Around the world, people are converting forest to pasture to raise cattle, a practice that can lead to the loss of biodiversity.

Meat-eaters may speed worldwide species extinction, study warns

By Virginia Morell Aug. 11, 2015

Diets rich in beef and other red meat can be bad for a person’s health. And the practice is equally bad for Earth’s biodiversity, according to a team of scientists who have fingered human carnivory—and its impact on land use—as the single biggest threat to
much of the world’s flora and fauna. Already a major cause of extinction, our meat habit will take a growing toll as people clear more land for livestock and crops to feed these animals, a study in the current issue of *Science of the Total Environment* predicts.

“It’s a colossally important paper,” says Gidon Eshel, a geophysicist at Bard College in Annandale-On-Hudson, New York, who studies how human diets affect the environment, and who was not part of the study. Researchers have struggled to determine the full impacts of meat consumption on biodiversity, Eshel says. “Now we can say, only slightly fancifully: You eat a steak, you kill a lemur in Madagascar. You eat a chicken, you kill an Amazonian parrot.” That’s because species-rich habitats are being converted to pasture and feed crops as the human appetite for meat swells.

But others disagree that livestock production is the leading cause of habitat loss. “They’ve created [a] stickman to be knocked down,” says Clayton Marlow, a grassland ecologist at Montana State University, Bozeman, “without accomplishing anything for either the ecosystem or the poor.”

Previous studies have explored links between modern livestock production and climate change, water pollution, and the loss of some herbivores and top predators such as wolves and lions. “But how is it impacting other species?” asks Brian Machovina, an ecologist at Florida International University in Miami, and the paper’s lead author.

To find out, he and his colleagues looked at studies that identified the world’s biodiversity hotspots—those areas that contain the highest percentage of endemic plant and animal species. Most are located in tropical nations. Then, the researchers picked out countries that are most likely to expand their industrial livestock operations, and determined where and how much land will be lost to grazing and growing crops to feed livestock. Using data from the Food and Agriculture Organization and other studies about the production of cattle, pigs, and chickens in these countries from 1985 to 2013 and the amount of land the livestock required, they extrapolated the likely future expansion of agricultural lands. Finally, they created maps of overlap.

Many of the places expected to see the greatest shift in land use from forest to livestock are in 15 “megadiverse” countries, which harbor the largest number of species, Machovina says. “By 2050, given current trends, these countries will likely increase the lands used for livestock production by 30% to 50%”—some 3,000,000 square kilometers—the researchers estimate.
The habitat loss is so great that it will cause more extinctions than any other factor, the study notes, particularly when coupled with other deleterious effects of livestock production, including climate change and pollution. “These changes will have major, negative impacts on biodiversity,” Machovina says. “Many, many species will be lost.”

The trend toward meat-eating is already having an impact, the scientists say.

Citing other studies, they note that more than three-quarters of the land previously cleared in the Amazon region is now used either as pasture for livestock or to raise feed crops for domestic and international markets. And the rapid deforestation there continues: Another 1898 square kilometers of forest were removed over the last year. Further, more than half of the Amazon’s Cerrado, a woodland savanna ecosystem known for its rare species, has also been cleared for raising cattle and soy. Habitats have also been—and continue to be—lost throughout Central and Latin America for the same reasons, the scientists say, who see a similar future for Africa.

By revealing where the most flora and fauna will disappear as lands are converted to agriculture for meat production, “the study equips us with a means to quantify the costs of our dietary choices in terms of species loss,” Eshel says.

The study also “suggests potential solutions that merit serious consideration,” notes ecologist David Tilman from the University of Minnesota, Twin Cities, who was not part of the work. To stop the loss of biodiversity, Machovina and his colleagues recommend that people limit meat consumption to 10% of their calories; eat more fruits and vegetables; replace beef—the most land-hungry meat—with pork, chicken, and fish; and change livestock production practices. But Tilman warns this won’t be easily done. “The challenge is to find solutions that meet human needs and simultaneously protect remaining natural habitats.”

Meeting the challenge of “feeding the world’s growing population with a shrinking land base” can’t be done without “intensive animal and crop production,” says Marlow, who argues that the real problem facing biodiversity is the loss of arable land to development such as urban and slum sprawl. He adds that developing countries are adopting industrialized livestock production because it’s efficient and “the only way we can feed the world’s growing population.”
If eating meat means consuming habitat, the world might consider food writer Michael Pollan’s advice: “Eat food. Not too much. Mostly plants.” It could save a lemur and a parrot.

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