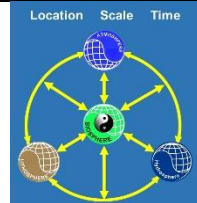




Applied Geography for Sustainable Living

From Eco-Brink to Eco-Brick: Sequestering Plastic Waste

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Applied Geography for Sustainable Living

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Applied Geography Education: the path to a more sustainable future.



The “garbage patches” of the North Pacific.

In the late 1950s and early 1960s, plastics were touted as the way to a bright future. As with many products of technology, plastics seemed to solve some problems, and then created others. It is estimated that about 75% of the garbage patches in the Pacific are plastic. Though large, it is of low density. This makes it hard to see from space, air craft, or even boats. Much of it consists of microscopic particles suspended in the top 4 meters of the water column. In some places,



rafts of large debris can be seen. Some of the debris ensnares animals.

Do you remember when we were asked to cut the plastic “rings” that held a six-pack of aluminum cans? It was to reduce and eliminate the hazard of that plastic waste posed to animals. It was a simple solution to the problem. It was so easy to do. Anyone could do it. It was a low-cost / no



cost solution. All it took was an awareness campaign. At that time, we were not aware of the added hazard that it could break down into smaller pieces that could be ingested by animals. It seems that “out of

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Applied Geography Education: the path to a more sustainable future

sight, out of mind” prevailed. As later observations revealed more of the plastics story, some of it was ingested by small and [large marine animals](#) and [sea birds](#). Larger plastic objects could be broken down over time into smaller and smaller pieces.



To a sea turtle, a plastic bag appears like a jellyfish (which is part of their diet).



The smaller the plastic pieces, to more organisms can ingest it. Plastic doesn't break down easily as can be seen in the bird carcass above.

And plastics were also evolving into newer and smaller forms for use in newer consumer products. Microbeads are a major source of microplastic pollution and are found in everyday personal care products. Micro sized plastics are so small that a wide variety of marine organisms can ingest them. Plastic particles have even been found in tiny zooplankton. As with so many things, there is [a plus and minus to micro plastics](#). For example, depending on the life-cycle stage of *Crepidula onyx*,



Credit: Matthew Cole, et al., courtesy of the journal "Environmental Science & Technology."

Credit UNEP's Global Programme of Action (see photo to left) the effects of ingesting micro plastics can be positive or negative. The complexity of ingesting micro plastics can be direct and indirect. They could be positive for one species enabling it to thrive which results in a negative impact on another species in the same habitat.

The very essence of science means the full story of plastics in the environment is an ongoing saga. It is a work in progress which may continue long after we are gone.

All wastes on Earth can only go in at least one of three places: the land, the air, or the oceans. It is a classic example of “what goes around, comes around.” We are still seeking solutions. But there is much to be said about the mantra “Reduce, Reuse, Recycle.”

Reduce the Use of Plastics in Your Life

This can easily be done but requires some self-discipline. Start with small easy steps: Say “No” to plastic bags, plastic bottles, drinking straws,



cups, and plastic utensils whenever you can. It is hard to be perfect, but every small step you take adds up over a life time. We switched to re-usable shopping bags and personal refillable drink containers. Eliminating using these disposable plastic items eliminates them from your trash. That helps to cut the flow of plastics to the rest of the environment. We no longer buy water in plastic bottles. We filter water at home and refill our refillable bottles.



and say
**NO
to
PLASTIC
BOTTLES**

Reuse Plastic in Creative Ways



We try to reuse plastic around the house. Here are a couple of examples.

- 1) We bought spaghetti sauce and the jars come with a plastic strap. Most folks remove the plastic and toss it. We made towel holders in the kitchen and bathroom with them. Below is a link (and

there many more out there) (<https://www.youtube.com/watch?v=bteudtIK4v8>) to give you more ideas. It can be an interesting exercise in creativity for you and your family.

- 2) We get goods delivered in cardboard and food in plastic boxes. We made a storage tray using the cardboard. The plastic food box is used to store small parts and placed in the storage tray. The trays are then arranged on a storage rack.



Recycling (?)

We have become a bit cynical about recycling, especially of paper and plastic. Recently China's refusal to take recycled paper and plastic from other countries is creating a [trash and recycling crisis in Los Angeles](#). As a result, our strategic goal is to reduce plastic use to a minimum and to sequester any plastic we use. Sequestering plastic means to pull it out of the main trash cycle and to put it into long-term storage using Eco-Bricks. This is not the perfect solution. Eventually the plastic will break down. For now, the goal is to remove as much plastic from the present-day environment as quickly as possible. This can be done using no tech / low-tech and no cost / low cost methods in any country.

From Eco-Brick to Eco-Brick: Sequestering Plastic Waste

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The Eco-Brick (aka Ecobrick, Bottle Brick, Ecoladrillo)

The diagram by Jo Stodgel is simple, clear, and says it all. You can do this at home, organize a group of children and adults in the community for trash clean up.

Plan to use Eco-Bricks in a community project. Visit the [Ecobricks](http://Ecobricks.com) web site for basic construction information. You are limited by your imagination guided with common sense for safe construction.

Can you imagine the sense of community and empowerment people can have by using the plastic trash from a beach clean-up to make park benches and shade structures with the Ecobricks made from that trash? With their own efforts, they now have a cleaner beach and new facilities using little or no money! Building with Ecobricks can done sustainably at the grassroots level. It is a win-win for local communities. 🌐



A community planter

Building with Ecobricks removes plastic from the environment, uses less wood, cement, and money. For best plastic sequestering, cover the plastic to shield it from the sun to minimize breaking down.

The Eco-Brick

The Ecobrick is made by tightly packing “clean” plastic waste into a dry empty plastic bottle. It appears to have been simultaneously independently developed at various places around the world. I sincerely doubt any of the “inventors” or innovators lose sleep over claiming the rights to it. I sincerely believe they want as many people as possible to make as many Ecobricks and possible.

Making an Eco-Brick is rather simple. Gather plastic refuse that is commonly found as litter on the beaches, rivers, fields, roads and streets.



By Jo Stodgel - www.Ecobrick.it, CC BY 4.0, <https://commons.wikimedia.org/w/index.php?curid=38203913>



An Ecobrick house

From Eco-Brink to Eco-Brick: Sequestering Plastic Waste

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The Future

The world seems to be drowning in plastic waste. If you can look out your door or window and NOT see mountains for plastic, be assured that somewhere in your local area plastic is being shipped away or buried to get it out of your view. There seems to be an endless supply of plastic trash to make many people potential Eco-Brick kingpins! Making Eco-Bricks might pull us back from

the Eco-Brink. But don't stake your future or the future of your kids on Eco-Bricks just yet. For the long haul, there are folks working on a way to eliminate the use of plastic in some areas.

Introducing Edible Plastics

Saltwater Brewery in Delray Beach, Florida, has created [edible six-pack rings](#) that feed marine life. [Photo from YouTube.] It remains to be seen if other beverage companies will follow. Others are developing [edible packaging](#).

As with any emerging technology, initial costs and implementation costs may be high. Increased use can bring these costs down.

This cost trend has occurred in the electronics, computer, and aviation sectors. Of course, there are detractors to edible plastics and packaging. Those businesses with a vested interest in petro chemicals and plastics will resist the diminishing role of plastic. This will be especially true if they focus on short-term gains and profits. The corporate world isn't the best champion of the big picture and long haul. The fundamental truth is the simple fact that only planet Earth is our home. If all of known geologic time were reduced to a 24-hour clock, people show up on Earth about a split second before midnight. We haven't been around very long. We may do ourselves in and die off because of our own pollution. Bacteria, ants, roaches and other life forms existed long before we came along. They won't miss us when we go. 🌐

