

## In this issue

### Contribution of pack animals in reducing CO<sub>2</sub> emission

Farooquee *et al.* (page 59) report the contribution of pack animals to environmental conservation through sustainable services and livelihood to the remote rural population of Uttarakhand Himalaya. The study was undertaken in the six major valleys of Garhwal Himalaya to understand and quantify the contribution of pack animals to the livelihood and economy of the people dependent on them for their survival. The authors demonstrate that horses and mules provide direct and indirect services to the society. The direct service is by providing the communication services in the far flung and remote areas not connected with road



network, they transport the essential commodities to such areas and also transport human being to the religious shrines of Kedarnath, Hem Kund and Yamunotri. The indirect service is that they save huge quantity of carbon dioxide emission from automobiles required otherwise in the transportation by providing their alternative transportation services. Thus, their contribution is on the whole for environmental conservation.

### Dispermic induction of interspecific androgenesis in fish

Of all the vertebrates, fish globally rank first with the most threatened and endangered members and surprisingly with more fresh water species than marine. With ever-increasing pollution from fertilizers, industrial wastes, oil spills and, habitat destruction and over-exploitation by humans, the number of species being

added to the list each year is increasing at an alarming rate. Preventive measures such as cryopreservation/germplasm conservation requires skill, labour and costly equipments. Recognizing that many of our nation's farmers are not much equipped, Clifton and Pandian have devised simple methods to preserve fish genome by monospermic androgenesis, dispermic androgenesis and cadaveric sperm preservation. These methodologies could be useful to resurrect an extinct/critically endangered fish population wherein only the males are available.

On page 64, Clifton and Pandian report successful dispermic induction of interspecific androgenesis in *Hemigrammus caudovittatus*. For the first time, they have traced the reasons for low hatching/survival of dispermic androgenotes. Unavailability of completely fused double sperm, inactivated eggs and haploid embryos are the major obstacles but not the increase in genomic load since fish have amazing ability to tolerate increasing genomic loads up to octoploidy (e.g. *Acipenser* sp., Sturgeon fish). They have also shown that dispermic fertilization success can be increased by doubling or tetra quadruplicating sperm concentration.

### Role of microwave sensor parameters

Imaging radars are operated in the microwave range of the electromagnetic spectrum at wavelengths from about 1 cm

to 1 m. Synthetic Aperture Radar has unique capabilities to provide valuable informations on surface geometry and surface geophysical property such as complex dielectric constant of terrain elements. These informations in turn give idea about surface roughness, shape orientation and moisture content of terrain features. These basic informations are valuable for interpreting lithology, topography and drainage pattern of geologic terrain. Arindam Guha *et al.* (page 99) address the role of microwave sensor parameters specially look angle and look direction of SAR data acquisition in delineating geological signatures with reference to metasedimentary terrain occupied by Kurnool Group of rocks. The main focus of the work is to identify the utilities of two look angle beams (IS2&IS4) of C-band ENVISAT ASAR data with alternate polarization (HH, HV) and two look direction (ascending and descending) for geological studies. The authors demonstrate how high look angle data enhances the drainages in comparison to look angle data. The study also highlights that the delineation of rock types with reference to backscattering coefficients measured in two polarization channels is better in low angle data. The study also emphasizes that both the look direction data is required to delineate geological lineaments as one particular look direction image may subdue or enhance particular lineament depending upon angular orientation of lineament with respect to look direction.

