

Book Review

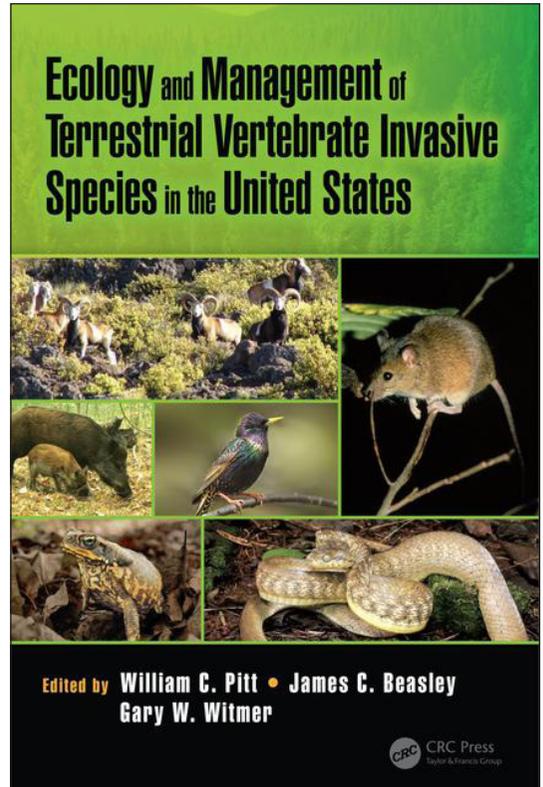
Ecology and Management of Terrestrial Vertebrate Invasive Species in the United States

by William C. Pitt, James C. Beasley,
and Gary W. Witmer
2017, CRC Press
Boca Raton, Florida
403 pages

Review by Lucian R. McDonald

ONE NEEDS ONLY TO GLANCE at the viral, and admittedly hyperbolic, range map for the common rat (*Rattus norvegicus*; Figure 1) to see the impact of worldwide trade. At various scales, this same species introduction phenomenon has occurred with >1,000 vertebrate species since ships began to explore distant lands. These species introductions, which can be accidental or purposeful and legal or illegal, have led to various outcomes. While some species cause no adverse effects or improve the lives of local humans, others take a great toll on the local environment, increase the spread of disease, or negatively impact crop or livestock production. This negative impact, to either humans or the environment, is what makes a species invasive. This book, *Ecology and Management of Terrestrial Vertebrate Invasive Species in the United States*, focuses on current and future effective management options to minimize the effects of invasive species and prevent their spread into new areas while providing perspective on historical successes and failures in invasive species management.

The first section of this book focuses on regulation of invasive species, including biosecurity and risk management, the economics of damage and damage management, and policy writ large. The authors advocate for the use of a proactive biosecurity program that consists of a comprehensive set of safeguards to protect a jurisdiction from the risk posed by further invasion of alien species and discuss the



tools used to manage such a program. This is followed by a discussion of vertebrate invasive species damage, the economic impacts of such damage, and the lack of data with which to assess this impact. The fourth chapter acts as an overview to national regulations related to terrestrial vertebrate invasive species, with a focus on such policies in the United States.

The focus of the second section of the book includes a brief overview of impacts of invasive species on the environment and agricultural production. The authors discuss the different scales at which invasive species can impact the ecosystems they invade. Ecological issues such as the formation of novel ecosystems, threatened and endangered species, climate change, and socioecology are discussed in relation to invasive species spread. This is followed by a description of agricultural issues related to invasive species, such as livestock and crop predation, damage to storage for

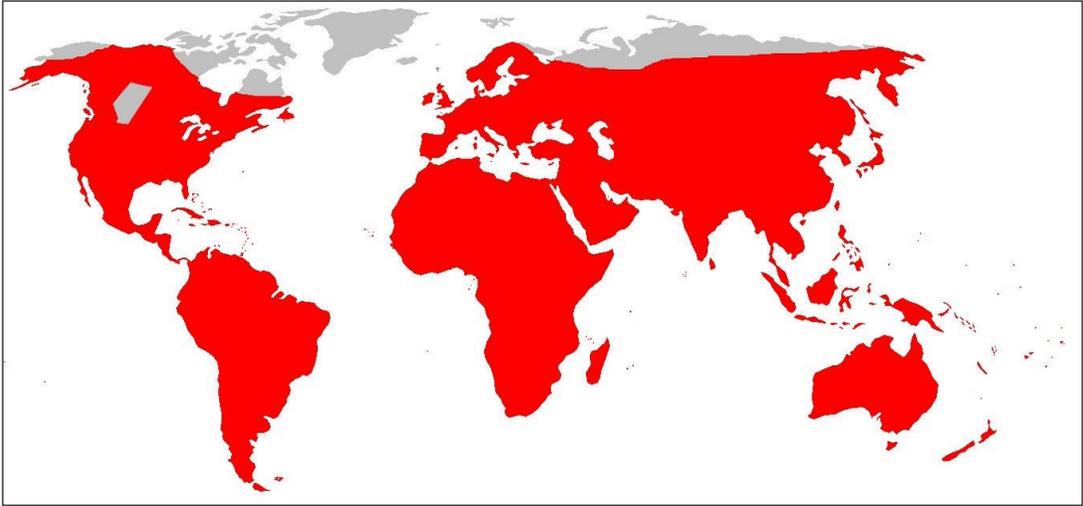


Figure 1. This range map of the common rat (*Rattus norvegicus*), which has a noticeable gap in Alberta, Canada, has been used in multiple social media posts questioning what the province has done to escape the invasion.

crops and feed, damage to rangelands, and the spread of agricultural disease.

The final section of the book includes 11 case studies on various invasive species. From the Brown tree snakes (*Boiga irregularis*) being managed in the previously snake-free island of Guam to the wild pig (*Sus scrofa*) ravaging large swaths of farmland in the contiguous United States, each case has a unique story that serves as a lesson for future management of invasive species impacts. Other species discussed here include Burmese pythons (*Python molurus bivittatus*), coqui frogs (*Eleutherodactylus coqui*), greenhouse frogs (*E. planirostris*), Cuban tree frogs (*Osteopilus septentrionalis*), cane toads (*Rhinella marina*), general rodents (*Rattus* spp., *Mus musculus*, *Cricetomys gambianus*), small Indian mongooses (*Herpestes auro punctatus*), feral cats (*Felis catus*), feral goats (*Capra hircus*), feral sheep (*Ovis aries*), European starlings (*Sturnus vulgaris*), monk parakeets (*Myiopsitta monachus*), rose-winged parakeets (*Psittacula krameri*), and house sparrows (*Passer domesticus*).

This book provides a wealth of information on the issue of terrestrial vertebrate invasive species, acts as a cautionary tale in regards to reactive management, and is worth a read for any scientist with an eye on the future of wildlife conservation and management. The field of invasive species management has hurdles ranging from international trade regulation to public misinformation. The control of

many vertebrate pests has taken a backseat as regulations have focused on plants, insects, and pathogens. The authors call for a more proactive approach to invasive species management that will require public education, cooperation at various levels of government, enforcement of existing laws, and new regulations targeting a well-organized and influential industry, the pet trade. Many control methods required to eradicate invasive species will face heavy public opposition, so this issue will likely be ongoing and needs more research and investment if the hope is to end the negative impacts of introduced species.

LUCIAN R. McDONALD is a graduate research assistant at Utah State University studying moose movement and moose–vehicle collisions in south-central Alaska in pursuit of a master's degree in wildlife biology. He received his bachelor's degree in wildlife, fisheries, and aquaculture science at Mississippi State University and is an associate wildlife biologist.

