

## Darjeeling zoo attempts India's first augmentation of red pandas in wild

(GS Paper 3, Environment)

### Why in news?

- The Singalila National Park, the highest protected area in West Bengal, has started an ambitious programme to **augment the wild red panda population.**



### What is the programme all about?

- In the **first re-wilding programme of red pandas (Ailurus fulgens)** in India, the **Padmaja Naidu Himalayan Zoological Park** has started an ambitious programme to release 20 of these furry mammals in about five years to the forests.
- The Padmaja Naidu Park, **at a height of about 2,000 metres above the sea level**, is one of the high-altitude zoos in the country and has been quite successful in captive breeding of the furry mammals.
- Conservation breeding of red pandas is only one part of the programme. Selection of animals to be released in the wild, breaking their food association with humans and tagging the animals released in the wild are crucial factors in re-wilding of the red panda population.

### Declining red pandas in wild:

- The number of red pandas has been declining in the wild, even in the **Singalila and Neora Valley National Parks**, the two protected areas where the endangered mammal is found in the wild in West Bengal.
- Recent studies estimate that there are 38 of them in Singalila and 32 in Neora.

### About Red Panda:

- Categorised as an **endangered species as per IUCN Red List of Threatened Species**, red pandas are shy, solitary and arboreal animals and considered an indicator species for ecological change.
- They are also one of the most iconic species in terms of their importance to global conservation.

### Habitat:

- A couple of recent publications by Zoological Survey of India (ZSI) have resolved the mystery around the demography and speciation in red panda.
- The studies have concluded that **India is home to both the (sub) species — Himalayan red panda** (*Ailurus fulgens*) and the **Chinese red panda** (*Ailurus styani*) and the Siang river in Arunachal Pradesh splits the two phylogenetic species.

## Artificial diet, feeding device for mosquitoes

**(GS Paper 3, Science and Tech)**

### Why in news?

- The **ICMR-Vector Control Research Centre (VCRC), Puducherry**, has filed patent applications for two of its unique products; an artificial diet and feeding device for mosquitoes reared in laboratory with the Indian Patent Office recently.



### Details:

- Both the products have been awarded a unique number which will protect the Intellectual Property (IP) of both.
- The two products allow **efficient and cost-effective mass-rearing of mosquitoes in laboratory** as it is important to keep these mosquitoes healthy to investigate basic facets of their biology and to study vector-borne disease and measures to control it.

### Artificial Mosquito diet:

- **Mosquito females require animal or human blood** diet to produce eggs. For this, blood has to be obtained from blood banks or live animals with proper human and animal ethical clearance.
- Regular supply of blood from blood banks is not easy. Considering these challenges and huge potential demand, they have zeroed in on four artificial diets for feeding.
- These **four diets prepared for female mosquitoes is like a baby formula food** and has all the essential nutrients, which are present in the blood. These diets would attract hungry female mosquitoes to accept the meal, taste it like blood, produce healthy and viable eggs which should hatch like normal eggs, form healthy useful for laboratory research and mass production whenever necessary.

### Feeding device:

- The foods needed to be kept at a certain temperature.

- It was very difficult to maintain the feed temperature to the optimum level of 37<sup>0</sup> C, which is human body temperature, by usual water circulation or by using the melted wax.
- Hence a device with controlled temperature was invented, a prototype made and also evaluated for mosquito feeding capability. This could easily replace the conventional hot water circulator-based feeding device.

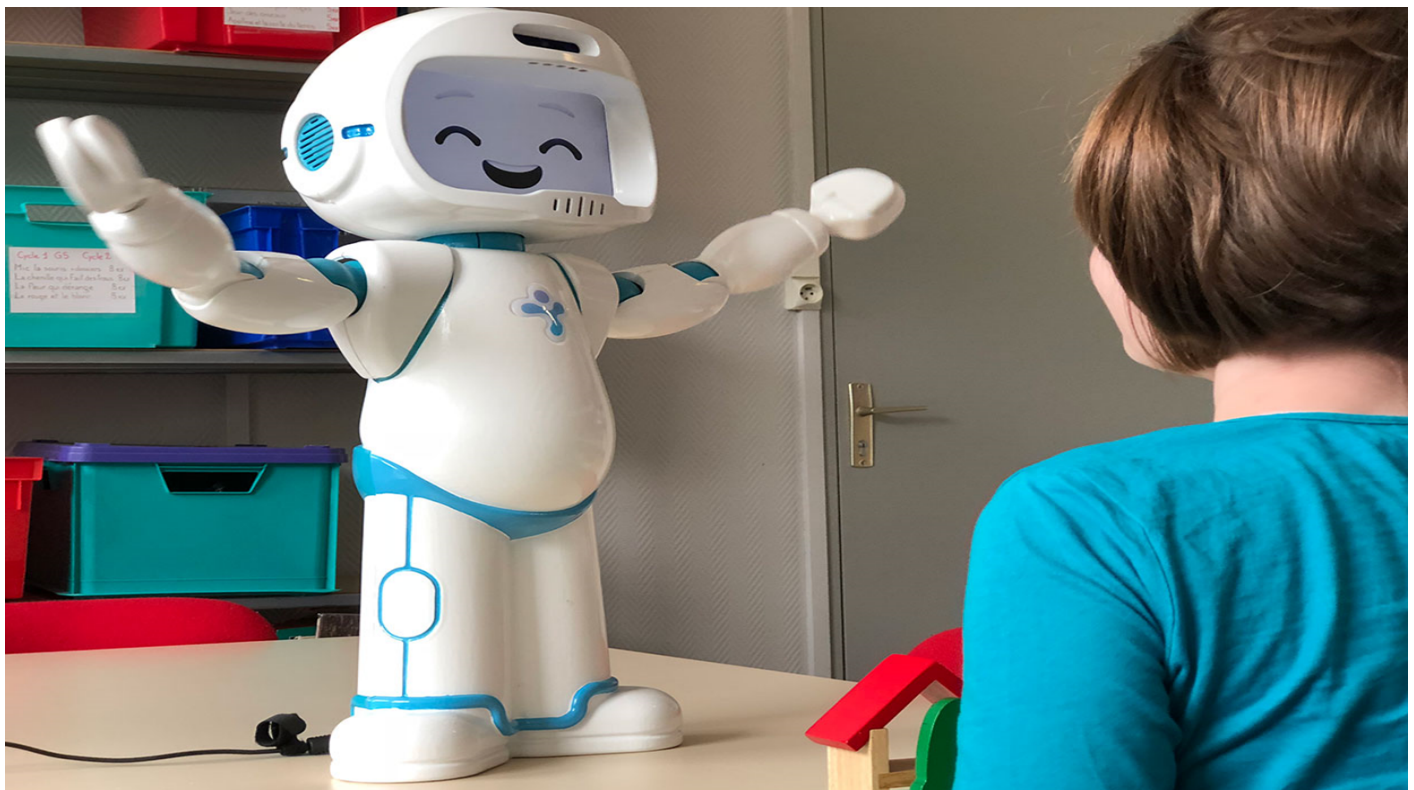
#### **Future prospects:**

- These products are a success story of an artificial mosquito diet and feeder that is commercially viable and technically sound and has great potential in rearing mosquitoes for research purposes.
- It is also useful for the mass production of mosquitoes for their control based on sterile insect technology, population replacement, or population reduction study and Wolbachia endosymbiont bacteria-based control operations.

## **Easing learning for children with ASD using robots** (GS Paper 3, Science and Tech)

#### **Why in news?**

- Recently, researchers studied the **use of toy robots in assisting learning for children** with autism spectrum disorder.



#### **Scope:**

- Teaching children with Autism Spectrum Disorder poses many challenges for special educators working in this area. One of these challenges is that the interventions needed are highly specific to each child.
- In a class, therefore, when handling more than one child, the teacher may benefit from support offered by robotic assistants.

#### **How the role of Artificial Intelligence (AI) and toys in the learning process of children with neurodevelopmental challenges was evaluated?**

- One part of the work was to study the effectiveness of interventions **using a toy robot, Cozmo**; the other part was to try and **use drones to help children with motivational issues** — for instance, motivating them to exercise if they were not inclined per se to do so (for instance, with hypotonia).

- They started the experiments with Cozmo in 2019. In 2020, due to the lockdown, they had to try online experiments. They started with seven children to be taught, and at the end of the experiments, they had to manage with four children.
- The goals were threefold; what it takes to understand the interaction between the special educator, child and robot; focus on helping not only the child but also the special educator in reducing their workload; designing the interactions and evaluation metrics.
- The interventions were designed to be in keeping with **the Individualised Education Plan (IEP)** that was in place for each child, comprising not only formal education goals but also special needs such as social communication or motor skills.

#### **Award and citation:**

- The work has already seen the limelight, and Ms. Paul has won the Murthy Govindaraju “Women in Computer Science” endowment award 2022, which comprises a cash prize of Rs. 1,00,000 and a citation to the awardee.
- The award has been instituted by Madhukar C. Govindaraju, alumnus of IISc, and his wife, Chaya Murthy Govindaraju, to promote excellence of women in computer science and to advance the computer science area among young professionals, especially women students.

### **Ancient jawbone dug up in Spain’s Burgos city** **(GS Paper 3, Science and Tech)**

#### **Why in news?**

- **Archaeologists in Spain** had dug up an **ancient jawbone** that could help them look into the face of some of the earliest human ancestors in Europe.



#### **Key Highlights:**

- The fossilised fragment of an upper jaw and cheekbone was found near caves in the Atapuerca Mountains in northern Spain’s Burgos province, the site of other ancient remains.
- The scientists were still working on identifying the specific kind of human ancestor and determining the bone’s age.

**Way Forward:**

- The found a fossil is very important and interesting that belongs to one of the first populations that arrived in Europe.
- The surprise find, which could be about 1.4 million years old, could also give vital clues to the evolution of the human face over the millennia.