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‘Grass is engineer and architect of our forest ecosystem’

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Gajanan D Muratkar (53), a botanist and professor with Sipna Education Society’s Arts, Science, and Commerce College at Chikhaldara (Amravati), has been selected for the Satpuda Landscape Tiger Partnership (SLTP) Conservation Hero Award-2022 for his invaluable grassland conservation efforts in the Central Indian landscape. The award, which carries a certificate and a Rs 25,000 prize, was announced on World Earth Day 2022 on April 22. Popularly known as the ‘Grass Man of India’ among the forest circles, he has pioneered a meadow development technique in which field staff and officials are involved to identify the local grasses, preparing a seed bank, creating mother beds, and introducing local grasses systematically to create the meadows. In 2012, this technique was developed by him in Melghat, the country’s oldest tiger reserve. Muratkar is also a recipient of the Sanctuary Green Teacher Award-2013. TOI talked to him about his achievements. Excerpts from an interview...

Q. What inspired you to specialise in meadow development?

A. As I’m working as a professor in environmental and life sciences, I always focused on the field and result-oriented research in Melghat Tiger Reserve (MTR). I started the ecological and environmental study of grasses in MTR. During the same period, I was invited by the forest secretary Pravin Pardeshi, Satpuda Foundation’s Kishor Rithe, and eminent botanist CR Babu for a workshop on the eradication of invasive species. This was the turning point as ex-field director KP Singh invited me to restore wildlife habitats by removing invasive species. It was a challenging job and it was here that I realized that meadow development in PAs is useful for wildlife habitat management, especially for herbivores.

Q. Tell us about your success stories from the field?

A. In 2012, the forest department rehabilitated 9 villages from the core area of MTR. Post rehabilitation of Churni, Vairat, Dhargad, Amona, Gullarghat, Somthana, Kelpani, Nagartas, and Barukheda the cultivated lands were full of invasive species line Lantana Camara, wild tulsi, and other invasive plant species. We developed grass nurseries (seed plots) right in the midst of meadows and also carried out important grasslands management interventions like studying soil

parameters, identification of grasses, weeds, wild leguminous plants, collecting grasses seeds, drying, storing, and enriching during the month of May–June by selecting appropriate sites. I also demarcated each grassland, prepared a register of grasslands management, collected the baseline data, and did a comparative analysis. Soon the vacated lands were converted into good grasslands by enrichment of palatable grass seeds, browsing species, and developing water bodies. While doing this, we focused on rigorous training programmes for frontline staff on meadow development. MTR ranked first in scientific and technical meadow development and the work was appreciated nationally thus, this model was replicated in other tiger reserves.

Q. Where was your model implemented in the country?

A. In the past 10 years, my technique to eradicate weeds and create such meadows has been implemented in tiger reserves and protected areas of Maharashtra, Madhya Pradesh, Rajasthan, Karnataka, Andhra Pradesh, Telangana, Chattisgarh, Jharkhand, Tamil Nadu, Uttarakhand, and Kerala. I also started a meadow development programme in Kuno National Park, MP. The lack of scientific meadow management activities has caused the degradation of forests. Several meadow development workshops were organized in the states producing good results. In Kuno, the frontline staff converted a 2-hectare patch into a 360-hectare grass meadow at another rehabilitated site. This has helped bring cheetah to Kuno. Besides, Sawai Madhopur, Bharatpur, Jim Corbett, and Mukundara Hills tiger reserves are also anxious for my support. Satpuda Tiger Reserve, MP, too achieved huge success through scientific strategies under my guidance in the last decade. This also helped MP successfully introduce swamp deers in Bori in Satpura. Changes in Kawal Tiger Reserve (Telangana) are working wonders. For the last 3 years, I started grass meadow management interventions in Palasgaon in Tadoba. The enrichment of palatable grasses and wild legume seeds in the meadow resulted in the development of soft fodder grasses and this recorded the movement of nearly 2,000 spotted deer. These are some examples.

Q. How do you double up as a professor and a grass man in the field?

A. As I am an academician, my primary duty is to carry out teaching, learning, evaluation, and research work at my institute, but grasslands or meadow development work is my passion. I spend my Diwali and summer vacations, and weekly holidays conducting field visits, workshops, and training for the field staff on meadow development and management. Thanks to my organization which always supports my services to several state governments.

Q. Grasses are common but why are these ecologically important?

A. Grasses are the monocot plants with more adoptive characteristics – morphological, ecological, and anatomical adaptations. The grasses are ecologically important because they develop root systems to control soil erosion, and maintain and conserve soil moisture and soil microclimate. Grasses also check run-off and maintain herbivore and carnivore habitats, besides bird nesting habitats.

Q. Not much is talked about research on grasses in India.

A. Yes, it’s true, but now research is happening. Research on grass requires taxonomical specialization in the identification, classification, and phytochemical analysis and phenology of grasses. Grass research requires microscopic and ecological study at the root level. Generally, botany students are away from studying on grasses as it requires commitment, devotion, and passion.

Seasonal and topographical variations in grasses need to study all components. Overall, people seem to value forests more than grasslands.

Q. How and what should be done to conserve grasses?

A. I suggest a five-pronged strategy for the conservation of grasses. It includes identification during flowering and fruiting season, identification of native and invasive grasses, in-situ conservation of grasses by preparing the calendar for grass seed collection, development of grass seeds plot as per the soil suitability, and lastly protection of such meadows from fires.

Q. What is the present status of grasslands in Central India?

A. Grasslands occupy nearly 24% of the geographical area in India. Grasslands of India have been classified into five broad cover types. With the advancement of ecological studies on grassland vegetation, grasslands are highly dynamic ecosystems. We have grassland or Savanna grasslands in India which are invaded by woody growth of vegetation and invasive weeds.

Q. What is the role of grasses in wildlife conservation?

A. Grasses are of two types — soft and coarse. Soft grasses are useful for herbivores that prefer soft feeders and coarse grasses are useful for other coarse feeder herbivores. Grasslands are of three types — smaller, intermediate, and taller. Each grassland has ecological significance. Smaller grasslands are used by wild animals like spotted deer, blackbucks and chinkara. Intermediate grasslands are used by large herbivores and taller grasslands are preferred for hiding, resting, and breeding by wild animals. Wildlife and grasslands are directly associated with each other and hence grasses are the engineers and architects of our forest ecosystem.

Q. Why is meadow development the buzzword in tiger reserves in the country?
A. Meadow development is a technical work to manage and improve the habitats for wildlife. However, the subject did not receive appropriate importance in India. While travelling across India in the last decade, I felt the need for systematic interventions in PAs and forest areas outside PAs, backwater and catchment areas of dams, and village relocation sites. Even in PAs, overgrazed grasslands are degrading and need to restore by such scientific interventions. This is a continuous process.

Q. But the restoration of grasslands has failed to get attention.

A. You are right. Even improper interventions carried out by the frontline staff in the past also has damaged the landscapes. But now, training and workshops have changed the ground situation. Grassland restoration is widely applied to increase the naturalness of the landscape and preserve the diversity of native grasses and wild leguminous plants. Grassland restoration includes soil parameters study and suitability of grasses with reference to physical and chemical parameters. This needs to be done with suitable palatable grasses and fruit-bearing and browsing species. Once you do this, grassland restoration takes place by ecological succession.

Q. What is the difference between the grasses grown on lawns and forests?

A. Grasses grown in the forest are wild with good resistance power and adaptations. Wild grasses are adaptive with good flowering, fruiting, and dispersal rate. Lawn grasses are ephemeral and hybridized. Lawn grasses are rhizomatous while wild grasses are non-cultivated and non-hybridized.

Q. What is your message to the forest department?

A. Grassland development and management is a technical and scientific method. Forest officers should take the initiative to enhance the capacity of frontline staff, motivate them for meadow development, avoid exotic grasses, and use only native grasses for grasslands development. The forest department should also start certificate or diploma courses in meadow development.

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