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About innovative Environmental Research



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The Environmental Efficiency of Beaches in Muscat Governorate and Barka Wilayat

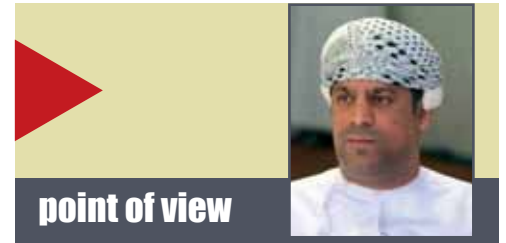
Sultanate Celebrates the Omani Environment Day



By: **Khadija Al-Shehia**

During the month of January, Sultanate of Oman celebrated the Omani Environment Day 2019, which falls on the 8th of January each year, in recognition of its participation in the global efforts to preserve and protect the environment, and to emphasize Omani privacy in dealing with the environment. The celebration was held for the first time in January 1997 on the directives of His Majesty Sultan Qaboos bin Said. This year, the Ministry of Environment and Climate Affairs held its annual celebration in North Batinah Governorate. The celebration was organized by the Department of Environment and Climate Affairs in the governorate. The program included a number of them, such as a student presentation of the the song «Nemat Allah Alaina – The bless Given to us by God», presented by the students of Riad Al-Ibdaa School at Sahar and a presentation of marine arts. The military band also participated by the art of Al-Azai. Alrai theater group presented a drama entitled «Sustainable Development». An exhibition was also opened with the participation of a number of

large companies in Sohar port and the industrial zone, in addition to government agencies. A total of 16 environmental awareness boards were distributed over the governorate's roundabouts. The celebration of this year's Environment Day came under the theme of «Clean and Sustainable Environment» as an expression of deep understanding of collective responsibility towards the protection of the environment and the need for concerted national, regional and international efforts in this field. The events of the celebration included a number of activities and awareness programs that contributed to the promotion of environmental culture. The most important of these activities are scientific symposiums, environmental exhibitions, mangrove farming campaigns, beach and valley cleaning, special awareness activities for children and coral cleaning campaigns. A number of governmental and private organizations, civil society organizations, NGOs, students, universities, colleges, schools and volunteer teams participated in all these events, which were translated into a true partnership between various groups of society.



point of view

The Afforestation ... Benefits and Risks

Dr. Dawood Sulaiman Al Balushy
Editor-in-Chief

It is nice to see the landscape of the streets in the Sultanate, which is green and rich with different kinds of trees. This has a good impact, due to the interest of different parties in the subject of afforestation, because of its various positive impacts to the environment, man and various living things. In addition, afforestation is combating the phenomenon of desertification, which has become a source of concern to all as a threat to the Omani environmental system.

Yes, the efforts are wonderful and distinct. They show a good environmental awareness embodied in the interest in afforestation. However, these efforts need to be correctly directed to the right way, which achieves various benefits of such efforts. This means moving away from the cultivation of exotic species of trees that threaten the Omani environment, and focusing on the cultivation of Omani local trees and plants that have become part of the global endangered tree species.

What prompted me to write about this, is the observation of an ecologist from an Arab Country when he visited the Sultanate on a leisure trip with his family. This man tweeted in one of the Social Media sites to say: «Oman is a beautiful country, its environment is clean and virgin and its laws are strict in preserving its natural components, but it is dominated by exotic trees in the streets, parks and gardens, while it has a large stock of local and unique trees in the region. If Oman does not pay attention to this problem, it will pay expensive prices to address this problem in the future, as happened in some countries of the world.»

In order to not be compelled to deal with the issue of afforestation in the future, we must take care of this problem and develop appropriate solutions by avoiding cultivating exotic trees and replace them with local Omani trees and plants. Our environment is rich in diverse plant cover that resists drought and grows naturally and does not require large quantities of water for irrigation. Prevention is better than cure.

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>> Tabaldi Tree

used for storing water and its leaves and fruits are food and medicine

■ In the Sultanate of Oman, is found in Ain Hasheer in Mirbat Wilayat which is one of the most beautiful springs at Dhofar Governorate

■ Its leaves are rich with sugars, potassium and vitamin C, and the fresh mellow ones are used as a vegetable



A Natural Water Tank

The tabaldi tree is characterized by its ability to store large quantities of water inside its trunk, for human usage in the dry season. Elephants used to peel off the bark of tabaldi trunk to reach the wet tissues saturated with water to absorb and quench their thirst. One of the most important characteristics of this tree is that it is not affected by the withdrawal of its bark like the rest of the trees. It renews its bark. In the ancient perennial trees, the local population makes a cavity in the heart of the trunk, which is opened in the area where the main branches meet, at the top of the trunk, to obtain a wide vacuum used to store the rainwater that enters this cavity through the opening at the top of the trunk. Rain water is also collected from the lowlands and store it in this cavity to be used during the dry season, where water is drawn by the bucket or any other vessel, and travelers can drink from this pooled water.



By: Fatmah Al Zidjali

Tabaldi tree, Alb. Habab, Albawhat tree, the flask, the inverted tree, or the monkey tree (the scientific name: *Adansonia*) was named in honor of the french botanist Micel Adanson. Is one of the rarest species of trees in the world, and belongs to the marshmallows. In the Sultanate it is called Bou Habab because its fruit contains many grains which can be eaten and strained for edible oil. This species of plant is consisted of eight species, 6 of them in Madagascar, one in the African mainland and the Arabian Peninsula and one in Australia.

Tabaldi Trees in the Sultanate of Oman

Tabaldi tree exists Ain Hasheer Spring which is considered one of the most beautiful springs of Dhofar Province, that is why it is a destination for tourists in the autumn season. This spring is named after the mountains where it is located at Marbat Wilayat. Hasheer Spring is about 54 km east from Salalah. This spring is characterized by the presence of rare giant tabaldi trees, which are locally known as (Kaji Herrome Thari), which are located near the spring's stream at the foot of the Hasheer Hights, in an area restricted by Hasheer Hights and Wadi Hanah where there are no more than 30 tabaldi trees only. There is also few tabaldi trees at Ghalkoot Wilayat in the western region.

Tabaldi Tree During the Seasons

It is a huge, slow-growing tree, it live long and its leaves fall in the dry season and it looks naked. This is what distinguishes it from the evergreen trees. When the tree is bare and striped of leaves, it looks as if it is upside down, its roots in the air and its branches in the soil. It is also characterized by the size and thickness of its which the trunk

looks like a huge barrel with wide, diameter of 7 to 15 meters. However, trunk measurement is not constant. It varies from year to year in excess or in decreasing, depending on the soil moisture and rainfall of the year. Tropical zones are characterized by two seasons: the rainy season and the dry season. The leaves of tabaldi trees fall at the beginning of

the dry season in October and remain bare of leaves until the beginning of the rainy season, which begins in June, when the leaves grow again. The leaves of tabaldi tree are large with five to seven large parts, and when the leaves are blooming, the flowering buds begin to swell in the afternoon and when the evening falls, the flowers bloom. The tabaldi flowers are large dangling, ranging in diameter from 10 to 12 centimeter. They have long thick necks and their large waxy white petals are curved up. A long stigma occupies the center of the finely-shaped, long-stemmed flower, which is surrounded by many white-and-brown-colored stamens and thus looks like a shaving brush. The flowering period lasts only for a short period, at dawn they close themselves, withered and changed from white to white to dark color, after being vaccinated by the night bats that are attracted to it because of the aroma that the flowers produce when they open. These animals visit the flowers to feed on the big stigmas and suck the nectar and naturally they are not seen bat at night when visiting the flowers, but their visits can be known from the traces of their claws on petals.

Benefits and Uses of Tabaldi Trees

All components of the tree are useful. The internal tissues of the trunk are strong. These tissues are pulled from the tree to make baskets, fishing nets, and ropes. The broad tree trunk is used after cutting the tree for making fishing boats after digging it. The tree leaves are rich in sugars, potassium and vitamin C, and the newly developed fresh leaves are used by the local population as vegetables, such as spinach, chalk or malochia, to be eaten after being cooked or dried and grated to be used for preparing some local foods. The leaves also have therapeutic effects. They are used to treat fever, and flowers that fall from the tree, is good for grazing animals such as sheep and goats.

The Study was Prepared by the National Centre



Human waste on beaches, in the sea and ocean waters, has become one of the biggest concerns for marine life because of its direct and indirect impact on biodiversity and human health. It also affects economic activities such as tourism, fishing and other activities that depend on water and beaches. The National Field Research Centre for Environmental Conservation (NFRCEC) conducted a scientific study on the size and quantity of marine debris in the Sultanate, taking 13 beaches in Muscat and Barka, as a model that gives indications of the volume, number and weight of waste on Omani beaches, and the best ways to deal with them. The study includes two phases; the first phase is a questionnaire that distributed it to beach goers. The second phase is a field survey on waste in the study site.



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The Environmental Efficiency of Beaches in Muscat Governorate and Barka Wilayat



Phase One: The Questionnaire:

The questionnaire is for studying the environmental efficiency of 13 beaches along 125 km of the coastline of Muscat Governorate and Barka Wilayat, in order to study several indicators such as the general hygiene levels of the beaches, the most common waste indicators, the priorities of improving hygiene, the mechanism used for beach cleanliness and general cultural indicators. About 105 persons selected from the target beaches, in a manner commensurate with the population, participated in the questionnaire. So, the participants from the beaches of the Bousher Wilayat are around 30 people, since this Wilayat is the most densely populated. The questionnaire questions are in both Arabic and English. Quantitative and descriptive analysis was adopted to ensure the best results from the questionnaire. The proportion of male participants is about 60%, compared to 40% of females, all of them from the level of university education.

The Questionnaire Results

- Wastes of trees remains and wood are the most common, followed by leaves, bags and cans of beverages, while electronic devices are ranked third.
- The survey included several mechanisms for the sustainability of beach cleanliness. The study highlighted that increasing awareness and educating of residents and visitors are the most influential indicators
- Most participants saw that hand sanitizers were the most common means of cleaning and collecting waste.
- On the availability of garbage bags and containers at the beaches, participants responded that they were available to a level of 36.2%.
- The questionnaire addressed a question about the form of waste, where they placed several options, «randomly placed on the ground», «received in sealed containers,» and «dangling from the container at random» where the highest percentage was randomly dumped on the ground at the level of 48.6% .
- 35.2% of respondents see that the level of waste on the beach is increasing day by day

Phase Two: Field Survey

The researchers conducted field surveys on 13 beaches in Muscat Governorate and Barka Wilayat to collect samples of marine human waste and analyze these samples according to their nature, origin, weight and number, in order to draw a conceptual map to assess the levels of coastal human waste in the Sultanate

The study included the beaches of Barka and, Al Sawadi at Barka Wilayat. Al Sib, Al Hail, Al Minoumah and Al lawami Valley at Al Seeb Wilayat. Al Azaiba, Al Ghubrah, Buashir, Al Qurum, Darsit at Mutrah Wilayat, Qantab at Muscat Wilayat, Fince and Dagmar at Qaryat Wilayat.

Samples Analysis

The researchers analyzed the samples collected along the coastline in the targeted areas. The weights, numbers, and nature of origin of each species were determined. The samples were classified according to their origin as waste from industrial processes, fishing



An Important Comparison

It is noted that 65 kg / km of waste was recorded along the shores of the Sea of Oman, a high quantity, but if we compare the reports recorded globally, it is less than the levels recorded in some areas. For example: At Georgia (USA) 102 kg / km. 1990 kg / km was collected from Texas beaches. In Indonesia, the amount of sea debris was 1,000 kg / km and in the Caribbean island of Curacao the pollution levels reached a maximum of 4500 kg / km.



Recommendations:

1 - To develop a clear plan for reducing the daily consumption of plastic materials, through the development of environmentally friendly alternatives, and strengthening controls and requirements directed to factories and shops in this regard.

2 - To Tighten the laws and measures aimed at protecting the coastal environment from unsafe behaviors by fishermen in practicing of various fishing activities, by creating environmental police for beaches.

3- To call upon the competent authorities to adopt a clear approach for distributing high-quality tight garbage containers for the shores of Barka and Qaryat Wilayats in particular.

4. To adopt a periodic schedule to supervise the quality of garbage bins distributed for the beaches of Barka Wilayat and Muscat Governorate.

5 To Renew the tools and mechanism of beaches waste collection by finding modern ways to cope with the continuous depletion of the beaches by the residents and visitors.

6 To organize awareness contests and programs per capita daily consumption, aimed at promoting the slogan of beaches without waste which contributes to stopping or reducing the source of single-use waste, thus reducing the waste expected to remain on the beaches.

7 - To temporally and spatially expand the scope of assessment study for coastal human waste in the Sultanate and its impacts on biodiversity.

The results showed:

■ Plastic waste is the most prevalent and wood waste is the most weight

■ The highest rate of pollution monitored in the beaches of Wilayat Barka and Wilayat Qurayat



activities or beach uses. The less common samples, which cannot be classified into one of the previous categories, are placed in the other materials category.

Results

- Three thousand 926 waste items were collected from the 1300-meter range, weighing 85.48 kg from 13 beaches scattered along the coastline of the Sea of Oman.

- The average number of pieces observed per meter was 3 pieces, at a rate of 65.75 g/m in front of the beach.

- Plastic remains waste is the most prevalent in terms of number (63%, 2 pieces / meter).

- Fishing waste (wood) is the highest weight of 47%, weighing 31 g / m.

- The extent of contamination recorded is number (69 - 643.5) Piece / 100 meters per beach.

- The weights of waste amounted to 99.2 (9.7) g / m in front of the shore.

- The highest pollution rate was recorded at the beaches of the Wilayat of (Qurayat and Barka) at a rate of 6.4 pieces / m and 4.8 pieces / m. The lowest levels of pollution were found in the beaches of Bousher and Matrah (1.5 m / m and 0.7 m / m).

- The highest weights of marine wastes were recorded at the beaches of the Qurayat and Al-Saib Wilayats, at a rate of 99.2 g / m and 94.1 g / m and the lowest were in the beaches of Boucher and Matrah Wilayats at a rate of 21.8 g / m and 9.7 g / m.



School Students Learn about Environmental Systems Associated with Fresh Water at Luzugh Flaj

By: **Ahmed Al-Busaidi:**

A group of students from the Sultan Qaboos Private School and the Danish School visited the village of Luzugh, in order to identify the project of Luzugh Falaj which is being supervised by the National Field Research Centre for Environmental Conservation (NFRCEC).

The guests were acquainted with the project facilities such as the Aquaculture, the project of developing modern irrigation systems by usage of solar energy, and the project of developing the system of waterways known locally as "Suar". Abdulaziz Hamoud Al-Husseini gave brief explanations on the progress of environmental projects in the village, and introduced the participants to the importance of the Falaj as a historical, cultural, economic and environmental value for Omani people.



The visitors expressed their satisfaction for this visit. Many of them participated in some voluntary work such as tree trimming, cleaning of the corridors, painting of the walls surrounding the tower and practical application of the installation of the modern high-efficiency water passages in preventing spills and its high quality in terms of saving

time and effort after replacing the traditional systems, The projects of studying freshwater ecosystems in the village of Luzugh at Smal Wilayat, of the Interior Governorate are a destination for researchers, scholars and environmental volunteers. These projects have a standard environment for practicing various volunteer activities.

Saudi Arabia

Investment in 7 of Solar Power Projects

Saudi Arabia has announced the start of receiving applications to invest in seven solar photovoltaic projects during the launch of the National Industrial Development and Logistics Services Program. The announcement of the Renewable Energy Development Office at the Ministry of Energy, Industry and Mineral Resources Projects, is the second phase of Saudi Renewable Energy plans which seeks to Generate more than 25 Gigawatt of solar and wind power over the next five years to reach the target of 60 Gigawatt over the next decade, including 40 Gigawatt of solar power and 16 Gigawatt of wind power.

Qatar

620 Environmental Violations in 2018

An official source at the Ministry of Municipalities and Environment in Qatar revealed the seizure of about 620 environmental violations and the issuance of more than 1500 warnings last year. Legal actions were taken against violators as part of the Ministry efforts to ensure the application of laws, protection of the marine and land environment, reservation of wildlife and natural resources. The source said that seizure of violations on land varied, such as violations of camels grazing prohibition, violations of the hunting law, obtaining of birds attraction devices «Alsawayat», throwing of the waste in places other than the allocated places, dredging of soil, discharge of sewage at wrong places, logging, parking in the areas of vegetation and other environmental violations.

KUWAIT

The Public Authority of Environment Signs Two Contracts of Anti-Creeping Sands and Organic Pollutants

The Director General of the Kuwait Foundation for the Advancement of Sciences, Dr. Adnan Shihabuddin, stressed the keenness of the Foundation to give environmental studies and initiatives a great deal of attention within its strategic plan 2017 – 2021, by supporting many projects related to the preservation of the environment and the conservation of its resources. This came in a speech by Dr. Shihabuddin at a ceremony hosted by the Foundation on the occasion of signing two contracts for two research projects by the Public Authority of the Environment funded by the Foundation and implemented by the Kuwait Institute for Scientific Research. The first research project is entitled «Managing the risks of Creeping Sand and Erosion of Beaches in the Northern Coast of Kuwait (in the region of Ghadbi)» and the second: «Development of the Kuwait National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants».

Bahrain

Establishment of the World Largest Diving Park in Bahrain

Bahrain has announced the establishment of the largest diving park in the world with an area of 100,000 square meters as a partnership between the Supreme Council for the Environment, the Bahrain Tourism and Exhibitions Authority and the private sector. Sheikh Abdullah bin Hamad All Khalifa, Personal Representative and Chairman of the Supreme Council for Environment, said: «The project includes a Boeing 747, as long as 70 meters, a large anthropomorphic fisherman's house, an artificial reefs and marine models made of materials that contribute to a safe environment for coral reef growth and marine wildlife.»

UAE

Ramsar Adopts Hatta Reserve as Part of the Wetlands

The Ministry of Climate Change and Environment and the Dubai Municipality have approved the adoption of «Hatta Reserve» by the General Secretariat of Ramsar Convention on Wetlands as a place on its list of wetlands of global importance. The announcement coincides with the World Wetlands Day and the celebrations of UAE of the National Environment Day. The Hatta Reserve which is under the supervision and development of Dubai Municipality, entered the list of the worlds most important wetlands as the third protected area in Dubai after the Jebel Ali and Ras Al Khor Protected Areas and the ninth in the UAE.

»» The Current Climate is Similar to What the Earth Lived 115,000 Years Ago

Scientists in Canada have found that the climate currently lived by Earth planet is much like that of the planet 115,000 years ago, according to the Washington Post. Although the Earth has been living in the past amid an unprecedented rise in temperature as today, the sea level rise has been different from thousands of years ago compared to what it is now. Scientists say that thousands of years ago the oceans were warmer than they are now, but the water level was at least 20 to 30 feet high. A new interesting study has shown that glaciers in the northern hemisphere have already declined as much as in the past, driven by warming in the Arctic.



»» The Color of the World's Oceans will Soon Begin to Change

A new study revealed that the colour of the world's oceans will soon begin to change, with warm water leading to a dramatic change in the numbers of phytoplankton, according to the study. The study by the Massachusetts Institute of Technology suggests that changes in phytoplankton living in water will make some parts of the ocean more bluish and other parts greener in one of the effects of climate change. As these microorganisms, such as plants on Earth, turn sunlight into energy and green, their presence in water has a significant impact on their colour. High global temperatures are expected to make polar regions rich in plankton more greener as their mass thrives, while blue oceans in the subtropical regions will turn bluish for the elimination of plankton.



»» 600 Living Creatures are Threatened with Extinction

A team of scientists found that there are 600 species of animals, not included in the red book, are on the verge of extinction. The scientific team published the results of its study and assessment of the number of animals and their habitats in the «Conservation Biology Journal». «When experts from the International Union for Conservation of Nature (IUCN) update the red book, they have not enough time to process data that includes 90,000 species.» says Luca Santin of the University of Nijmegen, the Netherlands. «This information is usually old or bad, which inevitably leads to the inability to recognize all threatened species.» The red book currently contains more than 90 thousand species of animals and plants, of which about 5 thousand are about to extinct.



Environmental Vocabulary

The Traveler

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Its two wings are long and narrow, extends item in open air, swimming by them in large space, help it to fly high distances and elevations. Carries the qualities of cleverness, intelligence and resourcefulness, what enables it to live and survive for many years. Its life has been blended with the sea, and never gone forever. Both are two souls, in one body they are inseparable.

When its name comes in our mind, we remember the blue sea and the waves, remembering its white body and gray wing as it is petting the sands of the beach with its group, and the sailor remembers it floating on water as a white piece of ice, and retrieving the hunter's memory when it is inferred by the abundance and availability of fishing. It is that the clever bird that some call a pirate of the sea. This may be because it attacks inelegantly the nests and eggs of other birds, or because it tricks earthworms by kicking on the ground as if it rain to come out of their holes and be a delicious prey in its sharp beak. At other times, Its long, sharp beak penetrates the stillness of the water, picking up a fish prey and take it out of its water habitat to the world of annihilation. Its food is varied and abundant, cleans the beach without knowing that Its favorite meal of garbage and dead fish is a residue, which contributed to its removal and disposal.

This bird lives in large colonies near the beaches and builds its nests on rocky and sandy slopes to ensure that its young chicks are safe and protected. In its daily practices, It produces loud noises like howl and laughter, increasing its clamour in the mating season, suggestive of its innate tendencies and instinctive harmony. After which the female puts in maximum three eggs a year, cured and protected by the couple. After seven weeks of hatching, the chicks are able to fly. The couple continue reproduction in high efficiency even after their age of over 60 years, and never separate along their live except by death. This bird has thus been the oldest and most fertile wild bird ever.

This bird is considered a migratory bird and spreads around the world with its forty types. Oman has eleven species, which add beauty to the shores of Oman during the winter period from October to May, and then leaves it to other places for nesting and breeding. Some of these species are endangered and some coexist with environmental balance. The long life span and rare hunting are key factors in their availability and reproduction. However its protection remains essential as international demand and a global responsibility. This because either islands or beach are devoid from this bird. The beautiful image of the Seagull cannot be erased from our mind while it is flying in open and wider space.

Desertification



Hi friends, Today i will tell you about an environmental phenomenon, It is called **Desertification**.

It is land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities



The most important reasons of desertification in Oman are:



High temperatures



Scarcity of rainfall



Soil erosion due to storms and cyclones



Use of traditional types of farming



Over- pumping of water



Overgrazing

Oman realized since early stages the seriousness of desertification and the importance of prevention of land degradation because of their negative effects on natural pastures and areas of arable lands. It developed the National Plan Action to Combat desertification in 2005 included preparation of inventory of natural resources of Oman, water sources and vegetation. It also carried out campaigns to cultivate local trees and plants, as well as several workshops and training sessions were held to combat this phenomenon.

