



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



Sultanate of Oman  
Diwan of Royal Court

August 2020 - Moharam 1442

Environmental monthly newsletter issued by the National Field Research Centre for Environmental Conservation

Issue 57

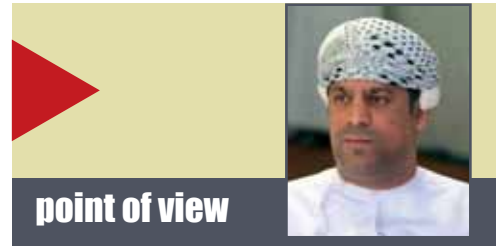
# The Red Tides ..

## Phenomenon between the inevitability and avoidance



## Capture of Wild Birds Hunters at Ibri and Wild Arabian Tahr Hunters at Alsharqiah South

Wildlife rangers at the Environment and Climate Affairs Department in Al Dhahirah Governorate, in cooperation with the Royal Oman Police, were able to arrest the wildlife violatorshanded with the crime of hunting a group of wild birds in the Ibri Wilayat where all the seized items were confiscated and referred for legal action. On the other hand, Al Sharqiyah South Police Command, in cooperation with specialists from the Ministry of Environment and Climate Affairs, arrested three people on charges of hunting Arabian Tahr violating the Environmental Protection Law in Jabal Qahwan Reserve in the Sharqiyah South Governorate.



point of view

## The Bird and The Mask

Dr. Dawood Sulaiman Al Balushi  
Editor-in-Chief

One image has widely spread on the social networking sites. It is a very expressive image of the current dealing with face masks that are used to prevent the risk of the spread of the Corona virus «Covid 19». Such masks are usually thrown on the beaches as a common practice.

The above said image is for a sea bird picking a mask with its beak at the beach to throw it away from the shore. The caption under the image says: «The bird still teaches man how to wipe out his bad deed.» The image indicates the bird's keenness to preserve the cleanliness of the beaches, which contradicts human behavior in this regard.

The phenomenon of throwing masks on roads, beaches, valleys and public places has become a striking and worrying phenomenon to a large extent. Scientific studies have shown that these masks, after being used, are transmitters of viruses, bacteria and some diseases that endanger human health. Also, these masks negatively affect the ecosystem by distorting the general view, polluting beaches, valleys, and tourist places, and affecting land and sea creatures, as well as the birds that may swallow them. This may lead to poisoning and killing such organisms. Also, these carelessly thrown masks cause the closure of water drainage and sewage networks. Even if they decompose, they affect the groundwater, the soil, vegetation, pastures and forests, in addition to the fact that they constitute a heavy burden on the garbage collectors who endeavor to collect them from various places.

Proper and safe disposal of such masks and placing them in the places designated for them is the correct way to deal with this phenomenon. Many countries of the world have designated special garbage containers for masks, where the waste of such masks are treated as medical waste that must be disposed of by scientific methods that ensure the preservation of human health and the surrounding environment.

In case that some countries have not designated containers for masks, then disposing of them in public garbage containers is also a good and safe way to avoid health and environmental damage, as the competent authorities deal with these wastes in an informed and correct way like the rest of the waste in engineering landfills.

The bird still teaches man how to ward off his misfortunes, and man still messes around with nature and environment as he pleases. Human violations continue to affect the health and environmental system. Is it time for humans to learn from birds how to conserve the environment.

## The Honey Curlew Returns to Al Wusta Wildlife Reserve



Office of Conservation of Environment at the Diwan of the Royal Court recorded the return of the Honey Curlew to Al Wusta Wildlife Reserve after a disappearance that lasted for about two years. This comes within the frame work of the attention paid by the office in monitoring and follow-up processes of the preservation of various environmental fields including wildlife. The Honey Curlew, which is scientifically called "Cursorius cursor" as it bears the foreign name "Cream-colored Courser", is one of the birds that widely live in the Arabian Peninsula and its presence previously recorded all over the Sultanate during the seasonal bird period. This bird is locally called "al-daraj". The bird is distinguished by its sandy and gray color in the crown area, with two lines, one is black and the other is white, starting from behind the eye to the back of the head. Its legs tend to be yellowish-white, and the beak is black. The back area of the abdomen is white and when

it flies, a black color is seen under the edges of the wing. It feeds on insects such as beetles, ants and locusts. These birds live in sandy areas of semi-desert areas with gravel and little vegetation, near cultivated lands, flat arid countryside and grassy areas. As well they are found in the southern part of the al-Jiddah area at the Al Wusta Wildlife Reserve. The honey curlew female lays its eggs on the ground, and there is no specific shape of its nest. The eggs are similar in color to the surrounding area. So they are usually sandy, tending to brown, spotted with black to brown color. This type of bird begins to reproduce at the beginning of January, and its eggs laying is also recorded in February and March, where the reproduction continues until the month of May. During the breeding season the female usually lays two eggs and the incubation period ranges between 18 - 19 days. The male and female oversee the incubation and take care of the little ones.

General supervision

D. Saif bin Rashid Al Shaqsi

Editor

D. Dawood bin Sulaiman Al Balushi

Technical Review

Khalifa bin Badawi Al-Higgi

Editorial Board

Issa Alsamsami  
Marwa Mukhaini  
Hana Al Hinai  
Zakaria Al Mawal

Abdullah Alsabei  
Mohammed Almqaimi  
Mohammed Al Haddabi



By: Fatimah AlZidjaliah

**C**orpse Flower or Titan Arum, is a plant species that belongs to the Taro Family and produces a very large, beautiful flower. It is the largest flower in the world, reaching a length of more than 3 meters (10 feet approximately). However, its smell very unpleasant, and many people compare it to the smell of rotten flesh. Therefore, it was called the corpse flower, or carrion of animal. This flower grows in the forests of Sumatra and it does not resort to what other flowers do. Unlike other flowers, It does not give off a sweet scent to attract butterflies and bees to pollinate them. Strangely, the corpse flower chooses to be pollinated by flies and beetles that lay their eggs in the rotten flesh, so it gives out this smell that attracts such insects. It was discovered in 1878 by the scientist Eduardo Bakary.



# The Corpse Flower



### Original Home

The origin of this plant is the tropical jungle of Indonesia. The flowering process of this flower is a rare global event, as it may not return to blooming again before 10 years or maybe a whole century. Indonesia, Borneo, Sumatra, Malaysia and the Philippines are the original habitat of this plant. This flower has been approved as one of the Indonesian national flowers by a presidential decree issued in 1994. This flower is a parasitic plant that grows in the rainy forests of Indonesia and Malaysia. It is considered one of the very rare plants that is difficult to find, because its buds need several months to grow. The blooming flower does not live for long and disappears in a few days. The corpse flower is a

## the Largest Flower in the World

unisexual plant, so pollination is very important for it and it only occurs when the male flowers are near the female flowers. This flower has only 5 petals.

### Pollination and Reproduction

Usually flowers are pollinated by insects that are attracted to the scents produced by the flowers, but this plant differs from other plants in that its flowers emit a very unpleasant odor, so it attracts only flies and some types of beetles. After pollination, this plant produces circular bodies with a diameter of about 15 cm, filled with a soft material in the middle of which are thousands of hard coated seeds that are eaten by different animals and so be distributed throughout the rainforests. This plant is only a flower, as it is one of the parasitic plants and has no branches or leaves and there is no chlorophyll in it. So the host plants are its only source of food. This flower has only 5 petals, and its core contains many thorns. Because this flower produces a strong smell like the smell of rotting flesh, it was called the «corpse flower».

### Description

It is one of the strangest plants in the world and it is an endangered species as well. It is a flower without leaves or stems and grows on the body of another host plant. This flower reaches almost a meter in diameter and weighs about 11 kg. Botanists say that the secret of the height of this flower is that, like a chimney, sends this unpleasant smell to reach the farthest possible distance and attract the largest number of flies so that the pollination process is done with high efficiency.

## Al-Ghadhf Plant



**A**l-Ghadhfis (fronds or Azebraut) a plant of the palm family. It is a wild dwarf plant that grows in the Arabian Peninsula (from Yemen to the Sultanate and Kuwait up to Wadi Al-Ghadhf in Jordan). It also grows at the rest of Southwest Asia (Iran, Pakistan, Afghanistan, to northwest India), as well as the plains of Italy. In Local environments, it is trimmed to for local usage.

## Used in Household Industries and Has Therapeutic Uses



### Local Names:

In the official Arabic and in the dialects of the Arabian Peninsula's north, it is known as al-Ghdhaf, while in the south it is known as al-shatb and al-asf. As well, some called it al-saaf. In the Sultanate and the UAE, its fronds are used for making mats, baskets and household utensils.

### Environments and Growth

Al-Ghadhf plant is well adapted to different environments, as it tolerates cold winters (-12 °C) and grows in very hot summers. It also grows naturally in various types of soil from good soil to salty and dry soils. It usually grows in wadies and bottoms as well as in mountainous heights.

### Description

Al-Ghadhf is palm-like, perennial, with many fronds and sprouting branches, with a dwarf trunk (shrub height from 1 to 2 meters (37- feet)). It is characterized by the fact that its leaves are fanlike, like palm leaves, which are long and smooth, ranging in length from 12 to 30 cm. The branches of the plant are single-flowering, that means they die after they bear fruit and the stem will return to growth the following year. This plant produces both male and female flowers that grow on top of its branches. Its single-seeded fruits are oval and unpalatable.

### Utilizations

Al-Ghadhf fronds were used in the Arabian Peninsula, especially the Sultanate and the United Arab Emirates, in the same utilizations of palm fronds, such as making household items, mats ...etc. These are utilizations so ancient that they were mentioned in the ancient dictionary called Lisano Al Arab. The author of Lisanoal-Arab mentioned that it is like palm trees and is found in India. Al-Ghadhf fronds are also used in Pakistan to produce baskets and ropes.

Al-Ghadhf had therapeutic uses in ancient Arabic medicine. And there is a recent study that demonstrated its curative properties as anti-fungal. It has been domesticated as an ornamental plant in southern Europe and North America due to its small size and tolerance to climate fluctuations.

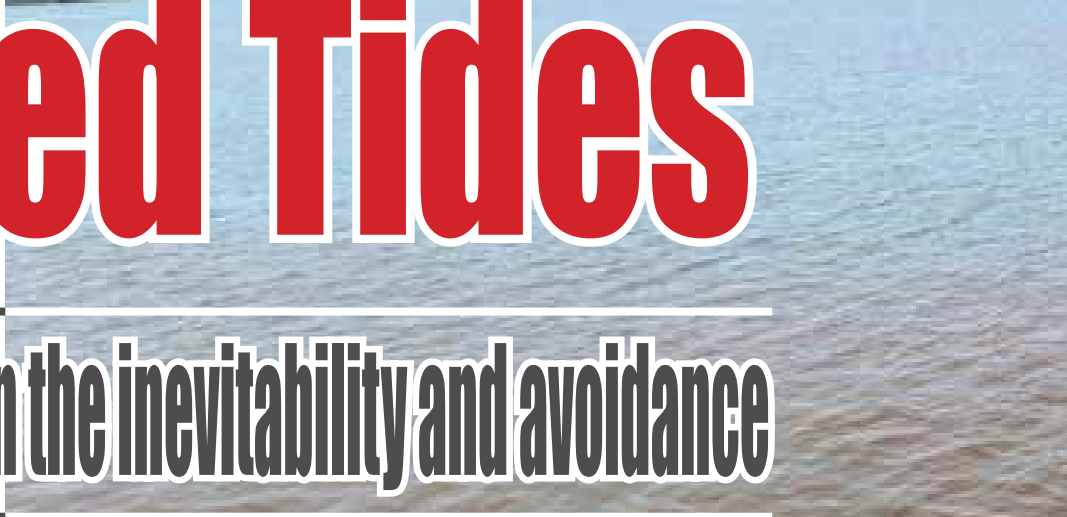
# The Red Tides

## Phenomenon Between the inevitability and avoidance



### Muscat - August 2020:

**T**he phenomenon of the harmful phytoplankton blooms (The Red Tides) is a natural phenomenon that causes great damage to humans and environment. It cannot be avoided as it is a natural phenomenon, but its damages can be mitigated. This environmental phenomenon occurs as a result of the flowering of one or more species of phytoplanktons (planktons) that live in water bodies (such as seas, oceans, rivers and lakes), which are very fine organisms that cannot be seen with the naked eye. These planktons are of great importance for marine life. They are the main source of food in that environment and contribute to the production of oxygen on the planet, but they sometimes multiply in excessive quantities resulting in the phenomenon of prosperity, which in turn negatively affects the marine environment and the organisms that live in it, as well as mammals, including humans and marine birds. When this phenomenon occurs, the color of the water often changes significantly, and the degrees of color of the water in which these planktons thrive vary from red to brown, orange, light yellow, and green, as the resulting color depends on the type of phytoplankton thriving, as each type has its own color pigment. The red color prevailed in the past, hence came the name (The Red Tides). The change in the color of the water is not an indication of the occurrence of the phenomenon, as the color of water may change for other reasons such as chemical or organic pollution. So the change in color for reasons other than phytoplankton is not called a Red Tide.



### The History of the Phenomenon

The phenomenon of the Red Tides has an ancient history in the Sultanate, as it was recorded 138 times in Omani waters between 1976 and 2019. The phenomenon was registered twice in 1967, the first of which was in the Dhofar Governorate. One phenomenon was recorded in each of 1978 and 1979. In 1988 its occurrence was recorded 3 times and it occurred 4 times in 1989. The year 1990 was the most recorded year for the occurrence of the phenomenon, reaching 10 times. In 1991, this phenomenon was recorded 4 times. In 1992 it happened twice. It happened 5 times in 1993 in 1994 and 1995 it happened twice in each year. In the year 1996 it happened 6 times. In 1997 and 1998 3 times were registered in each year. In 1999 it happened 7 times. The phenomenon of red tides was recorded 3 times in each of the years 2000 and 2001. In 2002 it happened 5 times. In 2003, it was registered twice. It occurred 1 time in 2004. It occurred 3 times in 2005 and 5 times in 2007. It occurred 6 times in 2008 and 5 times in 2009. There was 1 case in both 2010 and 2011. In 2012, this phenomenon happened 3 times. In 2013, it was registered 8 times. It occurred 4 times in both 2014 and 2015. In 2016 and 2017 it was registered 9 times in each year, and 6 times in 2018. Finally, last year it was registered 5 times. The species that cause the phenomenon varied in the Omani waters, and most of the flourishing species were non-toxic. As for the recorded deaths of marine organisms, they were either due to a lack of dissolved oxygen levels, an increase in ammonia or clogging of the fish gills and thus suffocated.

### Damages Caused by the Phenomenon

The harmful phytoplankton blooming phenomenon has multiple damages to the environment, health, economy and tourism are numerous. This includes the death of a number of fish and marine organisms, the occurrence of poisoning cases, the death of some types of large fish, birds and mammals, including humans. This occurs by eating marine organisms contaminated with biological toxins. In addition, the blooming of phytoplankton greatly affects the movement of water flow in the desalination plants due to the clogging of the membranes inside the withdrawal area, in addition to the increase in decomposing organic matter, which may lead to the suspension of some desalination plants. The phenomenon also leads to the emission of unpleasant odors that harm the inhabitants of coastal areas that are affected as a result of the decomposition of these plankton and the death of marine organisms. In addition, the impact of marine tourism, as the boom of marine plankton may impede the practice of some marine sports, swimming and diving. All this is in addition to the economic losses, as this phenomenon is sometimes accompanied by the death of quantities of fish, marine organisms and birds, as well as pollution of the beaches.

## Some Solutions

Some countries of the world have curbed the flourishing and reproduction of phytoplankton by using chemical, biological and mechanical treatments, but in condition that such measures should be applied to closed or semi-closed areas such as lakes and ponds, and not to open places such as the sea. Most of these methods are costly and labor-intensive, and some have negative effects on the organisms and the environment in which phytoplankton live. The effects of phytoplankton flourishing and reproduction can be minimized by periodic monitoring of their occurrence, whether by using technology and satellites to forecast and track them or through field visits and taking physical, biological and chemical readings of seawater. The application of effective coastal practices and management of industrial and domestic waste contributes to reducing the occurrence of the phenomenon, together with enhancing education and spreading awareness about them.

### How It Happens?

The growth of phytoplankton depends on the presence of some basic factors, including: the abundance of sunlight and carbon dioxide needed to help photosynthesis to produce food and oxygen, as well as the availability of appropriate temperatures for each type of phytoplankton that stimulate it to thrive. Also, the presence of suitable nutrients such as nitrates, phosphates, silica and others in abundant quantities contributes to the growth of these organisms. However, there are several stimulating factors that help increase the number of harmful phytoplankton to blooming. These factors can be divided into two main parts, the first is in the form of natural factors such as ocean currents, storms and hurricanes, as these

factors raise the cold bottom water loaded with nutrients to the surface, which provides a fertile and suitable environment for phytoplankton to thrive in the surface waters. The other part is the human factors due to the increase in human activity and urban development along the coasts, such as the establishment of tourist cities, factories and desalination plants. Humans also contributed to the transfer of foreign elements, which may be toxic, through the balance waters transported by large ships, as well as the transfer of huge and increasing quantities of industrial and agricultural liquid wastes and sewage to coastal waters. That is in addition to the steady expansion in the use of chemical fertilizers for agricultural production, it may be a major source of concern, because this transfers the nutrients to coastal waters. This enhances the reproduction of some harmful algae as they find their way to the sea.

### Types of Plankton

The number of marine phytoplankton recorded is about 5,000 species, 300 of which have the ability to flourish, among which about 60 - 80 species cause the phenomenon of harmful plankton blooming. This is in addition to 90 species that have been recorded as being toxic to the marine environment and human health around the world. The type of phytoplankton known as Noctiluca scintillans is the predominant type in most of the flourishing cases recorded in the Sultanate. It is from the group of flagellates, where about 50 % of cases recorded in Omani waters were caused by this type. This type is considered non-toxic, but it leads to a lack of oxygen and an increase in ammonia in the water. As for the type that comes second in terms of side effects that it leave in the waters of the Sultanate, it is the type known as Margalea fidinium polykrikoides. The first appearance of this species in Omani waters was recorded in 2008. Like the first type, it also not proved to be a toxic species, but it causes major impacts on the marine environment and society, including the death of large numbers of fish and coral reefs. It also restricted many functions of traditional fisheries and affected coastal tourism and leads to the closure of many desalination plants and refineries bordering the coasts.

### Studies and Research

The Center of Marine and Fisheries Sciences continues to conduct studies and research on the understanding of the factors that cause the recurrence of the Red Tide Phenomenon. The Marine Environment and Oceanography Department at the Center records the occurrence of the phenomenon and indicates whether the phenomenon was accompanied by deaths of fish or other marine organisms. This is done by documenting the data in a timeline. The Ministry of Agriculture and Fisheries is also currently implementing a strategic program for the phenomenon of harmful algal flourishing (2020 - 2024) in cooperation with the Scientific Research Council and with the participation of various relevant government agencies and institutions, in order to develop a mechanism for managing the phenomenon and its environmental, economic and health impacts.

Eng. Ahlam Sulaiman Al-Kharusiya, a marine environment specialist at the Center for Marine and Fisheries Sciences, conducted the latest studies on this phenomenon in her master's thesis entitled: "The Impact of Environmental Factors on the Flourishing of Harmful Phytoplankton at Majis Desalination Plant located in the Sohar Industrial Zone at the coast of the Sea of Oman. The aim of the research is to study the effect of physical, chemical and biological factors on the structure of the phytoplankton community in general and on the prosperity of harmful phytoplankton in particular in the northwestern region of the Sea of Oman and near the desalination plant of Majis Industrial Services Company located in the Sohar Industrial Port. Samples were taken for a year from April 2018 to March 2019. This is the first study of its kind for Omani waters to study harmful phytoplankton. A scientific paper from the study was published in one of the scientific journals. The study proved that winter is the most productive season for phytoplankton, specifically during the northeast monsoon season, when it recorded the highest percentage of phytoplankton, followed by autumn, while the spring and summer seasons recorded the lowest number in the abundance of phytoplankton, except for the end of the summer season during Southwest monsoon (in September). The study came out with several recommendations, the most important of which is that there should be continuous monitoring programs for the physical, chemical and biological changes of sea water using the latest technologies, the study of the species that cause the phenomenon of harmful algal bloomings and vesicle formation, not only near the desalination plant, but that should include the Sohar Industrial Port area.

## Dhofar Municipality Examines the Damage Caused by the Parthenium Plant and its Danger to Environment

His Excellency Dr. Ahmed bin Mohsen Al-Ghassani, Chairman of Dhofar Municipality, and of the Municipal Council in the Governorate, met in his office with the Director General of the General Directorate of Agriculture and Livestock and the Director General of the General Directorate of Environment and Climate Affairs, to discuss the efforts of the Municipal Council seeking to protect the environment from pollution and in interaction with community initiatives to remove the Parthenium plant. This meeting came within the frame work of consultation and coordination between the competent authorities regarding the Parthenium plant and determining the extent of its toxicity and harm to the environment, humans and animals, in order to unify and integrate efforts. During this meeting, it was agreed to take samples of this plant and conduct



laboratory tests to determine its toxicity and to determine the successful scientific methods to dispose of it in the event that its toxicity was proven.

In the coming days, the competent authorities will announce the results of these tests and the procedures that will be taken. It should be noted that the people of Taqah Wilayat in the two offices of al-Haq and Jibjat towns have launched volunteer campaigns since the twenty-third of last July aimed at eradicating the Parthenium plant.

### Bahrain

## 21% Out of Bahrain's Total Area is Designated for Natural Reserves

The Acting Tourism and Planning Department at the Supreme Council for the Environment, Suzan Ajjawi, revealed the completion of a national strategy of air quality for approval soon, along with an increase in air quality measurement stations in the Kingdom during the coming period. During a live interview on the council's Instagram page about the council's efforts to achieve sustainable development goals, she confirmed that the strategy has been submitted to the decision-makers for approval soon and there will be national policies for the short, medium and long term to improve air quality in the Kingdom of Bahrain. Also, Ajjawi confirmed the adoption of several environmental measures and the introduction of a package of improvements in the field of air quality, noting that an environmental package related to the waste management strategy is currently being implemented, which will raise Bahrain's standard in the city sustainability index. She explained that Bahrain has achieved an advanced qualitative leap in the field of sustainable development, as it ranks second in the Arab world and in the Gulf and an advanced ranked in the world. She indicated that natural reserves have become 21% of Bahrain's total area designated for marine environment, which has contributed to achieving a qualitative leap in city sustainability index at the level of sustainable development goals, which require that the percentage to be equal to 10% of the total area of countries.

### Qatar

## Seizing (64) Cleaning Violations on the Beaches of the North Municipality

The North Municipality, represented by the General Control Department, intensified inspection campaigns to control public cleanliness violations on the northern beaches during the Eid Al-Adha holidays, in cooperation with the Public Cleanliness Department and the North Security Department, as part of the efforts made to maintain the cleanliness of the beaches and their aesthetic and cultural appearance. The campaigns resulted in the seizure of 64 violations of the Public Cleanliness Law No. 18 issued in 2017. Seizure records were written and the necessary measures were taken. The inspectors also alerted 540 beach goers to the necessity of throwing waste in the designated places before leaving the place, and also alerted the owners of the cabins not to park in the area designated for the public.

### UAE

## The Success of the Initial Trials of Rice Cultivation

Within the strategic objectives of the Ministry of Climate Change and Environment to enhance food diversity and ensure its sustainability and the sustainability of ecosystems, in order to achieve the stability of food supply chains and encourage innovative research, the Ministry, in cooperation with the Rural Development

Department at the Ministry of Agriculture, Food and Rural Affairs in the Republic of South Korea, and the United Arab Emirates University, realized an outstanding successes in the initial experiments in growing rice in the desert environment of the UAE and under realistic field conditions.

### Kuwait

## Preparation for Starting the Fourth Phase of Mangrove Planting Project

As continuation of the mangrove planting project and the rehabilitation of coastal areas in the State of Kuwait, the planting of mangrove seedlings has achieved the desired results that were started in 2018. It was observed through field visits that good growth of seedlings reached nearly a meter in length.

Work and preparations are underway for the fourth phase to complete the project. The aim is to plant more than 1000 new seedlings of mangroves that have been processed in the laboratories of the Environment Public Authority represented by the Department of Biodiversity Conservation.

### KSA

## A Memorandum of Understanding to Promote Environmental Sustainability

The National Center for Waste Management in the Kingdom of Saudi Arabia signed a Memorandum of Understanding with PepsiCo, in order to establish a strategic partnership aimed at promoting environmental sustainability in the Kingdom. This memorandum focuses on defining the role of the two parties in promoting environmental sustainability

policies in line with the international best practices in support of the circular economy. The Memorandum of Understanding was signed by Dr. Abdullah Faisal Al-Sobaei, the CEO of the Center with the Vice President of the Food Division and General Manager of the Business Unit in the GCC and the Supervisor at PepsiCo, Mr. Tamer Muslim.

## Sharks Functionally Extinct in Many Coral Reefs Around the World

**N**ew York - Omania: A recently published study stated that sharks are «functionally extinct» in many coral reefs around the world, revealing a widespread global decline in shark numbers.

According to findings published in the journal "Nature", no sharks were detected in one of every five of the 371 reefs surveyed by the Global Fine Print Initiative in 58 countries. This does not mean that there are no sharks in these coral reefs, but it does mean that these fish are «functionally extinct» and it is rare for them to play their natural role in the ecosystem. The study attributed this to excessive fishing of sharks and overfishing practices.



Environmental Vocabulary

### The Fighter

Eng. Khalifa Badawi Al Higgi  
almitc@yahoo.com

**W**hen you see it at first glance, and when it is completely at comfort and stillness, its appearance makes you feel its kindness and gentleness, helps it in that its small body. Whom looking to it ignorantly, he never doubts what this animal is hiding a fierce genie that lies in its aggressive behavior when it is provoked, faces danger, or pounces on its prey. Its size is never proportional to the strength of its actions, and its appearance contrasts with its ferocity and aggression. The secret is not in size, but in courage and bravery.

A strange animal in its appearance as well in its behavior. Its shape is flat in top, about 28 cm wide and about 60 cm long, while its tail is 25 cm on average. Its body is covered with thick skin, on top of which is gray fur, while the underside is black. Its four legs are short, terminating in feet, each with five very strong claws. A small head that ends with a strong jaw protrudes from its body, while its eyes are small and ears are slightly larger than them. Its entire body structure is prepared for war and fighting, as it is neither tired nor tired of bloody fighting, and not afraid of attacking the most ferocious animals such as cheetahs, but it steals their food and eats their young because of its defenses, intelligence, courage and combat ferocity. So it is rarely having natural predators to overcome it. Danger to this animal is like a fun and game, plays with different types of weapons, such as; Its sharp claws, strong bite, and secreting stench odor from the anal glands, along with its agility, speed of movement and running. All these strong defenses are directed by supernatural intelligence, so that it can use human tools such as mud, fire and sticks to remove the danger, and it can dismantle doors and fences if it falls into captivity.

Its activity increases at night and in the cold day. It is a carnivorous animal that does not stop searching for its food from young leopards, lizards and small mammals. It relaxes at the table of poisonous snakes that it chews between its jaws like a piece of bread despite their toxins that do not affect on it at all. These meals are considered secondary compared to its favorite meal of wild honey, which it searches for its cells by guidance of kind of birds. As soon as it finds the beehive attacks it devouring its honey voraciously and ferociously, not caring about the anger of the bees and their stings because of the thickness of its skin and its immunity against stings and toxins.

The male weighs about 12 kg, while the female weighs 8 kg on average. This animal lives alone all the year, except when the reproductive instinct is triggered in May, when it meets the female in a nesting burrow that digs in less than 10 minutes. After 6 months of pregnancy the female gives birth of blind twins. It normally sleeps in the burrows that not digged up by itself but uses others burrows, especially of the ants that it seizes. The life span of this animal is about 24 years.

The honey badger, which scientists consider to be one of the fiercest and most dangerous animals throughout history, is still loaded with secrets and mysteries that scientists could not solve and understand due to its intelligence and fighting strength, exactly like the fighter who refuses to surrender, either death or victory. In Oman, the honey badger chooses to live in the mountains of Dhofar to suit its environment and its abundance of food. The honey badger is still around, waiting for researchers to understand its secrets and uncover its mysteries. Whoever desires to overcome difficulties, let him take the action, and be like the fighter to study this animal that we called it (The Fighter).

## Indian Tiger Census Sets a Record



**N**ew Delhi - dpa: A tiger census conducted by India achieved a record in 2018 in the Guinness Book of Records as the largest global survey of wildlife, by using camera traps that are remotely controlled. "It was a wonderful moment", Environment Minister Prakash Javdkar said in a post on Twitter. He added that India has doubled the number of tigers in it four years before the target date of 2022, which was set out at a global summit held in St. Petersburg in 2010. The results of the census issued last July revealed that the tiger population in India increased to 2,967 in 2018, up from 2,226 in 2014. India includes about 75% of the total number of tigers in the world, which the World Wildlife Fund estimates that it reached 3,900 in 2019.

## Stem Cell Technology Renews Hopes for Reviving an Extinct Breed of Malaysian Rhino

**K**uantan (Malaysia) «Reuters»: Pieces of skin, eggs and tissue samples, that's all that remains of Iman, the last female rhinoceros in Malaysia which died last November after failed reproductive attempts over years. Now, scientists are pinning their hopes on experimental stem cell technology to restore the Malaysian lineage of the Sumatran rhinoceros using cells from Iman and two other dead animals. «I am very confident ... if everything goes well and everyone supports us, it will not be impossible,» molecular biologist Muhammad Luqman told Reuters in his laboratory at the International Islamic University in Malaysia. The Sumatran rhinoceros, the smallest of the rhino subspecies, was declared extinct from the wild in Malaysia in 2015. Its flocks roamed Asia at one point, but its numbers have fallen to just 80 in neighboring Indonesia due to hunting and deforestation.



# Mining



Marwa Al Mukhami

## Do you know that ...

Mining operation across the globe, both surface mining and underground mining, have contributed to National income and causes some environmental issues !!



## What is mining ?



Mining refers to the extraction of metals, minerals and gemstone from the Earth

## What are the common types of mining ?

Coal mining

Gold mining

Uranium mining

Gemstone mining

Silver mining



## What are the common environmental issues that caused by mining ?

Deforestation

Air pollution

Water pollution

Release of harmful  
gases

