

# EARTH CARE

## LEARNING OUTCOMES

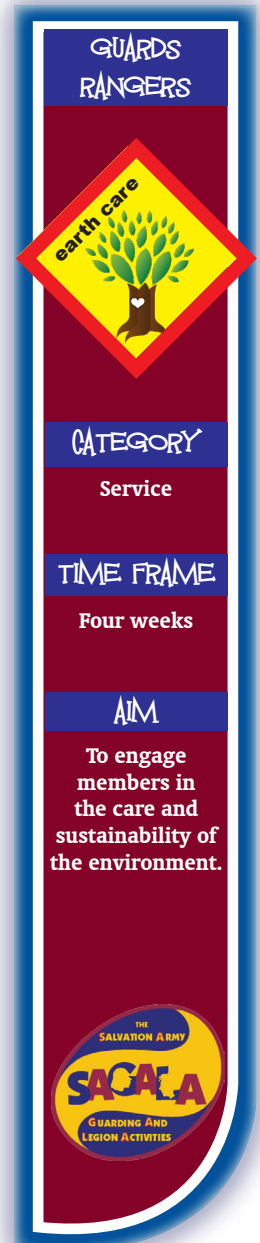
During the course of this badge members will have:

- identified materials that can be reduced, recycled, or reused;
- described the recycling process in their community;
- participated in activities that demonstrate environmental care and/or sustainability;
- identified sources of pollution and how they impact the environment.



## BADGE REQUIREMENTS

1. Demonstrate understanding of the impact that everyday actions have on the environment.
2. Identify materials that can be recycled and the procedures in recycling them.
3. Participate in activities that will help the environment.
4. Research sources of pollution and their impact on the environment.





# TEACHING IDEAS



## 1. Demonstrate understanding of the impact that everyday actions have on the environment.

Discuss with members the impact our actions have on the environment. You may like to complete the Living Lightly Survey in **Handout 1** or complete an online footprint calculator. Each member should write a list of at least 10 things they can change at home to lessen their impact on the environment.

Online footprint calculators can be found at:

<http://www.powerhousemuseum.com/education/ecologic/bigfoot/bigfoot2007/>

[http://www.abc.net.au/science/planetslayer/greenhouse\\_calc.htm](http://www.abc.net.au/science/planetslayer/greenhouse_calc.htm)

<http://www.wwf.org.au/footprint/calculator/>



## 2. Identify materials that can be recycled and the procedures in recycling them.

Provide garbage from your home or the corps for members to sort. Be sure to also provide members with appropriate gloves.

Ask members to create a data base, information poster, or similar on where to recycle items in the local area. Councils are a good contact point for such information. Use **Leader's Resource 1** for background information.

Ask members to do a garbage audit at home. Challenge members to reduce, recycle and reuse. Have members complete **Handout 2**. Discuss the action statements that members make. Follow this up at the conclusion of the badge or redo the audit.

Create lists of what can be recycled, reduced and reused.

Place these headings around the room and ask members to create lists of what can be recycled, reused and reduced.

Using **Leader's Resource 1** ask members to create statements that fit under the headings of reduce, reuse, recycle. Write these up on cards (use cardboard from cereal containers or old Christmas/birthday cards) then challenge each other to place the statement under the correct heading, e.g Always take your enviro bag shopping = reduce; It's the blanket appeal time = reuse; Composting maintains soil temperature = reuse; Processed metals and many alloys require less energy to recycle than to mine and process = recycling.



## 3. Participate in activities that will help the environment.

Choose one or more of the following activities for members' participation:

- plant trees and other native plants in private homes, council land, corps or centre facilities – be sure to obtain the necessary permissions first;
- create or restore a garden for an individual, e.g. an elderly person, the corps or other centre;
- start a compost system;
- during the time frame of the badge conduct collection drives for one of the unusual products that can be recycled e.g mobile phones, spectacles, plastic pots, blankets;

# Teaching ideas

- Clean-Up Australia Day, or simply choose a park or other area to clean up – you don't have to wait until the official clean-up day to help clean up Australia – check out the website <http://www.cleanup.com.au/au/>.

Brainstorm with members other ways they can help to care for or sustain the environment. Guide the discussion towards the use of water, electricity, gas, petrol and list their suggestions on a board or chart.



## 4. Research sources of pollution and their impact on the environment.

Members may work in pairs, threes or other combinations. They are to choose a form of pollution to research, for example water pollution, air pollution, dumping of toxins like oil or nuclear waste. They may present their research in any form they choose, e.g. poster, PowerPoint presentation, lecture. The research may require a visit to the local library, members could bring material obtained from the internet or other sources, leaders could provide material for members to search through.

Members should include some of the following ideas in their report:

- type or types of pollution;
- impact of the pollutant on the environment;
- causes of the pollutant;
- means to control, reduce or eliminate the pollutant;
- pictures may be included but should be labelled.

Leaders may like to conduct experiments to show various forms of pollution to members. Research the internet, library or local school for simple experiments. **Leader's Resource 2** shows water pollution experiments that you may like to try.



# Leader's Resource 1

Australians are the second highest waste producers in the world. We throw away 3.3 million tonnes of food a year – the equivalent of a quarter of the nations food supply.

The good news is households are recycling nearly 46% of their waste in some NSW council areas. Australians are among the best newspapers recyclers in the world, recycling 74.5% of newspapers in 2005. We're also now recycling 2.3 billion aluminium cans a year – that's 600 million more than ten years ago.

## Reduce

The most effective way is to reduce your waste before it becomes rubbish. Avoid waste by looking for ways of producing and using goods that stop waste being generated. Reduce waste by choosing products that can be used productively, recycled in your area, and have minimal packaging.

- Bulk buy when possible but don't buy more than you can use.
- Choose products with less packaging.
- Choose products with recyclable or reusable packaging.
- Carry reusable shopping bags or boxes.
- Re-use plastic bags and all types of containers over and over again.
- Buy quality goods that will last.
- Receive bills, bank statements, newsletters and periodicals electronically.

## Buy recycled goods

Recycled goods have already saved resources and raw materials and helped reduce the overall quantity of waste. Remember, 'recycled' means the product is made partly or wholly from recycled materials and 'recyclable' means the product is capable of being recycled. If you don't make an effort to buy recycled goods, you're not really recycling.

## Reduce energy and water use

Large amounts of water can be saved at home by:

- fixing leaking taps and replacing worn washers;
- using dual-flush toilets and water saving shower roses;
- running washing machines and dishwashers only when full;
- turning the tap off while cleaning your teeth;
- using a control nozzle on your hose when washing the car or the dog;
- using grey water for watering the garden and installing a rain water tank;
- design your garden to be water-efficient, use native plants.

To reduce electricity:

1. Install energy-efficient lighting such as compact florescent bulbs, and turn off lights when you leave a room.
2. Switch off appliances at the power point instead of leaving them on 'stand-by'.
3. Wash clothes in cold water and avoid using a clothes dryer – let air and sunlight dry them whenever possible.
4. Use the energy-saving settings on your dishwasher and let dishes air-dry.
5. Choose appliances with a high energy star rating – the more stars, the less energy consumed.
6. Install a solar hot water system, and make energy efficiency top priority for the booster or back-up.



# Leader's Resource 1 (contd.)

7. Turn down the heat on the air conditioner or heater when you're sleeping or away from home; put on more clothing before adjusting a thermostat; and add extra insulation to walls or ceilings.
8. Keep cooler by using external shading such as eaves, awnings, shutters or trees to reduce heat gain by as much as 80% .
9. Source electricity through an approved GreenPower program – your current supplier might be greener than you think or you may want to shop around.

## Re-use

Re-use containers, packaging or waste products in and around your home.

- Look for products in reusable, refillable or recyclable packaging when you shop.
- Donate unwanted clothing and furniture to charities.
- Enquire if goods can be repaired rather than replaced.
- Hold a garage sale, shop at garage sales and thrift shops.
- Use rechargeable batteries rather than single-use batteries and ask your local council about how to dispose of batteries properly.
- Use glass bottles and jars, plastic bags, aluminium foil and take away food containers over and over again before recycling or disposing of them.
- Carry your lunch in a reusable container rather than disposable wrappings.
- Use both sides of paper.
- Collect wool and material for craft groups.
- Share magazines and books with friends and neighbours. Use library services or book exchange.

## Recycle

Recycle waste material into useable products. Recycling recovers materials used in the home or in industry for further uses. You should only recycle after you've tried to reduce and reuse.

## Why recycle?

Recycling has environmental, economic and social advantages.

- Recycling generates environmental awareness.
- Recycling helps prevent environmental pollution.
- Recycling saves natural resources.
- Recycling conserves raw materials used in industry.
- Making products from recycled ingredients often uses much less energy than producing the same product from raw materials.
- Recycling reduces the amount of material dumped in landfill sites and helps our waste disposal problems.
- Goods are used productively and prevented from becoming litter and garbage.

## What can I recycle?

Most items can be recycled but only when there's a market for the finished product. So, be sure to buy products that foster the recycled market.

## Food and other vegetation

Food scraps and plant material, e.g. grass cuttings, tree branches, can be placed in a compost heap to be turned, eventually, into fertiliser.

# Leader's Resource 1 (contd)

## Glass

Glass is 100% recyclable. Multi-fill bottles can be rewashed and refilled. Single-fill containers, made of thinner glass, are separated into clear and coloured glass and broken down for cullet (used broken glass). All glass should be washed and recycled.

## Plastic

The two types of plastic most commonly recycled are PET (polyethylene terephthalate) and HDPE (high density polyethylene). PET is commonly used for soft drink packaging (the rocket bottom bottle) and HDPE is used to make plastic milk and detergent bottles. Other types of plastic can be recycled, but are not recycled in the same quantities.

## Aluminium

Lots of energy is used to produce primary aluminium from bauxite. Once in metallic form, aluminium can be recycled indefinitely. Recycling aluminium uses only 5 percent of the energy needed to produce new aluminium. This saves coal in energy production in power stations and reduces emissions to the atmosphere.

## Other metals

Processed metals and many alloys require less energy to recycle than to mine and process. This conserves our raw material resources for the future.

Lead can be recycled from old car batteries. Service stations and car battery retail outlets will generally accept car batteries for trade-in, or you can take them to a metal recycler for recycling. Do not empty out battery acid before delivering the batteries to a collector.

Don't throw away copper from hot water systems, copper pipes or old car radiators - take them to a scrap metal dealer. Electric cabling and wiring contains copper and aluminium, which can be recycled. The plastic coating found on some wiring can be removed by metal recyclers in a process called 'granulation'. The plastic is removed and the copper, aluminium and any steel present are separated magnetically for recycling.

Brass retrieved from old household fittings can be restored for use in old houses.

Steel and iron can be reclaimed from car bodies and engines, disused household or industrial equipment and building materials. Most household steel scrap is in the form of food cans. Scrap metal dealers may take clean, de-labelled cans but may not be able to offer payment for them. Steel cans, including aerosol, are accepted in many kerbside recycling programs.

## Paper

Plantation timber, not native forests, is the source of most paper-making pulp. Stronger, better quality paper is made from hardwoods. Softwoods produce shorter fibres suitable for paper such as newsprint. Good quality paper is in demand with recyclers to produce a variety of recycled paper products such as printing and writing paper, office supplies such as envelopes, toilet paper and tissues. Lower grade paper is usually used to make products such as cardboard and insulation.

## How do I recycle?

Recycling is easy once you know how. Many local councils provide a kerbside collection system or a community drop-off system. Kerbside collection of recyclable material involves placing recyclable material on the footpath for collection on a set day just like a normal garbage collection. Some councils provide separate bins for different materials, e.g. a paper bin, a plastic bin, a glass bin.

Community drop-off centres require a little more effort. Recyclables need to be stored at home and then take them to the drop-off centre. Remember take boxes and bags home from the drop-off centre to prevent litter, and do not mix any non-recyclables with the recyclables.



# Leader's Resource 1 (cont.)

- separate recyclables such as glass, plastic, paper and metal from other rubbish – depending on your local council's collection.
- recycle food and garden scraps, which can make up almost 50 percent of your garbage, as compost.
- keep potentially hazardous household waste such as motor oil, batteries, pesticides and paint out of landfill sites. Your council will provide information on how to dispose of them safely.

When you recycle glass:

- recycle all glass containers, not just bottles;
- rinse containers;
- remove contaminants such as lids, corks and caps – labels can remain;
- take glass to collection points or support kerbside schemes;
- place only glass in bins – contaminants such as ceramics china plates and cups can ruin a batch of glass because they melt at a different rate to glass and can weaken the recycled glass.

When you recycle plastic:

- first, re-use plastic containers and bags;
- sort your plastic into different types – follow the instructions at the drop-off centre or the instructions provided for your kerbside collection;
- rinse containers and remove lids (lids are often a different type of plastic);
- ask your supermarket to recycle plastic bags;
- look for the code number on any plastic item you buy and try to choose those which can be recycled in your local recycling program.

When you recycle aluminium:

- place aluminium cans in a recycling bin, not your wheelie bin;
- encourage your school or workplace to recycle aluminium cans;
- remove foreign objects (e.g. straws) that could ruin new aluminium.

When you recycle metal:

- take it to your scrap metal dealer or local drop-off centre;
- ask if you can be paid for returned metal goods;
- remember that old car bodies and old fridges and freezers look better in a scrap metal yard than dumped in bush land;
- don't include fire extinguishers, gas bottles, or shock absorbers – they have the potential to explode.

When you recycle paper:

- make two-sided copies, use the blank side of used paper for notepaper before recycling, and re-use envelopes;
- set up an office paper recovery scheme to separate good quality office paper for further uses in areas where local markets or collection services exist;
- vets and pet stores often accept shredded paper;
- use recycled paper where possible.

Other recyclables:

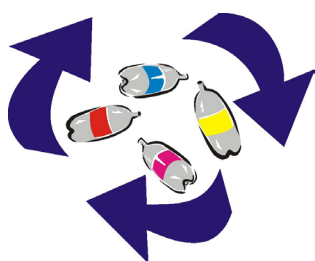
- ink cartridges from printers can be reused or recycled;
- mobile telephones can be re-used, refurbished or repaired, passed down to kids, or collected for 'mobile musters' where they are dismantled and the metals and parts recycled;

# Leader's Resource 1 (contd.)

- telephone directories and greeting cards, e.g. Christmas cards, can be placed in paper recycling bins;
- spectacles can be given to charitable organisations that reissue them overseas;
- corks can be recycled through Guides Australia;
- computers can be donated to community groups, provided they are still functional; some local councils may have a recycling schemes; create a home network; use working parts and new parts to build a new computer; some cities/towns may have a company that will collect and recycle computers.

Easy ways you can recycle your household waste:

1. Sort everything, check and remove any contaminants – non-recyclables such as plastic bags, hangers, lids, cigarette butts and crockery can ruin an entire kerbside collection or waste transfer bin load.
2. Collect and deposit recyclable materials in the correct kerbside recycling bin – or take them directly to a waste recovery or recycling facility.
3. Look for the recyclable symbol on plastic containers and check the number – most councils collect numbers 1, 2 and 3, and some also accept 4, 5, 6, and 7.
4. Reject plastic bags – take your own bag with you when shopping.
5. Start composting and set-up a worm farm.
6. Mulch or chip prunings for reuse in your garden or use your green kerbside recycling system.
7. Shop smartly – avoid unnecessary packaging and buy only what you need.
8. Support and select products using recycled-content or minimal packaging.
9. Look for ways to reuse, renovate or recycle other household goods – give unwanted goods a new lease of life.
10. Sort out and drop off your household chemical waste – take advantage of the Household Chemical Collection program.
11. Support and take advantage of council and local business recycling initiatives – make contact and investigate options for recycling your unwanted items such as mobile phones, furniture, appliances and electrical equipment.
12. Return unwanted medicines and used printer cartridges.
13. Give unwanted items to charity or local second-hand shop.
14. Have a garage sale or advertise unwanted items on community notice boards.





# Leader's Resource 2

## WATER SURFACE TENSION

A drop of water is small, but it is made of even smaller parts called molecules. Water molecules have bonds that hold them together. At the surface of the water, the molecules hold on to each other even more tightly because there are no molecules pulling on them from the air above. As the molecules on the surface stick together, they form an invisible 'skin' called surface tension.

Water striders and other insects can walk on water without sinking. The surface tension is strong enough to hold them. The insects' feet make dents in the surface tension, but it doesn't break.

### Materials:

Cooking oil

Water

### Procedure:

Rub a few drops of cooking oil on your hand.

Let water run over your hand. What happens? *(Beads will form from the water and oil.)*

Wash your hands with soap. Does this make the oil go away? *(Yes, if washed properly.)*

### How it Works:

The water molecules stick together tightly and will not mix with the oil on your hand. Since water molecules are attracted to each other so strongly, they formed small balls or drops which rolled over your oil coated hand. There is an invisible 'skin' of surface tension around each drop.

Soap molecules are attracted to both water and oil. One end of the soap molecule sticks to oil, the other end sticks to water. The soap breaks up the surface tension and keeps the oil drops mixed in with the water so that the oil can wash off your hand.

## SINK OR SWIM?

Sometimes detergents get into creeks or lakes. This could happen if people use too much soap to wash their cars. Then the water washes down the street into street drains and into a creek or lake. Once in the creek or lake, detergent could destroy the surface habitat.

### Materials:

a clean bowl (free of detergent)

paper clip or sewing needle

fork or tweezers

liquid dish detergent

### Procedure:

Fill the bowl with water.

Put a paper clip or needle on the tines of the fork, or hold it with the tweezers. Gently place the paper clip or needle on the surface of the water. Be patient and careful. You will be able to get the clip to sit on top of the water! Can you see the surface tension bend under the paper clip?

Add one or two drops of detergent to the water near (not on top of) the paper clip. What happens?

### How it Works:

The paper clip was resting on top of the surface tension. This 'skin' supported the clip and kept it from sinking. When you added detergent, the soap weakened the attraction the water molecules had for each other. This caused the surface film to disappear. Then the paper clip sank.

# Leader's Resource 3

Modern technology  
Owes ecology  
An apology  
*Alan M. Eddison*

Because we don't think about future  
generations, they will never forget us.  
*Henrik Tikkanen*

We do not inherit the earth from our  
ancestors, we borrow it from our children.  
*Native American Proverb*

There are no passengers on  
Spaceship Earth. We are all crew.  
*Marshall McLuhan, 1964*

We abuse land because we regard it as a  
commodity belonging to us. When we see land  
as a community to which we belong, we may  
begin to use it with love and respect.  
*Aldo Leopold, A Sand County Almanac*

And Man created the plastic bag and the tin and aluminum can and the  
cellophane wrapper and the paper plate, and this was good because Man could  
then take his automobile and buy all his food in one place and He could save  
that which was good to eat in the refrigerator and throw away that which had  
no further use. And soon the earth was covered with plastic bags and aluminum  
cans and paper plates and disposable bottles and there was nowhere to sit down  
or walk, and Man shook his head and cried: 'Look at this Godawful mess.'  
*Art Buchwald, 1970*

When one tugs at a single thing in nature, he finds  
it attached to the rest of the world.  
*John Muir*

We shall never understand the natural environment until we see it as  
a living organism. Land can be healthy or sick, fertile or barren, rich or  
poor, lovingly nurtured or bled white.  
*Paul Brooks*

We're in a giant car heading towards a brick wall and  
everyones arguing over where they're going to sit.  
*David Suzuki*

The more we exploit nature, the more our options are reduced, until  
we have only once: to fight for survival.  
*Morris K. Udall*

# Handout 1

## Guards/Rangers

### Living More Lightly

Instructions:

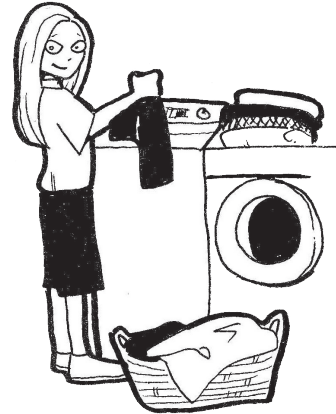
1. Go through the list and circle the appropriate response, Usually (U), Sometimes (S) or Rarely (R).
2. Follow the scoring guidelines at the end to find out what your impact is.

Food consumption and packaging			
I use cloth napkins instead of paper	U	S	R
I take my own reusable bags to the shops	U	S	R
I avoid buying food with lots of plastic wrapping	U	S	R
I grow some of my own food	U	S	R
I compost my organic food waste	U	S	R
I make use of left-overs and don't throw away good food	U	S	R
Impact Points			

Household energy and supplies			
I turn off electric lights and appliances when no one is in the room	U	S	R
I run a dishwasher only when it is full	U	S	R
I wash-up only when there is a full sink load	U	S	R
I decide what I want from the refrigerator before I open the door	U	S	R
I avoid using too much air conditioning in the summer	U	S	R
I avoid using non-essential appliances	U	S	R
I keep the windows and curtains closed when heating the house	U	S	R
I make my own household cleaners out of non-toxic materials	U	S	R
I avoid washing clothes before they really need it	U	S	R
I use a hanky instead of tissues	U	S	R
I share things with my neighbours and friends	U	S	R
Impact Points			

# Handout 1 (contd.)

## Guards/Rangers



Water			
I limit my showers to 5 minutes or less	U	S	R
I turn off the water while brushing my teeth	U	S	R
I place a device in my toilet cistern to reduce the amount of water used	U	S	R
I use half flush all the time	U	S	R
I buy unbleached or recycled toilet paper	U	S	R
I don't overwater my garden and make sure I water in the morning or afternoon	U	S	R
Impact Points			

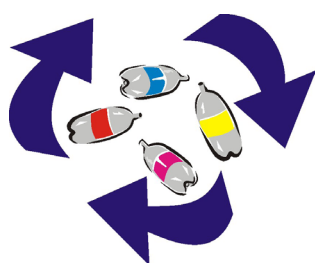
Transportation			
I regularly walk or ride my bike rather than asking for a lift in the car	U	S	R
I try and ride with more than one person in the car	U	S	R
I use public transport when I can	U	S	R
Impact Points			

Recycling and Reusing	U	S	R
I recycle aluminium	U	S	R
I recycle paper	U	S	R
I recycle glass	U	S	R
I use both sides of a sheet of paper	U	S	R
I do not throw away things that could be repaired or reused	U	S	R
I refuse plastic bags when I go to the shops	U	S	R
Impact Points			

# Handout 1 (contd.)

## Guards/Rangers

Environmental Action			
I get involved with groups to help the environment	U	S	R
I ask people to look after the earth better	U	S	R
I show people how to live more lightly on the earth	U	S	R
Impact Points			



### scoring

- Go back and tally up the number of points for each section. U = 0 points, S = 10 points, R = 25 points. Write the total impact points for each section in the space provided.
- Transfer the impact points from each section in the spaces below and add up the total.

Food Consumption and Packaging	_____
Household Energy and Supplies	_____
Water	_____
Transportation	_____
Recycling and Re-using	_____
Environmental Action	_____
Total Impact Points	<div style="border: 1px solid black; width: 150px; height: 20px; background-color: #cccccc;"></div>

Your final scores are an indication of what areas you could work on to reduce your impact on the earth. The higher the score, the more work you have to do! You could do this survey again in 6 months to see how much you have improved.

The main idea is to begin thinking about ways of lessening your impact on the earth.

# Handout 2

## Guards/Rangers

**Complete an audit of your garbage.**

Place the whole amount into a bag and weigh it. Using gloves sort through the garbage making piles that could be recycled, or composted or reused. Check for combustible material, over packaging and wastage.

Weigh each pile again to calculate the proportion of the waste. Could this be reduced, re-used, recycled.

Decide with your family to take action in regard to your garbage.

You may determine to create a compost system or search for a different brand of biscuit that has less packaging.

Type of garbage	Proportion/Weight of garbage	Comment – Could this be R R or R
Total Weight of Garbage		
Action statement		





# Devotional ideas

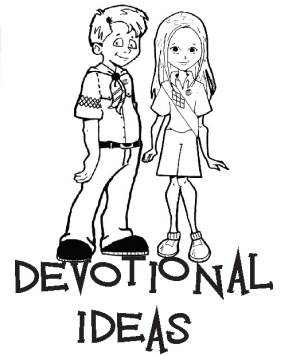


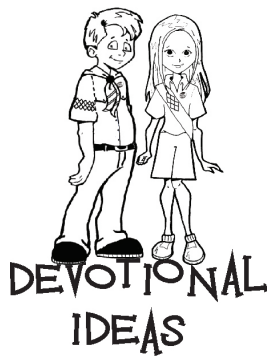
- Title:** Environmental reflection  
**Scripture:** Genesis 2:15  
**Thought:** To allow members time to reflect on the environment and their response to care for it  
**Supplies:** Bible, **Leader's Resource 3** copied, cut up and displayed around the room

Copy and cut up **Leader's Resource 3** and display the quotes around the room. Allow members to read the quotes and choose one to reflect on. They should consider what the quote is saying about the environment; how the quote challenges them personally; what their response might be.

Allow a few minutes for this and then invite members to share their thoughts and reflections as they choose.

Read the scripture verse and pray, thanking God for the creation of the world, recognising its beauty, acknowledging the trust God has shown in us, and asking for His wisdom and courage to act in order to care for and protect our environment.





# Devotional ideas



2. **Title:** The Caretaker  
**Scripture:** Genesis 1  
**Thought:** To raise awareness of humanity's role as caretaker of the Earth  
**Supplies:** Bibles

Distribute Bibles to members and invite various members to read Genesis 1. It is quite lengthy so ask different members to read a 'day' each, e.g. Genesis 3 - 5, 9- 13.

When completed ask a member to read again verses 26 - 29. Ask members to discuss:

- What is the role of humans in the environment? (verse 28)
- What does 'to subdue it (creation)' mean in practical terms? How have humans 'subdued' creation?
- Why were humans given this responsibility?
- Has God given humans permission to use creation as they see fit? Why/why not?
- How well do you think humans are doing in this role?
- How well are you doing in this role?

Close with a prayer of thanksgiving to God for the beauty and wonder of His creation, and a request for courage to stand against humanity's abusive actions on the environment.

# Devotional ideas



3. **Title:** Montage of Thanks  
**Scripture:** Psalm 8  
**Thought:** Celebrate God's creation  
**Supplies:** Cardboard, glue, scissors, materials to create a montage, e.g. magazines, flowers, leaves, scrapbooking decals

Ask a member to read Psalm 8. Members work together to create a montage using pictures from magazines of creation (e.g. birds, animals, plants, landscapes, mountains, seascapes, flowers, leaves and so on.) The montage could be created either around the words 'A Montage of Thanksgiving' or around a copy of Psalm 8.

Invite members to offer a sentence 'thank you' prayer for a part of God's creation, e.g. 'Thank you God for creating giraffes with their unique and individual spots', 'Thank you God for the amazing colours found in flowers.'

