MARINE DEBRIS: THE PACIFIC PROTECTION INITIATIVE

The Problem

An estimated 80% of marine debris comes from land-based sources, while only 20% comes from sea-based sources, like shipping and boating.[1]

Roughly 60–80% of all marine debris, and 90% of floating debris is plastic.[2]

Plastic gut contents of a deceased albatross. Photo courtesy of the California Coastal Commission.

Plastic resin polymers are so durable that it can take hundreds of years for plastics to break down at sea, and some may never truly biodegrade in the marine environment.[2]

Marine debris is ubiquitous and can be found from remote artic regions to highly populated urban beaches.[3]

The North Pacific Gyre is the world's largest ocean garbage dump and is home to a floating island of trash, commonly called the "Eastern Garbage Patch," that is twice the size of Texas.[3]

A study conducted by the Algalita Marine Research Foundation in the North Pacific Gyre found six more times the mass of plastic particles than plankton in these waters.[4]

"Despite global treaties to prevent dumping at sea and minimize land-based sources, and increasing efforts worldwide to protect water quality, the quantity of marine debris in the world's oceans is increasing"
– California Ocean Protection Council

A Need for Legislation

9 in 10 Californians say the quality of the beach and ocean is just as important to them personally as well as for the overall quality of life and economy in the state.[10]

California's "ocean economy" is valued at $43 billion.[11]

On February 8th, 2007 the Ocean Protection Council adopted a comprehensive resolution on marine debris that outlines specific actions for California to prevent and reduce marine debris. The Council's resolution is not regulation, but if paired with strong legislative action, it could be a catalyst for state, and potentially nationwide and international action on marine debris.[5]

Legislation will implement some of the solutions to reduce and prevent marine debris pollution called for by the OPC. Specifically, current legislation - SB 898, SB 899, AB 258, AB 904, and AB 820 - will address the following: the need to eliminate discharge of plastic resin pellets, commonly known as "nurdles" (AB 258); reduce single-use plastic packaging and promote recycling (AB 904,AB 820,SB 898); greatly reduce derelict fishing gear (SB 898); and introduce phased bans on the most toxic chemicals in plastic packaging (SB 899).

Trash piled up in Ballona Creek after a storm. Photo courtesy of the CA Coastal

Marine Impacts

Marine debris has injured or killed at least 267 species world-wide, primarily through ingestion and entanglement.[2]

More than 1 million seabirds, 100,000 marine mammals, and countless fish have died annually in the north pacific from ingesting or becoming entangled in marine debris.[2,3]

Commonly ingested items include bottle caps, cigarette lighters, plastic bags, and polystyrene pieces.[2]

Sea Lion ingesting a plastic bag. Photo courtesy of the Whale Rescue Team.

Plastic marine debris can attract dangerous chemicals present in the marine environment, like PCBs and DDT. Researchers have found concentrations of these chemicals on plastics in the marine environment at nearly one million times background levels.[6]

Past and Current Solutions

In addition to legislation, solutions include Clean Water Act pollution limits - Total Maximum Daily Loads, or "TMDLs" - which are critical to removing trash from our shores. In 2001, The Los Angeles Regional Water Quality Control Board adopted TMDLs for the Los Angeles River and Ballona Creek, which sets a zero-trash target for this waterbody.[7]

Education is also important; over 50,000 people statewide participate in Coastal Clean-up Day each year. The state Education and the Environment Initiative will reach all public school children, grades K-12, with environmental curricula. Efforts such as these are critical for raising public awareness and achieving marine debris reduction.[8,9]

References: [1]U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of Public and Constituent Affairs, (1999) "Turning to the Sea: America's Ocean Future;" United Nations Environment Programme (1995) "Global Programme of Action for the Protection of the Marine Environment from Land-based Activities." Note by the secretariat. UNEP (OCA) /LBA/IG.2/7; [2]California Coastal Commission, (2006) "Eliminating Land-based Discharges of Marine Debris in California: A Plan of Action from The Plastic Debris Project;" [3]S. Casey, (2006) "Our Oceans are Turning in to Plastic, Are we?" Best Life: 103-109; [4]C.J. Moore et al., (2001) "A Comparison of Plastic and Plankton in the Pacific Central Gyre," Marine Pollution Bulletin 42: 297-1300; [5]Ocean Protection Council Resolution on Reducing and Preventing Marine Debris, adopted February 8, 2007; [6]Y. Mato et. al., (2001) "Plastic Resin Pellets as a Transport Medium for Toxic Chemicals in the Marine Environment" Environ. Sci. Technol. 35:318-324; [7]Los Angeles River Trash TMDL: http://www.waterboards.ca.gov/losangeles/html/meetings/tmdl/tmdl_ws_los_angeles.html; [8]California Coastal Commission Coastal Cleanup Day website: http://www.coastal.ca.gov/publiced/ccd/ccd.html; [9]AB 1548, the Education and Environment Initiative (Pavley – Chapter 665, Statutes of 2003) and AB 1721 (Pavley – Chapter 581, Statutes of 2005. [10]2006 PPIC Poll data; [11]National Ocean Economics Program, *California's Ocean Economy, 2005*.