

agro-ecosystems is more than the proportion that damages crops has been highlighted. Examples of people locally protecting birds in agriculture fully aware of their usefulness have also been incorporated. These examples include the co-existence with humans of large birds such as the Sarus Crane in rural landscapes of North India. They also discuss the use of artificial perches in crop fields that attract predatory birds, especially owls that prey on small rodents.

Much of the text is based on direct interviews by the author of rural people locally supplemented with inputs from researchers who have been widely working on the issue of human–animal conflict in India. Questionnaire-based case studies have also been used in substantiating some of the findings presented in the book.

‘Birds as farmers’ friends’ is the core of one of the chapters. This well-illustrated chapter talks about the specific crop pests that are eaten by the different species of birds. An estimated 85% of all species of Indian birds is described as being useful to agriculture. Yet another chapter is devoted to ‘monkeys’. Rhesus macaque, bonnet macaque and Hanuman langur, the three most widely distributed species of primates in India, and their crop-raiding habits have been discussed in this chapter. Other chapters cover a wide range of relevant topics such as causes of conflicts, policies and strategies to minimize conflicts, overview of crop protection methods commonly used in India, protecting crops from bird damage, conserving birds beneficial to agriculture, etc.

While introducing the book to the readers the author has stated in the Preface: ‘this book aims to promote improved human–wildlife equations by examining the complexities of the problems concerning conflict and looking at examples of harmonious co-habitation, with a view to exploring options for addressing the former and drawing models from the latter’. Having set this ambitious goal, the author has tried to compile examples of conflicts and co-existence from localities across the country. However while she has succeeded in covering a wide range of issues across diverse landscapes, an in-depth analysis of the problem needed to make it a valuable reference book is lacking.

The main reason for the author’s failure in making the book a concise source

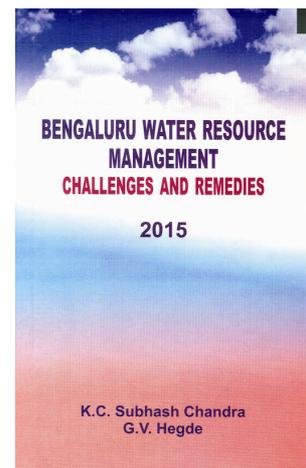
of information on human–animal conflicts is the style of presentation. The text is quite rambling and presented in the form of a report. For instance, the fourth part that presents the case studies does not have an introduction to the studies presented, nor does it attempt a synthesis of the findings contained in the many tables. In fact, there is no justification as to why all the case studies are limited to the state of Karnataka, when the book has a national perspective. The first three parts of the book have been split into 18 chapters and each chapter divided into several sub-sections with sub-headings. The frequent sub-headings have resulted in the text being fragmented further that on some instances the text under a sub-heading is merely a small paragraph.

The Preface also states that the book is meant to be useful to agriculturists, wildlife conservationists, students, NGOs working in the field, and also to stimulate interest among Government policy makers and implementation agencies. However, while reading the book, it does not inspire the reader to recommend it to any of these stakeholders. Take for instance the following passage: ‘the classical definition of a bird is a “feathered biped”’. Birds are warm-blooded vertebrates distinguished by their ability to fly, though there are some flightless species like the Kiwi in New Zealand or the Ostrich in Australia’ (p. 79). It is not clear who would benefit by statements like this.

In India, human–animal conflicts, be they in agro-ecosystems or along the fringes of protected areas are reasons for social, economic and political dilemma. The issue is one that demands in-depth research that leads to practical long-term solutions. The book under review has succeeded in merely setting the stage for further research on the various dimensions of human–animal conflicts. However, if this is indeed the purpose of the book, I will say the same has been well achieved.

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Bengaluru Water Resource Management: Challenges and Remedies. K. C. Subhash Chandra and G. V. Hegde. Institute for Natural Resources Conservation, Education, Research and Training (INCERT). 2015. xxiii + 135 pp. Price: Rs 600.

Bengaluru is the capital of Karnataka. It is also known as the information technology (IT) capital or Silicon Valley of India. The city has a long history, but it has witnessed tremendous growth over the past 50 years or so. According to the census of 1951, the population of Bengaluru was below 8 lakhs. However, due to rapid influx in IT-based companies and service industry, Bengaluru has witnessed a huge growth in population over the past six decades; the current population of the city is estimated to be close to 90 lakhs. The areal extent of the city has increased from about 29 sq. km in 1901 to about 800 sq. km at present. It is estimated that the population of Bengaluru will be close to one crore by the year 2020.

An unprecedented growth in the city has put immense stress on the infrastructure and has given rise to a number of problems, for example, frequent traffic jams, air pollution, water scarcity and pollution, urban flooding, disappearing lakes, etc. This book deals with challenges and remedies in water resources management for Bengaluru. Undoubtedly, the book is timely.

The subject matter of the book has been divided into 12 chapters. The Chapters 1–3 essentially give a brief snapshot of the city. The reader is introduced to the city, its historical background, population and its growth, and the climate. Since Bengaluru is located on a plateau

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and there is no major river flowing nearby, the geology of the city becomes extremely important from the perspective of water availability and management. Chapter 3 describes the geology and soils of Bengaluru.

Chapters 4–6 cover geomorphological and hydrogeological features, and lakes of the Bengaluru city. In chapter 4, the authors describe catchments of two nearby rivers, Arakavati and Ponnaiyar. Hydrologists are familiar with the fact that urbanization has significant impacts on river flows and this aspect has also been appropriately covered.

King Kempe Gowda, the founder of Bengaluru was aware of the constraints in water management due to geographical location, topography and the fact that there are no perennial rivers in the vicinity of Bengaluru. He gave prime importance to construction of tanks and lakes to temporarily impound rainwater to meet the irrigation and drinking water needs. Bengaluru is also known as the 'city of lakes'. Lakes of Bengaluru additionally help in keeping the climate cool. However, with the expansion of the city, many of the lakes have disappeared. Chapter 5 provides a good treatment of this topic as well as the present status. In

chapter 6, the authors have covered topics such as hydrogeological features, aquifers and groundwater resources, monitoring of groundwater, and impact of exponential growth in the number of bore wells.

Chapters 7–12 deal with water management in Bengaluru. Chapter 7 provides detailed estimates of water requirement and water resources availability from rainfall, surface and subsurface resources. Several remedial measures have been suggested to close the gap between resources availability and demand such as reducing transmission loss in water supply networks, tapping surface run-off, using sewage water after treatment and groundwater. Chapter 8 discusses over-exploitation of groundwater and its impacts, and Acts and Rules of the Government of Karnataka. In most of the uses, quality of water is as important as its quantity. Chapter 9 discusses various water-quality parameters for drinking water and quality aspects of groundwater. Due to water scarcity in Bengaluru, it is important to save every drop of water. Chapter 10 discusses rooftop rainwater harvesting and groundwater recharge.

The Government of Karnataka has been considering diversion of some rivers to

supplement water availability in the city. The authors discuss the Yettinahole river water diversion project in detail, which can provide some additional water to Bengaluru city. They also discuss the impacts due to such diversion project on the echo-sensitive Western Ghats. Finally, in Chapter 12, a summary of the findings is provided. The book has adequate number of references. An annexure provides details of Karnataka Ground Water Revolution Act.

The book has been authored by two renowned experts who have a long experience of working in the Department of Mines and Geology, Government of Karnataka. They have harvested their practical knowledge and experience to produce a compact book and have covered the subject in a lucid manner. Of course, due to the background of the authors, the book has a geology bias.

I am sure that the book would be highly useful for anyone interested in water resource management in Bengaluru city.

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