Paper challenges 1491 Amazonian population theories

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There's a scholarly debate brewing about whether pre-Columbian Amazonian populations settled in large numbers across Amazonia and created the modern forest setting that many conservationists take to be ‘natural.'

This view has become fashionable among many archaeologists and anthropologists, and is challenged in a recent paper from Dr. Mark Bush of the Florida Institute of Technology. The findings of Bush’s research may rekindle a debate has major implications for land use and policy-setting in the rain forest.

"We don't contradict that there were major settlements in key areas flanking the Amazon Channel -- there could have been millions of people living there," says Mark Bush, a British-born paleo-ecologist who travels to extremely remote rain forest locations to collect core samples from ancient lakes. He then analyzes those samples for pollen and charcoal and thus is able to conclude with a high degree of accuracy the extent of human settlement in that region.

"What we do say is that when you start to look away from known settlements, you may see very long-term local use," he says. "These people didn't stray very far from home, or from local bodies of water for several thousands of years. We looked at clusters of lakes and landscapes where people lived, and asked, did they leave their homesite to farm around other nearby lakes? No they didn't. These findings argue for a very localized use of Amazonian forest resources outside the main,

known, archaeological areas."

Bush says the evidence comes from a geographically diverse area: three districts, each with 3 (in two cases) or four lakes.

"In each we have one lake occupied and used, and the others little used or not used at all," he says. "So this is a total of 10 lakes that provide three separate instances -- one in Brazil, one in Ecuador and one in Peru, where there is evidence of long, continuous occupation of more than 5,000 years that did not spread to the adjacent, 8 to 10 kilometer distant lakes."

The findings are published in a paper titled "Holocene fire and occupation in Amazonia: records from two lake districts" that appears in a recent issue of *Philosophical Transactions of the Royal Society of London B: Biological Sciences*. Bush says this paper, and another forthcoming in the journal Frontiers in Ecology and the Environment, have important policy implications.

That's because the hypothesis of human-manufactured landscapes has been made popular by Charles Mann's book - 1491: New Revelations of the Americas Before Columbus – and could influence conservation policy in the Americas. That millions of people once populated the Americas, and that in Amazonia, at least, the rainforest is the product of long term human use, has been used as farmers and loggers as justification for clearcutting rainforests. Their argument, that the ecosystem already experienced vast landscape disturbance and proved resilient, relies on the ubiquitous influence of Pre-Columbian people, the suggestion that Bush's work rejects.

"These data are directly relevant to the resilience of Amazonian conservation, as they do not support the contention that all of Amazonia is a 'built landscape' and therefore a product of past human land use,"

Bush says. "Most archaeologists are buying into the argument that you had big populations that transformed the landscape en masse. Another group of archaeologists say that transformation was very much limited to river corridors, and if you went away from the river corridors there wasn't that much impact. That's what our findings tend to support."

Bush doesn't expect that his new findings will settle the debate, however.

"There's just too much passion on this issue. People who are inclined to believe what we're talking about will say this is very strong evidence, and say 'let's have more.' The archaeologists will say this study only examines two districts."

Bush himself calls the paper, co-authored with Claudia Listopad, William D. Gosling, and Christopher Williams of Florida Tech, Paulo E. de Oliveira of Universidade do Guarulhos in Brazil, Miles R. Silman and Carolyn Krisel of Wake Forest and Mauro B. de Toledo of Florida Tech and Universidade Federal Fluminense in Brazil, an important first step in making the case, through core sampling and pollen and charcoal analysis of sediment from seven lake bottoms, three in one district, four in the other, that much of Amazonia has not been transformed by human actions, and ideally should be kept that way, to preserve species biodiversity.

"The way to see this is as a sneak peak," he says. "It's a new way to look at landscapes and it's a new tool. The study needs to be replicated in more places before people will be persuaded, but it's certainly a warning shot across the bow."

"While the majority of archaeologists argue the rivers were the major conduit for populations," he adds, "there is an increasing vocalization that there was much more widespread habitat transformation; that you still had a bulk of people along the river but their influence extended

deep into the forest. It's still nebulous, and difficult to get people to map stuff, or put hard numbers on it, but there is a sentiment that the Amazonia has been disturbed and that the view of the Amazonian rainforest as a built landscape is gaining momentum. There are extremes at either ends, and the majority of people are in middle but there's a tendency of drifting toward the high end."

For example, he says 1950s population estimates were 1 million, in the 70s that estimate drifted up to 4 million; and in the 1990s drifted up to 10 million.

"We've now got a polarized community," he says.

At one end, he says, is Anna Roosevelt of the Field Museum in Chicago (she argues for large populations dispersed throughout Amazonia); at the other is Betty Meggers at Smithsonian (she argues these were very primitive people with low population).

Mark's studies are the first to apply core sampling methodology to determine through coal and pollen levels, how much human activity was going on.

Source: Florida Institute of Technology