# Conservation Education

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NEWSFLASH!

# POPULATION EXPLOSION!

## The world is becoming too full of people – we're going to have to find another planet to live on!

**Well not quite, but there are worries concerning the increasing number of people in the world and the impact they are having on the environment. It's all getting a bit crowded.**

Let's start by considering life in your house:

Do you have to wait in the queue for the bathroom in the morning? Is there always a race for the best seat in the living room in the evenings? Do you wish you had more space in your house, more bathrooms and generally more *stuff*??

Now imagine that 10 more people came to live in your house for good! What problems would this create? Make a list of the kinds of things that there would not be enough of or the difficulties it would cause.

Now think of your house as Planet Earth and your family and guests inside it as the *population* (total number of people) in the world. The same problems of not enough space and not enough 'things' to go around applies on a world scale – but with more serious consequences.

The number of people in the world has been going up and up and up and up since the beginning of human existence. It is now estimated that there are 6.781 billion people in the world – or 6,781,000,000. That's a lot of '0's! Let's start from the beginning… well, nearly.

**Fascinating Fact!**
It has been estimated that the total world population alive today is equal to the total number of people that have ever lived!

## Contents

# World Population Through The Ages - The Numbers.

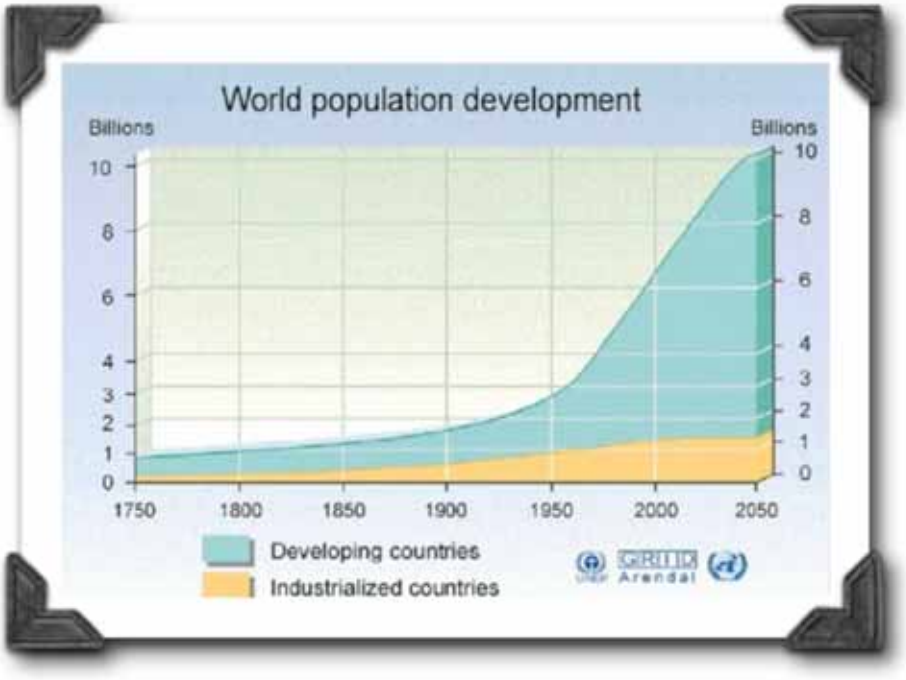
In 10,000 B.C. the world population was around 1 million (1,000,000). These people were known as 'hunter gatherers' because they lived very simply, by hunting animals for food and gathering nuts, berries, fruits and other food from the woodlands and moorlands. They didn't live in one place all the time; instead they moved around from place to place to find food. Their impact on the environment was small and any damage they caused was temporary – the land recovered once they moved on.

By the year 0 A.D. (10,000 years later) the world population had increased slowly to 200 million. By now people were settled in towns and villages and had started to grow their own food on basic farms. They would have cut down trees to clear the land for building their houses on and to create fields for growing their crops and rearing their animals. But their impact on the environment was still low.

The numbers continued to creep up until the 1800s. Look at the dates and figures below:

| Date | Population |
|---|---|
| 10,000B.C. | 1 million (1,000,000) |
| 0 A.D. | 200 million |
| 1500 A.D. | 500 million |
| 1810 A.D. | 1,000 million (1 billion – 1,000,000,000) |
| 1950 A.D | 2,406 million |
| 1999 A.D | 6,000 million (6 billion – 6,000,000,000) |
| 2009 A.D | 6,781million |

These numbers are much easier to understand on a graph:




So it took thousands and thousands of years, from human prehistory right through to the early 1800s for the world population to reach it's first billion.

Then came the start of a sudden population increase. The second billion was added in little more than 100 years, and the 3rd billion was reached less than 50 years later, in the 1960s. The 4th, 5th and 6th billion people were reached in spans of only about 12 years each! And from now on we can expect 54 million more people on the planet per year – that's 149,000 people *per day* or 2 or 3 football stadiums' worth!

If you visit http://www.ibiblio.org/lunarbin/worldpop you will find a counter that shows just how fast the population is growing. It shows that the world's population grows by 3 people EVERY SECOND!

Population growth = the number of babies born minus the number of people dying.

# Why does the population grow?

The main reason for the huge spurts in population growth is that people began to live a lot longer. This was due to improvements in medical treatments as well as improved living conditions. Technology suddenly improved, with the 'Industrial Revolution' in the 1800s. Tractors replaced horses and machines replaced people so it became much easier to grow lots of food and to transport it from place to place. Clean, fresh water was much more readily available. More and more babies were being born and surviving into adulthood so towns grew into cities and more new towns and villages were built.

Unfortunately some places (for example several African countries) don't enjoy this modern technology or decent medical services. But these less developed countries still have an increasing population (there are more babies being born each year than there are people dying). In fact the highest population growth rates are in the least developed countries of the world.

But the population isn't growing in all countries either. In Italy, for example, the population is going down because people are having fewer babies; each year there are more people dying (in old age mainly) than there are babies being born.

It is difficult to predict how many people will be living on the planet in the future but scientists believe that by 2025 the world population will be around 8 billion people and that it could reach 10 billion (10,000,000,000) by 2050 – eek!

Only when the birth rate is the same as the death rate will the population of the world stop growing. It is estimated that this won't happen until the total population reaches 10 billion. Meanwhile our planet is becoming rather crowded.

# Needs Must!

The problem is that everyone on the planet needs the essentials for survival:

- somewhere to live,
- food to eat,
- clean fresh water to drink and cook with,
- clothes to wear,
- places to work, learn, play and travel.

And we also want as many of the not-so-essential 'luxury' items as possible:

- cars,
- toys and games,
- electrical appliances like fridges, hair dryers, TVs, iPods, cameras, mobile phones,
- books, furniture, etc.

Where do all these things come from? Absolutely everything in our lives originally comes from our surrounding environment: the bricks for the buildings, the fabrics for our clothes, the food we eat and the water we drink; paper for books; metals and plastic for mobile phones and TVs; power supplies for the electrical appliances. These things are known as *resources* or *raw materials*.

There are now so many people in the world that we are starting to compete for resources such as oil, food and building materials – and we are starting to run out of some of them. This is putting pressure on the environment and causing serious problems in some parts of the world.

The world's population is concentrated more and more in towns and cities. In many less developed countries of Asia, Africa and Latin America, many of these cities are overcrowded because people move there from the countryside in search of food, shelter and jobs.

# Why Worry? The Problems of Population Growth

There are a number of problems created when too many people try to live in one place. The problems below are both local and global.

### 1. Land clearance

Land has to be cleared to create the space for farms, fields, houses, hospitals, roads etc, This means chopping down trees and destroying whole habitats such as woodlands, wetlands, moorland, heath land and hedgerows. The clearing of forests is called *deforestation.*

**Alarming fact!** More than 50% (half) of the world's forests have been lost already: cut down, burned and bulldozed.

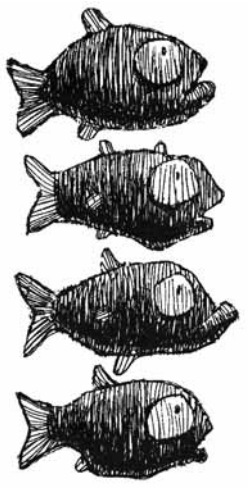
**Alarming fact!** The current demand for wood is set to significantly exceed the limit of sustainable consumption. i.e. we are using wood at a faster rate than trees can be re-grown.

As towns and cities increase in size, and land-use (e.g. farming) increases too, so valuable habitat decreases. Some habitats are more fragile than others and vulnerable to permanent damage. As well as being important wildlife habitats, forests are vital for helping keep the air clean, as they absorb carbon dioxide and can soak up much of the world's air pollution.

### 2. Loss of biodiversity

*Biodiversity* is the range of different types (*species*) of plants and animals as well as the actual numbers of them found in a habitat. Generally speaking, the bigger the range of species, the healthier the habitat and surrounding environment. The greater the number of people, the lower the biodiversity seems to have become. Humans can more easily *adapt* to changes in their environment but sadly many species of other animals and plants need specific conditions for survival and can't cope with changes and the damage caused by humans.

**Alarming fact!** It has been estimated that 27,000 plant, animal and insect species become extinct (lost forever) *every year*. 2 out of 3 species on Earth are estimated to be in decline.



### 3. Over-fishing

It's not just the forest and moorland habitats that are suffering from increased numbers of people. The oceans and the animals that live there are also at risk, and catching too many fish for food is one example. If the level of commercial fishing continues as it is, or increases as the population continues to rise, several species of fish are in danger of becoming extinct. Cod and some species of tuna are among the species at risk.

### 4. Over-grazing / land degradation

When the demand for food is high, farm land is often used very *intensively*. For example, each field will have as many cows as it can possibly fit in it in order to produce as much food as possible. When this happens every bit of grass gets eaten by the cows over and over again and where the climate is hot and dry, the grass often can't grow again. This leaves more and more bare soil which gets washed or blown away. This means that the field is no use for farming anymore - the land has become degraded.

**Alarming Fact!** 2 billion hectares of useable farm land has already been degraded around the world – that's the total areas of USA and Canada put together.

**Alarming Fact!** Every year the world's farmers have to feed 77 million more people with 27 billion tons less topsoil.

## 5. Food shortages

In many parts of the world it is getting harder and harder to provide enough food to feed everyone. Not enough land, poor quality land, not enough water, not enough money to buy farming equipment and climate change are all reasons for food shortages. Many countries have to *import* food (i.e. buy it from other countries) because they cannot produce enough to feed themselves. When there isn't enough food it can lead to hunger and famine, particularly if there is a drought or war as well.

## 6. Water Shortages

We all need water to drink, to water crops, cook and wash with. As more food is grown to feed more mouths, more water is required to produce the food. In many poorer countries the demand for water is often greater than the supply and millions of people still don't have access to clean, fresh water. This is a major problem where they can't afford the technology required to get clean water.

And of course, the more people there are the more sewage is produced. In some overcrowded poorer cities getting rid of the sewage is the biggest problem and contamination of the fresh water supplies is common.

**Alarming fact!**
Unclean water and poor sanitation causes the deaths of more than 12 million people each year.

**Alarming fact!**
70% of China's rivers are too polluted to use for drinking water or even swim in.

**Alarming fact!**
By 2025 it is estimated that 48 countries (3 billion people) will be facing fresh water shortages.

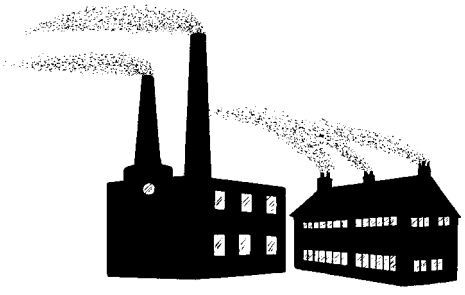
## 7. Public Health

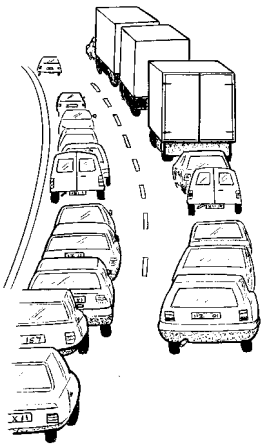
A lack of clean, fresh water causes major health issues and is the cause of many of the diseases and deaths in overcrowded, developing countries. The more people there are, the harder it is to provide enough clean fresh water for everyone, particularly in poorer areas where technology is basic and the number of people is rising rapidly.

## 8. Poverty

Overpopulation can lead to an increase in the proportion of poor people in an area, due to the lack of jobs available. And the poorer the family, the harder it is to produce or buy food and the higher the likelihood of hunger and other health issues.

**Alarming Fact!**
In 2000 an estimated 3 billion people were in poverty – that's half the world's population!





## 9. Waste and Pollution

We all produce waste – the more people there are the more waste there is - and it comes in different forms:

- Rubbish, most of which ends up in landfill;
- Air pollution from cars, factories, power stations and rotting waste;
- Water pollution from factories, farming, day to day washing and sewage.

Apart from damaging habitats and whole ecosystems, pollution contributes to other serious problems such as climate change and health issues.

For more information on waste, pollution and the associated problems, see previous issues of Conservation Education: 'Energy' (issue 13), 'Climate Change' (issue 16) and 'Rubbish (issue 18)'.

# Consumption

The actual number of people on the planet or in different areas is not the sole reason for all these problems. The *consumption* levels of people are just as critical. By consumption we mean not just how much food people eat (although this is significant), we also mean things like how much energy we use on a day to day basis, how many goods we buy each week, how much packaging we get through and how much waste we produce. Energy consumption produces *carbon emissions*, which contribute to pollution and climate change.

Consumption levels, energy use and carbon emissions are not evenly spread around the world. If every one of the 6+ billion people in the world all consumed as much as we in the developed world do, the planet really would be very damaged indeed. Our current consumption levels are already considered to be unsustainable so another 2.5 billion people all rightly striving to raise their standards of living will only cause environmental disaster. But it would be unfair to stop these people reaching our standard of living because of the damage we have caused already.

**Alarming Fact!** Since 1950 the richest 1/5$^{th}$ of the population has doubled its consumption of energy, meat, timber, steel and copper per person.

**Alarming Fact!** The carbon emissions of one British person today are the equivalent to 4 Chinese, 20 Indians and 250 Ethiopians' emissions.

There is only one Planet Earth and we are currently exceeding its '*carrying capacity*'. Unless we can begin to live on Mars or at least use raw materials from there – we need to do something about it. Otherwise Mother Nature may start to control our population for us with drought, famine and plagues.

# What Next?

There's not a lot we can do about the rising population in other parts of the world. But seeing as you and I already exist we should try to minimise our impact on the planet – or reduce our 'ecological footprint'.

## 1. Reduce, Reuse, Recycle!

Ah – here they are again the famous '3Rs'. You've probably heard of these already. They are very important and we all need to follow them if we want to help protect the environment for the future. Here's a quick reminder for you:

**a) Reduce**:
Reducing the amount of waste and pollution we create is the first, very important (and difficult!) step. It means things like using less electricity (turning lights off, turning the TV off standby and so on), buying less 'stuff' in the first place (do you *really need* the latest computer game, mobile phone upgrade, football shirt??); walking or cycling rather than going by car.

**b) Reuse**:
Reusing packaging wherever possible (jars, plastic bottles), mending things that break rather than buying new, giving things to charity or selling them on rather than throwing them out, buying second hand rather than new.

**c) Recycle**:
When we do have to throw things out, recycling them wherever possible reduces the need for new raw materials.
(For more information on the 3R's see Conservation Education issue 18).

## 2. Change our eating habits

a) Eat food that has been produced locally – reduce your 'food miles'. The further your food has travelled, the bigger its eco footprint is likely to be as it has required more energy to get it to your local supermarket.
b) Eat less meat. Cows and sheep reared for food need large amounts of land to live on. The grass requires fertilisers (applied using energy-hungry machinery) and the animals need extra food in the winter (from crops grown in other fields). The land they and their food is produced on could be used to grow even more essential food for humans such as potatoes or wheat.

**Alarming Fact!** The average American eats more than 120kg of meat each year. The average Indian eats just 6kg.

And here are some bigger ideas:

### 3. Limit the number of children in families?

This is a good topic for discussion! Should families around the world only be allowed by law to have one or two babies rather than 3 or 4? Would this be fair? It would certainly slow down the increase in population.

But imagine if people only had one baby and the parents and grandparents all lived a long time – there wouldn't be enough younger people growing up to be nurses, doctors, bus drivers, shop keepers and politicians to help them when they are older!

China's one-child policy: In 1979 China brought in a law which said that couples living in the cities were only allowed to have one child. Whilst the population is now 250 million less than it would have been had the policy not been introduced, it has been very controversial and caused many problems.

Perhaps it is better (and easier) to reduce our consumption than it is to reduce the number of people.

**Consider this:**
If a woman in rural Ethiopia (a poor African country) has 10 children and they all survive (unlikely), if they each went on to have 10 children of their own, the entire family of 100 would produce less carbon dioxide during their lives than you or I on our own!

### 4. Provide energy from renewable sources

The manufacture, transportation and use of both luxury and essential items require the use of lots of energy. Using non-renewable forms of energy causes air pollution and uses up oil faster than it is formed. If most or all of our energy came from renewable sources instead - such as hydrogen or wind power - then impact on the planet would be much reduced.

(For more information on Alternative Energy, see Conservation Education issue 19).

### 5. Improve technology for food production – GM food.

Ideally we need to provide more food from the farmland that exists already. This way habitats don't get destroyed and more hungry mouths can be fed.

Some crops have already been bred to provide more food in the same spaces. These crops are called Genetically Modified (GM) crops and they have been artificially, genetically altered. For example, some are more resistant to disease and drought and some have been altered to produce more grain per stalk.

Not everyone agrees with GM crops. Some people are worried about the knock-on effect of introducing manipulated plants to natural ecosystems. Several countries already grow GM crops but it has yet to be seen if they will help to reduce world hunger.

# Conclusion:

Rapid world population growth and increased consumption is causing problems. The challenge is to achieve '*sustainable development*' where everyone can have a decent standard of living without damaging the planet.

Hmmm…. Not an easy problem to solve!

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# And Finally…… The Good News

Yes there is some! Some scientists predict that the world population will peak at 9 billion in around 2060 and then start to fall, with a drop to 8.5 billion by 2100. Phew! But will it be too late by then? It is unlikely that many of you reading this will be around then – but it will all be happening in your lifetime. So you can help provide a healthier planet for your children and grandchildren by doing your bit to reduce your carbon footprint now!

*Useful websites:*

www.peopleandplanet.net
www.100people.org
www.panda.org
www.globalissues.org