DAILY CURRENT AFFAIRS ANALYSIS

LAKSHYA ACADEMY®

13 AUGUST 2024

1 - Biodiversity Heritage Site of Gupteswar Forest:

GS III

Environmental Conservation

- **Which are the most important facts about Gupteshwar Forest?**

- **Region and Significance:**

- The forest spans 350 hectares of delimited land and is extremely significant culturally because of its sacred groves, which the locals have long held in high regard.

- **Diverse flora and fauna:**

- It is home to an astounding array of plant and animal life. At least 608 kinds of animals, including 28 mammal species, can be found in the forest.

- **Important Species:**

- Several notable species of animals have been found in the forest, including the sacred Grove Bush Frog, Jerdon's baza, black baza, Malaber trogon, common hill myna, white-bellied woodpecker, and banded bay cuckoo. Other notable species of birds have also been found in the woodland.
- Eight species of bats inhabit the limestone caverns found inside the forest, with two of them classified as near-threatened.
- The IUCN classifies Rhinolophus rouxii and Hipposideros galeritus as near-threatened.

- **Diversity of Flora:**

- Additionally, the woodland is rich in floral diversity. It contains endangered medicinal plants including Indian snakeroot and Indian trumpet tree.

- **A Biodiversity Heritage Site: What Is It?**

- Biodiversity Heritage sites (BHS) are distinct, ecologically vulnerable ecosystems that have a high diversity of wild and domesticated species, rare and threatened species, and keystone species. These sites are well-defined.

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- **Statutory Provision:**

- According to the provisions of Section 37(1) of "The Biological Diversity Act, 2002," State Governments have the authority to designate areas of significant biodiversity as Biodiversity Heritage Sites in the official gazette after consulting with "local bodies."

- **Limitations:**

- Other than anything that the local communities voluntarily want to ban, the creation of BHS may not impose any restrictions on their current activities and usage. The goal is to improve local residents' quality of life by implementing conservation measures.

- **India's first BHS:**

- In 2007, Bengaluru, Karnataka's Nallur Tamarind Grove was designated as India's first Biodiversity Heritage Site.
- As of February 2024, there are 45 Biodiversity Heritage Sites in India, according to the National Biodiversity Authority.

Source → The Hindu

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2 – Opportunity in Lakshadweep:

GS II

Government Policies and Interventions

- **What Are Lakshadweep's Potentialities in Tourism and Logistics?**

- **Travel:**

- Lakshadweep is a fantastic tourist destination because of its immaculate beaches, coral reefs, and crystal-clear oceans.
- Lakshadweep has the potential to grow into a top tourism destination with the right infrastructure development and eco-friendly tourism strategies.

- **Logistics and Trade:**

- Lakshadweep has the potential to develop into a key hub for logistics because it is located close to international shipping lanes. Its close proximity to Karnataka's coast, and in especially to Mangaluru (a major port), presents prospects for cargo handling and commercial relations.
- The Lakshadweep Islands are closer to Mangaluru than they are. For daily needs, many Laksheadweep inhabitants depend on supplies from Mangaluru. These commercial ties date back centuries.
- Lakshadweep might enable more seamless commercial operations with the planned development of port connectivity and infrastructure, which would be advantageous to both local companies and the larger regional economy.

- **Growth in the Region:**

- The proposed Interim Budget 2024-25 for Lakshadweep includes development projects that benefit the islands as well as the region, especially Mangaluru and other nearby areas.
- In order to satisfy the demand for domestic travel, the Union Finance Minister announced during the Budget presentation that projects for port connection, tourist infrastructure, and amenities will be undertaken on Indian islands, including Lakshadweep.
- Improved connectivity and the launch of cruise lines have the potential to stimulate economic growth and tourism in Lakshadweep and its surrounding areas.

- **Ecological Importance:**

- The fact that Lakshadweep is a confined territory emphasises how important it is ecologically. A dedication to ecological techniques can be seen in the suggestions made to dock cruise ships at sea rather than constructing substantial infrastructure on the islands.

- **What Are Lakshadweep's Most Important Facts?**

- Lakshadweep, the smallest Union Territory in India, is an archipelago of 36 islands covering 32 square kilometres.
- There are 10 inhabited islands, three reefs, five submerged banks, and twelve atolls in this union territory with only one district.
- The distance between Kochi, a coastal city in Kerala, and the islands in the emerald Arabian Sea ranges from 220 to 440 km.
- Via an administrator, the Centre has direct authority over it.

- **There are three primary island groups:**

- The Northernmost Islands, or Amindivi Islands
- Islands Laccadive
- The southernmost island is Minicoy Island.

- All of them are little atolls made of coral that are encircled by bordering reefs.
- Kavaratti serves as both the Union Territory's capital and its main town.
- Organic Agricultural region: Under India's Participatory Guarantee System (PGS), the entire Lakshadweep group of islands has been designated as an organic agricultural region.
- Blue Flag Certification: Kadmat Beach and Minicoy Thundi Beach, two recently opened beaches in Lakshadweep, have been granted the Blue Flag Certification.

- **What worries are associated with Lakshadweep's development?**

- **Effect on the Environment:**

- The fragile environment of the islands, which includes marine life and coral reefs, is susceptible to harm from growing human activity, pollution, and building.
- To reduce these dangers, strict environmental restrictions and sustainable development practices are required.

- **Impact on society and culture:**

- Rapid development and rising tourism could endanger the indigenous communities of Lakshadweep's traditional way of life and cultural heritage.

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- **Development of Infrastructure:**

- The absence of suitable infrastructure, encompassing lodging, medical facilities, and transportation, presents a noteworthy obstacle to commerce and tourism in Lakshadweep.
- It takes careful planning and funding to develop modern infrastructure while maintaining the islands' distinctive identity and natural beauty.

- **Security Issues:**

- Lakshadweep's restricted area status and closeness to international shipping routes give rise to security worries. Coordinated efforts between government agencies and stakeholders are needed to strike a balance between the promotion of trade and tourism and security requirements.

- **Participation in the Community:**

- The effectiveness and durability of development programmes depend heavily on the involvement of local people in their design and execution.
- Fostering social cohesion and supporting growth efforts requires making sure that the advantages of development are fairly shared among locals and that their concerns are taken seriously.

- Governmental organisations, players in the commercial sector, civil society organisations, and local communities must work together to address these issues.

- Lakshadweep can overcome these obstacles and reach its full potential as a prosperous and sustainable island resort by embracing a comprehensive and inclusive approach to development.

Source → The Hindu

3 - iOncology-AI Project:

GS II

Government Policies and Interventions

- **Which aspects of the iOncology-AI Project stand out the most?**

- The Centre for Development of Advanced Computing (C-DAC) at AIIMS in Delhi and Pune, along with the Ministry of Electronics & Information Technology, collaborated to create the iOncology-AI initiative. Through this collaboration, cancer care will be revolutionised by combining skills in computer science and medical research.
- It seeks to use AI to improve cancer treatment's accuracy and effectiveness. Through the examination of extensive datasets that include genetic profiles, clinical histories, and treatment results, the study aims to clarify the intricate relationship between genetics and cancer treatment.

- **Operational Process:**

- The platform, created in collaboration with C-DAC, records and evaluates a range of cancer-related data, such as lab results, scan results, blood test results, and patient histories.
- By leveraging sophisticated algorithms, the AI-powered platform helps physicians customise treatment regimens for each patient by supporting them in making decisions about their care based on thorough genomic data analysis.
- Through analysis of thousands of cancer patients' clinical data and genetic composition, the platform can offer tailored therapy suggestions that enhance therapeutic results.
- The tool is especially helpful when there are limited resources available since it helps physicians make more focused treatment decisions and improve the delivery of healthcare.
- The software improves clinical decision-making by automatically identifying problems in scans and reports, but it does not replace clinicians as a helpful guide.

- **Emphasis on Ovarian and Breast Cancers:**

- The first usage of iOncology-AI is concentrated on early diagnosis of these cancers because these diseases are common among Indian women.

- **Effects:**

- By enabling early identification and individualised treatment for ovarian and breast cancers, the iOncology-AI platform can enhance the prognosis and quality of life for cancer patients.
- By increasing the productivity and efficiency of healthcare workers and optimising resource usage, it also lowers the burden and expense of cancer care. Furthermore, it advances cancer research and innovation by offering insightful information and data for additional study and advancement.

- Information regarding the composition and operation of an organism's genome is known as genomic data.
- For physicians and medical researchers, it is an extremely useful tool. It aids in their comprehension of how changes in our DNA impact our health.
- They use genomic sequencing to determine a patient's genetic composition and identify changes to our genes. The development of diseases like cancer can be better understood by looking at these alterations.

- **Worldwide Cancer Situation:**

- A complicated collection of illnesses known as cancer are defined by the body's aberrant cells growing and spreading out of control.
- These cells can penetrate and kill healthy tissues and organs; they are referred to as cancer cells.
- Cells divide, develop, and die in a controlled manner in a healthy body; but, in cancer, abnormal cell growth results from genetic abnormalities that disturb this normal cell cycle. A tumour may develop as a result of this.
- According to forecasts from the Global Cancer Observatory (GLOBOCAN), there would be 19.3 million incident cancer cases globally in 2020, with India coming in third place behind China and the US.
- According to a Lancet study, India would have 2.08 million cancer cases by 2040, a 57.5% increase from the current number. Cancer killed more than 8 lakh people in India in 2022 alone. This was mostly because the disease was discovered too late, leaving only 20% of patients alive.

Source → The Hindu

4 - Human Menstrual Blood Stem Cells:

GS II

Health related issues

- **Menstrual blood stem cells: what are they?**

- Endometrial stromal mesenchymal stem cells, or MenSCs, are produced from menstrual blood and have the ability to develop into a variety of tissue types, including smooth muscle, fat, and bone cells.
- MenSCs, or adult stem cells derived from women, are a morally acceptable source of stem cells.
- period cups can be used to collect period cells, which offers a less invasive option to surgical biopsies.
- Menstrual blood from women's endometrium, which lines the lining of the uterus, can be used to produce MenSCs.

- **Potential for Regeneration:**

- MenSCs display traits of multipotency. This implies that they have the ability to develop into diverse cell types, such as skin, bone, heart, liver, cartilage, fat, and neurons.

- **How to Manage Endometriosis:**

- MenSCs present promising therapeutic options for gynaecological conditions like infertility and endometriosis.
- The illness known as endometriosis is characterised by the growth of endometrial-like tissue outside of the uterus. It can make getting pregnant more difficult and result in excruciating pelvic pain.
- Beginning with the first menstrual period and continuing until menopause (the end of menstrual periods), endometriosis can affect a person.
- Endometriosis is commonly characterised by pelvic discomfort, particularly during menstruation, painful sex, infertility, heavy monthly flow, and gastrointestinal problems such constipation or diarrhoea.
- It is uncertain what causes endometriosis and how to prevent it. Although there is no known cure, medication and, in certain situations, surgery can be used to address the symptoms.
- The backflow of menstrual blood into a woman's fallopian tubes is a contributing element in endometriosis.
- Blood enters the pelvic cavity—the funnel-shaped gap between the pelvic bones—through this retrograde flow.

- The growth of endometrial-like tissue outside the uterus may be stimulated by endometrial stem cells implanted in these regions, leading to painful lesions, scarring, and frequently infertility.

- **More Comprehensive Therapeutic Uses:**

- The potential therapeutic uses of menstrual stem cells extend beyond gynaecological disorders.
- Menstrual stem cells were injected into diabetic mice to improve blood sugar levels and promote the regeneration of insulin-producing cells.
- Mice's wounds healed when stem cells or their secretions were used to treat them.
- Humans can receive transplants of menstrual stem cells without experiencing negative side effects.

- **Problems:**

- Menstrual stem cell collection is convenient, however the amount of research conducted in this field is very little compared to total stem cell research.
- Menstrual stem cells made up only 0.25% of total mesenchymal cell research as of 2020; bone marrow stem cells made up 47.7%.
- It is still difficult to produce MenSCs consistently and scalable for use in clinical settings.
- Funding menstrual stem cell research is severely hampered by cultural taboos and a lack of investment in women's health research.
- Menstrual stem cell research must be elevated above its relationship with menstruation as a viable area of regenerative medicine. This can be achieved by addressing gender bias in research funding.

Source → The Hindu