

GEER 2019

GREATER EVERGLADES ECOSYSTEM RESTORATION

IMPROVING SCIENCE COMMUNICATION WITH INFOGRAPHICS

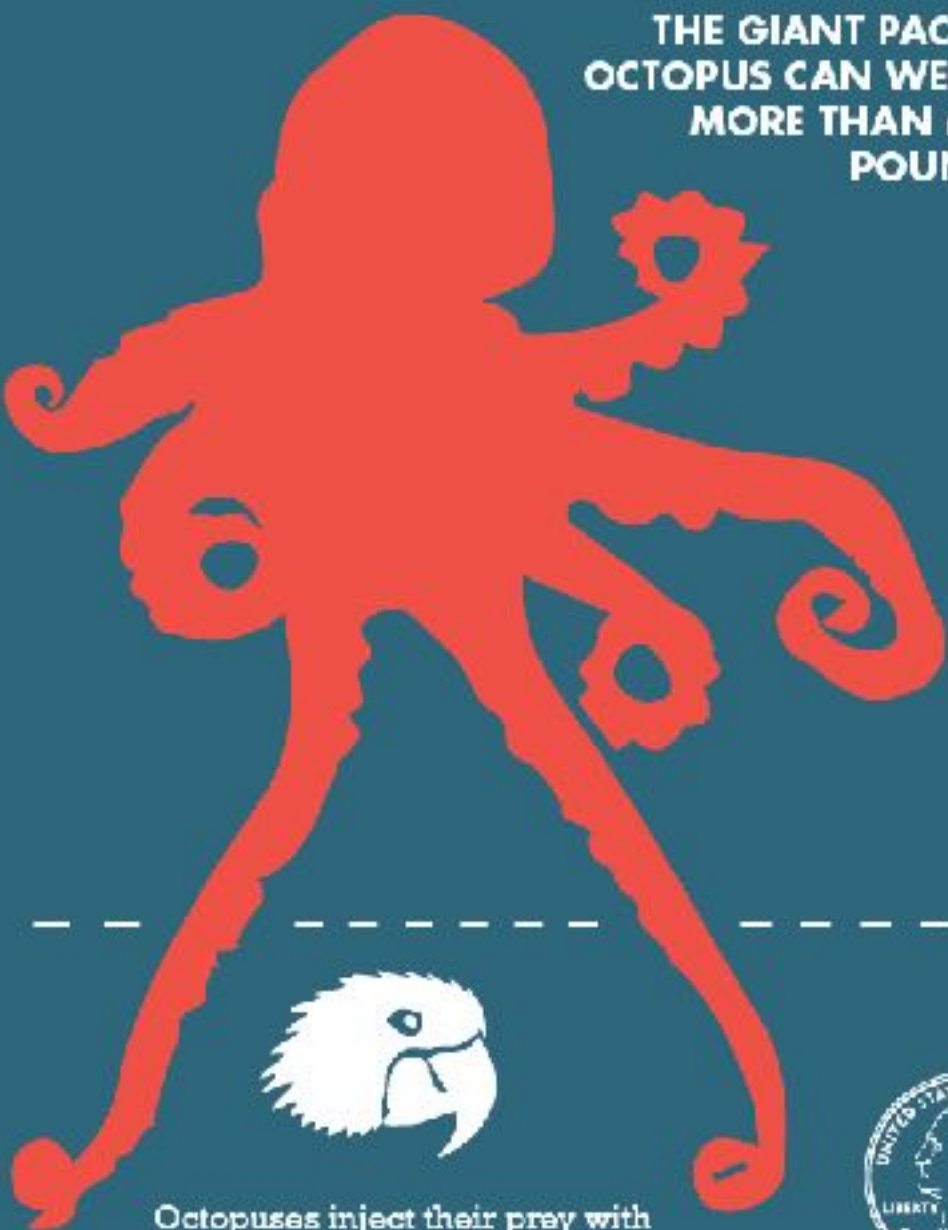
The key to any visual design is
the presentation of a cohesive,
structured, readable, and
understandable composition.

GOOD VISUALIZATIONS...

1. They show good information correctly
2. They attract readers' attention
3. They don't frustrate readers
4. They show the right amount of data

THESE ARE NOT INFOGRAPHICS

WORLD OCTOPUS DAY



THE GIANT PACIFIC OCTOPUS CAN WEIGH MORE THAN 600 POUNDS

Octopuses inject their prey with venom using a beak similar to a bird's made from the same tough material as a lobster shell.



ALL SPECIES ARE VENOMOUS, BUT THE BLUE-RINGED OCTOPUS IS THE ONLY ONE DANGEROUS TO HUMANS, RESPONSIBLE FOR AT LEAST TWO DEATHS.

OCTOPUSES VS. OCTOPI

THE PLURAL IN ENGLISH IS "OCTOPUSES," BUT THE GREEK PLURAL FORM "OCTOPODES" IS SOMETIMES USED. "OCTOPI," WHILE COMMONLY USED, IS CONSIDERED INCORRECT.



OCTOPUSES ARE ABOUT **90% MUSCLE**

one hundred thousand IS THE MAXIMUM NUMBER OF EGGS THAT A FEMALE OCTOPUS CAN LAY, BUT THE AVERAGE LITTER SIZE IS ONLY 80.



AN OCTOPUS HAS 3 HEARTS



THE GIANT PACIFIC OCTOPUS CAN INHABIT DEPTHS OF UP TO 5,000 FEET



A mature female octopus can have up to 280 suckers on each arm! Each sucker contains thousands of chemical receptors, with sensitivities to both touch and taste.

OCTOPUSES CAN QUICKLY CHANGE THE **COLOR AND TEXTURE** OF THEIR SKIN

300 RECOGNIZED SPECIES OF OCTOPUS



BECAUSE THEY DON'T HAVE BONES, EVEN LARGE OCTOPUSES CAN FIT THROUGH AN OPENING THE SIZE OF A QUARTER

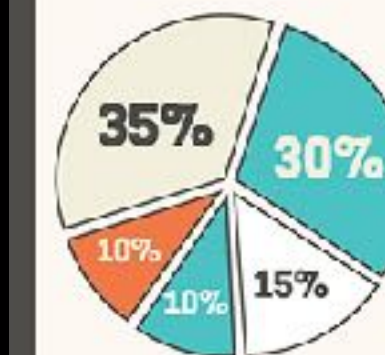


Breaking down your CREDIT SCORE

[According to FICO's model. Learn more at myfico.com]

MGIC

Your Credit Score is determined by 5 factors of differing importance:



35% PAYMENT HISTORY
How often do you pay your accounts on time?
Late payments may lead to a lower score.

15% LENGTH OF HISTORY
How long have you had credit history?
A longer history of responsible credit use will likely lead to a higher score.

10% TYPES OF CREDIT USED
Do you have more than one credit line?
Having experience with different types of credit (e.g., a car loan and a credit card) can help your score.

30% AMOUNTS OWED
How much of your total credit have you used?
Less is more! Lowering debt can be the key to a better credit score.

10% NEW CREDIT
Have you opened new credit lines lately?
Opening several accounts in a short time can lower your credit score.

MORE CREDIT SCORE FACTS REVEALED:

74% of College Students don't know their credit score.
(Source: Monitor V.C. Service)

144 MILLION AMERICANS (33%) haven't viewed their credit score in THE PAST YEAR.

9 OPEN CREDIT CARDS is the average per consumer.

20% OR LESS What's your credit limit? Using more than 20% of your credit limit may lower your credit score.

18 YEARS is the average consumer's oldest open credit line.
(2000 Survey Trends reported)



EXAMPLE
• USE \$10,000 OR LESS \$50,000 credit limit

57% of women said it was important to know a partner's credit score before getting seriously involved.
(Source: Experian, 2012 Survey)

0% The percent your age, race, income or job title impact your credit score.
(Source: FICO)

47% of men said it was important to know a partner's credit score before getting seriously involved.
(Source: Experian, 2012 Survey)

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This infographic has been brought to you by your friends at
MGIC!

THE COFFEE FACTS

THE BEAN BELT

ALL OF THE WORLD'S COFFEE GROWS HERE



FOUND BETWEEN THE TROPICS OF CANCER AND CAPRICORN

TOP 5 COFFEE PRODUCERS

1. BRAZIL
2. VIETNAM
3. COLOMBIA
4. INDONESIA
5. ETHIOPIA

33% OF THE WORLD'S COFFEE IS PRODUCED IN BRAZIL

TOP 5 COFFEE CONSUMERS

1. UNITED STATES
2. GERMANY
3. ITALY
4. JAPAN
5. FRANCE

56% OF AMERICANS IN THE UNITED STATES DRINK COFFEE
NONE OF THE ABOVE COUNTRIES ARE LOCATED IN THE BEAN BELT



2ND MOST TRADED COMMODITY IN THE WORLD
SECOND TO OIL

COMMONLY USED BEANS

ARABICA VS ROBUSTA

- MILDLY AROMATIC
 - NATURALLY LESSER CAFFEINE
 - GROWN AT ALTITUDES ABOVE 600M
 - 70% OF ALL COFFEE BEANS GROWN
- BITTER TASTING
 - HAS TWICE THE CAFFEINE
 - GROWN AT LOWER ALTITUDES
 - USED FOR EVERYDAY INSTANT COFFEES



65%

OF COFFEE CONSUMPTION TAKES PLACE DURING BREAKFAST HOURS

POPULAR BREWING METHODS



35% OF COFFEE DRINKERS PREFER THEIR COFFEE BLACK



2ND MOST POPULAR DRINK IN THE WORLD AFTER WATER

MOST EXPENSIVE COFFEE IN THE WORLD "KOPI LUWAK"

COUNTRY OF ORIGIN: INDONESIA

MADE FROM COFFEE BEANS EATEN, PARTLY DIGESTED AND THEN EXCRETED BY THE COMMON PALM CIVET, A WEASEL-LIKE ANIMAL



IT SELLS FOR MORE THAN \$600 A POUND
AVERAGING \$50 A CUP OF COFFEE



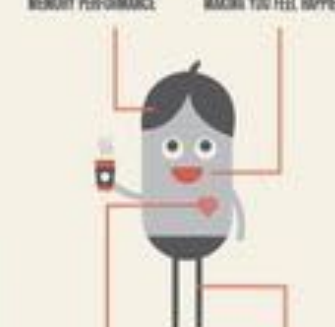
COFFEE BEANS CONTAIN CAFFEINE

A WHITE CRYSTALLINE XANTHINE ALKALOID THAT ACTS AS A STIMULANT DRUG

WHICH HELPS (WHEN TAKEN IN MODERATION)

INCREASED ATTENTION & MEMORY PERFORMANCE

INCREASED DOPAMINE LEVELS, MAKING YOU FEEL HAPPIER



DECREASES RISK OF HEART DISEASE

INCREASES PHYSICAL PERFORMANCE & MUSCULAR RECOVERY

CAUTION: CONSUMPTION ABOVE 400MG ABOUT 4 TO 5 CUPS OF COFFEE A DAY CAN CAUSE LONGER TERM EFFECTS LIKE CASCADING HORMONAL, PRODUCTIVITY, ANXIETY, DEPRESSION AND STOMACH BLOAT

SEPT 29

SEPTEMBER 29TH IS NATIONAL COFFEE DAY IN THE UNITED STATES

INFOGRAPHICS BY MEDNESS



GLOBAL LOGISTICS

Every day, thousands of packages are transported across towns, countries, and entire continents. What does it really take to send a box from Switzerland to South Africa on time? In addition to a global network of delivery people, you need the power of logistics to bring all ground and water transport in sync with the latest high-tech solutions for tracking and receiving. Here's a snapshot of how the global reach of UPS logistics facilitates package delivery to just about every destination, every day.

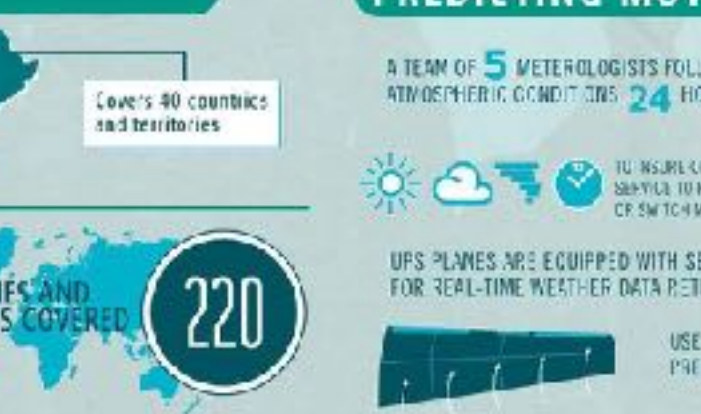
A DAY IN THE LIFE OF THE UPS FLEET



UPS WORLDPORT BY THE NUMBERS



AIRPORTS AND HUBS WORLDWIDE



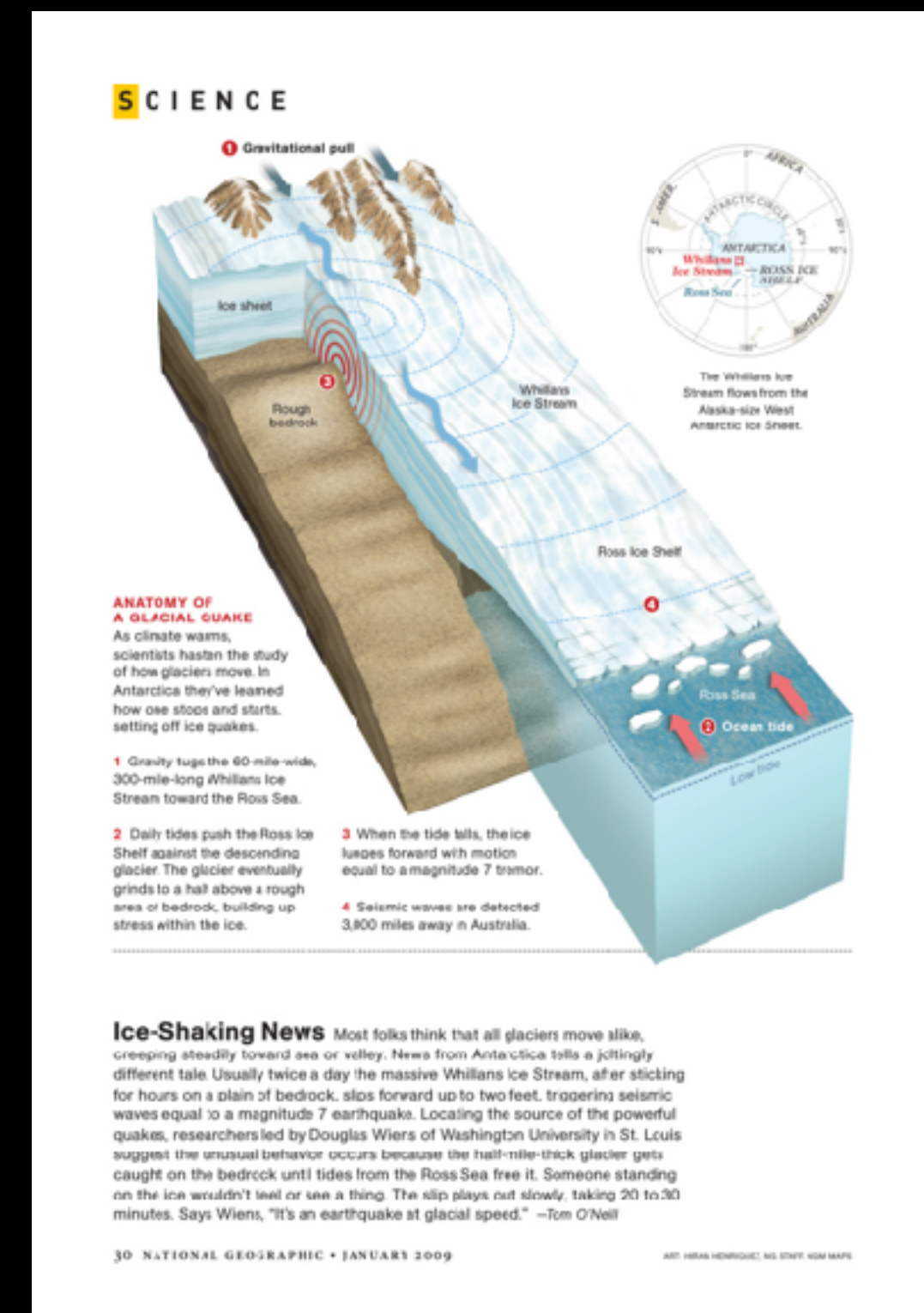
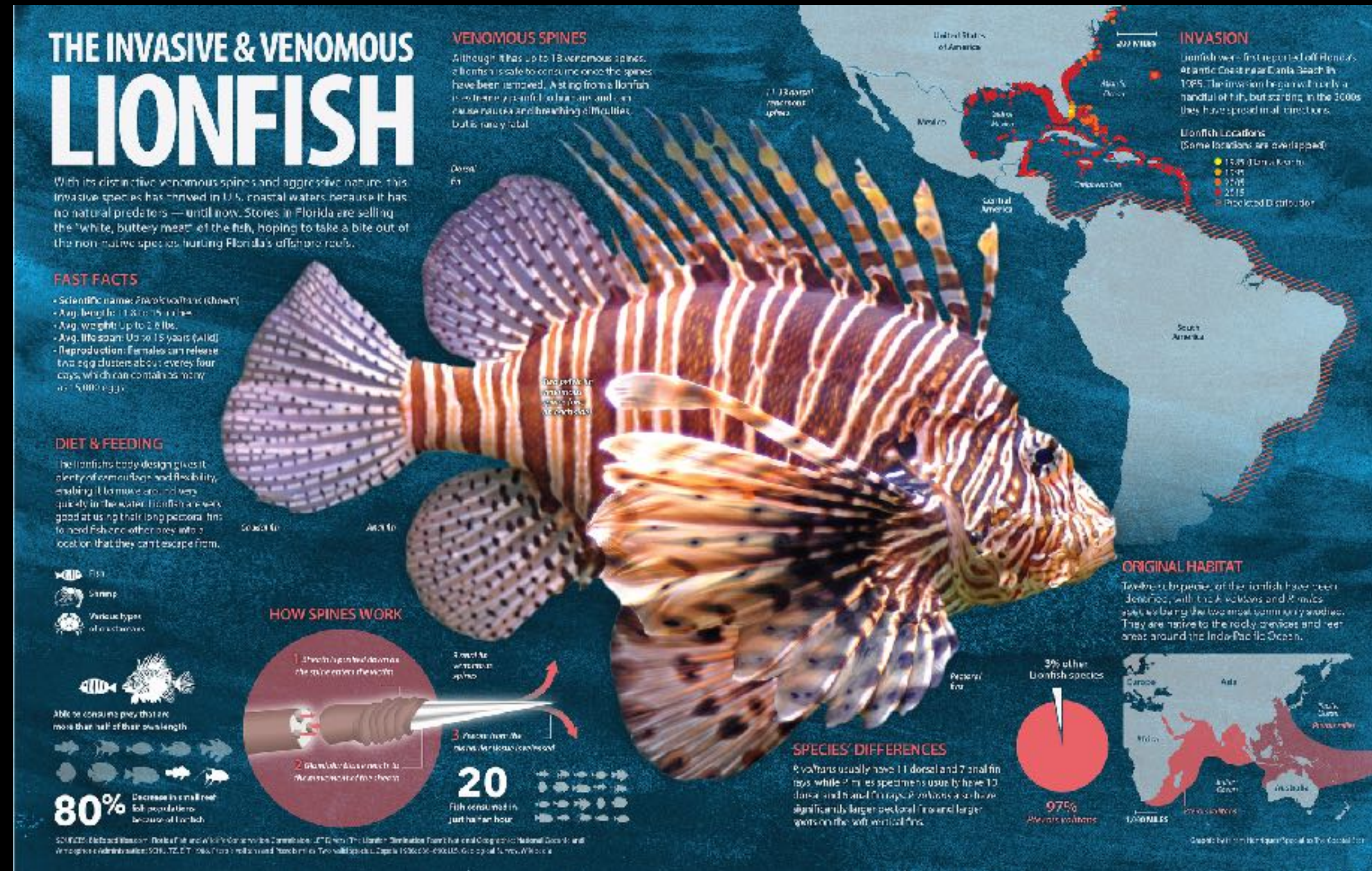
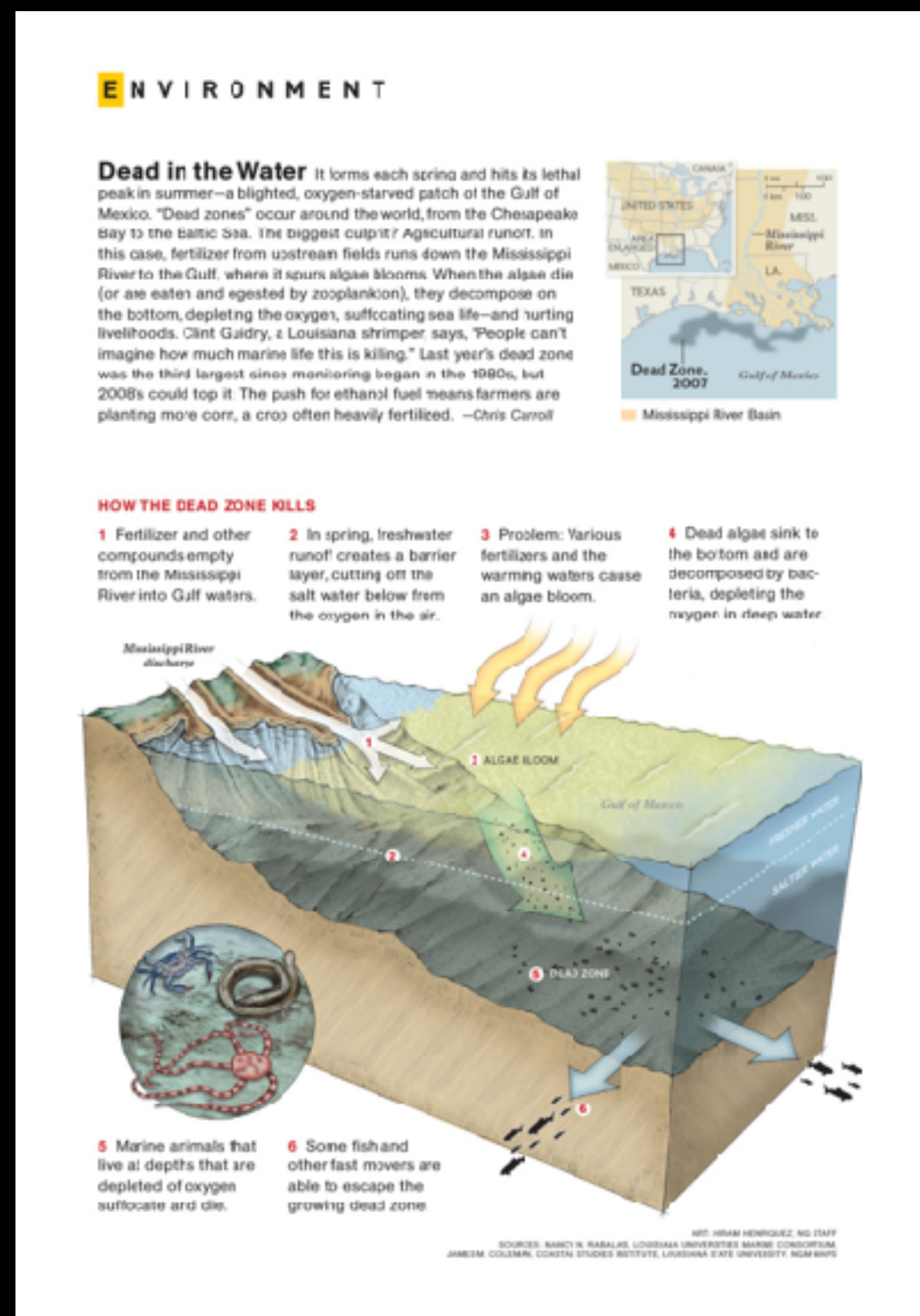
PREDICTING MOTHER NATURE



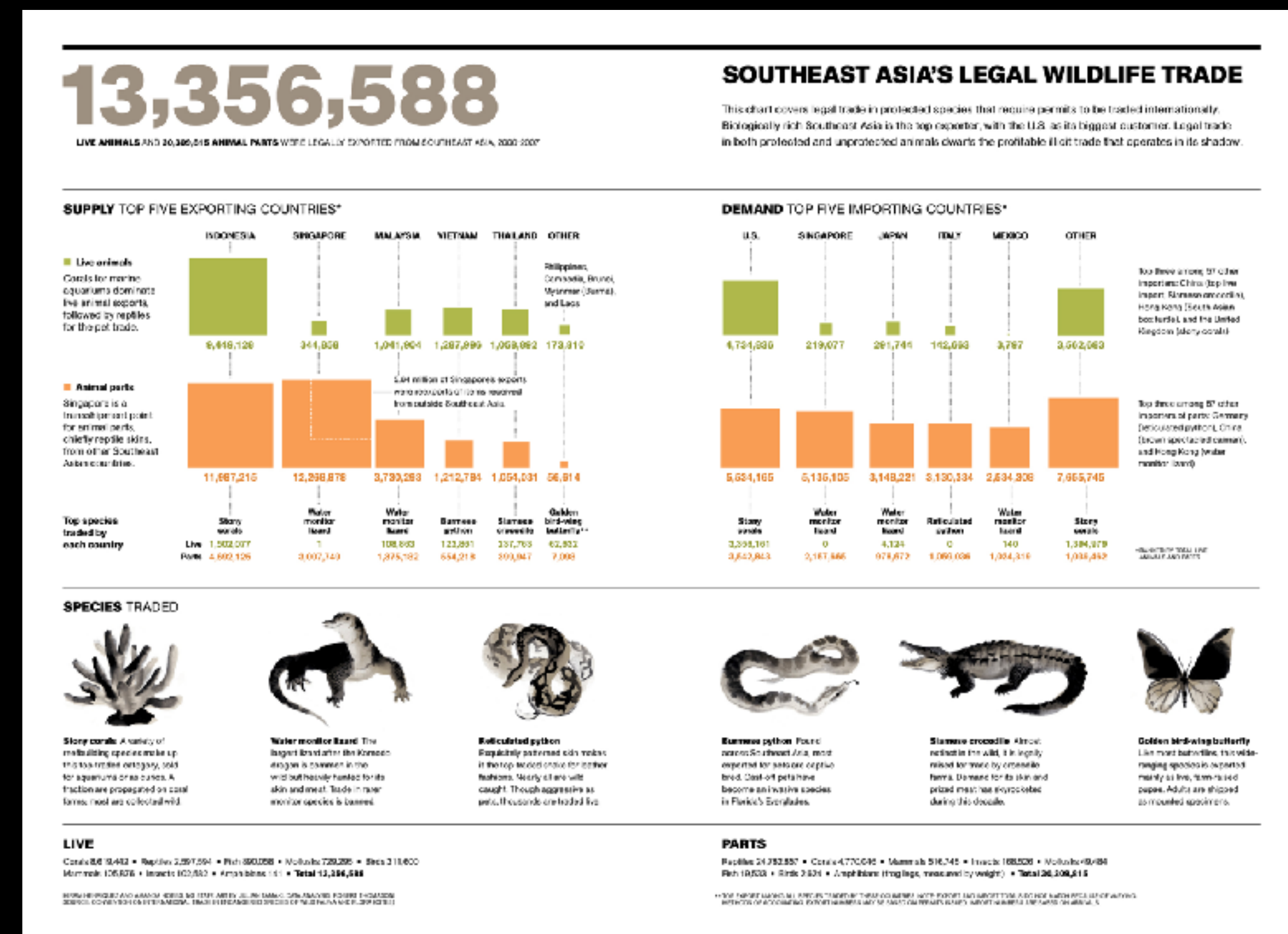
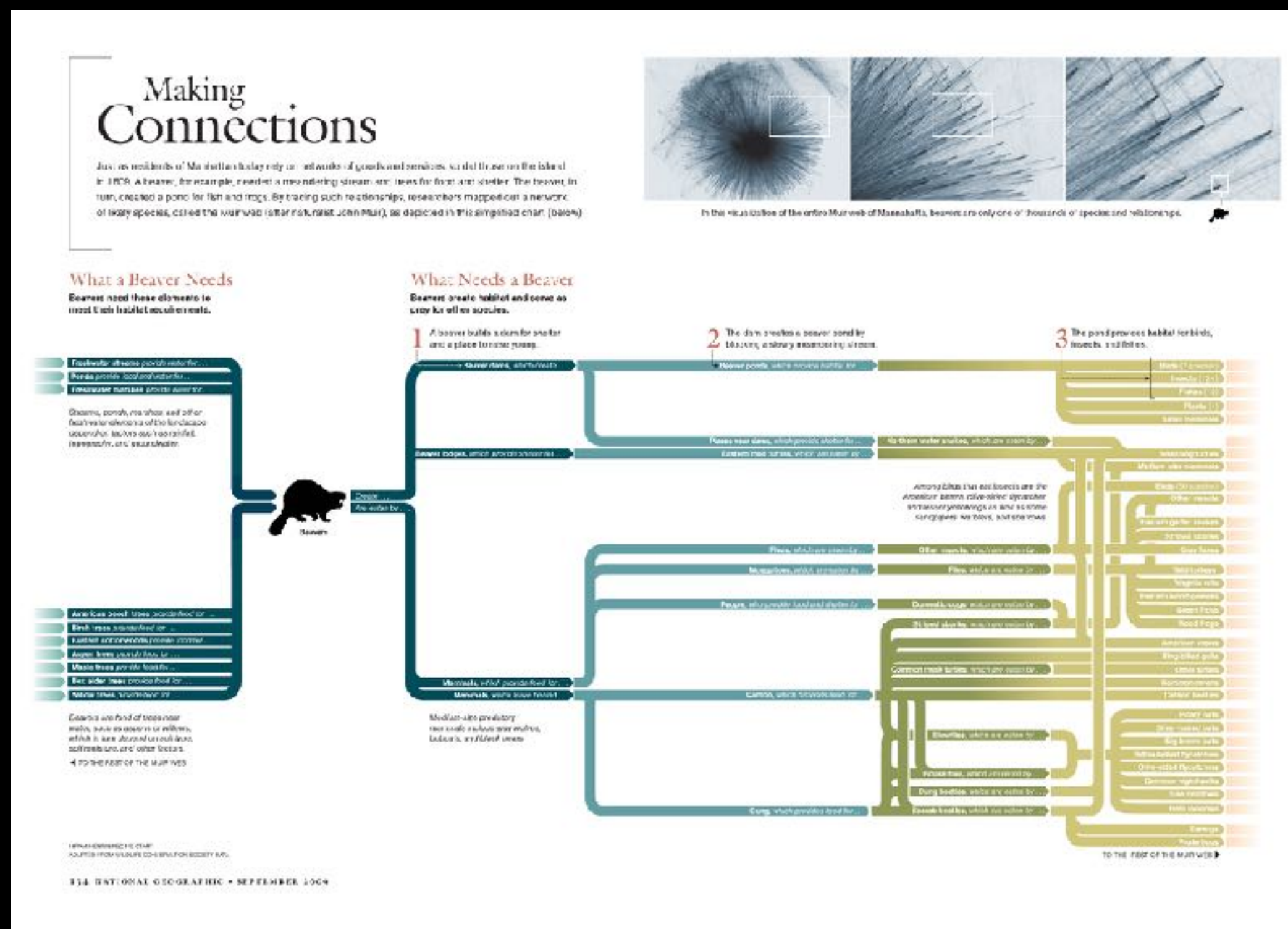
A COLLABORATION BETWEEN DEPT. OF TRANSPORTATION, IN PARTNERSHIP WITH UPS AND UPS LOGISTICS

THESE ARE DATA DUMPS

THESE ARE INFOGRAPHS



THESE ARE DATA VISUALIZATIONS

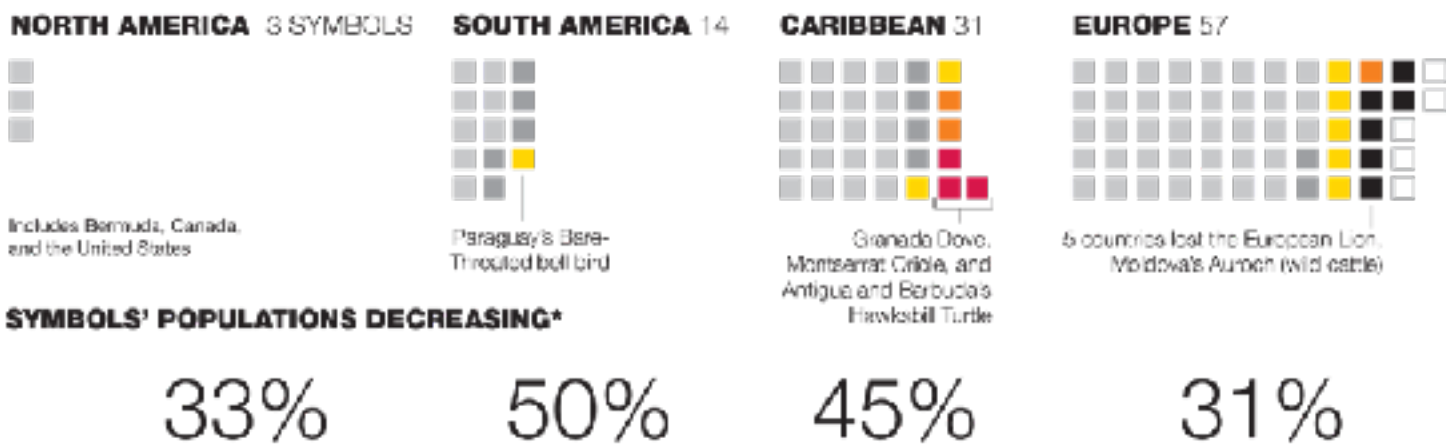
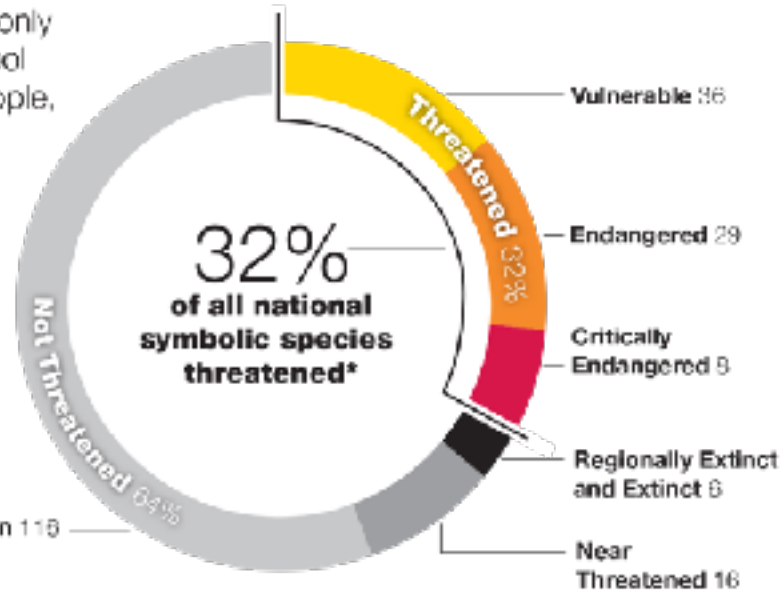


NATIONAL SYMBOLS ENDANGERED

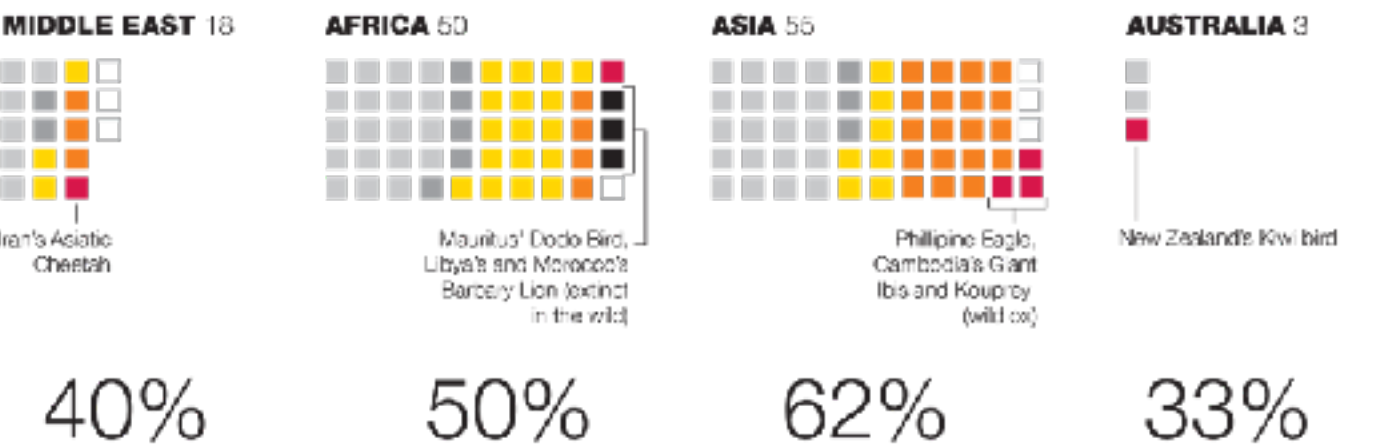
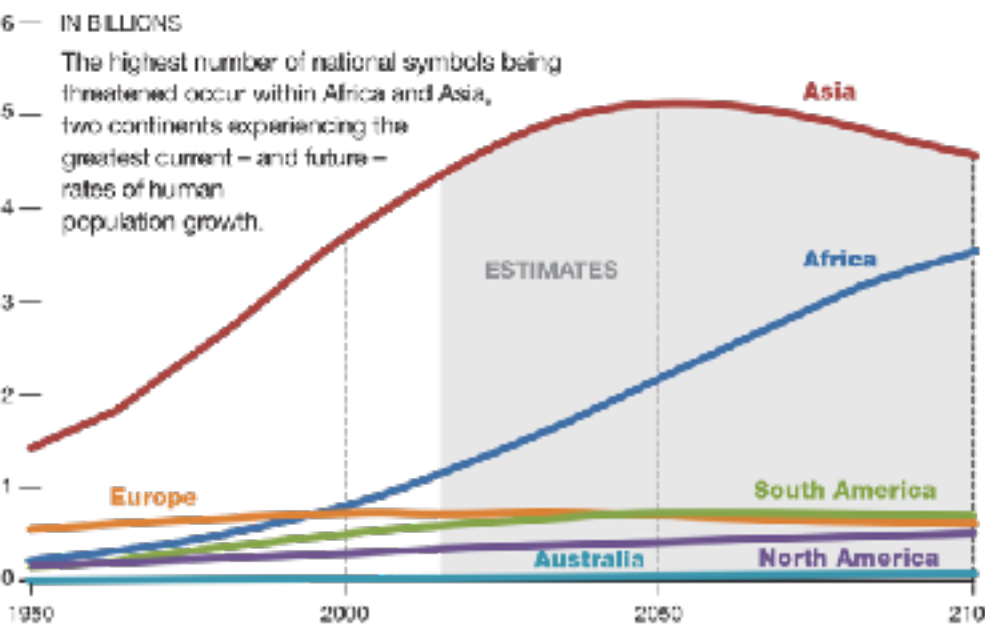
A person's national identity can be linked to not only the state or nation they belong to, but to a symbol which represents and embodies the nation's people, values, goals, or history. The national animal or plant is a symbol of this identity, selected for holding cultural, historical, economic, and/or religious significance. However, the planet's animal national symbols may be under threat of extinction due to human population growth.

SYMBOLS PER REGION

There are 231 IUCN listed National Symbols among the 146 countries assessed. Sixty countries, such as Angola, Bermuda, Canada, Greenland, Mexico, and Puerto Rico, have multiple symbols.

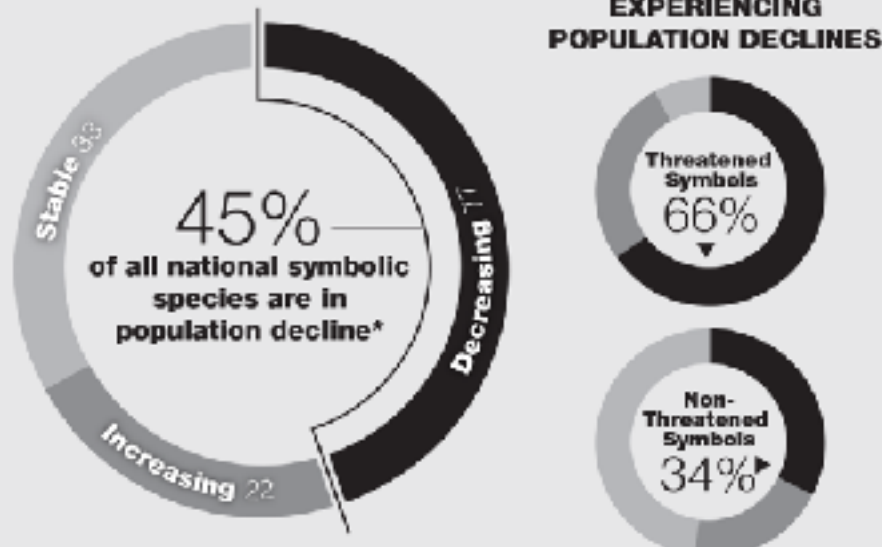


POPULATION GROWTH A KEY



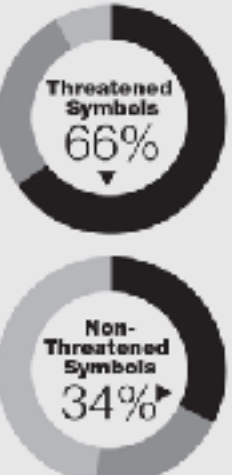
SYMBOLS IN DECLINE

The data shows that the proverbial "wheels" linking humanity and nature in its purest form (i.e. national symbols) are "falling off," evidenced by almost half of the modern world's most celebrated animals are threatened with extinction, and almost three quarters of all threatened symbols show population declines.



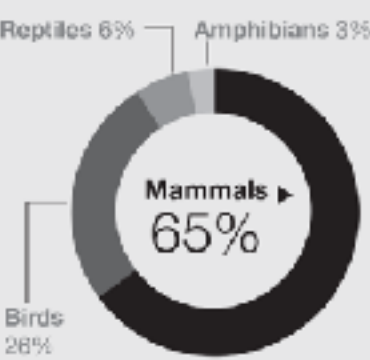
*Percentages rounded; excluded: extinct species, species not evaluated and insufficient data not counted.
IUCN=International Union for Conservation of Nature
SOURCES: The Energy Collective, CIA World Factbook.

EXPERIENCING POPULATION DECLINES



TYPES OF ANIMALS

Threatened national symbols differed significantly by animal type, with the highest being mammals. These include highly charismatic megafauna such as the big cats and elephants.



PRIMARY THREATS

Habitat loss due to human population growth is the largest threat, with exploitation and human conflict (overlap between resources, habitats, and nutritional needs of society and wild populations) are almost equal.



NATIONAL PROTECTION

Less than a fifth of all symbols have some form of national protective status within the associated nation.



GRAPHIC BY HIRAM HENRIQUEZ



VULNERABLE: Steel wall holds back water from Lake Okeechobee as the Army Corps of Engineers works on the 60-year-old Herbert Hoover Dike. The dike remains on a national shortlist of unsafe Class I dams.

On the brink of disaster

A project to shore up the levee around Lake Okeechobee has made progress — but not enough to avert catastrophe

BY CURTIS MORGAN
cmorgan@miami-herald.com

CANAL POINT — For two decades, reports from government engineers and outside experts have reached largely the same conclusion about the Herbert Hoover Dike: The levee ringed Lake Okeechobee is a disaster waiting only for high water to happen.

Even after the U.S. Army Corps of Engineers completed a \$225 million-plus overhaul to shore up its most vulnerable stretch this year, the dike remains on a national shortlist of unsafe Class I dams. It's a category defined as either "almost certain to fail under normal operations" or at extreme risk of failure with high fatalities and economic losses.

"The Corps' failure rate for dams is once every 10,000 years. One 2011 risk assessment estimated the dike's probable failure rate at every 14 years."

"Right now, Herbert Hoover is one of the handful of our



Source: U.S. Army Corps of Engineers

Grand jury digs into MLB 'secrets'

STERIODS SCANDAL

The MLB scandal intensified as a grand jury took possession of records showing ballplayers' — and others' — steroid use.

BY JULIE K. BROWN
jbrown@miami-herald.com

If Major League Baseball's "dirty dozen" suspended ballplayers thought their steroid problems were behind them, they were wrong.

On Friday, the whistleblowers whose records linked New York Yankees slugger Alex Rodriguez and 12 other ballplayers to a South Florida doping clinic was summoned before a secret grand jury, two sources close to the case told the Miami Herald.

Peter Fischer, the clinic's former marketing director, was ordered to turn over the records that shook Major League Baseball to its foundation and may lead to criminal drug charges against the clinic's owner, Anthony Bosch, his partners, his suppliers and, depending on their involvement, even his clients.

"It's going to make a lot of people start sweating now," said Miami lawyer David Weinstein, former chief of narcotics for the U.S. Attorney's Office in Miami.

"This was pretty much the players' dirty little secret. Now someone else is looking at their dirty little secret."

Among Bosch's alleged clients: more than 100 athletes, as well as police officers, lawyers, judges and high school students.

Federal investigators are sifting in on the clinic's entire distribution network, including looking into

ECONOMY

Beacon Council ends guessing game, picks outsider as new chief

Miami-Dade's economic-development group opted against a local insider, instead hiring North Carolina native Larry Williams from the Atlanta Chamber of Commerce.

BY DOUGLAS HANES
dhanes@miami-herald.com

The Beacon Council tapped as its new president and CEO a veteran of the economic-development front who currently runs the technology arm of the

MIAMI HERALD

AUG. 17, 2013

ORIGINAL STORY ONLINE HITS

From August 16 to September 19, 2013

7,058 people

viewed the original story online (without a graphic).

A vulnerable Lake Okeechobee

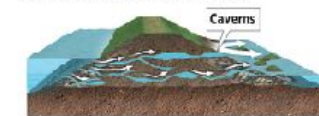
How damage occurs

Water seeps through cracks and crevices in the dike, creating damaging channels inside it called "piping," which leads to leaks (1). As lake levels and water pressure increase, the piping can grow into caverns that can potentially undermine the dike (2). A hurricane's storm surge against the dike can dramatically worsen the strain.

1 PIPING LEADS TO LEAKS ...



2 ... AND CAN UNDERMINE THE DIKE



LAKE OKEECHOBEE

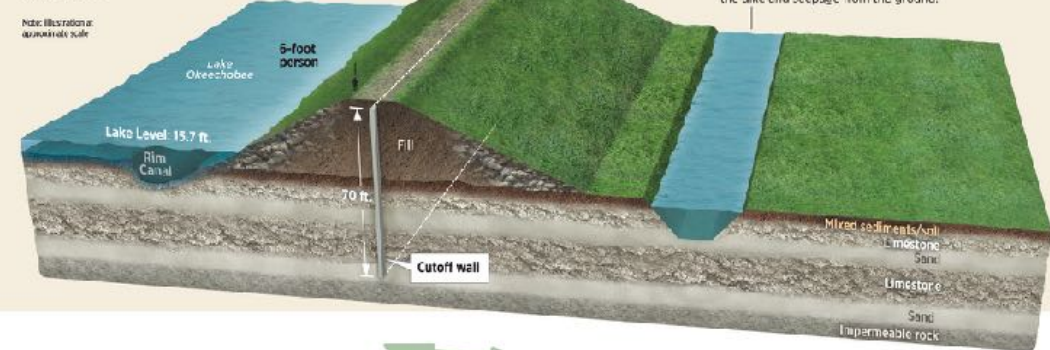
The name means "big water" in the Seminole Indian language, and with a surface area of 730 square miles it is the largest lake in the southeastern United States.

DIKE: A 30-35 foot embankment that controls or confines water.

First efforts to repair the dike

In January, the Corps finished the first major work to bolster the dike: building a two-foot-thick, 70-foot-deep concrete-like "cutoff wall" down the center of the dike along a 21-mile segment from Port Mayaca to Belle Glade (see small map below).

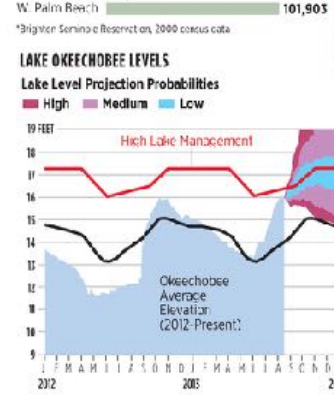
TOE DITCH: Captures rain fall runoff from the dike and seepage from the ground.



A potential for flooding

Flood waters from Lake Okeechobee could extend for miles, depending on water levels and which of eight "reaches" or segments of the 143-mile-long Herbert Hoover Dike fails. A rough map shows an improbably high 25-foot lake level — and was developed only as an exercise to compare computer inundation models — it does provide a rough outline of potentially vulnerable areas to flooding from failures along each reach. In the event of a breach, not every reach would be impacted at the same time.

LAKE OKEECHOBEE LEVELS
Lake Level Projection Probabilities
High Medium Low



Secondary measures: revamping culverts

An ongoing \$4.4 million Corps project to overhaul two culverts along the eastern shoreline illustrates the biggest underlying problem: The dike that protects surrounding communities from a lake roughly twice the size of Biscayne Bay is a minuscule but deteriorating antique that doesn't come close to modern engineering standards.

Older culverts (C-11, C-16)

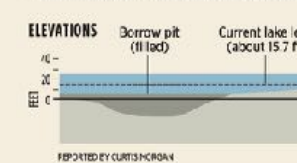


NEW, MORE ROBUST C-11 AND C-16 CULVERTS

The Corps is also in the process of removing, replacing, or sealing all 52 culverts around the lake that are now viewed as the greatest risk to the dike's stability, a project expected to take until at least 2018.

SOUTHEASTERN SHORELINE CULVERT OVERHAUL

The two new culverts, designed to the higher standards of a modern dam, are capable of enduring the immense pressure of a 25-foot lake level. That's more than seven feet higher than the lake has ever been and well beyond the 21-foot level considered a most certain to burst unrepaired portions of the existing levee.



A vulnerable Lake Okeechobee

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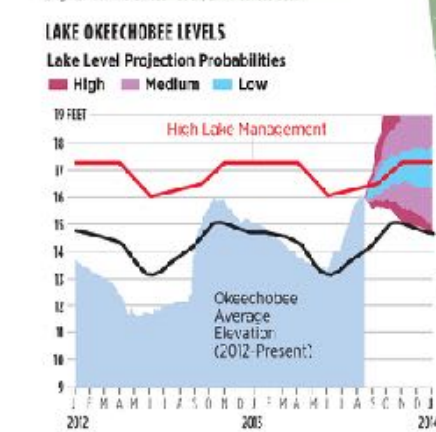
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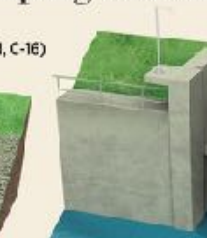
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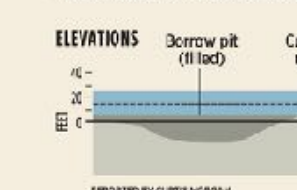


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NEXT ▶

A vulnerable Lake Okeechobee

Florida's Lake Okeechobee ranks second by the International Hurricane Research Center in a list of U.S. mainland areas most vulnerable to hurricanes. Reports indicate that the lake's Herbert Hoover Dike is susceptible to failure caused by water seepage and piping at high water levels whether by long-term changes due to rainfall or by hurricane events.

How
damage
occurs



First efforts
to repair
the dike



A
potential
for
flooding



Secondary
measures:
Revampig
culverts



Sources: U.S. Army Corps of Engineers, U.S. Census, city-data.com, South Florida Water Management District, Lloyd's Emerging Risks Team Report: The Herbert Hoover Dike, and the Everglades Foundation

REPORTING: CURTIS MORGAN; GRAPHIC: HIRAM ENRIQUEZ (SPECIAL FOR THE HERALD); INTERACTIVE: MARCO A. RUIZ / MIAMI HERALD STAFF

MIAMI HERALD

SEPT. 20, 2013

INTERACTIVE ONLINE HITS

From September 20 to October 31

13,670 people

viewed the graphic at the story level
(52 people viewed the standalone PDF)

<http://news-viz.com/lake-o-flood.html>

HIRAM ENRIQUEZ



UNIVERSITY OF MIAMI

Visualization can have
multiple purposes and
use different styles

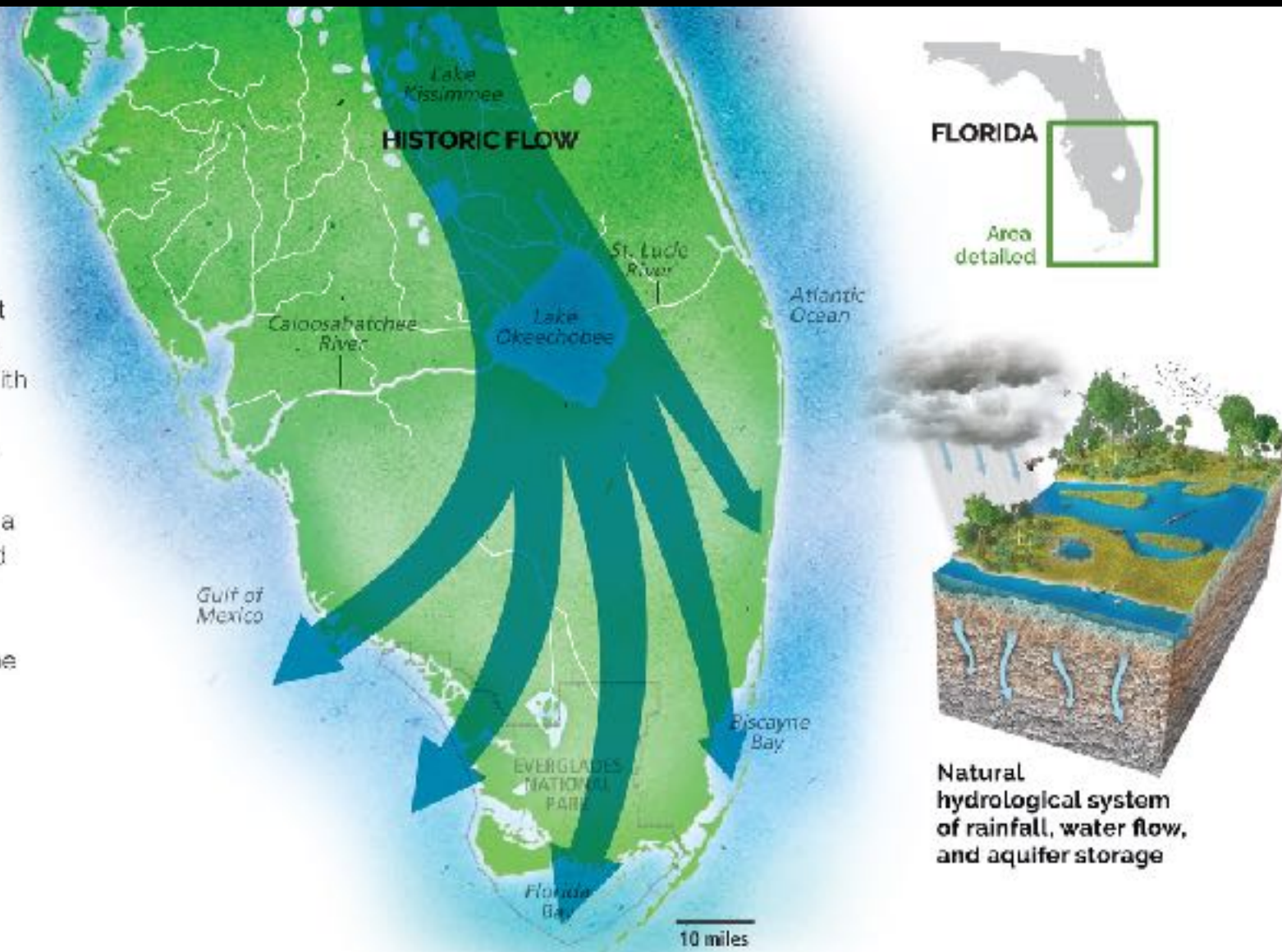
SOUTH FLORIDA & PHOSPHORUS

A Catastrophe in the Making

<http://news-viz.com/phosphorus/index.html>

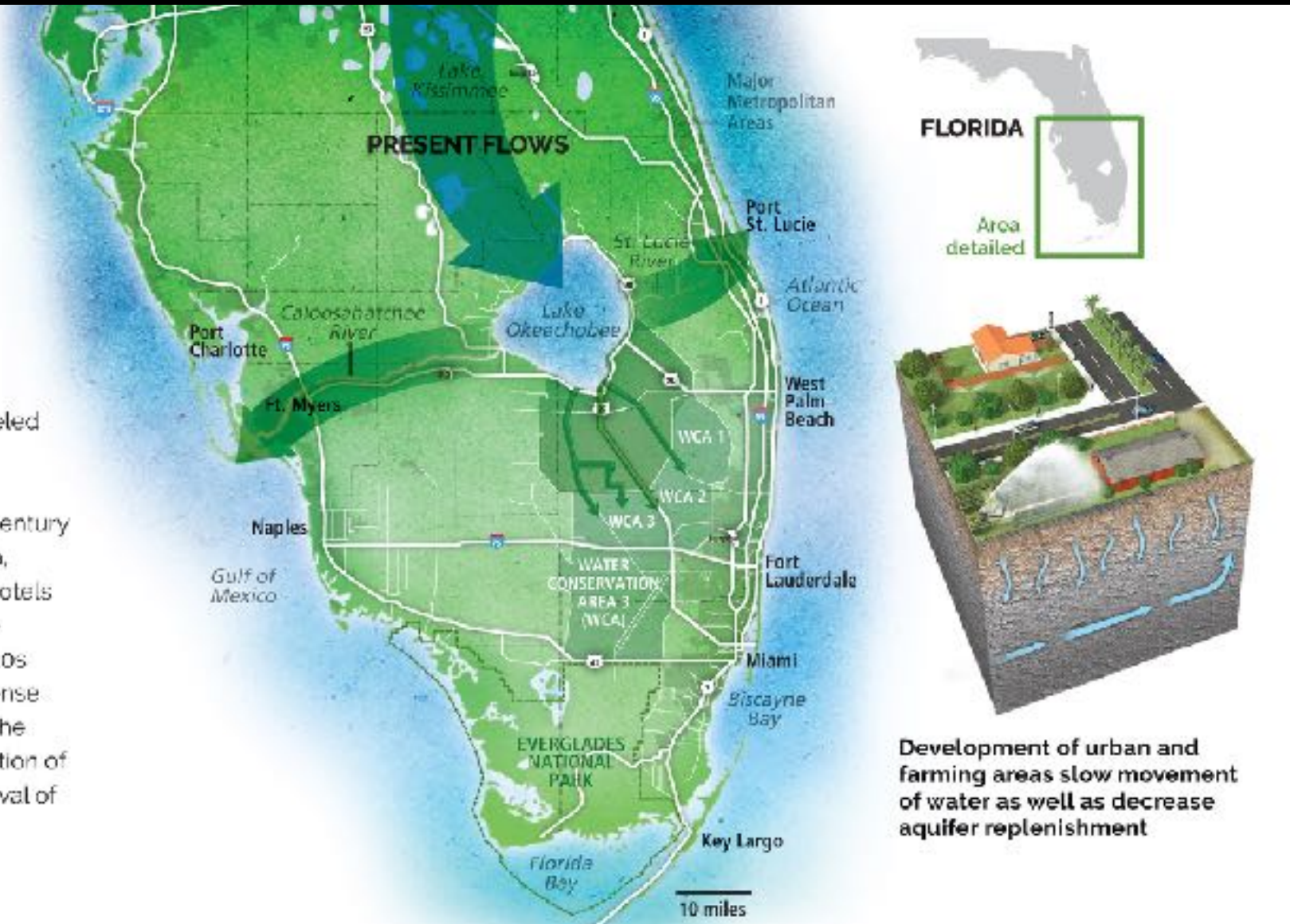
Florida, in 1900

Before Florida's development boom, the state's population was roughly over 500,000. With the absence of man's urban and agricultural areas, water flowed freely through the middle of the state following a gradual downward slope, and passed what is today's Everglades National Park before emptying into Biscayne Bay, Florida Bay and the southern Gulf of Mexico.



Urban Sprawl, Farming

Since 1900, much of the Everglades has been channeled for agriculture and urban development. Economic prosperity in the early 20th century stimulated tourism to Florida, leading to development of hotels and resort communities. The Florida land boom of the 1920s brought a brief period of intense land development, altering the landscape with the construction of man-made canals and removal of many natural waterways.



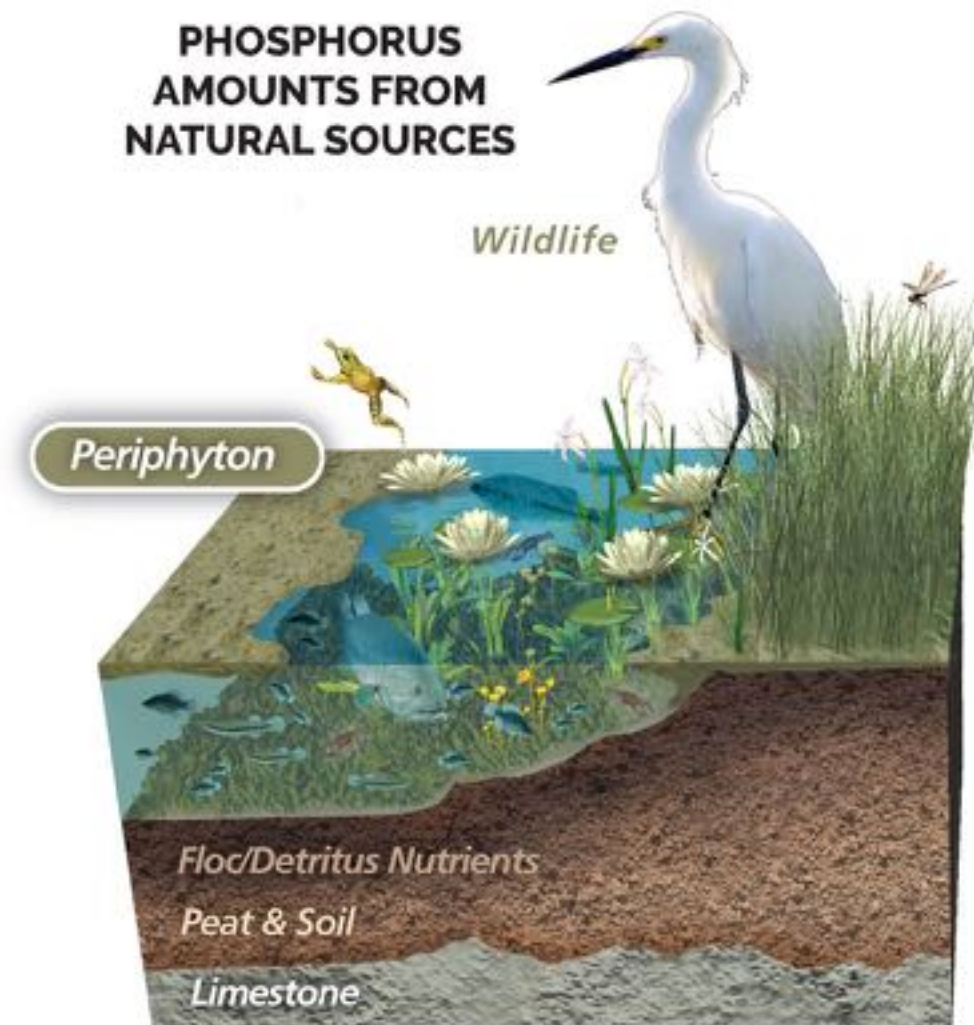
Cleaning the Water

Much of the polluted water is discharged to rivers east and west of the lake, eventually ending up polluting those rivers, as well as estuaries on either coast. Water is also discharged south and cleaned to avoid contaminating the Everglades' natural ecosystem and threatening the drinking water of a large populace. To do this, some water passes through stormwater treatment areas within the Everglades Agricultural Area before continuing south.



MAPS

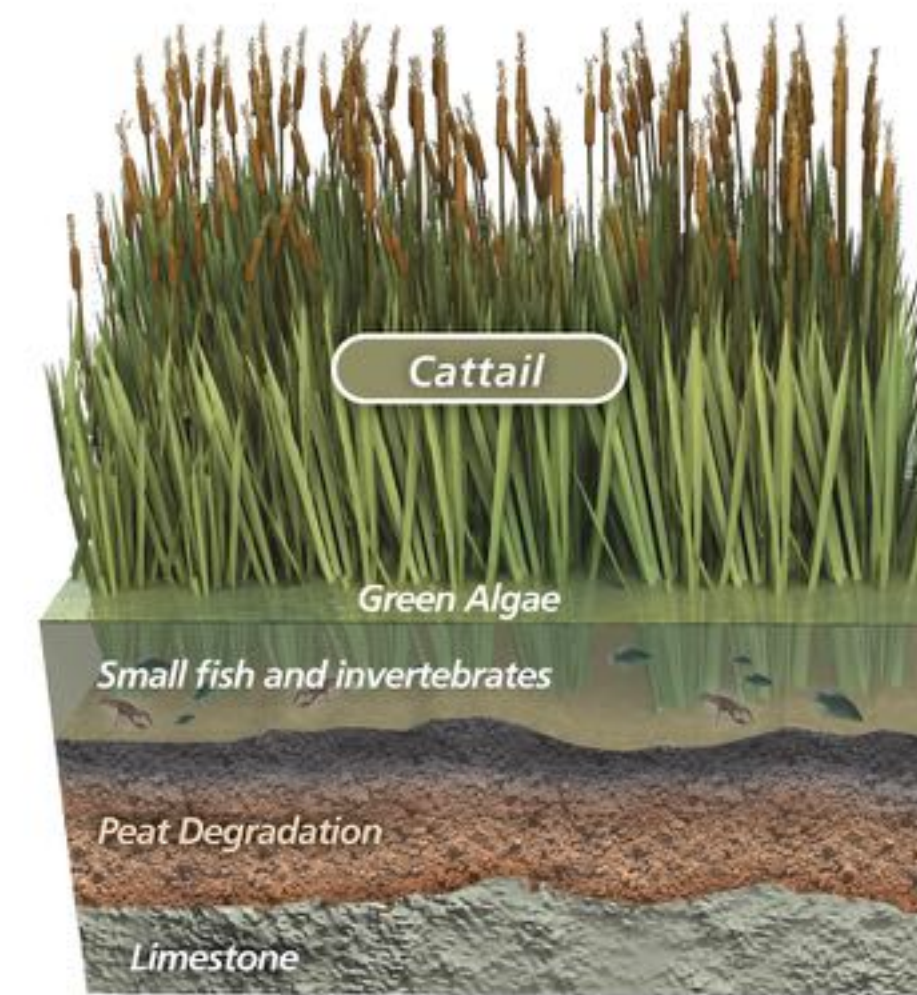
Affecting Water Quality



In normal amounts, phosphorus helps grow periphyton, a complex mixture of algae, cyanobacteria, microbes, and detritus that attaches to submerged surfaces in most aquatic ecosystems.



With too much phosphorus, green algae covers the water table, blocking important sunlight and oxygen for sustaining life under water.

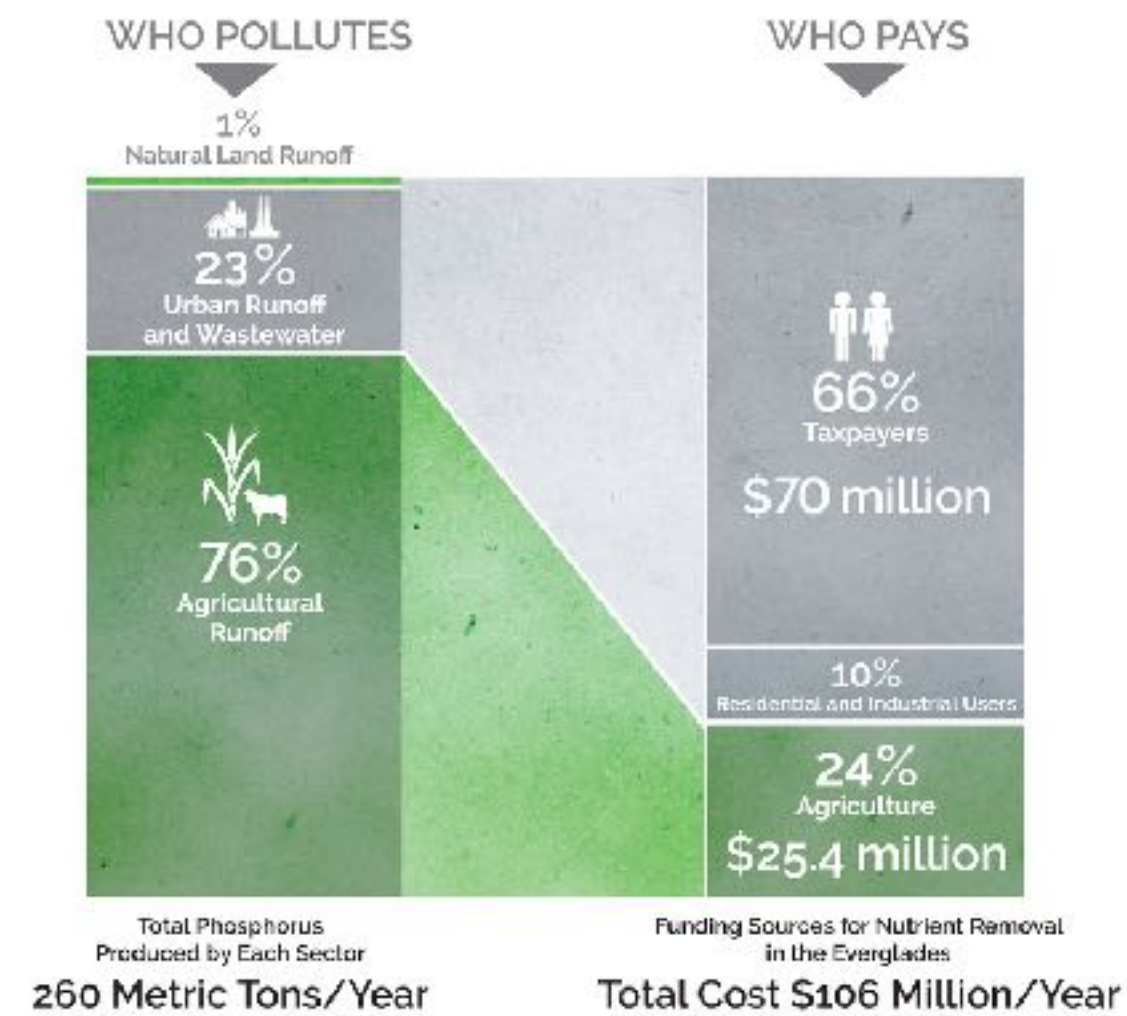


The Everglades food cycle is broken as large fish are unavailable as a food source for the birds that are attracted by them, altering the landscape forever.

3D ILLUSTRATIONS

Who Pollutes and Who Pays

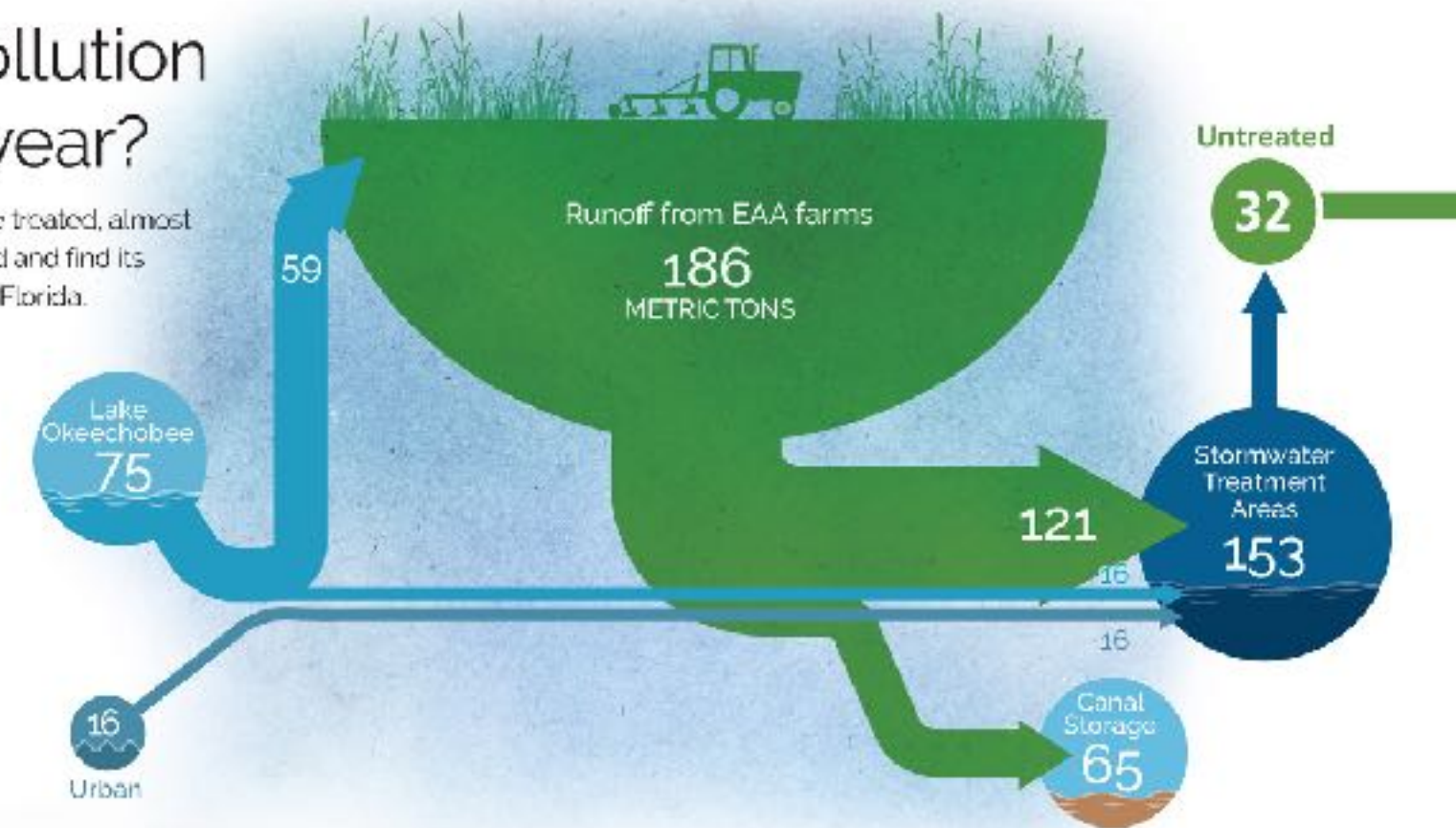
Even though agriculture is responsible for 76% of the pollution threatening the Everglades ecosystem, they only pay 24% of the nutrient removal. The remaining 66% is paid by taxpaying citizens.



How much pollution is that in one year?

Even though over 150 metric tons are treated, almost three dozen metric tons go untreated and find its way to waterways throughout South Florida.

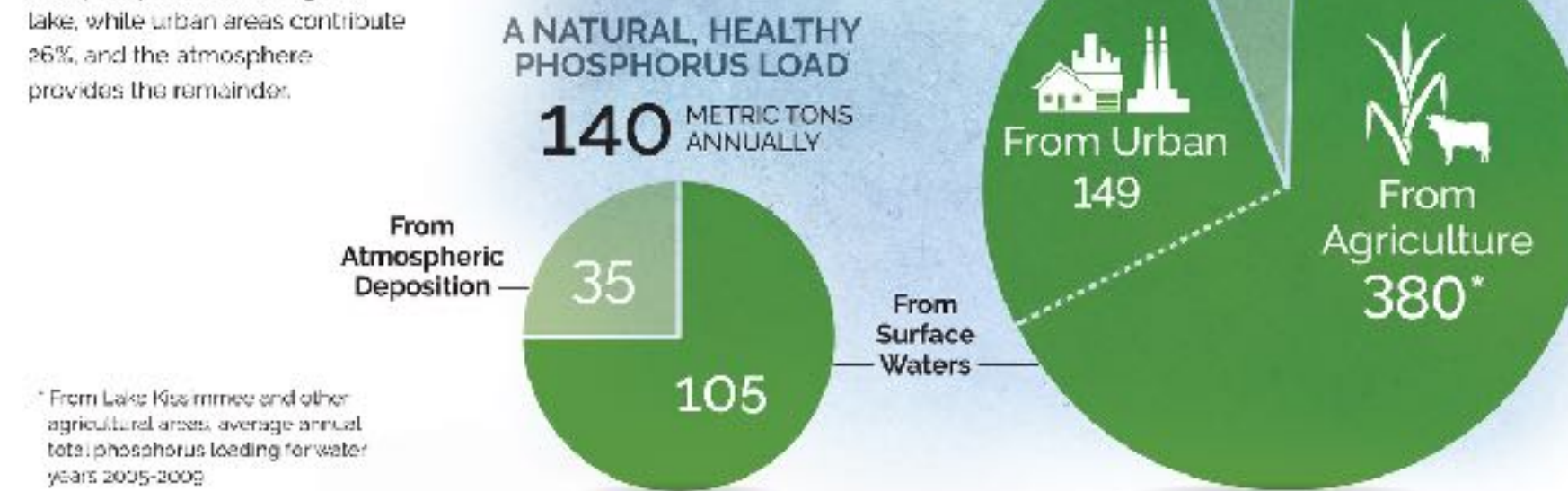
ALL NUMBERS IN ANNUAL METRIC TONS



NOTE: Values obtained from the South Florida Water Management District and from the South Florida Environmental Reports for Water Years: 2005-2012 (from May 2004 to April 2012).

Too Much Phosphorus

Agricultural areas above and around Lake Okeechobee contribute roughly 57% of the total phosphorus entering the lake, while urban areas contribute 26%, and the atmosphere provides the remainder.



HIRAM HENRIQUEZ



UNIVERSITY OF MIAMI

VECTOR
ART

CHARTS

GEER 2019

GREATER EVERGLADES ECOSYSTEM RESTORATION

MORE EXAMPLES

THE NORTH AMERICAN BISON

A New National Symbol

FAST FACTS

- **Population:** Estimated 545,000
- **Height:** 6-6.5 feet at the shoulder
- **Length:** 10-12.5 feet
- **Weight:** 900-2,000 lbs.



- **Vertical jump:** 6 feet
- **Running speed:** 35-40 mph
- **Lifespan:** 18-22 years (wild); over 30 years (captive)

- **Mating Season:** June-September
- **Gestation:** 270-285 days; calf is born April-May
- **Litter size:** 1 calf

The National Bison Legacy Act, passed in late April by the U.S. House of Representatives, aims to honor the North American bison as the national mammal of the United States. It must now get Senate approval before heading to the President's desk for his signature, bringing the iconic animal one step closer to receiving the recognition many groups have pushed for.

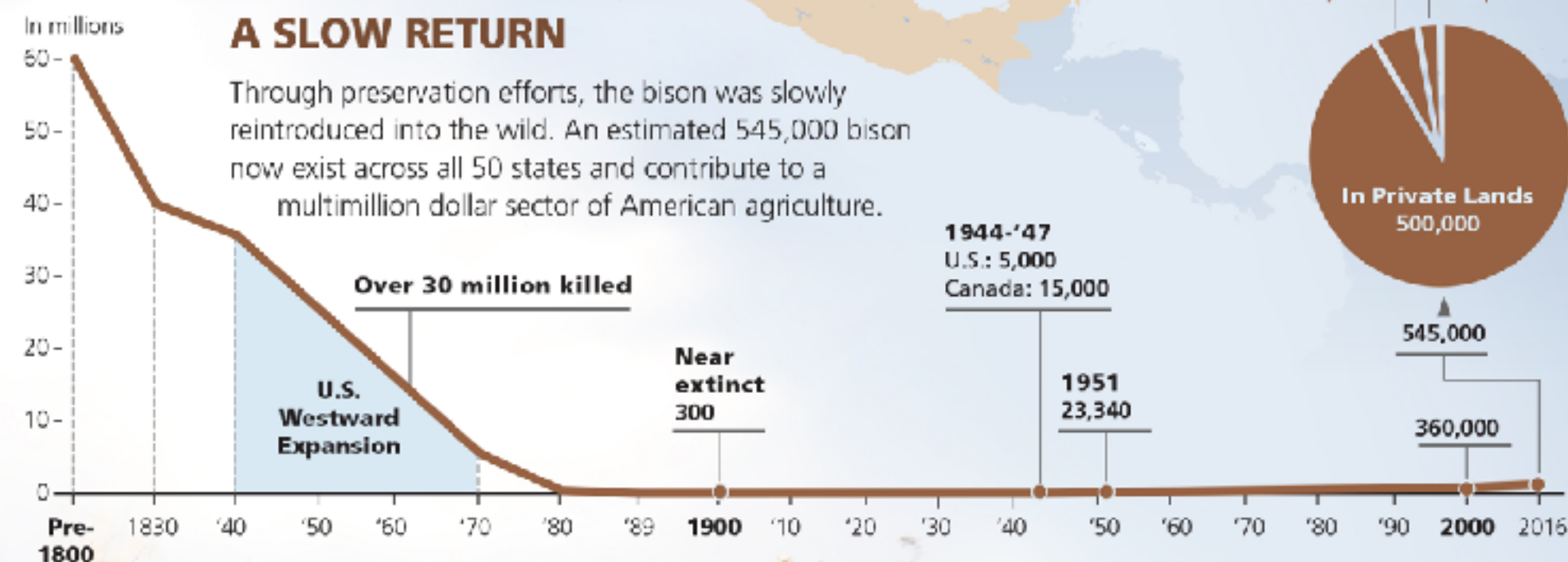
HISTORY & RANGE

Though it once grazed the plains of most of the U.S. in the millions, the population dwindled to a little over a thousand at the turn of the 20th century. Its decline coincided in large part with its mass slaughter during the years of the nation's westward expansion.

- **Pre-1800s range** (60 million)
- **1840** (35.6 million)
- **1870** (5.5 million)
- **1889** (Almost extinct)
- **2003** (Est. 500,000)

A SLOW RETURN

Through preservation efforts, the bison was slowly reintroduced into the wild. An estimated 545,000 bison now exist across all 50 states and contribute to a multimillion dollar sector of American agriculture.



TWO TYPES



Largest pop. of Wood bison
10,000
Wood Buffalo National Park

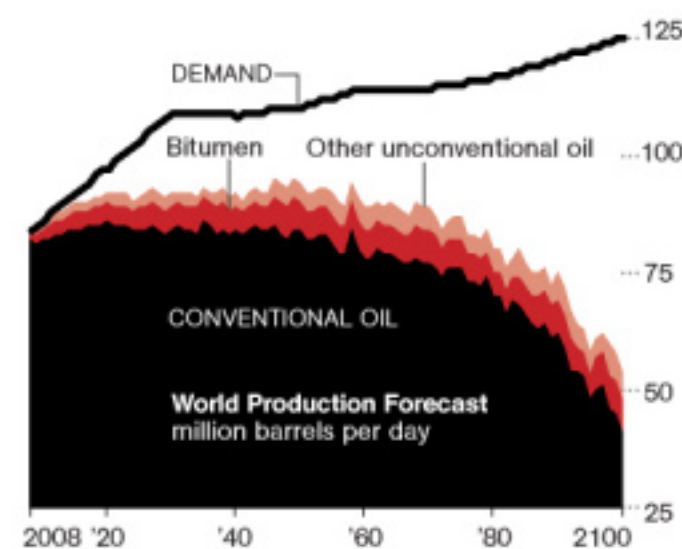


Largest pop. of Plains bison
4,000
Yellowstone National Park

Although ecologically extinct throughout most of their historic range, the remaining few roam private lands, national parks and small wildlife areas.

“The fact that we’re willing to move four tons of earth for a single barrel really shows that the world is running out of easy oil.”

—SIMON DYER, PEMBINA INSTITUTE



Within the next few decades, production of conventional oil around the world is projected to level off, then decline, even as demand continues to grow. Production from unconventional sources such as oil sands are also expected to drop if governments impose constraints to protect the environment.

cubic yards of sediment that once covered the bitumen, thereby bringing it within reach of shovels—and in some places all the way to the surface. On a hot summer day along the Athabasca, near Fort McKay for example, bitumen oozes from the riverbank and casts an oily sheen on the water. Early fur traders reported seeing the stuff and watching natives use it to caulk their canoes. At room temperature, bitumen is like molasses, and below 50°F or so it is hard as a hockey puck, as Canadians invariably put it. Once upon a time, though, it was light crude, the same liquid that oil companies have been pumping from deep traps in southern Alberta for nearly a century. Tens of millions of years ago, geologists think, a large volume of that oil was pushed northeastward, perhaps by the rise of the Rocky Mountains. In the process it also migrated upward, along sloping layers of sediment, until eventually it reached depths shallow and cool enough for bacteria to thrive. Those bacteria degraded the oil to bitumen.

The Alberta government estimates that the province’s three main oil sands deposits, of which the Athabasca one is the largest, contain 173 billion barrels of oil that are economically recoverable today. “The size of that, on the world stage—it’s massive,” says Rick George, CEO of Suncor, which opened the first mine on the Athabasca River in 1967. In 2003, when the *Oil & Gas Journal* added the Alberta oil sands to its list of proven reserves, it immediately propelled Canada to second place, behind Saudi Arabia, among oil-producing nations. The proven reserves in the oil sands are eight times those of the entire U.S. “And that number will do nothing but go up,” says George. The Alberta Energy Resources and Conservation Board estimates that more than 300 billion barrels may one day be recoverable from the oil sands; it puts the total size of the deposit at 1.7 trillion barrels.

Getting oil from oil sands is simple but not easy. The giant electric shovels that rule the

Robert Kunzig wrote about drought in the West in February 2008. Peter Essick’s most recent assignment was photographing the Ozark Highlands Trail.

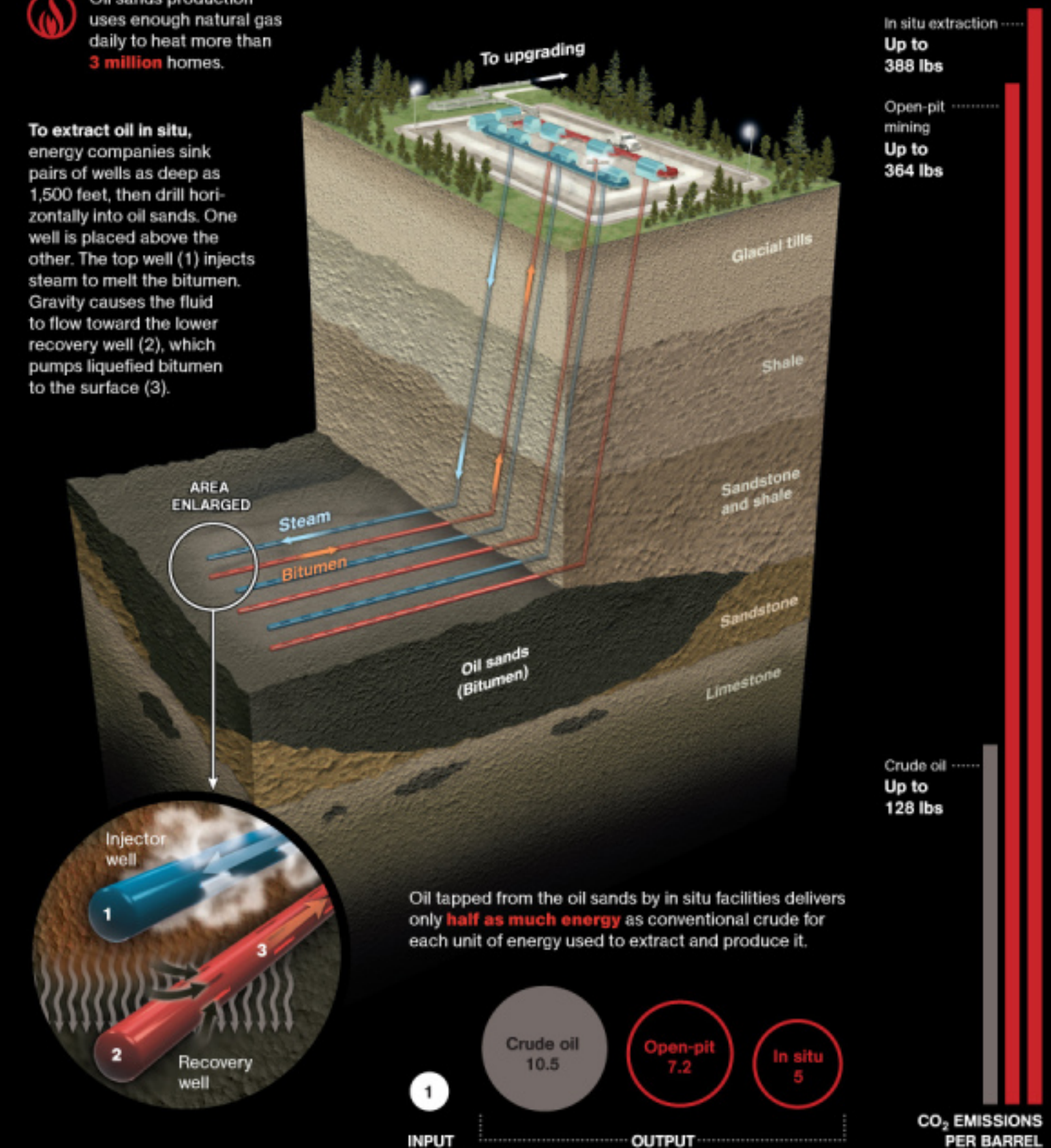
Black Gold Too Deep to Mine

About 80 percent of the bitumen potentially recoverable from Canada’s oil sands is in deposits deeper than 200 feet, requiring more energy to extract than bitumen from surface mines. Injecting steam into wells and upgrading the bitumen consumes vast amounts of water and natural gas.



Oil sands production uses enough natural gas daily to heat more than **3 million** homes.

To extract oil in situ, energy companies sink pairs of wells as deep as 1,500 feet, then drill horizontally into oil sands. One well is placed above the other. The top well (1) injects steam to melt the bitumen. Gravity causes the fluid to flow toward the lower recovery well (2), which pumps liquefied bitumen to the surface (3).



HIRAM HENRIQUEZ, NG STAFF
SOURCES: ALBERTA GEOLOGICAL SURVEY; U.S. DEPARTMENT OF ENERGY, ENERGY INFORMATION ADMINISTRATION 2008; PEMBINA INSTITUTE

A push to drill

Unless Congress acts, the Bush administration will allow oil and gas exploration as close as 100 miles to Florida's coast in July 2007.

BY WILLIAM E. GIBSON
WASHINGTON BUREAU CHIEF

WASHINGTON • President Bush startled the nation, especially environmentalists in Florida, when he took up a cause this year reminiscent of Jimmy Carter's fledgling bid for conservation and alternative fuels in the 1970s.

"I have come today to discuss undeniable opportunities for our country to achieve a great national goal, and that is to end our addiction to oil," Bush said, as a laboratory in Colorado, repeating a line from his State of the Union Address.

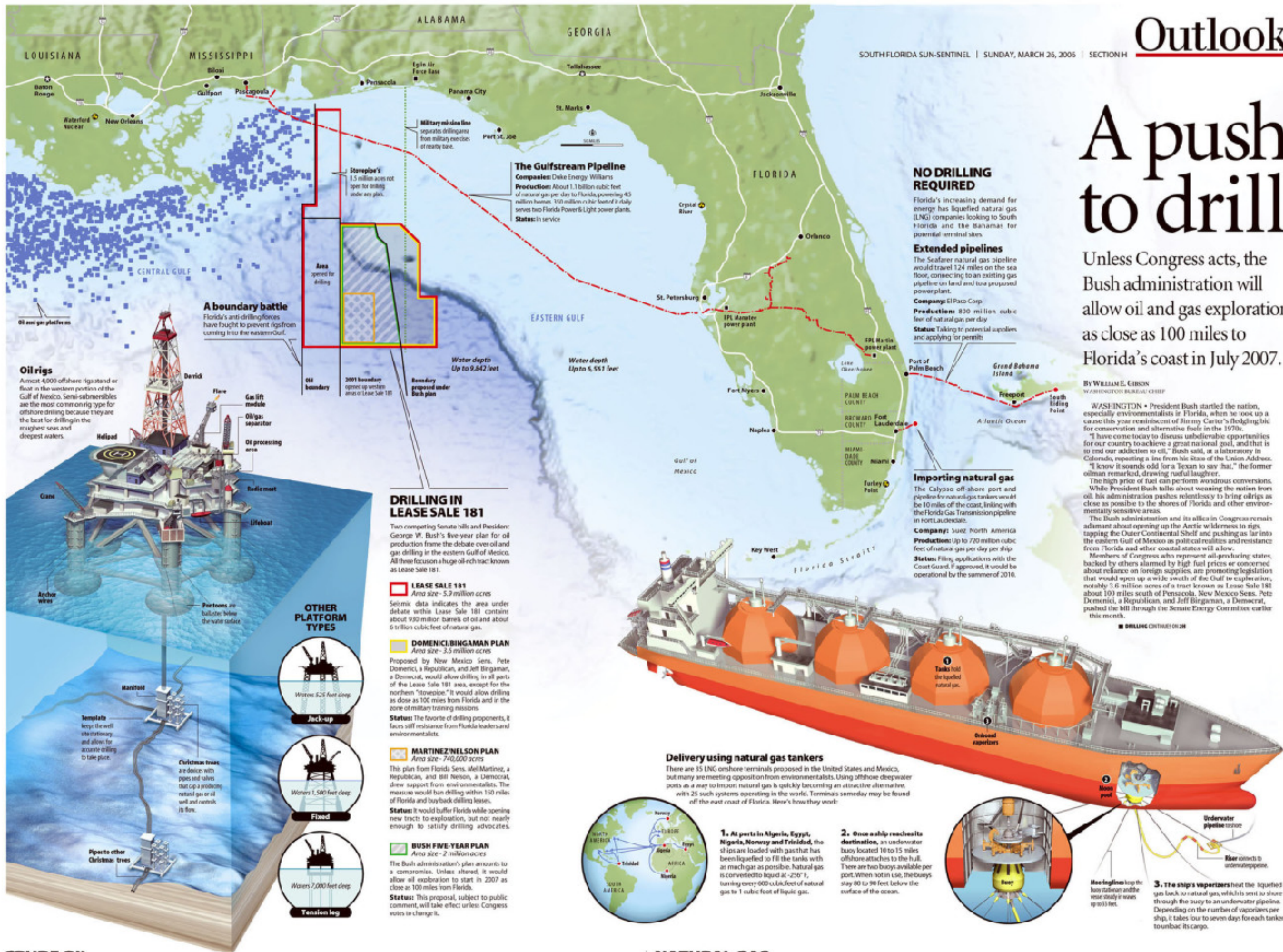
"I know it sounds odd for a Texan to say that," the former oilman remarked, drawing raucous laughter.

The high price of fuel can perform wondrous conversions. While President Bush talks about weaning the nation from oil, his administration pushes relentlessly to bring oil rigs as close as possible to the shores of Florida and other environmentally sensitive areas.

The Bush administration and its allies in Congress remain adamant about opening up the Arctic wilderness in sign, tapping the Outer Continental Shelf and pushing as far into the eastern Gulf of Mexico as political realities and resistance from Florida and other coastal states will allow.

Members of Congress who represent oil-producing states, backed by others alarmed by high fuel prices or concerned about reliance on foreign supplies, are promoting legislation that would open up a wide swath of the Gulf to exploration, notably 5.6 million acres of a tract known as Lease Sale 181 about 100 miles south of Pensacola, New Mexico Sen. Pete Domenici, a Republican, and Jeff Bingaman, a Democrat, pushed the bill through the Senate Energy Committee earlier this month.

■ DRILLING CONTINUES ON 26



DRILLING IN LEASE SALE 181

Two competing Senate bills and President George W. Bush's five-year plan for oil production frame the debate over oil and gas drilling in the eastern Gulf of Mexico. All three focus on a huge oil-rich tract known as lease sale 181.

LEASE SALE 181
Area size: 5.6 million acres
Seismic data indicates the area under debate within Lease Sale 181 contains about 930 million barrels of oil and about 6 trillion cubic feet of natural gas.

DOMENICI-BINGAMAN PLAN
Area size: 3.5 million acres
Proposed by New Mexico Sens. Pete Domenici, a Republican, and Jeff Bingaman, a Democrat, would allow drilling in all parts of the Lease Sale 181 area, except for the northern "stone" area, except for the zone of military training missions.

Status: The favorite of drilling proponents, it faces stiff resistance from Florida leaders and environmentalists.

MARTINEZ-NELSON PLAN
Area size: 740,000 acres
This plan from Florida Sens. Mel Martinez, a Republican, and Bill Nelson, a Democrat, drew support from environmentalists. The measure would ban drilling within 150 miles of Florida and buyback drilling leases.

Status: It would buffer Florida while opening new tracts to exploration, but no nearly enough to satisfy drilling advocates.

BUSH FIVE-YEAR PLAN
Area size: 2 million acres
The Bush administration's plan amounts to a compromise. Unless altered, it would allow oil exploration to start in 2007 as close as 100 miles from Florida.

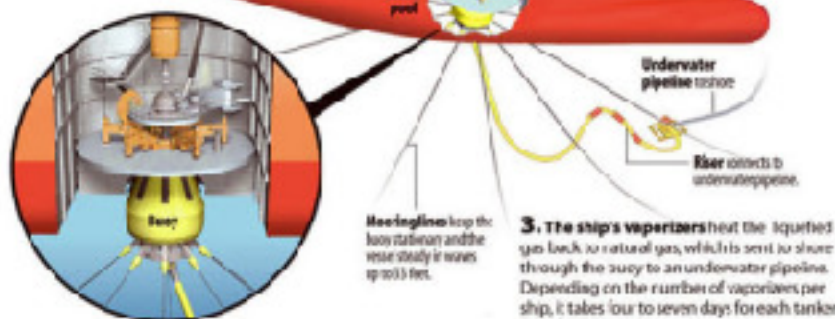
Status: This proposal, subject to public comment, will take effect unless Congress votes to change it.

Delivery using natural gas tankers

There are 15 LNG onshore terminals proposed in the United States and Mexico, but many are meeting opposition from environmentalists. Using offshore deepwater ports as a way to import natural gas is quickly becoming an attractive alternative. With 25 such systems operating in the world, terminals someday may be found off the west coast of Florida. Here's how they work:



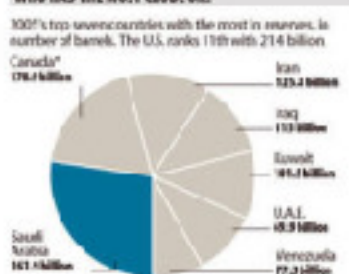
1. At ports in Nigeria, Egypt, Algeria, Norway and Trinidad, the ships are loaded with gas that has been liquefied to fill the tanks with a mixture of natural gas and ethane. Natural gas is converted to liquid at -260°F, turning every 600 cubic feet of natural gas to 1 cubic foot of liquid gas.
2. Once a ship reaches its destination, an underwater buoy located 10 to 15 miles offshore attaches to the hull. There are two buoys available per port. When not in use, the buoys stay 80 to 90 feet below the surface of the ocean.



3. The ship's vaporizers heat the liquefied gas back to natural gas, which is sent to shore through the buoy to an underwater pipeline. Depending on the number of vaporizers per ship, it takes four to seven days for each tanker to unload its cargo.

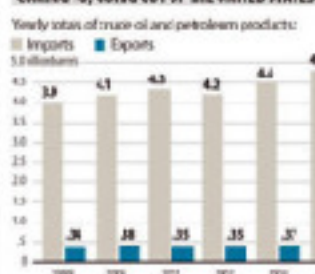
CRUDE OIL

WHO HAS THE MOST CRUDE OIL?



Source: U.S. Energy Information Administration

COMING TO, GOING OUT OF THE UNITED STATES



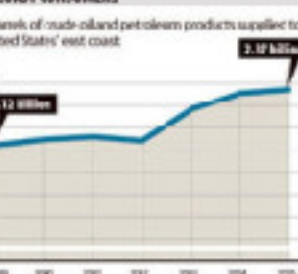
Source: U.S. Energy Information Administration

AVERAGE U.S. RETAIL GASOLINE PRICE PER GALLON



Source: U.S. Energy Information Administration

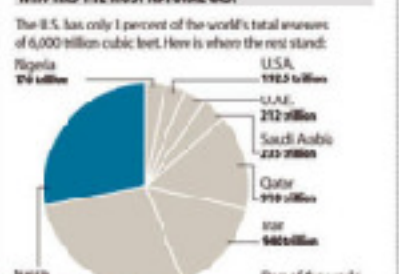
WEST COAST CONSUMERS



Source: U.S. Energy Information Administration

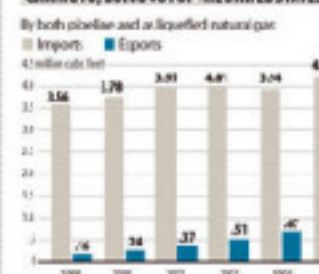
NATURAL GAS

WHO HAS THE MOST NATURAL GAS?



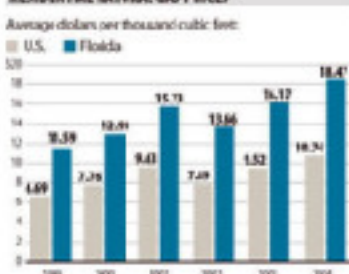
Source: U.S. Energy Information Administration

COMING TO, GOING OUT OF THE UNITED STATES



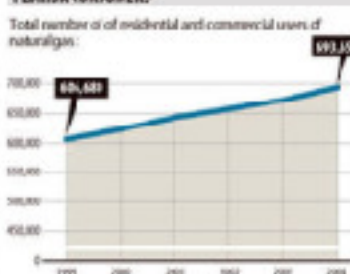
Source: U.S. Energy Information Administration

RESIDENTIAL NATURAL GAS PRICES



Source: U.S. Energy Information Administration

FLORIDA CONSUMERS



Source: U.S. Energy Information Administration

CONSERVING THE SOUTHERN RESIDENT KILLER WHALES

NOAA Fisheries will soon include Lolita, Miami Seaquarium's killer whale, in the endangered species listing for Southern Resident Killer Whales that spend much of the year in the inland waters of Washington and British Columbia. Their population was depleted between 1965 and 1975 because of captures conducted for marine parks, and their numbers remain low due to environmental factors such as pollution, oil spills and noise from passing vessels.

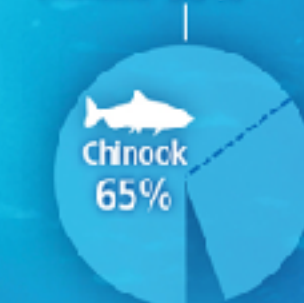
ORCINUS ORCA

Length	Up to 32 feet
Weight	Up to 10 tons
Speed	35 mph
Lifespan	29 yrs (male) 50 yrs (females)

APEX PREDATORS

Orcas are at the top of the food chain, vulnerable only to large sharks. They can tackle prey of all shapes and sizes, and often use a coordinated hunting strategy, working as a team like a pack of wolves.

SALMON 95%



OTHER 5%

DIET

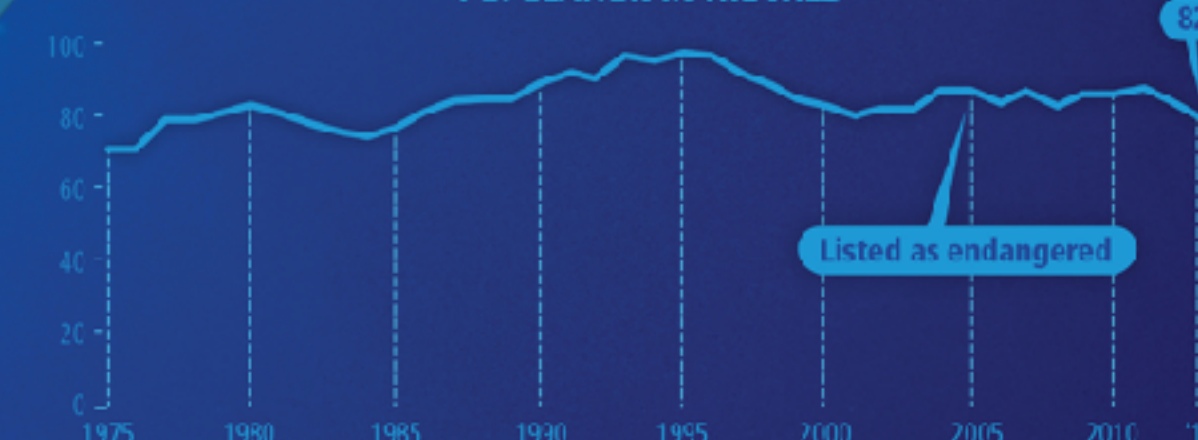
Salmon account for a large portion of these northeast Pacific Residents' diet, with large, fatty Chinooks being a favorite. Chum salmon are also eaten, but are not a significant food item.

Seagulls, Cormorants, Seals, Sea Lions, Squid



Chinook Salmon

SOUTHERN RESIDENT KILLER WHALE POPULATION IN THE WILD



CRITICAL HABITAT*

During the spring, summer, and fall months, the Southern Resident population can be found in the inland waters of Puget Sound and nearby waters. In the winter, they forage along the West Coast as far south as central California.



*Nov. 2006

Graphics: Hiram Henriquez
3D model: Triduza

Dorsal fin

Melon

Roar

The wide tail flukes work as a propeller when it swims at high speeds.

Caudal fins

Paddle-shaped pectoral fins may be one-fifth their body weight.

KILLER WHALES IN CAPTIVITY, 2010



Orcas who have been taken into captivity since 1961



91% DIED

*Canary Islands

GREAT WHITE SHARK

SOURCES: National Oceanic and Atmospheric Administration National Fisheries Science Center; *The Encyclopedia of Animals*; *Smithsonian Handbooks Mammals*; *The Independent*, UK; Animal Welfare Institute

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