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Cover: Muggar Crocodile basking on the banks of Savitri River at Mahad in Maharashtra, India. © Utkarsha M. Chavan.



## First steps of citizen science programs in India

Review by **Aishwarya S. Kumar**<sup>1</sup> & **Lakshmi Nair**<sup>2</sup>

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Being perhaps a country with the greatest number of citizen science programs, and with over hundreds participating in each (even thousands in some), India called for a complete compiled information on citizen science. This is where this mini book by Pankaj Sekhsaria and Naveen Thayyil stands out as a boon. First Steps provides a good overview of the ecology-based citizen science (CS) programs in India and meticulously encapsulates their different aspects. The book includes a few additions to the first of its kind initial report by the authors titled 'Citizen Science in ecology in India - an initial mapping and analysis'.

The authors open the book by talking about the popularity of citizen science programs in India (with their reportage finding space in some of the leading dailies of the country), how it has made scientific data accessible to public and, how it has contributed to a crucial component of conservation, i.e., research through crowdsourcing data. Without much delay, they quickly clarify of what to expect from their mini book which includes understanding CS as a concept, its crucial juncture, and what to expect from it as a design tool for problem-solving, future program designing, etc.

The next chapter covers the global history of CS, its contemporary developments and exponential growth ever since Alan Irwin's publication was out in 1995. These included the term 'citizen science' finding a place in the Oxford Dictionary and formation of a dedicated community for CS. Gradually, handbooks were released which, however, hardly did justice to spreading word on citizen science. The authors finally narrow down to the Indian scenario of CS and its practice, with the most popular one- Asian Waterbird Census (AWC) - dating back to 1987. The authors mention how despite this early adoption enough data could not be gathered due to various reasons. However, they also mention of how the scenario has changed for the better over the years.

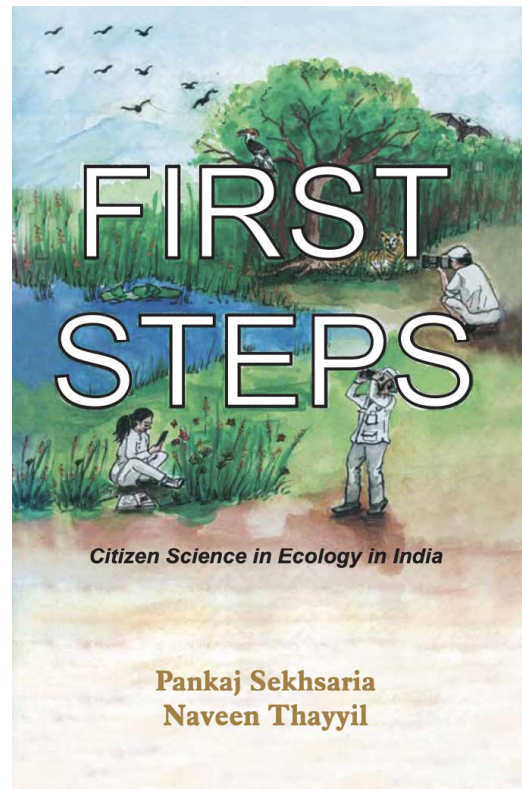
Both methods of analysis—quantitative and

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qualitative—were used for the study, which the authors present in the following chapters very intricately. Dividing the programs into five different themes according to the areas gathered from them formed the former, while the latter analysed the interviews and categorized them into seven categories. At the end, they put forward their key findings from these analyses while ending on a positive note of how the field of citizen science in ecology is going to expand in India.

The book thus stands true to its nature of being a beginner's guide. Without throwing any scientific jargons at their audience, the authors describe the fundamentals of citizen science. In fact, the chronology maintained to explain all this is the catch. We liked how chapters were further divided into subsections. Also, instead of jumping straight to the research analysis on CS, the book helps build a good fundamental base in CS slowly yet in a concise manner.

The idea of inclusion of a qualitative analysis is helpful to the reader. The interview excerpts with field experts indeed provide nuances of the programs. Importantly, it also addresses many vital questions pertaining to citizen science.

Though the book has been presented well, we feel some careful edits would have made it even better. For example, the book has no footnotes for quick reference. All have been addressed only at the end of the book and hence hindered the natural reading flow. Similarly, technical terms, interview excerpts, among others could have been italicized, which would have made it a better read.

The authors highlight the ambiguity surrounding the term 'citizen science'. However, details on this have not been given. Of the many proposed nomenclatures to replace the former term (from the literature reviews we have done), the book hardly mentions any. For example, the only other mention of an alternative to the term 'citizen science' is Public Participation in Scientific Research (PPSR) which appears in an interview excerpt.

17 CS programs were listed which included outdated programs as well. Even though the authors make a mention of how the data could be redundant, however, in the annexures, they could have included the end dates of these programs too. During a cursory check, some programs which are defunct haven't yet been taken down from their website. This can confuse users and inhibit participation. To add, though the timelines have been explained quite well, a diagram would have been a better representation. A reasoning for including only 17 citizen science programs also seems to be missing.

Yet another major lacuna is that there is only a mere mention of how citizen scientists are divided on the basis of their roles, i.e., as contributors (to data) and collaborators (to data along with researchers). As a beginner's guide to citizen science, a detailed information on these terms should have been included. At least a table mentioning these terms, their definitions and their references would have been beneficial.

Overall, it is a great resource for those new to CS in ecology.



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