



# One Health



## Dolphin Die-offs Hit Atlantic Coast Hard

By Candace Carter

Recent bottlenose dolphin strandings at Canaveral National Seashore have tentatively been connected to an Unusual Mortality Event (UME) that affected dolphins from New York to North Carolina last summer. In July 2013, a UME was declared for bottlenose dolphins along the Atlantic coast. UMEs are declared under the Marine Mammal Protection Act of 1972 when unexpected strandings occur that involve a significant die-off of any marine mammal population and demands an immediate response.

The most common species involved in UMEs are the bottlenose dolphin, California sea lion, and West Indian manatee. In Florida, bottlenose dolphin strandings have increased more than three-fold from average. Death rates along the Atlantic coast were ten times higher than normal, with over 1400 reported. The number of deaths is likely much higher because not all dead dolphins have washed ashore.

Mortality rates of bottlenose dolphins along the Atlantic coast have been tentatively attributed to cetacean morbillivirus (CMV). Specific morbilliviruses can infect humans (measles) and carnivores (canine distemper virus), though CMV cannot be transmitted to humans. In dolphins, transmission occurs through respira-

tory particles or direct contact between animals, including mothers and calves. Common symptoms are skin lesions, pneumonia, and brain infections. The virus can predispose infected animals to secondary infections, such as *Brucella*, a zoonotic agent.

Studies are ongoing to investigate other contributing factors including other pathogens, biotoxins, and range expansion. Additional collaborative studies are underway to better understand the characteristics of CMV and the potential impacts of this virus on dolphin stocks. NOAA has been investigating *Brucella* in marine mammals since 2011 and is working closely with stranding network members, the University of Illinois, the CDC and state health departments, the NPS, and the USDA.

As bottlenose dolphin populations migrate southward, more strandings are occurring along the southern Atlantic. Since December, three bottlenose dolphin deaths have been recorded in Canaveral National Seashore. Live strandings are not being taken to rehabilitation centers due to the risk of infecting other marine mammals. At this point, nothing can be done to stop the virus. No vaccine can be developed that can be easily deployed in wild populations of bottle-

nose dolphins.

The estimates of bottlenose dolphin populations in the affected area of the Atlantic are between 7,000 and 9,000 in the northern region, and between 9,900 and 12,000 in the southern region. Bottlenose dolphins are typically found in groups of two to fifteen and typically live between 40 and 50 years. Not all infected dolphins die from CMV. Some will survive and become resistant to the disease. A recent study shows this immunity is short-lived, however. CMV is expected to pass through bottlenose dolphins in epidemic waves which has continued through the spring of 2014, with 27 reported strandings thus far.

This interagency and interdisciplinary response is One Health in action.

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Figure 1. Kaetlyn Kerr of Fire Island National Seashore presents a safety tailgate session to staff heading to the field.

# Sharing Science to Promote Safety at Fire Island National Seashore

By Kaetlyn Kerr

Fire Island National Seashore (FIIS) is well known for its pristine natural beaches, summer rental homes, and its laid back, vehicle-free atmosphere. Perhaps equally well-known are the island's ticks and mosquitoes. These arthropods are not only a nuisance to those who live, work, and play on the barrier beach, they can also transmit zoonotic diseases to humans, like West Nile Virus (WNV) and Lyme disease. Educating people on the why's and how's a park is managed is extremely important, especially when it relates to zoonotic and vector-borne diseases. Questions on vectors and wildlife diseases from the public and park staff have prompted us to take a better look at communicating NPS policies and disease safety measures through educational programs and new forms of training.

Over the years, FIIS has worked hard on disseminating the proper safety information on wildlife and zoonotic diseases through interpretive and educational programs for the public. And recently, FIIS has added a new tool to its tool box—"tailgate sessions". Many parks use tailgate sessions to informally discuss safety precautions at the beginning of a work shift. These can range from how to safely

use a chain saw to how to properly operate a 4WD vehicle on the beach. In 2012, FIIS's Natural Resources Management staff began offering safety trainings on vector-borne diseases to other divisions in the form of tailgate sessions.

These sessions are used to train and educate employees on the potential disease risks associated with their positions. Topics in the tailgate session include basic biology of ticks and mosquitoes, diseases that can be found in the area and self-protection with the proper personal protective equipment (PPE) and where to get it. In addition, tailgate sessions summarize the FIIS's Mosquito Monitoring and Surveillance Program for West Nile virus and surveillance of Lyme pathogen-carrying tick populations and how these efforts align with the NPS mission. Fact sheets/summaries of information are distributed to employees with contact information for Natural Resources Management staff.

These tailgate sessions have been well received by other divisions and subsequently have created a new avenue for communicating about other natural resource topics. Fostering open communication between divisions in the informal tailgate sessions encourages discussions about diseases and human health and

makes for a safer work environment. Walt Martens, the FIIS's Maintenance Foreman, believes "the tailgate sessions are successful because it constantly reinforces safety and because they are concise and relevant to current issues our employees face in the field." Tailgate sessions are not only important for supplying staff with safety tips but also in educating staff on why and how FIIS manages its natural resources. No matter their division, all employees can serve as interpreters and arming staff with the proper knowledge is essential.

This year, tailgate session topics will be expanded to include diseases such as rabies and tularemia. Safety precautions for hantavirus will be discussed as well, a topic particularly important to FIIS staff responsible for opening seasonal park facilities. Emergency disease cards specific to FIIS will be available for staff this summer. These cards can be carried in an employee's wallet and presented to medical emergency personnel if that employee contracts a disease. With safety as a top priority for NPS, safety tailgate sessions on diseases are a great way to start off every season with a clean bill of health.

# Making Integrated Pest Management work for your park

By CDR Matthew Weinburke and Carol DiSalvo

Integrated Pest Management (IPM) is an interdisciplinary step-by-step approach to help park managers accomplish their goals in resource and human health protection. IPM is intended to prevent, detect, and manage pest issues while minimizing disruption and adverse impacts to other resources. In this way, IPM is very much a One Health approach that can improve the health of many species when practiced in an interdisciplinary manner.

All NPS employees and even visitors have a responsibility to practice IPM as mandated by NPS Management Policies. But as with many things in NPS, parks can implement IPM in many different ways in order to accomplish their goals. No matter what structure is used to implement IPM, multiple disciplines and parties need to be involved in order for efforts to be successful.

NPS policy requires every park to have an IPM Coordinator designated by the Superintendent. In many cases, this is a collateral duty position. Some parks, such as YOSE, have a coordinator *and* committee to handle IPM issues; other parks, such as Golden Gate National Recreation Area (GGNRA), have a full time Park IPM Coordinator.

GGNRA's IPM Coordinator works with maintenance workers who install door sweeps to exclude crawling insects, building occupants who effectively empty their trash into rodent

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# Wildlife Disease Center Stage

By Dr. Kevin Castle

The NPS Biological Resource Management Division Wildlife Health Branch (WHB), in collaboration with Colorado State University, conducted a Wildlife Disease Short Course for NPS and partner agency personnel, March 18 - 21 in Fort Collins, CO. The course provided an introduction to wildlife disease surveillance and management in the NPS. Through lectures, interactive case-based scenarios, and hands-on necropsies, participants learned about wildlife diseases and techniques to safely monitor and study them. Personnel from twelve parks, three regional offices, WASO, and the U.S. Fish and Wildlife Service attended; representing six regions.

The afternoon necropsy laboratory was led by a cadre of board-certified veterinary pathologists, including Dr. Colleen Duncan, Colorado State University; Dr. Kevin Keel, UC-Davis; and Dr. Terry Spraker, Colorado State University. Biological Resource Management Division WHB wildlife veterinarians and staff also assisted with necropsies. The necropsy lab is always a highlight of the class, and offers course participants an opportunity to roll up their sleeves and get a little dirty, as can be seen in the accompanying photo.

Other course highlights included presentations on avian, reptile, and

small mammal disease by Dr. Todd Cornish, University of Wyoming; an evening presentation on marine mammal disease issues by Dr. Spraker; and three nights of sampling local microbrews and foods. These informal gatherings allowed participants to exchange park experiences with their peers, and provided a means for forming inter-park networks. Wildlife Health Branch veterinarians presented on NPS's cutting edge research on Chronic Wasting Disease, White Nose Syndrome, and zoonotic infections in NPS wildlife biologists. Dr. Margaret Wild presented on NPS natural resource law and policy as it pertains to wildlife and a tutorial was given on using the NPS wildlife diagnostic service for park wildlife disease and mortality investigations.

This course also addressed how wildlife biologists can protect themselves and their staff from zoonotic disease. Presentations and discussions addressed use and wearing of personal protective equipment and techniques and resources to investigate potential disease outbreaks or zoonotic disease exposures.

Overall, participants said the course was very useful for their jobs, and the necropsy portion was a favorite. Comments included 'This course should be required for anyone who works with wildlife in any capacity' and 'Everyone, presenters and class participants, were very personable, making for dynamic engaging discussions.' The most common recommendation was to increase the length of the course and the time for discussions.

The Wildlife Health Branch hopes to offer this course again in the future in some combination of online and in-person formats, with resources available for participants to distribute to their parks.



# Forest health is One Health too!

## Making IPM work

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proof garbage cans at the end of each day, and with gardeners and landscapers who clean mowers before entering a new area to prevent the spreading of weed seeds from invasive plant species. Furthermore, the GGNRA's IPM Coordinator provides consultation to architects to aid in designing pest free buildings and has developed creative ways to reduce the use of chemical pesticides. By collaboratively working with the coordinator under the IPM approach, park staff become better educated on pest issues and know exactly what they need to do to prevent and solve them, saving the park time, resources, and funding. It is a single person dedicated to IPM, but working with multiple disciplines to ensure everyone understands their role. The IPM approach also provides a better and safer working environment for all concerned.

If a park isn't able to have a dedicated IPM coordinator, a committee approach can be an effective way to minimize the burden on a single collateral duty appointee while maximizing impacts. In response to the hantavirus outbreak in 2012, Yosemite National Park formed a multi-disciplinary committee at the end of 2012 to address hantavirus prevention, risk reduction, and IPM strategies. Hantavirus is a respiratory disease carried by some types of rodents including the native deer mouse found in the park. Yosemite's collaborative and multi-disciplinary IPM program involves Resource Management staff, the concessioner, public health consultants, IPM specialists, park partners, and the California Department of Public Health (CDPH) to discuss IPM problems and develop unique solutions that can be implemented in the park. Using the IPM approach,

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By Carol DiSalvo

IPM encompasses many of the principles of One Health by using interdisciplinary approaches while minimizing adverse impacts. Great Smoky Mountains National Park (GRSM) used a One Health/IPM process with multiple approaches to accomplish its goals while minimizing threats to human and resource health.

GRSM discovered hemlock woolly adelgid (HWA) in 2002. The HWA is a non-native insect pest which causes rapid decline and mortality in eastern hemlocks (*Tsuga canadensis*) and Carolina hemlock (*Tsuga caroliniana*) in the eastern United States in as few as 3-5 years after initial infestation. The loss of hemlock from the park would adversely impact stream temperatures, flow dynamics, watershed quality, and wildlife habitat.

GRSM coordinated with the US Forest Service and Friends of the Smokies to obtain funding and support for the project. The objectives of this project were: a) to minimize losses in hemlock old-growth forests, b) Protect trees in high-use developed areas, and c) Minimize loss-

es in hemlock-dominated forests. The park inventoried their forested areas and prepared an environmental assessment (EA) which proposed the use of various IPM tools in specific areas of the park to protect hemlocks. The proposed IPM tools included: site specific insecticides (insecticidal soap, horticultural oil, systemic insecticides) and biological control agents (adelgid specific predatory beetles). GRSM used a combination of chemical and biological controls to treat individual hemlock sites throughout the park which allowed more areas throughout the park to be treated. IPM tools were reviewed and approved. Biological controls were used to treat remote backcountry trees and along waterways; chemical controls allowed treatment of trees in areas accessible from the road; mature riparian hemlocks were stem injected with systemic insecticide to avoid water contamination.

By using a combination of treatments, GRSM effectively used limited resources to treat a greater area across the landscape while minimizing adverse impacts on other resources. GRSM is sharing their successful strategies with other parks.

## Making IPM work

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YOSE park employees, concessioner staff, NPS Office of Public Health and Wildlife Health staff, and CDPH representatives collaborated to document and monitor the deer mice populations around human occupied areas, implemented rodent exclusion measures on park structures, provided educational material to employees and visitors on the prevention of hanta-virus, conducted ongoing surveillance and assessments, and managed the deer mouse population through a snap trapping and monitoring program as recommended by public health partners.

Yosemite's IPM committee has prioritized other areas of concern that would require an effective IPM solution. To that end, Yosemite's IPM Program and Committee continues to be a collaborative and inclusive, reaching out to all employees and partners to ensure IPM is effectively implemented to reduce risks to people and resources while supporting the site's management objectives.

The National Park Service (NPS) and the Fish and Wildlife Service follow an 11 Step IPM Process which includes identification of the pest, understanding the designated significance of the park, the specific site's use, the importance of protecting a historic item, natural resource, human health, and proper education of the people involved to prevent pest issues (See <http://www1.nrintra.nps.gov/brmd/ipm/process.cfm>).



## One Health Network: Partners in Health

### Biological Resource Management Division

Wildlife Health Branch  
Chief

Dr. Margaret Wild  
(970) 225-3593

One Health Coordinator

Dr. Danielle Buttke  
(970) 267-2118

Integrated Pest Management

Carol DiSalvo  
(202) 513-7183

### Office of Public Health Director

CAPT Charles Higgins  
(202) 513-7217

Epidemiology Branch Chief  
CDR David Wong  
(505) 248-7806

Operations Branch Chief  
Sonya Coakley  
(202) 513-7215

Health Promotion Branch Chief  
Diana Allen  
(314) 655-1625

Field Services Branch Chief  
LCDR Adam Kramer  
202-513-7056

One Health Coordinator  
LT Danielle Buttke  
(970) 267-2118

### Office of Risk Management

Deputy Chief  
CDR Sara Newman  
(202) 513-7225

### Interested in collaborating in One Health?

Please contact the One Health Coordinator, Danielle Buttke, at [Danielle\\_Buttke@nps.gov](mailto:Danielle_Buttke@nps.gov) or 9790-267-2118.



## More One Health!

Several articles were recently published on the benefit of a One Health approach in science, medicine, and health promotion.

These include: 'Animal-assisted interventions: making better use of the human-animal bond' available: <http://veterinaryrecord.bmj.com/content/174/11/269.full>, 'Taking the bite out of rabies, putting teeth into 'One Health'' available at: <http://annals.org/article.aspx?articleId=1814429&guestAccessKey=bc99ff34-86ca-4a2b-9595-2011302bf982>, and 'The evolution of One Health: a decade of progress and challenges for the future' available at: <http://veterinaryrecord.bmj.com/content/174/4/85.full>.

A One Health Newsletter is also published by the One Health Initiative and available at: <http://www.onehealthinitiative.com/newsletter.php>.