

**Dated : 09/04/2018 | Monday**

# **UPSC PRELIMS**

## **2018/2019**



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#### FRONT PAGE

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#### PAK. PLANS TO PERMANENTLY BAN JUD

**POINT TO NOTE : PAKISTAN** was put on the grey list by the Financial Action Task Force (FATF).

**WHAT IS PAKISTAN'S MOVE :** It is planning a draft Bill to amend the Anti-Terrorism Act, 1997.

**WHY THIS MOVE ?** The move comes ahead of the visit by an FATF delegation to Pakistan on April 19 to examine the measures taken by Islamabad to curb terror financing.

**THE KEY TURN :** The proposed legislation would ensure full implementation of the UNSC resolutions against Saeed and the JuD.

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#### BJP HAS GRAND PLANS FOR AMBEDKAR ANNIVERSARY

On the birth anniversary of B.R. Ambedkar – UP Chief Minister Yogi Adityanath will be honoured with the title of "Dalit Mitra".

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NATIONAL PAGE

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**PROTO-HISTORIC SETTLEMENT OF ARTISANS UNEARTHED : Exciting discovery made in Bengal village**

**WHAT WAS FOUND ?** Minute bone and crystal drills of less than 2 cm size.

**WHAT WAS THEY USED FOR ?** They may be used for making beads, different varieties of beads of semi-precious stone.

**OTHER ARTICLES FOUND :** Bone points as well as a large number of microlithic tools have been unearthed.

**WHO DID THIS WORK ?** It was done by archaeologists of the University of Calcutta.

**WHICH PLACE :** Excavation at Asuralay village in West Bengal's Birbhum district.

**POINT TO NOTE :** A large amount of black and red ware pottery (BRW), which signifies a proto historic level of human occupation in different parts of India, has also been found at the site in large quantities.

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**OLI SEEKS FARM EXPERTISE FOR NEPAL -Says collaboration with Pantnagar university must to revolutionise the sector in Himalayan nation**

**NEPAL'S TIE :** Nepal's Prime Minister K.P. Sharma Oli sought the research expertise of G.B. Pant University of Agriculture and Technology in Uttarakhand to revolutionise agriculture in his country.

**NEPAL AND AGRI :** Two agricultural universities have been set up in Nepal.

THE HONOUR : The Prime Minister was given the honorary title of Doctor of Science at the convocation .

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### **CHINA OBJECTS TO INDIA'S 'TRANSGRESSION' : Raises issue at Border Personnel Meeting on March 15**

CHINA'S COMPLAINT : The Chinese military last month strongly protested against the Indian Army's "transgression".

IN WHICH PLACE ? The strategically sensitive Asaphila area along the disputed border in Arunachal Pradesh.

WHAT DID INDIA REPLY ? India rejected the complaint.

WHAT WAS THE FORUM ? The sources said the Chinese raised the issue at a 'Border Personnel Meeting' (BPM) .

WHAT CAN BE DONE IN BPM MECHANISM ? Under the BPM mechanism, the two sides can register their protest over any incident of transgression as there are varying perceptions about the Line of Actual Control (LAC) between the two countries.

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## **INTERNATIONAL**

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### **PAKISTAN PREPARING TERRORIST DATABASE: INDIVIDUALS, TERROR GROUPS TO BE LISTED**

#### **PAKS MOVE AGAINST TERRORISM :**

**MOVE 1 :** Introducing specific legislation to permanently ban Hafiz Saeed's Jamaat-ud-Dawa,

**MOVE 2 :** Pakistani government is also preparing a consolidated database of known terrorists and terrorist organisations.

**WHAT IS THE USE OF SUCH BASE ?** The database, which would be accessible to the country's financial institutions and law enforcement agencies, will help the regime to tackle money laundering and terror financing.

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**CPEC BEING EXTENDED TO AFGHANISTAN: REPORT**

**NEWS :** The China-Pakistan Economic Corridor (CPEC) is being extended to Afghanistan.

**WHO SAID IT ?** the Asian Competitiveness Annual Report said.



# UPSC PRELIMS 2018



## ENVIRONMENT

**Book**

**NIOS MODULE**

**No. of pages**

**36 --> 14**

**36 pgs reduced to 14 pgs**

**EFFECT : Studying time reduces from  
1 hours 48 mins to JUST 42 mins**



**DAY 36 : YOUR BUDDY FOR PRELIMS - LAWXPERTSMV INDIA****NATURAL ECOSYSTEM**

Page 95 :

WHAT IS NATURAL ECOYSYSTEM>

- A natural ecosystem is an assemblage of plants and animals which functions as a unit and is capable of maintaining its identity such as forest, grassland, an estuary, human intervention is an example of a natural ecosystem.
- A natural ecosystem is totally dependent on solar energy.

TWO MAIN TYPES : There are two main categories of ecosystems.

(1) *Terrestrial ecosystem*: Ecosystems found on land e.g. forest, grasslands, deserts, tundra.

(2) *Aquatic ecosystem*: Plants and animal community found in water bodies. These can be further classified into two sub groups. (i) **Fresh water ecosystems**, such as rivers, lakes and ponds. (ii) **Marine ecosystems**, such as oceans, estuary.

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TERRESTRIAL ECOSYSTEMS : Terrestrial ecosystems are (a) forests (b) grasslands, (c) deserts and (d) tundra

TYPES OF FOREST : Depending on the climate and type of trees they are generally grouped into:

(i) Tropical rain forests :

- Distribution : Found on either side of equator.
- Flora and Fauna :
  - ✓ High temperature + High humidity + receives above 200 cm of rainfall per year = soil is rich in Humus.
  - ✓ Support trees (tall upto 50-60m) + epiphytes : vines, creepers, woody creepers and orchid etc



(ii) Temperate deciduous forests : Trees shed their leaves in autumn and a new foliage grows in spring

- Distribution : northwest, central and eastern Europe, eastern north America, north China, Korea, Japan, far eastern Russia and Australia.
- Climate : moderate climatic conditions + 75-150 cm rainfall + brown soil rich in nutrients.
- Flora and Fauna : Common trees are oak, beach, heath, chest nut, birch, pine. Prominent grazers include deer, bison and rodents. Hibernation- common feature of animals. Presence of Invertebrate fauna comprises green flies etc

(iii) Boreal or north coniferous forests :

- Distribution : Coniferous forests are also known as 'Taiga'. They extend as a continuous belt across north America and north Eurasia below the arctic tundra. Soil = acidic + poor in nutrients.
- Flora and Fauna : characterized by evergreen, drought resistant and woody. Conifers (gymnosperms) e.g. spruce, fir and pine trees which bear naked seeds in cones. The animals found in these forests, are red squirrel, deer, goat, mule, moose etc.

Grasslands :

Distribution: 20% of the land on the earth surface. Both in Tropical + Temperate regions.

Place : Name of the grassland

- North America - Prairies
- Eurasia (Europe and Asia)- Steppes
- Africa- Savanna
- South America- Pampas
- India Grassland, - Savanna

Flora and Fauna :



- Scattered drought resistant thorny trees in the tropical grasslands.
- Badgers, fox, ass, zebra, antelope + large population of rodents, reptiles and insects.

## Page 98 :

### Deserts :

- **Distribution:** Deserts constitute 1/7<sup>th</sup> of earth's land = are hot + low rain areas with water shortage + high wind velocity. They show extremes of temperature.
- **Flora and fauna:** **Cacti, Acacia, Euphorbia and prickly pears** + animals include *shrew, fox, wood rats, rabbits, camels and goat* are common mammals + reptiles.
- **Adaptations:** Desert plants are hot and dry conditions.

(i) These plants conserve water by following methods:

- mostly shrubs +
- Leaves = absent + succulent and water storing.
- The stem contains chlorophyll for photosynthesis
- Root system well developed spread over large area.

(ii) The animals are physiologically and behaviorally adapted to desert conditions.

- They are fast runners + nocturnal (to avoid sun's heat) + long legs keep the body away from the hot ground + conserve water by excreting concentrated urine
- Lizards are mostly insectivorous and can live without drinking water for several days.
- Herbivorous animals get sufficient water from the seeds which they eat

### Tundra :

It means a "*barren land*" since they are found in those regions of the world where environmental conditions are very severe. There are **two types of tundra- arctic and alpine**.

- **Distribution:** **Arctic tundra** extends as a continuous belt below the polar ice cap and above the tree line in the northern hemisphere. It occupies the northern



fringe of Canada, Alaska, European Russia, Siberia and island group of arctic ocean.

- On the south pole **Anatarctica tundra** in the south pole is very small since most of it is covered by ocean .
- **Alpine tundra** occurs at high mountains above the tree line. Since mountains are found at all latitudes therefore alpine tundra shows day and night temperature variations.
- **Flora and fauna:** Vegetation : *cotton grass, sedges, dwarf heath, willows, birches and lichens*. Animals of tundra are reindeer, musk ox, arctic hare, caribous, lemmings and squirrel.

## ECOSYSTEMS OF INDIA

India is a vast country and possess many types of natural ecosystems.

### (a) Terrestrial :

#### 1. Forests

- Tropical rain forests** - includes the **tropical evergreen forests** + **tropical semi-evergreen forests with** plenty of rainfall and sunshine. Ebony,
  - **IMPORTANT TREES** : Mahogany and rosewood are the main trees of these forests.
  - **LOCATION** : Western Ghats, plains of West Bengal and Orissa and north-eastern India.
- Tropical deciduous forests** : Deciduous (whether it is moist or dry) forests because they **cast leaves for about six to eight weeks** in summer / ALSO called as monsoon forests with all their grandeur and beauty.
  - **LOCATION** : State of Kerala + eastern slopes of Western Ghats + North eastern parts of the peninsular plateau and in the valleys of the Himalayas Chhotanagpur plateau, covering east Madhya Pradesh, south Bihar, and west Orissa, Shiwaliks in the northern India.
  - **IMPORTANT TREES** : **teak, sal, and sandalwood.**



(iii) Temperate broad leaf forests :

LOCATION : 1500-2400 m altitudes in western Himalayas.

- Several species of Oak (Quercus) - which show **peak leaf fall during summer** but *never become leafless* with height of 25-30 m.
- Trees canopy is dense, herbaceous layer is least developed and grasses are generally lacking. The Oak forests are often rich in epiphytic flora.

(iv) Temperate needle – leaf or coniferous forests :

- LOCATION : 1700-3000 m altitudes in Himalayas.
- Important Plants : Pine, deodar, Cypress, Spruce and silver fir.
- Height : 30-35 m and possess evergreen canopy of long needle like leaves.

(v) Alpine and tundra forests :

- Location : altitudes above 3600 m.
- The plants show stunted growth. The trees like silver fir, pine, juniper and birch belong to this category - used by **Gujjar and Bakarwal tribals**.

2. Grasslands : In India, grasslands are found as **village grazing grounds (Gauchar)** and extensive low pastures of dry regions of western part of the country and also in Alpine.

Fauna : Rats, mice, rodents, deer, elephant, dog, buffalo, tiger, lion, ferrets are some common mammals of grasslands. In the north east India, **one horned rhinoceros** is amongst the threatened animal of grassland in this region.

3. Deserts :

The **Thar desert in Rajasthan** is an extension of **the Sahara deserts through Arabian and Persian deserts**. They extend from Punjab, Haryana, Rajasthan to Gujarat state.

Indian deserts are divided into four main types:

- hills,
- plains with hills,
- marshes and



- plains with sand dunes.

#### Flora and Fauna :

- The main crops of desert are *bajra, millet, wheat, barley, maize, jowar, guwar*. Medicinal plants found here are *mehndi, hak, isabgole and gugal*.
- Threatened species of birds and mammals, such as *Asiatic lion, wild ass, bats, scaly ant eater, desert fox, Indian gazzel, four horned antelope, white browed Bushchat, Great Indian Bustard, Cranes and Sandgrouse*.
- Gulf of Kuchch is distinguished by the presence of living corals, pearl oyster, sea turtles and a large number of migratory birds like kingfisher, cranes ibis and herons.

#### 4. Mountains — The Himalayas :

**DISTRIBUTION :** The Himalaya is a great range of mountains that spreads over a westnorthwest to east- southeast over a distance of about 2500 km covering Afganistan , Pakistan, India, Nepal, Bhutan and China. In India, it extends from the Indus trench below Nangaparbat in the west to Yarlungtsangpo- Brahmputra George below Namchebarwa peak in east.

They cover about **16.6% of India's total geographical area** and are spread partially or completely over **12 states** namely: Jammu and Kashmir, Himachal Pradesh, Uttaranchal, Sikkim, West Bengal, Arunachal Pradesh, Assam, Nagaland, Manipur, Tripura, Mizoram and Meghalaya

#### 5. Ghats :

Western and eastern ghats are also important ecosystems of India.

**Western ghats** also known as **Sahyadri extend from Tapti river in north to Kanyakumari** in south covering nearly 1,40,000 sq km parallel to the west coast of peninsular India.

- They pass through the states of *Gujarat, Maharashtra, Goa, Karnatka, Tamilnadu and Kerala*.



- These ghats are one of the richest biological resources and form distinct ecological and biogeographical region of India. Western ghats are one of 25 hot spots of the world.

**Hot spots are the regions which show maximum biodiversity, richness of species and endemic forms.**

**Eastern ghats** extend in north south-west strike in Indian peninnsula covering an area of about 75000 sq. km.

- They are spread through the states of Orissa, Andhra Pradesh and Tamilnadu.
- The eastern ghats **do not form a continuous range because the great rivers Mahanadi, Godavari and Krishna** cut across them.
- The climate of these ghats may be **semiarid to semihumid** with a rainfall ranging from 60 to 160 cm

(b)Aquatic

1. Fresh water ecosystem : Freshwater are terrestrial aquatic ecosystems. **Lakes, flood ponds, reservoirs and rivers** are its important components.

2. Marine ecosystem: India has a long coastline of about 8000 km stretching along nine states and two island chains.

- At the coast a number of rivers form estuaries at their confluence with the sea.
- There are three gulfs - one on the east coast that is gulf of Mannar and two on the west coast i.e. gulf of Kutchch and gulf of Khambhat.

THE THREATENED ECOSYSTEMS :

- Estuaries
- Mangroves
- Islands

ECOTONE :



Ecotone is a zone of junction between two or more diverse ecosystems e.g. the mangrove forests. They represent an ecotone *between marine and terrestrial ecosystem*. Some more examples of ecotone are – grassland, estuary and river bank

Characteristics of ecotone :

- It may be very narrow or quite wide.
- It has the conditions intermediate to the adjacent ecosystems. Hence ecotone is a zone of tension..
- It is linear as shows progressive increase in species composition of one in coming community and a simultaneous decrease in species of the other out-going adjoining community.
- A well- developed ecotones contain some organisms which are entirely different from that of the adjoining communities.
- Sometimes the number of species and the population density of some of the species is much greater in this zone than either community. This is called **edge effect**. The organisms which occur primarily or most abundantly in this zone are known as **edge species**. In the terrestrial ecosystems edge effect is especially applicable to birds. For example the density of song birds is greater in the mixed habitat of the ecotone between the forest and the desert.

CONCLUSION : We the human beings are responsible for the reduction of natural ecosystems. To protect our own species it is essential for us to protect them. Therefore to prevent the further destruction people should be educated and the various methods should be adopted for the protection of natural environment and ecosystem balance.



## HUMAN MODIFIED ECOSYSTEMS

The greed and need of human being has modified and changed the natural ecosystems greatly. The main reasons for the modification of natural ecosystems are and 1) increasing human population 2) increasing human needs and 3) changing life styles.

**HUMAN MODIFIED ECOSYSTEMS** Human modified ecosystems may or may not depend on solar energy e.g. in an industry energy is provided in the form of fossil fuel or electricity or both.

Some examples of human modified ecosystems are: (1) Agro-ecosystems ; (2) Plantation forests ; (3) Urban ecosystems ; (4) Rural ecosystems ; (5) Aquaculture ; (6) Industrial areas ; (7) Laboratory cultures

### **Characteristics of human modified ecosystems :**

- Highly simplified + Species diversity is very low + Food chains are simple and small.
- Depend on human (anthropogenic) support for survival; need for fossil fuel energy, fertilizers, irrigation etc.
- Attract large number of weeds.
- More susceptible to epidemic diseases + soil erosion + Highly unstable.

### **IMPACT OF INCREASING HUMAN POPULATION AND INDUSTRIALIZATION ON ENVIRONMENT IN INDIA :**

The increasing population and growing industrialization are severely affecting the environment in various ways

#### **1. Pollution:**

- Development of Science and Technology is a boon to mankind in fulfilling growing human needs + also caused environmental pollution.
- Pollution refers to the addition of any substance in the environment that has **direct or indirect adverse effect on humans**

**2. Global warming:** Atmospheric **build up of green house gases** have caused considerable heating of the earth leading to global warming.



**3. Human health and disease:** An increase in the population is leading to increasing incidences of epidemic diseases such as AIDS (Acquired Immuno Deficiency Syndrome), Hepatitis, T.B. (tuberculosis), bird flu, swine flu, Syphilis, Gonorrhoea, cancer and many more diseases. These diseases are caused by **environmental pollution or over crowding.**

**4. Over exploitation of natural resources:** Rapidly growing population results in over exploitation of resources.

5. Deforestation, over grazing, intensive cultivation, over irrigation etc. results in the loss of top soil and fertility of the land. Prolonged degradation of land leads to desertification.

6. Water bodies: Rivers, lakes, ponds, estuaries and oceans are being increasingly abused.

#### **HUMAN MODIFIED ECOSYSTEM :**

**1. AGROECOSYSTEMS AND AGRICULTURAL PRACTICES :** Agro-ecosystems are large areas where **commercial crops are cultivated.**

Economic importance (i) Agroecosystems **fulfill the basic requirements of food, fruits, edible oil etc.** (ii) Good quality grains can be produced with high yield. (iii)

Disadvantages of agro-ecosystem :

- Large scale **monoculture of agricultural crops results in severe loss of native biodiversity** including genetic diversity of crop plants.
- High yielding varieties of crop plants **are more susceptible to disease**
- To protect crop from pests and diseases requires **large scale use of pesticides and chemicals** which pollute the environment.
- Deplete ground water in many areas due to well irrigation.

**2. PLANTATION FOREST :** It is a man made ecosystem consisting of individuals of a particular tree species. The aim is to grow fast growing trees which are commercially valuable.

Economic importance : (1) Tree plantation are raised for **fruits, oil, rubber, coffee, timber, fire wood, pulp wood for making rayon and paper industries.** (2) Trees are



also planted to serve as wind breaks or shelter belts. (3) Tree plantations are also raised for controlling soil erosion and for increasing soil fertility. (4) Tree plantation provides job opportunities and generate income.

3. URBAN ECOSYSTEMS : Urban life is the life in a city where many people live close together.

- At present 45% of the world population is urban population and by 2030 there will be more than 60% people living in cities.
- **Characteristics of urban ecosystems** (1) High population density: (2) Congestion, shortage of housing and growth of slum areas. (3) Urban areas import **from outside to survive**. (4) Generate **large quantities of solid and liquid wastes and air pollutants** causing problems of environmental pollution. (5) More employment opportunities as well as tough competition. (6) Better education facilities. (7) Better medical facilities and health care is provided. (8) More and diverse sources of entertainment.
- **Advantages of urban ecosystems** (1) Economically- well developed. (2) Hub of industrial growth. (3) Centre of commerce. (4) Multicultural social environment. (5) Reduced infantile mortality. (6) Centres of political activity.
- **Disadvantages of urban ecosystems** (1) Urban areas consume **75% of the earth's resources and produce 75% of the waste**. (2) Urban areas are highly polluted (3) Suffer from problem of noise pollution is caused by industries and transport. (4) Suffer from serious shortage of water availability. (5) High crime rate, unrest and unemployment. (6) Increasing population density in cities of the world compels some people to live in slums.

4. RURAL ECOSYSTEMS : Rural ecosystems are **midway between natural and urban ecosystems** since the exploitation of nature and natural resources by humans is relatively much less.

- **Characteristics of rural ecosystems** : Many villages belong to a single family= live in small clusters in *thatched, mud houses* surrounded by farm lands.
- In rural areas people are directly or indirectly dependent on agriculture and consume locally available resources.
- Drinking water is largely obtained from wells, canals, lakes or rivers.



- Education, healthcare, drainage, sanitation, hygiene, and transport etc. are inadequate or lacking.
- Rural areas are mostly free from air and noise pollution.

5. AQUACULTURE—MERITS AND DEMERITS : Aquaculture is the artificial cultivation of aquatic plants or animals.

- 20,000 species of fish are known of which **only 22 of them are taken largely by man.**
- Fisheries include the extraction of food from the sea and the fresh water whereas **aquaculture is rearing of the aquatic organisms in artificially made water bodies** (Fig. 7.1) e.g. culture of fish like carps, tilapia.
- There are two types of aquaculture: 1. Fish farming 2. Fish ranching
- **Merit of aquaculture** : (1) Ecological efficiency is high. (2) High yield in small volume of water. (3) Improved qualities of fish obtained by selection and breeding and genetic engineering. (4) Aquaculture reduces over harvesting of fisheries. (5) High profit.
- **Demerit of aquaculture** : (1) Large inputs of feed, water and land are required. (2) Loss of native aquatic biodiversity. (3) Produces large amounts of fish wastes that pollute water bodies. (4) Destroys mangrove forests or coastal vegetation. (5) Aquaculture fishes are very sensitive to pesticide runoff from croplands. (6) Highly vulnerable to diseases leading to total collapse of the crop. (7) Aquaculture tanks or reservoirs are often get contaminated after a few years.

#### 8. DAMS, RESERVOIRS AND DIVERSIONS :

A dam is a structure built in order to store river or tidal water. Dams, reservoirs and diversions capture and store runoff water and release it as needed. They are used for: (1) controlling or moderating floods, (2) producing hydroelectric power, and (3) supply water for irrigation, industry and other uses to rural, suburban and urban areas.

- **Advantages of dams** (1) Water released from dams to generate electricity. (2) Reduce the use of coal and thereby reduce CO<sub>2</sub> emission. (3) Reduce downstream flooding. (4) Reduce river silting below the dam. (5) Supply irrigation water for croplands.



- **Disadvantages of dams** (1) Permanently submerge large areas of forests and crop lands. (2) Displace large number of native people. (3) Increase water pollution on account of reduced water flow. (4) Reduce nutrients replenishment of down stream flood plains. (5) Disrupt spawning and migration of some fish species.

## INDUSTRIALIZATION AND ENVIRONMENTAL DEGRADATION :

Pollution: All these industries discharge several waste gases and particulate pollutants into the atmosphere. Some of them are as follows:-

(i) Gaseous pollutants: Oxides of carbon, nitrogen and sulphur.
ii) Particulate matter: Fine metal dust, fly ash, soot, cotton dust and radioactive substances.
(iii) Burning of plastics: Emit poly chlorinated biphenyles (PCBs) which are harmful for lungs and vision.
(iv) Accidental release of some poisonous gases like phosgene ( $\text{COCl}_2$ ) and methyl isocyanate (as it happened in Bhopal) are fatal
Secondary air pollutants formed from complex reactions between primary pollutants, such as smog and acid rain, which are harmful all living organisms, buildings and monuments.

- **Land use and habitat destruction:** The natural ecosystems are modified to fulfill the increasing needs of growing human population 83 % of the earth's surface is affected (excluding Antarctica) by human.
- **Human health:** Use of various type of chemicals today have serious health implications. Incidence of cancer, genetic mutations and damage to nervous, immune and hormonal systems.
- **Increased sensitivity to diseases:** Cultivated species of plants, fishes and other domesticated animals have become increasingly sensitive to pest and diseases
- **Genetic resistance:** An increased use of insecticides, pesticides and antibiotics has speeded up directional natural selection and caused genetic resistance in the pathogens.



- **Effect on native populations:** Introduction of new alien species or non-native species reduces the populations growth of native species.
- **Effect on nutrient recycling:** Use of fertilizers in agricultural fields interferes with the natural biogeochemical cycles.



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