



Tending the Garden

Stewardship of Biodiversity and Endangered Species

God created an abundant Creation, filled with glorious creatures both large and small. As stewards of God's Creation we are called to protect all life, to keep and care for the garden. The blessing of fruitfulness is given to all of Creation in Genesis, and it is our duty to ensure that all life is allowed the opportunity of fruitfulness. The Creator blessed the Earth so that all creatures will prosper with great abundance and diversity.

The protection of biodiversity, or the diversity of *all* life, is an essential part of our roles as stewards of Creation. The current rate of extinction is 50 to 1,000 times the natural rate of extinction in some areas. Since the early formations of the U.S. colonies, at least 500 species native to the United States are known to have become extinct.

The loss of one species can have significant effects across all of creation. In Central and South America a single tree may have as many as 1,200 different species of beetles, of which about 160 are specialist feeders that live on that specific species of tree¹. Imagine how many specialists there are with 50,000 species of tropical trees. If the tree becomes endangered or extinct, so do the species that are intrinsically linked with it. Worldwide, at least 726 animal and 90 plant species have gone extinct since 1500².

Despite these upsetting realities, there is hope for change. With a better understanding of biodiversity, active citizenship, and a strong stewardship ethic we can help to preserve and promote biodiversity and protect the endangered species under our care. "In wisdom you made them all, the earth is full of your creatures" (Psalm 104:24), and in wisdom we can protect God's creatures. It is our role to ensure that the garden does not wither and die, but that it is tended in order to enable its fruitfulness and its productivity.

Biodiversity usually refers to the diversity of different species, but also includes ecosystems and the genetic diversity within a given species. Biodiversity becomes richer as you move closer to the tropics and equator in latitude, as well as other localized hotspots such as the California Floristic Province. Estimates of biodiversity range widely. Although



CHRISTIANITY COMES CALLING TO THE HILL

In early April 2004 Dr. Joseph Sheldon received a call from a senior staffer of the House Committee on Resources inviting him to testify on April 28 at the hearing on a bill that if enacted it would significantly weaken the Endangered Species Act. The self proclaimed “country boy” from Oregon is a profound writer on Christianity and the environment and at the time was a Professor of Biology and Environmental Science in Pennsylvania. His task was to present a 5-minute oral testimony based on a Biblical perspective of creation care. Dr. Sheldon’s testimony was followed by an extensive question period by the Senators on the committee, many of whom were interested in hearing his opinions on creation care. One of the Senators was so intrigued that he followed up with questions via email later that week pertaining to species protection from a Christian perspective. What a tremendous opportunity to speak for God’s Creation and influence the care of Creation.



1.75 million species have been described, many more exist. Insects are especially abundant with around 950,000 known species. It is estimated that there exists between 4 and 112 million species². No matter what the number, God’s Creation represents an amazing and diverse storehouse of biological wealth.

WHY SHOULD THE CHURCH CARE ABOUT BIODIVERSITY?

We are called to be stewards of God’s good Creation, to work and take care of the garden (Genesis 2:15). After God destroyed the Earth in the great flood humans were brought back into covenant with God. However, it was not only humans who were brought into covenant with God but “every living creature that is with you, the birds, the domestic animals and every animal of the earth with you, as many as came out of the ark” (Genesis 9:10). The story of the flood is part of the larger biblical principle of fruitfulness. Humans are to enjoy the fruit of the Earth, but also have the responsibility to take care of it as well. The Creator blessed the Earth so that all creatures have the opportunity to prosper with great abundance and diversity.

Some of the greatest natural wonders of Old Testament times are now lost because of over consumption. Lebanon was a mountainous land covered with one of the finest forests the world had ever seen. Now Lebanon is deforested and stripped of soil. “The trees of the Lord are watered abundantly, the cedars of Lebanon that he planted. In them the birds build their nests...” (Psalms 104:16-17). Where are the birds to nest if we remove all the cedars?

Psalm 104 continues by stating that God’s creatures are valuable not because of their usefulness to humans, though some are useful, indeed essential, to us. Rather, they are valuable to each other, the cedars are valuable as places for birds to nest and the mountains are valuable as places of refuge. Most importantly, rocks, trees, birds, and animals are valuable simply because God made them. As God’s image bearer we are blessed with a special relationship with God and with creation. In the end, God looked at all that he had made and saw that it was “very good” (Genesis 1:31).

Celebrate St. Francis!

Holding a Blessing of the Animals service recognizes the ideals of St. Francis of Assisi, who wrote a Canticle of the Creatures, an ode to God’s living things. “All praise to you, Oh Lord, for all these brother and sister creatures.” Christians everywhere celebrate the feast of St. Francis of Assisi on October 4 by blessing their pets in the spirit of this patron saint of animals and ecology. Visit www.ncecojustice.org/animalblessing.html for more!

BIODIVERSITY TODAY & TOMORROW

Today, we are seeing species extinctions at alarming rates, 50 to 1,000 times the normal rate of extinction. Habitat destruction, pollution, overharvesting, invasive species, endangered species trade, and many other factors are to blame for the current extinction problem. Currently conservation biology is examining how to protect the greatest number of species with the limited resources at their disposal. One of

the top methods for protecting species is the designation of hot spots, selected because of the greater number of rare or endemic species in an area. There are roughly 25 regions considered to be biodiversity hotspots³. Current international protection ranges from Migratory Bird Treaty Act to the Convention on International Trade of Endangered Species, or CITES. CITES regulates or prohibits commercial trade in globally endangered species or their products.

BENEFITS OF BIODIVERSITY

As Christians our primary concern is that of the intrinsic value of a species as given to them by God. By having greater biodiversity we have accomplished our goal as stewards and we are also privileged to have more of God's creation to admire and from which to learn.

Many see biodiversity as a source of medicine. The indigenous people of Madagascar used the rosy periwinkle in their medicine and in the 1960s scientists extracted two chemicals from that plant that have revolutionized the treatment of childhood leukemia and Hodgkin's disease. Thanks to this treatment there is a 99 percent chance of remission in children with leukemia. In fact, 25 percent of all pharmaceuticals in the U.S. contain ingredients originally derived from native plants, ranging from aspirin and codeine to ipecac.

Biodiversity also has recreational, aesthetic, and scientific value. From fishing and hunting to hiking, biodiversity provides enjoyment and sustenance. About 80 percent of our food supply comes from just 20 kinds of plants. There is vast untapped potential for increasing the range of food products suitable for human consumption.

What is causing such loss in biodiversity?

While it is almost never the case that just one problem can be attributed to the loss of a species, one of the greatest sources of loss is the physical alteration of habitats. Habitat destruction and alteration have been responsible for a majority of the known extinctions and are major contributors in current population declines. When the habitat changes through altered land use, species have a more difficult time finding suitable food, water, and shelter.

Habitat fragmentation, the separation of a landscape into various land uses, also contributes to diversity loss. The resulting small unconnected patches left for wildlife limit wildlife's ability to find suitable food, water, and shelter.

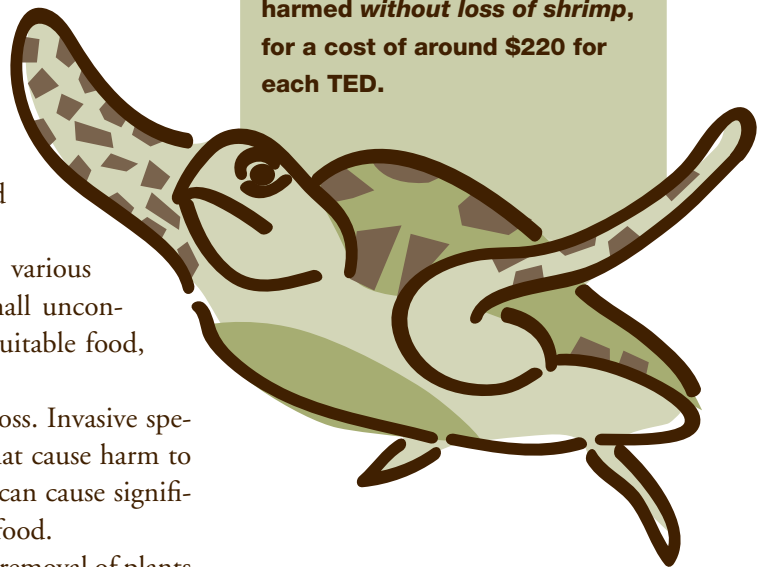
Invasive species are the second major cause of biodiversity loss. Invasive species are nonnative plants and animals introduced to an area that cause harm to the native species and biodiversity. Species that are not native can cause significant problems by competing with native species for space and food.

Overharvesting is also a contributor to biodiversity loss. The removal of plants or animals to the point that it is challenging to maintain viable population levels has put a number of species at risk for extinction. At least 70 percent of the world's important fish stocks are over-exploited. The reality of modern fishing is that the industry is dominated by technology that is able to far out-match the

SHRIMP AND SEA TURTLES

In 1989, the U.S. Congress added a provision that became known as the Sea Turtle Act, motivated by concern over continuing worldwide declines in the populations of all seven species of sea turtles and by scientific studies that implicated shrimp nets in sea turtle mortality.

One of the world's largest consumers of shrimp, the United States, was also one of the first nations to begin widespread use of the turtle excluder device, or TED, which is a grid trapdoor installed inside a trawling net that allows shrimp to pass through and stay in the net but directs other, larger objects or animals out of the net. By the 1980s, TED technology had allowed 97 percent of sea turtles caught in shrimp nets to be released alive and unharmed *without loss of shrimp*, for a cost of around \$220 for each TED.



SERMON STARTERS

NOAH AND THE FLOOD, GOD'S ENDANGERED SPECIES ACT

Genesis 9:8-17, or Genesis 6:1 though 9:17

Colossians 1:15-20

After the great flood God promised that he would never again destroy the Earth. God reestablishes the covenant with humans and all of Creation when God says, "This is the sign of the covenant that I make between me and you and every living creature that is with you, for all future generations" (Genesis 9:12). Humans are to repopulate the Earth, but not at the threat to the other species; rather, the bloodlines must be protected (Genesis 9:1-7). The Noah story teaches sensitivity to other forms of life and the biological and theological forces producing them. What is required is not human prudence but principled responsibility to Creation, and to God. The call to protect species lies in a biblically centered directive to protect species for the sake of God. The story of the flood is part of the larger biblical principle of fruitfulness.

We are to till, or serve, Creation with the same conviction as Joshua and his family served the Lord (Joshua 24:15); we are also called to keep Creation as we would expect God to keep us (Numbers 6:24). To keep, or "shamar" as it is used in the original Hebrew, the garden means we are to maintain all the creatures under our control and keep them in their proper condition. The blessing of fruitfulness is given to all of Creation in Genesis. Humans are called to enjoy the fruit of the Earth, but also have the responsibility to take care of it as well. The Creator blessed the Earth so that all creatures will prosper with great abundance and diversity. Finally, the Sabbath teaches that even the land shall have a year of rest. The Sabbath principle sets behavioral limits on us so that we allow for the restoration and prosperity of all life.

At the end of the Creation story, God looked at all that he had made and saw that it was "very good" (Genesis 1:31). It wasn't until all of God's Creation was complete that it was called "very good." As stewards of Creation we need to understand our role as protectors of Creation. Along with God's covenant with Creation, we have a responsibility to protect species so that the covenant will be fulfilled.

Group Study and Reflection

Please utilize this study and reflection guide to aid in a discussion around the topic of biodiversity and Creation Care. For more information please visit www.ncccojustice.org/Biodiversity.html.

NOAH AND THE FLOOD, GOD'S COVENANT WITH ALL OF CREATION:

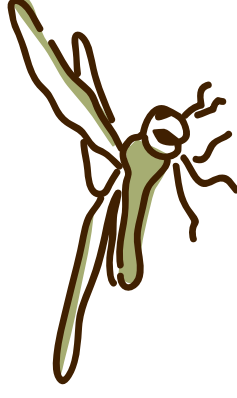
Genesis 9:8-17, or reading the entire flood story, beginning with Genesis 6:1 and ending with Genesis 9:17.

The flood story is a critical development in our relationship with God and with Creation, as well as God's relationship to Creation. The covenant that God announces is one that not only includes us as God's image bearers, but with all of Creation.

- How can the covenant be extended to our stewardship ethic of care for Creation?
- Is the covenant with certain species or is it with all species, all of Creation?
- What implications does the covenant have on us today?
- This covenant is an integral part to understand our need to protect species. Humans are called to repopulate the Earth, but not at the threat to the other species; rather, the bloodlines must be protected at the threat of divine reckoning (Genesis 9:1-7) "Keep them alive with you" (Genesis 6:19).
- In what ways are we, and how can we improve on, keeping up with our end of the covenant made with God?
- How does this covenant change our responsibilities outlook?
- Does the preservation of species seem more important now?
- Does the covenant have the same, more, or less relevance today?
- In light of our covenant with God, how do we understand our relationship with the rest of God's creatures?

While God's covenant is made with all the inhabitants of the ark, ultimately it is us who are the bridge between the covenant and God's creatures. It is this bridge that provides the backing for our stewardship ethic.

The Noah story teaches sensitivity to other forms of life and the biological and theological forces producing them. What is required is not human prudence but principled responsibility to the Earth, to God.



TAKE ACTION!

Personal

- Create a wildlife friendly backyard by planting native plants and trees and by attracting birds with feeders.
- Reduce the use of pesticides on your lawn and in your garden.
- Get involved with ecological restoration in your community.
- By organic and sustainably produced food to help reduce the use of pesticides.
- Switch to “tree-free billing,” instead of wasting paper, pay online.
- Contact your elected officials about biodiversity issues.

Congregational

- Encourage prayers and liturgies which include God’s Earth and people struggling to protect biodiversity.
- Manage your churchyard to benefit wildlife. Plan a nature trail through part of your churchyard pointing out different trees, plants, and wildlife.
- Play nature games with youth Sunday school classes and coordinate walks/hikes through local nature trails, preserves, and parks.
- Support local, national, and international conservation charities.
- Celebrate St. Francis Day by hosting a Blessing of the Animals service.

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Tending the Garden Stewardship of Biodiversity and Endangered Species

God created an abundant Creation, filled with glorious creatures both large and small. As stewards of God’s Creation we are called to protect all life, to keep and care for the garden. The blessing of fruitfulness is given to all of Creation in Genesis, and it is our duty to ensure that all life is allowed the opportunity of fruitfulness. The Creator blessed the Earth so that all creatures will prosper with great abundance and diversity. The protection of biodiversity, or the diversity of all life, is an essential part of our roles as stewards of Creation. The current rate of extinction is 50 to 1,000 times the natural rate of extinction in some areas. Since the early formations of the U.S. colonies, at least 500 species native to the United States are known to have become extinct. Despite these upsetting realities, there is hope for change. With a better understanding of biodiversity, active citizenship, and a strong stewardship ethic we can help to preserve and promote biodiversity and protect the endangered species under our care.



CALL TO WORSHIP

How many are your works; O Lord! In wisdom you made them all; the earth is full of your creatures. Be exalted, O God, above the heavens, and let your glory be over all the Earth; for all that is in the heavens and on the Earth is yours; yours is the kingdom, O Lord, and you are exalted as head above all.
adapted from Ps. 104, 108, and 1 Chronicles 29

PRAYER OF CONFESSION

LORD, you called us to till and to keep, to serve and to protect, yet we have neglected our responsibilities and your Creation is suffering the consequences of our actions and inactions. We continue to act in ways that contribute to the disruption of creations beauty and integrity. We have become distracted by wealth, power and personal pursuits. We have continually failed to see that our abuse of your Creation is also an abuse of our relationships with you and with each other. For this we grieve and are sorry. God, grant us forgiveness. Fill us with an irresistible love for you and all of Creation, and a desire for the balance and wellbeing of the whole Earth community; Through Jesus Christ our Lord. Amen.

PRAYER OF THANKS

Let the heavens be glad, and let the earth rejoice; let the sea roar, and all that fills it; let the field exult, and everything in it. Then shall all the trees of the forest sing for joy before the LORD.

The Earth is the LORD'S and all that is in it.

Yonder is the sea, great and wide, creeping things innumerable are there, living things both small and great.

The Earth is the LORD'S and all that is in it.

The trees of the Lord are watered abundantly, the cedars of Lebanon that he planted. In them the birds build their nests; the stork has its home in the fir trees. (Psalm 104:16-17)

The Earth is the LORD'S and all that is in it.

You make springs gush forth in the valleys; they flow between the hills, giving drink to every wild animal.

The Earth is the LORD'S and all that is in it.

You have made the moon to mark the seasons; the sun knows its time for setting.

O LORD, how manifold are your works! In wisdom you have made them all; the earth is full of your creatures. (Psalm 104:24) I will sing to the Lord as long as I live; for all that is in the heavens and on the earth is yours; yours is the kingdom, O Lord, and you are exalted as head above all.

Give praise to the LORD

Amen.

adapted from Ps. 24, 96, 104, and 1 Chronicles 29

BENEDICTION

May the Spirit of God stay close beside us, may we open our eyes to the beauty and gift of God's creation, and may we be filled with gratitude and act with love and mercy. And may Christ's peace be with you. Amen.

Biodiversity-Related Hymns

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|--|---------------------------------------|
| "All Creatures of our God and King" | "Let All Things Now Living" |
| "All Things Bright and Beautiful" | "From All That Dwell Below the Skies" |
| "How Great Thou Art" | "God of the Sparrow" |
| "This is My Fathers World" | "How Marvellous God's Greariness" |
| "For the Beauty of the Earth" | "God Created Heaven and Earth" |
| "Immortal, invisible, God only wise" | "O That I Had a Thousand Voices" |
| "Great is Thy Faithfulness" | "Shout to the Lord" |
| "Morning Has Broken" | "My Jesus, My Savior" |
| "Joyful, Joyful We Adore Thee" | "God of Wonders" |
| "I Lift My Eyes to the Quite Hills" | "As the Deer Panteth for the Water" |
| "Praise the Lord: Ye Heavens, Adore Him" | |

ability of fish to reproduce. Since 1950, harvest of the oceans increased from just 20 million metric tons to 139 million metric tons in 2001².

Pollution is another source of biodiversity loss because of the injury it can cause to plants and wildlife. Sources of pollution are extremely varied, but two common contaminants, nitrogen and phosphates, can cause significant changes in the soil and water, and the biodiversity that they support.

Global climate change, brought on by greenhouse gas emissions, is also having an impact on many species. Climate change is impacting habitat areas many species depend on to simply survive.

YOUTH ACTIVITY

Activity 1: Overharvesting, the “Tragedy of the Commons”

Materials:

Bowls (small boxes, Petri dishes)

Small candies (can also substitute marbles, pennies, etc.)

Spoons (one for each person, or each group)

Cloth to cover bowl/box

Opening Bible Verse: Deuteronomy 22:6-7

What is this passage saying about overharvesting? What would happen to future generations if we took both mother and young? It seems okay if just I were to take the mother, but what if each person started doing that thinking it was ok that “it’s just me doing it”?

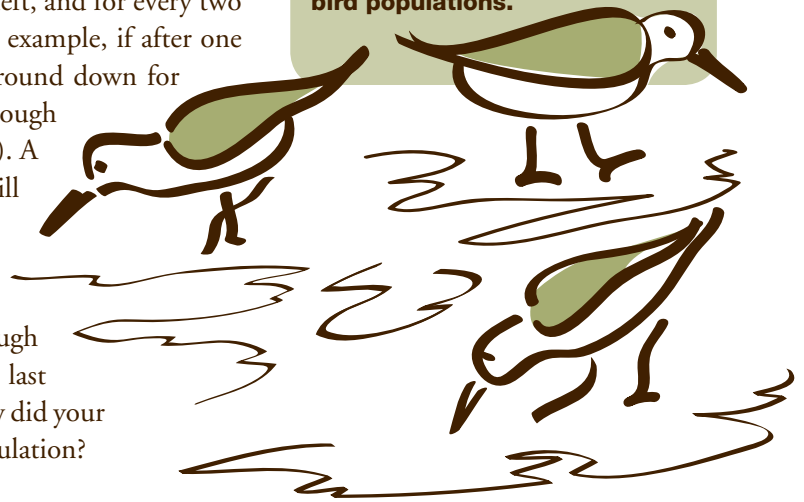
Procedures & Guiding Questions

Split up into groups of 4 or 5, if possible. Place 20 candies in a separate bowl (groups of 3 should have 15 candies). Cover the bowl so that they don’t know how many candies are in it. Instruct the youth to use their spoon to “fish” for candies, without looking inside, one after another. Each youth must take at least 2 “fish” (candies) to feed their families, but can take as many as they would like. After each round of “fishing,” count the number of “fish” left, and for every two put one more in (each pair of fish has one offspring). For example, if after one round eight are left, put four in to create a total of 12 (round down for odd numbers). Continue this method until there is not enough fish for the youth to feed their families (1 or fewer candies). A group of 4 will last 4 full rounds at best; larger groups will have fewer rounds.

Did some groups last longer than others? Why? Did some individuals take more than they needed for their families? What happens to the people who took just enough for their families or those who didn’t get enough in the last round? Is that fair? Is it fair to take more than we need? How did your actions affect everyone else? What happens to the fish population?

HORSESHOE CRABS AND SHOREBIRDS

Over-harvesting of horseshoe crab has led to a dramatic decline in Red Knot populations; a small robin sized shorebird. Up until recent years the Delaware Bay area has been a critical stop over site for hundreds of thousands of Red Knots and other shorebirds during their demanding 10,000 mile migration to its breeding destination in the high Arctic. But these days, the beach is almost bare. Thousands of birds used to stop on Delaware, Maryland, and New Jersey beaches to feed. Consuming up to 18,000 eggs a day, birds doubled in size within two weeks. Over the past two decades, however, the number of crabs has plummeted as they became attractive to commercial trawlers, who sell them as bait. The decrease in spawning crabs, in turn, has contributed to the collapse of bird populations.



Repeat the game again. This time though, have each person set aside 4 additional “fish” as their “personal” resource pond that only they can take from as well as the 20 fish “commons” resource pond. They are allowed to see the “personal” pond, and no one else can take from it. They must take at least 1 from that small, “personal” resource each time, and again have 2 fish total to feed their families. The same rules apply as far as offspring are concerned, with one offspring for each pair.

What was different this time? Did the game last longer, or did it end at all? Were they more concerned with keeping their personal pond full? Did anyone take all the fish out of the “personal” pond and have to rely on the “commons” for their food? Did they conserve (steward) their personal resources?

Concluding Bible Verse: Genesis 2:15

God has told us to take care of the Earth. How can we apply the lessons learned about overharvesting to caring for Creation?

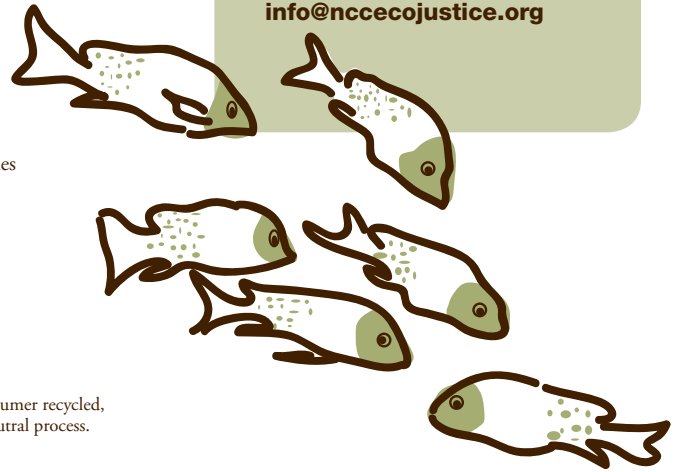
¹Evangelical Environmental Network. “Some Biblical and Scientific Perspectives on Species Protection”, 1996. http://www.creationcare.org/resources/endangered_book.php

²Wright, Richard T. 2005. Environmental Science, 9th Edition. Upper Saddle River, NJ: Pearson Education, Inc.

³<http://www.biodiversityhotspots.org/>



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For more information on biodiversity and how you can help protect God’s Creation visit the National Council of Churches Eco-Justice Program website at www.nccecojustice.org 110 Maryland Ave NE Suite 108 Washington, DC 20002 info@nccecojustice.org

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