Hurricanes and wildlife

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Our thoughts go out to those who have been impacted by Hurricane Ian. The Range Cattle Research and Education Center and many areas throughout central Florida were flooded by Hurricane Ian in late September and early October. Hurricanes can have severe impacts on all facets of life in Florida, including our natural resources. Wildlife are undoubtedly affected by extreme climatic events, like hurricanes. Hurricanes can cause direct mortality on wildlife, reduce reproductive success, and reduce food resources. Our understanding of how hurricanes impact different wildlife species is limited because field studies of wildlife behavior or wildlife survival during these infrequent and unpredictable events are rare. However, there are a few interesting case studies that we can use to inform our understanding of how wildlife respond to hurricanes.

White-tailed deer and Hurricane Irma

Dr. Heather Abernathy and colleagues at Virigina Tech University, University of Georgia, and the Florida Fish and Wildlife Conservation Commission were monitoring white-tailed deer in Collier County in 2017 when Hurricane Irma (category 3) made landfall. During the hurricane, white-tailed deer moved to higher elevation pine and hardwood forests and avoided marshes. These choices were opposite to what deer normally do this time of year in this area. For many deer, moving to these higher elevation forests required them to leave their home range. Interestingly, none of the deer that Abernathy and colleagues monitored during hurricane Irma died because of the hurricane, which suggests that the ability of deer to move to available refuge habitat (higher elevation forests) can increase their survival during hurricanes.

Wild turkey and two hurricanes: Matthew and Harvey

Dr. David Moscicki and colleagues at Louisiana State University, University of Georgia, South Carolina Department of Natural Resources, and Texas Parks and Wildlife were monitoring wild turkey in South Carolina in 2016 when Hurricane Matthew (category 1) made landfall and in Texas in 2017 when Hurricane Harvey (category 4) made landfall. Moscicki and colleagues found that wild turkeys hunkered down during the hurricanes - they decreased movement, using 75% less area than they used prior to the hurricanes. Several of the turkeys they were monitoring

died because of the hurricanes and from this, they extrapolated that hurricanes Matthew and Harvey might have caused turkey population reductions of 5% and 8%, respectively. Interestingly, despite the likely impact of the hurricanes on roost sites and altering of the forest through treefall, Moscicki and colleagues did not observe a shift in turkey roosting sites after the hurricanes.

Anoles and Hurricane Irma

Dr. Allison Rabe and colleagues at Harvard University and Washington University study the green anole, a native lizard in Florida. They had the unique opportunity to survey these anoles on two islands in the Indian River Lagoon near Fort Pierce, FL both before and after hurricane Irma (category 1) in 2017. Rabe and colleagues found that the surviving anoles had significantly longer forelimbs and hindlimbs, on average, than the anoles surveyed prior to the hurricane. These anoles have higher clinging capacity – literally the anoles that could hold on the best were the anoles that survived the hurricane. Dr. Colin Donihue (Harvard University) and colleagues found similar results in anoles in the Turks and Caicos after hurricanes Irma and Maria. Interestingly, additional work by Dr. Miguel Acevedo (University of Florida WEC) and colleagues at the University of Pittsburgh failed to find evidence of increased clinging capacity in the yellow-chinned anole after hurricanes Irma (category 5) and Maria (category 4) impacted Puerto Rico in 2017. Taken together, these findings suggest the possibility of evolutionary impacts of hurricanes on anoles but that such impacts are likely dependent on the underlying landscapes – the clinging capacity of anoles during a hurricane is more important in some areas than in others.

Terrapins and Hurricanes Michael, Georges, and Irene

The diamondback terrapin is a native turtle in Florida. One diamondback terrapin was being monitored by Dr. Margaret Lamont and colleagues at USGS, near Bay and Gulf counties in Florida, when Hurricane Michael (category 5) made landfall in 2018. The terrapin survived the hurricane – it did not make any major movements and was not displaced by fast-moving currents from flooding. Dr. Lamont and colleagues concluded that the hurricane did not affect the terrapin because of its ability to remain buried in sediment underwater for long periods of time, basically riding out the worst of the flooding and fast-moving water by remaining buried. Conversely, Dr. Brian Mealey and colleagues at Florida Atlantic University, Miami Museum of Science, Georgia Aquarium, and Texas State University were monitoring diamondback terrapins in the lower Florida Keys from 1997 to 2000. During this time, the terrapin population was negatively impacted by hurricanes Georges (category 2) and Irene (category 1) - these storms appeared to have reduced local abundance of terrapins and recovery of the population took months to years. Again, we see that hurricane impacts could be dependent on local environmental conditions, and that wildlife on smaller islands might be more vulnerable to the negative impacts of hurricanes than animals on the mainland.

The Rangeland Wildlife Ecology Lab has been monitoring wildlife using both trail cameras and acoustic recording units at the Range Cattle REC in Hardee County and at the Deluca Preserve in Osceola County. In the coming months, the images and sound files from these units will help us better understand how wildlife responded to and were impacted by Hurricane Ian in central Florida.

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