

# BIO-INDEX *report* 2010

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# FOREWORD

*By Dr. Ahmed Djoghlaf, Executive Secretary of the United Nations Convention on Biological Diversity (CBD)*

The poet William Wordsworth famously wrote: "Come forth into the light of things, let Nature be your teacher." That is the message we need to spread as we attempt to reconnect our children and youth with nature and to better educate them about the irreplaceable value of nature, striving to preserve the great diversity of life on Earth for their sake as well as our own.

Biodiversity – the wonder of life – is being destroyed at an unprecedented rate. The third edition of Global Biodiversity Outlook – the United Nations Convention on Biological Diversity (CBD)'s wide-ranging synthesis of the current state of biodiversity – released in May this year, showed that humans continue to drive species extinct at up to 1,000 times the natural background rate. This loss continues apace, compounded by climate change and accelerated urbanization.



Photo: Jonas Harms, 16 (Germany)

What is even more worrying is that our children, who are tomorrow's citizens and decision-makers, are in many cases too far removed from nature, both conceptually and physically. This conclusion is clear from the results of a survey of 10,000 children and youth between ages five to 18, in ten countries spanning the globe, commissioned by UN CBD partner Airbus. The full findings of the survey – the Bio-Index – follow in this report.

Unfortunately, the news is not good. The Bio-Index reveals the challenges we face when it comes to reconnecting children with nature, and in inspiring in them a love of the natural world which surrounds them. This is backed up by a recent poll commissioned by London's Natural History Museum with Mori, which revealed that only 13 percent of those surveyed could explain what biodiversity is, and how we benefit so much from it. It goes without saying that we will be unable to win the uphill battle for life on Earth without the understanding and engagement of future generations.

However that is not to say there is not hope. The UN CBD is dedicated to addressing this problem through its children and youth education programme called *The Green Wave*. As part of the initiative, each year on 22 May, the International Day for Biological Diversity, children and young people in schools and groups worldwide plant a tree or host an event at 10am local time, creating

a 'green wave' across time-zones. In May this year, hundreds of different groups around the world participated in *The Green Wave*, including schools, businesses, biodiversity institutes, botanical gardens, United Nations agencies, non-governmental organizations, governments and the media.

*The Green Wave* has been a particularly important tool in the engagement of young people on the subject of biodiversity loss in 2010, the International Year of Biodiversity. Through tree-plantings and other symbolic and educational events, the initiative has been a prime opportunity to communicate the human costs of biodiversity loss, and to get young people in particular involved in efforts to conserve and sustainably use our natural heritage.

This is the first year the Bio-Index has been undertaken – as a pilot study to establish a benchmark of biodiversity knowledge amongst young people. We warmly encourage contributions from other interested parties who would like to be involved with the initiative in subsequent years, as we develop the Bio-Index even further.

I would like to thank Airbus for producing this global snapshot of children's knowledge of the natural world, as part of their support of the International Year of Biodiversity and *The Green Wave*. Without the leadership of companies like Airbus, it would be difficult to bring an



Photo: Marvin Pulter, 14 (Germany)

Photo:  
Chad Nelson, 12  
(Dominican Republic)

environmental perspective into the commercial world, one of the places where it is most needed today. I invite other business leaders to join forces for protecting life on Earth.

We bring the results of this global study to the attention of the thousands of participants in the Aichi-Nagoya Biodiversity summit at COP 10 in October 2010, and continue in our work towards improving the knowledge and awareness among children and youth of the nature around them.

As the slogan of the International Year of Biodiversity reminds us: Biodiversity is life... biodiversity is OUR life.



**Dr. Ahmed Djoghlaf**  
Executive Secretary of the  
United Nations Convention  
on Biological Diversity.

# EXECUTIVE SUMMARY

*The culmination of a far-reaching piece of research undertaken amongst children and young people to mark the International Year of Biodiversity, 2010.*



This first Bio-Index, commissioned by Airbus and supported by the Secretariat of the United Nations Convention on Biological Diversity (CBD), questioned 10,000 respondents aged five to 18, across ten countries around the world, from Spain to Singapore, and the USA to UK.

The aim was to understand more about the average child's knowledge, understanding and appreciation of the natural world which surrounds them. In addition to this, it is intended that the Airbus Bio-Index will be developed and repeated in forthcoming years.

The survey, based on a quantitative approach detailed on page 5, asked a series of questions designed to:

- Provide a strong overall picture of general awareness and understanding of nature, environmental issues and biodiversity
- Investigate specific topic areas connected with the biodiversity, including endangered species and the concept of extinction, animals' habitats and distinctive characteristics, and some common misperceptions connected with the natural world
- Explore children's behaviours, habits and attitudes to the natural world in terms of their leisure time and activity preferences
- Understand if children make the connection between human innovation and nature (often referred to as biomimicry).

Overall, what is evident is that there is a core level of basic understanding shown by respondents across the board – for example, 86 percent of children correctly identified what an endangered species is, and 67 percent knew that many species face extinction due to habitat loss.

However there is a worrying percentage of children who still lack basic knowledge, or who are misinformed. 40 percent of children attributed species extinction to "humans eating them"; 14 percent simply didn't know what an endangered species is.

One in ten children said that global warming is caused by the earth getting closer to the sun.

When asked further questions which tested a more detailed knowledge of nature, many children struggled to answer correctly. Only 34 percent of children were able to correctly identify that a chimpanzee originates from Africa, for example.

One topic which seems to grab the attention of a generation immersed in technology is how the study and imitation of nature's best ideas can help to solve human challenges. This is often referred to as biomimicry - biologically inspired engineering. For example, more than 70 percent of those surveyed knew that the aviation industry had been inspired by the natural environment, and 93 percent knew that some medicines are made from plants.

When asked if they could themselves copy one skill from nature, 66 percent of children would choose to fly like a bird. Yet when asked which type of animal or plant they would most like to save, only nine percent said they would most like to save birds, with mammals such as snow leopards coming top with 50 percent followed by reptiles with 23 percent. Only six percent chose plants and less than one percent opted for insects. It seems to hold true that the 'cuddly' animals get all the fans!

Of particular interest were the survey findings which looked at children's interests and motivations. The next generation has a

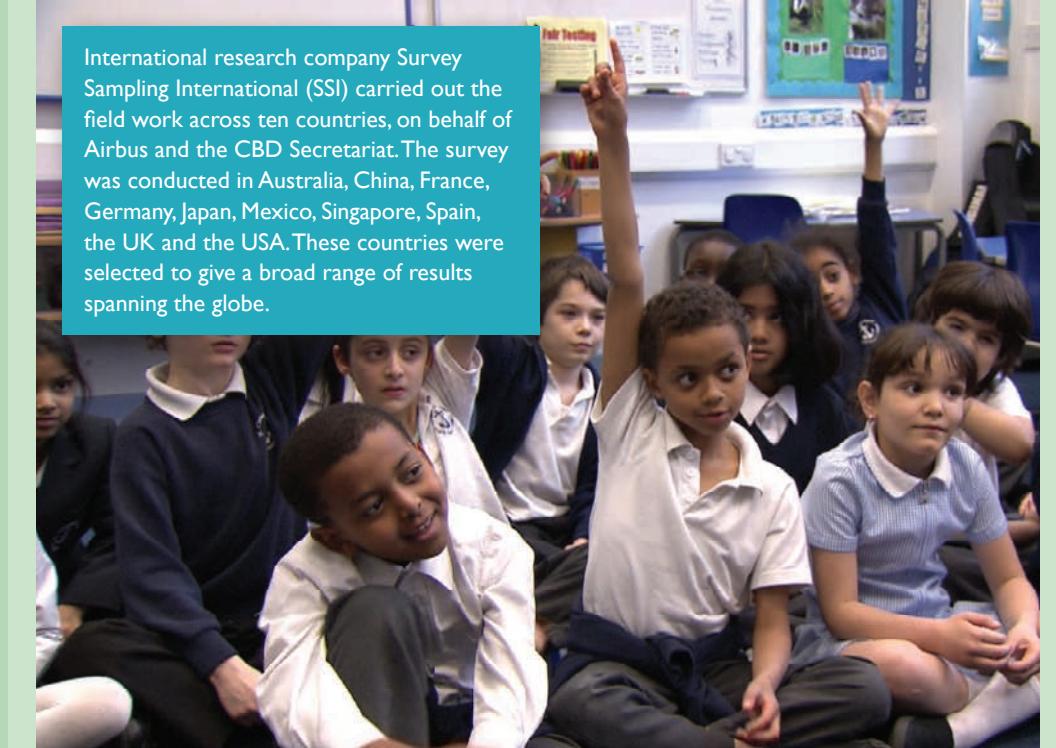
reputation for being glued to the virtual world and, unfortunately the survey not only confirms that, but highlights the implications this has for the future of the real world. When asked to rank what was most important to them, ten times more children ranked watching TV or playing computer games first compared to those who chose saving the environment (40 percent and 4 percent respectively). And while species extinction rates are estimated to be up to 1,000 times the natural rate, only 9 percent ranked looking after animals as most important.

However on a positive note, the results show that children still enjoy spending time outdoors with almost a third (30 percent) saying it is their favourite pastime. This leads us to conclude that, if inspired and motivated in the right way, there is still huge potential to engage future generations in the natural world around them.

Finally, the survey findings revealed some commonalities, and some marked distinctions, between children's knowledge and understanding across different countries, and continents. Young people in China were most knowledgeable on endangered species; Singaporean children professed an unusually high affinity for reptiles, and children in the USA were the biggest fans of spending time outdoors (52 percent of respondents). A section towards the end of the report highlights some of these interesting cultural contrasts.

# METHODOLOGY

*Sampling technique for global survey  
of 10,000 children and young people.*



**International research company Survey**  
Sampling International (SSI) carried out the field work across ten countries, on behalf of Airbus and the CBD Secretariat. The survey was conducted in Australia, China, France, Germany, Japan, Mexico, Singapore, Spain, the UK and the USA. These countries were selected to give a broad range of results spanning the globe.

Target respondents for the research were children and young people, usually considered a hard-to-reach group, particularly when research is being conducted across a number of countries. SSI has access to the largest number of active research panels around the world and every respondent has opted-in to participate in research. SSI has

demographic and household profile data on the majority of its respondents, including whether any children live in each household and what their ages are. The young people were therefore reached via their parents and permission was required for all children under the age of 16 to take part in the survey. The age range was five to 18.

The nature of the survey questions and the use of image prompts in some questions meant that an online survey would be the most appropriate channel for the Bio-Index. The questionnaire was checked for accuracy by the CBD Secretariat and SSI's Respondent Experience (REx) Teams ensured the survey was localised and tested by researchers at SSI going into field. Due care was taken not to include cultural or natural references that would exclude one country's respondents.

For all countries questioned, a sample size of at least 1,000 was obtained. This was composed in each case of a geographic and socio-economic spread, an equal gender split and respondents selected from a diverse base of up to two million households in each country. The gender split was analysed as part of the research process, but no notable differences or trends were noted.

The same questions were posed to respondents of all ages, and questions ranged from the very basic to more challenging. If a child was completing the survey with a parent, it was specified that they should not lead the child's response, but could help to explain the question.

Where appropriate, respondents were asked to 'tick all that apply' in terms of answers, meaning that for some questions, the total responses do not add up to 100 percent. This should be noted when reviewing the data.

## **Considerations**

When conducting research it is important to consider any limiting factors which may influence the findings. In this instance, one consideration is that an online survey – whilst the most practical and appropriate channel to survey young people – does have limitations in that only households with incomes allowing a home computer and internet access would be able to complete the questions. In addition, some countries only have internet access available to households in built-up, more urban areas.

Although it was encouraged that children complete the survey on their own, without help or influence from other family members, it was difficult to control this aspect of the survey process.



# SECTION 1

## Endangered species and extinction

In order to understand the scope of children and young people's knowledge about endangered species, they were asked a series of questions which delved into more detail as they progressed.



Photo: Diego Adrados, 13 (Spain)

A

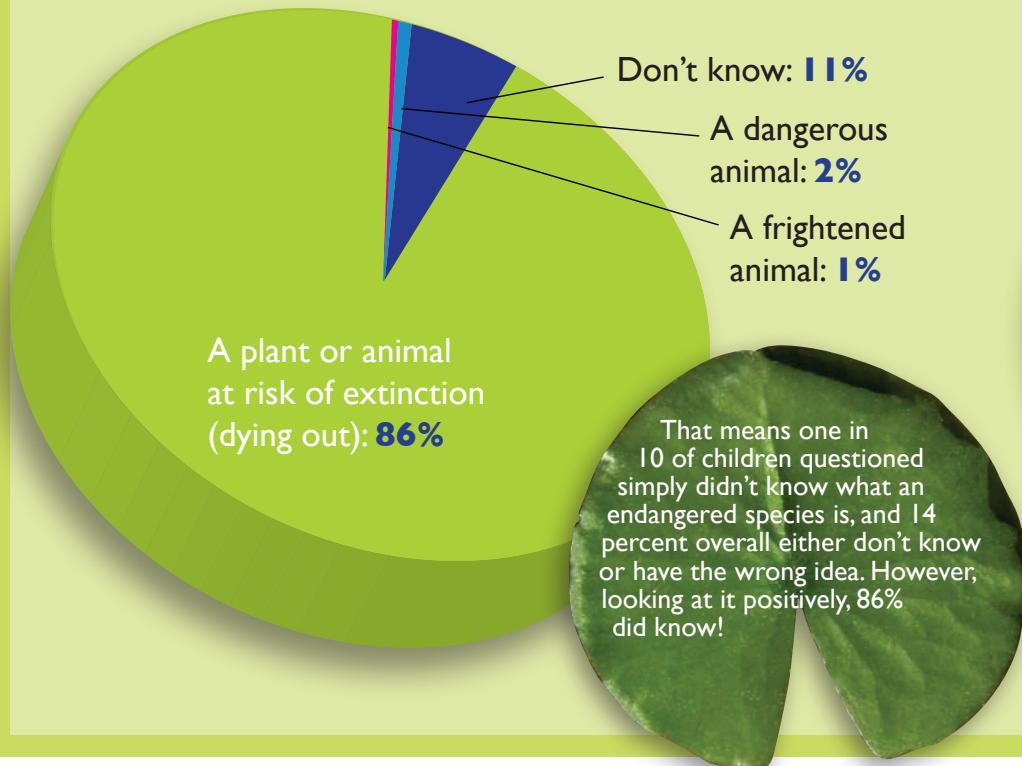
To begin, respondents were asked whether they know what an endangered species is (without any guidance or additional information). They were asked to choose from a range of options or select 'I don't know'.

After the question was posed, respondents were given a brief explanation of the term

'endangered species' before further questions were asked:

"Some species are endangered, which means that type of animal/plant is dying out and the numbers are decreasing. This is often because of environmental factors – their natural habitat (where they live) could be changing or it may be difficult for them to find food and water."

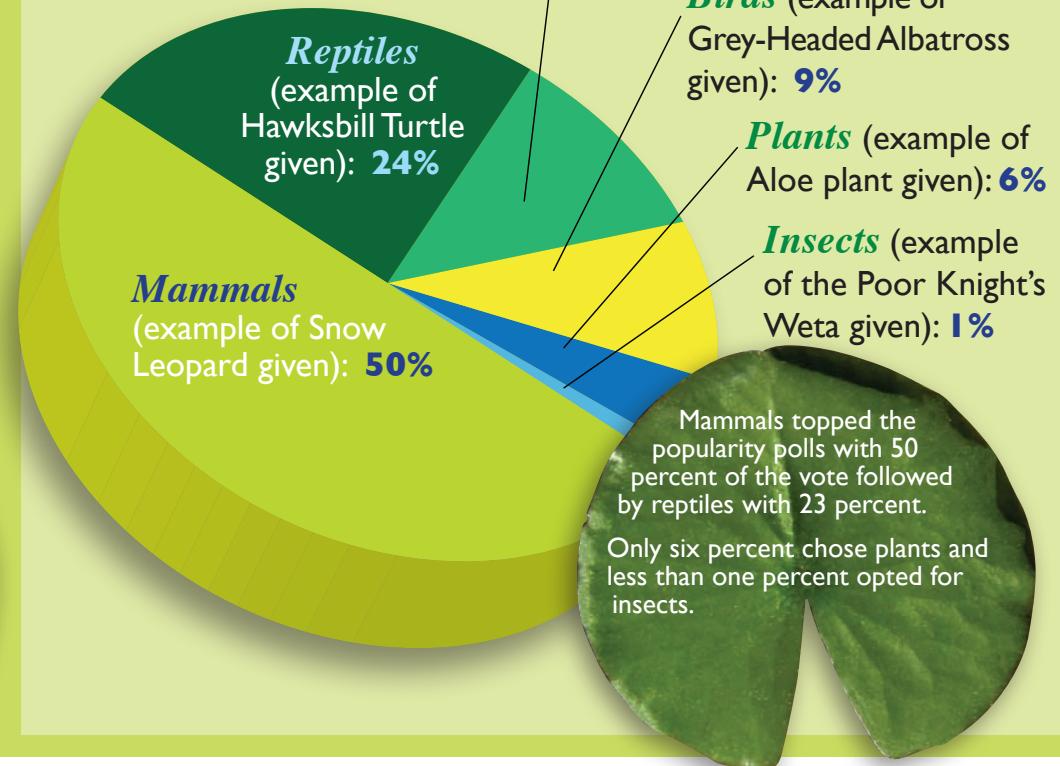
### Results



B

In order to understand children's knowledge of, and affinity for, various different species types, respondents were then asked which, from a selection of species, they would most like to save from extinction. The species, and examples given, were accompanied by a picture to illustrate.

### Results



# SECTION 1 cont.

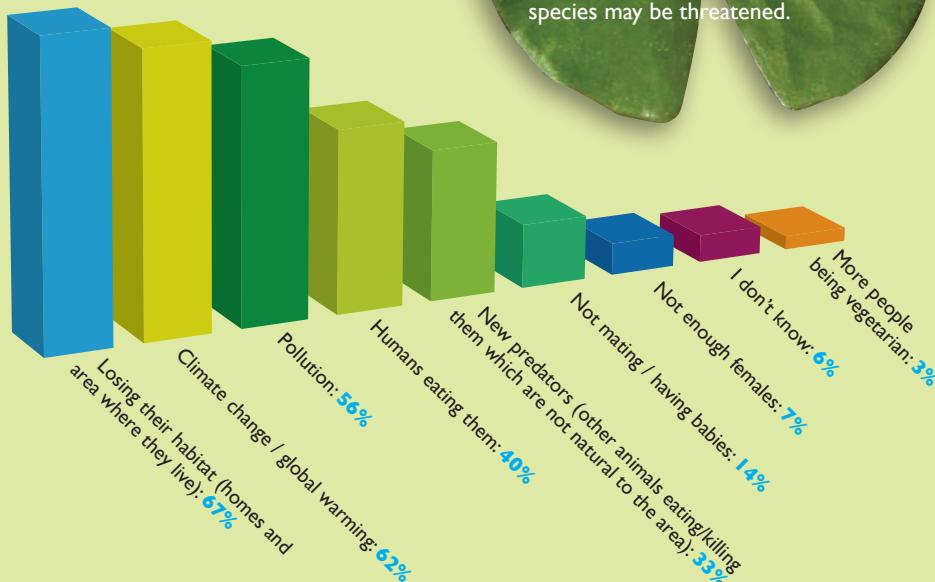


Photo: Diego Adrados, 13 (Spain)

C

Next, the extent to which children and young people understand why some animals and plants in the world are facing extinction was explored. Respondents were asked to select from a list of options, ticking as many as they thought were relevant.

## Results

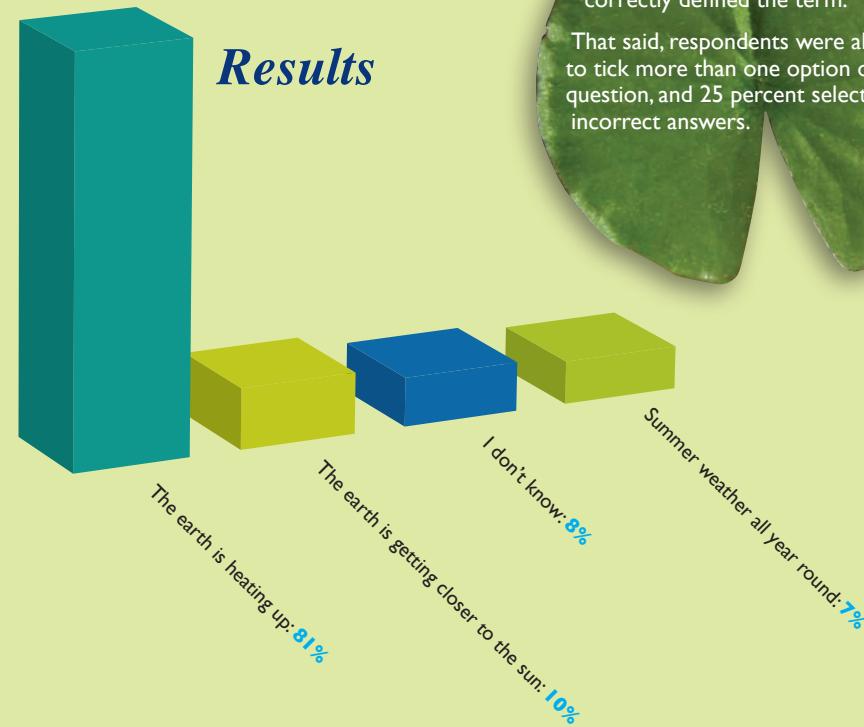


There is a solid base of understanding as to some of the reasons which underpin species loss, with habitat destruction, climate change and pollution being ranked as the top three factors by respondents.  
However six percent of children still did not know why the future of some species may be threatened.

D

Finally, the survey probed further to see if children understood what global warming actually means. Children were asked if they understood the term and were offered a selection of options to choose from.

## Results



Overall, a good proportion of respondents (81 percent) correctly defined the term.

That said, respondents were allowed to tick more than one option on this question, and 25 percent selected incorrect answers.

# SECTION 2

## Animal habitats and characteristics

The survey also looked to explore children and young people's understanding of the habitats of species, in particular animals.

**A**

Respondents were asked to look at a list of different animals and name which came from Australia and which came from Africa. Some animals that originate in neither country were also added to the list to make the question slightly more challenging.



### Results

Animal (Place)	Australia	Africa
<i>Elephant</i> (Africa)	3%	77%
<i>Giraffe</i> (Africa)	4%	57%
<i>Chimpanzee</i> (Africa)	2%	34%
<i>Kangaroo</i> (Australia)	96%	1%
<i>Polar bear</i> (Antarctica)	2%	1%
<i>Camel</i> (Asia)	3%	18%
<i>Panda</i> (Asia)	7%	1%

**B**

It was then explained that animals have evolved to suit their natural habitat and respondents were asked to correctly match a defining characteristic to each animal.

### Results



Animal	Characteristic	Correctly matched by
<i>Camel</i>	<b>Stores water</b>	96%
<i>Snow Leopard</i>	<b>White fur</b>	95%
<i>Gecko</i>	<b>Sticks to surfaces</b>	87%
<i>Chameleon</i>	<b>Changes colour</b>	85%

# SECTION 2 cont.

## Animal habitats and characteristics

C

Children were also then shown a chameleon and asked why it changes its colour.

### Results

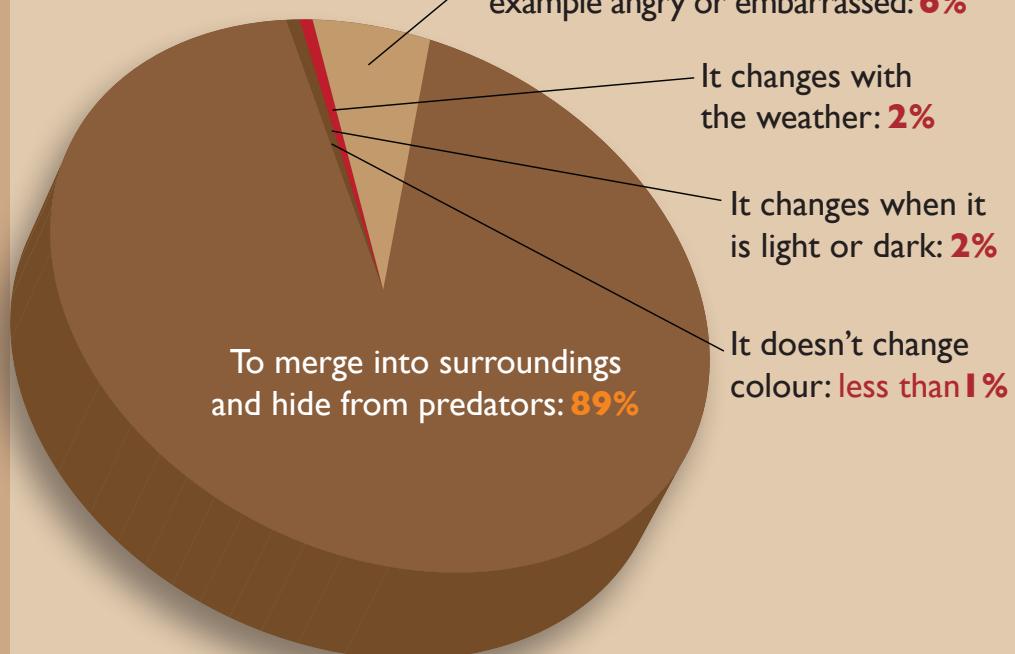


Photo: Mariló Moreno Ruz, 15 (Spain)

# SECTION 3

## *Inspiration through nature*

This section was designed to assess the extent to which children are aware of the crucial link between the natural world, and many of the innovations and technology which surrounds us in our everyday lives.

Photo: Patryk Majchrzak, 16 (Poland)

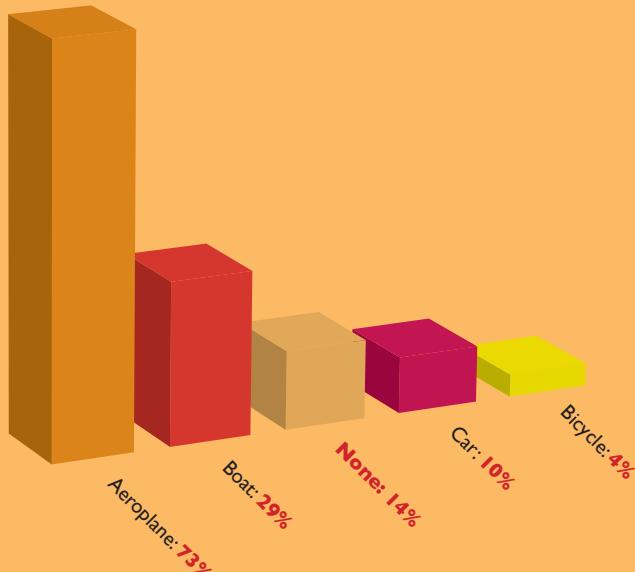
**A**

To begin, children were asked whether they think that any man-made inventions are inspired by nature's designs for animals and plants.

**79 per cent of children correctly answered this as 'yes'.**

Children were then asked which of the following forms of transport were originally inspired by an animal:

### *Results*

**B**

Respondents were then asked to match plants or animals to the man-made objects they originally inspired.

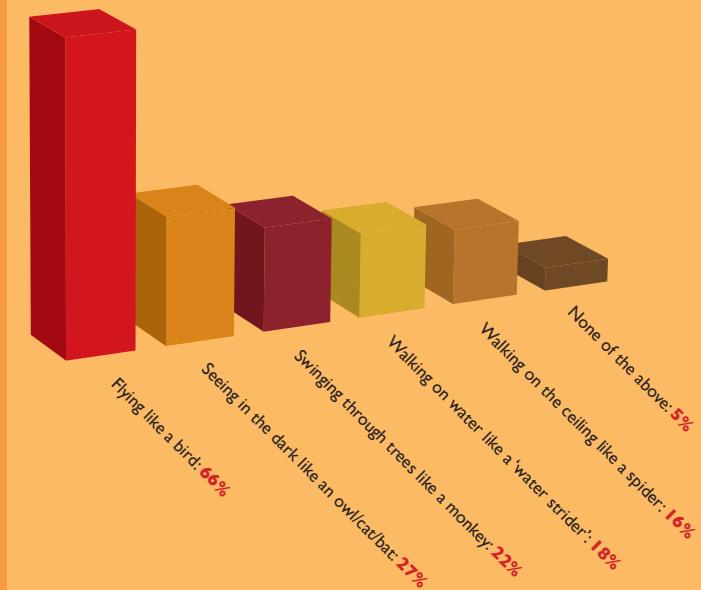
### *Results*

Animal	Characteristic	Correctly matched by
Fish	Submarine	99%
Bird	Aeroplane	99%
Firefly	Light stick (glow in the dark)	89%
Burdock (a thistle)	Velcro (fastener used on trainers and clothes)	89%

**C**

Finally, children were asked which clever skill from nature they would most like to be able to copy.

### *Results*



# SECTION 4

## Nature Facts

A

Children were asked some 'fast facts' about nature, again to assess their understanding of the natural world. In particular we were looking to identify common misperceptions about nature, and test the extent to which children fell into these knowledge 'traps'. In

each case, and where relevant, questions were tailored to ensure cultural and regional appropriateness in each of the countries where the survey was carried out. Children were asked whether a series of statements were true or false.

## Results

Animal	Answer	Correctly answered
<i>Flamingos are pink because of what they eat</i>	True	42%
<i>Snakes can see through their eyelids</i>	True	45%
<i>Male seahorses lay eggs</i>	True	55%
<i>If you cut a worm in half you get two worms</i>	False	55%
<i>Shoes are made from cow skin</i>	True	71%
<i>An elephant's pregnancy lasts for nearly two years</i>	True	75%
<i>Horse chestnut trees grow near horses</i>	False	82%
<i>In summer bears are brown and in winter they change colour to white</i>	False	87%
<i>Polar bears come from Poland</i>	False	90%
<i>The first ever plane copied a bird</i>	True	92%
<i>Plants are used to make medicines</i>	True	93%
<i>Polar bears and brown bears mate to make pandas</i>	False	95%
<i>Rats and birds mate to make bats</i>	False	96%

Photo:Afton Carpenter, 14 (Arizona, U.S.)



# SECTION 5

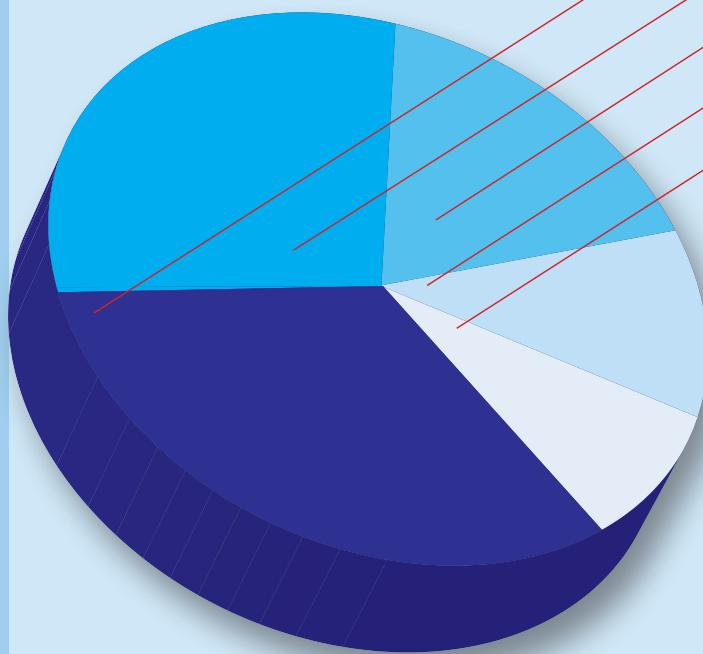
## *Children's leisure habits*

In order to determine the extent to which children enjoy playing in the outdoor world, and how that sits alongside their TV consumption and use of computers, children were asked about their favourite pastimes.

**A**

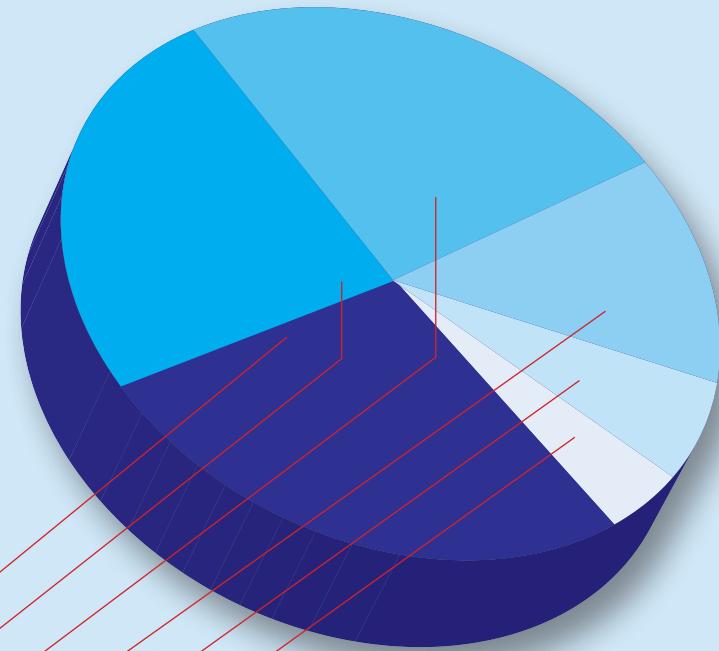
The questions in the survey asked them to name their favourite, and also to rank in order of importance, a selection of hobbies and leisure activities.

### *Results*



#### *Favourite pastime:*

- Playing computer games **34%**
- Spending time outdoors **30%**
- Watching TV **17%**
- Reading **11%**
- Indoor hobbies **8%**



#### *Ranked most important:*

- Playing on the computer **26%**
- Playing outside **26%**
- Learning **21%**
- Watching TV **14%**
- Looking after animals **9%**
- Saving the environment **4%**

Saving the environment was ranked least important by 32% of respondents.

Ten times more children ranked watching TV or playing computer games first compared to those who chose saving the environment (40 percent and 4 percent respectively).

And while species extinction rates are estimated to be up to 1,000 times the natural rate, only 9 percent ranked looking after animals as most important when compared to other pastimes.

On a positive note, the results show that children still enjoy spending time outdoors with almost a third (30 percent) saying it is their favourite pastime.

# COUNTRY STATISTICS



## Australia

- Australian children are big reptile fans, with 31 percent choosing to save them from extinction
- 11 percent of children in Australia said they didn't know what global warming meant.



## China

- 90 percent of those questioned in China knew what an endangered species is, the highest proportion of any of the countries taking part in the survey
- China has the greatest proportion of children who didn't understand what global warming means; 30 percent of those questioned thought it meant we would have summer weather all year round
- Only 33 per cent of children in China correctly identified giraffes as originating in Africa, versus a global average of 57 percent.



## France

- French children were keener than average to copy the skill of flying like a bird – 72 percent versus the average of 66 percent
- 15 percent of French children think pandas come from Australia
- Children in France were on average less familiar with the concept of habitat loss as a factor in

causing species to become endangered – only 51 percent were aware of this (compared with average of 67 percent).



## Germany

- Of the countries surveyed, fewest children in Germany selected playing computer games as their favourite pastime (24 percent)
- 14 percent of German children think pandas come from Australia.



## Japan

- More children in Japan ranked playing outside as more important to them than playing on the computer – 30 percent compared with 23 percent
- When it comes to saving the environment, fewest children in Japan ranked it most important to them (versus a list of activities), at 2 percent, although the global average overall was very low at 4 percent
- In Japan, only 66 percent of children surveyed knew what an endangered species is.



## Mexico

- More children in Mexico than the other countries surveyed said that saving the environment was most important to them

(compared with a list of other options), at 7 percent. The average across all ten countries was 4 percent

- Mexican children were the most knowledgeable about global warming, with 87 percent correctly identifying that this means the earth is heating up
- Reptiles are very popular amongst children in Mexico, with more children in that country choosing to save them from extinction (42 percent) than mammals (38 percent) – unlike the rest of the world's respondents



## Singapore

- In terms of children who knew that climate change is, in part, responsible for endangering species, Singaporeans came top with 69 percent
- Of the countries surveyed, more children from Singapore selected playing computer games as their favourite pastime (46 percent), than any other country
- Children in Singapore were the lowest proportion of respondents saying their favourite pastime was spending time outdoors (13 percent), versus an average of 30 percent.



## Spain

- Twice as many children in Spain said their favourite pastime was spending time outdoors, than watching TV – 37 percent compared with 18 percent

- In terms of children who knew that climate change is, in part, responsible for endangering species, Spanish children were lowest at 54%.



## UK

- Children in the UK are much more likely than average to want to save mammals, like snow leopards, from extinction, versus other species like birds and insects. 69 percent of British children, the highest from all the countries surveyed, said they would most like to save mammals
- Twice as many children in the UK say their favourite pastime is spending time outdoors, than watching TV – 34 percent versus 16 percent.



## USA

- In the survey children from the USA were the highest proportion of respondents saying their favourite pastime was spending time outdoors (52 percent) – the average was 30 percent
- Of all the countries surveyed, fewest children from the US knew that global warming means that the earth is heating up, at 77 percent versus the average of 81 percent
- Only 60 percent of American children knew that aircraft are inspired by nature – the lowest of any country.

# CONCLUSION

It is hoped that readers find this report and the survey findings enlightening reading, or at the very least food for thought.

What seems clear is that there is work to be done both in the short and longer-term, in improving the knowledge, awareness and understanding that children have of the natural world which surrounds them, and motivating them to find out more – and get involved.

Whether it is through schools-based learning, local community environmental schemes, wildlife organisations and parks, or global initiatives like *The Green Wave* programme, there are lots of opportunities for children to be inspired, get their hands dirty, and build a love and respect for nature which will last a lifetime.

It's also often simply a case of making a start – however small! All of our individual actions can make a big difference. So here are five relatively easy things we can do to get started:

1. Take your children to local wildlife parks or zoos, and explain what biodiversity is and why it's important (and try and simplify the concept of biodiversity when you explain it!)
2. Whether you live in the city or countryside, create a mini garden project. Sow some indigenous seeds in a small outdoor garden space or even in a window box to encourage bees and birds to visit

3. Take your children on 'wildlife walks' – looking at different animals, plants and insects along the way while respecting nature – making as little noise as possible, keeping to the paths, not throwing rubbish, and so on
4. Participate in the International Day for Biological Diversity on 22 May each year
5. Organize a neighbourhood clean up.

Beyond these simple ideas, how we collectively create a deeper engagement with the natural world, and make action happen, is a harder question to address. The reach and impact of the International Year of Biodiversity 2010 has, however, surely been a step in the right direction.

Airbus and the CBD intend to continue to collaborate on further Bio-Index surveys following on from this pilot activity, creating a long-term benchmark for children's knowledge on this topic. In the meantime they would welcome your views and commentary on the report, and to hear from any organisations which would be interested in working together on future editions.

**2010**

Photo: Julia Kresse, 15 (Germany)



Please email us with your comments at

**TheFuture@airbus.com**

# ACKNOWLEDGEMENTS

Thanks should go to the ten thousand children across the globe who took the time, together with their parents, guardians and teachers, to complete this survey.

Many thanks also to **Wildscreen** who kindly provided the imagery used in the original survey via their initiative **ARKive**, together with their consultancy on the species cited within.

## About the Convention on Biological Diversity (CBD)

Opened for signature at the Earth Summit in Rio de Janeiro in 1992, and entering into force in December 1993, the Convention on Biological Diversity is an international treaty for the conservation of biodiversity, the sustainable use of the components of biodiversity and the equitable sharing of the benefits derived from the use of genetic resources. With 193 Parties, the Convention has near universal participation among countries. The Convention seeks to address all threats to biodiversity and ecosystem services, including threats from climate change, through scientific assessments, the development of tools, incentives and processes, the transfer of technologies and good practices and the full and active involvement of relevant stakeholders including indigenous and local communities, youth, NGOs, women and the business community. To date, 157 countries and the European Union are party to the Protocol. The Secretariat of the Convention and its Cartagena

Protocol on Biosafety is located in Montreal, Canada.  
[www.cbd.int](http://www.cbd.int)



## About the 2010 International Year of Biodiversity

The United Nations proclaimed 2010 the International Year of Biodiversity, and people all over the world are working to safeguard this irreplaceable natural wealth and reduce biodiversity loss. This is vital for current and future human wellbeing. The International Year of Biodiversity is a unique opportunity to increase understanding of the vital role that biodiversity plays in sustaining life on Earth.



## About The Green Wave

The CBD's Green Wave initiative is designed to engage and educate young people worldwide about the crucial role biodiversity plays in our lives and our futures so that they champion actions that will help to support a more sustainable world. Through *The Green Wave*, they are encouraged to celebrate life on earth and at 10:00am on the International Day of Biodiversity, which falls on 22 May each year. As the celebration passes through the world's time zones it creates a 'green wave' of awareness and activity from east to west around the planet.

[www.greenwave.cbd.int](http://www.greenwave.cbd.int)

## ARKive About ARKive

ARKive, an initiative of the not-for-profit charity organisation Wildscreen, gathers together the very best films and photographs of the world's species into one centralised digital library, to create a unique audio-visual record of life on Earth, prioritising those species at most risk of extinction. Preserved and maintained for future generations, ARKive is making this key resource accessible to all, from scientists and conservationists to the general public and school children, via its award-winning website

[www.arkive.org](http://www.arkive.org)



## About Airbus

In addition to pioneering greener flight, Airbus is also working in partnership with the United Nations Secretariat of the Convention on Biological Diversity (CBD) to build awareness of the importance of biodiversity and the steps everyone can take to nurture the environment around them.

Airbus is using its global reach to back the CBD's Green Wave initiative, designed to engage and educate young people worldwide about the crucial role biodiversity plays in our lives and our futures so that they champion actions that will help to support a more sustainable world.

Innovation has always been at the heart of the aviation industry - in the last 40 years, aircraft fuel burn and emissions have been reduced by 70

percent and noise by 75 percent. Nature itself may help us to find the solutions to greener flight and a more connected and sustainable world – through the science of *biomimicry*. Losing biodiversity means losing the potential to find innovative solutions to future problems faced by humankind.

[www.airbus.com](http://www.airbus.com)