

FISCAL YEAR 2023 - 2024

# POLICY BRIEF

LEVERAGING AXIS DEER FOR SUSTAINABLE PET FOOD PRODUCTION,  
ENVIRONMENTAL GAINS, AND CROP PRODUCTION IN MAUI COUNTY



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# SUMMARY FOR POLICYMAKERS

## FOOD FOR THOUGHT (& PETS!)

- Axis deer and other invasive mammals are consuming agricultural crops, increasing erosion rates, and causing top-down effects on ecosystems, agriculture and food security.
- Axis deer is not being harvested in sufficient quantities because for human consumption, inspection of deer meat is required under USDA's Food Safety and Inspection Service and there is a shortage of inspectors and slaughterhouse facilities. The State of Hawai'i Department of Agriculture has estimated it would cost \$1 million to update the state's meat inspection program and another \$1 million to run it on an annual basis.<sup>1</sup>
- Regulations for pet food production are less restrictive. The Federal Meat Inspection Act (FMIA) does not apply to meat and wild game for dog and cat consumption. Moreover, operations meeting the definition of 'farm' are not subject to the FDA Food Safety Modernization Act (FSMA) Preventive Controls for Animal Food rules.<sup>2</sup>
- Natural pet food products are in demand. According to the American Pet Products Association, pet owners in Hawai'i spend over \$54.8 million in pet products.<sup>3</sup> Results from a survey of Maui residents indicate that 57.6% were interested in either dog food with axis deer meat, chew treats made from axis deer parts, or both products for pets.<sup>4</sup>
- Policymakers should support agricultural producers in the commercialized harvesting of game meat for pet food products.

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# PROBLEM STATEMENT

## Overview

In Maui County, axis deer decimate native plant species, fruits and vegetables on agricultural lands, and foraging grass on ranches. In addition, fecal material left on farmlands can make crops unsellable under federal regulations.

### Population Growth of Axis Deer

An early 2022 survey estimated 46,743 axis deer present on Maui.<sup>5</sup> With no natural predators, the deer population is currently estimated at 60,000 or more.<sup>6</sup> Without control measures in place, axis deer populations in Hawai'i have been known to increase by 20-30% per year.<sup>7</sup>

### Financial Losses to Agricultural Producers

According to a Maui County survey of 25 farms and 5 ranches, axis deer caused \$306,000 in crop damage and \$496,000 in damage to the ranches, for a total of \$802,000 per year from 2011-2012.<sup>8</sup> In addition, farmers and ranchers spent \$257,000 and \$610,000 respectively on mitigation, for a total of \$867,000 during those years. A majority of the mitigation efforts entailed putting up fences. Installation of ungulate-proof fencing costs an average of \$23-\$30 per foot, if available and not hampered by supply chain issues.<sup>9</sup>

## ABOUT US

**Joseph & Josephine's LLC** is a social entrepreneurship venture inspired by our great-grandparents, Joseph and Josephine "Kealoha" Marciel. During the early 1900's Joseph and Josephine raised 14 children on their 78-acre homestead, situated in the rural community of Kaupō, Maui. Today, we seek to perpetuate their legacy by pursuing projects that promote healthy and productive agroecosystems.

### We value:

- **Self-Sufficiency**
- **Sustainable Agriculture**
- **Conservation**
- **Social Responsibility**



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# POLICY RECOMMENDATIONS

- The State of Hawai'i Department of Agriculture should establish custom processing regulations for wild game.<sup>10</sup> Custom-exempt legislation would permit the slaughtering of wild game and direct sale of meat to consumers who are members of a "herd share" or similar organization. Producers act as agents who arrange transportation to the slaughter and processing facility.
- The State of Hawai'i Department of Agriculture should authorize commercialized harvesting of game meat for pet food products when administering the emergency loan program to help farmers with deer impacts in Maui County.<sup>11</sup>
- Game meat for human consumption should be prioritized, however, meat salvage and surplus should be distributed for pet food. The State of Hawai'i Department of Health, Food Safety Branch and Department of Land and Natural Resources should establish and publish voluntary guidelines for field dressing and handling of wild game to prevent contamination of carcasses.
- The County of Maui Department of Environmental Management should coordinate efforts across and with State of Hawaii departments, academic institutions, industry sectors and businesses, sportsmen, ranchers and farmers, landowners, local invasive species cooperatives, and other organizations.

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# REFERENCES

- <sup>1</sup> Heaton, Thomas. "Reviving Hawaii's Meat Inspection Program Could Also Take Aim At Axis Deer." Honolulu Civil Beat, 17 April 2023, [www.civilbeat.org/2023/04/reviving-hawaiis-meat-inspection-program-could-also-take-aim-at-axis-deer](http://www.civilbeat.org/2023/04/reviving-hawaiis-meat-inspection-program-could-also-take-aim-at-axis-deer). Accessed July 2023.
- <sup>2</sup> Center for Food Safety and Applied Nutrition, "FSMA Final Rule for Preventive Controls for Animal Food." *U.S. Food and Drug Administration*, <https://www.fda.gov/food/food-safety-modernization-act-fsma/fsma-final-rule-preventive-controls-animal-food>. Accessed July 2023.
- <sup>3</sup> George Mason University Center for Regional Analysis, "Economic Impact of the Hawaii Pet Industry." Pet Industry Joint Advisory Council. <https://petadvocacy.org/wp-content/uploads/2022/02/HawaiiPetIndustry-12.pdf>. Accessed July 2023.
- <sup>4</sup> Rubino, Elena. "Methods for Population Control, A Case Study on the Axis Deer on Maui Island, HI." 2014, p.148. <https://d2vsp3qmody48p.cloudfront.net/wp-content/uploads/2014/08/Rubino-thesis.pdf>. Accessed July 2023.
- <sup>5</sup> Sugimura: preliminary data shows there are 46,743 axis deer from 'Ulupalakua to Pā'ia." Maui Now, 20 February 2022. <https://mauinow.com/2022/02/20/sugimura-preliminary-data-shows-there-are-46743-axis-deer-from-%ca%bbulupalakua-to-pa%ca%bbia>. Accessed July 2023.
- <sup>6</sup> "Emergency period for deer crisis extended." The Maui News, 19 November 2022. <https://www.mauinews.com/news/local-news/2022/11/emergency-period-for-deer-crisis-extended-2/>. Accessed July 2023.
- <sup>7</sup> Hess, Steven C. "Wild Sheep and Deer in Hawai'i—a Threat to Fragile Ecosystems." U.S. Geological Survey, Pacific Island Ecosystems Research Center, 2008, <https://pubs.usgs.gov/fs/2008/3102/fs2008-3102.pdf>. Accessed July 2023.
- <sup>8</sup> Burnett, Kimberly and Wada, Christopher, "Assessing the Costs of Priority HISC Species in Hawaii." University of Hawaii Economic Research Organization, 2016, p.2, <https://uhero.hawaii.edu/wp-content/uploads/2019/08/UHERO-HISC-2016.pdf>. Accessed July 2023
- <sup>9</sup> Rubino, Elena. "Methods for Population Control, A Case Study on the Axis Deer on Maui Island, HI." 2014, p.31. <https://d2vsp3qmody48p.cloudfront.net/wp-content/uploads/2014/08/Rubino-thesis.pdf>. Accessed July 2023.
- <sup>10</sup> National Center for Agricultural Law Research and Information. "'Custom Exempt' Slaughter: The Exception, or the Rule?" University of Arkansas System Division of Agriculture, <https://nationalaglawcenter.org/custom-exempt-slaughter-the-exception-or-the-rule>. Accessed August 2023.
- <sup>11</sup> Hawaii Department of Agriculture, "Emergency Loans Available to Assist with Access Deer Impacts in Maui County." State of Hawaii, 30 August 2022, <https://hdoa.hawaii.gov/blog/main/nr22-13mauiaxisdeerloans/>. Accessed July 2023.