

## DISEASE PANDEMICS AND THE POPULATION FACTOR

An NPG Forum Paper  
by Nathaniel Gronewold

### ABSTRACT

It's been only a few years since the world exited the height of the COVID-19 coronavirus pandemic, but we're now facing a potentially deadlier new pandemic threat. This threat stems from a virus that health professionals have been monitoring for two decades: H5N1, more commonly known as bird flu or avian influenza. Once mostly the bane of chicken farmers, H5N1 has now infected domesticated animals and wild species worldwide. It's now jumping from dairy cows to humans. Each day the threat grows worse. As with COVID-19, bird flu infections could quickly escalate into a pandemic, facilitated by our over-populated world.

This Forum paper you're reading now may be a place for like-minded folks advocating for a smaller human population, but let's all agree that no sane person alive would look forward to the pain that an avian flu pandemic could deliver. COVID-19 killed at least 7 million people worldwide in just three years; an H5N1 pandemic could be by orders of magnitude worse. We must do everything we can to prevent it while encouraging our society to embrace future population declines and a more sustainable economy for everyone.

### THE NIGHTMARE

It's very difficult for any alternate news item to get noticed during the noise of a US presidential election season, let alone the tumultuous 2024 cycle. This became nearly impossible after the June 27 presidential election debate. The debate and its aftermath were practically the only things in the news for days, even weeks. That's why many of this Forum's readers probably missed far more important news that ran the Tuesday following that debate. Here's the July 2 headline by Forbes:

"Moderna scores federal funding for mRNA bird flu vaccine as pandemic fear grows."<sup>1</sup>

The Associated Press (AP) put it this way:

"The US will pay Moderna \$176 million to develop an mRNA pandemic bird flu vaccine."<sup>2</sup>

This news, I assure you, is far more consequential than Joe Biden's recent debate performance and his decision to drop out of the 2024 presidential race.

Quietly and without much fanfare, the US government awarded a contract to Moderna for the company to begin "late-stage development" of avian influenza vaccines capable of tackling newer emerging strains of H5N1. Moderna made the announcement to shareholders, which is how the media found out. AP said the \$176 million investment is the federal government's not-so-subtle way of telling Moderna to speed things up.

That's because we're running out of time.

Bird flu has been detected in every US state except Hawaii. As of this writing, it's been detected on every continent except Australia – yes, bird flu has hit animal populations in Antarctica, and its rapid spread on the Antarctic peninsula is even disrupting penguin research there.<sup>3</sup> A new H5N1 outbreak in animals may be discovered in Australia as well by the time this Forum paper is published. "Australia has had avian influenza outbreaks in poultry previously," Dr. Debbie Eagles, Director of the Australian Center for Disease Preparedness, told me and others in a

recent call she and her colleague, Frank Wong, held for reporters.

More than 160 dairy cattle herds in the United States are now infected with avian influenza.<sup>4</sup> Normally, when this virus is detected on a farm the government orders all the animals to be killed. Maybe dairy farmers hold more political sway than chicken farmers because the authorities are simply monitoring the ongoing outbreak on dairy farms. They are assuring us that the risk to the public is low; yes, the H5N1 virus is in the cows' milk, but the virus is destroyed during pasteurization, they say.

Indeed, as of this writing, the authorities on H5N1 are insisting that the threat to the human population is low. That's what they said in the early days of COVID-19, but the situation this time around is different, I will admit. For starters, we know a threat is lurking and our scientists are keeping a close eye on things (we assume, or hope). By contrast, COVID-19 caught the world completely off guard.

Since April, at least four US farm workers have contracted bird flu from dairy cows while nine have caught the virus at poultry farms, and these are just the ones we know about.<sup>5</sup> Again, we're told that the risk to the broader population is low since the virus hasn't yet evolved to be passed from human to human. But it now passes from birds to a wide array of mammals, including domestic cats, penguins, sea lions, walruses, cows, and other species, including humans. Pessimists worry that it may be only a matter of time for a strain to evolve that spreads among humans as easily as the common cold. Thus, the Moderna contract and the frantic push to get a handle on this problem before it's too late.

The ongoing US outbreak marks the first time ever that avian influenza has been discovered thriving in cattle and jumping from cows to humans. Thus far, the people who contracted the virus at dairy farms in Colorado are reported to have suffered only mild symptoms, suggesting that this particular strain hasn't evolved to become too lethal to humans – we hope.

This hasn't been the case in the past when people caught the virus directly from infected birds or bird carcasses. Of known cases of past bird-to-human infections, H5N1 killed about half its victims.

Why is bird flu a bigger story than the US presidential election? Because as terrible and traumatic as the COVID-19 pandemic was, COVID ultimately proved fatal in about 63 out of 100,000 cases, for a mortality rate of less than 0.1%. Bird flu has an estimated mortality rate of “somewhere

between 25 and 50%” as former Centers for Disease Control director Robert Redfield said in a recent interview with News Nation.<sup>6</sup> That means unless it can be stopped or quickly contained, a bird flu pandemic could conceivably kill billions in the time it took COVID to kill millions. “It's not a question of if, it's more of a question of when we will have a bird flu pandemic,” Redfield added.

Now weigh this level of lethality against all that we have learned about the near impossibility of stopping a viral pandemic in these modern times, thanks to our recent experience with the novel coronavirus.

Despite the draconian lock-downs, travel bans, forced business closures, forced school closures, and government vaccine mandates, COVID-19 spread throughout the entire world anyway and is now part of daily life. Almost everyone has caught it or will at some point. And the COVID-19 pandemic left people bitter and distrustful of governments, and less likely to blindly accept government directives during the next pandemic. Given how the COVID-19 response was botched, would we fare any better during a far more dangerous avian influenza pandemic? I certainly hope so, but I fear that won't be the case.

OK, so now that you're up to speed on the latest H5N1 situation, perhaps you're now wondering: What does any of this have to do with population?

Everything. Absolutely everything.

The modern world is ideally suited for a catastrophe like a global H5N1 pandemic. Moderna's shareholders apparently agree.<sup>7</sup> Though far too many of us don't want to hear it, the fact that it's even remotely probable (unlikely, perhaps, but plausible) that this virus might, under certain evolutionary conditions, end up killing billions of people is all the proof we need that there are far too many of us on this planet. Our airports are far too crowded, our cities are far too densely populated, and our methods of producing enough animal protein to feed 8 billion people are far too susceptible to serious, even potentially fatal, problems.

An over-crowded planet, interconnected like never before, massively increases the likelihood of disease pandemics like COVID-19. H5N1 is the one we're concerned about the most today. There will be other pandemic threats in the future.

And if we fail to head off H5N1? The darkest take is that we could witness something like a modern-day version of the bubonic plague that devastated Europe

in the 14th Century. I think this is overly pessimistic, but this kind of talk exposes what's really at stake.

Experts say that the world is better prepared for H5N1 than it was for COVID-19. I believe them. I truly do. Vaccines are already in development. There are known antiviral treatments to alleviate symptoms. The world's healthcare industry is mobilized, monitoring the situation carefully, ready to respond. But healthcare leaders can only do so much.

We also need a more sustainable society with far lower population numbers. Our massive, hyper-crowded human population is absolutely, unquestionably 100% a factor in H5N1 pandemic risk assessments. A much lower human population could help prevent a nightmare of this magnitude from ever coming to pass.

For now, we must do everything to stop avian influenza in its tracks. The World Health Organization (WHO) recently reported the death of a patient in Mexico with bird flu. WHO officials have no idea how this person contracted the disease in the first place.<sup>8</sup>

## DECIMATING FACTORS

In early February 2020, my wife and I attended the Sapporo Snow Festival in Hokkaido, northern Japan (at the time we were living about four hours east of Sapporo). We had a blast. One evening in particular it was bitterly cold, so we took brief refuge in one of the many heating tents set up by the festival's organizers. Plenty of others joined us, including scores of polite and happy tourists speaking Chinese. My wife would later remark on how some of these guests were coughing quite a lot. We chalked it up to their chain smoking.

Months later, the Sapporo Snow Festival of 2020 would come to be recognized as one of the epicenters of the COVID-19 outbreak in Japan. This was all determined many months after my wife fell ill with a severe and mysterious illness after we returned home from the festival. Her symptoms were a fever and persistent cough, sometimes violent enough to make her vomit. I later caught the same bug, a strange cold-like infection that only caused a fever and violent coughing, which is unusual for me because I normally don't get fevers and a cold or flu usually gives me the sniffles, not coughs. Back then, Japan wasn't testing for COVID, so nobody raised any objections when I later recovered and then flew down to New Zealand to join my parents for a two-week tour of the North Island. We encountered plenty of tourists there, as well. At the time, there was no reason to think I had contracted this emerging bug. The authorities assured us that it was bottled up and the risk was low.

The day I flew back from Auckland to Hokkaido, the Hokkaido prefectural government declared a state of emergency while I was in the air. The very next day, New Zealand shut its airports and banned all incoming flights. I had gotten out in the nick of time. It took around six weeks for the Asia-Pacific to go from noticing something peculiar happening in China to full-scale panic and lockdown mode. But it was already too late—COVID had already taken solid hold in China, Japan, New Zealand, and beyond.

I was still a beat reporter based in Japan when the pandemic began. I started reporting on the situation in earnest, only to raise the ire of one of my US editors. He insisted that I not spend too much time on it because he said COVID would never become a big story. Either he was steeped in denial or not all that bright. I tried to convey to my team members back in the States the significance of the panic that was gripping Asia. They insisted it would stay confined to Asia. I argued the disease was already in the USA and that it was only a matter of time until the same panic took hold there. They refused to believe it.

We all know how things turned out.

COVID spread like wildfire because very large population centers in Asia (and later, globally) are connected in mere hours by air. There are direct flights between even mid-sized cities in the region; not everyone needs to connect via Beijing or Tokyo. Connecting these Asian population centers involves squeezing millions of people through airport security stations each day, and then cramming them all into confined, pressurized steel tubes where the passengers share recirculated air for a few hours until arriving at their destinations. Well before COVID, I had noticed that I was always coming down with a cold after flying. My wife recommended that I start wearing a mask during commercial flights. I tried this and it worked, for a while.

Crowding facilitates the spread of diseases. This is just a fact. This is as true for the human population as it is for the rest of the animal kingdom.

In the wild, the odds of a rapid spread of a disease increase with higher animal population numbers and higher animal population densities. Ecologists sometimes support the culling of some wild animal populations they believe have grown too large because they worry, in certain instances, that nature will eventually do the culling for them and in a way that threatens the very survival of that species – via disease.

There are limits to growth, and limits to population growth. There are also factors in play that

either restrict growth or “correct” it in catastrophic ways. In nature, an ecosystem’s carrying capacity is not the only factor determining the size and density of a species’ population. The same rules apply to human societies. I think more demographers, the folks who study human population dynamics, should be trained on animal population dynamics, as well. I firmly believe the insights from ecological studies of animal population dynamics are absolutely relevant to any discussion of human demography. I’m fully aware that the field of demography itself disagrees with me here, but it would be nice if more demographers would become open-minded in this respect. Looking beyond economic factors and incorporating ecological factors could do wonders for demographers, and economists, for that matter.

Animal populations rise and fall and rise again for a variety of reasons, but the entire process is best explained as a sort of battle between the innate biotic potential enabling the expansion of a species’ population versus the limiting and decimating factors determined to put a ceiling on it, especially in finite systems like the one we call Earth.

Biotic potential basically refers to the degree to which an animal population can expand. A species that develops into sexual maturity quickly, reproduces at very large numbers, and then lives for a long time will have an enormous propensity to grow and grow in population size. Let’s take the example of the lionfish, an aquatic species native to the Pacific and Indian Ocean basins. They mature quickly. A female lionfish can lay thousands of eggs at a time, and can breed multiple times per year. The average lionfish can live for about 15 years. This species is kept in check in its native habitat but has no natural predators in the Atlantic Ocean and Caribbean, that’s why a lionfish infestation has pretty much conquered the Western Atlantic, and it only took 20 years. Whales grow their numbers much more slowly by comparison. Though whales can live far longer, they take longer to reach sexual maturity and they breed slowly; thus, whale populations still haven’t fully recovered even after more than 40 years of a blanket moratorium on whaling.

Predators are a limiting factor—lionfish populations in the Pacific are limited by their natural predators. Resource availability is another. Given enough time, animals can adapt to overcome limiting factors and expand to impressive population sizes, even with weak biotic potential. This is what happened to humans.

Our hunter-gatherer ancestors spread across the globe thanks to a remarkable ability to adapt resource acquisition strategies to new environments. Eventually, humans began growing their own food, expanding their available resources exponentially. But the human population was still kept in check by other limiting factors, the most potent one being disease – people generally fell ill and died well before they reached what we consider today to be old age. This changed dramatically with vaccines and modern medical practices. Industrial agriculture introduced another boost to human population numbers. Our population exploded in turn.

But what about decimating factors? Oh, they’re still very important.

As with humans, animals will sometimes overcome or adapt around limiting factors to achieve enormous population numbers. They may even sustain these high population numbers and high population growth rates for some time. But an end always comes, because (as I’ve said repeatedly in this Forum) nothing grows forever.

If factors gradually limiting a population’s size (like resource availability or deaths from natural predation) are overcome, then given enough time, a decimating factor will appear to drastically lower population numbers. Sometimes there’s an “overcorrection” that can lead to extinctions – think of the asteroid impact that most paleontologists believe drove dinosaurs to oblivion about 64 million years ago. As the name suggests, a decimating factor is anything that acts to decimate an animal population. They can be natural disasters, like a volcanic eruption or meteor strike. A devastating drought, perhaps. They can also come in the form of disease pandemics – a viral infection that passes easily from individuals living in crowded colonies, killing scores of them before the population can develop any natural immunity to help guard against the attack.

From the collapse of the Roman Empire to the 1300s, farming, trade, and early forms of mechanization helped Europe’s population swell to at least 50 million people, perhaps up to nearly 100 million by some estimates. However, though the farms grew enough food to sustain this population, European cities were notoriously crowded and filthy, ideal environments for disease. The humans of this period had conquered limiting factors like predators and resource scarcity, but they unwittingly laid the foundation for a particularly nasty decimating factor to sweep the continent. It only took seven years for

the bubonic plague of the mid-14th Century to kill approximately half of Europe's population.

It's unlikely that H5N1 could render a similar level of devastation in the 21st Century given our modern communications and health infrastructure. Nevertheless, the consequences could still be catastrophic given our 8-billion strong population, knitted together as it is via airports, railroads, highways, and sea lanes.

"The virus is still not adapted to infection in humans," Australian Center for Disease Preparedness official Dr. Frank Wong told us during that press briefing. "The risk is low."

Despite this, he added "avian influenza viruses have the potential to have this spillover infection, and that's why that is so important that infected properties are locked down and the outbreak is controlled and eliminated as soon as possible."

## THE STAKES

Colorado, the epicenter of the current farm outbreak in the US, is now requiring H5N1 testing at all dairy operations in the state.<sup>9</sup> What does this mean? How concerned should we be?

Recently published research led by University of Wisconsin-Madison scientist Yoshihiro Kawaoka reported on an investigation into an avian influenza outbreak at a dairy farm in New Mexico. The study found that the strain of the virus detected there had acquired an adaptation that makes it easier for the virus to pass to humans.

"The authors went on to investigate receptor binding and found that bovine H5N1 binds to both avian-like and human-like sialic acid receptors," according to a synopsis of that study. "This dual receptor binding specificity has not been observed for older circulating H5N1 viruses." In other words, this is something new.

The researchers discovered that mice and ferrets are contracting the virus through cows' milk. The bottom line: H5N1 is evolving in ways that make it easier to spread to and infect a wide variety of mammal species, and not just avian species. "Viral spread has since been documented across herds and infection has been seen in other mammals, including in humans, indicating an increased public health risk," according to that study.<sup>10</sup>

Some of the information about H5N1 that's getting out now will sound familiar to anyone who followed COVID news. This includes details on how

H5N1 could acquire the ability to infect other species. "We've all heard about the spike protein on the COVID virus," the Australian Center for Disease Preparedness' Frank Wong told us at that recent briefing. "The [avian] influenza virus has similar proteins on their surfaces." He stressed that the virus still hasn't adapted in a way for it to easily infect humans and pass between them. The concern is that it's heading in that direction.

A separate study generated equally troubling findings.

Investigating the H5N1 presence on US dairy farms, researchers reported that H5N1 is adapting in ways that facilitates its propagation both between and within species. "Analysis of whole genome sequences obtained from dairy cows, birds, domestic cats, and a racoon from affected farms indicated multidirectional interspecies transmissions," according to the preprint. "Epidemiologic and genomic data revealed efficient cow-to-cow transmission after healthy cows from an affected farm were transported to a premise in a different state." The researchers said they uncovered clear evidence "underscoring the ability of the virus to cross species barriers."<sup>11</sup>

Health researchers are finding the H5N1 virus pretty much anywhere birds can fly. I could be wrong (and I hope I am) but my guess is that it's currently spreading in Australia, as well; it's just that animal health monitors there haven't discovered it yet. One study published earlier this year documented a case of H5N1 being detected in New York City from infected birds.<sup>12</sup> The virus' spread on dairy farms is causing particular concern, mainly because it's the first time H5N1 has been seen infecting cows and because it's spreading from cows to other species, humans included. Officials are increasingly worried that the virus could spread to pigs, a development that would increase the odds of an H5N1 strain emerging that's capable of passing from humans to humans.

We now know that milk sold in 10 states showed traces of H5N1.<sup>13</sup> Public health officials are now urging consumers to avoid unpasteurized milk. In a sign of growing public defiance of experts' recommendations, news reports said sales of raw milk in the US actually went up after this health alert was put out there.

Previously found only in wild birds, especially waterfowl, H5N1 made the jump to farm chickens long ago. Today, it's an interspecies ailment, adapting to threaten a wide range of mammals. It can be found from Alaska to Tierra del Fuego and the Antarctic

peninsula, from Finland to South Africa. Humans made COVID a globe-spanning virus; H5N1 has already achieved this feat all on its own via wildlife.

Scientists have confirmed that H5N1 has been detected throughout the world in at least 40 different mammalian species, including squirrels and polar bears. This could mean one of two things. “This effect could just be attributable to the current high H5N1 infection rates throughout the world, which means the virus is reaching more areas and mammal species living in these places,” said one study. Or “the dynamics of the virus may also be changing, in which case its infectivity in unusual species such as mammals is probably increasing.”<sup>14</sup>

It’s critical that we crack the mystery behind the rapid spread of H5N1 in dozens of species worldwide. Arguably the biggest unanswered question is this: How is H5N1 mutating? Is the virus adopting traits that allow it to multiply in mammal tissues through mutations happening within infected birds, or within these infected mammal species? “Some researchers have reported mutations compatible with adaptation to mammal replication, which is concerning and requires attention,” researchers said in a broad literature review of H5N1 studies. “However, evaluating whether those mutations happen in wild birds before mammal infections or arise *de novo* in mammals after infection is important.” In other words, “mutations that facilitate replication of the virus in mammal hosts... could be of concern.”<sup>15</sup> That’s putting it mildly.

It bears repeating here that cases of human infection are still exceedingly rare, especially when measured against the current rising tide of confirmed animal infections.

As noted in the wide-ranging literature review referenced in the paragraphs above, which was published in the March 2024 edition of *Emerging Infectious Diseases*, for the two decades between 2003 and 2023 health authorities detected human H5N1 infections in 878 individuals. That’s an average of about 44 human cases per year globally. Most of these infections were bird-to-human transmissions that happened in Asia and Africa. Rare, yes, but it’s the mortality rate that’s most troubling observers trying to get a handle on this situation. Of the 878 people who contracted H5N1 over the past twenty years, 458 of them died of the disease, equating to a 52% mortality rate. Again, at the height of the COVID-19 pandemic the novel coronavirus was believed to be fatal in just 0.1% of cases. The authors of this particular H5N1 study stress that the risk of human-to-human spread is

still low. In the very next breath, however, they note that the Spanish influenza virus that caused the pandemic of 1918-1920 “developed from an avian influenza virus that adapted to humans.”<sup>16</sup>

That’s concerning, to say the least. Estimates vary, but most experts believe the Spanish flu killed about 25 to 30 million people worldwide, back when the world’s population was about 1.8 billion people. A low-end estimate puts Spanish flu fatalities at around 18 million people. Thus, even the most optimistic assessments by historians say the Spanish flu pandemic probably killed at least 1% of the world’s population. 1% of 8 billion is 80 million. That’s a more optimistic assessment of what a modern-day H5N1 pandemic might look like. The pessimistic assumptions predict a far higher total fatality figure.

The stakes simply don’t get any higher than this.

Our human population now stands at 8 billion and rising. Avian influenza has been found to be lethal to humans in 50% of cases over the past 20 years. Obviously, this explains why the US government is now showering Moderna with money and ordering the company to speed things along as far as vaccine development is concerned. Time may be of the essence.

In a study conducted last spring, researchers detected H5N1 in wastewater samples taken from nine cities in Texas. Those researchers declined to identify the cities in question, underscoring the extreme sensitivity of this discussion.

## THE POPULATION FACTOR

Let’s step back for a moment.

An H5N1 pandemic could be utterly devastating in a way that no society has experienced since the 14th Century bubonic plague, but some optimism is called for here.

14th Century European cities were filthy and disorganized, the perfect places for diseases of all sorts to grow and spread. Medical science was in its infancy back then. Most societies were organized in city states with limited governing capacities. Our world is one of hygiene, modern medicine, modern communications, and governments amply capable of organizing health responses touching millions of people. US health authorities were arguably too slow to get a grip on the ongoing H5N1 outbreak at dairy farms, but they seem very attentive now, and they are mobilizing a response and containment plans. Thus, the very recent decision by Colorado officials to mandate H5N1 testing at dairy farms. I expect we’ll see more such

announcements coming in the near future.

“The risk to humans is low,” they keep telling us. But the recent and ongoing accumulation of bad news regarding H5N1 suggests that, at the very least, we could be very close to a precipice. Now may be the time to have some very serious adult conversations about population growth and the industrial agricultural systems we’ve developed to feed our huge population, and how governments approach both topics in terms of public policy and public rhetoric.

In some US states, it’s literally illegal to expose the filthy, unhygienic, and unhealthy conditions existing at dairy farms, feed lots, pig farms, chicken farms, and other modern animal agriculture facilities to public scrutiny. These places are best described not as farms at all, but rather as industrial facilities growing and processing animals for food. The living conditions for the animals raised for consumption mimic, in many ways, the conditions of 14th Century European cities – crowded and filthy, littered with urine and feces and who knows what else. Insects, rats, and vermin regularly come and go, while the animals themselves are confined for the duration of their miserable lives to tiny spaces designed only to facilitate their growth.

We’ve long been told by animal agriculture companies and the governments that protect them that these conditions must exist as they do to feed a population of 8 billion people. Today, the greatest threat to human public health is festering in these very poultry plantations and dairy farms. H5N1 has found our industrial animal agriculture infrastructure to be an excellent place to shelter and evolve new ways to infect and kill animals, and us. So, while we’re kept busy trying to contain H5N1, maybe now is the time for governments to pressure companies to find new and better ways to grow food; to have agribusiness adopt practices that don’t pose so much danger to the public. It’s long been theorized that the next great disease pandemic to sweep humanity could originate out of factory farming. Now we’re getting disturbingly close to seeing this prediction come true.

And what of population size?

Long story short, the larger and more crowded the human population, the greater the risk of a devastatingly corrective decimating factor like a deadly global pandemic entering the picture. As it is with nature, so it is with society.

I proudly believe that the world’s human population must fall, but gradually and in a more

normal fashion, with low birth rates pushing demographic forces steadily in that direction, as we see happening now. History tells us that some 80% of Florence, Italy died during the bubonic plague. That catastrophe left a permanent mark on that city visible to this day. I never, ever want to experience seeing one quarter to one half of humanity perish in under five years. Even a H5N1 pandemic disaster with a “mere” 10% mortality rate would be far too much to endure.

Despite the rising risk of global pandemics, the current thinking within the governments of every country on Earth is that there is no such thing as too many people.

Every government, including ours, wants to expand the size of the population under its control. They fret about falling birth rates and react to these statistics with public pleas and incentives designed to encourage the citizenry to produce far more humans and help expand the population. They encourage mass immigration as a convenient and easy way to expand tax rolls and economic growth (paying absolutely no attention to the rising rents and cost-of-living increases that the present population suffers as consequences).

In the past, some governments voiced concerns that their populations were way too large or expanding too rapidly, but those days are long gone. Government leaders today sing about how 8 billion people on our planet is not nearly enough, and wouldn’t it be nice if we could go far beyond this figure. The media parrots them, quoting so-called “experts” like Elon Musk and Jeff Bezos and other sources carefully selected to back up their arguments on how falling birth rates are a significant threat while an expanding human population is anything but.

I occasionally hear a peculiar argument from some people advocating for much higher fertility rates and an ever-larger and expanding human population, to 10 billion, 15 billion, 20 billion, the more the merrier, as they say. This odd line of reasoning that I’m referring to goes something like this: “Think of all those billions of souls who will never be born, all those conscious beings who will never help us build a better world, should we fail to raise our birth rates. How unfair is it to them that we deny them this chance at existence?”

Well, allow me to offer here the counter and corollary argument: Think of all those billions of people who will never have to die of the next plague.

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**Nathaniel Gronewold** is the author of *Anthill Economics: Animal Ecosystems and the Human Economy* and *A Tale of Two Cranes: Lessons Learned from Fifty Years of the Endangered Species Act*. He holds a Ph.D. in environmental science from Hokkaido University and teaches journalism and media operations as a faculty member at the University of Hawaii at Manoa.

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**Negative Population Growth, Inc.**  
2861 Duke Street, Suite 36  
Alexandria, VA 22314

Phone: (703) 370-9510  
Fax: (703) 370-9514  
Email: [npg@npg.org](mailto:npg@npg.org)

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