



Efforts to Restore Balance with the Earth

This guidebook introduced various environmental issues and their causes. What have we learned? Different points might come to mind. Someone might realize that one environmental problem leads to another. Or that by giving up little conveniences, we can help to improve the environment. Please talk these things over with your friends and see what else you can discover.

Next, we will move on to an encouraging topic. In Japan and around the world, people have started to efforts to restore the beauty of our Earth. This page illustrates some of these efforts. Let's all try to learn more about these and other approaches to restore our planet.

Working with Other Countries to Solve Environmental Problems

Environmental problems in developing countries, such as deforestation and desertification, are sometimes caused by people exploiting land for farming or cutting trees for their daily living needs. Water shortages and contaminated drinking water are sometimes caused by a lack of technology. Since many developing countries are important partners that support the livelihoods of the Japanese, Japan offers assistance by sending them money, supplies, people and technology to help. This is one way Japan tries to help solve environmental problems in distant countries.

Preservation of SATOYAMA

Developed countries

Developing countries

(Aid from Japan)

Rainwater

Natural energy

Biomass

Local production for local consumption

Light rapid transit

Solar power

Technical guidance for agriculture

Reforestation

Rooftop greenery

Wall greenery

Cooperation in construction of groundwater dams and water supply systems, well-digging

Modal shift

Cars less dependent on fossil fuels

helping solve energy problems by providing geothermal power generation technologies

Biotopes



Start Living an Eco-friendly Life Today!

There are so many eco-friendly things you can do to get started, and lots of them are easy and simple to do. So start with whatever you like.

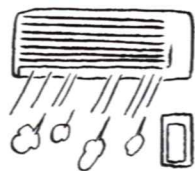
1 Properly separate your recyclables.

When it comes to your used milk cartons, paper, plastic, PET plastic bottles, glass bottles, and cans, if you separate them properly and put them outside on the right day according to the local pick-up schedule, they will be sent to factories, recycled, and reborn as new products. For example, milk cartons are recycled into toilet paper, PET bottles become fleece clothing, and plastic gets used in new plastic products.



2 Set your thermostat to save energy.

Set the thermostat of your air-conditioner at 28 degrees Celsius in the summer and 20 degrees in the winter. If you feel too hot, take off a layer of clothes. Too cold? Put on a sweater.



3 Repair and re-use.

Repairing broken stuff is cool! So when your stuff gets broken, try to fix it. When we look back in history, like in the Edo Period (1603-1867) in Japan, there were professional workmen in every field that could fix almost anything, and everybody used things with great care. We should learn from these examples. So ask your parents how to repair broken stuff, and give it a try yourself. It is also important to buy durable and long-lasting things, and then take good care of them so they last a long time.



4 Use refillables.

Many things we use everyday can be refilled instead of buying new containers or packages for stuff like shampoo, detergent, soap, ballpoint pens, etc. You can even find instant noodles in the market that can be brought home in refillable packages. If you use more refillable things, then there is no waste generated in the first place.

5 Don't waste food.

Japan's ratio of food self-sufficiency is only 40 percent, but at the same time a quarter of the country's food supply is thrown away. Some have called Japan a "country that wastes food." If you leave food on your plate, it's wasted. If you eat everything in your dish, you can help reduce food waste and be healthier at the same time. So when you aren't so hungry, ask for less food.



6 Come up with other uses for things before you throw them away.

Even if you think something is ready for the trash, it could still be used for something else. For example, ripped clothes can be used as cleaning rags, torn socks are really good for polishing shoes, and old toothbrushes are great for cleaning things with small details. It's fun to come up with new things to do with used stuff. Try thinking of new ideas for your own household.



ted, and lots of them are easy and simple to do.

7 Ride a bike whenever you can.

Drive in cars less. Use transit, ride a bike, or walk instead.

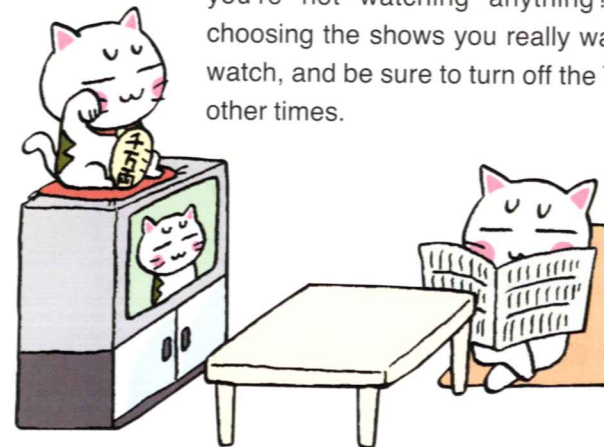


8 Cut standby energy used by electric appliances.

Unplug your electric appliances when they're not in use. If you use an electric water heater/warmer, turn it off when not needed, because they use a lot of electricity just to keep water at the same temperature.

9 Reduce your TV time.

Do you keep your TV on even when you're not watching anything? Try choosing the shows you really want to watch, and be sure to turn off the TV at other times.



10 Switch off and unplug appliances whenever you can.

It takes a lot of energy to generate electricity, and this is one of the major causes of global warming. So switch off appliances when you don't need them. Turn off the main power switch of your TV and unplug electric appliances when not in use, because they still use a little power when they're plugged in, even when they're turned off. This can add up to a lot over time.



11 Be on the lookout for eco-marks on products.

You've tried to separate your trash and recycle things before, haven't you? Then it makes sense to buy products that have recycled content and other eco-friendly features. There are a lot of green products available to choose from. Look for eco-marks before you buy.



12 Bring your own bag.

Always carry your own bags whenever you go shopping. Say "No thank you" to plastic bags when they are offered at stores, and "No" to book covers at the bookstore. Tell the rest of your family to do the same thing, too.



13 Use water wisely.

Of all the water on Earth, only about 0.01 percent is actually available for us to use, so we need to be careful and conserve it. Your parents are happy when you use less water too, because it cuts their water bill.



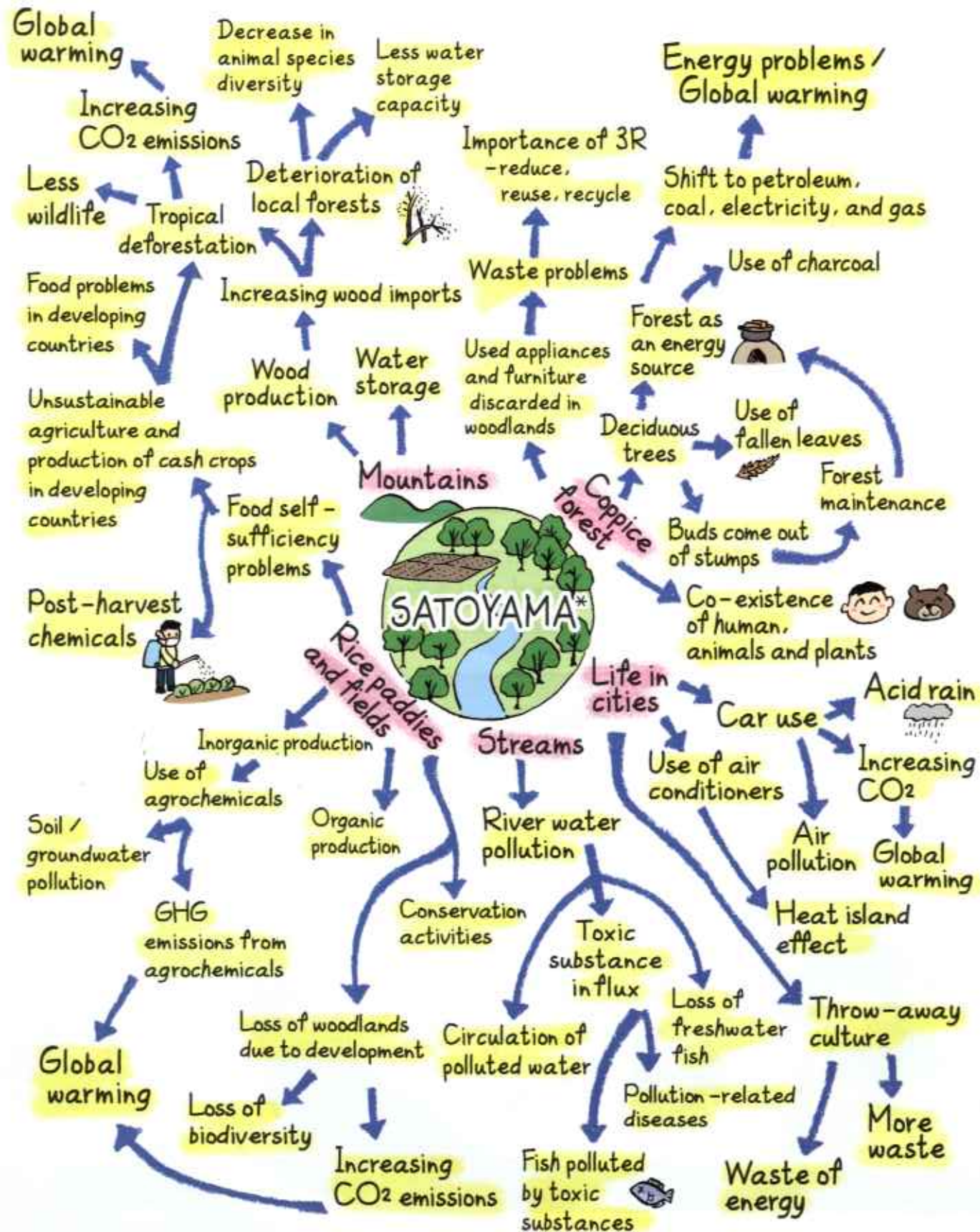
14 Carry your own water bottle.

Water bottles are convenient to carry, because you can have drink of water anytime you're thirsty. Some are even insulated so they keep liquids hot or cold. Always carry your own water bottle with you, and that way you can easily reduce the number of PET bottles and cans that need to be recycled. Use your own water bottle, and reduce waste!



Japan's Traditional Rural Landscapes Teach Us Much about Environmental Problems

Environmental problems can be found near almost anyone's home. If you hear people talk about a place nearby and say, "That used to be a beautiful little forest," then you should go and have a look. You'll likely find clues to a variety of environmental problems like the ones shown below.

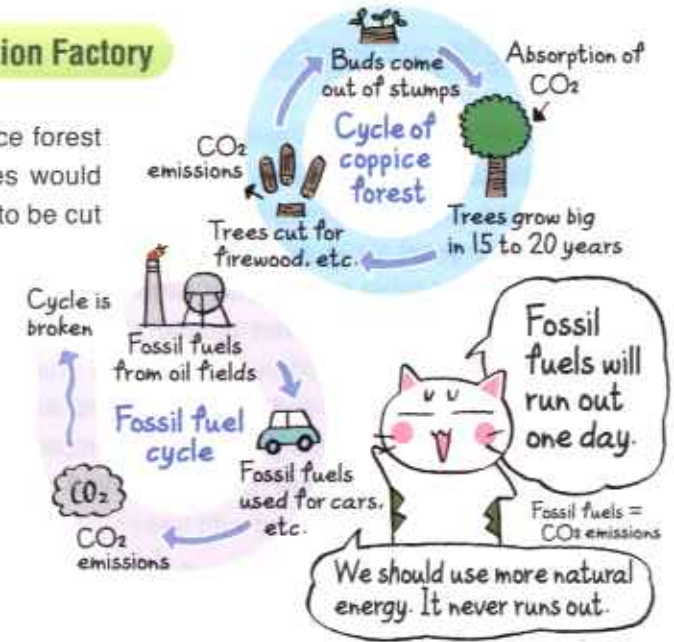


*SATOYAMA SATOYAMA is a zoning concept originated in Japan, which consists of secondary forests (coppice woodlands), farmlands, agricultural ponds, and grasslands surrounding villages.

Stories from a Coppice Forest

The Coppice Forest Was Like a Fuel Production Factory

In the past, people in Japan would create a local coppice forest (or woodlot) by planting and caring for trees. The trees would continue growing for many years and provide branches to be cut from time to time as a source of firewood and charcoal. But as people changed their lifestyles in the last century, this practice disappeared and was replaced by the consumption of large amounts of fossil fuels like oil and gas. Fossil fuels are resources that have accumulated in the Earth over hundreds of millions of years, but humans have tried to take all these fuels out of the ground in just the last hundred years or so. That's why the shortage of energy has become a big problem in Japan and around the world.



Coppice Forests Turned into Garbage Dumps?

After being used in their traditional roles of providing firewood, many coppice forests were deserted. In some places, people would illegally dispose of large items, trash, and other kinds of unwanted materials there. In some cases, they even dump things that contained dangerous substances that could pollute the groundwater.



Fossil fuel Substances formed from the remains of ancient plants and animals, which were transformed by temperature and pressure deep in the Earth. Like fossils, these substances come from things that lived long ago, so we use the word fossil to describe them. More than three-fourths of the energy consumed by humans comes from fossil fuels.

"Green" energy . . . Any energy that comes from natural sources, such as geothermal heat, sunlight, wind, wave power, and tides. Canola oil (from the rapeseed flower), and firewood are also considered "green" energy sources because many things in nature are green.

Stories from Green Areas and Forests in Japan

Why Many Local Forests Were Lost

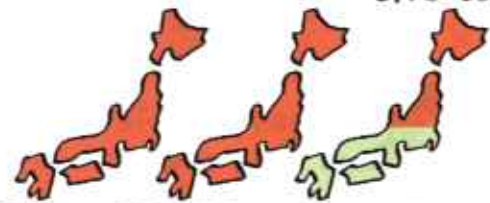
The role of local coppice forests as an energy source in Japan largely came to an end with the widespread use of fossil fuels. These lands then faced many years of change and development. Japan is a mountainous country with a limited amount of flat land, so when people wanted to build new towns or golf courses, they would often do this by flattening hills and filling in valleys. Advances in building technologies also made it possible to put up apartment buildings even on slopes that were once covered with trees.



Tropical Forests in Danger

Forests in other regions of the world are even more endangered. Forests covering an area about 2.5 times larger than Japan's total land area disappeared between 1990 and 2000. Above all, tropical forests face the most serious threats. Most of these are in developing countries, which have continued to cut down forests to make room for farms and pasture and for human populations. They also clear-cut the forests for timber (for construction) or woodchips (to make paper) and export these to developed countries, or cut the forests to plant crops to sell. Tropical forests account for about 47 percent of the world's total forest area, and the loss of these forests affects the natural atmospheric circulation and has an impact on the whole planet. Another big worry is that about half of the species on Earth live in tropical forests, and many of them are endangered by the loss of these forests.

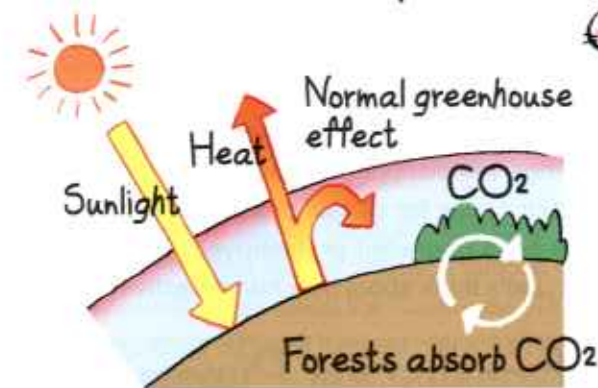
Global forest loss between 1990 and 2000 was 2.5 times as the area of Japan.



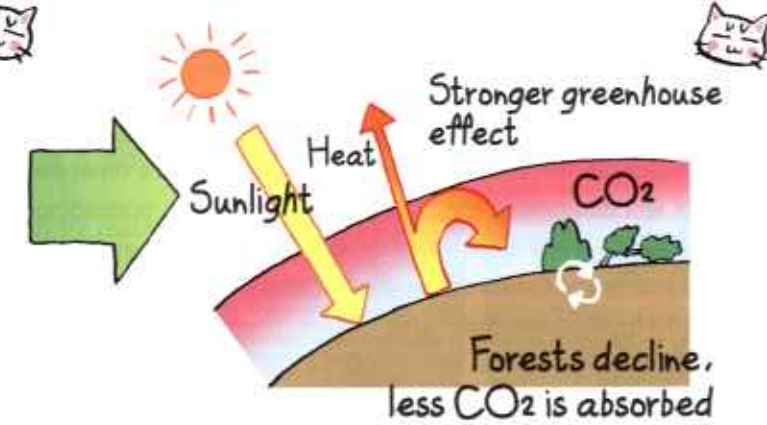
Does the Loss of Forests Make the Earth Warmer?

Global warming is causing many problems. Ice sheets are melting, sea levels are rising, and the world's climate is being disrupted. Do you know how this works? Global warming is caused by an increase in the density, or thickness, of the greenhouse gas layer encircling the Earth, which works like the plastic sheets used on the roof and walls of greenhouses to keep the heat in. Carbon dioxide (CO₂) accounts for about sixty percent of all greenhouse gases, so if we reduce CO₂ emissions, global warming can be reduced. Forests play an important role in reducing the amount of CO₂ in the air, because trees absorb and fix CO₂ and also generate oxygen. Now you can understand why our planet will become warmer if the forests shrink—because fewer trees will be there to absorb CO₂. We must remember that we should not depend only on trees to reduce global warming, but also make an effort to reduce the generation of CO₂ itself. Let's all think about what we can do together. There are many clues hidden in this book.

Under normal temperatures

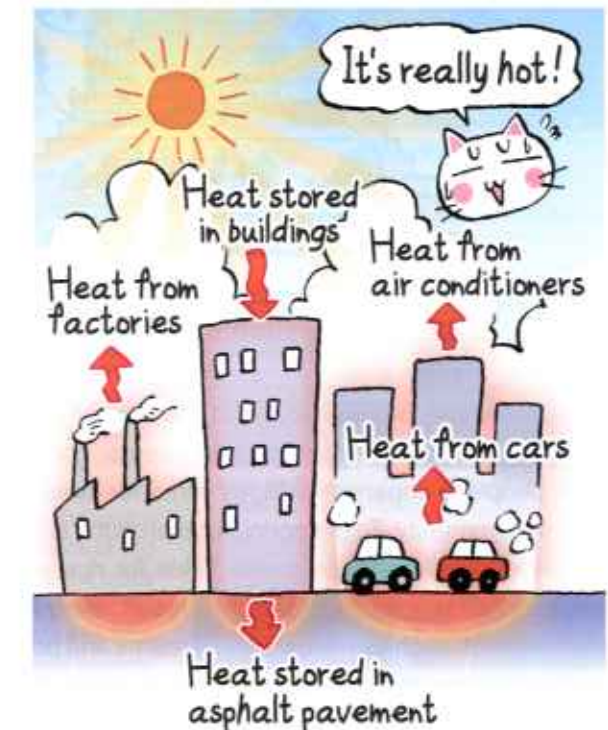


When the natural balance is lost



Heat Island Effect

Local warming is more serious in large cities like Tokyo than in rural regions. For the past 100 years, for example, while the average global surface temperature has risen about 0.6 degrees Celsius, and temperatures in some of Japan's largest cities have risen by two to three degrees. If we look at a distribution map of surface air temperatures, the heated city center looks like an island in a sea of cooler temperatures. This is why the phenomenon is called the "heat island effect." It is causing a variety of problems, including an increased number of uncomfortably hot "tropical nights" and local torrential downpours.



Terminology 02

Greenhouse gases Gases that increase the temperature of the Earth's atmosphere. In addition to CO₂, these include methane from garbage and animal waste, CFCs used in air conditioners, nitrous oxide from chemical fertilizers, and so on.

Carbon dioxide (CO₂) When fossil fuels such as oil and coal are burned, carbon dioxide is generated. It prevents excess heat on the surface of the Earth from escaping to outer space.

Small Insects Reveal the Connections between Living Things

When we look in our garden or visit a nearby park or forest, if we are patient and watch closely, we can see many different types of organisms. At first glance, they seem to live in peace, but in reality, they struggle to survive. For example, caterpillars that eat the leaves of plants are sometimes eaten by frogs. Then, the frogs are sometimes eaten by snakes, and they, in turn, become food for eagles or small animals. When any of these animals die, fungi and bacteria in the soil decompose them, and they serve as nutrition for plants to continue growing. We call the predator-prey relationship a "food chain," and organisms whose lives are sustained by food chains and their environment are called "ecosystems."



Ecosystems Are in Danger

What happens, then, if certain living things disappear from the network of organisms in an ecosystem? In the example mentioned above, if the caterpillars disappear, the frogs will disappear. Then snakes that eat frogs will disappear, too. The impacts will keep spreading. The major cause for certain organisms to disappear suddenly is because their habitat, or living environment, has been degraded or destroyed. They lose their homes because of the destruction or contamination of habitat. Let's think about how human activity has a bad effect on organisms.



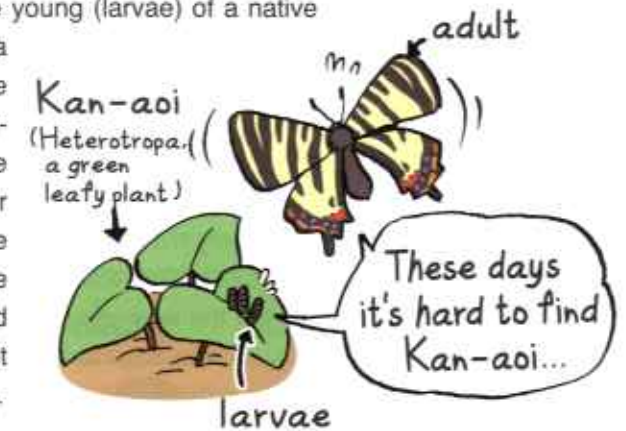
Ecosystems That Humans Help to Create

Human beings do not always hurt the environment. Sometimes they help to create and enrich ecosystems. For example, in the past, people in Japanese villages cared for forests near their village or community. To get agricultural produce and wood for fuel, people cleared forests to create fields for rice and vegetables, and planted fast-growing trees. As a result, many kinds of natural environment, such as the banks of streams and ponds, wetlands, and well-lit forests were created. Then, a variety of plants and animals that preferred the water's edge or well-lit forests came to live in SATOYAMA. Insects, wild birds, and small animals also gathered there to look for food. Thus, SATOYAMA turned into environments where many living creatures could thrive.



Why Are Gifu-chou Butterflies Disappearing in Japan?

Thanks to the ongoing efforts of local people, traditional SATOYAMA in Japan grew into wonderful places for many living things to flourish. Sadly now, waves of development (cutting forests, building roads and buildings) over recent decades have put it in danger. For example, we now know that, when the number of butterflies and swallows drops, SATOYAMA is in danger. The Gifu-chou, the young (larvae) of a native butterfly in Japan known as the "Goddess of Spring," eats a green leafy plant called *kan-aoi*. In the forests where we see fewer *kan-aoi* plants growing, butterflies are not seen much anymore. Swallows, too, are not seen very often anymore, because there are fewer and fewer places where they can collect their food and the mud they need to build their nests. Any drop in the number of native organisms is a warning that our forests are threatened. You should ask the adults in your neighborhood what kinds of living things are disappearing. This way you'll get a big picture of how the actions of humans affect living things.



Foreign Plants and Animals Can Destroy a Stable Native Ecosystem

An ecosystem can be seriously altered or destroyed by plants and animals that are not native. A famous example in Japan is the case of a fish called the black bass. They come from other places, are tough, and they eat native fish. Also, some other, now familiar wild plants, such as dandelions, Persian speedwell, and purple dead-nettle actually came from outside of Japan. They are called "naturalized plants," and their numbers continue to increase. Because they are tough, they can spread widely and are difficult to get rid of. They can even push native plants out of their own habitat. If you simply begin with observing what is happening to your familiar native plants and creatures, you'll become more aware of the greater environmental problems we all face.



Efforts to Protect Wildlife Habitat: Sone Higashi Elementary School in Kita-Kyushu, Fukuoka, Japan

Students of Sone Higashi Elementary School work to protect the environment by picking up garbage that washes up along the 500-hectare Sone tidal zone close to the school. The initiative is called the "Keep the Sone Tideland Clean Campaign." When it was launched in 1993, only children from the school were involved. Now, parents, people from local community associations, the local fishery association, and from a local nursery school come to volunteer. Thanks largely to the campaign there has been a return of many horseshoe crabs, recently thought to be in danger of extinction. Besides cleaning up the tidal lands, participants study the egg-laying habits of the crabs and the conditions of egg laying, such as water and air temperatures, water quality, and the sites where the crabs like to lay their eggs. Volunteers also monitor more than 200 species of wild birds that visit the tidal wetland every year. The volunteers discovered that some of the birds flew from overseas to Japan and back, emphasizing the lesson that protecting the local environment is connected to protecting the global environment.

