Earth Day takes place on April 22, 2018. The theme for this year’s celebration is End Plastic Pollution, which is dedicated to providing the information and inspiration needed to fundamentally change human attitude and behavior about plastics.

From poisoning and injuring marine life to the ubiquitous presence of plastics in our food to disrupting human hormones and causing major life-threatening diseases and early puberty, the exponential growth of plastics is threatening our planet’s survival. In light of these threats from plastic use, the Earth Day Network has built a multi-year campaign to End Plastic Pollution. The goals include ending single use plastics, promoting alternatives to fossil fuel-based materials, promoting 100 percent recycling of plastics, corporate and government accountability, and changing human behavior concerning plastics.

To celebrate this year’s Earth Day theme, SB&F has selected books and films that focus on environmental issues, particularly on plastic pollution and recycling.
Books for Children

Clean Planet: Stopping Litter and Pollution, by Tristan Boyer Binns. (Illus.; from the You Can Save the Planet Series.) Westport, CT: Heinemann, 2005.

In Clean Planet: Stopping Litter and Pollution, Tristan Boyer Binns tackles complex concepts, such as the greenhouse effect and the depletion of the ozone layer, with simplified, but accurate, explanations and diagrams. This book defines air, water, noise, and litter pollution and describes the sources of these types of pollution. Scattered throughout the book are small boxes that present fun and interesting facts or simple actions that the reader can take to reduce the burning of fossil fuels, the use of pesticides and fertilizers, and the accumulation of waste in landfills. The book also focuses a great deal on ways to clean up pollution or stop it altogether.

This book gives suggestions and describes methods for conserving resources, including water, soil, forests, wildlife, minerals, and fossil fuels. The science information is sound, and recommendations for aiding in conservation are good. In addition, the historical information is interesting, and the photographs are colorful and add to the information presented in the text.


This book in the series explains how many of the living things on Earth are still to be found and described, as well as things that affect biodiversity and what our world might look like in years to come. It looks at ways that human activity is affecting biodiversity and how that may play out in the future of life on Earth based on past instances of mass extinction, and also looks forward to the time when the sun will no longer support life on the planet. The schematics are clear, simple, effective, and likely to interest the students. The tone of the text is conversational without being silly or condescending to this age group.


Garbage and Recycling presents basic information about garbage and recycling in a colorful and easy-to-read format for early elementary aged children. The book combines short text segments on garbage, landfills, and recycling, with inset text, photos, or figures marked with a recycling icon to illustrate key points. A new concept is introduced each time the page is turned, keeping the reader engaged and connecting the main points throughout the book. Two pie charts with percentages marked, as well as text insets with some simple statistics and facts, are great ways to make scientific date accessible to kids; and they serve as examples of how information can be explained and presented using words, numbers, and pictures or icons.

Garbage Helps Our Garden Grow: A Compost Story, by Linda Glaser. (Photographs by Shelley Rotner.) Minneapolis,
This book, which focuses on home composting, is a nice, mostly pictorial description of the process from the addition of compostables to the pile through the harvesting of vegetables grown. The book is clearly aimed at the beginning or more casual composter, which is appropriate for the target audience. The process, as shown, is straightforward: Add ingredients and wait. There are photos showing the addition of water and an adult with a pitchfork turning the pile. Particularly appealing are the range of ages shown and the hands-on nature of most of the photographs. The question-and-answer section is nicely done and suggests a simple, relatively rapid, and very doable experiment that would be a great introduction to a larger composting effort.

*How on Earth Do We Recycle Plastic?*, by Janet Potter D’Amato and Laura Stephenson Carter. (Illus. by Janet Potter D’Amato; from the How Do We Recycle...? Series.) Minneapolis, MN: Lerner Publishing Group, 1992.

This brief, two-section book is part of a series about recycling for young people. The first section discusses plastics—their history, the different types of plastic there are, problems involved with their disposal, and ways that they can be recycled. The section ends with a list of things individuals can do to use less plastic or recycle it more effectively. The second section is a collection of craft ideas for using plastic materials that otherwise might be thrown away. The book has a very small science component, but it does have ideas for activities related to recycling that might be useful with elementary school groups.


This book is a delightful introduction to recycling for children. Bright, colorful, and accurate illustrations by Cathy Morrison accompany the text, both highlighting examples from around the world of various animals that recycle in their normal, daily existence. The language used is simple and straightforward, making it easily understood by even very young children. Familiar and unfamiliar animal examples are given. From the veined octopus to caddisfly larva and hermit crab to elephant, familiarity and fresh, new knowledge should captivate young readers and listeners alike. Each case of recycling is described in detail and explained in terms of how it helps the environment, as well as the creature being discussed. The final section of the book contains reproducible activities to further reinforce the text.


The book is designed for young juveniles, but older children and adults will certainly gain from the story, beginning in 1998, of a young girl, Isatou Ceesay (an English and Wolof speaker), and four adult women who would make a significant impact on the nation’s environment and
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Economy. Plastic bags had replaced traditional containers but the worn, discarded bags created dire ecological problems. By collecting and washing the cast-off bags, cutting them into narrow strips, and spooling these into thread, Isatou and the women crocheted plastic purses that were sold in the market. Teaching these skills to more women economically empowered all of them, brought in cash, and resulted in a home industry that provided purses to a growing international market, in turn leading to the creation of a nonprofit organization focusing on literacy and health.


*Plastic Ahoy* has many great attributes and is a great read. The author narrates an exploratory study of the Great Pacific Garbage Patch by a group of young scientists on a specially equipped ship. The garbage patch, three times the size of the continental United States, was discovered by a boat captain in 1997. The patch provides an excellent laboratory to study effects of plastic on the food chain. Three young female scientists designed and conducted the studies. They wanted to investigate the effects of plastic on plant and animal life. The author provides an engaging context to show how scientists use the scientific model. Excellent photos provide clear illustrations of the different apparatus the scientists used to gather samples and study their specimens. It also provides a realistic view of working on a less than glamorous research vessel.


This colorful book traces a single plastic bottle from manufacture, through its use as a water bottle, to its journey through the recycling process and its formation into a bottle again. Despite its somewhat cartoonlike look and the talking bottles, the book contains age-appropriate information about the manufacture, distribution, and recycling of plastic bottles. The fact that one bottle is followed through the story makes the narrative approachable for its young audience despite the unfamiliarity of the subject matter. The story follows a complete cycle, beginning with the new plastic pellets being made into bottles and ending with recycled pellets being turned into bottles again.

world of landfills, rivers, and oceans.


This book provides an overview of pollution and its causes, as well as its effects on the planet and living things. It also describes efforts to decrease pollution. It is easy to imagine this book as a reference text that would be used individually in researching information to add to a report on environmental science. The book also could be used by a small group of students who are exploring the environment and influences on the environment. The science information is sound and recommendations for aiding in conservation are good. In addition, the historical information is interesting and the photographs are colorful and add to the information presented in the text.


The book cleverly uses fictional stories to impart non-fiction information regarding taking care of the Earth. Trina, the lead character, shares facts about Earth’s water pollution, conserving energy, and taking care of the planet. Though the book is a picture book, it is also written as a simple chapter book. There are also activities for children to do to reinforce concepts from the stories. The book lends itself to helping young children conceptualize ideas about the environment, as well as learn about the structure of an informational text.


This book is a welcome addition to the shelves of any kindergarten to third-grade school library or local community library. The author, Kay Barnham, has created a book that exposes young children to concepts that can truly make a difference in their lives and the greater world around them. The book is divided into multiple short (2-3 pages) chapters that include boldface key terms easily found in the glossary. The book is full of ideas that children and students can use to minimize their impact on the environment, make environmentally responsible choices, and raise awareness of global environmental issues.


This book provides essential background information and a series of green science projects that get children actively involved in exploring recycling, and it does this in a way that makes them enthusiastic participants. Each of the five chapters includes an introduction to the topic followed by five or more experiments, demonstrations, and activities. Each of these includes a list of the materials needed, step-by-step procedures, and questions and prompts to help children interpret results. There are also ideas for turning some of these explorations into science fair
In *Recycled Science*, Tammy Enz and Jodi Wheeler-Toppen present over 30 projects that use common household items to demonstrate scientific principles. Projects are divided into chapters by main material (i.e., popsicle sticks, snack bags, etc.), and bits of reusable knowledge scattered throughout the book provide background on the science at work. There is a heavy focus on physics, though the book also touches on earth science, chemistry, and biology. Projects range in complexity from a simple wooden chain to a flashlight, and many are quite clever in their design. True to its claim, most projects rely only on materials that can be found around the house.


In an era where science is still not taught as a core academic subject in many elementary schools across the nation, this book is a must-have title for all elementary teachers from kindergarten through grade 6. This title is a consumable workbook that seems initially designed for environmentally conscious individuals to use at home with their children. It can be used in the school setting as well. The book asks students to think about topics that are current in our era: energy and climate, water and oceans, land and animals, health and food, and waste and recycling. Background information on each concept is given, and the activities are engaging for youngsters and ask them to think and be creative.


A children’s book about garbage did not sound promising, but trust National Geographic to publish an interesting and accurate book. It is filled with colorful pictures, many small informational boxes, and a range of topics from “Food for Thought” to “The Future of Garbage.” The book can be read by individual chapters or as a cohesive whole. It clearly and effectively describes issues with trash and debris, while offering suggestions for curbing waste. Many of the suggestions are simple ones that start in a home, like starting a compost pile, while others suggest collective efforts, like clean-up groups.


*Trashing the Planet* is a well-illustrated and readable summary of what we continue to do wrong on our Earth, in its oceans, and even in near-Earth space by wasting food and other resources and by not considering what happens when we are done with a product. Toxic substances in trash; shipping of trash we don’t want to deal with to other countries where there are no regulations to prevent hazardous use; and production...
of plastics that get into our oceans and that are not subject to biodegradation and thus remain in the oceans for centuries. Small particles of such plastics already are killing birds and fish because they mistake the plastic for food. In our space environment, among other hazards are zombie satellites. Many may not realize the immensity of the problems described here, and this book could be a much-needed wake-up call.

**BOOKS FOR ADULTS AND TEENS**


In 1987, reflecting the need to curtail ocean- and beach-littering debris, the U.S. government ratified Annex V (Garbage) of the International Convention for the Prevention of Pollution from Ships (1973) and its 1978 protocol, known jointly as MARPOL 73/78. That same year, the U.S. Congress enacted the Marine Plastic Pollution Research and Control Act to implement the agreement domestically. In support of these actions, the National Academy of Sciences was given the task of drawing up a nationwide implementation plan, along with suggesting strategies to accomplish the goals of the treaty and the legislation. This book is the final report of that effort. It is a very detailed report and, as such, is unique in the literature on marine pollution. It is an outstanding reference work that the serious student of marine pollution control would find most valuable.


*Complexity: The Evolution of Earth’s Biodiversity and the Future of Humanity* delves deeply into what it means to have biodiversity. A great text for either an introduction or thorough reading on the current and future states of life on Planet Earth, *Complexity* contains insight into the interplay between diversity and complexity. It weaves together the elements of Earth’s ecology, and demonstrates the interplay between plants and animals. It argues for an obligation towards contemporary problems in conservation and maintaining biodiversity. Furthermore, *Complexity* discusses the diverse and distinct forms of life we encounter, from the small and microscopic prokaryotes to humans.


*Deceit and Denial*, by Gerald Markowitz and David Rosner, is an eye-opening examination of the chemical industry in the United States and its tactics of influencing public policy regarding occupational health and safety standards and environmental regulations. But, as the title suggests, it is more accurately an indictment of the practices of the chemical industry and a warning to the American public that the results of internal corporate health and safety research studies are often concealed. In addition, the book carries the message that, even when these studies are conducted by external, purportedly independent,
interests and reveal mixed or uncertain results, it is wiser to assume that a serious danger to the public health more likely than not exists. The concept of “environmental racism” practiced in Louisiana, one home of the petrochemical industry, is discussed and supported with statistical evidence.


This book does an outstanding service to at-risk species by discussing in supported detail the previous Big Five Mass Extinctions and how the current situation compares (sadly and almost unbelievably, the extinction rate over the last 500 years is faster than during the Big Five Mass Extinctions). Although the data are solemn and sobering, the author refuses to take a defeated stance. He narrows the causes of damage to three main human impacts: 1) energy use, 2) food production, and 3) our financial system. Barnosky provides suggestions for the average person to make a difference; namely, spreading the message of the extinction crisis, improving food buying and consumption, voting for leaders who recognize the problem, and decreasing the carbon footprint.


Photographer Gary Braasch’s new book, *Earth Under Fire*, presents his “World View of Global Warming,” a timely, thought-provoking, accessible, and informative overview of what is at stake in deciding how to address the challenges that climate change poses. Chapters cover familiar examples of the impact of global warming on polar regions, glaciers, and wildlife. This is not, however, a doomsday book. The final chapter and the epilogue present the choices facing us in deciding what future we will move towards; these chapters emphasize that, although we have the tools to choose a “better, cooler, more humane” future, it is by no means certain that we will make that choice. Most of the volume is given over to text that does an excellent job of summarizing the science behind the photos, explaining both the process of scientific research and the implications of the results of that research.


This volume is a must read for anyone involved or interested in the future of energy generation and the consequences of global warming. It is a careful and readable review of the research and development that has occurred in the areas of solar energy (photovoltaics and thermal), biofuels, ocean energy, geothermal energy, and modifications in the burning of coal. The overall goal of this volume is to examine the feasibility and cost-effectiveness of recent developments in energy research and development and the effects of these developments on reducing greenhouse gases. The volume provides a clear and
encouraging view of projects as well as hopes for the future in areas like batteries and fusion power.


This book is a timely, excellent text for upper-level classes in anthropology, sociology, philosophy, and scientific or environmental philosophy. Lyrically written, haunting in its imagery, it’s also a good read for anyone interested in the human-nature dynamic. The author examines humanity’s emotional and spiritual relationship with the physical world. Using the traditional, historic world view of Alaska’s native peoples as a model, he notes the urgent need for a return to a time when people were immersed in their natural world instead of set apart from it.


This volume is a passionate effort to get people’s attention about climate change. Ward warns that rising sea levels are a key risk to our future, and one that is being ignored. The fact that he describes being discouraged (because the topic is too scary) from sharing his theory of mass extinction due to anoxic oceans only increases the stakes of his project.

**Flooded Earth** is an odd combination of dramatic future predictions, calls for action, and remarkably long descriptions of scientific detail. **Flooded Earth** is an interesting read, but it is unclear how wide an appeal the book will have for a more general audience.


Stanley Rice has written an interesting book that includes a diverse and complex discussion of the importance of the botanical world to humanity. In the text, Rice covers such diverse subjects as photosynthesis, climate change, agriculture, hydrology, and landscape ecology. The discussion includes interesting information, and sometimes-controversial data, to establish the importance of the botanical world to both the history and present-day condition of humanity. The best part of the work is the diversity and interesting data that Rice presents to the reader to support his argument for the importance of the botanical world.


**Green Plastics** is an introduction to the science of biodegradable plastics—bioplastics. Written for the nonchemist at an easy-to-understand, layman’s level, this book could conceivably be used as a textbook for a science elective intended for nonscience majors. Although there are no end-of-chapter problems to work out, this book does conclude with an appendix entitled “Make Your Own,” which provides descriptions of experiments or projects, with detailed, step-by-step instructions, for synthesizing several plastic and bioplastic materials. Because of the ubiquitous nature of plastics, the author proclaims our era as the “Age of Plastics,” which may be an accurate assessment.


**Hot** is an easily read, nontechnical, well-researched book based on the best climate science sources. It honestly paints a foreboding picture of
how Earth’s climate is expected to change if the world’s societies allow continued uncontrolled increases of greenhouse gases in the atmosphere. The author has also researched the mitigation of and adaptation to climate change—that is, how we can avoid the unimaginable and manage the unavoidable. It is clear that different adaptation strategies are, and will be, more effective or less effective in different places as the local and regional impacts of climate change differ. The last two chapters address mitigation. The book presents an ambitious program of what can be done: concerted and coordinated intergovernmental and global economic action that could go far to mitigate the impacts of climate change.


If you are a middle school or high school science teacher looking to add some depth or dimension to your environmental science curriculum, this could be a book to consider. *Hydrosphere* is not only about water, but more importantly, about its flow through the rivers, lakes, and oceans and its confluence with the Earth, space, and life. The central mission of the book is the pressing issues affecting our water supply and its quality. The organization of the material leads the reader to the inescapable conclusion that the Earth’s water supply and quality are indeed fragile and fundamental to the survival of life on this planet. If steps are not taken on an international scale to protect our water now, we may be in imminent danger of losing it.


Biosphere 2 was built in 1991 as an enclosed living environment that would provide the eight people living there for two years with all the essentials, such as air, water, and food. The biosphere was modeled after the Earth’s biosphere. Another goal for the project was to create an environment where humans could live on other planets, such as Mars. That being said, the author, Mary Kay Carson, describes the design of the model and its operations for the eight-person team that lived there for two years. Today, the biosphere is a research facility for University of Arizona students and staff. Earth scientists are using Biosphere 2 to research ways to solve problems with soil erosion, test models used to make predictions about climate change, and conduct experiments that will benefit rainforest conservation.


In *Life of Earth*, Stanley Rice presents much of our current understanding of cosmology, geology, and biology as he tells how our planet got to its present state and what seems likely for the future. The eight chapters give us the story from a point of view that is new and different from the usual approach. Rice provides the evidence needed to understand how we have arrived at our current form and behavior, and he introduces the idea that our survival selected the mental systems that make civilization and religion work for us. He uses our understanding of the
cosmos to give a view of our, and its, future and end.


The book is an account and awareness of an accidental discovery of plastic litter, 200 miles in diameter, floating on the surface of the mid North Pacific Ocean. While predominantly factual, it also is personal and inspirational at times, giving a sense of an individual journey and discovery, complete with self-reflection and assessment of the anthropological impact on yet another natural resource. The work includes several pages of interesting, color photographs that help document and underscore the scope and gravity of the problem.


Freinkel takes eight objects that are part of our everyday life, examining how they’re made (which includes a cogent history of plastics); how they impact our life and health; and how humankind can realize better ways of disposing of plastics. It is this last piece that underscores the thoughtful examination of science, although the present situation of disposal is grim. The purpose is clear: here’s where we are, how we got there, and what we can do to improve the situation. By delving into the science, history, and sociology behind these eight objects, Freinkel provides a basis for a more informed inquiry into the subject of how plastics shape and drive our lives.


*Pollution* is part of the Current Controversies series, which has almost 60 titles. Each book in the series explores social, political, and economic controversies, and the contents are taken from a variety of resources, including books, scholarly journals, newspapers, government documents, and position papers from both public and private organizations. The original sources are often edited for length and to ensure their accessibility for a young audience. Every attempt is made to present the variety of opinions that is being expressed on the controversy.


Exceptionally active and fecund, humans have had a profound effect on the planet they inhabit. Asteroids and tectonic movement accounted for at least some of the five major extinctions, or biotic attrition, events that have occurred across more than five hundred million years. Yet it is likely that humans are pushing the sixth, which is occurring now. Will human ingenuity reverse the course? At present, an increase in atmospheric levels of carbon
dioxide is reducing species diversity more insidiously, as in the way carbon absorbed by the oceans is making them more acidic and a deadly environment for coral. Those with a science background will find much to enjoy, too.


Like most of the David Suzuki books I have read, this one is excellent. Readable, interesting, containing content varying from the scientific to the personal to the cultural, and with folktales juxtaposed next to scientific evidence, the book makes you keep reading just to see what is on the next page. Included in every section are stories, examples of how people from different cultures live and use resources, examples of interactions among organisms and the environment, and structured opportunities for personal reflection. The reader will also appreciate the fact that Suzuki includes not just text, but activities, thought-provoking questions, a glossary, and even some self-check questions for review.

**FILMS**


_Eco Company_ is a national TV show of which “Our Beaches & Plastic” is one of the 20-minute episodes. Each is hosted by a diverse group of teenagers with a goal to “chronicle the passions of a new generation and to answer their questions.” The show is entertaining, fast moving, and educational. Viewers are empowered with advice to take action at home, care for their own neighborhoods, and to volunteer. “Our Beaches & Plastic” includes four-minute long sections. Each section can be viewed separately and used as a starting point for a more extensive discussion. Students in 3rd grade to high school could learn from and enjoy this show.


Directed by a teenage boy, this film looks at the question of what happens to plastic when we throw it away. Dylan decides to find out by following plastic trash to its end source which is the ocean. As the "downhill to everything", that great blue expanse serves as an unintentional dumping ground and a transportation system as countless pieces of plastic debris wash up on shores around the world. Marine life often ingest plastic debris which ends up affecting human health as those creatures end up on dinner plates.

The film also explores the history of plastics and how they came into wider use due to World War 2 as well as the science of plastics, which breaks down the fact that they simply do not break down in nature.

Plastic Paradise is an easy-to-watch and understand overview of the problem of plastic waste accumulating in the oceans. Angela Sun takes the viewer on a journey from Midway Island, where damage to marine creatures is particularly horrendous and heartbreaking, to conferences, where industry representatives dismiss the ocean plastic waste problem. She interviews scientists who are researching the extent of the ocean plastic trash problem and the consequences for ocean ecosystems and activists who are raising public awareness and lobbying for regulatory change. The beautiful marine photography and charismatic people keep the content accessible and interesting as the film covers a wide range of complex issues.


Just one word: plastics! They have transformed most aspects of our lives. But tragically we now realize plastics can’t really be thrown away and now are an integral part of our oceans, like algae and plankton. How has this happened? This film follows scientists from the U.S., Canada, UK, and the EU, who are working in the field and lab, are finding the missing plastic and perhaps more importantly shedding light on how microplastics are affecting the marine food web. While this film may not have the visual impact of David Attenborough’s Blue Planet II series, it is a winner as a supplement in environmental science classes. Students should be stimulated by problems in microbiology, toxicology, and biogeochemistry that the filmed scientists are investigating in the plastisphere. All should be challenged by how to curtail plastic pollution in the oceans.