TIME TO GROW UP: VERTICAL FARMING AS A POTENTIAL SOLUTION TO WILDLIFE ISSUES IN THE UNITED STATES

BY

JONATHAN MORRIS

It is clear that urban expansion and population growth are both major contributors to the dire situation that faces wildlife in the United States.1 These animals are being driven from their natural homes and forced into the suburbs and cities of our country. As a result, opportunities for human conflicts with displaced wildlife abound. Unfortunately, displacement is not the only issue. A recent study found that changes in land use “could lead to the loss of up to 40% of the species in some of the most biologically diverse areas around the world.”2 But, where has all the land gone?

A recent UN report on environmental impacts of consumption and production concluded that “agriculture and food consumption are identified as one of the most important drivers of environmental pressures, especially habitat change . . . .”3 In fact, the UN report found that “[f]ood production is the most significant influence on land use . . . [, and] both meat and dairy, in general require more resources . . . than plant based alternatives.”4 While it is absolutely true that not all of the agricultural land in the U.S. is used for livestock production, much of the land is used to grow food to feed the animals that is then eaten. In fact, “more than half of the world’s crops are used to feed animals, not people.”5

---

2 Id.
4 Id. at 78-9.
5 Id. at 80.
Unfortunately, the issues involving wild animals do not end with displacement. In the wild, species often prey on others. This is the way of the world, unless that prey is owned by a livestock producer. That is when the government gets involved. A pack of wolves in Washington State recently discovered this the hard way. This group of wolves, known as the Profanity Peak wolf pack, killed a nearby cattle rancher’s livestock when he released them “directly on top of their den site.”

The Washington Department of Fish and Wildlife determined that the solution involved shooting the wolves from a helicopter, which resulted in the accidental killing of the pack’s breeding female.

It is important to note that the Washington Department of Wildlife is by no means a rogue state agency. There is an entire division of the USDA’s Animal and Plant Health Inspection Service dedicated to “resolv[ing] wildlife conflicts to allow people and wildlife to coexist.” This somehow translated into the unnecessary deaths of 2.7 million wild animals in 2014. Wildlife Services attributes approximately 31% of the “occurrences of damage or threat to resources by wildlife” to threats to agriculture.

Further, while population density is already a well-known issue, the forecast is somewhat grim. The U.S. Census Bureau estimates that by 2060, the U.S. population is expected to increase by nearly 100 million people. A population spike, which seems inevitable, leads to

---

7 Id.
increased demand for food and, thus, even less natural habitat for wildlife. More than 37,000 “threats’ were reported to almost every agricultural product from alpacas to asparagus and cattle to cucumber.¹²

If land-use change is a major contributor, there may be some hope. Vertical farms, which are typically located in urban centers, are essentially tall structures dedicated to growing crops in a controlled environment. Proponents of this new technology claim that vertical farms may be the future of farming.

In September 2016, AeroFarms will begin seeding a 70,000 square foot vertical farm in Newark, New Jersey that will yield up to 2 million pounds per year, according to the company’s website.¹³ The facility will use an “aeroponic” system that replaces sunlight with LEDs and a traditional irrigation system with a closed-loop misting system that the company claims will use 95 percent less water than field farming.¹⁴ Moreover, because everything is grown in a controlled, indoor environment, there is no need to use pesticides, herbicides, or fungicides, which results in a significant increase in productivity.¹⁵ AeroFarms believes that its technology will result in a 75 times increase in productivity over field farming. A recent study concluded that “[vertical farming systems] present[ ] a viable alternative to conventional horizontal growth

---

¹² Occurrence of Damage and Threats to Agricultural Resources by Wildlife Reported by Wildlife Services, USDA (last visited Sept. 25, 2016), https://www.aphis.usda.gov/wildlife_damage/prog_data/2014/C/Table_C_Full_Report.pdf. While reported threats to “agricultural resources” includes a number of fruit, vegetable and grain crops, the vast majority of issues result from wildlife threats to livestock. For example, the most common threat to a non-livestock resource was corn. The total reported threats to corn for the year 2014 was “field corn.” In comparison, there were 1,989 reported threats to adult cattle; 9,478 reported threats to calves; 1,559 for chickens; 3,059 for adult sheep; and 5,934 for lambs. Id.


¹⁵ Id.
systems by optimizing growing space use efficiently, thereby producing more crop per unit area.”

Vertical farms also mean that less infrastructure is required to get food to population centers. Most crops, which are typically grown in rural areas miles away from cities, require transportation, which means trucks, trailers, gas, and roads. “Habitat loss and deforestation represent the main threats to wildlife species, and are closely linked to the expansion of roads and human settlements.”

One study found that infrastructure related to farmlands and agricultural intensification may be a contributor to biodiversity decline. Currently, more than half of the entire land area of the United States is used for agriculture, and more than half of that is used for pasture, range, and grazing.

Vertical farms also have the potential to reduce the number of conflicts between agricultural interests and wildlife. Threats reported to Wildlife Services often result in the intentional and unintentional deaths of wildlife. Among the animals killed by the agency in 2014 were badgers, black bears, cardinals, chipmunks, cormorants, coyotes, deer, feral dogs, ducks, golden eagles, egrets, falcons, foxes, geese, hares, hawks, herons, ibises, lizards, mice, otters, owls, pelicans, porcupines, prairie dogs, rabbits, raccoons, roadrunners, robins, sheep, skunks, snakes, squirrels, toads, turtles, vultures, and wolves. Wildlife Services agents use lethal

---

16 Id.
18 Id.
21 In 2014, Wildlife Services killed 21,194 Canada Geese. Id.
22 In 2014, Wildlife Services killed 15,698 prairie dogs. Id.
23 In 2014, Wildlife Services killed 11,261 raccoons. Id.
24 In 2014, Wildlife Services killed more than 8,000 squirrels. Id.
25 Id.
methods that include, but are not limited to, poisoning, gassing, traps and snares, and guns shot from the ground or aircraft.\textsuperscript{27}

Ultimately, logic seems to indicate that the implementation of vertical farming technology and a reduction in the consumption of animal products would free up a significant amount of land for wildlife, which is essentially the view propounded by the UN report on environmental impacts of consumption and production.\textsuperscript{28}

While the implementation of vertical farming and an effort to reduce the consumption of animal products is unlikely to resolve all of the threats that currently face wildlife in the United States, it is certainly a step in the right direction. We have cut down their homes, plowed over their habitat, pushed them out, and killed them when they got in the way. All of that in the name of civilization. The least we can do is make a concerted effort to reduce our impact on them, and allow them to live out their days in peace and quiet in their natural habitats.

\textsuperscript{26} Traps and snares, alone, do not typically result in death. Animals caught in these devices often succumb to prolonged exposure to the elements and injuries. Those that don’t are killed upon the return of Wildlife Service agents. HSUS wildlife disservice.


\textsuperscript{28} See generally United Nations, \textit{supra} note 3.