



## ECO Earth Week Facts and Information

### \* Monday – Animal and Wildlife Conservation

#### • Why It's Important

- Wildlife conservation is the practice of protecting plant and animal species and their habitats.
- Wildlife provides balance and stability to nature's processes.
- The goal of wildlife conservation is to ensure the survival of these species, and to educate people on living sustainably with other species.
- Human population growth and development also endangers the habitats and existence of various types of wildlife around the world, particularly animals and plants that may be displaced for land development, or used for food or other human purposes.
- Other threats to wildlife include the introduction of invasive species from other parts of the world, climate change, pollution, hunting, fishing, and poaching.
- Sources:
  - <https://www.nationalgeographic.org/encyclopedia/wildlife-conservation/>

#### • Local Conservation Efforts

- Mangroves
  - Provide habitat for many aquatic plants and animals



- Provide shoreline stability and protection from storm surge and erosion. These roles all support the local economies of many south Florida communities.
- Mangrove Trimming and Preservation Act
  - Regulates the trimming and alteration of mangroves while also banning the use of herbicides and other chemicals used to defoliate mangroves
- Mangroves cannot be removed, trimmed, or disturbed without a permit from the Florida Department of Environmental Protection.
- Various mangrove replenishment initiatives are in effect
- Sources:
  - <https://www.floridamuseum.ufl.edu/southflorida/habitats/mangroves/conservation>
- Manatees
  - Reclassified as endangered in May 2017
  - Considered a keystone species in Florida because changes in their behavior indicates changes in the environment
  - Sea Grasses
    - Why they're important
      - Primary food source
      - Other marine organisms use it for food and nursery locations
      - Stabilizes sediment
      - Increases water clarity
    - Conservation Efforts
      - Stricter water quality standards
      - Boating restriction zones
      - Education of boaters, tourists, and residents
    - Sources
      - <https://www.floridamuseum.ufl.edu/southflorida/habitats/seagrasses/conservation/>
  - Warm Water Refuges
    - Manatees seek out warm water refuges when water temperature drops below 68°
    - These areas are threatened by
      - Reduction of natural spring flow due to groundwater withdrawals from human use
      - The development and maintenance of port facilities
      - Power plant shut downs

- Due to the loss of natural springs, manatees use warm waters from power plants to stay warm in the winter
      - Increases importance of restoration of natural springs
  - Restoration efforts
    - Establish minimum flows at Florida springs that protect the warm-water habitat requirements of manatees
    - Develop and implement plans to prevent significant future manatee mortality caused by potential changes in power plant operation
    - Enhance protection and restoration of seagrasses and freshwater vegetation in proximity to warm water habitats
    - Improve manatee access to natural spring systems
  - Human Impacts
    - Entanglement/ingestion
      - According to researchers, in over 6,500 manatee necropsy reports from a 20-year dataset (1993 to 2012), over 11% of the animals that died either ingested or showed evidence of entanglement in marine debris (or both) (Reinert, et al. 2017).
  - Manatee Protection Zones
    - Established by FWC to restrict the speed and operation of vessels where necessary to protect manatees from harmful collisions with vessels and from harassment
  - Sources
    - <https://myfwc.com/wildlifehabitats/wildlife/manatee/>
- Florida Panther
  - Critically endangered
  - Lives in Big Cypress and the Everglades
  - Recovery Plan (2008)
  - Require large continuous ranges to meet their social, reproductive, and energetic needs.
  - Dense understory vegetation provides some of the most important feeding, resting, and denning cover for panthers.
  - Panthers select forested habitats, marsh shrub swamps, and prairie grasslands with agricultural lands.
  - Currently, the only known breeding population of panthers is south of the Caloosahatchee River.
  - Threats
    - Urbanization, residential development, road construction, conversion to agriculture, and mining

- Panther mortality resulting from vehicle collisions threatens the potential for population expansion.
  - Range expansion and reintroduction of additional populations are recognized as essential for recovery.
  - Fostering greater public understanding and support is necessary to achieve panther conservation and recovery.
  - Sources
    - <https://www.fws.gov/southeast/wildlife/mammals/florida-panther/#habitat-section>
- Lolita
  - Taken from wild in Washington in 1970 at 4 years old
  - Still performs
  - Bought by Miami Seaquarium
  - Lives in the smallest orca tank in the US
    - 80 feet long, 60 feet wide, 20 feet deep
  - Claims that it violates the Animal Welfare Act
  - Lives without any companion
  - Abandoned in tank during Hurricane Irma
  - She shares her tank with dolphins who regularly harass her and rake her skin causing wounds
  - Movement of Lolita needs to be approved by NOAA
  - The Lummi Nation has for two years campaigned to retire her and bring her home.
  - Sources
    - <https://whalesanctuaryproject.org/whales/lolita-fame-misfortune/>
    - <https://sacredsea.org/>
    - <https://www.seattletimes.com/seattle-news/environment/remembering-lolita-nearly-49-years-still-in-captivity-at-the-miami-seaquarium/>

\* **Tuesday – Plastic Waste Awareness and Reduction**

• **Plastic Waste**

- About 50% of plastics produced each year are for single-use purposes, meaning that it is only intended to be used for a few moments before being discarded where it will exist for several hundred more years (Plasticoceans.org).
- The estimates for how long plastic endures range from 450 years to forever (National Geographic).
- The process of producing bottled water requires 6x as much water per bottle as there is in the container (Plasticoceans.org).

- World plastic production has increased exponentially from 2.1 million tons in 1950, to 147 million in 1993, to 406 million by 2015 (National Geographic).
- 73% of all beach litter is plastic (National Geographic).
- Bans on plastic appear to be quite effective. In the UK, the introduction of a 5p plastic bag charge in 2015 has brought an 83% reduction in plastic bag use.
- Ingestion of plastic kills an estimated 1 million marine birds and 100,000 marine animals each year (United Nations).
- Sources
  - <https://plasticoceans.org/the-facts/>
  - <https://www.nationalgeographic.co.uk/10-shocking-facts-about-plastic>
- The Issues with Plastic and Styrofoam Packaging
  - About 1/3 of an average landfill's waste is made up of packaging material.
  - Chemicals from plastic/Styrofoam containers can leach into the food and, in turn, our bodies.
    - These chemicals result in human health effects, such as altered hormones and cancer.
  - Polystyrene (a form of plastic, commonly known as Styrofoam) contains the toxic substances styrene and benzene, suspected carcinogens and neurotoxins that are hazardous to humans
    - Cities such as New York, Washington, and San Francisco have banned Styrofoam coffee cups, plates, and to-go boxes.
    - When exposed to sunlight, Styrofoam creates harmful air pollutants which contaminate landfills and deplete the ozone layer.
    - Every day, about 1,369 tons of Styrofoam are buried in U.S. landfills.
    - Every year, Americans throw away 25 billion Styrofoam coffee cups.
  - At the current rate, it's predicted that by 2050, the mass of plastic in the world's oceans will exceed the mass of all the fish that live there.
  - Not all plastic is recyclable and not all recyclable plastic is recycled.
    - 9.2 billion tons of plastic have been produced, of which only 9% has been recycled properly.
    - As of now, 91% of packaging waste is sent to the landfills and/or in the environment.
  - Plastic debris, containing chemicals, are often ingested by marine animals, which can injure or poison them.
  - Plastic waste sent to landfills is ultimately incinerated to make room for more, which releases toxic pollutants and irritants into the air we breathe.
  - Production of plastics is a major user of fossil fuels, as 8% of global oil production goes to manufacturing plastics.

- The amount of plastic waste is so massive that 5 large garbage patches exist in the ocean.
- Plastics are not biodegradable, but are photodegradable (UV rays break down plastic into microplastics, tiny pieces that are invisible to the naked eye and last for centuries, absorb toxins, and are easily ingested).
- Sources:
  - <https://www.ehn.org/plastic-environmental-impact-2501923191.html?rebelltitem=2#rebelltitem2>
  - <https://supplychain.edf.org/resources/sustainability-101-packaging-waste-the-problem/#:~:text=Unfortunately%2C%20this%20innovation%20comes%20at,disposed%20of%20into%20the%20environment.>
  - <https://www.colliercountyfl.gov/your-government/divisions-s-z/solid-hazardous-waste-management/keeping-green-helpful-information-page/the-facts-on-styrofoam-reduce-and-reuse#:~:text=When%20used%20with%20food%20products,and%20deplete%20the%20ozone%20layer.>
  - <https://www.becausehealth.org/all-about-take-out-containers-2540550848.html>
- Upcycling
  - Upcycling is the process of transforming materials destined to be destroyed into new products of higher value and environmental purpose. Reusing waste without destroying it takes far less energy than breaking it down to be remade into something new.
  - Benefits of upcycling include conserving resources, saving energy, and preserving landfill space. Buying upcycled products from discarded materials directly offsets the amount of water and energy that would be needed to make new materials from scratch.
  - Upcycling has many applications, from art and music to clothing and design. People are constantly exploring new ways to convert yesterday's trash into today's treasure.
  - Sources:
    - <https://www.looptworks.com/pages/what-is-upcycling>
- Feminine Hygiene and Plastic Waste
  - In the North American market, the polyester lining and plastic applicators from tampons have been found to contain bisphenol A, or BPA (a disruptor proven to have harmful effects on aquatic wildlife).

- When these tampons are discarded, this chemical can leach into the environment and into aquatic ecosystems, causing harm.
- The Centre for Marine Conservation reports, in a single year, over 170,000 tampon applicators were collected along U.S. coastal areas.
- Sources:
  - <https://divacup.com/environmental-impact-feminine-hygiene-products/>

\* **Wednesday – Food Sustainability**

- Sustainable agriculture is the rejection of the industrial approach to food production (aka factory farms). It integrates three main things: environmental health, economic profitability, and social and economic equity (DoSomething).
- With this type of farming, chemical pesticides or fertilizers aren't necessary, crop diversity is encouraged, and precipitation provides irrigation water (DoSomething).
- Organic farming typically requires 2.5 times more labor than conventional farming, but it yields 10 times the profit (DoSomething).
- Most of the meat in our country is raised through CAFOs (concentrated animal feeding operations) which have a host of environmental and animal welfare issues (PBS).
- Rural communities are becoming increasingly aware that keeping their landscape in agricultural production is essential for their economic viability. As a result, sustainable food and farming is now recognized as a critical component of community planning and development, as rural communities work to ensure economic prosperity into the future (PBS).
- In 2010, the U.S. food supply provided 4,000 calories per person per day. The average American consumed 2,507 calories per day in 2010. 1,493 calories per person are wasted a day, an increase of 22% from 1970 (University of Michigan).
- The EPA estimated that in 2010, 31% of the food supply was lost, 50% more than in 1970 (University of Michigan).
- Capitalism is consolidating power into the hands of a few businesses in the food market. Four firms control 85% of the beef packing market; 82% of soybean processing is controlled by four firms. The top four food retailers sold almost 45% of America's food in 2016, compared to only 17% in 1993 (University of Michigan).
- Organic farms do not use chemicals that require large amounts of energy to produce, pollute soil and water, and present human health impacts. Sales of organic food in 2019 were 5.0% higher than in 2018; organic food now accounts for 5.8% of all food sold in the U.S. (University of Michigan).
- Food production contributes approximately 30% of global greenhouse gas emissions, and the livestock sector alone represents almost half (14.5%) of these emissions (Harvard).

- Food production occupies about 40% of global land (Harvard).
- Food production uses about 70% of freshwater (Harvard).
  - Causes eutrophication (nutrient overload) and dead zones in lakes and coastal areas (Harvard).
- Sources
  - <https://www.dosomething.org/us/facts/11-facts-about-sustainable-agriculture>
  - <https://www.pbs.org/food/features/five-things-you-didnt-know-about-sustainable-farming-earth-day/>
  - <http://css.umich.edu/factsheets/us-food-system-factsheet>
  - <https://www.hsph.harvard.edu/nutritionsource/sustainability/>

\* **Thursday – Circular Economies**

- A circular economy is an economic system in which products are designed to use waste, reduce waste, provide materials or services for future products, or a combination of these.
- A linear economy describes a system that uses raw materials to produce products that eventually become waste.
- A circular economy focuses on technical and biological cycles. Technical cycles recover and restore products and materials while biological cycles has waste that filters back into the system through composting and anaerobic digestion which creates new materials for production.
- Aims to mimic the circular structure of the natural world where potential waste is used to fuel new growth.
- The MacArthur Foundation is a British organization aimed at accelerating the transition to a circular economy
- The concept of a circular economy cannot be traced to a single author or time but has roots in several schools of philosophy and includes several major schools of thought.
- According to the MacArthur Foundation, these schools include “functional service economy (performance economy) of Walter Stahel; the Cradle to Cradle design philosophy of William McDonough and Michael Braungart; biomimicry as articulated by Janine Benyus; the industrial ecology of Reid Lifset and Thomas Graedel; natural capitalism by Amory and Hunter Lovins and Paul Hawken; and the blue economy systems approach described by Gunter Pauli.”
- Example: Toronto uses organic household waste as biofuel to fuel truck fleets and use as heating.
- Sources
  - <https://www.nationalgeographic.com/science/article/partner-content-circular-economy-event-recap>



- <https://www.ellenmacarthurfoundation.org/circular-economy/concept>
- <https://www.ensi.org/global/downloads/Publications/395/the-circular-model-brief-history-and-schools-of-thought.pdf>

\* **Friday – Climate Change Awareness**

- **Why It's Important**

- The concentration of carbon dioxide (CO<sub>2</sub>) in our atmosphere, as of May 2020, is the highest it has been in human history.
- By fighting climate change, we improve livelihoods: “natural climate solutions such as restoring degraded forests could create as many as 39 jobs per million dollars spent — that's a job-creation rate more than six times higher than the oil and gas industry.”
- The ice sheets are shrinking, and glaciers are retreating almost everywhere around the world.
- Migration and population are impacted by climate change, as where and how food is grown influences where people settle, and cities exist.
- Daily necessities such as shelter, food, clean water and air are heavily impacted by climate change. This negatively impacts human health and has led to an increase in deaths by malaria, diarrhea, malnutrition, and heat stress.
- It is estimated that by 2040, nearly 1 in every 4 children worldwide will live in a region with very limited access to water resources.
- The 20 warmest years on record have been in the past 22 years, according to the World Meteorological Organization’s IPCC report.
- More than 1 million species are at risk of extinction.
- Food supply depends heavily on climate and weather conditions. Despite technology to adapt agricultural practices, increased temperatures, diseases, water stress, and weather extremes will still pose immense challenges for farmers.
- Climate change is expected to cause more heat stress, poor air quality, increase waterborne diseases and diseases transmitted by insects and rodents. This all heavily affects human health worldwide.
- Mosquitoes are expanding their territory, thus expanding their ability to spread disease.
- Wildfire seasons are months longer than they ever were.

- **Sea Level Rise**

- Sea level has risen about 8 inches in the last century; the rate in the last 2 decades is nearly double of the last century. It accelerates every year.
- The size and thickness of the Arctic sea ice has rapidly melted over the last decades.

- Sustainable Solutions
  - Take public transport, carpool, or ride a bike.
  - Avoid single-use plastics.
  - Unplug computers, TVs, and electronic when they are not in use.
  - Reduce animal protein consumption at least by half, as that would reduce carbon footprint by more than 40%.
  - Hold polluting fossil fuel companies accountable in court.
- Sources
  - <https://www.conservation.org/stories/11-climate-change-facts-you-need-to-know>
  - <https://climate.nasa.gov/evidence/>
  - <https://www.light-for-the-world.org/10-facts-you-need-know-about-climate-change>
  - <https://www.earthday.org/5-terrifying-climate-change-facts-scary-halloween/>
  - <https://www.noaa.gov/education/resource-collections/climate/climate-change-impacts#:~:text=Human%20health%20is%20vulnerable%20to,many%20of%20the%20health%20threats>
  - [https://www.edf.org/climate/why-fighting-climate-change-so-urgent?utm\\_source=google&utm\\_campaign=edf\\_none\\_upd\\_dmt&utm\\_medium=cpc&utm\\_id=1561743801&gclid=EAlaIqobChMllaPmxJby7wIVIhitBh0VCQZOEAAAYAiAAEgKwSPD\\_BwE&gclidsrc=aw.ds](https://www.edf.org/climate/why-fighting-climate-change-so-urgent?utm_source=google&utm_campaign=edf_none_upd_dmt&utm_medium=cpc&utm_id=1561743801&gclid=EAlaIqobChMllaPmxJby7wIVIhitBh0VCQZOEAAAYAiAAEgKwSPD_BwE&gclidsrc=aw.ds)
  - [https://earthrights.org/what-we-do/climate-justice/?gclid=CjwKCAjw9r-DBhBxEiwA9qYUpQTzsqeR4wEkkdiP75yi5tz8IzqdNa4YQij1VPZyBs8-dYm3v8NishoCYuYQAvD\\_BwE](https://earthrights.org/what-we-do/climate-justice/?gclid=CjwKCAjw9r-DBhBxEiwA9qYUpQTzsqeR4wEkkdiP75yi5tz8IzqdNa4YQij1VPZyBs8-dYm3v8NishoCYuYQAvD_BwE)