

Climate Change, Citizen Science and You

By Uttara Mendiratta

The Internet age is one of opportunity and convenience. The transfer and exchange of information is simpler than anyone could have imagined a few decades ago. There are also unprecedented opportunities to network and share one's skills and creativity, be it through blogs, art, photography or videos. Ordinary citizens, with their quiet, yet keen eye on the happenings around them have a lot to tell, provided there is an easy way for them to do so.

Given an appropriate structure, information provided by citizens can provide insights into many of the serious issues we face in today's world, including the gravest of environmental problems: climate change, habitat destruction, pollution and species loss. Numerous 'Citizen Science'

Projects across the globe take advantage of our networked world to organise people in collecting a variety of environmental data. And the contributions have been nothing short of impressive. Project BudBurst, Christmas Bird Count, Nature Watch, Firefly Watch, Earthdive, Monarch Larva Monitoring Project, Roadkill, Spider WebWatch, The Great Sunflower Project, BioBlitzes, Edward O. Wilson's Encyclopedia of Life – the list of ecology-related citizen science projects is long and diverse. Volunteers in these projects actively contribute to our understanding of the world by collecting data on the distribution and population status of various species and also on natural phenomena such as bird migration, pollination by bees, effects of man-made disturbances on marine species, etc.

Across the western world, volunteers have made significant contributions to large-scale collaborative surveys, especially in fields such as ornithology. In Britain, there is a birdwatcher for every two square kilometres and in Finland, the first large-scale collaborative ornithological survey was started in 1749! The contribution of amateurs to science has not been limited to information on birds – insects, plants and reptiles all have curious onlookers reporting on them. An initiative in Malaysia recorded palm varieties over four-and-a-half years, resulting in the documentation of 31 new varieties, nearly doubling what botanists had previously recorded. Watchful eyes can also act as an early warning system: the decline of the Ivory Gull was first reported by citizens;

and Rachel Carson tells us in *Silent Spring* that anxiety about widespread poisoning of wildlife by agrochemicals in the U.S. was first raised by local residents on farms and in small towns.

Much remains to be learnt about the potential consequences of climate change on the natural world. Some basic predictions can be made, but nature is complex and small changes in the climate may result in varied consequences for species, food webs and ecosystems. So, in addition to trying to predict what will happen, we need to closely monitor actual changes in the world around us.

Such monitoring is already yielding valuable information. For instance, we all know from media reports that cherry trees in New York blossomed well ahead of spring last year, creating much unease. A more organised collection of such data has also been undertaken by citizen science projects such as Project BudBurst in North America. Under such projects, data on such events is collected to understand the changes brought about due to global warming. You may have similar observations on the *champaka* or *amaltash* trees in your backyard that made you wonder about the changes to our regional climate – but perhaps you have not had an opportunity to share this information with anyone.

Opportunities to make simple, yet critical contributions to the understanding of the effects of climate change on the environment are rare in India. A new project attempts to change this. In MigrantWatch, volunteers from across the country contribute information on the timings of bird migration. Participation involves making simple observations on the arrival, presence and departure of migratory birds. The data can be submitted directly through the website or sent by regular mail to the organisers.

In its first year, MigrantWatch monitored the arrival and overwintering of nine common migrants to India. The project is supported by volunteer participants from across the country, now numbering over 400. The data collected in the first year highlights the potential of this endeavour. Reported first sightings of the Rosy Starling *Sturnus roseus* in the second half of 2007 captured quite well its north-to-south arrival. The Indian

subcontinent harbours almost the entire global population of this species during winter. By collecting such information from year to year, we will be able to examine the effects of climate change on the timing of bird migration in our region.

Citizen Science projects are entirely dependent on volunteers. Because the information is contributed by the public, the data and results of MigrantWatch are accessible to all participants and anyone who wishes to see or use this information. Projects like MigrantWatch create opportunities for weekend fun and recreation, yet at the same time encourage citizens to contribute valuable information. A major advantage of a national level data collection system like this is that it will be able to unify efforts made by nature clubs and birdwatching groups into a project of global importance. By synchronising their data formats, these groups can now contribute to authentic science at the global level, in addition to serving as a nature activity or a local conservation effort.

MigrantWatch is run from the National Centre for Biological Sciences (NCBS), in collaboration with the journal *Indian Birds*. The project is guided by a number of experts in the field and there is constant communication between organisers and participants regarding developments

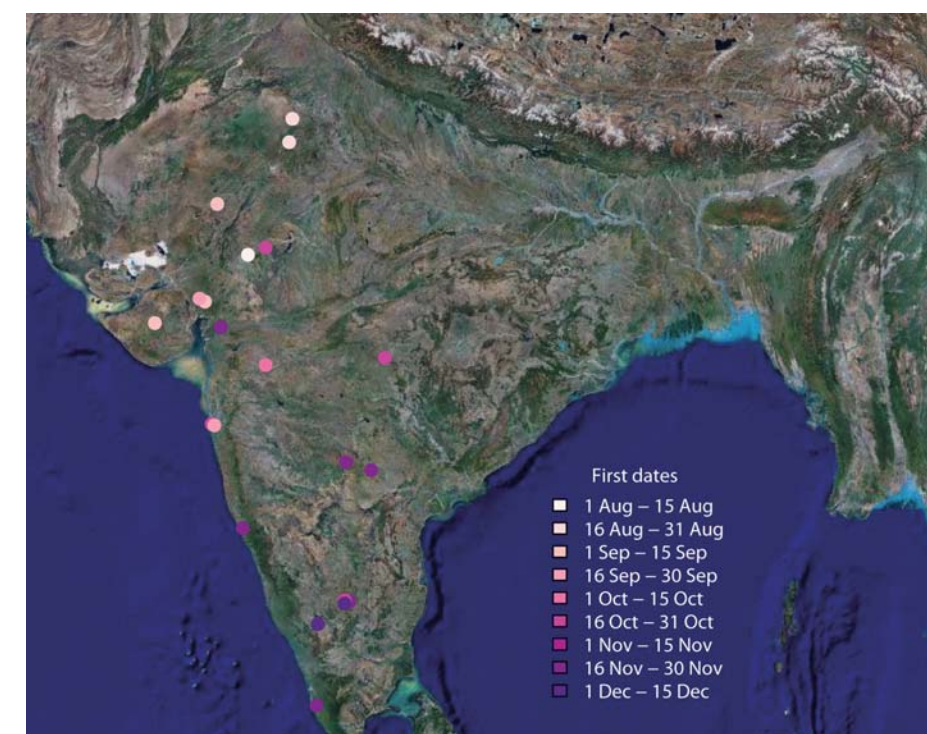
and results. For those who would like to contribute but are not interested in birdwatching, there are other opportunities. The Citizen Science programme at NCBS is developing plans to launch additional monitoring projects, for example, on the timing of flowering and fruiting of trees. Suggestions for projects are welcome!

Participatory projects can be highly rewarding in a wide variety of ways. The data generated outperforms the scale of even the largest scientific projects or surveys. For many citizens who acknowledge the detrimental impacts of humans on ecosystems, but who are not in a position to actively counter them, Citizen Science offers an option to contribute by monitoring impacts and changes. Perhaps, the biggest reward of it all is that participants now have one more excuse to escape their stressful routines and spend more time in the wilderness or in their own backyards and parks. ♫

FOR MORE INFORMATION, CONTACT:

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North-to-south migration of the Rosy Starling in 2007.