

No life without biodiversity

CBD TREATY IS NOT THE SALVATION



Nic van der Knaap

N.G.H.M. (Nic) van der Knaap (1944) was interested in all things living from an early age. And so, he collected a mini-Naturalis (natural history museum in Leiden) which was arranged in boxes under his bed and through scouting he visited natural science camps. His mini-



garden motivated him to start work in 1959 with his father John, who had a horticultural business in Wieringen. In 1973, he took over the company and started the cultivation of cut anthuriums. Gradually he began breeding anthuriums.

That became increasingly professional and resulted

in 1984 in the launch of the company, Anthura, where he served until 2004 as DMS (director/majority shareholder).

Van der Knaap has occupied several executive positions in trade-related organizations, such as the Flower Auction, Ciopora and Plantum. In addition, within Plantum, he has sat on various committees, such as the Main Committee on Intellectual Property, Main Committee on Biodiversity, Main Committee on Export Promotion and Trade Barriers and the Platform on Starting Material. On behalf of Plantum, he was a member of the Sector Boards for Floristry Crops at Naktuinbouw. For his efforts for the public interest, he received the Honorary Membership of Plantum and in 2014 he was appointed Knight of the Order of Orange-Nassau.

Nic van der Knaap is married to Jeannette van Paassen and has two sons, Iwan and Mark.



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First edition 2016

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DESIGN Marcel Bakker, De Ontwerperij

PRINTING Global Printing

TRANSLATED into English by Mireille McNutt

Blue Bird Publishers

www.bluebirdpublishers.com

ISBN/EAN 978-90-79598-06-9

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Biodiversity deserves priority

Biodiversity, the variety of life forms, is the most important issue for people on earth, but it is also very fragile. Protection of biological variation should therefore be given the highest priority. The attention and commitment are still greatly lacking from what is needed to stop the genetic erosion. Indeed billions of dollars are being spent, but the money goes mainly towards what they think is important right now. Often that actually contributes to the decline of biodiversity in the longer term. I have always admired the enormous diversity of life on earth. Every decline of this biodiversity is a loss. Restoration is then difficult or impossible.

When it was announced that measures would be introduced to slow the decline of biodiversity, I was very enthusiastic. A major problem was finally receiving the necessary attention. Gradually it became clear which direction had been chosen by the formation of the Convention on Biological Diversity (CBD) in June 1992 in Rio de Janeiro. Under the motto ‘The world in our hands’, 105 countries agreed to protect the biodiversity in the world. It was a big disappointment. Development aid quickly dominated and the pursuit of money for the use of genetic resources had started. The CBD eventually proved itself to be a barrier for the intended objective.

The Convention seeks to combat the erosion of biological diversity and thereby the loss of genetic resources. It is true that there are many good elements in the CBD pursuing that objective, but subsequently Access and Benefit-Sharing (ABS) became an important part of the CBD. The ABS in itself serves a valuable purpose: allowing developing countries to share in the benefits from the exploitation of their genetic resources. Maintaining biodiversity and helping developing countries are both important. Unfortunately, due to the chosen structure, these objectives are not achievable. The combination of CBD and ABS is to blame. Everything revolves around benefit sharing or, in other words, money.

Excessive complexity, bureaucracy, financial expectations, differences in interpretation and uncontrollability turn the CBD into an expensive quick fix. As a result, the use of biodiversity is limited, innovation is curbed, developing countries become disappointed

about income based upon benefit sharing and it does not contribute to the protection of biological diversity. The CBD does not add much value and will suffer from a chronic restoration scheme, with which one still tries to meet the objectives. The first makeshift solution has already been created for food in the form of the 'International treaty on plant genetic resources for food and agriculture'. It will not be the last.

Biodiversity is the foundation of our life and development and provides social stability. They are both important. The effort to maintain the process, the CBD, however, will cost more than can be spent on protection of biodiversity and development funds to developing countries from the proceeds on the basis of the CBD. If the CBD is not functioning in the chosen structure, then a transition to a better system will have to be made. In this book, I outline a model that can be a new basis for the CBD. It is an alternative to the top-down model which is not working. The alternative is called the DABB System (Donation, Labour and Biodiversity Protection).

I rarely meet anyone who knows what I mean when I talk about the Convention on Biological Diversity. Broad public awareness and participation in all countries can therefore make a big contribution. Blaming others is not enough. The purpose of this book is to share as widely as possible my understanding through practical experience and a lifelong interest in nature and biodiversity. I sometimes place it in a historical context or rely on practical experiences. Furthermore, I have also undertaken a lot of desk research using the Internet and a Masterclass in the Use of Genetic Resources at Wageningen Academy. I want to contribute to a broader interest and approach to a growing global problem that is bigger than climate change.

Nic van der Knaap

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Biodiversity



A blue whale is 30 metres long and weighs 170 tonnes. That is 170,000 x 100 billion times the weight of a bacterium. Both possess everything they need to live and reproduce

(Photo: Thinkstock)



Chapter 1

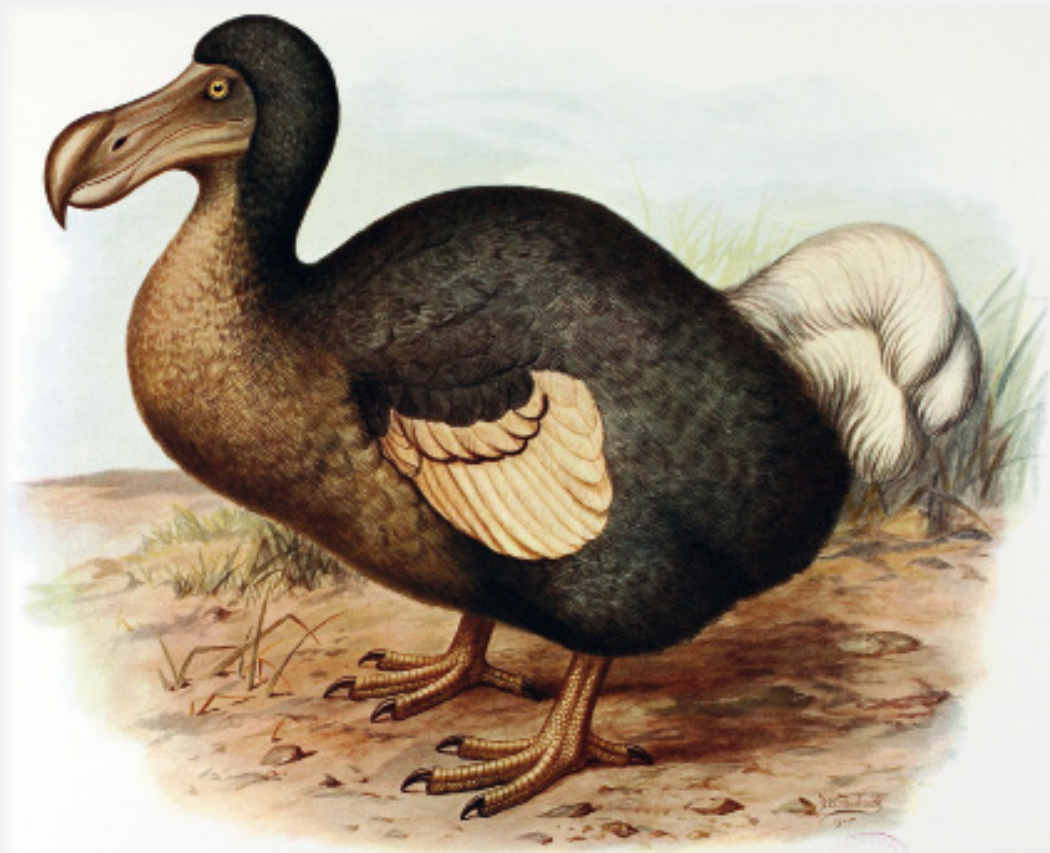
Biodiversity

ALL LIVING THINGS – from a microscopic bacterium to a 30-metre blue whale – together are part of the biodiversity of the earth. In interdependence, millions of different types of lifeforms make up living nature, which we only partially know. It is a dynamic system, which has been evolving for millions of years.

Biodiversity is important, but in recent years it has been completely overshadowed by the climate issue. This is unjustified, because biodiversity is more important than climate. People can live in a changed climate. Indeed hot, cold, dry and wet regions on earth are inhabited. But people cannot live without other biological life. They cannot get their necessary nutrition from a glass of water or a scoop of soil. The concern about the accelerating climate change is justified, but the eroding biodiversity is the greatest threat facing humanity. Both of these problems demand a collective effort, which must achieve a result simultaneously and on the basis of weight and urgency. The sooner those results are obtained, the better. Everything that is lost in biodiversity can never be retrieved.

How all life forms came into existence on earth is still a mystery. It is not only the external shape, but also the interior in each cell from which life is formed. The variety and all the various external and internal characteristics are determined by the complex structure of DNA in the nucleus of all existing lifeforms. It concerns millions of different living organisms in water and on land. Man also forms part of the large bio-complex on earth. All existing organisms live in habitats where they, together with other organisms and the abiotic environment, constitute ecosystems which are themselves also dependent on each other. Without the sea, there could be no rainforest. And there would be no herring swimming in the North Sea if it was an inland sea, without links to the oceans. Examples of ecosystems are mountains, seas, lakes, grasslands, deserts, forests, coral reefs and rivers.

Biodiversity is greatest in tropical rainforests and warm coral seas. There is less diversity in deserts, on high mountain peaks, in cold regions and in the deep sea, but life there is undoubtedly completely adapted to the particular circumstances. Everything that lives, including people, eats and is eaten by cohabitants on earth. These can be large animals or plants, but also fungi, bacteria and viruses survive from other organisms. It is one big biological system with considerable direct and indirect dependence. It is part of a global complex of ecosystems. The different ecosystems also create diversity themselves due to



The dodo became extinct at the end of the 17th century in Mauritius and what has gone will never come back. Lack of knowledge, apathy and idleness are the biggest reasons for the extinction of life forms caused by man

Illustration: J.W. Frohawk, Boston Republic library

the diverse environmental and climatic conditions. They must adapt or perish. That process has been going on for millions of years.

In a rainforest, where it sometimes rains daily and a constant temperature prevails, plants need little adaptation and there are very few dropouts; there is no drought stress and for millions of years there have been limited changes. As a result, plants and animals have been able to develop into a rich variety, which makes the tropical rainforest so special. In an untouched primeval forest, you can find trees upon which thousands of different plant species are growing. Also within that tropical rainforest, there are incredibly much larger and smaller habitats. In a puddle of water at 600 metres altitude, there are small fish swimming. Leaf axils, cavities in tree trunks and even rare tropical flowers are mini habitats for small frogs, small snakes and many species of insects. Animals have adapted to be able to move around in the dense forest, full of bushes, shrubs and palm species with long thorns.

In contrast to the large green leaves in the rain forest, everything in the desert and arid regions is aimed at preventing evaporation and saving water. Plants usually have a silvery colour to reflect the excessive sunlight and have smaller leaves in order to limit the evaporation of water. By adapting to climatic conditions, not only the appearance of the plants is different, but the components also differ. Examples include species of acacia, eucalyptus, lavender and olive, which contain oil. Animals in this environment can also survive for a long time without water, such as camels. Smaller animals sometimes get enough water from the condensation on stones in the early morning.

In cold regions with periods of ice and snow, plants produce a type of antifreeze. They allow their leaves to fall off or they die off above ground. The groundwork for the next growing season is already laid under the ground in the form of a tuber, bulb or rhizome. Sugar beet, tulip and lily of the valley are notable examples. There are also plants and trees that stay green and still survive very low temperatures. Spruce, holly, ivy, moss and grasses can

Gap in the chain – It is misleading to only think in numbers. If one per cent of the 12 million species becomes extinct, it does not seem very many. But when it concerns 120,000 larger animals and plants, or organisms that are an important link in the ecosystem, then that can have dramatic consequences. It may create gaps in the food chain, whereby whole populations of species could disappear. If that happens, it will affect the quality of the human environment and the genetic resources that are needed to feed and clothe the growing world population. The rich variety of available products will then decline.

Many plants and animals have already become extinct due to human activities and that continues unabated. There are people who have no problem with that. There is enough left, they think. Others are very worried, because they are aware of the interdependence of organisms. Alas we cannot test it. We cannot test the resilience of nature to the point of no return.

survive the winter quite well with green leaves. The animals in dry and cold regions are also well adapted. They can often eat and digest tough, hard leaves, branches and thorns or they can still find food in snowy regions, like the reindeer. Animals which live close to the poles, mainly eat animal food, because plants are very rare. Algae are the base at the bottom of the food chain. Due to the limited biodiversity that occurs there, it is a fragile ecosystem. In addition, there are habitats which do not belong to the landscape. Take for example the intestinal flora of a person; a habitat with 100 billion bacteria in 100 to 600 different species with a total weight of 1 to 1.5 kg. It is a symbiotic system, we cannot do without the variety of bacteria.

The number of species of animals, plants and other life forms living on earth now, is at least 12 million. There are also estimates of 80 million. In particular, we do not yet know much about micro-organisms. As yet, that makes it impossible to give an exact number. Larger animals and plants are less common than smaller ones. Many life forms are endemic, they are only found in a particular habitat.

2

Globalization process



Illustration: Pim Verhoef

The development of agricultural technology started in the region of the 'fertile crescent' some 12,000 years ago. It dispersed further over a larger area some 6,000 years later

Chapter 2

Globalization process

DURING PREHISTORIC TIMES, man gradually spread out from the warm regions, towards the boundaries of the north and south polar regions. Initially, they were hunters and gatherers who lived on what their natural environment had to offer. Hunting techniques were greatly improved 35,000 years ago by the Cro-Magnon people. Their skills meant that, in a relatively short time, they began to dominate large areas of Europe and Asia, where previously the Neanderthals had prevailed.

But even then, the improvement in hunting techniques was to have implications. The more efficiently someone is hunting and gathering, the smaller the catch and harvest in the long run. If hunting and gathering did not yield enough food, it was sometimes necessary at that time to limit population growth. That was sometimes hard and rigorous by means of child abandonment, neglect, abortion, infanticide and by abandonment of the elderly and disabled. An alternative was to move to other regions. Man had to be strong and mobile in order to survive.

The first agriculture ensured that plants, whose seeds, leaves or tubers could be eaten, were grown extensively in the habitat. Agriculture and animal husbandry meant that mass migration of peoples across the earth was possible. Along with the migration of peoples, came also the migration of plants and animals on which they were dependent. Not only the people, but also their food sources adapted themselves time and again to their new habitat. Borders did not yet exist. People migrated regularly to new regions because the population growth was greater than the amount of food which nature and primitive agriculture could offer. There was also intercontinental dispersion, but these people had no interaction with the place of origin, as in the time after Columbus. To a large extent, the further development of agriculture and animal husbandry generated the development in technology. People gained a better understanding of cause and effect, and acted accordingly. They started to influence natural processes and tried to come to grips with their environment. Before that time, they were solely dependent on nature, which went its own way. Continuing to live in one place had great benefits, whereby all the means for living, working, sleeping, food production and food preparation could be improved.

The agriculture technical development, which started some 12,000 years ago in the Fertile Crescent around the Euphrates and Tigris in the Middle East, still continues and will con-

tinue in the future. It must. The global population has increased dramatically since then and the need per person is growing rapidly, compared to what it once was.

In 12,000 BC, there were between 1 and 10 million people living on earth, in 1804 that had risen to one billion and in 2014 that had increased to 7 billion. The prediction of the UN is that there will be 9 billion people on earth by 2050. There may be 12 billion by 2100. All these people want a good life with the associated ecological footprint. The more people there are on earth, the smaller the ecological footprint per person must be to avoid overburdening the planet. We can no longer deny that there are ever more restrictions in a world that once seemed so immense.

The global traffic that emerged in the fifteenth century led to everything that could be brought to another place for a higher value being carted away. Not only silver, gold and minerals, but also plants, animals and derivatives found their way to new markets. Human cultures were taken to other countries and continents. With all the visible things which were transported, invisible things also travelled along. Pathogenic bacteria, fungi and viruses were transported for people, animals and plants, as well as insects, rats and mice. The big change on earth had started.

The discovery of America by Columbus was the beginning of the globalization process that still continues today. Emigrants carried on in (their) new country with what they had been used to doing in their home country. They brought diseases with them, but were in turn often affected by diseases to which they had not yet built up any resistance. Yet they took those risks. Driven by hope for and faith in a better life than they had in Europe, they embarked on their long journey which usually had no way back.

The flow of plants and animals soon proceeded in all directions and spread all around the globe. If someone in North America digs up their back garden, they will not realize that the earthworms and red worms did not exist there five hundred years ago. They came along from Europe, presumably in the root clods of cultivated plants. People have already transported more than 13,000 plant varieties, meaning that the plants are now growing in places where they previously did not exist.

There is now almost no single crop that is grown exclusively in the country where the wild variety originates. Many crops that originate from distant countries have gradually become indigenous crops elsewhere. One example is cacao, native to Central America and northern South America. Nowadays 68 % of the world production of cocoa is cultivated in West Africa. Soy originally comes from China, but now 80 % of world production is generated in the United States, Brazil and Argentina. Onion and leek are originally from Iran, Afghanistan and surrounding countries. They are now grown in almost all countries and are now the most commonly eaten vegetables. Even crops such as wheat, rice, millet, sugarcane, potato, palm oil, rubber, cotton, coffee, tea, bananas, corn, peanuts, cassava, tomato, cabbage, grape, apple, citrus fruits and many other important crops have become impor-



The family grew up among the greenhouses. From left to right: Nic van der Knaap, Pascala van der Knaap, Jo Tangel, Gerard van der Knaap, Jan van der Knaap.

Photo: Bep van der Knaap-Hofstede

Greenhouse – From the age of two, I have grown up in a greenhouse. My father cycled, with me in an ‘English basket’ (flat vegetable basket) on his arm, to his horticultural firm behind the village where we lived. I played in the greenhouse, while he worked. I am now 70 years old and still regularly visit the greenhouses. Controlling the climate in a greenhouse is not easy, even with the climate computers we have been using for over forty years. Several times, I have seen architects of buildings, who apparently have never spent a few days in a greenhouse, make mistakes using lots of glass. The high temperatures then have to be reduced with further investment.