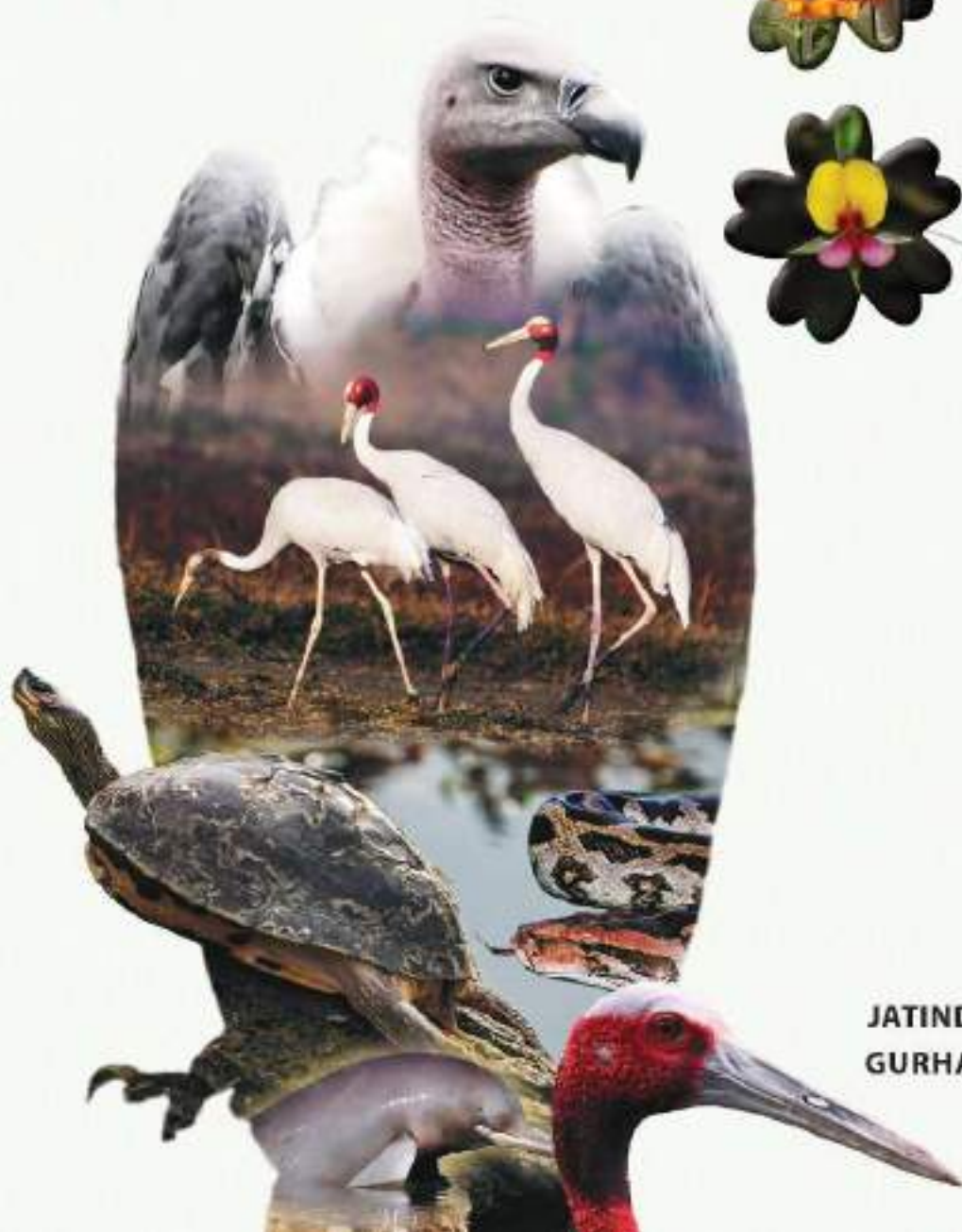
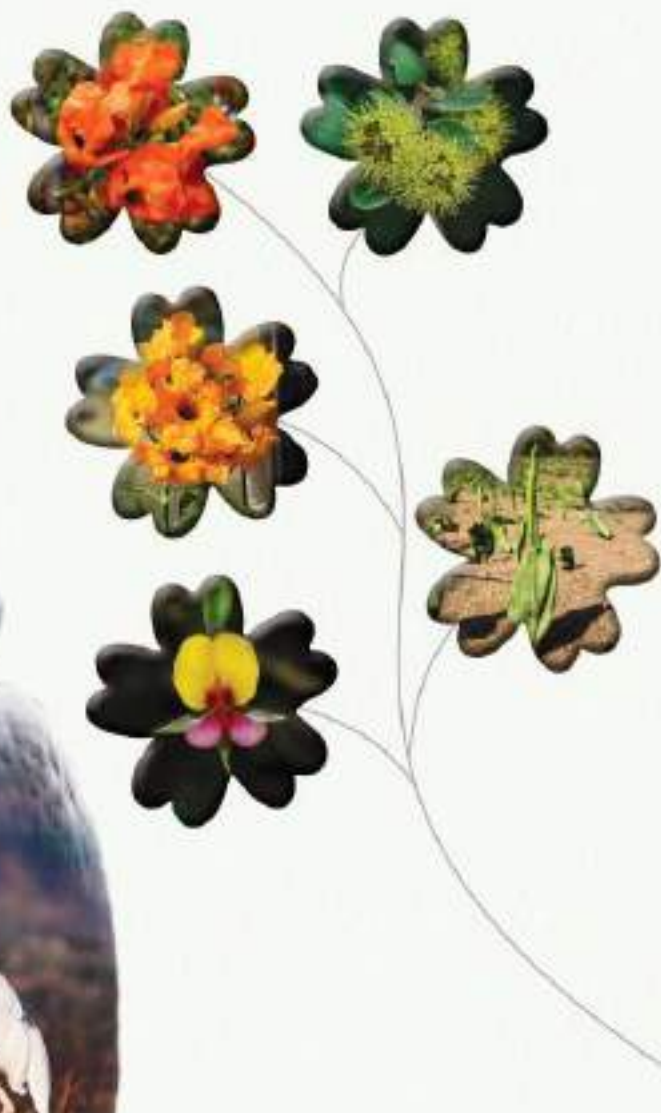


THREATENED
Flora
& *Fauna*
OF PUNJAB



JATINDER KAUR ARORA
GURHARMINDER SINGH

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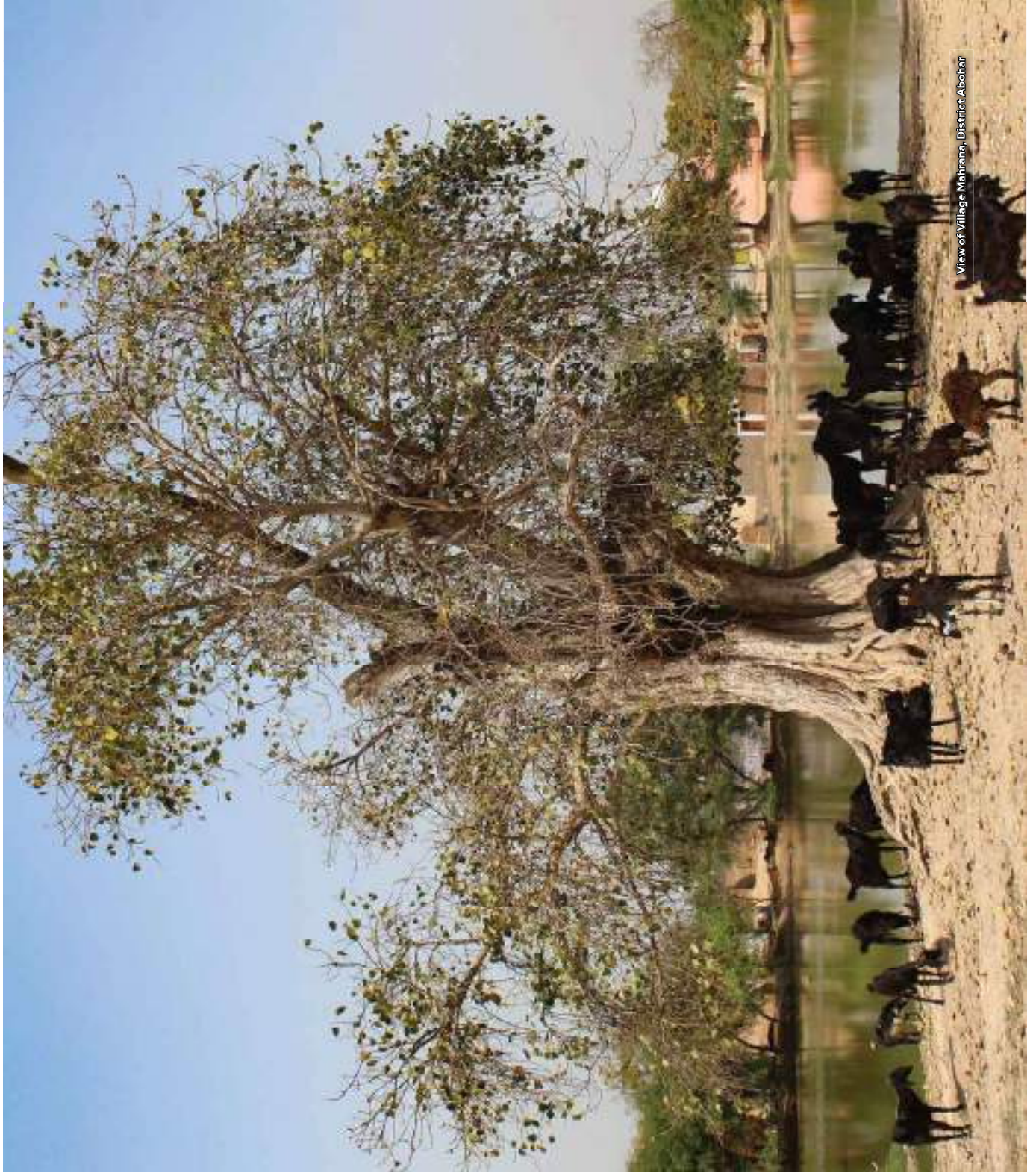
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Mangifera indica (Mango) Tree at Village Bassi Umar Khan, District Hoshiarpur





View of Village Mahrana, District Abohar

Prepared By

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Bhagwant Mann
Chief Minister, Punjab and
Minister Incharge,
Deptt. of Science, Technology & Environment



FOREWORD

Biodiversity provides a vast array of services and benefits to mankind that are often taken for granted. All systems and goods that support our health and well-being can ultimately be traced back to the nature. Despite being vital for our survival, biodiversity is being increasingly threatened globally on account of various factors. Human activities are exerting severe pressure on biological resources thereby resulting in irreversible loss of biodiversity in last few decades.

The COVID-19 pandemic and its associated costs to health, societies and economies have underpinned & reaffirmed the urgent need to redefine our relationship & interactions with ecosystems, natural habitats and wildlife. The ongoing degradation of biodiversity and ecosystems, besides jeopardizing the existence of many plant & animal species on the planet earth, would also undermine progress towards majority of Sustainable Development Goals (SDGs) – especially those related to poverty, hunger, health, water, cities, climate and land. Loss of biodiversity is therefore not only an environmental concern but also a developmental, economic, social and moral challenge, which needs to be addressed on utmost priority.

Conservation of nature in its all manifestation is deeply embedded in our ethos, values, traditions, culture, heritage and religious precepts. Understanding the ecological dimensions of intrinsic relationship of human with nature, the visionary Babasaheb Dr. B.R. Ambedkar, the Father of Indian Constitution, had put the inclusive environmental governance at the Centre Stage. Indian Constitution is amongst the few in the world to have specific provisions regarding environmental protection. The Directive Principles of state policy and fundamental duties under Article 48 A and 51 A(g) enshrined in our constitution clearly cast duty on the State as well as the citizens to safeguard and improve the various components of our environment, wildlife and forests and to maintain a cordial & compassionate relationship with all living creatures.

I am delighted that Punjab Biodiversity Board and Punjab State Council for Science & Technology have jointly taken initiative to prepare a Coffee Table Book on the threatened plants & animals of Punjab, which are on verge of extinction as notified under section 38 of Indian Biological Diversity Act, 2002. I congratulate & place on record my appreciations to the entire team of Department of Science, Technology & Environment for having brought out this excellent publication.

Punjab & Punjabis have always been frontrunners, be it the freedom struggle & meeting food security of India or safeguarding the country's borders & achieving sporting glories. I am confident that Book, which is the result of dedicated work would act a source of immensely useful information and motivate one and all, especially common man & concerned Government Departments/Agencies to join hands and take spirited & exemplary on-ground actions to bring back these 13 magnificent species from the brink and ensure that their population survives & thrives in all parts and hinterland of the State of Punjab.

(Bhagwant Mann)



Mattewara Reserve Forest, Ludhiana



Dr. V.B. Mathur
 Chairperson
 National Biodiversity Authority
 Government of India



MESSAGE

'If conservation of natural resources goes wrong, nothing else will go right'

- Prof. M.S. Swaminathan

Biodiversity is the biological variety and variability of life on Earth. It is the basis for many ecosystem services that people depend upon viz., the regulative, supporting, provisional and cultural services. Realizing the importance of biodiversity conservation for sustaining life on earth, the United Nations designated 2011–2020 as the 'United Nations Decade on Biodiversity', and 2021–2030 as the 'United Nations Decade on Ecosystem Restoration'.

Endowed with an amazing variety of habitats, ecosystems and diverse climatic regimes, our country has an exquisite range of biological environments, that support a rich heritage of biodiversity. India, a megadiverse country, with only 2.4% of world's land area, harbors nearly 8% of all globally recorded species, including over 49,000 species of flora and over 10,00,000 species of fauna and is an acknowledged Centre of crop plant diversity and endemism.

India as party to Convention on Biological Diversity (CBD), was one of the first countries to have enacted a proactive and comprehensive legislation viz., the Biological Diversity Act in 2002 to implement the provisions of CBD. A three-tier institutional mechanism has been created under the Act in the form of National Biodiversity Authority, State Biodiversity Boards/UT Biodiversity Councils and Biodiversity Management Committees (BMCs) at National, State/UT and Local Levels respectively to undertake effective actions for achieving the three objectives of CBD.

BD Act has specific provision u/s 38 for notifying species which are on the verge of extinction, or likely to become extinct in near future as threatened species and to promote rehabilitation of such species through multi-pronged actions. In this regard, Punjab Biodiversity Board and Punjab State Council for Science and Technology have taken the initiative to prepare a Coffee Table Book on 'Threatened Flora and Fauna of Punjab', notified u/s 38 of Biological Diversity Act, 2002.

I take this opportunity to place on record my appreciation for hard work and dedicated efforts put in by Dr. Jatinder Kaur Arora, Member Secretary and Mr. Gurhinder Singh, Principal Scientific Officer, Punjab Biodiversity Board for bringing out this Coffee Table Book. I am sure that Coffee Table Book would act as valuable source of information for the public, researchers, academicians, nature enthusiasts, and the concerned Departments who are engaged in the rehabilitation/restoration actions for conservation of threatened species.

(Dr. V. B. Mathur)

Dr. Akhilesh Gupta
Senior Advisor & Head
Policy Coordination & Programme
Management Division
Department of Science and Technology
Ministry of Science and Technology
Government of India



MESSAGE

There are clear evidences now that climate change and biodiversity are inextricable linked. The climate change is already forcing species to adapt either through shifting habitat, changing life cycles, or the development of new physical traits. The IPCC AR6 Working Group 2 Report released this year, presented, for the first time, climate change as part of a coupled system with three components viz. climate, ecosystems (that also include biodiversity) and human society. As per the recent Millennium Ecosystem Assessment Report, climate change is likely to become one of the most substantial drivers of biodiversity loss by the end of this century.

Conserving natural ecosystems including their genetic and species diversity, is therefore crucial for achieving the overarching objectives of both the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC). Biodiversity can support efforts to reduce the negative effects of climate change. Conserved or restored habitats can remove carbon dioxide from the atmosphere, thus helping to limit warming to 1.5°C.

Department of Science & Technology, Government of India is implementing two National Missions namely National Mission on Strategic Knowledge for Climate Change (NMSKCC) and National Mission for Sustaining Himalayan Ecosystem (NMSHE) under National Action Plan on Climate Change (NAPCC) to promote strategic actions towards Climate Change by developing knowledge networks among the existing knowledge institutions engaged in research and development relating to climate science; for building human capacities for better understanding of Climate Change Issues and for facilitating data sharing, mitigation & adaptation actions with the involvement of all the stakeholders.

I am delighted that Punjab Biodiversity Board in collaboration with Punjab State Council for Science & Technology, which is hosting DST's Climate Change Knowledge Centre for Punjab, is publishing the Coffee Table on threatened species, which are on verge of extinction in the state, to create awareness and generate enthusiasm for conservation of these species.

I am sure the readers would find the Coffee Table Book very useful that would motivate them for promoting biodiversity conservation. I congratulate the team involved in bringing out this very informative and visually impactful Coffee Table Book.

(Akhilesh Gupta)

Tamarisk/Sab.Cedar Tree (*Tamarixindica*) at Abbohar Wildlife Sanctuary, Distt. Fazilka



White-breasted Kingfisher (*Halcyon smytnensis*) at Hanike Wetland

Rahul Tewari, IAS

Secretary
Deptt. of Science, Technology & Environment
Govt. of Punjab-cum-
Chairman, Punjab Biodiversity Board



MESSAGE

Biodiversity is the foundation for human survival and ecosystem services. Human dependence on biodiversity extends beyond the food we eat, the air we breathe, and the water we drink. Beside rendering various provisioning, regulating, cultural and aesthetic services, each indispensable for human health, biodiversity also plays a pivotal role in securing socio-economic development.

The rapid growth of human population and resultant increasing demands for food, housing, goods & infrastructure development, etc. are putting immense pressure on our biodiversity. The unprecedented worldwide loss of biodiversity especially declining species diversity and erosion of valuable genetic resources would certainly impede the efforts being made for poverty eradication, ensuring nutrition and achieve Sustainable Development Goals.

The integration of value of natural ecosystems and biodiversity into economic development process is one of the crucial priorities of all Governments. Living in harmony with nature is a way of life deeply engrained in Punjabi traditions, culture & religious beliefs. Thus, Punjab Biodiversity Board is striving to undertake holistic initiatives to ensure effective implementation of various provisions of the Biological Diversity Act, 2002 in the State and involve local communities for promoting conservation & sustainable use of biodiversity.

I am glad that Punjab Biodiversity Board and Punjab State Council for Science & Technology have jointly brought out this Coffee Table Book on 'Threatened Flora and Fauna of Punjab', notified under section 38 of Biological Diversity Act, 2002, to highlight the pressing urgency for taking multi-pronged actions by all concerned for their conservation & rehabilitation.

I hope that Coffee Table Book would serve as a valuable resource material on threatened 13 floral and faunal species of the State of Punjab.


(Rahul Tewari)

THREATENED *Flora & Fauna* OF PUNJAB



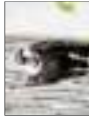


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This book, a disquisition on threatened flora and fauna of the State of Punjab, is an effort to kindle enthusiasm for delving into realms of nature's bounty, receiving nurturing from it as well as giving the same back.

The information on key attributes and array of other aspects about threatened species has been presented in a well rounded manner by interspersing with about — photographs.

The book is a precious resource for those desirous of knowing about and contributing towards diversity of biological resources.

