The Effects of Plastic Waste on Animals

The Ripple Effect of Human Actions

When we humans behave in ways that are not environmentally conscious, our actions cause detrimental ripple effects for our planet and for all its residents. In particular, when we incorrectly dispose of our plastic waste, this creates dire and, at times, fatal consequences for environmental ecosystems and for our fellow inhabitants, namely animals.

Declines in Earth's Biodiversity

The Living Planet Report, from the World Wildlife Fund and the Zoological Society of London, is a leading scientific analysis of the Earth's health and the impact of our human activity on it. The 2014 Living Planet Report detailed significant declines in animal populations and vital ecosystems due to human action, including overfishing, ocean drilling and mining, as well as from pollution, and corresponding greenhouse gas emissions and global warming. The report notes that in the 40-year period from 1970 to 2010:

- Mammal, bird, reptile, amphibian and fish populations declined by 52% on average
- Populations of the fish species most directly tied to human well-being declined by 49% overall
    - These fish comprise up to 60% of protein intake in coastal countries, supporting millions of small-scale fishermen as well as the multibillion-dollar global fishing industry
        - Some particular species (i.e. Scrombidae, the family of mackerels, tunas and bonitos) saw an even greater decline of 74% during that time
- Vast marine habitats have been degraded and destroyed, resulting in declining ecosystems like coral reefs, mangroves and sea grasses around the world

How Plastic Injures or Kills Animals

Many marine animals ingest plastics, mistaking them for food. Marine researchers around the world have observed hungry sea turtles eating plastic bags, mistaking them for jellyfish, and seabirds eating all kinds of plastic objects, including cigarette lighters and toothbrushes, mistaking them for small fish. In the Great Pacific Garbage Patch within the Northern Pacific Gyre off the California coast, albatrosses and other birds were repeatedly observed picking through the floating plastic to find and eat red, pink and brown pieces of plastic ("Anything that looked like shrimp", according to world-renowned ocean researcher Captain Charles Moore). Small plastic fragments called microbeads, which resemble fish eggs, are routinely found in the stomachs of numerous sea creatures including marine mammals, reptiles, jellyfish, fish and birds. Research performed in Lake Erie by 5Gyres and the State University of New York last year found an average of 8 pieces of plastic in small-sized fish, 20 pieces in medium-sized fish and 44 pieces in cormorants, large sea birds that eat these fish.

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When plastic is ingested, it can get lodged in the windpipe, obstructing airflow when swallowed or when birds try to regurgitate it to feed their chicks, eventually causing suffocation. Once in the digestive tract, plastic debris can either block the tract, or accumulate in the stomach, producing a false sense of fullness, causing the animal to stop eating, resulting in malnutrition as it slowly starves to death.

The National Oceanic and Atmospheric Administration (NOAA) estimates that plastic debris kills 100,000 marine mammals, and millions of fish and seabirds, every year.

According to the 2014 edition of the scientific journal *The Marine Pollution Bulletin*,

- Animals in almost 400 species have been injured or killed after ingesting or becoming entangled in our trash
    - Includes all 7 sea turtle species, more than 50% of all mammal species and almost 2/3 of all seabird species
        - 92% of the time, the trash was plastic
- More than 10% of all species that have fallen victim to marine debris are threatened with extinction

The marine advocacy group Ocean Crusaders states that 2/3 of all fish stocks in the world have ingested plastic. It also estimates that 100,000 marine animals die from becoming entangled in discarded plastic every year (the biggest perpetrators identified are fishing gear like nets and line, and consumer packaging). This estimate is conservative because it captures only animals that are found dead, not those that are subsequently eaten by other animals, decompose entirely or are never found.

Greenpeace estimates that 80% of all seabird species have ingested plastics. It notes that 96% of Northern Fulmars (seagull-like relatives of albatrosses and shearwaters) that were found washed up dead in the North Sea near The Netherlands between 1982 and 2001 had ingested 23 pieces of plastic on average. It also notes that 50-80% of all sea turtles that are found dead had ingested plastic. Again, the actual statistics are likely worse because these statistics include just the animals that are found dead; many more have died and have been eaten or decomposed, never being found.

Australian scientists from James Cook University have found coral starving due to blocked digestive tracts after eating plastic microbeads, and dying due to being covered by plastic bags, which was suffocating them or was blocking the sunlight they needed to survive. Ocean Crusaders notes that a single plastic bag can kill numerous animals. Because it takes so long for plastic to break down, an animal can eat it and die, then decompose, re-releasing the bag into the environment and making it accessible to other animals to eat and subsequently die. This cycle can keep repeating for hundreds of years for each and every bag–and every year, 100 billion bags (10% of the 1 trillion plastic bags consumed around the world) are estimated to enter the ocean![1]

Marine animals aren't the only ones affected by plastic trash. Land birds like the reintroduced California Condor have been found with plastic in their stomachs.[2] Stray animals that are forced to rifle through garbage piles to find food, and animals that normally feed in waste dumps and landfills, have suffered suffocation, or intestinal blockage and eventual starvation, from discarded plastic waste.

What We Can Do

Now that we know more about the many ways our pollution negatively affects our animal neighbors, we can make better decisions individually and collectively to significantly decrease our levels of plastics use and pollution. Stay tuned for more about the collective strides being made around the world, and about individual ways to reduce our pollution and its corresponding negative impact on our Earth.

1,013 words

FOOTNOTES

1 http://www.iflscience.com/environment/rocks-formed-plastic-found-beach

2 http://www.britannica.com/science/plastic-pollution

