NASA, Google data show North Korea logging in protected area

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Using NASA satellite data and Google Earth, a Purdue University researcher has reported finding evidence that North Korea has been logging in what is designated as a protected United Nations forest preserve.

Guofan Shao, professor of geo-eco-informatics, studies the Mount Paekdu Biosphere Reserve, a 326,000-acre forest preserve in North Korea. Since many researchers are unable to visit North Korea, Shao studies changes in the forest using remote sensing data.

The United Nations Educational, Scientific and Cultural Organization operates the Man and Biosphere Programme, which tries to understand the ecological, social and economic dimensions of biodiversity loss and reduce that loss in 551 sites worldwide. Shao said Mount Paekdu - together with an adjacent biosphere in China - has the world's highest plant biodiversity in a cool, temperate zone and is the habitat for many wildlife species, including the endangered Siberian tiger.

"This mountain is significant in terms of biological conservation," he said.

Shao and his collaborators started noticing through NASA satellite data that there were some changes happening to the land in North Korea. NASA images didn't have the resolution Shao needed to pinpoint what those changes were or how they were occurring, so he used Google Earth , which has a clear resolution down to 1 meter.

"Particularly in the core area, there should be no human activity - no deforestation," Shao said. "But when you look at the data with Google Earth, you can see the forest is no longer intact."

Google Earth images show that extensive logging has taken place in the North Korean biosphere. Shao estimated that as much as 75 percent of the forest in the core area had been removed in large strips.

"It's kind of a disappointment," said Shao, whose results were published in the journal *Biological Conservation*. "Hopefully more organizations, including governments, will pay more attention to the conservation issues there."

Without communication with North Korean officials or the opportunity to visit the site - both of which Shao has requested - there is no way to tell why the trees had been removed. Shao speculated that the land may be used for agriculture since North Korea suffers severe food shortages.

"I don't really understand what's going on in the nature area," Shao said. "They may want to grow something, or they may just want the timber."

Forest on the China side, in the Changbaishan Biosphere Reserve, also was damaged, but not by logging. Overharvesting of pine nuts damaged nearly every pine tree in certain zones of the reserve and all but eliminated a food source for about 22 species of forest wildlife. Pine seed harvesting in the biosphere was banned in 2007, but pine tree populations declined because of the harvesting.

Shao said he would continue to monitor the biospheres for changes in the landscape using remote sensing data and that he hopes the study will shed light on deforestation issues in East Asia. He said it is urgent to develop cross-border strategies that can combat both detectable and hidden degradations to preserve forests of ecological importance.

Provided by Purdue University