

Vol.16 No.6

November/December 2022

THE

WILDLIFE PROFESSIONAL

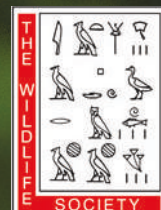
STOPPING TRAFFIC

Authorities combat the
ever-shifting illegal
wildlife trade

Putting in the hours to
be better in the field

Benefiting wildlife
on the farm

Tracking seals in a
frigid landscape



The Wildlife Professional is the flagship publication of The Wildlife Society and a benefit of membership. The magazine—published six times annually—presents timely research, news and analysis of trends in the wildlife profession.

ABOUT

The Wildlife Society, founded in 1937, is an international nonprofit scientific and educational association dedicated to excellence in wildlife stewardship through science and education. Our mission is to inspire, empower and enable wildlife professionals to sustain wildlife populations and their habitat through science-based management and conservation. We encourage professional growth through certification, peer-reviewed publications, conferences and working groups. For more information, visit us at www.wildlife.org.

BECOME A MEMBER

Membership is open to wildlife professionals, students and anyone who is interested in wildlife science, management and conservation. To learn about the benefits of TWS membership or to join, go to www.wildlife.org/join.

CONTRIBUTOR GUIDELINES

All members are encouraged to submit ideas for articles to *The Wildlife Professional*. For more information, go to www.wildlife.org/publications.

ADVERTISING

For information about advertising and our media kit, contact advertising@wildlife.org or visit www.wildlife.org/advertising.

COPYRIGHT AND PERMISSIONS

Permission to make digital or hard copies of part or all of any article published by The Wildlife Society for limited personal or educational use within one's home institution is hereby granted without fee, provided that the first page or initial screen of a display includes the notice "Copyright © 2022 by The Wildlife Society," along with the full citation, including the name(s) of the author(s). Copyright for components of this work owned by persons or organizations other than TWS must be honored. Instructors may use articles for educational purposes only. **Copying, republishing in part or whole, posting on an Internet website or using it for commercial or promotional purposes is prohibited under copyright laws and requires permission of the publisher. For permission, please contact editor@wildlife.org.**

The views expressed in this publication are not necessarily those of The Wildlife Society.

Periodical postage for The Wildlife Professional (ISSN 1933-2866) is paid at Bethesda, MD, and at an additional mailing office. The Wildlife Professional is published bimonthly, producing six issues each calendar year.

Postmaster: Send address changes to The Wildlife Society, 25 Century Blvd. Suite 505, Nashville, TN 37214



TWS STAFF

Ed Arnett	Chief Executive Officer
Wildlife Policy & Communications	
Keith Norris	Director
David Frey	Managing Editor
Dana Kobilinsky	Associate Editor
Joshua Learn	Science Writer
Caroline Murphy	Government Relations Manager
Kelly O'Connor	Conservation Affairs Network Fellow
Madison Chudzick	Wildlife Policy Intern
Allison Cox	Content Editor, TWS Journals
Anna Knipps	Editorial Assistant, TWS Journals

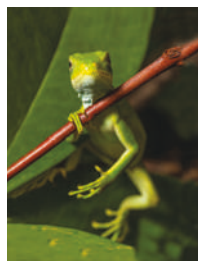
Operations

Cameron Kovach	Director
Aniket Gajare	Software Developer
Nick Wesdock	Business Relations and Conferences Manager
Mariah Beyers	Member Engagement Manager
Jamila Blake	Professional Development and Inclusion Manager
Jennifer Lynch Murphy	Certification and Outreach Manager

TWS GOVERNING COUNCIL

Don Yasuda	President
Bob Lanka	President-Elect
Arthur Rodgers	Vice President
Gordon Batcheller	Immediate Past President
Evelyn Merrill	Canadian Representative
Kathy Granillo	Southwest Representative
Andrew Kroll	Northwest Representative
Jason Riddle	North Central Representative
Duane Diefenbach	Northeast Representative
Lisa Muller	Southeastern Representative
Andrea Orabona	Central Mountains and Plains Representative
Jim Seding	Western Representative
Morgan Register	Student Liaison to Council

Graphic design by Lynn Riley Design.



Credit: San Diego Zoo Wildlife Alliance

This banded iguana hatched in captivity after authorities seized trafficked iguanas from a man in California.

EDITORIAL ADVISORY BOARD

Chair Samara Trusso, Pennsylvania Game Commission

Section Representatives

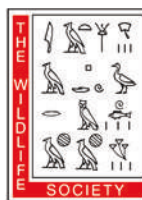
Western	Matthew P. Bettelheim, AECOM
Central Mountains & Plains	Elmer Finck, Fort Hays State University
Canadian	Mike Gillingham, University of Northern British Columbia
Northwest	Nancy Lee, U.S. Geological Survey, retired
Southeastern	Matthew Chopp, Florida Fish & Wildlife Conservation Commission
Southwest	Misty Sumner, MLS Consulting
North Central	Lowell Suring, Northern Ecologic, LLC
Northeast	Dee Blanton, U.S. Fish and Wildlife Service

Working Group Representatives

Conservation Education and Outreach	Adam Rohnke, Mississippi State University
Human Dimensions	Chris Chizinski, University of Nebraska-Lincoln
Invasive Species	Tessie Offner
Renewable Energy	Michael Fishman, Edgewood Environmental Consulting, LLC
Wildlife Toxicology	Louise Venne, Wood Environment & Infrastructure Solutions, Inc.

At-Large Representatives

Barb Hill, Bureau of Land Management, retired
Charles Nilon, University of Missouri
Celina Gray, Blackfeet/Métis, University of Montana
Diana Doan-Crider, Amino Partnership in Natural Resources, LLC
Lauren D. Pharr, North Carolina State University
Adam Janke, Iowa State University
Geriann Albers, Indiana Department of Natural Resources
Matt Dyson, Ducks Unlimited Canada



The Wildlife Society

Headquarters

425 Barlow Place, Suite 200
Bethesda, MD 20814-2144
301.897.9770 phone
twswildlife.org
www.wildlife.org

Mailing Address

25 Century Blvd., Suite 505
Nashville, TN 37214

f	facebook.com/thewildlifesociety
t	@wildlifesociety
YouTube	youtube.com/user/WildlifeSociety
in	linkedin.com/groups/1704017
@	@thewildlifesociety

Contents

November/December 2022

Vol. 16 No. 6

FEATURES

- 26 Turtles in Trouble**
Trafficking poses conservation concerns for America's turtles
By Jennifer Sevin, Kerry Wixted, Lane Kisonak, Bridget Macdonald, Julie Thompson-Slacum, Scott Buchanan and Nancy Karraker
- 32 Congratulations Award Winners!**
Recognizing The Wildlife Society's 2022 award recipients
- 37 A Long, Cold Legacy**
For decades, the Weddell Seal Project has been tracking seals in a frigid landscape
By Parker Levinson
- 42 Two Methods are Better than One**
Using both egg adding and molt capture reduces Canada goose damage
By Nicole E. Rein and April L. Simnor
- 46 The Cost of Combating Chronic Wasting Disease**
The high costs of CWD management may be too much for agencies to bear
By Noelle E. Thompson and J. Russ Mason
- 50 Into the Field**
Cover cropping offers benefits to wildlife on farmlands
By Joe LaRose and Robert Myers
- 55 Experts in the Field**
To become better field researchers, we need more practice
By Denver W. Holt

Departments

- | | |
|----------------------------------|------------------------|
| 4 Editor's Note | 58 Policy Perspectives |
| 5 Leadership Letter | 60 Field Notes |
| 6 Science in Short | 62 In Memory |
| 10 State of Wildlife | 64 Gotcha! |
| 14 Today's Wildlife Professional | |



COVER STORY >>

STOPPING TRAFFIC

Authorities combat the ever-shifting illegal wildlife trade

By Joshua Rapp Learn

16

Credit: U.S. Fish and Wildlife Service



37

Credit: Parker Levinson under NMFS Permit No. 21158



46

Credit: Michigan Department of Natural Resources

>> Log On for More

This publication is available online to TWS members on wildlife.org.
References printed in blue indicate links in the online version of the magazine.



Turtles in Trouble

TRAFFICKING POSES CONSERVATION CONCERNS FOR AMERICA'S TURTLES

By Jennifer Sevin, Kerry Wixted, Lane Kisonak, Bridget Macdonald, Julie Thompson-Slacum, Scott Buchanan and Nancy Karraker

On a hot August day in 2019, over 200 eastern box turtles (*Terrapene carolina*) poached from the wild were seized in South Carolina. Confined to plastic tubs without shelter from the heat, they were dehydrated and malnourished. Several had already died. Investigations later revealed that the smuggler, Nathan Horton, had illegally shipped thousands of North American turtles overseas before he was caught (DOJ 2022).

Cases like this play out across the country annu-

ally. On top of habitat loss and car strikes, they face threats from poaching. Whether it's at the hands of an isolated individual or a sophisticated international smuggling network, the illegal removal

of turtles from the wild undermines conserva-

tion efforts for many vertebrate groups in the world. Over 60% of species are threatened worldwide (Lovich et al. 2018), and unsustainable collection is recognized as a primary threat (Stanford et al. 2020).

Illegal trade has far-reaching consequences for wild turtles. Adults must successfully reproduce multiple times over their long lives to achieve reproductive replacement. Delayed maturation, small clutch sizes, low embryonic and juvenile survival rates and increased vulnerability for nesting females can predispose turtle populations to rapid declines following the substantial loss of adults (Heppel 1998, Howell and Siegel 2019). Because adult females

► Turtles involved in the illegal trade are often subjected to inhumane conditions, with some falling ill or dying in the process. Some of the more than 200 eastern box turtles from the Nathan Horton trafficking case were kept in plastic tubs with no substrate or shade and limited food and water.



Credit: South Carolina Department of Natural Resources



are often targeted for illegal trade by breeders, the stakes for population viability are high.

problem because it's illicit," said Ed Grace, Assistant Director for the U.S. Fish and Wildlife Service's

know about the scope, breadth and impact of the illegal trade in turtles highlight a need for consistent data gathering and coordination."

What we do know is that many of our native turtle species, such as box, spotted (*Clemmys guttata*), wood (*Glyptemys insculpta*), bog (*G. muhlenbergii*) and Blanding's turtles (*Emydoidea blandingii*) and diamondback terrapins (*Malaclemys terrapin*), are listed as Species of Greatest Conservation Need or as state or federal threatened or endangered and are targeted for illegal trade in the U.S. and abroad (Meck 2019).

Yik-Hei Sung, assistant professor at Lingnan University in Hong Kong, has been studying the online trade in turtles since 2016. "I regularly see box turtles, diamondback terrapins and spotted turtles sold online in Hong Kong," he said. "Many appear to have been caught from the wild. With the large numbers of these species being sold and their vulnerability in many U.S. states, I suspect their populations are being impacted by sales overseas."

In many cases, reptile smuggling co-occurs with other in sophisticated rings with ties to corruption, fraud and money laundering crimes," said Ryan Connors, prosecutor with the U.S. Department of Justice.

Illegal trade in turtles is a complex issue. Solving it requires concerted action by stakeholders across supply, transit and demand countries.

A call to action

The Collaborative to Combat the Illegal Trade in Turtles, an interdisciplinary collaboration among agency biologists, law enforcement, legal professionals, academics and nongovernmental organizations, was formed in 2018 in response to a rise in the illegal trade of turtles. Under the Partners in Amphibian and Reptile Conservation umbrella, the group's members focus on ways to better understand, prevent and eliminate the illegal collection and trade of North America's native turtles.



Credit: U.S. Fish and Wildlife Service

In 2020, the CCITT, Association of Zoos and

lished "A Call to Action to Protect North America's Native Turtles from Illegal Collection," highlighting the need to address this threat to native turtles. The message resonated, garnering support from over 650 conservation professionals and 37 organizations to coordinate and strengthen state regulations, enhance the capacity of wildlife law enforcement, increase resources for housing and caring for con-

and conduct research and education.

Partnerships and progress are being made, but there is much more work to be done.

Shell games and lawful loopholes

An inconsistent patchwork of state and provincial herpetofaunal regulations complicates matters. According to Andrew Grosse, herpetologist for the South Carolina Department of Natural Resources, it was the Horton case that highlighted South Carolina's weak regulations and ignited the passage of a bill to end commercial trade in South Carolina's native turtles and more tightly restrict the take of 13 species.

South Carolina is one of several states that have enhanced its regulations in recent years, recognizing that a state with weaker regulations than its neigh-

conservation in surrounding regions. Each jurisdiction maintains its own permitting, take and transport regulations, along with enforcement mechanisms, under an individual statutory framework. The broad

▲ An eastern box turtle, bound by tape and stuffed in a tube sock, was intercepted by the USFWS in an internationally bound shipment.



variation among these frameworks often confounds

CCITT has gathered data on the enforcement challenges arising from inconsistent regulations. The Association of Fish and Wildlife Agencies adopted a resolution in favor of making legislative frameworks stronger and more consistent between neighboring states. In addition, AFWA has developed model statutory language in the hope that more states will voluntarily strengthen laws for amphibians and reptiles.

Agency professionals, legislators and executive of-

up regional coordination of laws and regulations to outmatch the widespread coordination of illegal poachers, buyers and sellers. States such as Florida, Missouri, Texas, Virginia and West Virginia have recently taken steps to limit the collection of wild turtles, with Virginia also expanding protections for herpetofauna with SGCN status.

and penalties, a need for interstate information-sharing, a greater focus on linking turtle-related

regulatory language for licenses and permits, take restrictions for a wider range of species, acquir-

regulations and enhancing enforcement capacity as essential to strengthening turtle protection.

Supporting the green front line

The investigation and arrest of Nathan Horton required a multi-year commitment and close collaboration between law enforcement from three state wildlife agencies and the USFWS. Building a

ing and time-consuming. It requires dedicated and skilled law enforcement, coupled with the support of management and necessary resources.

“When senior law enforcement are asked to identify

gist with the Connecticut Department of Energy and Environmental Protection and a CCITT co-chair.

There is no question law enforcement divisions

of their mission. “Restrictive funding sources and competing demands are other common barriers to law enforcement’s ability to engage on this issue

Training is also a top priority, with topics ranging

Agencies need skilled personnel, technological resources, regulatory frameworks and training to be able to counter cyber-crime. “The illegal trade in turtles not only involves brick and mortar facilities but is now heavily occurring through social media and other online platforms,” said Florida Fish and Wildlife Conservation Commission Capt. Van Barrow, a co-chair of CCITT’s Law Enforcement Working Group.

Gathering and sharing information in a timely manner are also fundamental needs highlighted by law enforcement.

mechanism or framework for collecting data and sharing information across agencies. To help close knowledge gaps, collaborating more broadly with researchers from a variety of disciplines, including natural resources, social sciences, criminal science, policy and economics, is encouraged.

▼ U.S. Fish and Wildlife Service officer Amanda Dickson and her dog Lancer inspect thousands of boxes daily in an effort to detect smuggled wildlife.



Credit: U.S. Fish and Wildlife Service



Catching a perpetrator is just one aspect of enforcement. Holding criminals accountable is the responsibility of prosecutors and judges, who may

these crimes in terms of damage to wild turtle populations and the loss of ecosystem services they provide, including seed dispersal, nutrient cycling and habitat creation (Lovich et al. 2018).

“Education to the judicial system is a priority,” said Michelle Christman, PARC’s federal agencies coordinator from the USFWS. “This should no longer be a low-risk, high-reward crime.”

Caring for the confiscated

an uncertain future. The capacity to house them, screen them for disease, determine their origin and repatriate them back into the wild is limited.

During the 2022 Northeast Illegal Turtle Trade Workshop hosted by CCITT (Wixted et al. 2022), 80% of 78 poll respondents said they did not have

turtles. Forty percent said it would be a serious

template to help develop a process for responding to turtle seizures.

being held in inhumane conditions and require immediate veterinary attention. Animals may also need to be separated and quarantined individually to reduce the risk of spreading disease, such as ranavirus, which recently claimed the lives of 100

scated turtles are frequently sent to zoos and aquariums, but they often lack adequate space, equipment and funding to provide long-term care. Presently, s- cated turtles can be sent or funding to provide care

reimbursement for the care of the turtles from his case. Given that turtles may live 40 years or longer, care may be needed for years if release back to the wild is not possible.

“The CCITT and [AZA SAFE American Turtle Program](#) are partnering to help address these



Credit: Kurt Buhlmann and Tracey Tuberville/University of Georgia

▲ Box turtles confiscated from convicted wildlife smuggler Nathan Horton are part of a repatriation study to learn about turtle fidelity at the translocation site and integration into the existing wild population. A data logger monitoring temperature is fixed to this turtle’s carapace. Repatriation of turtles is the ultimate goal, but it is challenging to achieve. The source of the turtles is often unknown and without funding to analyze genetics and conduct disease screening, releasing turtles randomly to the wild may negatively influence local population genetics, spread novel diseases and create competition for resources.

Closing the Shell

You can help us combat the illegal turtle trade.

We now know that some criminals take advantage of publicly available information on locations of wild turtles from published scientific articles, presentations, naturalist-oriented community science apps and museum collection data portals, to ascertain locations of wild turtle populations.

“Understanding the geographic distributions of species is critically important for conserving them,” said Bryan Stuart, curator of herpetology at the North Carolina Museum of Natural Sciences. “Unfortunately, the data that scientists and others gather in this effort can also be inadvertently used by those who exploit the species for monetary gain.”

Stuart suggests the herpetological community obscure detailed locality data for sensitive species in publications, presentations and websites.

You can also help by offering your expertise to conduct training for law enforcement, serve as an expert witness for prosecutors, conduct research to fill data gaps and educate the public. Report suspicious activity to your state law enforcement or the USFWS by calling 1-844-397-8477.



challenges by developing a business model for scation facilities and writing grants to purchase equipment, provide care, determine wild origin and test for disease to maximize the chances of returning animals to the wild,” said Dave Collins, director of North American turtle conservation at Turtle Survival Alliance and founder of the AZA SAFE American Turtle Program. Protocols scated turtles and decision-making tools were developed to help maximize the probability that turtles can be released back to

the wild and help guide managers in determining whether release is viable.

A long-term and dedicated source of funding, similar to what has been established to combat white-nose syndrome in bats, is necessary to ad-

the probability and success of repatriation. Recovering America’s Wildlife Act, if passed by Congress, would immensely help address these funding needs and could result in an increase in law enforcement

RECENT U.S. LAW ENFORCEMENT CASES INVOLVING ILLEGALLY COLLECTED TURTLES

-  **May 2022**
North Carolina: 722 eastern box turtles, 122 spotted turtles.
-  **October 2021**
Florida: 3500 turtles including three-striped mud turtles and Florida box turtles.
-  **September 2021**
Kentucky: 915 eastern box turtles.
-  **May 2021**
Multiple States: 134 Florida box turtles, 178 eastern box turtles, 127 wood turtles, 220 spotted turtles, 77 diamondback terrapins, etc.
-  **December 2020**
Georgia: 5952 loggerhead musk turtles, 743 common musk turtles, etc.
-  **December 2020**
Multiple States: 1500 turtles including eastern box turtles, Florida box turtles, spotted turtles, wood turtles.
-  **January 2020**
Oklahoma: 1000 eastern box turtles.
-  **August 2019**
Florida: 4000 turtles including Florida box turtles, eastern box turtles, spotted turtles, diamondback terrapins, and others.
-  **July 2018**
New Jersey: 3500 diamondback terrapins.

Numbers are documented totals of wild-caught turtles involved in each case.

Locations are source of wild-caught turtles.

Dates are approximate time of arrests, charges, indictments, or sentences.

These cases are just the tip of the poaching iceberg.

Collaborative to Combat the Illegal Trade in Turtles

July 2022

Credit: Scott Buchanan/Rhode Island Department of Environmental Management and Collaborative to Combat the Illegal Trade in Turtles

The human factor

issue that involves people and their behaviors. The behaviors that drive poaching, smuggling, selling and buying turtles can be motivated both by internal factors—such as knowledge, beliefs, values, attitudes and emotions—and external fac-

conditions, governance structures, geography and social networks (Wallen and Daut 2018).

“To shift behaviors of individuals or groups involved in any link of the illegal turtle trade chain, we need

targeted interventions,” said Christine Browne, senior social scientist with the Combating Wildlife

available information on the illegal turtle trade from experts from multiple disciplines, including law enforcement, criminology, and public policy, we are advocating for the collection and use of robust social science information to inform the development of behavior change interventions.”

Building on this foundation, partners will undertake a strategic planning process in 2023 to articulate a shared understanding of the problem and to identify key stakeholders, intervention points and priority conservation strategies, as well as to coordinate actions.

There is also a need to be proactive in educating our existing constituencies about the problem and enlisting their help in addressing it, including by increasing appreciation for the roles turtles play in their native habitats, encouraging people to report violations and making state regulations easy to access and understand. By developing and sharing

► This timeline of selected cases related to the illegal trade of wild and native species in the U.S. highlights the scale of the issue. There is a large demand for turtles, mainly for pets, domestically and internationally. U.S. turtles are also intercepted internationally after they have been smuggled out. The true scale of the illegal trade is unknown.



clear information and consistent messaging, we are helping the public, peers and partners understand what is important and how they can help.

“But the greatest outreach needs may be within our agencies and networks,” said Dave Golden, assistant commissioner of New Jersey Fish and Wildlife. “Leadership support, nation internally and with partners are essential for our actions to be in combating this problem.”

Through collaboration, we can create opportunities to leverage expertise, capacity and funding to address the greatest needs, like providing housing and care for scatted turtles, ment and implementing demand reduction strategies.

Achieving and sustaining this level of coordination is a shared conservation priority and then committing to playing a role in developing the solution. ■

are those of the authors and do not necessarily represent the views of the USFWS.



Jennifer Sevin, PhD, serves as a visiting lecturer of biology at the University of Richmond and co-chair of the Research and Data Working Group of CCITT.



Kerry Wixted, MS, is the Amphibian, Reptile and Invasive Species Program manager at the Association of Fish and Wildlife Agencies and co-chair of the Human Dimensions Working Group of CCITT.

Lane Kisonak, JD, is the chief legal officer at the Association for Fish and Wildlife Agencies and chair of Regulatory and Judiciary Working Group of CCITT.

Bridget Macdonald, MS, is a public affairs specialist with the U.S. Fish and Wildlife Service and co-chair of the Human Dimensions Working Group of CCITT.



Julie Thompson-Slacum, MS, is a supervisory fish and wildlife biologist with the U.S. Fish and Wildlife Service's Chesapeake Bay Field Office and co-chair of the Human Dimensions Working Group of CCITT.

Scott Buchanan, PhD, is the herpetologist for Rhode Island Department of Environmental Management and a CCITT co-chair.

Nancy Karraker, PhD, is a professor in the Department of Natural Resources Science at the University of Rhode Island and co-chair of the Research and Data Working Group of CCITT.



WILDLIFE MATERIALS

PROTECT • MONITOR • STUDY





Distributor
RECONYX
SEE WHAT YOU'VE BEEN MISSING...

RECEIVERS AND TRANSMITTERS FOR WILDLIFE RESEARCH

800-842-4537

1202 Walnut Street • Murphysboro, Illinois USA • www.wildlifematerials.com

