

600 fishing boats in city get transponders with ISRO help

The ₹18-crore project envisages installing 5,000 transponders on boats in the State and is funded by the Government of India. Tamil Nadu is the first State in the country to get the equipment

Deepa H. Ramakrishnan
CHENNAI

Around 600 boats in the Kasimedu fishing harbour have been fitted with two-way communication transponders with technology developed by the Indian Space Research Organisation (ISRO).

These transponders will come in handy in case of emergencies and will allow the boat owners, the Fisheries department control room and other agencies like the Coast Guard to know the whereabouts of the vessel.

According to officials in the Fisheries department, in the first phase, 1,400 deep-sea vessels and multi-day voyage vessels will be covered.

"So far, around 900 transponders have been fixed on boats in Chennai, Cuddalore, Nagapattinam, Thoothukudi and Colachel. ISRO has provided the technology to three companies of which one has developed the product and will provide around 2,700 transponders. We



Staying connected: The cost-effective transponder can run for 28 hours even after electrical connection is severed. B. VELANKANNI RAJ

will fix the transponders as we get them," said an official.

The ₹18-crore project to install around 5,000 transponders on boats in the State has been funded by the Government of India.

The equipment allows two-way text communication via GSAT-6 Satellite. Mobile applications have been developed for android phones/tablets for use by the fishermen on board and for the owners.

The device can be synced through the respective mobile applications via Bluetooth.

Apart from such communication, the department can push information related to weather and fish shoals.

Weather alerts

"If a cyclone warning has been issued and the information has to be sent to them, it can be done through this device. A buzzer has been fixed inside the boat and can be used to alert the fishermen in case of emergencies. When the fishing boat sends information, the satellite downlink lands at the ISRO's satellite applica-



tion centre in Ahmedabad, which pushes the feed to the Fisheries department server and other agencies like the Coast Guard," said another official.

OFFICIAL
Fisheries department

The equipment has several advantages over other communication devices like VHF that have limited reach. It is cost-effective and can run for 28 hours even after electrical connection is severed.

Though the device was fixed in Gujarat and Tamil Nadu on a trial basis in 2017, that version had limited uses.

The latest one provides more features for fishermen and Tamil Nadu is the first State in the country to get it, said the official.

Satwiksairaj and Chirag claim India's first Super 1000 doubles crown

INDONESIA OPEN

Press Trust of India
JAKARTA

Satwiksairaj Rankireddy and Chirag Shetty scripted history by winning the men's doubles title at the Indonesia Open here on Sunday, becoming the first pair from the country to claim a Super 1000 badminton event.

The Indians outwitted the Malaysian World champion duo of Aaron Chia and Soh Wooi Yik 21-17, 21-18 in an intense contest that lasted 43 minutes.

Satwiksairaj and Chirag gained the initiative midway through the first game and they never really gave a sniff to their fancied opponents after that.

In the second game, the Indian pair did not allow their opponents to break free and a four-point streak kept it ahead of the curve. The Indians seemed to be in line for a facile victory when the Malaysians nullified four match points.

However, the World No. 6 pair could not be denied when the score read 20-18 and the duo converted the match point to script a



Phenoms: Chirag and Satwiksairaj are pleased as punch after showcasing their prowess to land the top prize. AP

magnificent win and take home a prize money of \$ 92,500.

Well prepared

"We had prepared very well for this event. We knew the crowd will be supporting us. We played some amazing badminton. We didn't have good head-to-head record against them, so wanted to play one point at a time and it fetched the result for us," said Satwiksairaj.

"Even in the second game when they took a couple of points, we were like we don't have to hold ourselves back and play

safe. That would have made the game a little slow and they are good at capitalising on. I am really happy and we really needed this win," commented Chirag Shetty.

Completing the 'trick

In men's singles, World No. 1 Viktor Axelsen clinched his third consecutive title here after outplaying hometown favourite and World No. 2 Anthony Sinisuka Ginting 21-14, 21-13.

In the women's final, China's Chen Yu Fei defeated Spain's Carolina Marin 21-18, 21-19 to bag the title.

Preparedness pays off

India escaped the fury of the cyclone because of early warnings from the IMD

A potent cyclonic storm, Biparjoy, swept through Gujarat and parts of Rajasthan last week and while it did cause noticeable destruction to the infrastructure, scores of injuries and cattle deaths, there have been only two reported casualties. The India Meteorological Department began issuing its first reports on the cyclone's trajectory as early as June 8, and by June 11, the agency first indicated that the storm would not bypass India, as previously estimated, but would likely sharply swing towards coastal Saurashtra, Gujarat. The storm was also categorised as falling in the 'very severe' category – average wind speeds of over 115 kmph. The four days of lead time and an estimate of its strength gave enough time for district authorities in Gujarat to begin evacuating people – nearly 1,00,000 people in the coastal regions of the States were moved to shelters and close to 30 central and State disaster relief teams were kept ready. The railways cancelled several trains and fishermen too received advance warnings of the cyclone's impact, that kept them away from the sea.

There were power outages in 1,092 villages, about 5,120 electricity poles were knocked down and an estimated 186 transformers and 2,502 feeders were damaged in the Saurashtra-Kutch region. While shops and establishments have reportedly re-opened, a full return to normalcy is still awaited. Experience from recent years shows that cyclones, whether in the Bay of Bengal or the Arabian Sea, and their expected impact can be precisely gauged only 36-60 hours ahead. While a greater lead time should in theory mean more time for preparation, the nature of coastal infrastructure, inefficient communication networks and livelihood patterns, combined with the natural fury that cyclones bring about, mean that there are limits to precautionary measures. A cyclone in 1998, that struck Gujarat, reportedly killed nearly 3,000 people, and it can be safely said that India has moved beyond that era. However, there are newer threats on the horizon. Several studies warn that the Arabian Sea, thanks to the effects of global warming, is likely to be the fountainhead of many more severe cyclones. Frequent evacuation cannot be implemented as a permanent policy intervention and efforts must be made to ensure that coastal-regulation-zone norms that prescribe the kind of structures permissible at specific distances from the shoreline must be strictly implemented. The dwellings of rural, coastal inhabitants must be strengthened and natural bulwarks such as mangroves at wetlands must be buttressed for improved resilience.

In Mann Ki Baat, PM speaks on Emergency, efforts to eradicate TB

Modi hails the achievements of sportspersons in his monthly radio broadcast; Congress takes a dig at PM over 'silence' on Manipur violence

The Hindu Bureau
NEW DELHI

Ahead of his state visit to the U.S., Prime Minister Narendra Modi on Sunday addressed a special out-of-turn episode of *Mann Ki Baat*, where he sought the blessings of the citizens for the trip and also recalled the horrors of the Emergency, saying that "as India is the mother of democracy, we can never forget June 25", the day the measure was imposed.

Mr. Modi said that usually the episode was put out on the last Sunday of every month, but since he was travelling to the U.S., he wanted to speak to the people before that.

Mr. Modi hailed the progress that is being made towards a tuberculosis-free India by 2025. He spoke of how dairy farming was picking up pace in Jammu and Kashmir's Baramulla, India's strong disaster response strategy as seen in the preparations for Cyclone Biparjoy, the need to conserve nature through means like rainwater harvesting and afforestation, and the continuous hard work of the nation's sportspersons, which was bringing international laurels.

However, the Congress took the opportunity to take a dig at the Prime Minister's silence over the ethnic violence in Manipur, where over 100 have been killed and tens of thousands displaced.



BJP members and workers listen to Prime Minister Narendra Modi's *Mann Ki Baat*, at Majnu Ka Tila in New Delhi on Sunday. ANI

Jairam Ramesh, Congress leader, said in a tweet, "So one more *Mann Ki Baat* but *Mann* (Silence) on Manipur. The PM patted himself on the back for India's great capabilities in disaster management.

What about the entirely man-made [actually self-inflicted] humanitarian disaster in Manipur. Still no appeal for peace from him. There is a non-auditable PM-CARES Fund, but does the PM even care for Manipur is the real question."

In the episode, Mr. Modi tied the themes of his topics around public participation, citing the role of the people in helping preparations for Biparjoy, their efforts to conserve water,

and their active participation in the mission to eradicate TB.

Mr. Modi mentioned the Nikshay Mitra programme, under which social organisations, villages, panchayats and individuals can "adopt" TB patients to help and support and remove the stigma.

Reminding listeners that June 25 was nearby, Mr. Modi said, "It was a dark period in the history of India. Lakhs of people opposed the Emergency with full might. The supporters of democracy were tortured so much during that time, that even today, it makes the mind tremble. I wish that, today, when we are celebrating the *Azadi Ka Amrit Mahotsav* we must also have a glance at such crimes which endanger the freedom of the country."

Gita Press, Gorakhpur, awarded Gandhi Peace Prize for 2021

The Hindu Bureau
NEW DELHI

The Gandhi Peace Prize for 2021 will be conferred on Gita Press, Gorakhpur, one of the largest publishers of religious texts such as the Bhagavad Gita, the Ramayana and the Upanishads.

The decision to confer the award on Gita Press was taken by a jury headed by Prime Minister Narendra Modi after due deliberations on Sunday in recognition of the publishing house's "outstanding contribution towards social, economic and political transformation through non-violent and other Gandhian methods", the Culture Ministry said in a statement.

While recalling the contribution of Gita Press in promoting the Gandhian ideals of peace and social harmony, Mr. Modi observed that the conferment of the award was a recognition of the work done by the institution in community service.

The annual Gandhi Peace Prize was instituted in 1995 on the occasion of the 125th birth anniversary of Mahatma Gandhi. The award carries an amount of ₹1 crore, a citation, a plaque and an exquisite handicraft or handloom item.

The previous awardees include organisations such as the Indian Space Research Organisation, Ramakrishna Mission, Gramin Bank of Bangladesh, Vivekananda Kendra, Ka-

It has published 41.7 crore books in 14 languages, including 16.21 crore copies of the Gita

nyakumari and Sulabh International, New Delhi.

It has also been awarded to former President of South Africa Nelson Mandela, social worker Baba Amte, Archbishop Desmond Tutu of South Africa, environmentalist Chandi Prasad Bhatt and Bangabandhu Sheikh Mujibur Rahman of Bangladesh.

Centenary year

Gita Press is one of the world's largest publishers, having published 41.7 crore books in 14 languages, including 16.21 crore Bhagavad Gita. It completes 100 years of its establishment in 2023. "The institution has never relied on advertisement in its publications, for revenue generation. Gita Press along with its affiliated organizations, strives for the betterment of life and the well-being of all," the Ministry said.

According to the official website of the Gita Press, the institution's main objective is to "promote and spread the principles of Sanatana Dharma, the Hindu religion among the general public by publishing Gita, Ramayana, Upanishads, Puranas, Discourses of eminent Saints and other character-building books and magazines and marketing them at highly subsidised prices".

The remarkable endurance of the Y chromosome, 'master of maleness'

Many animal species have a genuine fear of losing the Y chromosome in the distant future. This has happened in some species that have naturally lost this chromosome. Such animals provide us with models to understand the process of sex-chromosome turnover and a means to repurpose another chromosome into a sex chromosome

Sridhar Sivasubbu
Vinod Scaria

The Y chromosome, often referred to as the "master of maleness", has long captivated scientists and historians alike. In humans, in addition to the 22 pairs of chromosomes in each, we have a pair of sex chromosomes called X and Y. Sex as a specification is determined by these sex chromosomes. They carry sex-determining genes. All biological males have X and Y chromosomes and all biological females have two X chromosomes. The 'sex-determining region Y' on the Y chromosome determines the biological male sex.

'Juvenile delinquent'

Estimated to have emerged around 200-300 million years ago in a common ancestor of all mammals, the Y chromosome has had a unique genetic journey, and embedded within its DNA lies a remarkable tale of evolution. Scientists published the complete genetic sequence of the Y chromosome in 2003. This sequence provided an outline of 23 million bases of the 60 million or so bases that together make up the Y chromosome. In total, the chromosome encoded for only 55 genes and accounted for around 2% of the genetic material inside a cell.

Many researchers jokingly refer to the Y chromosome as the "juvenile delinquent" among chromosomes thanks to its abundance of repetitive sequences, poor functional utility (with a small number of genes), reluctance to socialise (i.e. recombine with other chromosomes), and a high proclivity to degenerate over the course of evolution.

Indeed, because it has little potential to recombine, the diminutive Y chromosome has been passed from father to son, carrying the legacy of generations. Scientists have extensively studied it to understand human migration and evolution. It has also fuelled countless debates, unravelled the mysteries of paternity, revealed genetic diversity, and illuminated the intricate tapestry of our shared past.

Vital genes

In a landmark genetic study, published in March 2003 in the *American Journal of Human Genetics*, researchers reported that around 0.5% of all the men in the world have inherited a Y chromosome from the Mongol emperor Genghis Khan or one of his descendants. While the Y chromosome has been at the centre of many scientific and social controversies involving sex determination and gender discrimination, we would be better off not



Representative illustration of DNA. THAVIS 3D/UNISPLASH

underestimating its influence on other aspects of health as well.

In fact, contrary to initial assumptions that the chromosome is degenerating and shrinking over time, and possibly has little functional role, researchers have discovered of late that the Y chromosome possesses genes that are vital to biological functions, including those linked to ageing and lifespan regulation (recent studies have shed light on an intriguing connection between the human Y chromosome and longevity).

In the animal kingdom (including mammals), scientists have noticed substantial differences in lifespan between the sexes: the females tend to live longer than the males.

This phenomenon has been attributed largely to the absence of a second Y chromosome in males, exposing the deleterious mutations in the X chromosome.

It is also well known that men lose the Y chromosome (LoY) with age and that this is associated with a higher frequency of cancers, Alzheimer's disease, and a shorter lifespan. This has been corroborated by studies on mice models that showed that LoY resulted in shorter lifespans and that older mice with LoY displayed significant memory deficiencies compared to younger mice.

However, a recent study in fruit flies from France's National Centre for Scientific Research, published in the journal *Nature Ecology and Evolution* on June 12, attributed the longevity to the phenotypic sex of the animal rather than the presence of a Y chromosome.

Phenotypic sex refers to an individual's



In the animal kingdom (including mammals), scientists have noticed substantial differences in lifespan between the sexes: the females tend to live longer than the males

sex as deduced from their genitalia.

Losing the Y

Studies conducted by researchers at the University of Virginia School of Medicine, U.S., and Uppsala University, Sweden, together with others have shown that LoY in humans occurs with age and is associated with several debilitating medical conditions - a finding that has been validated in mice with LoY, resulting in weak heart muscles (cardiomyopathy), stretched or thickened heart tissue (fibrosis), and heart failure.

Scientists corroborated these observations with association studies in large human cohorts, such as the UK Biobank. Yet all is not in vain for the male members of the species: researchers have also found that the pathological effects observed on account of LoY in mice's hearts could be negated by transforming growth factor beta 1-neutralising antibodies, suggesting a potential treatment for this medical condition in future.

In another paper published in the same journal, on June 2, researchers performed an analysis of 29 primate sex chromosomes and suggested that in the

last 80 million years, there has been a rapid evolution of the Y chromosome. This is exemplified by the fact that the human Y chromosome is about one-third as big as the X chromosome. So, many animal species, including humans, have a genuine fear of losing the Y chromosome in the distant future.

Relinquish the title

In fact, this has already happened in some species, such as rodents, which have naturally lost their Y chromosome. Such animals provide us with models to understand the process of sex-chromosome turnover and a means to repurpose another chromosome (i.e. one of the autosomes) into a sex chromosome.

Further, the evolutionary path leading to the appearance of modern humans provides clues as to what could be in store for the Y chromosome.

Genome sequences of the Neanderthals, an ancient relative of the modern human, harbour telltale signs of the replacement of the Y chromosome beginning from modern humans.

This suggests that such replacement is not new to the human lineage, and that it is quite possible that the Y chromosome may have to relinquish its coveted title of "master of maleness" to another chromosome in the times to come.

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