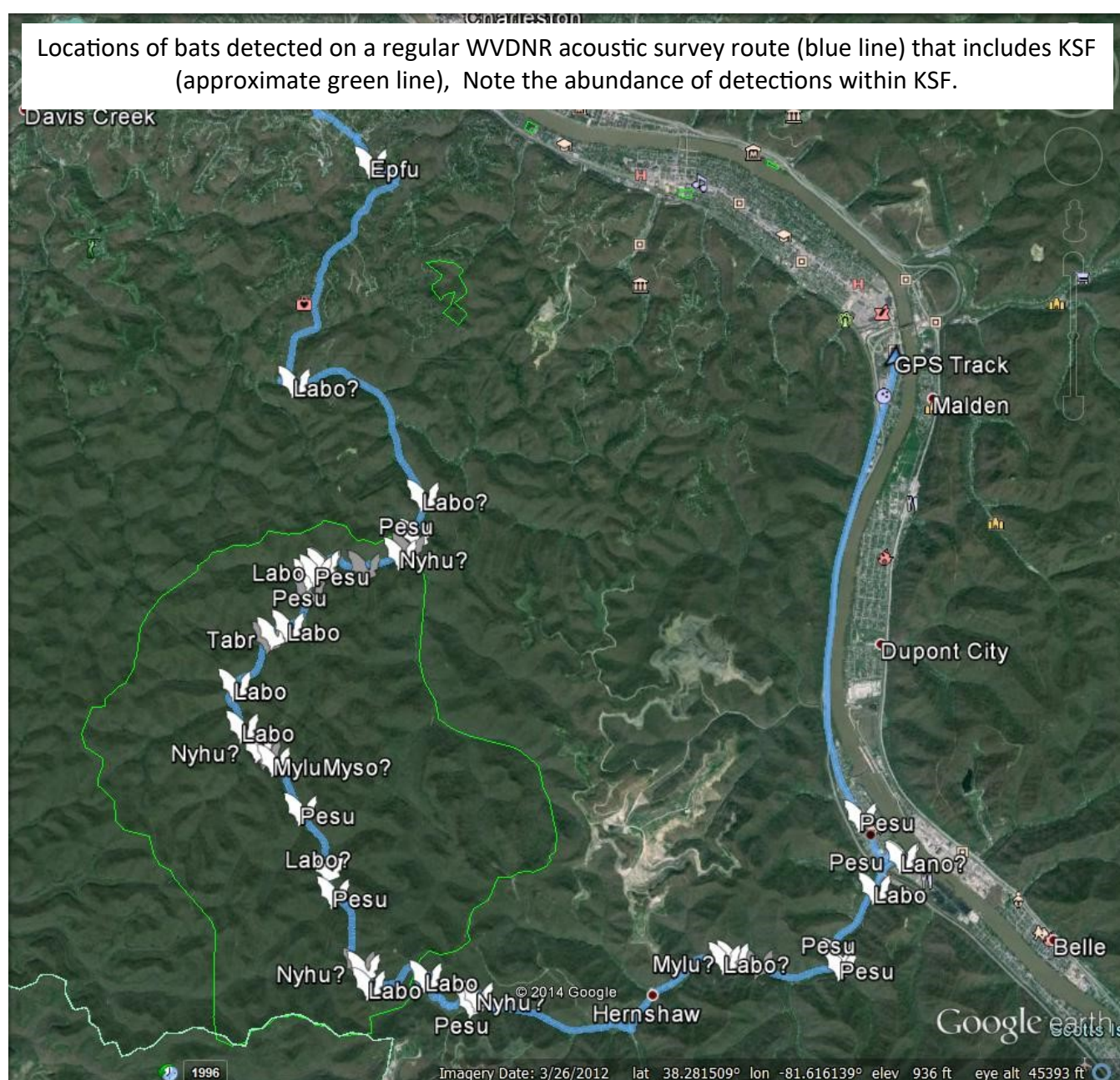




Nora Lea, Kanawha State Forest's very own Northern Long-eared Bat
Courtesy, All Star Ecology

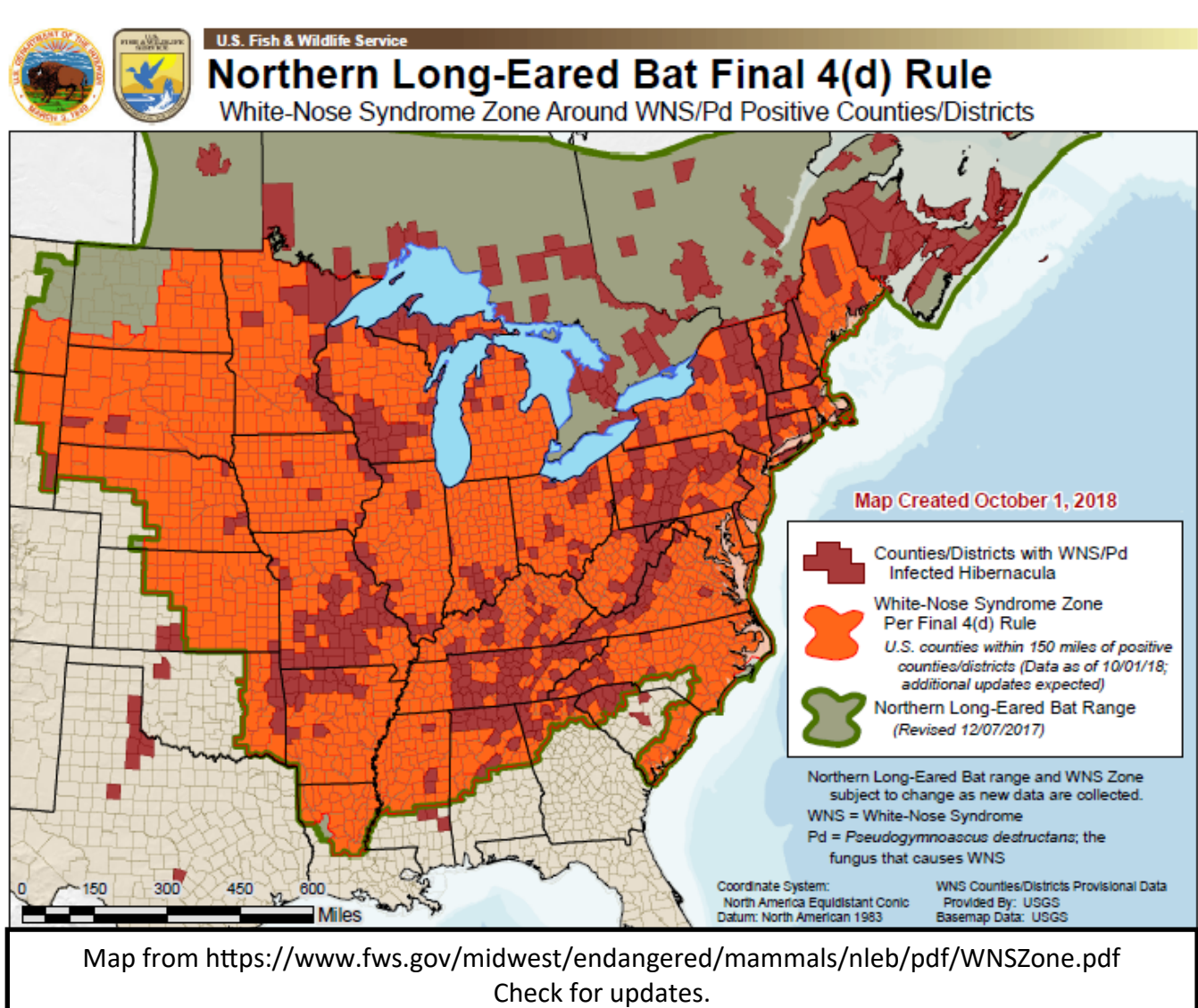
Kanawha State Forest Bats : Threatened/Endangered

West Virginia Department of Natural Resources (WVDNR) biologists have performed drive-by acoustic bat surveys through Kanawha State Forest for many years. They have detected nine species on a regular basis, including the endangered Indiana Bat (IB) and the threatened Northern Long-eared Bat (NLEB).



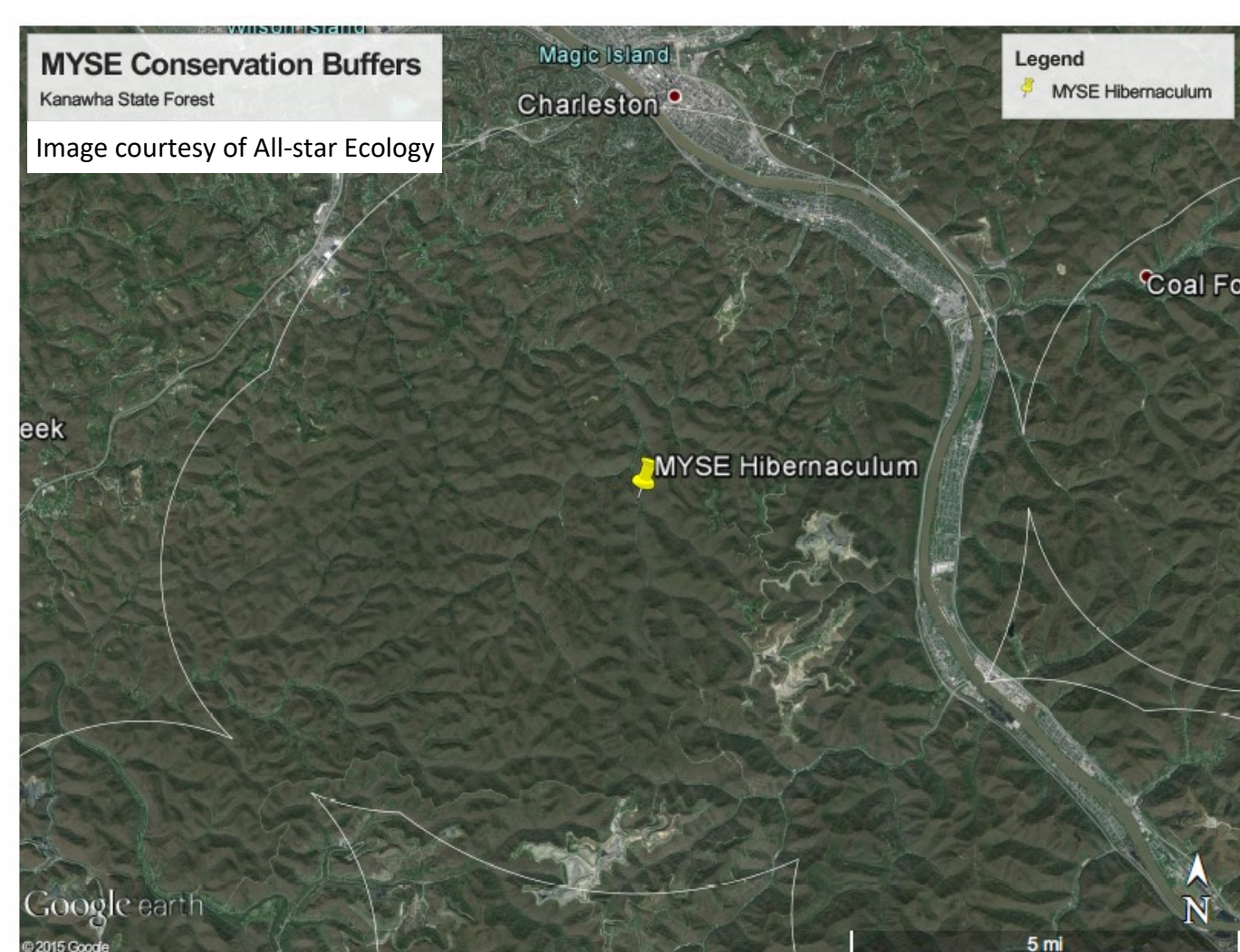
The first known *endangered species* bat colony found in KSF was one made up of Indiana Bat (IB) mothers nursing their pups. It was found in the southwestern corner of KSF in 2005 by a consulting firm hired by a coal company, as required by federal and state law, prior to mining near KSF. This effort resulted from the WV Department of Environmental Protection's (WVDEP) consultation with the U.S. Fish and Wildlife Service (FWS) as required by Endangered Species Act guidelines. Sometime between 2005 and 2009, that maternity colony was damaged by a gas well worker felling trees. Then, in 2014, a maternity colony was found on the west side of KSF during a survey preliminary to a powerline expansion.

Bat surveys conducted during 2005 and 2009 on Kanawha Fork and Middlelick Ridge prior to mining at the proposed Keystone Development No. 2 Mine (KD2) found that Northern Long-eared Bats (NLEB), had a maternity colony there. In the same year as the latter survey, a deadly fungus-borne disease called *White-nose Syndrome* (WNS) was detected in a few West Virginia bat populations. Populations of cave-hibernating bats have been decimated in several northeastern states since discovery of the disease in 2006.



By 2013, known NLEB hibernacula populations in WV had been cut nearly in half (48%). Then, during April of 2015, a spring emergence bat survey at the abandoned mines along this trail found that at least one of the mines served as a hibernaculum for the NLEB. Biologists captured a healthy female, nicknamed *Nora Lea* (see her photo at the upper left of this sign). The following month, on May 4, 2015, the NLEB was listed as *threatened* by the FWS, primarily due to WNS.

The Endangered Species Act has improved the lot for many species that were once rapidly headed for extinction. Actions that have a federal connection must be scrutinized for impacts to endangered species. In KSF, a powerline expansion in 2015 was regulated by the Federal Energy Regulatory Commission (FERC) and therefore it qualified for FWS scrutiny. Coal surface mining is regulated by the Office of Surface Mining, Reclamation, and Enforcement (OSM) and the WVDEP, and therefore must follow endangered species protection protocols established by consultation among the WVDEP, the OSM, and the FWS. When these agencies cooperate, endangered and threatened species are protected and there is minimal disruption to proposed projects. All-Star Ecology's suggested conservation buffer for the NLEB hibernaculum (MYSE on the map, below) will help the agencies guide future projects in the area.



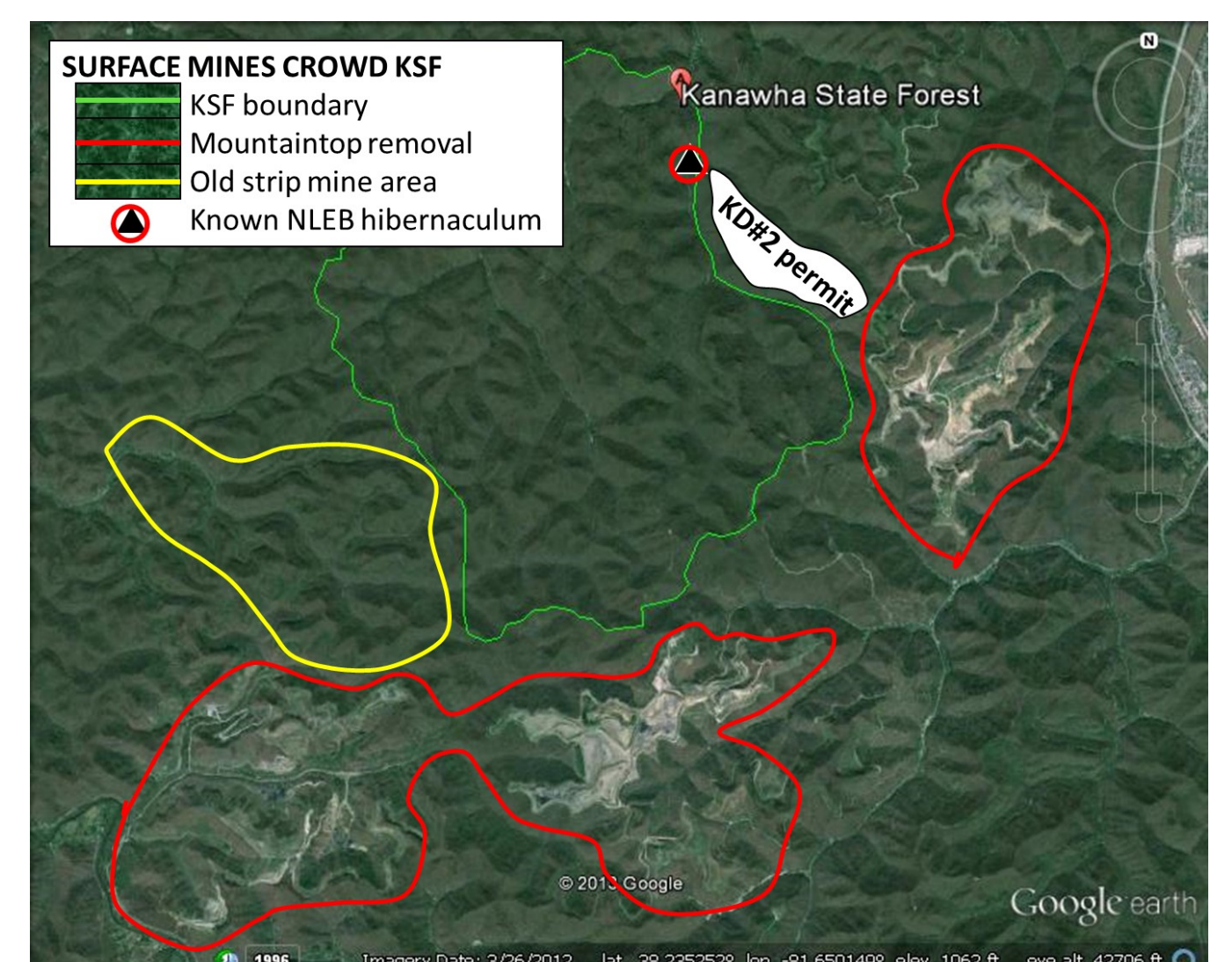
There are nine species of bats known to inhabit KSF. All of them are susceptible to a variety of dangers and many of those dangers are generated by humans. The IB and the NLEB were, in 2019, the only species of the nine so reduced in population because of one or more of these dangers that the FWS listed them as threatened or endangered. Two other KSF hibernating bats that have declined greatly since 2006 due to WNS and are being counted annually during hibernacula surveys are the Little Brown Bat and the Tri-colored Bat. Some of the natural dangers that may threaten survival of these species are predators (like owls and snakes), severe windstorms, sudden early onset of winter weather, and parasitic infestations (like White-nose Syndrome). Human-induced dangers include global warming, timbering, surface mining, and indiscriminate spelunking, which can spread diseases and disturb

and weaken hibernating bats.

Summer habitats in KSF are considered top quality for both the IB and the NLEB. Both species prefer roosting in hollow snags and trees or under loose bark in forested areas. They feed by catching a variety of flying insects on the wing, but the NLEB is also a gleaner, catching motionless insects on leaves and bark. Its relatively short, wide wings give it incredible maneuverability among tree leaves and branches. The IB often feeds along streams and other waterbodies. The abundance of native tree species in KSF, with their great diversity of insects, provide high quality food for nursing mothers during the pupping season. In addition to the tree-based insects, the flying adults of clean stream-based insects in KSF also provide good nutrition, especially in early spring when the bats emerge from hibernation. The abandoned underground mines in and near KSF provide suitable hibernation crevices for the NLEB, which prefer to sleep singly or in small clusters, tucked away in fissures and crevices between loose roof slabs.



The habitats of lands bordering KSF on the south and east have become increasingly hostile to the IB and the NLEB, as the forests have been timbered and the mountaintops blasted away, replacing the woodland vegetation with a landscape of grasses and shrubs (see photo map image, below). Polluted streams produce fewer aquatic insects, thus limiting the food available to bats that prefer hawking along stream corridors. The WVDNR's management of KSF as a forested recreational environment has maintained its high suitability for threatened and endangered species. Do your part to protect KSF by recreating thoughtfully.



To learn more, read this sign's other side.