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ANIMALS

The Struggle to Contain, and Eat, the Invasive Deer Taking over Hawaii

BY DAN NOSOWITZ ON MAY 24, 2021

Axis deer were first brought to the islands in the 1860s. Now they number in the tens of thousands.



Axis deer, which are sometimes known as chital, are native to Sri Lanka, parts of India and Nepal.

Photography by Krishna80/Shutterstock

There should not be any land mammals living in the wild on any of the Hawaiian islands. There shouldn't be many wild mammals, period; the only endemic mammal in Hawaii, besides marine mammals, is a single species of bat. But there are many mammals traversing the eight main islands in the archipelago today. There are wild sheep, goats, cattle, mongoose, wild boar, rabbits, rats, mice and a small but stable population of brush-tailed rock wallabies on Oahu. None of them should be there.

But the most important invasive species for a few islands, especially Maui and Molokai, is the axis deer. On Molokai, an island of only around 7,000 people, there are somewhere around 70,000 axis deer. On Maui, there are around 50,000.

The axis deer are a fascinating and multi-dimensional inhabitant. They are simultaneously invasive and part of traditional culture; they destroy food supplies and are an extremely important source of food themselves; they are protected by law and despised by some parts of law enforcement; they are wildly destructive to Hawaii and also, during the worst of COVID-19, were a beacon of hope.

Axis deer, which are sometimes known as chital, are native to Sri Lanka, parts of India and Nepal. They're sometimes known as the spotted deer, because they have white spots on their tawny coats, and sometimes as the barking deer, because they are extremely vocal. They first showed up in Hawaii in 1867, given as a gift to King Kamehameha V: three bucks, four does and one male faun, for a total of eight deer. The gift-givers were from Hong Kong, then a colony of Britain. The deer were initially released on Molokai, and they multiplied quickly; some were later moved to Oahu, Lanai and, eventually, in 1959, to Maui.

“Introducing grazing animals here was considered a good thing,” says Jeff Bagshaw of the communications and outreach team for Hawaii’s Department of Forestry; he focuses on deer in Maui. Hawaii was a base to explore the Pacific and a halfway point to Asia, but some of the early sailors found it tough to restock their ships without land mammals to hunt. A few different peculiarities of the Hawaiian islands made it a great home for the axis deer. As grazers, they prefer to eat grass, but they will browse for just about anything. And Hawaiian plants, without any native mammals that might eat their leaves or shoots, never bothered to evolve thorns, spines or toxins to discourage herbivores. There’s even a variety of native Hawaiian raspberry, called the akala, that doesn’t have any thorns.

The deer found no predators in Hawaii, either; none of the wolves, big cats, terrestrial snakes or alligators that prey on them in Asia. But because they had so many predators in Asia, the deer evolved to give birth much more often than other deer species, in the hopes of outpacing the rate at which they get eaten. In Hawaii, they have no predators, but they still give birth year-round.

The dream of those early sailors was realized, but far too well: Soon, Hawaii had an absurd number of land mammals to hunt. The deer, on a few of the islands, became an environmental and sometimes a public health disaster. “They have a huge impact on all our native species,” says Bagshaw. One example: The ōhia tree, which grows in high elevation forests, is both sacred to Hawaiians and vital for the state’s water supply (when clouds come into contact with the tree, condensation forms and drips onto the ground, eventually flowing down the mountain into rivers

and reservoirs). Starting in 2010, two new-to-science types of fungus were found on the tree that are harmful to it. Trees do have the ability to heal scars in their bark, which would eventually block the fungal infection, but ōhia trees heal slowly and much more slowly now because the deer nibble and rub on the bark, keeping those wounds open and the infection much more deadly.



Axis deer running on Maui. Photo by iofoto/Shutterstock

There are more common environmental problems, too. The deer trample the land, damaging the nests of ground-nesting endemic bird species. They'll eat a wide variety of plants, including endangered ones, which has cascading effects on insects and birds. They'll eat just about anything, really, including crops: Farmers have reported big losses in fruit crops and vegetables, as well as damage to sugarcane. They're a public health issue, too: They provide food for (also non-native) mosquitoes and, when they die, they can poison delicate water ecosystems. This became a much larger problem recently, when drought led to Molokai deer dying of starvation by the hundreds—although not in large enough numbers to put their population in any jeopardy. And they're extremely dangerous to drivers; axis is just one of many deer species that seems magnetically attracted to moving vehicles.

Given all of this, it's not unreasonable to wonder whether the deer should simply be completely eradicated from Hawaii. And, in truth, Hawaii has taken some measures to keep the deer population from spreading: It is now illegal to move deer from one island to another, and when they were illegally brought to the Big Island in 2009, it took only a few years for the government to remove them all. Even in Maui, the Department of Forestry will remove deer from particularly delicate ecosystems, especially watersheds or places where there are endangered species, provided those places are on state land. "We're the most isolated landmass on the planet," says Jake Muise, one of the owners of Maui Nui, a commercial venison operation in Maui. (Muise also handled removing the deer from the Big Island, a few years back.) "If our watersheds aren't functioning properly...water is the most valuable thing we have."

Hawaii's governor, David Ige, has committed to what's referred to as the "30 by '30" plan: to fence in 30 percent of the state's priority watersheds by 2030, largely to protect them from the deer. That may not sound like all that ambitious of a plan—only 30 percent?—but the difficulty of constructing this fencing is truly staggering. Bagshaw says that a minimum height of seven feet is necessary for hog fencing to keep out the deer, and Muise says that even that isn't guaranteed; the deer are clever and persistent. They'd love to construct 12-foot fences instead, with proper skirting on top and bottom, but the expense is daunting. All the steel must be imported from the mainland, and constructing long expanses of fencing on extremely rugged state lands, over rivers and creeks and mountains, is a major undertaking. That same cost of installing fencing can eat into farmers' profits too much for it to be worth it.

But for whatever efforts the Department of Forestry has taken, the process for actually eradicating these deer from Hawaii would be insanely expensive and maybe impossible; while the Department can remove deer from state land, that land is often remote and rugged and not really the preferred habitat for the deer. Getting permission from every private landowner with deer on their property, and figuring out the liability situation for having government agents with guns there, all in the service of somehow killing and removing more than a hundred thousand deer? It's just not going to happen.

Another reason it's not going to happen, beyond the practicalities, is that, according to Bagshaw, the deer are legally protected. The state constitution, dating back to at least 1950, has included a clause meant to protect the traditional subsistence practices of Hawaiians. But therein lies the question: What exactly is "traditional"? Hawaiian courts have set the precedent that any practice that existed in Hawaii before November 25, 1892 counts as "traditional." That date was chosen for its

importance to Hawaiian law; it was the last reorganization of the Kingdom of Hawaii's judiciary system prior to American annexation. And the axis deer, of course, had arrived a couple of decades prior to that date. So the law that protects traditional subsistence practices applies, just barely, to a wildly destructive invasive species.

Not only is the Department of Forestry not allowed to completely eradicate axis deer from Hawaii, it is theoretically required to ensure that the population is stable and secure. Of course, that's not a problem it's really worrying about; the deer is so overpopulated that the idea of saving the deer is laughable. But it would have to, if it came to that.

Despite the fact that the axis deer doesn't belong in Hawaii, that bit about it being protected as a subsistence practice isn't actually that crazy. Deer hunting, although only 150 years old, has legitimately become a tradition on the islands of Molokai, Maui and Lanai. Deer, especially but not exclusively in the more rural parts of those islands, is a major part of the culture. Many families have extra chest freezers to store axis deer, and you can find it on the grill at backyard barbecues. (Most often, it's sliced thin and marinated in teriyaki sauce, according to Muise.)

The deer also serves a pretty vital role as a source of protein. While Hawaii was perfectly capable of feeding its own population prior to European contact, the late 19th and early 20th centuries destroyed Hawaiian agriculture. Instead of planting crops that could feed the Hawaiian people, such as taro, breadfruit and coconut, Europeans (and soon, Americans) tore all that out to plant the crops that could feed foreign imperialists, such as sugarcane and pineapple. By 1936, Hawaii was, according to a University of Hawaii study, in desperate straits: Only 37 percent of its food was grown locally. The rest was, and remains today, imported, at great expense and significant risk, mostly from the mainland United States.

On Lanai, for example, the 3,100 or so residents rely in large part on the barges that deliver their food. If there's a disruption in that service, from, say, a devastating global pandemic, store shelves are empty. Those on Lanai and Molokai, and to a lesser extent Maui, have to figure out some other way to feed themselves, and the incredibly abundant axis deer are a major part of that equation.

Of course, the deer aren't exclusively a help. Fresh produce imported from the mainland is quite expensive in Hawaii, and backyard gardening is more than just a hobby for many Hawaiians. But as

anyone who lives near a deer population knows, there are few things deer like more than absolutely destroying a carefully planted garden. They are damnably difficult to keep out, requiring at least an eight-foot fence, which is not affordable for most people. So the deer provide subsistence, but they also might take some away.

The Department of Forestry is engaged in an awkward dance regarding the deer. It can't eradicate the deer, even if that makes ecological sense. But it's also the agency that hands out hunting permits, and boy, is it ever handing them out. "On Maui and Molokai, there is no bag limit and there is no season," says Bagshaw. "You can hunt 'em like a videogame from sunrise to sunset, if you want." The permits cost \$20 for the year and require no more than a gun license and an easy online application. Frankly, the Department of Forestry would love it if hunting was even more common than it is.

But the state's resources for actually dealing with the deer problem are extremely limited. With most of the deer on private land, the ability to actually hunt on prime land tends to come down to one-on-one relationships between landowner and hunter, which isn't much good for efficiency.

Commercial operations have been slow to take hold. Muise, a Canadian who came to Hawaii on a volleyball scholarship more than 20 years ago and never left, started Maui Nui with his wife, Ku'ulani. Muise grew up in an extremely rural part of far northern Alberta, and the self-reliant subsistence he learned there carried over to a place that's about as different, ecologically, as any place on the planet. Maui Nui is one of the only companies selling axis deer commercially at scale, and the reason for that is, well, it's insanely difficult to do so.

"The process of harvesting a wild animal has crazy amounts of overhead that go into it," says Muise. It is legal to give hunted meat to anyone you want, in the United States, but to sell it, it has to be inspected. Unlike some states, Hawaii has no state meat inspection service, so Maui Nui has to go straight to the USDA. On every single hunt, a USDA inspector must accompany Maui Nui's hunters and examine every single wild axis deer for health before giving a thumbs up to the hunter to take a shot. And that hunter can only take that one shot; the USDA regulations for humane commercial hunting strictly require that the animal be rendered unconscious immediately, with a single shot to the skull. This process is slow and liable to spook the deer, so it has to be done at night, when the deer are more calm, which requires all kinds of equipment. Maui Nui's hunters use military-grade infrared binoculars and, as of recently, a drone, to locate deer in the dark.

Until very recently, there were no USDA-approved butchers for deer in Maui, so Maui Nui had to, at truly ridiculous expense, send whole deer carcasses via barge to processors on the mainland, and

then have the broken-down deer shipped back. It now has its own butcher, but all of this—the equipment, the hunting training, the hourly fee for the USDA inspections, the butchering facility—requires an insane level of investment. The idea of, say, selling axis deer in Whole Foods? It’s not nearly as easy as going hunting.

Other states have programs to make use of overpopulated game animals. In Pennsylvania, a public-private partnership called Hunters Sharing the Harvest operates a network of deer processors throughout the state. Hunters can bring in a kill to any of these facilities, it’ll be broken down and venison—highly valuable protein!—will be put into the food bank system. Hawaii has no version of this, owing to the lack of state resources to inspect and approve processors. And that’s especially galling, because, unlike the white-tailed deer of Pennsylvania, the axis deer in Hawaii is apparently delicious. As a subtropical species, the axis deer has much less intramuscular fat, which carries that gamey flavor that many find unpleasant in other deer species. “When we talk about people eating venison, there’s a general apprehension because it’s most associated with something gamey they’ve had in the past,” says Muise. But he describes axis deer as an extremely clean, non-gamey meat, somewhere between beef and lamb in flavor.

To Muise, there’s a balancing act involved and some point at which the damage caused by the deer and the value of the animal to Hawaiian society can meet in the middle. But his operation by itself isn’t nearly large enough to slow down the population growth of the deer, let alone reduce the population to a sensible number. Neither the public nor the private sector has the ability to get the axis deer under control. And given their damage to public health, the delicate ecosystem of these islands and agriculture, the time might have come for a better plan.

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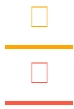
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17 COMMENTS



Most Voted

Tammy

17 days ago

The feral felines on the islands of Hawaii is a bigger problem. They carry a particular parasite that is devastating to the Marine environment on the islands. Round up all the feral cat, put them in a sanctuary. Thank you, God bless you.

Last edited 17 days ago by Tammy

5

Reply

View Replies (1)

susan

17 days ago

We(Hawaii) have to aggressively attack this problem. Don't talk about how hard it's going be to accomplish. The alternative is unacceptable. We talk about Hawaii being sustainable. When that won't ever happen because of a little deer.

If the state can pay people to relocate to Hawaii to improve our economy we should be able to do more to protect this land. Those who run this state need to get their priorities straight.

3

Reply

View Replies (1)

J A

18 days ago

Well written informative article. Well done.

2

Reply

Bridgit Rivera

17 days ago

Wouldn't it make more sense to simply castrate part of the male population. Simply band the testicles and turn then loose. No damage. Keep up the hunt to maintain a safe population count.

2

Reply

View Replies (1)

T/A Ranch

13 days ago

I live in Texas. We raise Axis deer and some African animal species as well. Axis deer multiply exponentially. When we first started our Axis herd, we bought 11 deer. 5 bucks and 6 doe. 3 years later we had over 50. When an Axis doe has a fawn, she is re-bred in less than 7 days. I have seen our doe get re-bred the day after birthing a fawn. With the estimated population numbers y'all have on the Islands, you will never get the Axis population under control. Not without a mass killing of the deer, but with those... [Read more »](#)

2

Reply

David O'Neill

□ 18 days ago

Hello: I am an active deer hunter in PA and MD. US. I'm reacting to your comment: "unlike the white-tailed deer of Pennsylvania, the axis deer in Hawaii is apparently delicious. ... the axis deer has much less intramuscular fat." First, White tail deer have little or no "intra muscular" fat. That lack of intramuscular fat makes it hard to cook well because it toughens and dries out when cooked beyond rare. I don't eat the inter muscular fat so I don't know about its flavor. My belief is that carcass care is the most important factor influencing flavor. I expect... [Read more »](#)

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Reply

[View Replies \(1\)](#) □

Raymond Keenan

□ 17 days ago

Umm. I really do not have much to say.... I wish someone would make a stand and educate these people on a healthy ecosystem- a healthy Hawaiian ecosystem... if you have such a need for pig, goat, deer, cow- put them in a fenced area and grow them.

0

Reply

sue

□ 16 days ago

feed them to the homeless

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Reply

Lee Walters

□ 10 days ago

Have areas that are more accessible to hunters. There's very little public land on Molokai and Maui that allow hunting. You basically have to know someone with private land and pay a guide service big bucks. I know many folks here on Oahu that's love to come over and hunt, but just don't have the connections!

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Reply

Robert

□ 7 days ago

It would appear the solution to the axis deer population reduction is simple. They have a genetically non-diverse lineage, so a biological control would do what nature already does. Surely they are susceptible to diseases in their countries of origin.

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Reply

View Replies (1) □



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