

# Teenagers and biodiversity - worlds apart?

An essay on young people's views on nature and the role it  
will play in their future



## FOREWORD

Not so long ago, when our children were at kindergarten I read them a Jip en Janneke story every bedtime. The Jip en Janneke stories were written by Annie M.G. Schmidt in the 1950s and 60s. The world she depicts is a simple one. Father goes to work on his bicycle and Mother does the housework. Jip and Janneke play, sometimes inside but usually outside. Janneke has a doll, Jip has a bear, and they have a ball. They have all sorts of adventures outdoors. They roll down the dike (and discover stinging nettles), build huts, pick flowers and find a hedgehog. This is the world in which many of our politicians and senior policy makers grew up.

What a contrast with children today. Instead of just one rag doll, today's Janneke probably has a cupboard full of Barbies, and Jip has traded in his bear for a Gameboy. Instead of playing outside they watch Cartoon Network and Fox Kids or play computer games. Nature is something they see on television, preferably in

programmes featuring sharks and crocodiles, or other spectacular and dangerous animals. Recent research in the UK has revealed that primary schoolchildren know more about the various 'species' of Pokémon than about plants and animals. What effect have these childhood years had on today's young people? And what does this mean for the future?

We were curious to find out and decided to investigate what young people think biodiversity - or 'nature' - will mean to their lives in about twenty years time. We hosted a meeting with youth



researchers and experts on environmental education, we involved young Alterra researchers and we talked to a great many teenagers and scientists. We consulted literature on the subject and compiled a questionnaire which was filled in by 420 schoolchildren. We discussed the results of the questionnaire with members of the Dutch Youth Organisation for Nature Study (NJN) and other schoolchildren during a symposium, organised jointly with the NJN and Naturalis, the National Museum of Natural History. A website and poster were designed for the event. We also elected a representative to take part in the Youth Conference during the Sixth Biodiversity Congress, held in The Hague in April 2002, where we distributed the results of the questionnaire on posters and leaflets and answered questions.

One of the goals of nature policy is to bring nature closer to people. Our study looked at teenagers as a possible target group of government policy. It has thrown up some pointers for meeting young people's needs and raising their appreciation and understanding of nature and biodiversity. It uncovered a wider gap between young people and nature than we had expected, but also sparked off a desire to know more, and not only among the schoolchildren. Our study attracted attention from the media and we received many invitations to speak at meetings on nature and environmental education.

Although the research was conducted in the Netherlands, the picture we obtained may also apply to at least the more urbanised regions of Europe where the cultural, economic and social climates are broadly similar. Our study raises questions we feel have to be confronted. We hope this essay will encourage you and others to take a closer look at young people's attitudes to nature and biodiversity.

Jana Verboom  
Wageningen, January 2004

## ARE CHILDREN LOSING TOUCH WITH NATURE?

Are children losing touch with nature? If you think they are, have you ever wondered why? The home environment? School? Television? Internet? If you have children yourself, when did you last take them to a nature reserve, or to the hills, the coast or the woods? And would it surprise you to learn that teenagers value nature most as an attractive backdrop to life? But why should we want to know about the attitudes of this young generation to nature? Well, for one thing, we are responsible for the nature they will inherit. Will it be what they expect? Will they appreciate it? And will they be interested enough to protect it?

Teenagers today lead very different lives than their parents did twenty or thirty years ago. Their parents grew up with one or two channels of black-and-white television in the evenings and without computers, but with time and space to build huts, play in the woods and catch tadpoles. Today's children seem to spend a lot of time watching television or on the computer. Mum and Dad both work. They plan 'quality time' in their busy schedules and drive the children of the 'back seat generation' from one organised activity to another, from football to guitar lessons, from tennis to flute lessons. Their children have less time - or make less time - to discover nature outdoors. And, of course, 'outdoors' has become a more dangerous place, nature is seen less as a play area.

Meanwhile, baby boomers dominate the world of research and policy making. In the Netherlands they have invented a host of intriguing concepts for packaging nature



conservation policies, such as the National Ecological Network, 'robust corridors', 'green-blue arteries', the 'Wet Axis', nature compensation and mitigation, and now 'nature for people'. But these plans need time. Habitats and populations cannot be established overnight; nature restoration and environmental policies may take twenty to thirty years to have the desired effect in the landscape. Our birds of prey have only recently fully recovered from the use of pesticides like DDT, decades after they were banned.

The decisions the over 35s now make will determine the type of nature we will have in twenty years or more, when the youth of today have reached their age. In other words, the next generation will be confronted with the results of our policies - policies they have not chosen and about which they have never been consulted. And from their ranks must come the future guardians of nature. The question is, what do teenagers know about nature? Are they concerned about the state of nature, and what will biodiversity mean to them when they are older?

To find out, we decided to survey a representative group of schoolchildren from 15 to 18 years old. Most still live at home and have relatively few responsibilities, but all are rapidly developing from children into adults. The question we set out to answer was:

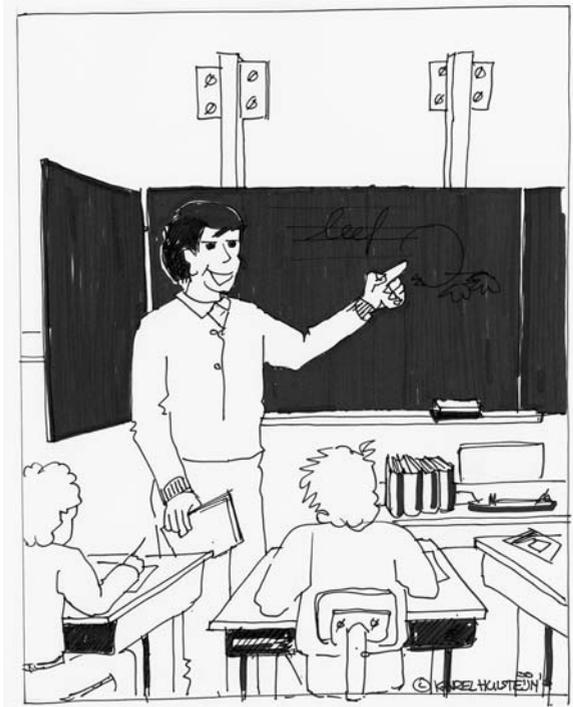
*What place will biodiversity have in the lives of today's teenagers (15-18 years old) when they are adults, alongside other aspects, such as employment, welfare and safety?*

The trouble with the word 'biodiversity', though, is that you cannot easily identify with it. Some of the children even had difficulty pronouncing it. 'The variability among living organisms at the ecosystem, species and genetic levels' is not a concept that conjures up real images or experiences of nature. To make the concept of biodiversity manageable for our research we used words which refer to certain aspects of biodiversity: the word 'nature', various ecosystem types such as 'forest' and 'heath', 'extinction of plant and animal species', and 'numbers of plant and animal species'. What the pupils think about these subjects tells us something about their attitude to biodiversity, without having to use this difficult word itself.

We designed a questionnaire to ask the pupils about

- What interests them
- What they think about biodiversity
- Whether they identify with nature or not

- How they think they will use and value green and natural areas in twenty years time
- The role they think nature will play in their adult lives and what they will do to protect it



The written questionnaire was completed by 420 pupils aged 15 to 18 during a normal lesson. The pupils were members of 24 classes from seven Dutch secondary schools of various types and with catchment areas ranging from inner city to rural areas. To obtain a representative sample population we included classes from all levels of secondary education across the spectrum of subject areas. The results were aggregated into two clusters for analysis: the 'lower level' classes (preparing for further vocational and training courses) and the 'higher level' classes (preparing for professional and university education). The pupils took the

trouble to fill in the questionnaire properly and entered into the subsequent discussions with enthusiasm. A few were initially disruptive, but soon came round and found the material to be interesting after all.

The schools were also given the opportunity to take part in a ramble using global positioning system equipment. One school was particularly keen on this idea because it allowed the many immigrant children at their school to become acquainted with Dutch nature. Two lower level classes and two teachers took part in the excursion to the Utrechtse Heuvelrug, a wooded area to the east of the Dutch city of Utrecht. We noticed no recalcitrant behaviour and enjoyed our walk and discussions with the pupils. Their reports on the day revealed that they enjoyed the excursion and were excited by the fact that they were allowed to stray off the paths in the nature reserve.

Of course, there are some children that love nature, regularly go to the countryside, woods, heaths or dunes and know a lot about natural history. Some of these nature-loving children are members of youth organisations such as the WWF or the Dutch Youth Organisation for Nature Study (NJN). The membership of the NJN has fallen sharply in recent years and these children are a small minority. They were not properly represented in the questionnaire survey and so we approached a group of nature-loving teenagers to find out their opinions. We discussed the results of the questionnaire with these nature-lovers and a group of policy makers and nature education specialists on a Saturday afternoon in the Natural History Museum in Leiden. Although we also sent invitations to the schools taking part in the survey and all other secondary schools with 'higher level' classes, only a handful of children considered it worthwhile coming, even with free train tickets and free entry to the museum. The NJN members did come in large numbers and were clearly committed.

This essay draws on our interpretation of the results of the questionnaire, a literature study and our discussions with the children taking part in the survey and with the NJN members and experts we consulted. It conveys our overall impressions of the children's response within the wider social context. A quantitative summary of the answers to the questionnaire is included at the end. As this field of research is new and there is little other data to put the results into perspective, our findings present a preliminary sketch which can only be filled in through discussion and further research.

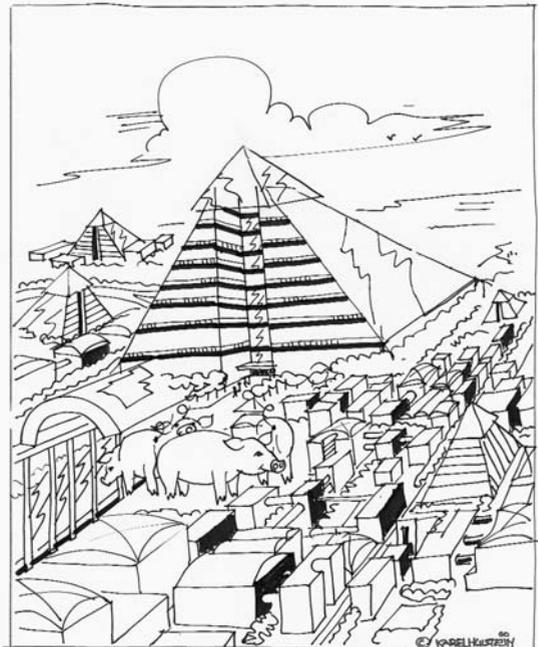


## SOCIETY AND NATURE IN TWENTY YEARS TIME

Twenty years ago nobody could predict how computers, internet and mobile telephones would change our lives. Neither can we predict exactly what life will be like twenty years from now, but we can make an educated guess at some general trends.

The process of urbanisation and suburbanisation will continue. Not only will the environment become 'greyer' (more asphalt and concrete) at the expense of green, but our 'consumption space' will expand too: greater use of the car, more frequent recreational trips and holidays to more distant destinations. People will make greater demands on their living environment and want bigger houses, preferably in a green environment and with recreational amenities nearby. But although the differences between town and country are becoming blurred, policies still assume a clear distinction. This is rapidly becoming impossible in the Netherlands, with its convoluted and fragmented pattern of urban development. Is this drawing of boundaries still feasible, or should we seek to combine land uses in multifunctional urban landscapes? Should we (can we) bring nature closer to where people live and work, or should nature be something you visit in the weekend?

Farming will be transformed. Following a long period of agricultural expansion and intensification, a change to sustainable farming systems is in sight. The future lies in the production of both food and an attractive green environment. As well as hi-tech farms and further industrialisation of agriculture (high-rise piggeries?) we are likely to see diversification into regional products, campsites and 'social care farms'. Hobby farms and organic farms will probably grow in number. A rarity just twenty years ago, organic produce has found a market and the area farmed organically is growing each year,





although with only two per cent of all agricultural land farmed organically in 2003, the Netherlands still lags behind other European countries.

Demographic changes are easier to predict. Two major trends can be discerned: an ageing population and an increasingly multicultural society. Already one in seven people under 25 in the Netherlands are of foreign descent and most do not come from a Western culture. In 2015, this proportion is expected to rise to one in six, with the majority born and raised in the Netherlands.

### **Our responsibility for nature**

In recent years, Dutch policy makers have adopted a new approach to nature policies. Nature is no longer restricted to nature reserves and designated areas of 'new nature', but stretches from the back door to the heart of the wildest areas. At the same time, nature should meet the wishes of the population, be accessible and provide a range of recreational opportunities. The Dutch government expects that people will take their responsibilities for nature seriously: we not only have the right to the benefits of a green living environment, we also have the obligation to maintain and protect it. The government will act where necessary but expects the civil and private sectors to take on a greater share of the responsibility.

*'It's up to each of us to look after nature, but we have to do it together.'*

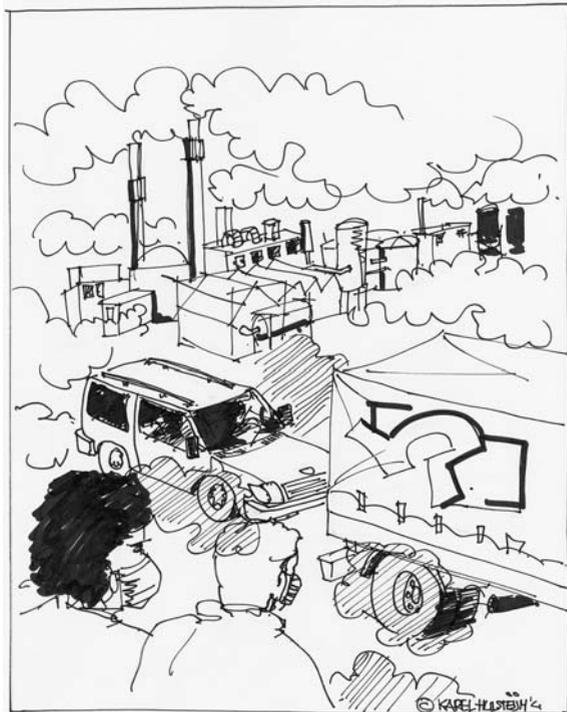
That is the background to our study - a rapidly changing physical and social environment and a greater role for non-governmental and individual action to protect nature. We ask ourselves how young people, the potential future guardians of nature, will respond to this? What sort of nature will these pupils feel responsible for, and what will they do to conserve it?

## YOUNG PEOPLE AND BIODIVERSITY

The pupils in our survey say they have little contact with nature, only about once or twice a week or month, and then usually the 'nature' of recreation areas, such as sports fields or natural swimming ponds. There is little sign that a love of nature is inculcated at home. Indeed, about three-quarters of the pupils thought there was only 'a bit of interest' for nature at home, and eleven per cent said there was none. Only sixteen per cent of the pupils reported that their families took time to go on walks in the countryside or nature areas, watched nature programmes on television or talked about the natural world at home. More than half (55%) never go to nature reserves and parks, zoos or botanical gardens. Wild and rare plants and animals attract little interest. Statistics Netherlands (CBS) reports similar trends. As anyone who hikes or bikes in the Dutch woods or countryside can confirm, these are not the best places to find teenagers. They are too old to be with their parents and do not want to go there with friends.

### 'Nature will lose out to industry and companies'

Although young people rarely come into contact with nature, they are fully aware that all is not well. Eight out of ten said that they were concerned about nature, and other research has revealed a wider pessimism about the future of nature and the environment. Most pupils were concerned about expanding residential and industrial development. Nine out of ten are particularly concerned about the woods and forests, which they think are in real danger of disappearing. Pupils repeatedly mentioned the greenhouse effect and global warming as threats to nature. They also mentioned air pollution, natural disasters and



threats to plant and animal species. Some think the depletion of natural resources (energy and water) is a real possibility in twenty years time. A small group do not share this pessimism at all and believe that 'nature will find its own balance'.

*'In the Netherlands decisions are always based on economics and not in favour of nature or the environment.'*

### **'There's nothing I can do about it anyway'**

A key criticism young people have is that the environment is being built up at a rapid rate and that economic interests outweigh the impacts on nature and the environment. They have visions of a country full of buildings and almost denuded of woods and forests, and feel powerless to stop it: 'There's nothing I can do about it anyway.' The keen nature-lovers (NJJN members) confirmed that young people think they have little influence and do not know how to express their concern. But despite their pessimism about the future of nature and the environment (and about world peace and public safety too) the pupils are definitely optimistic about their own personal future. In particular, they expect a good education, good economic prospects and job opportunities. Most were confident or very confident about their opportunities for a career between now and 2022 and less than one in ten were pessimistic.

*'Nature in the Netherlands is already totally ruined. So let's protect nature in the rest of the world so that we don't mess that up too.'*

### **'I know so little about nature'**

Despite their general expression of concern about the future of nature, the pupils in our survey had no clear idea about what biodiversity is and why it is an issue. A little under half (44%) indicated that they were not really bothered by the fact that many plant and animal species around the world are facing extinction. They know only a few of the common animal species and hardly any plants, and are more concerned about a lack of space for nature than about biodiversity. For them, 'nature' conjures up feelings, experiences and memories of places.

*'If you ask most children what sort of nature they like, they will say "I only know one type of nature, the green type." But if you ask what sort of music they like, they can name at least forty different types.'*



Many pupils were unable to provide realistic answers to the question on which species of animals and plants will do better or worse in the future. Most were unable to name a single endangered plant species and knew only a few endangered animals. The list of wild animals or plants they would miss if they died out is dominated by common, striking or cuddly mammals, or animals featured on television. The top five were deer, squirrel, fox, badger (endangered in the Netherlands) and rabbit. It was a surprise to find even pets and domesticated animals on

the list (cats, dogs, cows and horses). Animals also greatly outnumber plants. Of the plants, trees were mentioned most often. Hemp was mentioned four times.

Plants were more prominent among the species they would not miss if they died out. One teenager did not like plants at all and was quite happy to see them all go! In general, they mentioned annoying species which can bite or sting, such as mosquitoes, stinging nettles and wasps, and animals they fear like rats, snakes and spiders. Bees even figured on the list. Some children are apparently oblivious to their vital role in pollination, as food for birds, and for making honey.

*'What do young people care if 300 types of hoverfly die out, as long as there are still trees and green areas.'*

About half of the pupils thought there would be fewer plant and animal species in the Netherlands in twenty years time. Others assumed that 'the government' will take action to reintroduce or protect endangered plants and animals. Fourteen per cent thought there would be more species in future, and some even mentioned genetic manipulation as a source of new species. But, to be fair, even the experts are largely in the dark. All they can say is that, as the environment changes, some species will

probably disappear and others will extend their range northwards into the Netherlands.

Many of the pupils, particularly those from immigrant families, appeared to have no idea about which species are native to the Netherlands. Some were surprised to hear that there are no lions or elephants wandering around in Dutch forests. We also observed lengthy discussions on whether insects were animals or not. All in all, the pupils in our survey had little knowledge of the 'nuts and bolts' of nature, individual species and their significance for natural processes. For them, nature, perhaps like many other things in life, is all about appearances - the big picture. A backdrop to life, but not a part of life.

*'The other kids at school think you're strange if you show an interest in nature.'*

*'Nature is not part of young people's lives.'*

### **'Maybe I should take more interest in nature'**

Among our young people nature is firmly on the back burner - but it can be brought to the boil. When forced to confront questions about nature and biodiversity, many of the children were curious and entered into the discussions with enthusiasm. Teachers reported that some pupils were still asking questions days after the event. 'Nature' had become much more of an 'issue'. It was more interesting - and more important - than the pupils had expected. For many of them, this exercise was a learning process, opening their eyes to issues they had clearly not thought much about.

*'My own feeling is that I can't do much about the major problems affecting nature and that lots of people think the same way. But actually each person can make a big difference if everyone acts. You should do more to confront people with the problems.'*

*'I think that nature is quite an important topic, but not many people my age care much about it. Perhaps we should do something about that?'*

If they are so concerned about nature, who do they think should be taking action to conserve nature? The pupils thought most should be done by nature conservation and environmental groups - those groups they think do most now - followed by international governmental organisations, industry and local government. About half

think the government should do more for nature conservation. They see a much less active role for themselves, local groups and, surprisingly, for farmers. Actions that would impinge on their own freedom, such as making less use of the car, going to meetings, voluntary work and not eating meat, were clearly unpopular. More than half claimed that they would probably give money to groups and organisations that do take action, or be willing to pay higher taxes, and some would be prepared to play an active role in their own neighbourhood or district. They want someone else to take care of the big picture.

### **'If I were minister for Nature ...'**

So what would these adolescents do if they were running the country? They were asked what they would do first if they were minister for nature conservation. Most put environmental measures at the top of the list, with cleaning up litter the clear favourite. Many would plant more trees and create more nature reserves for wild animals. As ministers they would conserve and increase the size of forests and secure more land for nature instead of industry and housing.

*'I would make people clear up the rubbish they leave in the countryside so that everyone can enjoy nature and see how important it is.'*

*'If I were the minister I would make sure there was less industry, more nature areas and that wild horses were released and of course highland cattle as well.'*



*'I would give less priority to economic growth and more to nature. I would try to make agreements with other countries on nature conservation.'*

*'A minister should protect more areas and make sure that as few fields and polders as possible are built up.'*

*'Fewer cars and therefore less pollution and better public transport.'*

*'As minister I would start an advertising campaign to give young people an idea about the state nature is in and do something about it.'*

When asked to evaluate the effectiveness of ten policy measures, the pupils give massive support to tree planting, reintroducing species and measures to restore habitats and create more nature reserves. Given a choice of four nature strategies, most pupils gave the highest priority to establishing and protecting large nature areas, followed by creating more recreational green areas, such as sports fields, natural swimming pools and walking areas. They were less enthusiastic about more nature nearer to residential areas and encouraging nature-friendly farming.

### **'Not in my back yard'**

Despite their apparent enthusiasm to protect nature, these teenagers elevate their personal interests above the wider interests of society as a whole. They have embraced the 'not in my backyard' syndrome. Their preferences when confronted by eight pairs of contrasting propositions that affect their own personal lives and wider social and environmental issues reveal clear conflicts of interest. Young people want a comfortable lifestyle and more detached houses with big gardens, but they also want more nature and no more roads - they even say they will be prepared to accept longer traffic queues and delays! They are all for creating new, wild nature areas, but not for sacrificing skiing holidays to protect the Alpine environment. Many were aware that you need to intervene to ensure the survival of certain plants and animals or reintroduce species, but they also like the idea of leaving areas well alone and letting nature take its course. They seem unable to face up to the choice between what is good for them and what is good for nature.

*'You sort of feel guilty about all the nice things, and that's why nature's not really in.'*

## **Dilemma**

Our research shows that most adolescents have little real understanding of what 'nature' is or what biodiversity means, and have a very limited knowledge of wild plants and animals. They value nature mainly as providing an attractive or exciting décor for home life, sports and other activities. Their prime concern is about space for nature; biodiversity does not have much appeal. This generation displays a huge variety of youth cultures, fashions and lifestyles, but most young people have rather traditional aspirations for the future. They do not aspire to change the world; the government, or someone else, should do that. What they can do is have a successful career and a comfortable life. They want more green space and wild areas, but are reluctant to give up a space-guzzling lifestyle. If they really want both, they face a dilemma.

## BRINGING NATURE TO YOUNG PEOPLE

People care about what they know, and they know about what interests them: things they value or that are part of their daily lives. If most teenagers know so little about nature and tend to value only the more visual aspects of the natural world, they may not be equipped to appreciate the importance and value of biodiversity in future. Re-establishing the links between young people and nature can only benefit both. We can do this by teaching them about nature, engaging them and encouraging activities in natural setting, and learning more about young people and biodiversity.

*'We should be worried about all those children who are so far removed from nature.'*

### Nature education

The pupils were keen to know more about nature. The overwhelming majority thought that at school 'no time' (32%) or only 'a bit of time' (56%) was devoted to natural history and nature conservation. Many criticised this and wanted to learn more. They want more time to discover nature 'hands on'. Some of the nature-lovers argued that too little time is devoted to nature education at school, particularly biodiversity, because children who know little about species tend to display a general lack of interest in nature. It is not a 'hot topic'.

In the Netherlands children in the last four years of primary school (eight to twelve years) receive on average no more than an hour and a quarter per week on science. In this time the teacher has to cover topics from biology, physics, environment and technology. For some children, this is all the nature education they receive. The more academic streams receive at least some additional biology lessons in their first three years of secondary education, but biology is an optional subject thereafter. This is a structural problem which surely lies behind the general low level of interest in the natural environment. It is a problem that has to be solved.

*'Knowing about things is very important for getting a feel for them, but also because you develop a sense of responsibility for them when you're older.'*

One response is to raise the amount and quality of natural history or biology education in primary schools and the initial years of secondary education. The Biology Council of the Dutch Royal Academy of Sciences has argued for better coordination between theory, practical work and experience through a combination

of head (knowledge dissemination), hand (action) and heart (experience). We heartily support this view. We should find a way to teach children how to appreciate the value of nature and biodiversity - even an idea of its financial value - and at least take responsibility at least for the habitats and species which are unique or characteristic in their own corner of the world.

## **Nature appeal**

The pupils in our survey are open to communication about nature but do not actually get as far as learning more, becoming involved and taking action to protect nature. We could get them interested by tapping into those aspects of their lives they value most. A few ideas:

*'I don't think that knowledge about nature leads to greater concern and willingness to act. It's not what you know, but what you experience.'*

### *Social nature*

We can draw on the desire among adolescents for fun and companionship by emphasising the social aspects of voluntary work and by appealing to their creativity. We need to know how this social and recreational function of nature can be combined with its spatial and ecological requirements.

### *Hi-tech nature*

This young generation is a computer generation used to growing up with technologies that are changing as rapidly as themselves. Some can be attracted 'into' nature by making use of new technologies such as global positioning systems (GPS) in survival courses and other nature-related activities.

### *Lifestyle nature*

Media coverage can raise interest in nature among young people if it is presented in ways that young people identify with - 'cool' programmes presented by celebrities they know and look up to. The 'News from Nature' programme on Dutch School TV took just such an approach. It was presented by a trendy young woman, the idea being to identify nature and species diversity with a positive lifestyle, in much the same manner that advertisements associate products with a positive image. In a German competition young people were asked to make a short film about nature that would be attractive to other young people. In other words, a film that presents nature as 'in', an object to be identified with. The films had to be set in a natural

environment, not far from home. The winner was chosen from the 68 films submitted by television vote during an international nature film festival in Berlin and received a prize of □ 5000. The competition's aim of associating 'intact nature' with a positive lifestyle will be further promoted through repeated broadcasting of the winning film.

*'The government should spend more money on making people like me aware of how serious the situation is!'*

### *Street nature*

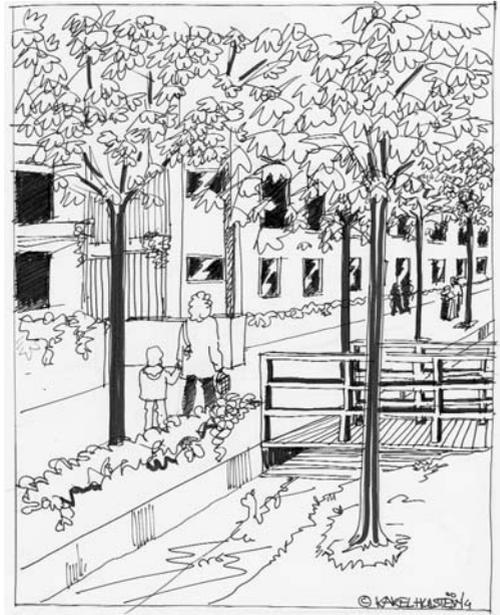
An increasing proportion of children grow up in an urban environment and we can no longer assume that they will have any contact with nature. Green space in the neighbourhood, whether it is of high ecological value or not, is important for this experience of nature. More 'green in the street' should be the motto, according to the NJN children. We could start with habitat creation in urban parks and along urban fringes, for instance in our own region.

*'Nature begins outside your front door.'*

### *Adventure nature*

Memories of places where you built huts, played hide and seek and discovered all sorts of creatures are important in later life. The National Forest Service has created a number of nature playgrounds where children can safely discover nature through play. In fact, every neighbourhood could have its own nature play area. Some researchers say that 'risk-seeking behaviour' is increasing among young people; if nature cannot provide these children with the excitement and challenges they seek, they will look elsewhere. Children and teenagers need unplanned, wild places where there are no rules, places where they can unwind, release stress, take risks and tear around on the moped.

To survive, nature must have a place in human society. It seems that conserving nature for reasons of ecology or biodiversity is not going to be enough. We have a



special responsibility for the natural world, but this responsibility has to be felt and become a part of our lives. The overriding message from our study is that it is our job (the generation of current policy makers and nature conservationists) to introduce young people to nature. Crucially, we need to know how young people can learn to understand what biodiversity is and what it will mean for their future lives.

*'As long as nature is just something in text books, it doesn't really mean much and you don't "get it".'*



## Nature research

In all scientific research the more you know the more questions you uncover. This study was no exception. One of the biggest problems is how valid the opinions are. We all know that the answers people give in questionnaires often paint a more favourable picture than justified by their actual behaviour - particularly where their behaviour regarding environmental issues is concerned. And it is even easier to say what you will do in future; something else to actually do it. An additional problem here is that the study is about an age group more actively concerned with school, sports, shopping, going out and experimenting with relationships than with the future of the world or the state of nature. But their views will change as they grow older and have children of their own. In itself, the fact that many young people spend less time in a natural environment is not necessarily a bad thing. What is of concern, though, is that many of them have little idea what they might find if they went there.

Our experiences as children have an important influence on the interests we have in later life and this goes for our attitude to nature as well. Our survey could only scratch the surface, but it raises the spectre of a future society estranged from nature and with a limited grasp of the importance of biodiversity. The importance of engaging young people in shaping the future of nature hardly needs stating. We feel that calling for more research and long-term monitoring on young people and their

attitudes to and knowledge of biodiversity is fully justified. Do young people really spend less time in nature than other generations? Do they really know less or care less and how do their attitudes develop throughout the years? We need to find out. Main questions are:

- What kind of nature do young people prefer?
- How can we encourage young people to spend more time in nature?
- How effective is nature education?
- What are the differences in attitude between age groups?
- How does the way we think about nature change during our lives?

We welcome any comments and further ideas you may have.

In writing this essay we wanted, above all, to stimulate discussion about the role young people can play in nature policies and nature conservation. How do we ensure the continuation and development of efforts to conserve biodiversity and guarantee a secure place for nature in our society? We have no ready answers. Except to say that to find the answers we will have to teach young people - as parents, volunteers and teachers - listen to young people - as politicians and policy makers - and study young people - as scientists.

## THE QUESTIONNAIRE RESULTS

### The questionnaire

The questionnaire was divided into three parts: on the pupils' present attitudes and what they think about biodiversity, on what they think nature and society will be like in twenty years time, and on how they see their own lives in twenty years time. The questionnaire contained open questions and multiple choice questions and was based on the outcome of an expert meeting with established youth researchers and experts on nature, environment and biodiversity. The draft questionnaire was tested on two classes.

The opinions expressed by the teenagers say something about the role and significance of nature in young people's lives and what they think about the various interpretations of biodiversity. We asked them what they would do if they were minister for nature and the policies they would prefer to implement (institutional nature). We asked them what sort of nature they think will be endangered in twenty years time and how much diversity there will be (true nature). Of course, we also wanted to know what they know about nature and how they value it, both the positive and the negative aspects (subjective nature).

We asked them what they think the future will bring. We wanted to know whether they are confident about the future or not, if they are worried about the decline of nature, the problems they expect in twenty years time and the importance they attach to a number of social issues. We also asked them who they think should act to protect nature and what they would do themselves in future.

Finally, we were curious about how they think they will fit into the pattern of work, consumption, social life and free time, with all the attendant obligations. We were able to explore this in only a limited way, focusing on its relevance for nature, the influence of the home environment and of school, who they think is responsible for nature and how they can influence the state of nature in twenty years time.

### Selection of schools

We asked the directors, biology teachers or careers counsellors of a number of schools whether they would be prepared to arrange for classes to fill in the

questionnaire during a lesson. From the schools willing to take part in the study we made a careful choice. The selected schools represent different school types and a range of catchment areas - from inner city to rural areas, in different parts of the country. A number of classes from each school took part - including classes taking different subject clusters. The questionnaire and discussions were held during various lessons, not just biology lessons. The participating schools received a small budget to spend on teaching materials.

The field work took two weeks and 420 questionnaires were filled in. The pupils were given half an hour to fill in the questionnaire in a supervised environment. The remaining time in the lesson was devoted to a discussion on the issues raised by the questionnaire and any questions and remarks the pupils had on the subject of nature, biodiversity and the future. The questionnaire survey was conducted in the second and third weeks of January 2002.

A varied mix of pupils filled in the questionnaire, including children of immigrant families. Although we might have expected pupils at the schools in Amsterdam to give different answers than pupils living in rural areas, we found that they all held roughly the same opinions about nature and the future, regardless of where they live and where they go to school.

## SUMMARY TABLES OF ANSWERS TO THE QUESTIONS

### PART I - WHAT YOU DO AND THINK NOW

Table 1. How often do you go to these places?

How often do you go to....	Percentage of answers in each box				
	once a week or more often	once a month	a few times a year	once a year	seldom or never
recreation areas	32	19	36	5	8
farmland	23	11	15	9	43
city park	14	14	24	10	38
woods	13	17	39	13	18
river	10	7	21	16	46
lakes, sea, dunes or beach	6	8	60	16	10
protected nature areas	3	4	19	19	55
zoo and/or botanic garden	1	2	13	33	52

Table 2. Indicate how important nature is to you for the following reasons

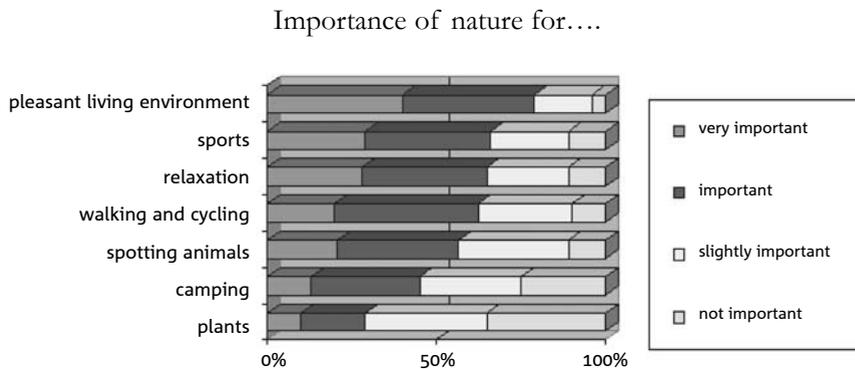


Table 3. The government have come up with all sorts of ideas to protect nature in the Netherlands. Do you think these ideas will help a lot, help a little or not help at all?

<b>Policies the pupils thought would be helpful</b>	<b>Percentage who answered 'will help a lot / a little'</b>
Plant two new trees for every one felled	91
Buy up agricultural land to create nature reserves	84
Reserve money to create corridors to link nature areas	76
Reintroduce animals and plants that have become extinct in the Netherlands	76
Spend half the budget for new motorways on nature in the surrounding areas (e.g. ecological verges, wildlife crossings, badger underpasses)	70
Build more flats than houses to leave more open space	46

<b>Policies the pupils thought would not be helpful</b>	<b>Percentage who answered 'will not help at all'</b>
Increase the cost of running a car	56
Compulsory unpaid nature conservation work, such as clearing litter, planting trees, removing weeds	51
Reclaim part of the North Sea to prevent complete urbanisation of the rest of the Netherlands	50
Prevent the spread of plants and animals from outside the Netherlands to protect our native species	46

Table 4. Write down one or more wild plant or animal species found in the Netherlands which you would miss if they died out.

*Numbers of times species were mentioned by the pupils*

<b>Higher level pupils (n = 192)</b>	<b>Lower level pupils (n = 214)</b>
Red deer (32)	Red deer (60)
Squirrel (22)	Fox (41)
Rabbit (17)	Squirrel(34)
Beaver (15)	Badger(31)
Birds (16)	Rabbit (21)
Fox (13)	Beaver(17)
Badger (11)	Birds(16)
Dog, horse, trees (10)	Birds of prey(15)
Cat (9)	Roe deer (14)
Lion, owl (6)	Seal (12)
All animals and plants (6)	Sparrow, hedgehog (10)
All animals (5)	All animals (8)
Dolphin, cows, elephant, wild boar, snakes (5)	All animals and plants (8)
Hedgehog, mouse, seal (4)	Stork (8)
Oak, sunflower, rose, tulip (4)	Otter, butterflies, buzzard, wild boar (7)

Table 5. Are there any wild plant and animal species you would not mind dying out?

*Numbers of times species were mentioned by the pupils*

<b>Higher level pupils (n = 192)</b>	<b>Lower level pupils (n= 214)</b>
No species (15)	Mosquitoes (48)
Mosquitoes (14)	Stinging nettles (42)
Rats(13)	No species (21)
Stinging nettles(11)	Wasps (15)
Wasps, bees (10)	Rats, pigeons (13)
Snakes (9)	Insects (12)
Insects, mice, spiders, weeds (7)	Spiders (10)
Cat, dog (6)	Mice, snakes (7)
Tiger, hogweed (4)	Thistles, crows (6)



## PART II - NATURE AND SOCIETY IN TWENTY YEARS TIME

'Try to imagine what the world will be like in twenty years time. You will probably have been working for some years and may have a family. What will nature and society be like then?'

Table 6. Do you think the following things will get better or worse in future?

(Aggregated answers)

<b>Improve</b>		<b>Worsen</b>	
Economy	++	Environment	--
School education	++	Nature	--
Employment	+	Public safety	-
Public health	+	World peace	-
Anti-discrimination	+		

Table 7. Which types of nature do you think will be in danger in twenty years time?

	<b>Percentage of answers in each box</b>			
	<b>severely threatened</b>	<b>slightly threatened</b>	<b>not threatened</b>	<b>don't know</b>
Marshes	29	<b>38</b>	17	16
Natural forests	<b>46</b>	41	11	3
Natural road verges	19	<b>35</b>	<b>35</b>	11
Rivers, banks and floodplains	15	<b>41</b>	33	11
Marine animals and plants	36	<b>39</b>	19	6
City parks	8	25	<b>57</b>	9
Urban nature	28	29	<b>35</b>	8

Table 8 There are now very many different species of plants and animals in the Netherlands. But in twenty years time will there be more species, just as many or less?

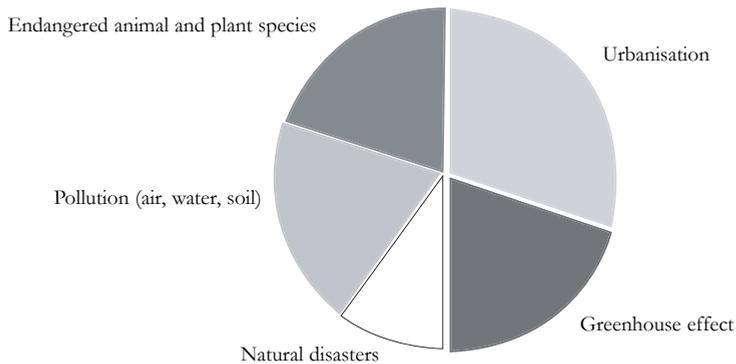
	<b>Percentage ticking</b>			
	<b>more</b>	<b>just as many</b>	<b>less</b>	<b>don't know</b>
Animal species	14	30	<b>52</b>	4
Plant species	19	26	<b>47</b>	8

Table 9 Some people think that the government should do most to protect nature; others say that ordinary people should be more active. Indicate how much you think everyone should do.

The pupils were asked to cross one of five boxes on a scale from 'do something' to 'do a lot'. The answers for the highest score ('do a lot') are given below (where there are significant differences, the first percentage is for lower level classes and the second for higher level classes).

	Percentage saying 'do a lot'	
	lower level	higher level
Nature conservation and environmental groups	68	
European Union or United Nations	44	
Industry	42	
Municipal councils	51	26
Local groups at district/neighbourhood level	31	15
Yourself	30	18
Farmers	27	12

Table 10. What problems do you think will affect nature in twenty years time? (Open question; the answers have been aggregated into five main categories)



### III YOUR LIFE IN TWENTY YEARS TIME

Table 11 In future some things will be more important to you than others. In the table below tick the box that shows how important the following will be to you in future: very important, important, not important or don't know.

How important will these be to you in twenty years time?	Percentage ticking 'important' or 'very important'	
	Lower level	Higher level
Good friends	77	88
A pleasant living environment	73	74
A partner	64	67
A good job	75	54
Lots of social contact at work	55	47
Having children	51	41
Earning lots of money	55	27
Pursuing a career	50	34
Responsible work	40	18
Living and working abroad	26	22
Living close to my work	31	12
Opportunity to work part time	19	15
Working for an environmentally-friendly company	11	8
Working for a company connected with nature/the natural environment	10	6

Table 12 What are the chances that in twenty years time you will do the following? Very high, high, small or very small?

	Percentage ticking 'high / very high chance'
Donate money to nature conservation organisations	61
Pay more taxes for nature conservation	51
Buy ecological products	47
Do nature conservation work in my own neighbourhood	38
Protect the birds in my neighbourhood	26
Join a group that maintains green areas in the district	24
Make as little use as possible of car, airplane etc	22
Attend events and meetings or go on excursions on nature and the environment	17
Take part in protests against the destruction of nature	16
Do voluntary nature conservation work	14
Become a vegetarian	13
Be active in a green political party	11

Table 13. What sort of choices will you make when you are grown up? (Put a cross in the box that best shows how much you are in favour of the proposition in each pair.)

Proposition 1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Proposition 2
A large private garden and city parks	X	More wild nature (primeval/natural forests, unexplored areas)
More detached houses so that everyone has more living space	X	Less living space and more room for nature
More roads, if necessary right through nature areas, to relieve traffic congestion	X	No more road building, protect nature and accept traffic queues and delays
Less environmentally friendly but cheaper energy (e.g. nuclear power)	X	Environmentally friendly but expensive energy sources (wind turbines, solar energy, etc.)
Let nature look after itself; do nothing	X	Interventions to promote a diversity of natural habitats and species
Skiing holiday each year, even if this is harmful to the environment	X	No more skiing holidays, to protect the Alpine environment
A field with plants and animals all about the same size and shape	X	A field with all sorts of plants and animals, big and small, trees, shrubs and grass
Neat and tidy nature areas	X	Leave nature areas well alone and let anything grow

*Table 14 If in twenty years time you had one thousand Euro to donate to a good cause, how would you give the money away? (Fill in amounts beside each cause; you may also fill in '0' if you don't want to give any money for a particular purpose.)*

<b>The cause is stated in order of the total amount the pupils would donate</b>
Third world countries
Healthcare
Nature conservation
Environment
Education
Poor people in the Netherlands
Culture (film, theatre, exhibitions)
Sport

## Suggested further reading

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