



The National Field  
Research Centre for  
Environmental Conservation  
About innovative Environmental Research



Sultanate of Oman  
Diwan of Royal Court

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**The National Centre observes more than  
250 species of birds in Jabal Akhdhar**

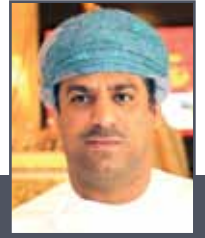
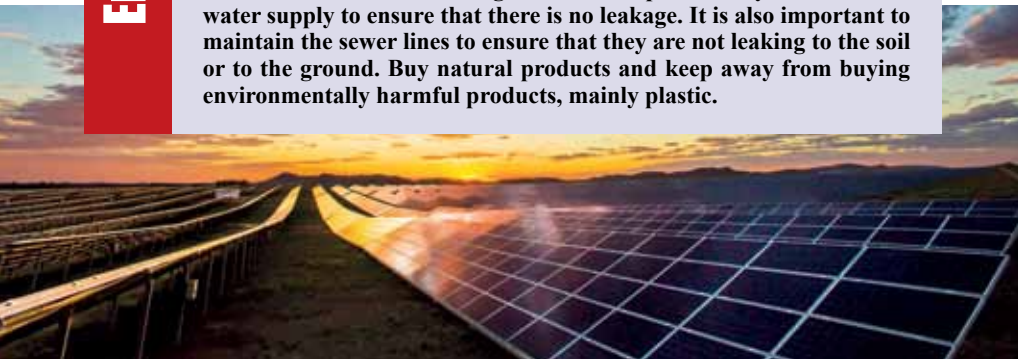
**Organised by PDO****NFRCEC participates in Natural Reserves Management Workshop****Fatima Al Zadjali wrote:**

The Knowledge Centre of Petroleum Development Oman (PDO), in coordination with the National Field Research Centre for Environmental Conservation (NFRCEC), held a workshop in the management of Natural Reserves in the Sultanate. This is in cooperation with the Department of Juvenile care of the Ministry of Social Development.

The workshop targeted youth in the age of 10 to 13 years. It covered several topics related to environmental balance and conservation. The NFRCEC gave a description of the nature reserves in the Sultanate. Its researchers explained the nature of these protected areas, their role in conserving the organism which face extinction, providing appropriate natural conditions to protect them and help in their nestling and defending their generations.

**Environmental Tips**

- There is no need to use the car for short trips that you can walk or use a bicycle for example, and several people can use the same car to go to the same place, like going to work instead of using everyone his car.
- If you buy a new car, consider purchasing a hybrid or electric car, or try to install a solar water heating system and install solar cells to generate electricity if you can that.
- Reduce the use of electrical devices as much as possible and switch off all devices if not used, as the generation of most of the electricity at the present time by burning fossil fuels or nuclear energy and other means that send materials and radiation harmful to the environment and cause pollution. Check all appliances, electrical appliances, and do maintenance periodically, If you buy new devices it is important to buy that save electricity, which gives the same efficiency or often higher so as to conserve energy and thus preserve the environment.
- Install the water saving devices and periodically maintain the water supply to ensure that there is no leakage. It is also important to maintain the sewer lines to ensure that they are not leaking to the soil or to the ground. Buy natural products and keep away from buying environmentally harmful products, mainly plastic.

**point of view****Al ... lan**

**Dr. Dawood Sulaiman Al Balushi**  
Editor-in-Chief

In a glaring scene that is repeated more than once in the region of Al-Jabal Al Akhdar, which is the visit of some tourists after enjoying the most beautiful time escaping from the heat of the summer to the cold climate in Al-Jabal Al Akhdar by burning the trees perennial and rare, and left to burn in full in a scene of self-sadness, with these bad deeds that lead to the elimination of rare wildlife in the Sultanate.

These negative behaviors practiced by some tourists in many of our eco-tourism areas are a real threat to the Sultanate's ecosystems. Many of these irresponsible behaviors destroy rare national treasures that are difficult to return to their virgin nature. Some of them to hundreds of years, not to mention the destruction of vegetation, which is currently complaining of human threats and natural accelerated it, which foreshadows an environmental problem to come.

The efforts of the government in preserving the vegetation cover are continuous and continuous in this aspect. The Jabal Al-Akhdar area has been declared a protected landscape. There are also projects and programs to combat desertification and re-cultivate local plants and trees in order to preserve them from extinction. However, these efforts remain incomplete if not all together to make it successful through their positive behavior in dealing with all the components of the Omani environment, because the first and influential and affected by natural elements is human.

We can not place in each Juniper tree in Al-Jabal Al Akhdar guard watching it all the time or trap cameras, but we must be the sons of this precious country guards of national wealth in it from all the hands, and to ignite in our souls and the souls of our sons and brothers in the community of our love and interest in singles and elements of the Omani environment because it is a cultural wealth for future generations.

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D. Dawood bin Sulaiman Al Balushi

Technical Review

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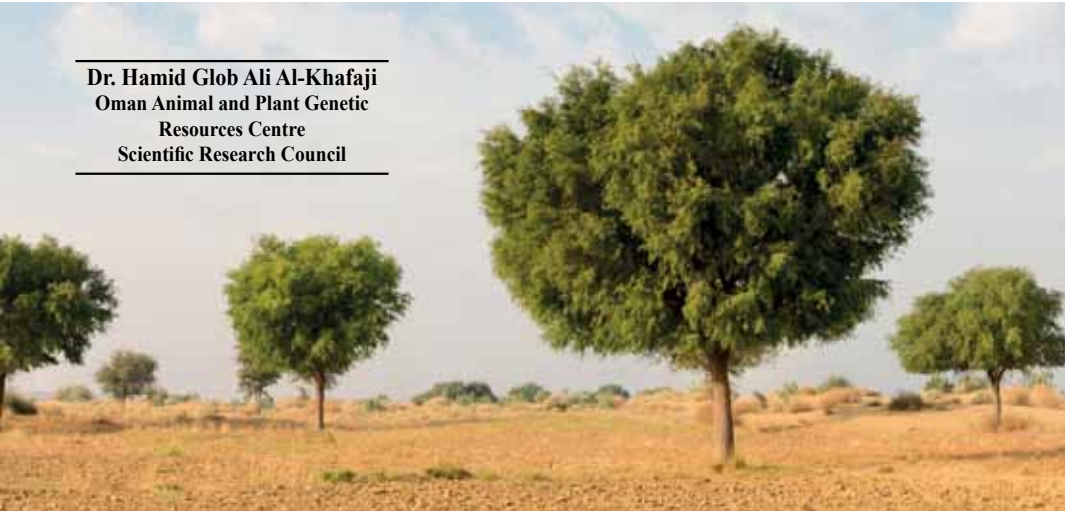
Abdullah Alsabei  
Mohammed Almqaimi  
Mohammed Al Haddabi



## A real invasion turns alien species into a factor that threatens biodiversity



Dr. Hamid Glob Ali Al-Khafaji  
Oman Animal and Plant Genetic  
Resources Centre  
Scientific Research Council



# Biological invasion

## when human intervene and disturb the ecosystem



The invasion or biological invasion is known as the rapid increase in time and space for the spread of species in the form of groups. This invasion may be of natural origin or of human origin, and this term is used for plant, animal or pathogenic microorganisms harmful to humans or animals Poultry. In other words, according to IUCN, invasive species are not only for plants but also for viruses, bacteria, insects, molluscs, fish, mammals, animal species and birds. The biological invasion calls for the introduction and growth of alien species. Exotic species are considered invasive if they are settled and multiplied in natural habitats and thus become a threat to biodiversity.

### Human is one of the most important factors

Man is one of the main factors in the introduction of alien species, either directly or indirectly. Marwan Horticultural (2010) defines a precise definition of invasion or biological invasion as a permanent appearance of a species in a new part of nature does not follow the gentle spread of the natural variety in the form of a group or several groups and permanently and continuously and this type is either vegetarian or

animal or bacterial provided that the human is The reason for the emergence of this species is that, for example, when some plant species are transferred from one environment to another without adequate evaluation, the consequences may be so serious that it is difficult to control the cessation of the spread of these plants in the new environment. This is what happened in the ancient world where man began in this world and since the discovery of agriculture and the use of intensive methods in agriculture from plowing, combing and softening the land and planting seeds and various agricultural processes contribute to changing the existing ecosystem and destruction of food chains, Disappearance in some countries



as in Australia. The cultivation of cactus plant was also transferred to Australia. This plant was spread throughout Australia as a new plant to a new environment and the first Australians to fight this plant by mechanical methods and pesticides. However, these methods were not effective in eliminating this exotic plant until a special insect was brought from America The South fed this plant to Australia and was increased and spread, and contributed to this insect to limit the spread of this plant.

### Types of biological invasion

The types of biological invasion are divided into two types: the first is a natural or automatic natural invasion, without human intervention, and the second is a human invasive invasion. The invasive plants are damaging the environment, or we can call them environmental surprises. In 1951, a plant called Al-Gaf Al-bahri or mesquite (*Prosopis Juliflora*), which is belongs to Memosaceae family was introduced to Sudan, and Al-Gaf Al-bahri is a native native of Central America, but has spread outside its native land as a result of its use for afforestation in dry places and has been cultivated as a green cover and a new resource for timber. Tropical, and The habitat of the marine gaff (Mesquite), where there are organisms in this region of the world to feed and compete with, which made the existence of ecological balance with other plants, but when the entry of this species to the desert areas, they spread using a mechanism called (Allelopathic effect) Plants have secreted a chemical that destroys most of the surrounding living plants. Studies have shown that this tree transmits a chemical from its flowers and branches. It kills the seeds of the plants beneath it and prevents them from growing, leading to poisoning the soil in contrast to the acaiacactus. Where they fall when a It is grounded and also fixation air nitrogen in the soil. In the Sultanate, five years ago, the Al-Gaf Al-bahri of Muscat was introduced to the Sultanate as a decorative garden that grows quickly and is used in landscape decoration. In recent years, this tree has spread to most areas of the Sultanate and to oil exploration areas due to its rapid growth and lack of permanent irrigation. Deep in the ground, which drains the water in the area.

### Protection of biodiversity

In order to preserve biological diversity from the threat of plants and animals, it is necessary to develop programs and plans to reduce the spread and invasion of such organisms, the most important of which is awareness of the dangers of introducing Allian plants and animals. We would like to mention here the work of the Ministry of Agriculture and Fisheries, where the management of the Integrated Management Project of the Al-Gaf Al-bahri (Al-Maskait) was established. The implementation of this project is based on the decision of the Council of Ministers No. 92013/ dated 9 April 2013, and the Ministry of Environment and Climate Affairs is working with other state institutions to establish appropriate controls and legislation to protect the Sultanate from any invasion or biological invasion.



## During a survey

conducted as

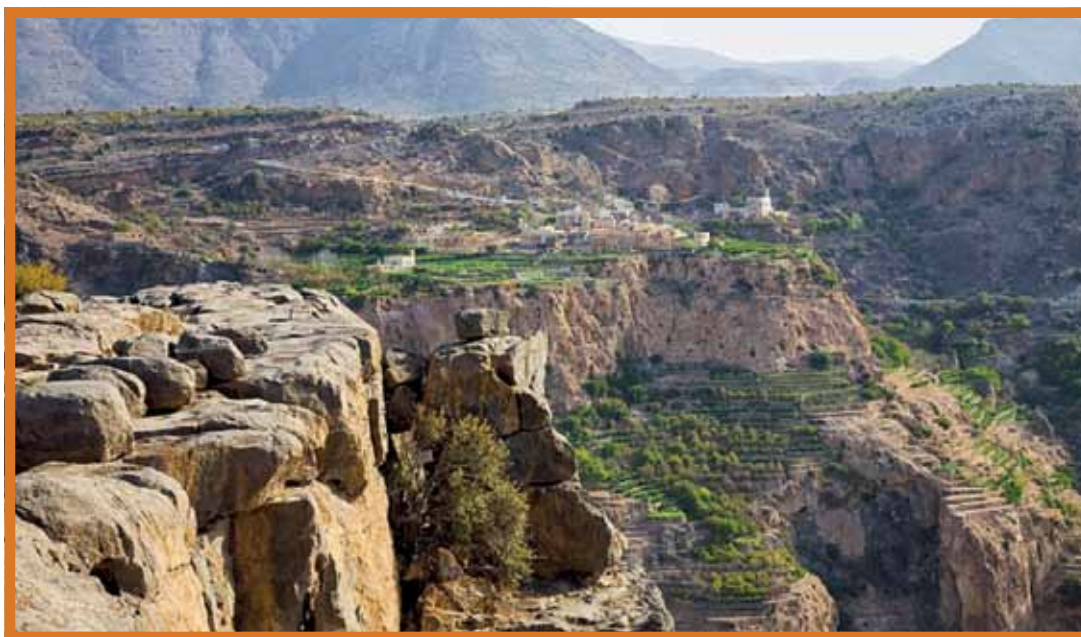
biodiversity research

in the region

of the field research process adopted by the NFRCEC. It involved research tours to survey areas with large biodiversity and collect as much data as possible. This is required to create environmental database which helps in protection of environmental wealth of Oman in all parts of the Sultanate. The data is provided to researchers and scientists interested in biodiversity in the country for their future research.

The observation tools used by the mobile environmental research unit of the National Field Research Centre for Environmental Conservation (NFRCEC) recorded about 250 species of birds and about 2530- species of Omani butterflies during the scientific field study carried out by the unit during its visit to the Jabal Akhdhar reserves. The visit was part

# Mobile unit of the National Centre observes more than 250 species of birds in Jabal Akhdhar



### Periodic visits

The mobile unit of the NFRCEC carries out repeated visits in Sultanate's areas and reserves with biodiversity. It also conducts periodic surveys to identify the positive and negative developments taking place in these regions and compares the outcome of the surveys with previous visits. It also notes the environmental changes in these areas. The unit organises periodic visits of the researchers of different fields such as birds, butterflies, medicinal plants

- The unit periodically visits protected areas to see environmental changes
- The unit conducts special field visits after heavy rainfall in one of the areas targeted for research

and study teams of water systems to these protected areas. This happens according to precise and specific timetables which vary between different

seasons while the focus is on winter and summer.

### Special Studies:

The mobile environmental Research unit conducts

## ● MERU spotted about 25 - 30 species of Omani butterflies



● Conducts studies to understand problems faced by diverse ecosystems

● During visits, unit documents biodiversity to update database

special field visits after every heavy rainfall in one of the areas targeted for research. The unit tries to support biodiversity in the region through these visits.

It also undertakes research studies about the problems faced by the biodiversity in the region, such as drought which largely affected the diverse ecosystems in recent

years. These visits cover various areas which comes under reserves in the Sultanate, most important of them are Jabal Samhan reserve, Jabal Akhdhar reserve, and Salil Nature Park. These visits also include coastal areas, deserts and villages in the interior of Oman. For these surveys, the unit coordinates with the concerned authorities to get permits which gives it full freedom for field work.

### Documenting:

The mobile environmental unit, during its visits to different locations, documents the biodiversity in the regions. For this purpose, it uses different tools, including digital cameras with different lenses, such as remote zoom lens or zoom lens for micro organisms. The unit also documents the location of sighting and its time by using Global Positioning System, in addition to many scientific manuals, atlases used by the team to determine the species and some of the information about biodiversity in Oman. The unit in populated or near-residential areas contacts with local residents to get information which is helpful for the team and its work.

### Survey of birds:

The reserve and its plants provide a suitable environment for nesting of birds. It also reduces threats which prevent their settlement. One of the main reasons of the efforts of the mobile unit is survey of birds in the reserve. It is carried out by drawing some imaginary lines at random points of the reserve. Each line stretches to one kilometer. The line is divided into five points. Each point is 200 meters. The team stands for about 3 minutes, then moves to the next point which takes two minutes. The team surveys the areas surrounded by the point by watching the birds with the naked eye or using Telescope or by distinguishing the sounds of some birds. These lines are drawn in random areas of the reserve to cover the widest possible area of the reserve and are samples representing the total area of the reserve. Information is documented for each observation such as type of bird and its classification, if possible, and its picture.

### Results:

MERU (Oman's Birds and Butterfly Group) recorded about 25 - 30 species of Omani butterflies and recorded more than 250 species of birds. These birds are varied between endemic and migratory birds in the mountain region. The participants observed these birds either through binoculars and camera traps. They also know their types, ways of their lives and migration.



## The Sultanate is succeeding in replacing a prasthetic limb for endangered Femal Arabian Tahr

The veterinary team of the General Directorate of Veterinary Services has been able to perform the process of replacing a prasthetic limb for the Female Arabian Tahr. This is one of the rare operations in the world and the first of its kind in the Arab world. In order to preserve the strain of this endangered animal, the veterinarian resorted to this procedure after the removal of the original limb as a result of the fracture of the female defecation, resulting in tissue damage and blood supply.

The prasthetic limb is designed to be installed directly in the bone and to operate efficiently. After the operation, the veterinary team confirmed the ability of the Female Arabian Tahr to walk normally, which enables her to practice her normal life. It is noteworthy that the Female Arabian Tahr purity is classified in the Red List of endangered animals according to the classification of the International Union for the Conservation of Nature (IUCN). The majority of the Female Arabian Tahr live in the Sultanate.

## KUWAIT

### Study recommends the need to invest in renewable energy

A Kuwaiti economic study prepared by the Kuwait Economic Society in collaboration with Marmore Mena Intelligences confirmed the need to promote the growth of the traditional and renewable energy sector by attracting more private investments and increasing the efficiency of project implementation. The government's support for the energy sector was about \$ 4.5 billion, or 62 percent, the highest among the Gulf states. The study pointed out that Kuwait needs to adopt the concept of green buildings to rationalize energy consumption, which is based on the idea of effective exploitation of resources and wealth without a negative impact on the environment it added that the installation of solar panels on the roofs of buildings help to ensure the amount of energy consumed by the building to become closer to self-sufficiency with the need to link the procedures for obtaining building permits to meet a component of environmental sustainability it stressed the importance of investment in the development of infrastructure for the management of electric vehicles from in order to encourage reliance on them because these compounds play a significant role in reducing fossil fuel consumption it explained that encouraging the reliance on electric vehicles allows the government to use energy for other productive purposes, pointing out that the reduction of fuel subsidies will contribute to encouraging the consumer towards the use of these vehicles.

## Qatar

### organizing first green world in 2022

The French newspaper Unvego de France published a report entitled Qatar Turning to Sustainable Development, in which it said that after a long period of dependence on hydrocarbons, Qatar began its ecological transition. Sustainable development and the use of renewable energies are now a strategic priority for Qatar. World football in 2022, green at all. Qatar launched its «ecological» move by launching an ambitious program aimed at reducing the environmental footprint of industrial activities. The Qatari authorities launched a plan last January to double the number of visitors to its territory as a regional tourism hub. The innovative plan focuses on «investment opportunities to accelerate growth and promote sustainable development», Which was the first in the region. This voluntary will of Responsible Tourism was also reflected in the hosting of the World Tourism Organization's annual summit in September 2017, which was held under the theme «Sustainable tourism: a tool for development». Of the Qatar National Vision 2030, the roadmap that guides government action over the medium term. Now many industrial and agricultural initiatives are using renewable energies.

## Saudi Arabia

### 30 new clean energy projects

The German Industry and Trade Commissioner in Saudi Arabia, Bahrain and Yemen, Oliver Ums, has revealed renewable and alternative energy cooperation with Saudi Arabia. There are about 30 joint Saudi-German renewable energy projects, as well as high-level nuclear energy talks with the Saudi government. During a meeting in Al-Khobar Ums emphasised to announce the details of

the International Exhibition of Industrial Valves and the International Conference of Pumps, «Wolf World Expo 2018», which will be held in November in Düsseldorf, Germany, he stressed that there is a tendency to establish projects for the military industry with Saudi- Germany in this sector, pointing out that Germany is a pioneer in the field of military industries.

## UAE

### Launching program to measure air quality

On the sidelines of its participation in Abu Dhabi Sustainability Week, the UAE Ministry of Climate Change and Environment launched the National Aeronautical Air Quality Data Platform, which relies on artificial intelligence techniques to monitor and analyze the levels and sources of air pollutants in the UAE and upgrading its quality to the objectives of «Vision 2021». «In October, the UAE

government launched the UAE's Artificial Intelligence Strategy, which represents the new phase after the smart government, on which the services and sectors will be based, and the structure.» said Dr. Thani Al Zuwaidi, Minister of Climate Change and the Environment. The UAE's future infrastructure in line with the UAE Census 2071, which aims to make the UAE one of the best in the world in all fields.

## Bahrain

### Conference on «Innovation in Sustainable Mobility»

The conference will be held in Bahrain from 2 to 3 September with the participation of local, regional and international speakers from the industrial, legislative and research sectors to share expertise and experience and share the latest research and technology related to vehicle efficiency. The Kingdom of Bahrain, through the National Energy Efficiency Plan adopted

by the Council of Ministers, has set clear initiatives and objectives to increase energy efficiency by 6% by 2025 and seeks to protect the environment by reducing environmental pollution and its effects. International experiences to take advantage of to achieve these trends. The conference is also the first step on the road map to activate energy efficiency programs for vehicles.

## Plastic bags dissolve in water without polluting

Chilean engineers have introduced plastic bags made of soluble plastic without any contamination. The secret in using lime is to place oil in the chemical composition. «Our product is derived from limestone and is not harmful to the environment,» Roberto Estete, director of Solubag, told a news conference in Santiago. Christian Olivares, who is behind the project, also hopes to market the product, made from polyvinyl alcohol (BOVA), which has been dissolved in water since October in Chile, a Latin American country that bans the use of traditional plastic bags. «For bread, we have

to have flour and other ingredients,» he said, adding: «The flour for us is polyvinyl alcohol and other ingredients approved by the US Food and Drug Administration (FDA) which allowed us to manufacture various plastic products.» In addition to the traditional bag, a cloth bag is designed for repeated use. This latter bag is more resistant and decomposes in hot water than in cold water. «We have carbon in the water, and it has no effect on the human body,» Estete told reporters after the bags were defrosted. He experimented directly and drank the water used to dissolve the bags.



### Environmental Vocabulary

## Princess of the Mountain

Eng. Khalifa Badawi Al Higgi

almitc@yahoo.com

Still struggling the thirst and cruelty of the place. Its hardness gained from the rocks that were cracked and came out though it to open air, to a world that made with it an infinity deal. The world which growing on its rock, breathing its air, bearing its cold stings, and enjoying the breeze of its good climate. By Its permanent greenness contributed to making a fame and importance to the place where it came from, and inevitably will return to it. It does not have another place rather than its high bosom with its twins that all shared the living milk, the causes of life and the unity of destiny.

The height of its place indicates the height of its status and its importance. This tree is the most greenest and predominant at Jabal Al Akhdhar, Jabal Shams and some mountains above 1300 meters above sea level. It has not been lost by spacing of rain period, even more resistant and challenging against hard circumstances. Like a luscious princess, remains beautiful, resists all what may take from its beauty except that dictated by nature's appeal. Its leaves are small, olive-colored and grow in high density on very solid branches based on a very rigid trunk, the strongest among the trees. The hardness and strength increase with age, and the male tree features its toughest and strongest wood. Generally, its sticks are not breaking easily and anti termites. Its fruits are small and rounded, called the (Zoghnog), much like the fruits of the local olives. Reaches up to five meters height and grow faster and higher when it finds a more secure and fertile place on the banks of the wadies.

If this blessed tree does not have social and medical benefits, it is enough for it to paint the eternal green on the hard mountains, to give it life and beauty, so far as its immense benefits to man and animal are concerned. Its products are involved in many popular treatments and therapeutic extraction. The uses of its timber and its strong sticks have expanded from visible use to spiritual uses in which those interested in this field find their own needs and benefits from it.

The Wild Olive (Utum), a long-lived mountain wild evergreen tree. In every stone fracture has found its effect, in every wady has an effect, in every height has an effect, in every heart he saw it lefts effect. Really it is a princess. The tourists were unjust it, and many did not understand it. They did not recognize its signals to prevent it from burning or cutting. Cry without tears and scream without a voice, pleases, only heard by the one who knows and understand it and shared it crying and unfortunate. The Princess of the mountain is still in spite of the circumstances standing, so please rewarded it with continuous protection to remains for us and for future generations.



Study:-

## Blocking the sun will not save humanity

A study that rejects the theory of «preventing global warming» The blocking of sunlight to cool the earth will not save humanity from the effects of climate change. Previously, researchers speculated that the injection of gas molecules into the atmosphere, would reduce global warming enough to prevent the death of crops. But researchers who analyzed the past effects of volcanic eruptions have shown that protecting the atmosphere harms crops as much as they do, and concluded that cooling the atmosphere by methods would affect productivity by limiting sunlight, making the process ineffective as a way to stop global warming. Some previous processes of global cooling occurred because of the gases emitted during the

massive volcanic eruptions. Some experts believe that humans can inject similar particles into the atmosphere. This could contribute to the artificial cooling of the earth, to mitigate global warming caused by increased levels of carbon dioxide. For example, the eruption of the Pinatubo volcano resulted in the injection of about 20 million tons of sulfur dioxide into the atmosphere, resulting in a decrease of about 2.5 per cent in sunlight and a reduction in the average global temperature by about half a cent. Solar geology is one of the ways to help humans manage the effects of global warming. However, findings from researchers at the University of California, Berkeley, indicate that this technology may not be as effective as expected.

## 95% of the limor species of the monkey species are threatened with extinction

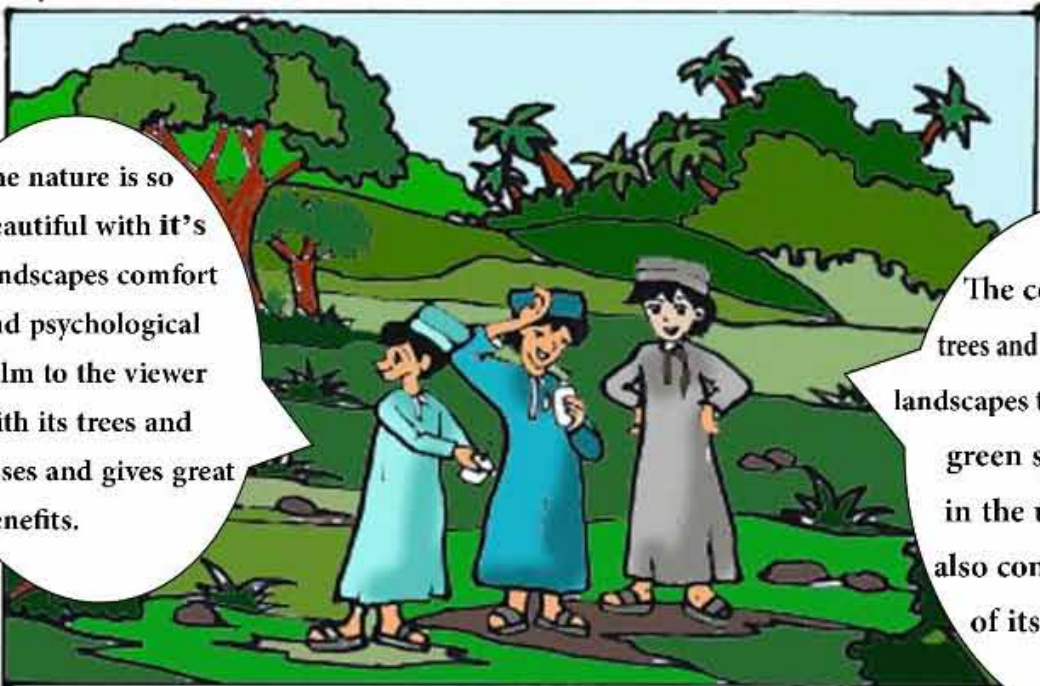
One of the members of the committee responsible for keeping the surviving species of the Lemurian animal species in Madagascar, Ross Mittermeir, warned of the risk of extinction, with 95 percent of the animals facing this threat, with only 105 animals Limor, becoming the most endangered in the world. Known for its long tail and pointed mouth, this species of animals is a magnet for nature and animal lovers. However, due to the destruction of large areas of forests, the growth of mining activity, the irregularity of agriculture and the increase in fishing activity, their numbers are decreasing significantly.



# Our Green Environment

By: Iftekhhar Al-Badawi

The nature is so beautiful with its landscapes comfort and psychological calm to the viewer with its trees and roses and gives great benefits.



The conservation of trees and non-cut helps green landscapes to have a large green space, especially in the urban cities and also conserve the nature of its splendor and beauty.

We know the benefits of trees in human life are many, they absorb carbon dioxide through process of photosynthesis so that their food can be produced in the presence of light and then release oxygen to the atmosphere.



also, plants give many benefits, feed living organism prevent its soil from erosion and fertilize it and reduce or stop desert fication.



So friends, let us plant a tree everywhere to renew hope on our good land to maintain the balance of the environment and the beauty of its natural landscapes.