

WILDLIFE FORENSICS

COMBATING CRIME AND CONSERVING BIODIVERSITY



Narendra G.Chandewar

**WILDLIFE FORENSICS:
COMBATING CRIME AND CONSERVING BIODIVERSITY**

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Foreword

I am delighted to present the book **“Wildlife Forensic: Combating Crime and Conserving Biodiversity”** authored by **Shri Narendra Chandewar**, a highly knowledgeable officer of the Maharashtra Forest Department. This book arrives at a crucial moment when wildlife crimes are becoming more complex and require strong scientific support for effective investigation and prosecution. In such a scenario, a clear and practical guide like this is extremely valuable for field staff at every level.

Wildlife forensic science is often misunderstood as a subject relevant only to laboratory experts. It begins in the field—at the location where the offence occurs. The role of our frontline staff—forest guards, foresters, RFOs, ACFs, and DCFs—is essential. The accuracy with which they identify clues, collect evidence, preserve samples, and maintain documentation can determine the success or failure of a case. This book explains these important procedures in simple and easy-to-follow steps, ensuring that officers from all cadres can understand and apply forensic methods during investigations.

The book explains important topics such as identification of species involved in wildlife crime, handling injured wild animals, preservation of crime scenes, sample collection, maintaining chain of custody, and coordination with wildlife forensic laboratories. He has also provided detailed information on scientific tools like DNA analysis, morphology, bite-mark and tool-mark examination, skeletal study, and digital evidence. Another notable feature of this book is its clear presentation of the **Wildlife (Protection) Act, 1972**, including the classification of offences, punishments, and the responsibilities of forest officers in investigation and prosecution. The practical tips, checklists, and case studies will be especially helpful for officers during field operations, raids, rescues, and preparation of legal documents.

The strength of this book lies in its simplicity and practical orientation. It translates a highly technical subject into clear, field-based guidance that can be immediately used by staff working on the ground. I congratulate **Shri Narendra Chandewar** for his dedicated effort in preparing this useful and timely book. I strongly recommend it as a training and reference manual for all forest officers and frontline staff across the state. It will undoubtedly strengthen our collective resolve to combat wildlife crime with scientific precision and protect the priceless biodiversity of Maharashtra.

Place: Nagpur
Date: 16/10/2025


M. Shrinivasa Reddy, IFS
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सत्यमेव जयते

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Preface

It is with immense professional pride and a profound sense of responsibility towards our natural heritage that I pen this preface for Mr. Narendra Chandewar's seminal work, "Wildlife Forensics: Combating Crime and Conserving Biodiversity." In an era where the silent, creeping tendrils of wildlife crime threaten to unravel the very fabric of our ecosystems, this book arrives not a moment too soon. It stands as a critical bridge between the hallowed halls of forensic science and the rugged, often unforgiving, frontlines of forest conservation.

The illicit trade in wildlife and its derivatives is no longer a peripheral issue; it has morphed into a sophisticated, transnational syndicate, ranking among the most lucrative forms of organised crime globally. For too long, the battle against these networks has been hampered by a significant gap: the chasm between the collection of evidence in the field and its scientific adjudication in a court of law. Traditional law enforcement, while valiant, often lacks the specialized tools to make irrefutable cases. This is where the paradigm of wildlife forensics emerges as a game-changer.

Writer, with his distinguished background as a Divisional Forest Officer, brings a unique and invaluable perspective to this complex subject. He does not merely present forensic techniques as abstract laboratory procedures; he masterfully contextualizes them within the operational realities of a forest officer's duty. This book is a testament to his firsthand experience of wildlife and forest crime investigation by using forensic techniques, morphology, and toxicology into a practical guide for those who protect our wild spaces. He eloquently demonstrates how a fragment of bone, a sliver of skin, or a trace of poison can be transformed into a powerful witness, speaking volumes for the voiceless victims of this brutal trade.

At the Government Institute of Forensic Science, Nagpur, our mission is to equip the next generation of scientists with the skills to serve justice in all its forms. This book will undoubtedly become an essential text for our students, illuminating a vital and rapidly expanding niche of forensic application. It provides a comprehensive framework, from the meticulous protocols for crime scene management in a forest to the legal intricacies of presenting forensic evidence under the stringent provisions of the Wildlife (Protection) Act, 1972.

Mr. N. G. Chandewar has rendered an invaluable service to the nation's conservation community and the cause of forensic science. I am confident that this authoritative volume will become an indispensable resource, guiding our efforts to ensure that the scales of justice are balanced, not just for humanity, but for every living creature that shares this planet with us.

Place: Nagpur

(Dr. Sanjay Thakare)
Director

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MESSAGE

Wildlife crime — including poaching and the illegal wildlife trade — poses a significant threat to India's rich biodiversity. It forms a complex web that pushes vulnerable species toward extinction, undermines national security, and devastates ecosystems, wildlife populations and habitats.

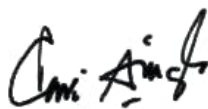
To combat wildlife crime effectively, the best enforcement practices must be deployed, ensuring the prosecution of poachers and wildlife traffickers. For successful prosecution, thorough investigation and systematic evidence collection are vital. This is where the discipline of wildlife forensics emerges as a game-changer.

It is indeed an honour to introduce this timely and significant work, *Wildlife Forensics: Combating Crime and Conserving Biodiversity*, by Mr Narendra Chandewar.

Mr Chandewar, with his extensive field experience as a Divisional Forest Officer, masterfully bridges the gap between the forest and the laboratory in his book. The book meticulously guides readers through the entire forensic process — from the critical first steps of securing a crime scene and properly collecting and preserving evidence while maintaining chain-of-custody, to the advanced techniques of molecular analysis, forensic pathology, and entomology — all the way to the final application of this evidence in securing convictions in wildlife crime cases.

What makes this book valuable is its practical orientation. It is designed for scientists, frontline investigators, forest guards, public prosecutors, and scholars exploring this evolving field. It anchors forensic science within the robust framework of Indian wildlife laws, making it a practical operational manual. The book also presents insights into landmark cases to illustrate forensic science in action.

On behalf of WWF-India, I commend Mr Narendra Chandewar for his valuable contribution. This is a vital step towards securing India's magnificent biodiversity for future generations.



Ravi Singh

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AUTHOR'S NOTE

Along with habitat loss and climate change, wildlife crime has become one of the biggest dangers to biodiversity in the twenty-first century. In addition to putting species in peril, poaching, illicit trade, and trafficking networks can damage ecosystems, destroy cultural heritage, and threaten the rule of law. In light of this, wildlife forensics has become a vital scientific field that unites criminology, biology, and law in order to fight crime and protect our common natural heritage.

The goal of this book, **Wildlife Forensics: Combating Crime and Conserving Biodiversity**, is to provide students, forest officials, investigators, lawyers, and conservationists with a thorough academic resource as well as a useful manual. It highlights the particular difficulties of investigating wildlife crimes in India while also placing them in a global context by fusing academic underpinnings with case studies and practical applications.

Following the legal framework that serves as the foundation for enforcement in India, the chapters are arranged methodically, starting with the principles of wildlife forensic science and how it differs from human forensics. The institutional framework, the kind and extent of wildlife crime, and the complexities of investigation, evidence gathering, and preservation under difficult field conditions are then presented to the readers. Maharashtra's protected species, local trafficking hotspots, and case examples that make the science come to life are given particular attention.

To illustrate the broad breadth of this field, advanced techniques are investigated, ranging from forensic ballistics and chemistry to DNA analysis and isotope studies. Pathology, toxicology, and entomology are examples of related forensic sciences that further expand the investigation toolkit. Additionally, the volume offers information about national and

international research and enforcement laboratories, organizations, and non-governmental organizations.

With an emphasis on procedure harmonization, capacity building, and upcoming technologies like eDNA, AI-based trade detection, and portable sequencing platforms, the last chapter examines the future of wildlife forensics in India.

In order to support the long-term survival of our planet's biodiversity, I hope that this book will serve as an inspiration to a new generation of conservation leaders and wildlife forensic scientists who will bolster the battle against the illegal wildlife trade.

-Mr. Narendra G. Chandewar

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AUTHOR PROFILE

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Mr. Narendra Chandewar is an agriculture graduate. He completed his Bachelor's degree in Agriculture from Anand Niketan College of Agriculture, Warora, with distinction. He went on to earn a postgraduate degree in Agriculture, specializing in Food Science and Technology, from Mahatma Phule Krishi Vidyapeeth, Rahuri, Ahilyanagar District.

Currently, he serves as a Divisional Forest Officer in the Maharashtra Forest Department and is pursuing a Ph.D. in Environmental Science from Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

His areas of interest include forestry, wildlife, law, agriculture, and environmental issues. He has published 19 research papers in reputed national and international journals. Additionally, he has authored over 42 technical articles published in various Marathi magazines.

He is a recipient of the Gold Medal awarded by the Maharashtra Forest Department for excellence in forest conservation and protection. He was also recognized as the Best Trainee (Gold Medalist) during his Forest Officer Training at the Central Academy for State Forest Service (CASFOS), Burnihat, Assam.

Mr. N. G. Chandewar guides students in subjects such as nature interpretation, environmental science, forest and wildlife studies, and competitive examinations. He also serves as a guest lecturer on forestry and wildlife laws at forest academies. Furthermore, he has authored several books for field forest officers and forest department employees.



महाराष्ट्र हेतु

