a mile off his bow. Radar confirms that it's close to a no-fish zone. While the Peter Gladding picks up speed the crew goes into action. They know that boats often sneak into the reserve because that's where species, such as shrimp, are more plentiful. Joe pulls along side the trawler and orders a boarding.

RAUL LOPEZ

Do you speak English? Okay. How many people on board do you have? Three people on board. Including yourself. *Habla Español?* Is your captain sleeping? Okay, make sure you wake your captain. Wake him up and we're gonna come aboard to conduct marine fisheries inspection.

Federal agent Kenny Blackburn escorts the captain to the bridge. Kenny wants to check the on-board tracking system to find out whether the trawler ever entered the no-fish zone.

KENNY BLACKBURN

I'm sure you're just turning around in here but you need to stay out of this. When's the last time you had the TEDs checked at all? I've kind of looked at them and we've got a few issues we need to at least go through and address.

Kenny asks for the nets to be brought in. He wants to see whether they are fitted with federally mandated devices called TEDs that help captured turtles escape injury or death.

KENNY BLACKBURN

These big holes right here. You need to mend all of these net holes right here. If a turtle gets in they might get a flipper stuck in there and we might accidentally drown the turtle.

When this net is being deployed it's like a funnel coming through. Whenever a turtle gets in the net it will hit the grates of this right here and it'll shoot the turtle outside these flaps.

Raul Lopez is the officer in charge of the boarding.

RAUL LOPEZ

We got a violation. It's a minor violation. It's gonna be a quick fix. They already have equipment to fix it on the boat and that's what they're going to do, right now.

This boarding goes smoothly. However, there are times when the crew uncovers far more serious infractions.

(Barella Boarding)

Less than an hour later Joe Scarpa spots a commercial fishing vessel called the Barella. Radar shows that it's not transmitting any tracking information.

RAUL LOPEZ

It looks like we have a violation here, at this time. Maybe. We're going to board the vessel and confirm that violation.

When the Peter Gladding pulls alongside the fishermen seem unconcerned. Joe is suspicious; this is a boat with a long history of sanctuary violations. When they board the Barella the crew is prepared for the worst, they remember what happened about a year ago.

(One Year earlier)

Captain Scarpa videotaped the event, which later became part of the state's evidence.

JOE SCARPA

We just came up on the fishing vessel Barella. They are apparently fishing inside the North ecological reserve.

Once aboard the Barella Raoul confronts the captain who admits that his boat was illegally fishing inside a no-take zone. It's a serious violation and one that threatens the health of the sanctuary.

RAUL LOPEZ

Half mile inside no reserve Dry Tortugas. Okay.

JOE SCARPA

He agrees to that.

RAUL LOPEZ

Yes he did.

After checking the hold about 1500 pounds of yellow tail snapper are discovered and immediately confiscated. The Barella was then escorted back to Key West and fined \$25,000. Its fishing license was suspended for 60 days and the captain was ultimately fired.

(Barella today)

In contrast to last year's boarding today's inspection goes smoothly. The problem with the tracking system is resolved and it clearly shows that the Berella was in compliance with no-take regulations.

RAUL LOPEZ

That means we are doing our job. That means we are policing everybody. People is getting better understanding about fishing in Tortugas area.

JOE SCARPA

It makes me feel like what I am doing out here is actually working. We're educating the fishermen out here by, by enforcing the law and there, they are learning their lessons, they're learning from that, and we're gaining voluntary compliance.

MATT DAMON (On-Camera)

Clearly marine reserves and law enforcement can go a long way towards improving the health and biodiversity of our oceans. But as we will soon learn, these efforts may just not be enough.

(Smoke Stacks and Mega-cities)

The scientific community now reports that the level of carbon dioxide in the atmosphere is higher than it's been for hundreds of thousands of years; and our planet's temperatures are rising faster than at any other time in recorded history. Today climate change is fueled more by the richer countries of the world, from mega-cities powered by global economies and by life styles that impose many times the stress on the planet than those coming from the developing world. The impact on our oceans is profound. And perhaps the most serious threat is coming from a place far from the cities and industries that are warming our planet.

(Icebergs and Glaciers)

Greenland is an island nation locked in what seems like a never changing state of deep freeze. However scientists recently discovered that this polar ecosystem is changing, and at a pace that is sounding alarm bells around the world.

(Scientists Setting Up Camp)

It happened during a recent expedition to the southeastern coast of Greenland. When their research ship arrives, glaciologists load equipment onto a helicopter and set off in search of a stable landing area to setup camp. Their destination is the Kangerdlugssuaq glacier. At almost five miles across and over three thousand feet thick this is one of Greenland's largest ice fields. When the scientists reach the glacier they install a series of GPS sensors. Their mission is to measure the movement of the glacier as it transports frozen water from the ice sheet to the ocean.

(Time Lapse of Glaciers)

Though it's almost impossible to see glacial movement with the naked eye, when time-lapse photography compresses eight hours into a few seconds it becomes more apparent.

(Scientists Aboard Research Vessel)

Once back aboard the ship the scientists begin calculating the glacier's speed.

GORDON HAMILTON

We processed the first set of data.

They discover that it's moving at the rate of nine miles per year, 125 feet per day. Everyone is stunned. The speed of the glacier's march to the sea has tripled in just ten years.

GORDON HAMILTON

University of Maine

That would start to collapse the ice sheet very rapidly in ways that we don't yet appreciate and that could remove a large amount of the Greenland ice sheet quite quickly.

The implications are shocking. Once a glacier picks up speed it's almost impossible to slow it down.

(Scientists Explore Melt-Water Lakes)

But there still remains one unsolved mystery. What is causing the glaciers to speed up? Some believe the answer is tied to the melt-water lakes that form on the ice sheet during the summer months. The team begins to investigate one of the larger lakes. It's just under a mile in diameter. They decide to take a closer look. Though melt lakes forming in the warmer months is not a new phenomenon they are now developing more frequently and at higher elevations. This is clearly a sign of global warming.

JASON BOX

Byrd Polar Research Center

I didn't expect the temperature trends to manifest themselves this clearly in ice sheet acceleration. We know that the temperatures have gone up but to see this rapid response has been a surprise to the science community.

The glaciologists then uncover the connection they were looking for; the relationship between the lakes and the racing behavior of the glaciers. They discover that many of the lakes empty into rivers that feed into deep cracks in the ice. From there the water falls straight down.

(Animation of Glacial Movement)

Scientists believe that when the water from the lakes reaches the bottom it lubricates the flow of the glacier over the bedrock. This speeds up the movement of the glacier, increasing the volume of ice falling into the ocean.

(Ice Falling Into Sea)

The problem is, every time glacial ice falls into the sea it contributes to global sea-level rise. If temperatures continue to rise, more and more melt-water lakes will form and more and more ice will speed its way to the sea. Scientists now estimate that one third of global sea level rise comes from the Greenland ice sheet. If the entire ice sheet should melt the oceans of the world would rise by a catastrophic 23 feet.

MATT DAMON (On-Camera)

Though scientists tell us that the possibility of the disappearance of Greenland's entire ice sheet is centuries away, before you breathe a sigh of relief, they also warn that at the current rate of melting within a few decades rising seas will have a profound effect on the low-lying countries of the world.

(River Activities)

Bangladesh is a place defined by water. And, at its heart is a series of rivers and streams that rise in the Himalayas and slowly make their way to the Bay of Bengal. Here in the delta the rhythms of life haven't changed in centuries.

(Monsoon)

For two months each year monsoons sweep across three quarters of Bangladesh. Though as many as twenty-five million are sometimes left homeless by the floods, the country has always managed to cope with these annual events. However there is a geographic reality that Bangladesh can never escape, most of the country is only a few feet above sea level.

LESTER BROWN

Earth Policy Institute

Given the accelerated rate of melting that we are seeing in the world during the early years of this century, we could be looking at a rise in sea level of some five feet during this century. If sea level rise is three feet it will cover close to half the rice land in Bangladesh. Bangladesh has 151 million people. Imagine such a large share of that population losing its rice harvest.

(River Activity)

In the future, when sea level rise inundates the lowlands of Bangladesh, millions will be forced to seek shelter. Many will come to the country's capital, Dhaka.

LESTER BROWN

What this will translate into is the massive displacement of people, not thousands, or hundreds of thousands but tens of millions. In Bangladesh it's difficult to imagine compressing that population into a much smaller area.

(Dhaka Streets)

But the teeming streets and back alleys of Dhaka won't be able to handle the influx of migrants. Of its nine million citizens, three million already live in extreme poverty, with no electricity, no running water, no toilets.

(Riots)

In a city already prone to political violence, as food shortages put extreme pressure on the population, riots will undoubtedly break out. So once again millions of environmental migrants will be forced to find a new home. Only this time their destination will cross political boundaries, into neighboring India.

(Calcutta Streets)

At night the streets of Calcutta come alive, but behind the shimmering mask of endless neon there's a place Kipling called "the city of dreadful night." In the unflinching light of day the enormous difficulties facing 15 million inhabitants seem overwhelming. Despite all the hardships, Calcutta has always been a major destination for illegal immigrants from Bangladesh. But what will happen when sea level rise leaves tens of millions homeless and angry? How will they cross a border that will undoubtedly become more secure?

V. RAMASWAMY

Community Organizer

Over the last two decades or so, impoverished Bangladeshis also keep coming into India for livelihood. They may be here for just a day, or a few days, or a few months, so for the poor boundaries don't really matter. When they have to survive, they will scale any boundaries. They will go over them, through them, or under them, because poverty does not recognize boundaries.

MATT DAMON (On-Camera)

Though the flight of tens or even hundreds of millions of sea level rise refugees may be many decades away, there is a more immediate threat associated with global warming, and it's happening far from the rising waters of our oceans.

(Glaciers of the Andes)

These are the highlands of South America's Andes, the highest tropical mountain chain in the world. With peaks rising to over 25,000 feet, this is home to more than seven hundred glaciers.

TIM BARNETT

Scripps Institution of Oceanography

Glaciers are in retreat almost everywhere in the world. People use that melt water now during the summer, during the dry season, for irrigation and drinking and all sorts of things. But as the glaciers continue to melt the day will come – when there won't be any glaciers.

Scientists estimate that because of global warming the glaciers of South America could be completely gone by the year 2015. Here in Peru the melting is occurring at an even faster rate. These glaciers, which are over 18,000 years old, are expected to disappear within just one or two years.

LESTER BROWN

We forget that the distribution of world population as it is today was shaped during the period of remarkable climate stability. A climate system that's changed very little now for not only thousands, but tens of thousands of years. We look at a country like Peru for example where the glaciers are melting at an extraordinary rate. These are the glaciers whose ice melt sustains the principal rivers in Peru. These rivers provide not only drinking water but irrigation water.

MATT DAMON (On-Camera)

By now you may be asking, "what exactly does the melting of in-land glaciers have to do with our planet's oceans?" What we will now discover is that the connection is both unexpected and alarming.

(Farming and Food Markets)

Since the time of the Incas glacial run-off has been the only source of irrigation water for small-scale farmers and herders. But as glacial rivers dry-up food will become more and more scarce. Local markets that are now abundant with fruits and vegetables will slowly disappear. In the very near future millions of Peruvians will have no other choice than to abandon their land and migrate to the coastal cities of Peru.

(Lima Streets)

Once a small Spanish colonial port on the Pacific, Lima is a bustling overcrowded metropolis of 9 million people. Nearly all of its water is piped in from the glacial streams of the Andes. Its abundance, especially for the wealthy, makes it hard to believe that this city was built on one of the driest deserts in the world.

(Slums)

For the four million people living in the sprawling shantytowns surrounding Lima, there is no water.

THOMAS HOMER-DIXON

University of Waterloo

One of the things you find is that when people move in large numbers from the countryside into urban areas, frequently the cities aren't well adapted to receive these people. There isn't the infrastructure of water systems, of electrical grids, of housing stock, of schools and hospitals and things.

Pachacotec is a squatter community made of sticks, straw matting and salvaged bits of corrugated steel. Most come here in search of economic opportunities, but what they really find is a place without sanitation and little access to electricity. Here drinking water is stored along the side of the road in discarded oil drums.

Several times a day Maria Cortez gets water from a container marked with her family's name. Provided by a private contractor, the cost of water is equal to more than a quarter of her husband's income. But what other choices does she have? Maria and her family must have water to survive. Yet it is in communities like this that the water-starved refugees of the near future will surely be forced to live. Can you imagine what their lives will be like, especially when the city will have to find enough food to feed hundreds of thousands fleeing from the highlands of the Andes?

SCOTT BURNS

WWF

There's a connection between what happens in the sea and what happens on land. You are dealing with poor and sometimes desperate people and if you take one source of food away they're going to find another source someplace else.

In Lima, and especially here in Pachacotec, the major source of inexpensive protein is seafood. But at some point soon the need to feed a new surge of migrants will quickly lead to an environmental tipping point. What is now a sustainable fishery will likely become over-fished in a matter of years.

Compounding the problem just a few hundred yards off these popular beaches Lima's semi-treated sewage pours into the Pacific. And as glacial rivers dry up and the city's population grows, increased pollution will turn local waters into dead zones, devoid of any marine life. When this happens the people of Lima, like the millions of environmental migrants fleeing from the highlands of Peru, will lose their primary source of protein.

MATT DAMON (On-Camera)

What we need now is to address the problems of overfishing and marine habitat destruction. But most of all we need to immediately deal with global climate change.

STEPHEN PALUMBI

Stanford University

Climate change affects everything. All the organisms that live in the ocean are used to being bathed in it, are used to its temperature, are used to where the ocean currents flow and all those things change with global climate change.

Will the loss of Antarctic sea ice, which Emperor Penguins need to reproduce, lead to their extinction?

STEPHEN PALUMBI

The way whales for example move back and forth -- where they feed, where they breed is set in their migratory brains. But how are they going to figure out where to move when the climate changes?

What about coral reefs? If they disappear because the oceans are becoming warmer and more acidic, will we lose irreplaceable habitats for plants and animals?

STEPHEN PALUMBI

What about the salmon? How are they going to figure out where the streams have gone when the glaciers that feed them are gone?

As hurricanes become stronger because of global warming -- will increased toxic pollution along our coastlines affect the health of sea otters and other marine mammals?

STEPHEN PALUMBI

There is a whole set of thousands of species that depend upon the ebb and flow of the seasons, the ebb and flow of the currents in order to set the scales of their lives. And all of those are going to change and very quickly with global climate change.

SCOTT DONEY

Woods Hole Oceanographic Institute

In the end we have to reduce our emissions of carbon to the atmosphere. We either need to switch to renewable fuels or we need to somehow capture the carbon that we would normally emit say from a power plant or from a car. This is going to be really tough. Energy pervades our economy. Fossil fuels are basically the lubricant that has led to rapid development around the globe. We're making choices that future generations are going to have to live with and I don't really think it's our choice to destroy something that they are never going to get to see.

MATT DAMON (On-Camera)

When it comes to climate change there are no easy answers or quick fixes. It's not as if we can push a button and suddenly stop emitting carbon into the atmosphere. But when it comes to oceans, fortunately there are communities in the world that are beginning to find new ways to stop the destruction of our marine environment.

(Belize)

Forty miles off the coast of Belize, on a small Caribbean island called Laughing Bird Key, the rhythms of life are defined by natural forces, like the wind and the currents. Several months each year, during the time of the full moon, something extraordinary happens.

(Spawning)

Just below the surface of the water tens of thousands of reef fish, snapper and grouper, converge on a spot called Gladden's Spit. Their bodies are big and ripe and ready to reproduce. The mating frenzy begins when the females, in a swirling motion, suddenly release their eggs. Following behind the males release their sperm to create an underwater snowstorm. The spawning season also attracts scientists from around the world.

WILL HEYMAN

The Nature Conservancy

We swim right into the school of these things so you're just looking around and it's just solid fish. It's just unbelievable. Fish aggregate to spawn because the physical oceanographics are such that you get convergent currents at a reef promontory, which take larvae offshore and away from the reef. It can be pretty spooky being in one of these milky spawn clouds and just looking around -- you really don't know what's coming at you.

(Whale Sharks)

What's coming at them is the largest fish on the planet. Up to 60 feet long, whale sharks come to feed on the dense cloud of eggs that the spawning fish produce.

(Fishing Boats)

Several years ago Marine biologists discovered a problem. At the start of the spawning season local fishermen were catching tons of fish before the snapper and grouper had a chance to reproduce. When the fish populations declined the whale sharks began to leave in search of more prolific spawning sites.

(Measuring Fish)

Everything changed when local officials created the Gladden Spit Marine Reserve. The catch is now carefully monitored and recorded. During the spawning season fishing is limited.

(Whale Sharks)

Within a few years the fishery rebounded. And then the whale sharks returned and with them came a new source of income -- eco-tourism. Brian Young used to be a fisherman, now he's a tour guide

BRIAN YOUNG

We all want to get real tight together so we can simulate the spawning. It looks like the spawning with all the bubbles going up and that will attract the shark. They are down there with the fish, swimming around waiting for the spawning to start. So if we simulate something like that, they come in for that.

The lesson learned from the success of the Gladden Spit Marine Reserve is simple. When a fishery is saved there are often unexpected benefits, like the once in a life-time opportunity to swim with the largest fish on the planet.

FEMALE TOURIST

Incredible. There were dolphins flying over there and a whale shark under us. It was incredible.

BRIAN YOUNG

There's one right on the surface right there. Right behind you.

MALE TOURIST

Bryan, do all your people get this excited when they see them for the first time?

BRIAN YOUNG

Oh man, I'm feeling excited myself.

Here in Belize the protection of a fishery not only helped the people of Laughing Bird Key, it's joined Florida's Dry Tortugas reserve as a model for marine communities around the world.

MATT DAMON (On-Camera)

Though the stewardship of our oceans is vitally important, let's not forget that they are also places of extreme beauty. With this in mind, we conclude our program with a rare look at this elegant world of biodiversity. And who better to guide us than the distinguished oceanographer and explorer -- Sylvia Earle.

SYLVIA EARLE

If I could, I would love to take anybody and everyone down into the sea, to see what I have come to know and love. Most people on the planet don't get to see the ocean the way I get to see the ocean, from the inside out, getting to meet creatures on their own terms, face to face. Here's the thing, the ocean is a living system.

This is what makes the planet function, life, not just water, not just rocks, but the living systems shape the earth and have been shaping it for billions of years. The best way to go beyond where divers go is in a little submarine. People ask me sometimes "aren't you scared? Don't you get lonely down there?" I say "Scared? No, I love it down there. And lonely? As you descend it's not completely dark because all around there is a galaxy of light, like being in the middle of a Fourth of July celebration, fireworks, these little sparkle flash and glow, little jellies and minute crustacea.

The water changes from this ethereal blue to kind of a purplish violet, and then it gets to deepest purple-blue, and finally it's just black. And that's what I would love to be able to share with every person on the planet. To get to understand that the ocean is alive. The ocean drives the way the world works. We need to take care of the ocean as if our lives depend on it, because our lives do depend on taking care of the ocean.

What we need now are the efforts of people everywhere, all those who are willing to find ways to strike the right balance, between what we want and what the oceans can provide.

MATT DAMON (On-Camera)

Though separated by distance and culture, for the six and a half billion people who draw sustenance from the rich diversity of the natural world, there are common bonds, bonds that are renewed by each generation, bringing new ideas, new attitudes, new hope for the state of the world's oceans. Planet Earth. This is our home. This is where our journey of discovery must begin.

[Fade-out/Fade-in]

MATT DAMON (On-Camera)

To discover more about today's featured stories, educational resources, or download teacher's guides and other information about the environment, please join me on the Journey to Planet Earth web site at pbs.org.

[One Second Black]

[Tail Titles]

Narrated By
MATT DAMON

Producer
MARILYN WEINER

Director - Writer
HAL WEINER

Editor

JIM MCNAMEE

Cinematographer

DENNIS BONI
BILL MILLS

Original Music

FRANK FERRUCCI

Editorial Advisory Board

PETER BACKLUND
BONNIE COHEN
RITA COLWELL
GEOFFREY DABELKO
ROBERT FRI
PETER D. HART
NAY HTUN
CHARLES KENNEL
ANDREW LIGHT
THOMAS E. LOVEJOY
JESSICA TUCHMAN MATHEWS
MAURICE STRONG

Episode Advisors

GEOFFREY DABELKO
ANDREW LIGHT
THOMAS E. LOVEJOY

Outreach Manager

KIMBERLY KLINGER

Associate Producer

REBECCA HOWLAND

Web Site Design

SONNETT MEDIA

Publicity

CARA WHITE

Additional Photography

KIP F. EVANS
ANDREAS RYDBACKEN
BOB TALBOT
PETE ZUCCARINI

Post Production

CINEART GROUP, MIAMI
HENNINGER MEDIA SERVICES, ARLINGTON

Post Production Supervisor

RALPH QUATTRUCCI

Audio Mix

DAVID HURLEY

Colorist

DAVID MARKUN

Production Controller

VICTOR J. CALANDRA

Location Managers

MARCELA SANCHEZ-AIZCORBE
NARGIS AKTER
LOUIZE HILL
VASUDA JOSHI

Educational Materials Development

DAVID WOOD
MARGARET PENNOCK

Special Thanks

LORI ARGUELLAS
DANIEL BASTA
LISA BOROK
RUI BELA
LOU CAFIERO
KARRIE CARNES
THE CREW OF THE PETER GLADDING
LEIGH ESPY
FLORIDA KEYS NATIONAL MARINE SANCTUARY
EARTH POLICY INSTITUTE
THE HEINZ CENTER
HABITAT MEDIA
ERIN KEOENIG
LOUIZE HILL
GREENPEACE INTERNATIONAL
MARINE FISH CONSERVATION NETWORK
MONTEREY BAY AQUARIUM
MONTEREY BAY AQUARIUM RESEARCH INSTITUTE
MUSEU MARÍTIMO DE ÍLHAVO
NATIONAL AERONAUTIC AND SPACE ADMINISTRATION
NATIONAL AIR & SPACE MUSEUM
NATIONAL MARINE SANCTUARY PROGRAM, NOAA
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NATIONAL SCIENCE FOUNDATION
THE NATURE CONSERVANCY
THE OCEAN CONSERVANCY
THE OCEAN FOUNDATION
COLIN J. O'HARA
GREG SANDERS
GARY SHLIFER
RICHARD SPINRAD, NOAA
ROYBACK PRODUCTION
THE SCRIPPS INSTITUTION OF OCEANOGRAPHY
TIM SILVA
SMITHSONIAN INSTITUTION
U.S. GEOLOGICAL SURVEY
WOODS HOLE OCEANOGRAPHIC INSTITUTION
WORLD WILDLIFE FUND
WOODROW WILSON INTERNATIONAL CENTER FOR SCHOLARS

Screenscope acknowledges the use of footage from the film
Moby Dick

This program was produced by Screenscope Inc.,
which is solely responsible for its content.

A SCREENSCOPE PRODUCTION

In Association With
SOUTH CAROLINA ETV

© Screenscope, Inc.
Washington, DC 20016

[One Second Black]

Major funding for Journey to Planet Earth was provided by the National Science Foundation: "America's Investment in the Future," and the Arthur Vining Davis Foundations: "Dedicated To Strengthening America's Future Through Education." Additional funding was provided by the Munson Foundation and the National Marine Sanctuary Foundation.

[One Second Black]

We are PBS

#####