



MONTEREY BAY AQUARIUM®

“Hot Pink Flamingos: Stories of Hope in a Changing Sea” Exhibit Press Kit

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NEWS RELEASE

FOR IMMEDIATE RELEASE

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“HOT PINK FLAMINGOS” TAKES WING AT THE MONTEREY BAY AQUARIUM IN MARCH 2010



Compelling special exhibition tells climate change story through the lives of remarkable ocean wildlife

Amazing animals will capture visitors’ hearts and minds when the Monterey Bay Aquarium’s newest special exhibition, “Hot Pink Flamingos: Stories of Hope in a Changing Sea,” takes wing on March 29, 2010.

They’ll also gain a new perspective on global climate change by viewing its potential impacts on tropical wading birds, green sea turtles, the colorful creatures that inhabit coral reefs, hypnotic jellies, playful Magellanic penguins and other ocean animals.

Visitors will journey through six galleries that weave together stories about the many ways that climate change is affecting ocean animals – and tales of hope involving people and communities that are tackling climate change and making a difference.

Everywhere, visitors are invited to explore how they can join with the aquarium and people around the world in taking small but significant steps to slow the climate crisis and protect ocean wildlife.

“At a time when there’s no shortage of bad news about the state of the oceans, it’s heartening to have things to celebrate,” said aquarium Executive Director Julie Packard. “This exhibit highlights those stories of hope and success.”

“It’s important to remember that the oceans are incredibly resilient,” she added. “Given a chance to recover, they can produce a remarkable abundance of life – much more than we see today.”

Visitors are welcomed to “Hot Pink Flamingos” through a motif of iconic posters like those used to promote national solidarity during wartime or to mobilize the public for social change. In this case, they highlight challenges of a changing ocean, provoking questions and encouraging visitors to make a difference.

Galleries in the 7,000-square-foot exhibition introduce visitors to living animals from around the world, and incorporate video and hands-on activities to address how our

use of fossil fuels creates carbon pollution. Live and multimedia exhibits also spotlight the many impacts carbon pollution has on the oceans: from rising sea levels and melting Arctic ice, to ocean acidification, warming waters and disappearing food. Still, the overall message of “Hot Pink Flamingos” is one of hope.

In the “Under Water” gallery, visitors come face-to-face with gangly four-foot-tall Chilean flamingos, scarlet and white ibises, striking roseate spoonbills, cattle egrets and other wading birds, and discover how rising sea levels affect coastal wetland habitats. An interactive map illustrates what the impacts might be on coastal cities around the world.

The living exhibit is paired with “Hope Electrified” – a gallery showing how a switch to clean energy can reduce carbon pollution and combat future flooding. It offers tales about fossil fuel-free technology that exists today, and the people who produce alternative energy, making a living for themselves while greening the Earth.

In the “Iceless Arctic” gallery, visitors witness the dramatic impacts that melting Arctic ice is having on villagers in Shishmaref, Alaska and how they are adapting to these changes. Stunning visual effects offer visitors a sense of what life is like in the Arctic where melting ice is rapidly becoming blue open water.

In the evocative “Acid Ocean” gallery, visitors encounter a healthy coral reef community bustling with exotic fishes, ornate sea anemones and other animals. The 10-foot-long reef showcases the textures, colors and motion of living corals, as bright yellow butterfly fish, tangerine-hued anemone fish and other species dash about the reef.

Nearby, embedded in a realistic coral “graveyard,” an animated video illustrates the dire threat the oceans face from climate change: acidification that is changing ocean chemistry, putting corals and other marine life at risk. Here, visitors get a glimpse into cutting-edge technology that colleague scientists at the Monterey Bay Aquarium Research Institute (MBARI) are using to monitor these changes.

Nearby, in “Faith and Action,” visitors meet people from religious communities – Buddhist, Christian and Muslim – who are acting to reduce carbon emissions and slow climate change because they believe they have an ethical responsibility to be good stewards of the Earth.

While some jelly species may thrive in warmer waters, “Simmering Seas” introduces tropical spotted jellies that could disappear in a warmer ocean. In a nearby exhibit, young green sea turtles help illustrate how rising temperatures could affect the gender of baby turtles in the nest or threaten sea turtles’ nesting beaches altogether.

“World of Change” highlights countries and cities that have set goals for reducing carbon pollution and that are cutting their carbon footprint in creative ways. Interactive panels take visitors to Costa Rica, where taxes pay for forest conservation; to Iceland, where 80 percent of the energy supply comes from hydropower and geothermal power; and to San Francisco, Chicago, Paris, Bihar, India and other model cities that are leaders in the climate change fight.

Similarly, “Hope Taking Root” shares stories of local actions that are making a difference – and provokes visitors to consider what they can do at home to slow the climate crisis.

Playful Magellanic penguins can be found in the “Vanishing Feast” gallery. These charismatic birds from South America serve as emissaries for all seabirds affected by a changing sea. Climate change is likely impacting prey species, such as anchovies, on which these penguins depend, forcing them to swim further in search of food. In 2008, several hundred starving penguins washed ashore in Brazil after a search for food took them into a strong current that swept them hundreds of miles from home.

Brazil’s Niteroi Zoo, which nursed hundreds of birds back to health including Magellanic penguins, has collaborated with the aquarium and others to provide a home to a few stranded penguins that cannot be returned to the wild.

A final gallery, “Make Change, Not Carbon,” focuses on steps visitors can take in their homes and their communities. An innovative, interactive kitchen invites visitors to explore easy ways to reduce energy use and save money at home.

Five interactive multimedia stations invite each visitor to commit to making one change in their daily lives to help slow the climate crisis. They then are asked to add their photo to the sea of portraits of those who have taken a pledge to action. Nearby, two electronic postcard stations encourage visitors to let elected officials know that they’re concerned about climate impacts on ocean wildlife.

Scattered throughout “Hot Pink Flamingos” are talkback stations where visitors are encouraged to share their concerns, opinions, thoughts and feelings about the climate crisis, and where they can pledge to do their part. Spanish-speaking visitors will find bilingual signage and video captions throughout the exhibition.

“Hot Pink Flamingos: Stories of Hope in a Changing Sea” offers many reminders that we all belong to this Earth and are responsible for taking care of our home – and that we can help lessen the impacts of the climate crisis by making little changes on our own and big changes together.

“Hot Pink Flamingos: Stories of Hope in a Changing Sea” is included with regular aquarium admission of \$29.95 adult; \$27.95 senior (65+) and student (full-time college, with I.D.); and \$17.95 children 3-12 and the disabled (**2010 prices**). Children under 3 are admitted free of charge. Discounted tickets for members of the military and their families can be purchased in advance at many California and Nevada installations.

The aquarium is located on historic Cannery Row in Monterey. The aquarium is open daily except Christmas Day. Hours of operation vary by season. Visit www.montereybayaquarium.org or call (831) 648-4888 for daily schedules, and more information about “Hot Pink Flamingos: Stories of Hope in a Changing Sea” and the aquarium in general.

Advance tickets can be purchased online or toll-free by phone from the aquarium at (866) 963-9645. Seasonal specials, details about special events and programs, family activities and live web cams can all be found online at www.montereybayaquarium.org.

The mission of the Monterey Bay Aquarium is to inspire conservation of the oceans.

Editors: Please contact Public Relations for images or video footage of animals featured in “Hot Pink Flamingos.”

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“Hot Pink Flamingos: Stories of a Hope in a Changing Sea”

Exhibit Facts

- What:** A \$3.5 million special exhibition exploring the effects of climate change through the lives of remarkable ocean wildlife, and sharing stories of hope involving people and communities that are engaged in tackling climate change – and making a difference.
- Where:** Monterey Bay Aquarium, 886 Cannery Row, Monterey, California.
- When:** March 29, 2010 – end date TBD; Open daily except Christmas Day, hours of operation vary by season. Visit www.montereybayaquarium.org or call (831) 648-4888 for daily schedules.
- The exhibit:** A 7,000-square-foot exhibit featuring four live animal galleries exploring the different ways that climate change is affecting ocean animals. Several striking species – including scarlet and white ibis, Chilean flamingos, cattle egrets and Magellanic penguins – have never before been on exhibit at the aquarium. Alongside live animal exhibits are videos and interactive stations that address how energy use from fossil fuels creates carbon pollution, and the many impacts carbon pollution has on the oceans: from rising sea levels and melting polar ice, to ocean acidification, warming waters and disappearing food sources. The exhibition weaves together exhibits of sea turtles, coral reefs, wading birds, jellies and penguins as it tells tales of hope involving people and communities taking on climate change. Visitors are invited to explore how they can join with the aquarium and people around the world in taking small but significant steps to address the climate crisis and protect ocean wildlife.
- What's unique:** One of the few exhibitions in the country to focus on the many impacts climate change is having on marine wildlife, at a time when few people associate climate change with the oceans. Hot Pink Flamingos highlights global stories of hope and success, and provides tools for visitors to help reduce their carbon footprint. The exhibition offers many reminders that we all belong to this Earth and are responsible for taking care of our home, and that we can lessen impacts of the climate crisis by making small changes on our own and big changes together.
- Admission:** Included with aquarium admission (**2010 rates; subject to change**): \$29.95 adult; \$27.95 senior (over 65) and student (full-time college, with I.D.); \$17.95 children and the disabled; under 3 free. Discounted tickets for members of the military and their families can be purchased in advance at many California and Nevada installations.
- Parking/shuttle service:** Parking in Cannery Row parking garage three blocks away. (Passenger drop-off in front of aquarium.) The free WAVE visitor shuttle links the aquarium with downtown Monterey and waterfront destinations daily during summer season (Memorial Day to Labor Day).
- Information/advance tickets:** General information, (831) 648-4888, or online at www.montereybayaquarium.org. For advance tickets by phone, (866) 963-9645 or online.

“Hot Pink Flamingos: Stories of Hope in a Changing Sea” Gallery Tour

“Hot Pink Flamingos: Stories of Hope in a Changing Sea” is a fascinating and compelling special exhibition that explores the varied impacts climate change is having on marine wildlife and the 70 percent of Earth covered by oceans. The multi-sensory adventure through seven different galleries features live exhibits where regal wading birds, a pristine coral reef community, juvenile green sea turtles, tropical jellies and dapper Magellanic penguins make their debut.

Galleries in the 7,000-square-foot exhibition introduce visitors to living marine animals from around the world, and incorporate video and hands-on activities to address how our use of fossil fuels creates carbon pollution. Live and multimedia exhibits spotlight the many impacts carbon pollution has on the oceans: from rising sea levels and melting polar ice, to ocean acidification, warming waters and disappearing food sources. Overall, the message of Hot Pink Flamingos is one of hope. Interactive stations and videos offer many reminders that we all belong to this Earth and are responsible for taking care of our home – and that we can help lessen impacts of the climate crisis by making little changes on our own and big changes together.

Under Water

After visitors view a short film linking burning fossil fuels to climate changing carbon pollution, they come face-to-face with four-foot-tall Chilean flamingos, scarlet and white ibises, gorgeous roseate spoonbills, cattle egrets and other coastal birds, and discover the impact that rising sea levels has on wading birds in the wild. An interactive map illustrates what the comparable impacts might be on coastal cities worldwide. In the gallery, “Hope Electrified” shares how a switch to clean energy can reduce carbon pollution and combat future flooding. It offers tales about fossil fuel-free technology that exists today, and who’s already producing alternative energy.

Iceless Arctic

Nearby in the “Iceless Arctic” gallery a short film and dramatic visual effects give visitors a sense of being in Shishmaref, Alaska, where melting polar ice is changing the landscape and lives of villagers.

Acid Ocean

In the “Acid Ocean” gallery, a vibrant, living 10-foot-long coral reef community bustling with sea life showcases a healthy coral community. An animated video demonstrates the dire impacts ocean acidification can have on corals and other sea life. The gallery also highlights Monterey Bay Aquarium Research Institute scientists, who are using cutting-edge technology to monitor these changes in the ocean. Next, visitors experience “Faith and Action” where they learn how faith-based communities are being good stewards of the Earth by reducing their carbon emissions.

Simmering Seas

In this gallery visitors encounter mesmerizing tropical spotted jellies and always-popular green sea turtles that could disappear in a warmer ocean. Countries and cities that have set goals for reducing their carbon footprint are the focus in “World of Change.” The message is brought closer to home in “Hope Taking Root,” where examples of local actions that are making a difference encourage visitors to think about what they can do at home to slow the climate crisis.

Vanishing Feast

Visitors enter the realm of Magellanic penguins, charismatic birds from South America that serve as emissaries for all seabirds affected by a changing sea. Climate change is likely impacting prey species, such as anchovies, on which these penguins depend, forcing them to swim farther in search of food. These dapper divers will put living faces on the story of climate change and its impacts on the ocean.

Make Change Not Carbon

A final interactive gallery focuses on steps visitors can take in their homes and their communities. An innovative “kitchen” lets visitors explore easy ways to reduce their energy use and save money at home. Five interactive multimedia stations invite them to commit to making one change in their daily lives to help reduce their carbon footprint. They can then have their photo taken and watch a simulation of themselves in action. Nearby, two electronic postcard stations allow visitors to write their elected officials with their concerns about climate impacts on ocean wildlife.

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“Hot Pink Flamingos: Stories of Hope in a Changing Sea”

Exhibit Animals

In the Monterey Bay Aquarium’s newest special exhibition, “Hot Pink Flamingos: Stories of Hope in a Changing Sea” visitors explore the threats marine wildlife – birds, sea turtles, jellies and corals – face from climate change and learn how they can help.

Four galleries with live exhibits take visitors around the world to different habitats: “Under Water” looks at the impacts of rising sea levels on wading birds; “Acid Oceans” examines the effects of changing ocean chemistry on coral reef habitats; “Simmering Seas” explores the impacts of rising temperatures on jellies and sea turtles; and “Vanishing Feast” investigates what happens to wildlife when global climate change impacts food sources.

Here’s a look at some of the species featured in the exhibition.

Under Water Gallery

Chilean flamingo

Phoenicopterus chilensis

The bird’s characteristic plumage is the result of its diet – small crustaceans and algae rich in red pigments (called carotenoids). Flamingos are filter feeders, putting their heads upside-down underwater to strain out food items. This species is apparently declining somewhat rapidly due to egg-harvesting, hunting, disturbance and the degradation of its habitat. It’s classified as near-threatened on the World Conservation Union’s (IUCN) red list.

Size: 2.5 to 4.5 feet tall, with a 4- to 5-foot wingspan.

Range: Both coasts of southern South America – from coastal marshes to high-elevation ponds. Breeds in Bolivia, Argentina, Chile and occasionally central Peru and Paraguay.

Roseate spoonbill

Platalea ajaja

The roseate is the only spoonbill species with brilliant plumage and the only one to lose the feathers on its head, exposing the dragon-like skin underneath, with age. Like other spoonbills, this species wades through the water in search of fish, crustaceans and aquatic insects. In Florida, roseate spoonbills feed primarily in mangrove estuaries. This unusual bird feeds by opening the “spoon” of its bill and sweeping it side-to-side to trap prey.

Size: Up to 31 inches tall with a wingspan of approximately 3.5 feet.

Range: Atlantic and Pacific coasts of Mexico and Central America. Breeds along the coasts of Texas, Louisiana and southern Florida.

White ibis

Eudocimus albus

White ibis probe sediments for food, wading through shallow waters and relying on touch to find prey buried below the surface – crustaceans (especially freshwater crayfish and estuarine crabs) and aquatic insects. Young white ibis need to maintain a delicate salt balance, so nesting grounds are typically located near freshwater feeding sites.

Size: 22 to 27 inches high with a wingspan of approximately 3 feet.

Range: Mexico's Atlantic coast, through Belize to Nicaragua and along the Pacific coasts of Mexico and Central America.

Scarlet ibis

Eudocimus ruber

The scarlet ibis is distinguished by its brilliant red, pink and orange color; even its legs and feet are red. The bird's color comes from its diet – various red algae and crustaceans – that contain red pigments like carotene. While adults have distinctive red plumage, chicks are usually grayish brown in color, only turning scarlet with age. The scarlet ibis's long, thin bill is used for probing food buried in the mud or hiding under plants.

Size: Up to 30 inches tall with a wingspan of three feet.

Range: Occur in mudflats, estuaries, shorelines and shallow bays throughout northern South America, ranging from Venezuela to eastern Brazil.

American bittern

Botaurus lentiginosus

Belly stripes help hide the bittern in dense marsh plants, where it remains motionless to capture unsuspecting prey – typically insects, amphibians, crayfish, small fish and small mammals. These secretive birds are more easily heard than seen. The loss of coastal wetlands is considered the biggest threat to this species

Size: 23 to 33 inches tall with a wingspan of 3.5 feet.

Range: Found in freshwater wetlands throughout the mid-U.S. to northern Canada.

Cattle egret

Bubulcus ibis

Cattle egrets generally dine on various insects, frogs and small fishes. In the presence of livestock or other grazing animals, they often perch atop a host – cows in North America, or zebra and wildebeest in the species' original African habitat. During migration, they may feed along coastal shorelines.

Size: 18 to 22 inches tall with a wingspan of almost 3 feet.

Range: Though native to Africa and Asia, this bird is widespread across North America, where its range is expanding. Reported from Canada through the U.S., and Mexico to Central America.

Acid Ocean Gallery

Coral Reef Community

Corals consist of a colony of tiny anemone-like polyps and are usually found in warm waters at a depth of less than 150 feet. Hard coral polyps secrete and deposit a solid skeleton of calcium carbonate. Colonies can be several feet wide, and a coral reef may be miles long.

Coral reefs are among the most imperiled ecosystems on Earth; many around the world have been damaged or destroyed by human activities. Threats to coral reefs include ocean acidification (changing ocean chemistry), bleaching (increasing water temperatures), algal blooms from nutrient influx (runoff containing fertilizers), siltation from soil erosion and damage by people (boats and commercial fishing gear). Many species of coral are listed on the IUCN red list as endangered or threatened with extinction.

Illegal collecting is also a threat to corals. The Monterey Bay Aquarium works with state and federal officials who investigate coral smugglers by taking care of confiscated live specimens for possible use as evidence. Aquarium staff also cultures corals on-site, sending them to other zoos and aquariums to reduce collection of this precious resource from the wild.

Corals species in this exhibit include staghorn (*Acropora* sp.), velvet finger (*Montipora* sp.), candy cane (*Caulastrea* sp.), horn (*Hydnophora* spp.), finger leather (*Sinularia* sp.) and bird's nest coral (*Seriatopora* sp.)

Staghorn coral

Acropora spp.

Staghorn coral, as the name suggests, is a branching coral with cylindrical branches. This coral exhibits the fastest growth of all corals increasing in length by 4 to 8 inches per year. Staghorn coral has been one of the three most important Caribbean corals in terms of its contribution to reef growth and fish habitat. Many species of staghorn coral are considered vulnerable to extinction with populations decreasing, and some are listed as endangered or critically endangered on the IUCN red list.

Size: From a few inches to over 6.5 feet in length.

Range: Indo-Pacific, Australia, Florida Keys, Bahamas, Caribbean islands,

Convict tang

Acanthurus triostegus

Black stripes resembling a prisoner's uniform give this fish its name. They are otherwise known as surgeonfish due to sharp blades found close to their tail fins, though they're infrequently used as a weapon. Convict tangs swim in schools containing thousands of individuals.

Size: Up to 5 inches in length.

Range: Indo-Pacific.

Pyramid butterflyfish

Hemitaurichthys polylepis

The unusual markings on this reef-dwelling fish – a white pyramid on a yellow background – make it quite unmistakable. This fish forms a pair bond when breeding.

Size: Up to 7 inches.

Range: Eastern Indian Ocean and Western and Central Pacific.

Spinecheek anemonefish

Premnas biaculeatus

Like other members of the clownfish family, the spinecheek anemonefish seeks refuge among the stinging tentacles of anemones. The males are bright red, with females maroon to almost black. This species feeds on small plankton and algae.

Size: Up to 5 inches in length.

Range: Indo-Western Pacific.

Green damselfish

Chromis viridis

This colorful fish aggregates in large groups in coral reefs. Males prepare the nest, which is shared by several females. The male guards the nest and ventilates the eggs with its tail fins. Damselfish feed on small plankton and algae.

Size: Up to 4 inches in length.

Range: Indo-Pacific.

Simmering Seas Gallery

Spotted jelly

Mastigias papua

Spotted jellies “farm” microscopic algae in their tissues for food. These jellies and their symbiotic algae thrive in a limited range of temperatures. When it’s too warm, the jelly loses its symbiotic algae – and its food source. A warmer ocean could remove these unique jellyfish from tropical ecosystems or force them to shift their range to cooler waters.

Size: Up to 2 feet in diameter.

Range: South Pacific Ocean, Hawaii and Puerto Rico.

Green sea turtle

Chelonia mydas

Green sea turtles are found worldwide in tropical and subtropical waters, usually near continental coasts and islands. A green sea turtle may travel over 1,600 miles between nesting beaches and feeding grounds. Female sea turtles crawl onto sandy beaches at night to lay their eggs. They dig a hole and deposit 100 to 200 eggs. The sex of the hatchlings is dependent on the nest temperature. As global temperatures increase, more females might hatch from sea turtle nests —but will there be enough males to reproduce? All six species of sea turtle are listed as endangered on the IUCN red list.

Size: 2.5 to 4 feet long.

Range: Common in the Atlantic Ocean, Mediterranean Sea and the Indo-Pacific Ocean.

Vanishing Feast Gallery

Magellanic penguin

Spheniscus magellanicus

Magellanic penguins spend much of the year at sea, hunting for food and diving up to 300 feet. They eat a varied diet, from anchovies and sardines to squid, rockfish and crustaceans. They come on land to breed, nest and molt their feathers. Magellanic penguins are listed as near-threatened on the IUCN red list due to threats from overfishing, pollution and climate change.

Size: Can grow to 27 inches tall.

Range: Found in the waters off Chile, Argentina and the Falkland Islands.

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‘HOT PINK FLAMINGOS’ EXHIBIT BRINGS AWARENESS TO IMPACTS OF CLIMATE CHANGE ON OCEAN WILDLIFE

The words “climate change” conjure up images of warmer temperatures, fierce storms and rising sea levels, yet most of these impacts are land-based. How a changing climate affects our oceans is a story that’s rarely been told – until now.

“Hot Pink Flamingos: Stories of Hope in a Changing Sea” takes visitors on a global journey through different ocean habitats, sharing stories of the impacts climate change is having on a range of ocean species – many never before exhibited at the Monterey Bay Aquarium.

“In the fight to counter the effects of climate change, the oceans will be our most important battleground,” said Aquarium Executive Director Julie Packard. “Hot Pink Flamingos” brings visitors face to face with the ocean animals impacted by our daily lives. It also shares stories of hope and change from around the world – examples of the things we can all do to help solve the climate crisis – small things alone, and big things together – for all of our tomorrows.”

The story of the warming of the planet, retreating glaciers, melting ice sheets and subsequent rising sea levels isn’t new. But sea level rise will affect not only humans, but the wildlife living in coastal regions. In “Hot Pink Flamingos,” wading birds such as Chilean flamingos, roseate spoonbills, cattle egrets and American bitterns represent how their food supplies are put at risk as rising sea levels submerge critical mangrove habitats. Scientists project the loss of one-third, to almost one-half of coastal wetlands worldwide by 2080.

Mangroves not only provide food for ocean wildlife and humans, they are nurseries for marine fishes and act as an important buffer zone, absorbing energy from tidal surges during intense storms. They’re also a natural water filtration system between rivers and oceans.

Flamingos are known for their flamboyant pink color – an artifact of a diet rich in red pigment from shrimp and algae. Colorful wading birds such as flamingos, roseate spoonbills and scarlet ibis are threatened by the loss of coastal wetlands. These birds play a critical role in the health of marsh ecosystems, where their feeding action turns over muddy sediments in rivers and ponds. As waters rise and they can't reach their food, these wading birds will be forced to move.

Scientists are astonished to witness the ongoing loss of sea ice every summer in the Arctic; some project it could vanish by 2100, or even as early as 2040. Dr. Wieslaw Maslowski, a research professor at Monterey's Naval Postgraduate School, says it could happen between 2010 and 2016 – during the run of "Hot Pink Flamingos."

Polar bears were listed as an endangered species in 2008 due to loss of critical habitat. As the ice retreats further each summer, polar bears are confronted with long and sometimes deadly trips out to sea in search of ice platforms, or face a summer on land without food, relying on their fat reserves. This shortened hunting season is jeopardizing cub and adult bear survival, and populations are already in decline in some regions of the Arctic. The impact of vanishing ice affects many other Arctic animals. Walruses and seals also need stable ice platforms for hunting, resting and breeding. A mother walrus nurses her calf for the first two years of its life, leaving it on ice platforms as she feeds in shallow waters. Loss of sea ice appears to be forcing mothers to forage further from their young, resulting in starvation and drowning. Without Arctic summer sea ice, the future for all these animals is uncertain.

Carbon pollution from fossil fuels is changing ocean chemistry. As carbon dioxide mixes with ocean water it changes the ocean's acid-alkaline balance – a phenomenon scientists call ocean acidification. This subtle but significant change threatens the future of animals, like corals. Corals build rocky skeletons from calcium and carbonate – chemicals found naturally in the ocean. But when oceans become more acidic, acid snaps up loose carbonate. Without that critical building block, it's much harder for corals to form a reef.

Coral reefs are perhaps the most productive habitat in the oceans. Reefs provide food, shelter and a nursery for countless fishes and invertebrates. They also support commercially important species, and a lucrative tourist industry. Healthy corals are essential to vibrant ecosystems as well as being economically significant in communities around the world. Scientists believe corals are seriously imperiled by ocean acidification.

The current rate of change is faster than anything ocean wildlife has experienced in hundreds of thousands of years; acidity at the ocean's surface has increased 30 percent since the onset of the Industrial Revolution in the 19th century. Although other species may be able to adapt to a more acidic ocean, scientists fear corals can't adapt quickly enough to survive.

Scientists at the aquarium's sister institution – the Monterey Bay Aquarium Research Institute – are working hard to understand the effects of ocean acidification, and are conducting experiments to better predict how wildlife might respond and adapt to a more acidic ocean.

The world's oceans absorb at least half of the planet's carbon dioxide emissions. Without this service, global temperatures would have risen even further over the last few hundred years. The effects of warming temperatures may be already affecting some of the ocean's inhabitants. Some species of jellies may have challenges in warming seas. Spotted jellies “farm” microscopic algae in their tissues for food. These jellies and their symbiotic algae thrive in a limited range of temperatures. When it's too warm, the jelly loses its symbiotic algae – and its food source. A warmer ocean could remove these unique jellyfish from tropical ecosystems or force them to shift their range to cooler waters.

For species such as sea turtles – whose nest temperature determines sex of the hatchlings – a change of a few degrees could skew their population by favoring a single gender. This could further imperil the survival of animals already threatened by other human activities such as fishing, development on nesting beaches and egg collection. Some nesting beaches already produce more females than males—will climate change mean even fewer males?

All seven species of sea turtles worldwide are listed as endangered. Global climate change – warming temperatures, loss of nesting habitat to rising sea level and more acidic oceans – threaten to push these ancient creatures to the brink of extinction.

Magellanic penguins of Argentina and Chile are the world's most abundant temperate penguins. However, it is a species in decline; competition from commercial fisheries, coastal pollution and climate change threatens their survival. Climate change is likely to be affecting prey species, such as anchovies, on which these penguins depend. They are foraging almost 40 miles further from their nesting sites than was true 10 years ago, jeopardizing their survival and that of their chicks.

In summer 2008, hundreds of emaciated and dying juvenile Magellanic penguins washed up on the shores of Brazil. Scientists suspect that absence of anchovies in coastal waters caused the birds to search for alternate food sources further offshore, where stronger than usual currents pulled them far north of their usual range. A fast response by wildlife experts at the Niteroi Zoo resulted in many penguins rehabilitated and returned to the wild.

The mission of the Monterey Bay Aquarium is to inspire conservation of the oceans.

Editors: Please contact Public Relations for images of animals featured in “Hot Pink Flamingos.”

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