Department of Agriculture

STATE OF HAWAI'I

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Annual Report 2023- 2024

Aloha! It is a pleasure to present this annual report for the Hawai`i Department of Agriculture for Fiscal Year 2024.

When I was appointed as Chairperson of the Hawai'i Board of Agriculture in January 2023, I knew it would be the most challenging position that I would undertake in my lifetime. That has certainly been the case; however, what drives me even more is realizing the potential of this office to make progressive change and enhance Hawai'i's agricultural community.

Raising our state's food security has never been more important - and more complex. The state has many essential needs and limited resources which require us to be deliberate and prudent in how we manage the department's programs and initiatives.

One of the most important factors to the sustainability and growth of agriculture is the availability of land resources. In the past year, the Hawai'i Department of Agriculture and the Department of Land and Natural Resources have worked jointly to fulfill Act 90, a 20-year-old mandate to transfer state agricultural leased lands to management under the Department of Agriculture. In August of 2023, 36,000 acres of agricultural lands were transferred and 21,000 more acres are in the process of being transferred. There is more work to be done and this administration will remain committed to the transfer of additional suitable agricultural lands in the future.

Another important requirement is the availability of water resources. We must continue to address the critical need for adequate irrigation water to support local food production. While there are competing interests in water resources, consideration for agricultural water use must be given priority. Water is the lifeblood of agriculture - it cannot survive without it.

The past year has also brought to the forefront the battle against invasive species. Support for plant quarantine inspections to stop the entry of pests into our state and support for eradication and control of pests before they become established is also essential in protecting our agriculture, environment and our community.

As you read the pages of this report, know that the department and the agricultural industries appreciate the support of all who understand the vital role that Hawai'i's agriculture fills in our community.

Mahalo,

Sharon Hurd

Sharon Hurd
Chairperson, Board of Agriculture

AGRICULTURAL DEVELOPMENT DIVISION
Matthew Loke, Ph.D.
Division Administrator

The Agricultural Development Division (ADD) promotes the economic viability of commercial agriculture in Hawai‘i by sponsoring joint marketing programs for agricultural products with high revenue growth potentials, facilitating the development and expansion of marketing opportunities for targeted agricultural and processed products, and providing timely, accurate and useful statistics. ADD is organized into two (2) branches – the Market Development Branch (MDB) and the Market Analysis and News Branch (MANB).

Noteworthy accomplishments attained by the ADD in Fiscal Year 2023 are outlined below:

- Provided subject matter guidance, technical assistance, procurement, and administrative support to the HDOA Administration.
    - Collaboratively submitted, along with the Chairperson's Office, a successful proposal securing $3.3 million from USDA-AMS under the Resilient Food Systems Infrastructure (RFSI) Program for 2023-2027 (CFDA No. 10.190).
- Engaged in several crucial procurement contracts and initiatives aimed at organizing, supporting, and enhancing Hawai‘i's agriculture industry's recovery and expansion following the COVID-19 pandemic.
    - Successfully administered the statewide Hawai‘i Agricultural Conference grant for 2022 ($65,000).
    - Effectively managed the GoFarm Hawai‘i Agricultural Workforce Development Program grant for 2022 ($95,000).
    - Coordinated the HDOA Innovation Grant Program 2022 contract ($199,000).
    - Contributed to the USDA Local Food Purchasing Agreement (LFPA) Program, resulting in a grant of $1,800,000 awarded to DOE.
    - Assisted in implementing mandated programs from the previous Legislature (2022), including the Food Hub Pilot Program (FHPP),

- the Farmer Apprentice Mentoring Program (FAMP), and the Coffee Independent Study Initiative.

- Administered the USDA-NIFA Farm and Ranch Stress Assistance Network (FRSAN) Program with a funding allocation of $500,000 in 2021. This effort aimed to initiate, expand, and sustain programs providing professional agricultural behavioral counseling and referral for other forms of assistance as necessary to local agricultural producers during the coronavirus pandemic (CFDA No. 10.525)

- Updated the HDOA's Emergency Operations Plan 2023 which addresses the department's roles and responsibilities assigned by the Hawai'i Emergency Management Agency (HI-EMA) to support affected jurisdictions in state emergency operations.

MARKET DEVELOPMENT BRANCH
Brendan Akamu
Manager

The Market Development Branch (MDB) facilitates the development of the agricultural industry through the expansion of new and existing markets. The team develops and identifies opportunities for Hawai'i's agricultural industry through the strategic use of promotions, grants, community outreach, tradeshows, and educational missions locally, domestically (US Mainland) and internationally.

Promoting export growth of agricultural commodities from the state, the Hawai'i Department of Agriculture leverages its "Made in Hawai'i with Aloha," and "Seal of Quality" branding programs. These programs provide consumers with assurance that the premium products are genuine, authentically Hawai'i-grown, or Hawai'i-made and are guaranteed and certified by the State of Hawai'i. The MDB also manages four very successful grant programs each year.

Major Activities and Program Accomplishments in FY 2023 are as follows:

- ***Micro Grants for Food Security Program (MGFSP)*** are designed for small-scale gardening, herding and livestock operations to increase the quantity and quality of locally grown food in food-insecure communities. Grants are awarded to individuals of up to $5,000 per household and $10,000 for organizations. 697 individual applicants were qualified and 562 were recommended for the award totaling $2,810,000. Some 13 organization applicants qualified and 9 were recommended for the award totaling $90,000.

- ***Specialty Crops Block Grant Program (SCFSP)*** supports projects that provide the highest measurable benefits or return-on-investment to the specialty crop industry segment in Hawai‘i. Projects must enhance the competitiveness of Hawai‘i-grown specialty crops, in either the domestic or foreign markets. Preference is given to projects that measurably increase the production and/or consumption of specialty crops, and/or foster the development of fledging crops and organic operations. 24 organizations qualified and 11 were recommended for the award totaling $469,036.

- ***Food Hub*** – Pursuant to Section 16 of Article III of the State Constitution, SB2218 SD1 HDI CD2, entitled “RELATING TO A FOOD HUB PILOT PROGRAM.” became law as ACT 313, Session Laws of Hawai’i 2022, on July 13, 2022, for a period of 5 years and was assigned to the HDOA. This program established food hubs, which are centrally located facilities having a business management structure that facilitates aggregation, storage, processing, distribution, and marketing of locally produced food products. By actively coordinating these activities along the value chain, food hubs may provide wider access to institutional and retail markets for small- to mid-sized producers and increase consumer access to fresh healthy food, including those consumers in underserved areas and food deserts. The HDOA was appropriated $1,500,000 for the establishment of a 5-year program. An RFP was created and posted for applicants on March 27, 2023, and closed on May 3, 2023. A total of 27 proposals we submitted totaling $6,218,019.26 of which 6 proposals were accepted totaling $1,350,000.

- ***Grants-In-Aid (GIA)*** – The Legislature makes appropriations for grants in accordance with Chapter 42F of the Hawai‘i Revised Statutes (HRS). There are two types of grants: Operating and Capital Improvement Project (CIP) grants. Generally, Operating grants are for a nonprofit’s operational, or program expenses and CIP grants are for construction projects. Funds are available on a reimbursement basis and payments are contingent upon fulfillment of the terms and conditions of the grant agreement. The Legislature decides who is awarded a grant, the type of grant, the award amount, what the funds can be used for, and which state department will administer said award. HDOA does not participate in the application process as the House Finance Committee and the Senate Ways and means Committee does the process. The HDOA was assigned 11 operating awardees for a total of $2,085,000.

- ***Seal of Quality*** – Launched in May 2006, the Hawai‘i Seals of Quality represent the cream of the crop of Hawai‘i’s agricultural producers. It was established to protect the integrity and value of the marketing

cachet for Hawai‘i branded farms and value-added products. Products with this seal are genuine, Hawai‘i-grown, or Hawai‘i-made premium products, a guarantee that is enforced by the State of Hawai‘i. The program currently has 51 members of which 46 were renewals and 5 were new to the program.

- ***Made in Hawai‘i with Aloha*** – is a branding program managed by the HDOA and is promoted jointly by HDOA, Hawai‘i Department of Business, Economic Development and Tourism (DBEDT), and the Chamber of Commerce of Hawai‘i (CoC). The MIHA branding program was established to protect the integrity and value of authentic Hawai‘i branded products and to identify those products made in Hawai‘i from products made elsewhere yet called made in Hawai‘i. Products labeled with the MIHA logo comply with the provisions of Hawai‘i Revised Statutes (HRS) §486-119 Hawai‘i-made products; Hawai‘i-processed products. The program currently has 139 members of which 121 were renewals and 18 were new to the program.

Local Market (Hawai‘i) Promotions and Activity

- ***Hawai‘i Coffee Association*** – HDOA was a sponsor through our Sponsorship-Product Promotion (SPP) budget and participated at the 28th Annual Conference and trade show. HDOA was part of the program agenda with a panel presentation and discussion which included 5 departments: Agricultural Development, Plant Industry, Pesticides, Quality Assurance, and Measurement Standards. There were 72 coffee and associated coffee attendees from Hawai‘i and the Mainland.

- ***Hawai‘i Cattlemen’s Council*** – is the Statewide umbrella organization comprised of the four county level Cattlemen: s Association. 150+ member ranchers represent over 60,000 head of beef cows which represent 75% of all the cows in the state. HDOA was a sponsor through our Sponsorship-Product Promotion (SPP) budget and participated at the annual Convention with an informational booth and presented to the association attendees “Ecosystem Approaches to Range Management.”

- ***Hawai‘i Farm Bureau Federation*** – serves as Hawai‘i’s voice of agriculture protects, advocates, and advances the social, economic, and educational interests of a diverse agricultural community. It consists of 2,000 members from eleven counties throughout the State of Hawai‘i. HDOA was a sponsor through our Sponsorship-Product Promotion (SPP) budget and participated at the annual Convention with an informational booth and presented an update on the HDOA to the association’s 195 attendees.

- ***Hawai‘i Tropical Fruit Growers Conference*** – is dedicated to the Hawai‘i-grown tropical fruit community through promotion, research, education, and collaboration. The primary purpose is to promote the interests of any, and all aspects of tropical fruit in the State of Hawai‘i. HDOA was a sponsor through our Sponsorship-Product Promotion (SPP) budget and participated at the annual Convention with an informational booth to the 275 attendees at its annual conference and trade show.

- ***Other Smaller Events include:***
  - Hawai‘i AgriFood Summit.
  - Hawai‘i Chamber of Commerce Annual Convention.
  - Mana Up Showcase.
  - Waimānalo Community Townhall.
  - Nānākuli Community Townhall.
  - Maui Ag Fest.
  - O‘ahu Farm Trail Tour with Office of Economic Revitalization (ORE).

Mainland (Continental US) and International Promotions and Activities

- ***National Restaurant Association (NRA)*** – supports the thriving restaurant and foodservice community, providing America with nourishment, opportunity, and joy, working to enhance quality of life for all. This organization has combined their annual trade show with the *National Association of State Departments of Agriculture (NASDA)* who speaks on behalf of a unified voice for all 50 states and four territories, NASDA is a nonpartisan association working to influence policy that is beneficial for all regions, people, and environments. HDOA participated in their annual trade show "*A Take of the States*," taking 2 Hawai‘i companies to promote their business at an estimated revenue increase in sales of about $350,000.

- ***Specialty Food Association*** – is to shape the future of food and to champion and connect members to deliver innovative products and expand consumption of specialty foods – HDOA participated in their annual *Winter Fancy Food Show* taking 3 Hawai‘i companies to promote their business at an estimated revenue income of about $125,000.

- ***FOODEX Japan*** – is traditionally the largest food industry trade show in Asia and is a showcase for both domestic and international food manufacturers to showcase their products to a wide range of global

buyers to the event. With the lifting of major travel restrictions and the easing of COVID related regulations in Japan, the 2023 event enjoyed a successful rebound in attendance with visitor levels reaching 73,789 registered visitors in 2023, compared to the 2022 attendance of 33,726. The 2023 attendance level marked the full recovery of the show's attendance draw to its pre-COVID norms. The 2023 event drew an increased number of international buyers from North America, Europe, and the Middle East. 2023 marked the first cooperative support of DBEDT and HDOA for the Hawai'i Pavilion at *FoodEx Japan*. Through their combined efforts the Hawai'i Pavilion was able to expand its size to 10 booths to support more Hawai'i companies at the event. A combination of Hawai'i manufacturers and Japan agents representing Hawai'i manufacturers participated in this year's event with a total of 17 Hawai'i companies being represented.

- ***Gulf Food Show*** – The largest annual Food and Beverage Show in the world – promoted as "where real growth happens through genuine connections, insights, stories and talent, amplifying the global food and beverage ecosystem." HDOA participated with 3 coffee companies demonstrating coffee techniques and offering tastings. The 5-day event increased revues for all 3 by $265,000.

- ***Fine Food Australia*** – is the leading trade event for the food industry. The event has welcomed hundreds of food industry professionals from Australasia and beyond. *Fine Food Australia* is the nation's only established tradeshow dedicated to all thing's food – from foodservice to hospitality, and catering equipment, to retail and bakery. HDOA participated in the USA pavilion in conjunction with USDA FAS. 37 solid business solicitations for products: cookies, biscuits, candy, coffee, jams & jelly, and honey were received.

- ***Global Produce & Floral Show*** – is the presentation of the International Fresh Produce Association (IFIA) – A trade association that grows prosperity for all companies in the global fresh produce and floral supply chain. HDOA participated in the trade show taking 2 Hawai'i companies representing coffee and macadamia nuts. The 3-day event had 6,000+ visitors to our Hawai'i booth and generated $175,000 in new sales.

- ***Western United States Agricultural Trade Association (WUSATA)*** – to conduct trade events and activities for companies that target international markets. These include Export Readiness Training (ERT), financial support, workshops and business development services that are geared to increasing exports internationally. HDOA had 9 Hawai'i companies in missions that included, Korea, Japan, and Canada.

MARKET ANALYSIS & NEWS BRANCH
Matthew Loke, Ph.D.
Acting Manager

The Market Analysis and News Branch (MANB) is entrusted with two primary functions. Firstly, it conducts research to support the Department and Divisions, focusing on trends, commodities availability and value, survey methods, labor and factor inputs, and other facets of agriculture that benefit from market analysis. Secondly, MANB strives to foster collaboration from agricultural producers, wholesalers/distributors, shippers, food-hubs, local/federal agencies, and other relevant entities to create informational resources that will enhance decision-making for industry stakeholders, especially agricultural producers.

Activities and accomplishments for the fiscal year are outlined below:

- Maintained essential capabilities to collect, filter, aggregate, analyze, and present agricultural data, despite challenging staff constraints.

- Refined farm labor statistics reporting for increased timeliness and accuracy through a refined bi-annual reporting system.

- Engaged in outreach events to connect farmers, improving efficiency in the execution of commodity and other agricultural statistics surveys.

- Conducted surveys and reported on commodities with growth potential, evaluating and preparing statistical reports on select crops (e.g., avocados, bananas, basil, taro, eggs, and livestock).

- Provided continuity in core agricultural commodity measures through USDA-NASS survey contracts, encompassing vegetable and melon crops, noncitrus fruits and nuts, seed crops, horticulture, and aquaculture.

- Conducted a survey on taro production and produced an article titled *“Taro Production and Market Landscape in Hawai‘i, 2021*” as an additional resource for the industry.

- Provided non-confidential data, study briefs, and specialized research in response to individual requests from the public, agricultural industry, non-government organizations (NGOs), universities, and government agencies.

- Select list of popular statistical reports released in FY 2023 are as follows:
  - Coffee Statistics, 2021-2022.
  - Farm Labor Statistics, State of Hawai‘i, Second-Half, 2022.
  - Farm Labor Statistics, State of Hawai‘i, First-Half, 2023.
  - Fresh Basil Statistics, State of Hawai‘i, 2021.
  - Statistics on Papayas, State of Hawai‘i, 2017-2021.
  - Statistics on Floriculture, State of Hawai‘i, 2022.
  - Top 20 Agricultural Commodities Produced, State of Hawai‘i, 2021.

AGRICULTURAL LOAN DIVISION

Dean Matsukawa
Division Administrator

The Agricultural Loan Division operates the Agricultural Loan Program and Aquaculture Loan Program. The program's primary objective is to promote the development of the State's economy by stimulating, facilitating, and granting loans to qualified farmers, ranchers, aquaculturists and food manufacturers.

The program works with private lenders through participation loans and loan guaranties to increase the amount of funding available to agriculture and aquaculture industries. The program may provide direct financial assistance to those that are unable to obtain financing from conventional sources. The program operates two revolving loan funds which provides capital to fund agricultural and aquaculture loans. The Division also serves as a safety net for agriculture and aquaculture industries by providing assistance during times of emergency.

The emergency loan program was activated during the fiscal year to assist farms and ranches being affected by the overpopulation of Axis deer in the County of Maui. The persistent drought conditions which reduced vegetation and forage exacerbated the situation forcing the deer into agricultural and developed areas seeking food and water. The agricultural communities suffered crop and pasture forage losses which resulted in significant economic damage and production losses.

The loans approved during the fiscal year assisted a wide variety of operations including mushroom, cattle, tropical fruit, coffee and truck crop operations. The Division also made 7 emergency loans under Axis deer emergency loan program.

Farm operations overall were improving financially as the economy recovered from the Covid slowdown however, there were headwinds caused by increasing inflation and supply chain disruptions. In the second half of the fiscal year the significant increase in the program's interest rate affected loan demand.

Major activities and accomplishments of the program for FY 2023 were as follows:

- Approved 11 loans for $1.43 million during FY232. The loans helped farmers retain or increase acreage by 7,609 acres. The division's loans also helped to preserve or increase employment for 53 farm employees and laborers.

- The division's loan portfolio as of June 30, 2023 was valued at $22.6 million with 139 loans booked. The loan breakdown by county is as follows:

    1. Hawai‘i County $10.9 million
    2. O‘ahu County $5.9 million
    3. Maui County $3.4 million
    4. Kaua‘i County $2.4 million

- Collected $2.792 million in FY23. Of the amount collected $710,363 was in interest and $2.082 million was in principal.

- Approved 7 axis deer emergency loans totaling $790,420 to assist farms and ranches that suffered economic damage and losses.

- The Division provided an operating loan to an orchid cooperative on the island of Hawai‘i to expand production and improve operations.

General Loan Data
01/04/24

Current Interest Rate: 7.5%

Cash – Agriculture - $9,477,396
Available for loans - $6,036,967 ($2,355,000 of ceiling remaining that can be approved)
Class D Emergency Loans - $970,003 (No ceiling budgeted for FY 2024)
Aquaculture - $942,153

Delinquency Rate as of 12/31/23:
6.69% - (Amount past due to outstanding portfolio)
Indicates how commonplace is non-payment.

Attorney General Accounts:
21 Loans - $1,543,453 6.97% (of total portfolio)

Breakdown by County of total number of loans and dollar volume for FY24:

County	No. Loans	Loan Volume
Hawai‘i	64	$10,542,534
Maui	24	$ 3,562,283
O‘ahu	39	$ 5,659,097
Kaua‘i	9	$ 2,381,409
Totals	136	$22,145,323

Tables:

	Fiscal 21	Fiscal 22	Fiscal 23	Fiscal 24 YTD
$ Amount Approved	$3.43 million	$198,650	$1.43 million	$800,000
No. Approved	17	3	11	2

Total Portfolio	12/31/20	12/31/21	12/31/22	12/31/23
Total Loan Volume	$25,379,768	$24,886,148	$22,686,867	$22,145,323
Total No. of Loans	162	153	142	136

Delinquencies	12/31/20	12/31/21	12/31/22	12/31/23
No. of Delinq. Loans	67	64	65	65
$ Amount of Delinq. Loans	$2,472,577	$2,631,635	$2,732,590	$2,920,934
No. of Loans Written Off	0	0	0	2

REPORT TO THE THIRTY-SECOND LEGISLATURE
2024 REGULAR SESSION

IN COMPLIANCE WITH

SECTIONS 155-14 AND 219-4, HAWAIʻI REVISED STATUTES

PREPARED BY
HAWAIʻI DEPARTMENT OF AGRICULTURE
JANUARY 2024

Sections 155-14 and 219-4, Hawaiʻi Revised Statutes, allow the Department of Agriculture to transfer funds between the Agriculture Loan Revolving Fund and the Aquaculture Loan Revolving Fund. Sections 155-14 and 219-4, Hawaiʻi Revised Statutes, also set a ceiling of $1 million for each revolving fund that can be transferred during a calendar year; and requires the department to report to the Legislature, twenty days prior to the convening of each session, all transfers made between the two funds during the preceding year and the balance of each loan fund as of December 31st.

The Department of Agriculture reports that no transfers were made during 2023.

Following are the loan fund balances as of December 31, 2023:

AGRICULTURE LOAN REVOLVING FUND

$30,782,001.01*
** Available for loans: $6,036,967.41*

AQUACULTURE LOAN REVOLVING FUND

$1,443,313.87*
** Available for Loans: $942,153.53*

AGRICULTURAL RESOURCE MANAGEMENT DIVISION
Brian Kau
Division Administrator

The Agricultural Resource Management Division (ARMD) works to ensure that the State has dedicated and reliable sources of agricultural water, farmland, infrastructure for farming, and agricultural-related processing facilities. The division provides administrative oversight over a majority of State agricultural land in production, processing facilities, and several irrigation systems statewide. By maintaining and operating abandoned plantation irrigation systems, the division supports and encourages the development and expansion of diversified agriculture on former mono-crop plantation lands.

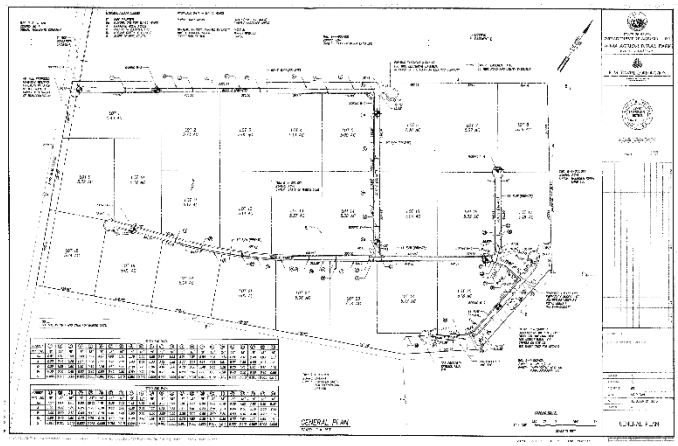
Activities for FY 2023 included the following:

Capital Improvements

Royal Kunia Agricultural Park Project
The program is pursuing the development of the 150-acre Royal Kunia Agricultural Park in Central O‘ahu. This Ag Park provides an opportunity for farmers to lease agricultural land from the state at a reasonable rate, allowing farmers to cultivate crops and support the agricultural industry.

In its current design, the agricultural park will include 24 farm lots of prime agricultural land. Each lot will be 5-7 ½ acres in size and will include access to agricultural water for crop irrigation. The park will also include a drainage lot and dedicated area set aside for future farm dwellings. The development of associated farm dwellings creates a future agricultural park model to support agricultural growth and development.

The program is prioritizing the development of farm lots for agricultural use. This effort is anticipated to cost $25M and includes mass grading, as well as the construction of access roads and utilities throughout the agricultural park.



Kahuku Agricultural Park Improvements Project
The program is the sole source of irrigation water to 24 farms in the 225-acre Kahuku Agricultural Park. The associated Kahuku Agricultural Park Irrigation System is comprised of 12,000 feet of pipe, 3 pumps, a pumphouse, and a 100,000-gallon steel storage tank. Water is pumped from the ground, stored in the tank, and distributed to farms via gravity flow.

After decades of operation, the pumphouse and pumps required modernization. The Kahuku Agricultural Park Improvements Project includes the replacement of the aboveground pumphouse and 3 pumps. The $1.1M CIP started in November 2022 and has an estimated completion date of Spring 2024. During the project's construction, the program will look to minimize disruptions to the farms.

Future proposed improvements to the Kahuku Agricultural Park Irrigation System include replacement of the aging irrigation water storage tank, assessment of underground pipelines, and repair of standpipes.

Waikolu Valley Irrigation System Improvements
Waikolu Valley, on Molokaʻi's north side, is the source of the irrigation water that makes up the Molokaʻi Irrigation System. The program maintains an elaborate system of dams, pumps, tunnels, pipes, and other infrastructure in Waikolu Valley that was originally built in the 1950s and 1960s. In the summer of 2023, an $8.6M CIP was started to make much needed repairs to various parts of the system.

Included in the scope of work are improvements to damage caused by a landslide. The contractor was tasked to rebuild a walkway that was swept away, add protection to a pipe that is located at the base of the slope, and install slope stabilization to prevent future slides.

Also included is the replacement of a steel bridge that has deteriorated over the decades. The bridge supports pipes that carry water from two sources across the valley. The contractor was required to encapsulate the bridge during the cleaning process to prevent pollution to the surrounding area.

Another component of the project was to repair diversions that are used to collect water. Over the years, heavy water flow and tumbling rocks and boulders have slowly eroded portions of the diversions. The contractor rebuilt the damaged portions to ensure proper functionality. With input from the Department of Land and Natural Resources, fish ladders were installed on the diversions to provide a pathway for migratory aquatic life to traverse.

These much-needed improvements will ensure that irrigation water can continue to be provided to the farmers of Molokaʻi. However, the harsh conditions in Waikolu Valley make maintenance of the infrastructure there an ongoing undertaking.

Contractor performing slope stabilization work to prevent future landslides.

Dam repair in Waikolu Valley

Non-Agricultural Parks

The Hawai‘i Department of Agriculture (HDOA) continues to work with the Department of Land and Natural Resources (DLNR) on the transfer of Non-Agricultural Park lands to HDOA. During the past fiscal year, the Board of Agriculture approved the transfer from DLNR to HDOA of 110 parcels, totaling approximately 57,677 acres. During the fiscal year, DLNR transferred to HDOA, by Governor’s executive order, three parcels totaling 5,105 acres. We are awaiting the transfer of the remaining 56,735 acres from DLNR pending completion of land surveys and mapping of the parcels and easements.

Ponoholo Ranch, Kohala, Hawai‘i Island - Non-Ag Park

Ponoholo Ranch, Limited, is well-known for its high-quality beef production. Leasing over 5,895 acres of state land along the slopes of Kohala Mountain, Ponoholo Ranch is reported to have one of the largest cattle herds on the Island of Hawai‘i. Approximately 10% of all beef production stays here to support the local economy and 90% is exported to the Continental US. Deeply rooted in Kohala, Ponoholo Ranch utilizes management practices that balance environmental conservation as well as agricultural and food production to create food sustainability for the present and future generations.

Joseph H. Young, Hāna, Maui – Non-Ag Park
Joseph Young and his family members have been farming in the Wailua-Hāna area for generations. On approximately 11 acres, they grow an impressive variety of produce including but not limited to liliko'i, banana, avocado, 'ulu, taro, achiote, Hawaiian oranges, bitter melon and more. With almost daily rain showers, limited irrigation systems are needed to sustain their plants. Their products are sold locally to hotels, stores and at open markets. The Young family home in Lahaina was directly affected by the Maui wildfire. While the home was not destroyed, since there was no electricity and water, he was not able to return to it. Fortunately, Joe and his wife were staying overnight at the farm when the wildfire tragedy occurred.

Hashimoto Farm, Hānapepe, Kaua'i – Non-Ag Park
In the tight knit community of Hānapepe valley, on a 4-acre parcel, sit several meticulously maintained taro patches in various stages of growth. The Hashimoto family have resided and farmed in Hānapepe family for close to 100 years. The family obtained this current lease through a public auction held in 1973 and continue to produce high quality taro and other fruits and vegetables for decades. The Hashimoto's take pride in the quality of their produce and use adaptive strategies to sustain their successful small farm operation throughout the generations. They sell their taro to local companies on Kaua'i, which in turn produces Kūlolo , taro chips, and poi for sale on the island.

Agricultural Parks

Mahiku Farm LLC - Waimanalo Ag Park

Mahiku Farm LLC, owned and operated by Lounareth and Prany Soulatha, leases 10 acres of agricultural land at the Waimanalo Agricultural Park. Currently, they harvest 2,000 pounds of taro leaf and 30 pounds of Kaffir lime leaves weekly. They also grow Meyer lemons, mint basil, lemon grass, papaya, banana, and calamansi on their farm. Their products are sold to a wholesale produce company that distributes to local retail stores such as Times and Don Quijote.

Shane Castillo – Pāhoa Ag Park

Shane Castillo became a lessee of the Pāhoa Agricultural Park in 2022. In a short period of time, Mr. Castillo has made impressive improvements to the property and has created a diverse farming operation that includes a wide variety of nursery and food crops, such as but not limited to, anthuriums, orchids, various palm varieties, guava, citrus plants, mango, avocado, eggplant, coconut, and even Christmas trees, to name a few. Mr. Castillo sells his nursery products to large wholesale companies and retail shops within the State of Hawai‘i. The vast majority of his food produce is donated to various organizations such as, the Teen Challenge of the Hawaiian Islands and the Food Bank. All crops produced on this farm are used to support Hawai‘i’s local economy.



Nursery Solutions, Inc. – Keāhole Ag Park

Nursery Solutions, Inc., owned and operated by Guy Celliar, specializes in the cultivation of vanilla beans. As a lessee of the Department of Agriculture since 1999, Nursery Solutions, Inc. is home to an immaculate 5.906-acre parcel in the Keāhole Ag Park, where you can find a thriving vanilla operation. Beans harvested from this nursery are processed on-site and used to create value added products which are enjoyed by Hawai‘i’s local economy and beyond.

Irrigation Systems

During the past years, each of the Irrigation Systems experienced low rainfall and major construction projects which affected irrigation water storage capabilities. The system knowledge and operational experience of the irrigation system workers and engineers

prevented water service interruptions and the implementation of conservation measures.

The August 2023 brushfires in the Waimea area approached and contacted the Lālāmilo Farm Lots, which is serviced by the Puʻukapu Reservoir System. Although the Puʻukapu Reservoir was empty due to construction of reservoir improvements, the irrigation system was configured to provide continuous service. The Lālāmilo farmers were able to use the irrigation system to help fight the brushfire and protect their property. Irrigation water fees have been waived for Lālāmilo Farm Lots farmers for August 2023 whenever requested.

Honokaʻa-Paauilo Irrigation System – Waipio Valley Miscellaneous Improvements
Waipio Valley is home to the program's irrigation water sources for the Honokaʻa-Paauilo Irrigation System (a.k.a. Lower Hāmākua Ditch Irrigation System). Over the years, the Koʻiawe, Alakahi, and Kawainui intake structures have experienced severe damage from harsh weather conditions, landslides, and dislodged boulders.

A $2.1 million contract to make improvements to various damages to the intake structures was issued. The project began in October 2023 and is anticipated to be completed in March 2024. Work includes the restoration of concrete walls, tunnel roofs, fiberglass walkways, valve operators, and intake grates. Improvements to the Alakahi Intake are nearly complete and the contractor will be moving onto the Kawainui Intake in December 2023.

These improvements will provide much needed structural stability and will extend the life of the intake structures for many years to come.


Lower Hāmākua Ditch – Waipio Valley Miscellaneous Improvements, Island of Hawaiʻi

Honokaʻa-Paauilo Irrigation System - Flume Improvements
In April of 2023, the program began major upgrades to key components of the Lower Hāmākua Ditch.
Completed work includes the replacement of an existing redwood flume structure with plastic lumber and five layers of fiberglass material to prevent water seepage. Also completed was the replacement of a section of open concrete-lined ditch with buried high-density polyethylene (HDPE) pipe. This ditch section is relatively flat and was experiencing high seepage losses. The remaining work involves the replacement of three deteriorated flumes with HDPE pipes and associated headwalls, blow-off valves, fiberglass walkways, and structural supports.

The improvements from the $2.4 million project will result in a more reliable supply of irrigation water by greatly reducing the possibility of a catastrophic failure and will allow the system to maximize the amount of irrigation water transported by eliminating the current leakage problem.


Lower Hāmākua Ditch - Miscellaneous Flume Improvements, Island of Hawaiʻi

<u>Capital Improvement Projects for FY2023</u>
The following projects are ongoing on the Island of Kauaʻi:

- East Kauaʻi Irrigation System Facilities Assessment Study – Planning
- Kainahola Stream Cleaning - Construction

The following projects were completed on the Island of Oʻahu:

- State Irrigation System Reservoir Safety Improvements Waimanalo Reservoir Crest Improvements - Design

- State Irrigation System Reservoir Safety Improvements Tai Lee Reservoir Improvements - Design
- Waimanalo Irrigation System Base Yard Improvements - Design
- Kahuku Irrigation System Pumping Station Improvements - Design
- Kalaeloa Harvesting Facility - Design

The following projects are ongoing on the island of Oʻahu:

- Waimanalo Irrigation System Maunawili Valley Improvements, Phase II - Design
- State Irrigation System Reservoir Safety Improvements Waimanalo Reservoir Crest Improvements - Construction
- State Irrigation System Reservoir Safety Improvements Tai Lee Reservoir Improvements - Construction
- Hawaiʻi Water Management Project, Waiāhole Reservoirs 155 and 225 Improvements - Design
- Waimanalo Irrigation System Baseyard Improvements - Construction
- Kahuku Irrigation System Pumping Station Improvements - Construction
- Wahiawa Reservoir Due Diligence Report – Planning
- Kalaeloa Harvesting Facility - Construction

The following projects were completed on the Island of Molokaʻi:

- Molokaʻi Irrigation System Waikolu Valley Improvements - Design

The following projects are ongoing on the Island of Molokaʻi:

- Kualapuʻu Reservoir Vegetation Removal - Construction
- Farrington Booster Pumping Station Repairs and Maintenance - Construction
- Coupling Replacement on 30” Irrigation Pipeline From West Portal To Kualapuʻu Reservoir - Construction
- Statewide Meter Replacement and Miscellaneous Improvements, Molokaʻi Irrigation System - Construction
- Molokaʻi Irrigation System Waikolu Valley Improvements - Construction
- Molokaʻi Irrigation System Miscellaneous Pumps Valves, and Gates Repair, Replacement and Maintenance - Construction

The following projects were completed on the Island of Hawaiʻi:

- Honalo Marshalling Yard Improvements - Design
- Lower Hāmākua Ditch-Waipio Valley Improvements - Design

The following projects are ongoing on the Island of Hawaiʻi:

- Honalo Marshalling Yard Improvements - Construction
- Lower Hāmākua Ditch-Waipio Valley Improvements - Construction

- State Irrigation System Reservoir Safety Improvements Pu‘ukapu Reservoir Improvements - Construction
- State Irrigation System Reservoir Safety Improvements Pu‘u Pulehu Reservoir Spillway Improvements - Design
- Waimea Irrigation System Drainage Improvements - Design
- Kamuela Vacuum Cooling Plant Demolition of Inactive Vacuum Cooling Warehouse - Construction

ANIMAL INDUSTRY DIVISION
Isaac Maeda, DVM
Division Administrator/State Veterinarian

The Animal Industry Division protects Hawai‘i’s livestock, poultry, aquaculture industries, animal and public health by preventing disease introductions and detecting and controlling economically important diseases and pests within the state. The division conducts: animal disease surveillance, epidemiology and control; inspection of all animals and birds entering the state; aquaculture shrimp disease-free certification; livestock brand registration; voluntary livestock disease certification, animal disease traceability programs; laboratory diagnostic services; and dog and cat import regulation and quarantine to reduce the risk of rabies introduction.

Animal and public health and environmental programs aimed at preventing the introduction of foreign, emerging, zoonotic and economically detrimental animal diseases and pests into the state continue to be important functions of the division. Examples such as Highly Pathogenic Avian Influenza virus, African Swine Fever virus, and Asian longhorned tick are just a few examples of disease agents of high concern that are not in the state.

Hawai‘i’s statuses for State-Federal Cooperative Disease Control Programs during Fiscal Year 2023 (FY23):

- Brucellosis Free, cattle and swine
- Pseudorabies Free, Stage V
- Bovine Tuberculosis (bTB), Accredited Free*
  (*Refer to bTB in the Animal Disease Control branch section.)

A memorandum of understanding (MOU) between the Hawai‘i Department of Agriculture (HDOA) and the US Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services (USDA APHIS VS), on the requirements and responsibilities for maintaining Hawai'i’s Accredited Free State status regarding the risk of bovine tuberculosis (bTB) was executed on November 17, 2022, with a minor revision on January 20, 2023. The MOU, and HDOA responsibilities detailed in the MOU, are subject to annual review and renewal. The latest revision was signed in November 2023. The State of Hawai‘i continues to maintain a “Bovine Tuberculosis Accredited Free State Status.”

Hawai‘i is also recognized as free of bluetongue virus and anaplasmosis and surveillance programs for these diseases are ongoing to ensure that the free status is documented and maintained. No new livestock and poultry disease agents were detected during FY23. Continuing voluntary disease control program activities include scrapie in sheep and goats and Johne’s disease in cattle. Stringent import requirements remain in place for birds entering Hawai‘i in an effort to reduce the risk of West Nile virus introduction.

The division received cooperative agreement funds from the USDA APHIS for $132,605.00 during FY23. The agreements supported specific activities in diseases of avian ($43,291), cattle ($27,057), One Health ($5,411), Sheep, Goat, Cervid, Equine ($8,000), swine health ($21,645), and Animal Disease traceability ($24,378). The Division also was awarded a $67,945.00 grant from the National Animal Disease Preparedness and Response Program in FY23 to upgrade carcass disposal incineration equipment. The equipment will be used in response to damaging, emerging and foreign animal diseases that threaten Hawai‘i’s animal agriculture.

RABIES QUARANTINE BRANCH

The Rabies Quarantine Branch managed a greater number (approximately 18,992) of dogs and cats entering Hawai‘i during FY23 compared with prior years (e.g., approximately 12,200 in 2012). This represents an increase of 9% from the previous year and 89% from FY10’s 10,075 entries. The entries in FY23 were almost four times the 4,771 animals that entered Hawai‘i prior to the start of the 5-day-or-less program in FY03. In addition, 254 animals transited through the State (an approximate 30% decrease from FY22).

The following are approximate rabies quarantine statistics for cats and dogs arriving between

July 1, 2022, and June 30, 2023 (FY23):

PROGRAM	NUMBER	PERCENT
120-day	597	3.1
5-Day-Or-Less Early Arrival	537	2.8
5-Day-Or-Less	5374	28.4
5-Day-Or-Less Total*	5911*	31.1
Airport Release	12484	65.7
Total	18992	100
Transiting Through Hawai‘i	254	

* Includes dogs and cats arriving early

In June 2003, the rabies quarantine program transitioned from “quarantine only” with the implementation of the 5-Day-or-Less program that focuses on pre-entry vaccination, serology, identification, and health certification to reduce the risk of disease introduction.

Under the 5-day-or-less program, pets may be released at Honolulu International Airport if they complete pre-arrival requirements that include (but are not limited to):

1. Positive pet identification with electronic microchip.

2. A minimum of two rabies vaccinations in the animal’s lifetime, administered no less than 30-days apart. The current (or last) vaccine must not be administered no less than 30 days before the pet's arrival in the state, and not expired.

3. FAVN rabies serological testing to measure vaccination response with sufficient level (> 0.5 IU/ml) of rabies antibodies.

4. A 30-day waiting period after a passing FAVN rabies test before entry into the state; and a 30-day pre-arrival waiting period between the time the lab receives the blood sample and the earliest date the pet may enter the state (the pre-arrival waiting period is necessary due to the long and variable length of rabies incubation, where the virus may hide in an animal before clinical signs of the disease become apparent).

5. Certificate of Veterinary Inspection (CVI) or Health Certificate, executed no less than 14 days before arrival.

6. Pet owners must also submit required paperwork more than 10 days before the pet's arrival.

7. Inspection upon arrival.

In 2018, the minimum waiting period of 30 days after: the last rabies vaccination (2); and passing FAVN blood test (3,4), before arrival were reduced from periods of 90 days after the last rabies vaccination and 120 days after the passing blood test. These changes substantially reduced the preparation time to enter Hawai‘i for animals that were not previously vaccinated for rabies or had not had rabies serological testing. These changes do not significantly increase the risk of disease entry.

The high and increasing number of direct release qualified dogs and cats at the Daniel K. Inouye International Airport in Honolulu (HNL) is a continual challenge for the veterinary, inspection, clerical, accounting, and animal care staff by substantially increasing workload.

Staff access computerized databases (Animal Information System or AIS) to manage, monitor, and verify information relevant to qualification. Considerable time is spent reviewing documents, pre-qualifying pets, processing payments, receiving and inspecting pets, and addressing the needs, questions and concerns of the general public. The clerical, veterinary, and inspection personnel spend an extensive amount of time e-mailing and speaking with pet owners on the phone and in person explaining program requirements. It is still estimated that nearly half of all submitted essential documents require follow-up contact with veterinarians or pet owners.

To improve application convenience for customers and in response to improve workflow efficiency, the program solicited, and awarded, a service contract to upgrade the existing AIS that started in FY24. An important component of this multiyear project is the upgrade of the Hawai‘i Pet Owner Portal or HIPOP. This upgrade will allow pet owners to submit applications and pay online, digitizing the current paper hard copy documents

processes. AIS contains approximately 239,000 dog and cat accounts and over 80,000 owner accounts.

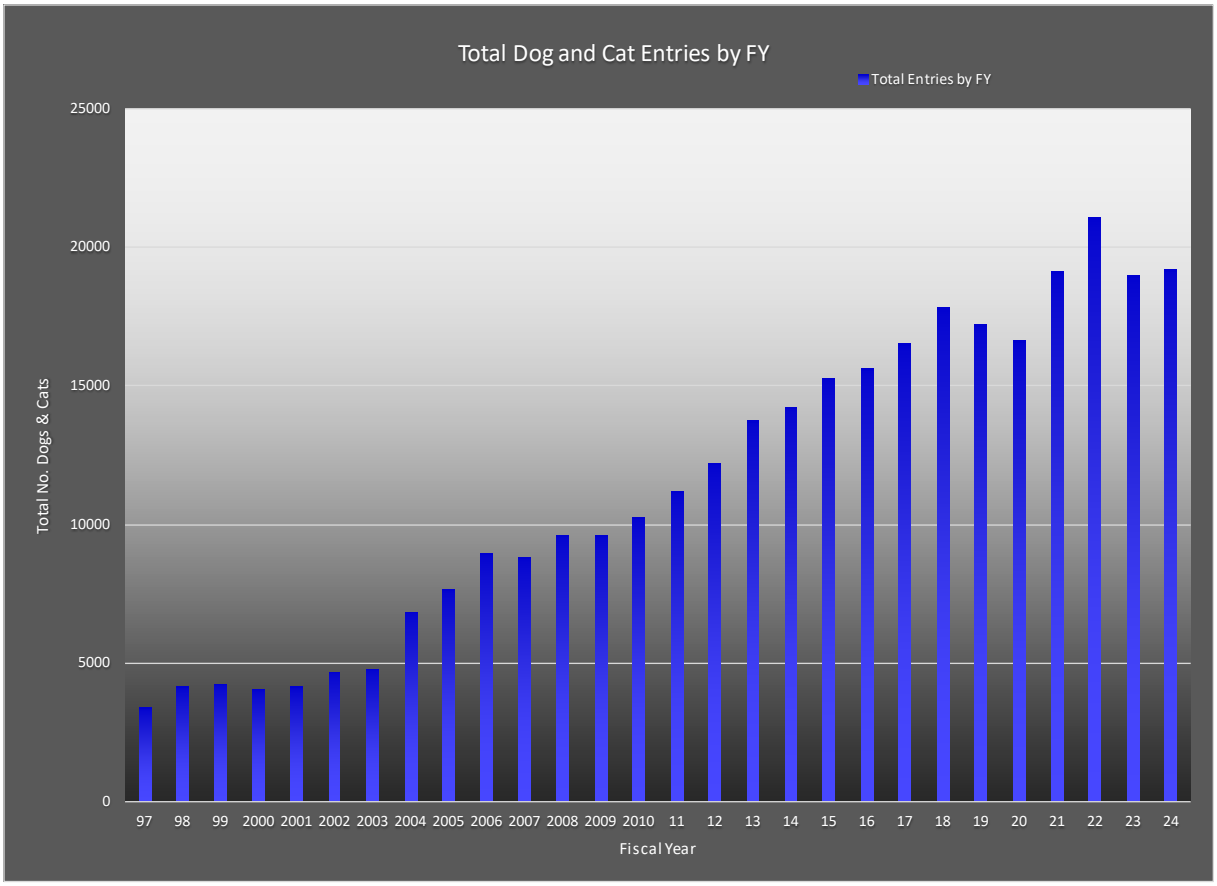
Approximately 12,484 dogs and cats were released at the airport in FY23, that amount is 15.3% higher than the 10,831 animals released at the airport in FY12. However, this number does not reflect the workload for the total number of pet documents processed, because the database adds an estimated 20,000+ files each year for the 5-Day-or-Less program. Animal Disease Control Branch (ADCB) staff including the port veterinarian and livestock inspectors provide essential support to the program by assisting rabies quarantine veterinary assistants with inspecting and processing dogs and cats released at the Airport Animal Quarantine Holding Facility (AAQHF) seven (7) days a week. The AAQHF is under the jurisdiction of and operated by the ADCB.

Mid-way through FY10, staffing challenges resulted from the elimination of two (2) ADCB Inspectors due to a statewide reduction in force. Inspection hours at the AAQHF had to be reduced from 8 a.m. to 8 p.m. to 8 a.m. to 5 p.m. to address the staff reduction. Furthermore, filling position vacancies division wide has not been a rapid process adding additional challenges to operations.

The 5-Day-or-Less program continues to be very successful, but it is labor intensive in documentation and verification as well as receiving, inspecting, caring for and releasing dogs and cats. The AAQHF estimates nearly 10% of arriving pet owners do not submit the required pre-arrival documents beforehand resulting in additional screening and verification of these cases by the inspection staff at the airport facility. Pet charter flights also have created severe congestion and processing issues because over 35 animals on a single flight may be delivered at one time, to the AAQHF. The AAQHF is not designed nor staffed to easily manage acute, high volume, influx of animals. These high-volume flights, along with increased numbers of animals routinely arriving in the state in general, increase challenges faced by staff. The AIS HIPOP improvement project mentioned previously should help to address routine arrivals but not pet charter flights as they are not routine and irregular in schedule. Extensive renovation of the facility is needed to process these acute peak arrival patterns.

The Department routinely updates its website, including an information brochure that is dedicated to Hawai‘i’s rabies quarantine program and contains all of the information and forms relating to quarantine and the importation of cats and dogs. Pet owners may access pre-arrival FAVN rabies serological test results and associated 5-day-or-less dates at this DOA website. Checklists for the 5-day-or-less program are available at the site to assist pet owners of both resident pets and non-resident dogs and cats with preparations to qualify for this reduced quarantine option.

The following graph represents the dramatic rise in the number of dogs and cats entering Hawai‘i since the 5-Day-or-Less program was implemented at the end of FY 2003. Note: FY24 total is projected from the first 5 months of entry data.



Approximately 97% of arriving dogs and cats qualified for the 5-Day-or-Less program in FY23. Furthermore, of the approximately 18,395 pets that qualified for the 5-Day-or-Less program, 12,484 pets (more than 65%) qualified for direct release upon arrival at Honolulu International Airport. In comparison to only 1.4% (262) of the arriving animals were quarantined for 120 days.

Animals may qualify for quarantine periods between zero (airport release) to 120 days under the early arrival provision of the 5-Day-or-Less program. There were about 537 dogs and cats that were in the early arrival category in FY23 that spent an average of 23 days in quarantine.

In addition to HNL, the Department has a system that allows dogs and cats to enter Hawai‘i directly at Kona International Airport at Keāhole, Kahului Airport on Maui, and Līhu‘e Airport on Kaua‘i. Quarantine approved veterinary facilities serve as private contractors to inspect animals upon arrival at these airports because the rabies quarantine program does not have personnel on islands other than O‘ahu. A pet owner must apply for a Neighbor Island Inspection Permit (NIIP) to fly with their dog or cat directly to one of these airports from the continental U.S. The following are current requirements to obtain a NIIP:

1. Every dog or cat must meet all the requirements listed on the “Checklist for the 5-Day-or-Less Program” except that all required documents must be submitted earlier (30 days or more before the intended date of arrival).

2. Pet owners must submit the following documentation to the Animal Quarantine Station 30 days or more ahead of the planned arrival:

   - Completed Dog & Cat Import Form, AQS 279
   - Original rabies vaccine certificates for the two (2) most recent vaccinations
   - Payment of $165 in cashier’s check or money order made out to the Department of Agriculture
   - Flight information
   - A letter from the owner requesting Direct Airport Release at either “Kona” or “Kahului” or “Līhuʻe”

3. Owners must make reservations for inspection with an approved contractor. Contractors will then send a confirmation to the Animal Quarantine Station (AQS) that they have agreed to perform the inspection and release procedure on the dog or cat. Owners are responsible for the additional fees to the contractor for this service.

4. A Kona, Kahului, or Līhuʻe Neighbor Island Inspection Permit will be e-mailed to the owner once the AQS has:

   - Received the above required documents, information, and payment (see 2 above).
   - Confirmed the pet meets all of the requirements for the 5-Day-or-Less program and neighbor island inspection and release; and
   - Received confirmation from the approved contractor that they will meet the pet.

5. The pet specific NIIP must accompany the dog or cat on the aircraft and be submitted to the inspector upon arrival in Hawaiʻi.

Another phase of the AIS improvement project mentioned previously, is planned to have the NIIP application simplified to a digital online process that will also allow pet owners to arrange for an inspection with an approved veterinary contractor online. The goal of the NIIP component of the AIS project is to simplify and decrease the time for accomplishing one through four above, through digitization.

In addition to rabies exclusion, the quarantine program continues to monitor dogs and cats carefully for ticks exotic to Hawaiʻi. Animals were discovered carrying Rhipicephalus sanguineus ticks upon entry examination in FY23. Rhipicephalus sanguineus, the brown dog tick, is the only tick established in Hawaiʻi and associated with dogs. However, three (3) cases involved dogs with either Amblyomma americanum, the lone star tick, or Dermacentor variabilis, the American dog tick. Both of these ticks are not established in Hawaiʻi and are a concern because they can transmit various diseases to humans and other animals, such as those that cause Lyme disease,

ehrlichiosis, rickettsiosis, Rocky Mountain spotted fever tularemia, and theileriosis. In addition, ticks including D. variabilis can cause tick paralysis in animals and people.

ANIMAL DISEASE CONTROL BRANCH

The Animal Disease Control Branch (ADCB) prevents, investigates, conducts surveillance, controls and eradicates animal diseases that may have serious economic impacts on the state and nation's livestock and poultry and aquaculture industries, some of which impact public health. The branch inspects animals entering the state and ensures compliance with division rules and laws pertaining to the mitigation, control and eradication of animal diseases.

Avian Influenza (AI)

Highly pathogenic Avian Influenza (HPAI) continues to circulate in wild birds and poultry throughout the world and continental US. HPAI has been detected in wild aquatic birds, commercial poultry, and/or backyard flocks in 49 of the 50 states. HPAI testing is routinely conducted for surveillance and disease investigations on ill and dead birds. No positive HPAI detections have occurred in domestic or wild birds in Hawai‘i to date.

West Nile Virus (WNV)

An embargo on the movement of poultry and other birds, except chicken hatching eggs and chicken day-old chicks through the U.S. Postal Service (USPS) remains in place. In addition, all poultry and other birds including all hatching eggs and all day-old chicks require a "Poultry and Bird Import Permit" for entry into the state. Those species of poultry and birds capable of producing high WN virus levels are required to undergo a seven-day pre-arrival quarantine before qualifying for an entry permit. The geographic location of the flock of origin for poultry and bird imports are evaluated for proximity to HPAI detections before import permits are issued. Poultry and other birds arriving in the state not meeting entry requirements are refused entry. In FY23, 69 shipments of poultry or other birds were refused entry or returned by carriers or by the USPS to their origins for failing to meet entry requirements. West Nile virus arrived in the continental U.S. in 1999 and now affects all states except Hawai‘i and Alaska.

Bovine Tuberculosis (bTB)

Bovine Tuberculosis free status maintained

Bovine tuberculosis (bTB) a chronic, debilitating disease of cattle, bison, goats, cervids, and other animals that can also cause a serious disease in humans, is caused by the bacteria Mycobacterium bovis. State and federal veterinarians test cattle herds annually and manage hunter assisted surveillance of wildlife on the East end of Moloka‘i, where bovine tuberculosis had been a recurrent problem until 1997. To prevent the potential spread of bovine tuberculosis from eastern Moloka‘i, all cattle east of Kamalo were required to obtain a permit and have an annual negative BTB test to move. Prior to 2021, the last bTB infected cattle herd, located on eastern Moloka‘i, was depopulated

when a single cow was identified with bTB in 1997 and no new cases of BTB in cattle were found at that time.

In June 2021 a small cattle herd was identified as infected with bovine Tuberculosis (bTB) on the island of Molokaʻi. The ADCB, in collaboration with USDA APHIS VS, conducted a disease investigation examining and testing trace herds associated with the index herd. By FY23, five (5) cattles and one (1) mixed swine cattle herd were identified as infected with bTB and subsequently depopulated. During that time two (2) hunter collected axis deer were also found infected with bTB. No other bTB infections have been found since.

In response to the bTB detections on Molokaʻi, Quarantine Order 158 was placed on the entire island restricting movement of ungulates by permit only. A memorandum of understanding (MOU) between the Hawaiʻi Department of Agriculture (HDOA) and the USDA APHIS VS, on the requirements and responsibilities for maintaining Hawai'i's Accredited Free state status regarding the risk of bovine tuberculosis (bTB) was executed on November 17, 2022, with a minor revision on January 20, 2023. The latest revision was signed in November 2023. The MOU and bTB activities by HDOA and USDA APHIS VS are necessary for the State of Hawaiʻi to maintain a "Bovine Tuberculosis Accredited Free State Status." The MOU, and HDOA and USDA APHIS VS responsibilities detailed in the MOU, are subject to annual review and renewal.

The branch works with hunters, the Department of Land and Natural Resources (DLNR), and USDA Wildlife Services (USDA WS) to source wildlife samples for bTB analysis. As reported previously, only two (2) infected wildlife (axis deer) have been identified since 2021. USDA WS also began a two-year project on Molokaʻi (in FY24) to evaluate wildlife population density and movements, and wildlife interactions with livestock. It is hoped that the study will help determine what strategies can be employed to mitigate exposure to livestock.

Bovine Brucellosis

Bovine Brucellosis class free status maintained

Hawaiʻi has been officially classified as free of bovine brucellosis since 1983.

Bovine brucellosis is an infectious disease of cattle, bison, and elk caused by the bacteria Brucella abortus. Brucellosis can also infect humans. During the fiscal year, 41 cattle were tested for brucellosis. No suspects or reactors were found. However occasional spill over of Brucella suis from infected feral swine and Yersina entrocolitica will cause cross reactivity on cattle surveillance testing resulting in herd epidemiological investigations that may include herd testing. These investigations find that in areas where B. suis is endemic in feral swine, a single or few heads may become transiently infected but no cattle to cattle spread has been seen and no herd reproductive abnormalities have been found.

Swine Brucellosis & Pseudorabies (PRV)

Hawaiʻi maintains free statuses for Swine Brucellosis and Pseudorabies

Brucellosis
Hawai‘i retained its free status for swine brucellosis during FY23.

Brucellosis in swine is caused by the bacteria Brucella suis. Infected swine experience reproductive problems including abortion and infertility. Brucella suis can cause serious infections in humans. One (1) domestic swine herd was found infected in FY23, quarantined, and underwent a test and removal of reactors plan in FY23 to rid the herd of swine brucellosis. As a result, Hawai‘i maintains its Brucella suis free status.

Feral swine in Kona, Hāmākua (Hawai‘i), Kahakuloa (Maui), Ft. Shafter westward through Waianae, the North Shore, and Windward (O‘ahu) are known to be infected with swine brucellosis. Exposure of domestic swine to infected feral swine and the practice of maintaining transitional herds of mixed feral and domestic swine have been the source of all domestic swine brucellosis infections in the past.

In addition to annual testing of all sows and boars over six (6) months of age at slaughter, 25 percent of the herds in the state are randomly selected for testing to determine their brucellosis status. Surveillance for FY23 included 682 domestic swine and 57 feral swine samples. One (1) domestic swine herd was infected, and 14 percent of the feral swine tested were reactors to swine brucellosis.

Pseudorabies
Hawai‘i maintains a free status for pseudorabies in swine.

Pseudorabies (PRV), a viral infection of swine, causes respiratory disease and reproductive failure. Pseudorabies infection of other species (such as dogs) is typically fatal, but humans are not susceptible.

Pseudorabies surveillance testing of 363 domestic swine samples during FY23 found no infected domestic swine. One (1) transitional herd was determined to be infected. Feral swine on the islands of Hawai‘i, Maui, and O‘ahu are known to be PRV-infected. Forty-three (26/60) percent of the feral swine tested in FY23 tested positive for PRV. Infected feral swine are a constant threat to domestic swine herds. A statewide quarantine order prohibits the commingling of feral and domestic swine as well as the inter-island movement of feral swine.

Transmissible Spongiform Encephlopathies Scrapie
Hawai‘i continues to be recognized as consistent with the USDA Voluntary Scrapie Certification Program Standards.

Scrapie is a transmissible, insidious, neuro-degenerative disease affecting the central nervous system of sheep and goats. Scrapie has not been diagnosed in goat or sheep flocks in Hawai‘i.

Hawai‘i received USDA cooperative agreements continued in FY07 to provide sheep and goat flock owners with educational information, enroll flocks in the status program,

conduct surveillance testing on cull and diagnostic animals, and provide for some genotype testing. A quarantine order is in place to require change of ownership identification requirements for certain classes of sheep and goats for Hawai‘i to remain consistent in the National Scrapie program.

Bovine Spongiform Encephalopathy (BSE)
During FY23 BSE sampling continued on cattle exhibiting neurological signs, unknown cause of death and those unable to rise continued. There were no positive test results.

Importation/Exportation of Livestock, Poultry and Other Animals
An embargo on the movement of poultry and other birds into Hawai‘i through the U.S. Postal Service implemented in September 2002 remains in place. The embargo remains in place to prevent the entry of West Nile virus, Avian Influenza and other avian diseases from entering the state with infected birds.

Inspected and approved for entry into the state: 592 head of livestock; 8,885 poultry and other birds; 530,739 day-old chicks and hatching eggs; and 5,949 other animals. Over 19,300 dogs and cats were also received at the Airport Animal Quarantine Holding Facility at HNL.

The branch staff conducted 149 compliance investigations, 11 citations were issued, 332 written warnings, and 4 animals and 65 post-office shipments were refused entry.

VETERINARY LABORATORY

Travis Heskett, D.V.M., D.A.C.V.P. Lab Director
Raquel Wong, D.V.M., Veterinary Medical Officer

The Veterinary Laboratory provides essential services to assist department veterinarians in identifying and controlling diseases affecting livestock and poultry. The Veterinary Laboratory provides a diverse range of diagnostic services. Professional staff are trained in different disciplines such as pathology, histology, serology, parasitology, and bacteriology. If specialized services are required, laboratory staff members handle and package specimens in accordance with specific shipping regulations to ensure the safe and secure transport of specimens.

In the FY23 fiscal year, the number of tests performed was similar to previous years. The laboratory tests swine serum for brucellosis, pseudorabies, and porcine reproductive and respiratory syndrome (PRRS). Serum samples are also forwarded to NVSL-FADDL for classical swine fever surveillance. The veterinary laboratory performs necropsies (which include histology and often parasitology) to investigate unusual morbidity and mortality events. Tissue samples were collected in 21 instances to rule out African Swine Fever and Classical Swine Fever.

Rabbit Hemorrhagic Disease Virus was detected on a single Hawaiian farm in 2022. In FY23, samples from six (6) rabbits that were necropsied were forwarded for molecular

testing to rule out the continued presence of this disease (RHDV was not detected). Diagnostic investigations into poultry deaths included the collection of samples for avian influenza surveillance, and avian influenza was not detected in the state in 2023 (44 avian influenza tests were performed). The laboratory performs Equine Infectious Anemia testing on horse serum, and the presence of this virus was not detected in 244 horses tested. Dogs and cats in quarantine are routinely tested for intestinal parasites, and necropsies and rabies tests are performed on dogs and cats that die during the quarantine period. Rabies was not detected in any animal tested in 2023 (seven (7) domestics and three (3) non-domestic species were tested).

AQUACULTURE DEVELOPMENT PROGRAM
Todd Low, Program Manager

The Aquaculture Development Program (ADP) provides essential support services to encourage further growth and diversification of the aquaculture industry. ADP is a planning, development, and problem-solving organization whose goals are to assist in the start-up of production and service businesses and to contribute to their success. Specific activities include planning and policy formulation, new business development, permit facilitation, marketing assistance, disease diagnosis and prevention assistance, and co-funding of statewide technical extension. The mission of ADP is to: prepare and implement state aquaculture plans and policies for the expansion of aquatic farming, and research and technology transfer business; coordinate statewide development activities; and directly assist both public and private sector interests in achieving their aquaculture-related goals, in order to create jobs and diversify the economies of all islands.

Major activities for FY2023 were:

- Estimated wholesale product value for the industry was $89.6M for calendar 2022 according to Department statisticians, which represents a 12% increase from 2021. Algae continue to constitute high value and amount to 50% of the total value of the industry.

- Continued the joint implementation of the amended Chapter 190D, HRS, Ocean and Submerged Lands Leasing law with the DLNR. Keāhole Point Fish produced 900 tons of Hawaiian Kanpachi (*Seriola rivoliana*) – 38% of their current allowable yearly production. Ocean Era Farm continues to develop their proposal for an integrated multi-trophic aquaculture operation to be located off Ewa Beach on Oʻahu. The project would integrate Nenue (*Kyphosus sandwicensis*), Moi (*Polydactylus sexfilis*) with seaweed in a submersible array.

- Integrated the concept of Restorative Aquaculture into ADP planning and tactics. Restorative aquaculture occurs when commercial or subsistence aquaculture provides direct ecological benefits to the environment, with the potential to

generate net-positive environmental outcomes. Macroalgae and bivalves improve water quality and sequester carbon and will be the targets for increased production.

Continued to provide an internationally recognized Shrimp Surveillance and Certification Program to the growing shrimp broodstock industry. The Aquaculture Veterinarian provides third-party diagnostic sample collection with chain-of-custody documentation for all Hawai‘i broodstock operations including the Oceanic Institution/US Marine Shrimp Farming Program stocks based on O‘ahu. At present, there are twelve shrimp broodstock export farms under the surveillance program and all are disease-free. Hawai‘i's shrimp broodstock are as essential to the intensely competitive global shrimp production market in Asia, as bull and cow breeders are to the beef industry. Hawai‘i’s industry shipped 450,730 broodstock shrimp to 17 countries including the U.S. in support of global food shrimp production.

- Assisted farmers with import permits and export health documentation for aquatic species on O‘ahu, Kaua‘i, Maui, Moloka‘i, and Hawai‘i. The Aquaculture Veterinarian is continuing to provide chain-of-custody sampling for a voluntary screening of imported koi stocks while in quarantine before being transferred to grow-out systems destined for export. This effort is contributing to the now significant numbers of koi being exported to the mainland and the future expanding market into the EU. The Disease Prevention Program assists in cooperation with federal oversight in developing new aquaculture drugs for food fish species.

- Promoted the local consumption of aquaculture products by participating in the Agriculture Awareness Day at the State Capital. Worked with various Internet, television, radio, and print media to provide background information, place stories and promote the industry. Maintained an email distribution list to distribute time-sensitive information to local producers.

- Provided technical reviews of research and development proposals to the Center for Tropical and Subtropical Aquaculture. Provided reviews of Aquatic Species Importation permits for the Department's Plant Quarantine Branch.

- Provided limited extension services to farmers and start-up operations. Provided inspection services for the cooperative aquaculture facilities permit to the Department of Land and Natural Resources. The Aquaculture Veterinarian provided critical diagnostic services to farmers for disease outbreak problems.

AQUACULTURE DEVELOPMENT PROGRAM
Todd Low
Branch Manager

The Aquaculture Development Program (ADP) provides essential support services to encourage further growth and diversification of the aquaculture industry. ADP is a planning, development, and problem-solving organization whose goals are to assist in the start-up of production and service businesses, and to contribute to their success. Specific activities include planning and policy formulation, new business development, permit facilitation, marketing assistance, disease diagnosis and prevention assistance, and co-funding of statewide technical extension.

The mission of ADP is to: prepare and implement state aquaculture plans and policies for the expansion of aquatic farming, and research and technology transfer business; coordinate statewide development activities; and directly assist both public and private sector interests in achieving their aquaculture-related goals, in order to create jobs and diversify the economies of all islands.

Major activities for FY2023 were:

- Estimated wholesale product value for the industry was $89.6M for calendar 2022 according to Department statisticians, which represents a 12% increase from 2021. Algae continue to constitute high value and amounted to 50% of the total value of the industry.

- Continued the joint implementation of the amended Chapter 190D, HRS, Ocean and Submerged Lands Leasing law with the Department of Land and Natural Resources. Keāhole Point Fish produced 900 tons of Hawaiian Kanpachi (*Seriola rivoliana*) – 38% of their current allowable yearly production. Ocean Era Farm continues to develop their proposal for an integrated multi-trophic aquaculture operation to be located off Ewa Beach on O‘ahu. The project would integrate Nenue (*Kyphosus sandwicensis*), Moi (*Polydactylus sexfilis*) with seaweed in a submersible array.

- Integrated the concept of Restorative Aquaculture into ADP planning and tactics. Restorative aquaculture occurs when commercial or subsistence aquaculture provides direct ecological benefits to the environment, with the potential to generate net-positive environmental outcomes. Macroalgae and bivalves improve water quality and sequester carbon and will be the targets for increased production.

- Continued to provide an internationally recognized Shrimp Surveillance and Certification Program to the growing shrimp broodstock industry. The Aquaculture Veterinarian provides third-party diagnostic sample collection with chain of custody documentation for all Hawai‘i broodstock operations including the Oceanic Institution/US Marine Shrimp Farming Program stocks based on O‘ahu. At present, there are twelve shrimp broodstock export farms under the surveillance program and all are disease-free. Hawai‘i's shrimp broodstock are as essential to the intensely competitive global shrimp production market in Asia, as bull and cow breeders are to the beef industry. Hawai‘i’s industry shipped 450,730 broodstock shrimp to 17 countries including the U.S. in support of global food shrimp production.

- Assisted farmers with import permits and export health documentation for aquatic species on O‘ahu, Kaua‘i, Maui, Moloka‘i and Hawai‘i. The Aquaculture Veterinarian is continuing to provide chain of custody sampling for a voluntary screening of imported koi stocks while in quarantine before being transferred to grow-out systems destined for export. This effort is contributing to the now significant numbers of koi being exported to the mainland and future expansion into the EU. The Disease Prevention Program aids with cooperation, with federal oversight, in developing new aquaculture drugs for food fish species.

- Promoted the local consumption of aquaculture products by participating in the Agriculture Awareness Day at the State Capital. Worked with various Internet, television, radio and print media to provide background information, place stories and promote the industry. Maintained an email distribution list to distribute time-sensitive information to local producers.

- Provided technical reviews of research and development proposals to the Center for Tropical and Subtropical Aquaculture. Provided reviews of Aquatic Species Importation permits for the Department's Plant Quarantine Branch.

- Provided limited extension services to farmers and start-up operations. Provided inspection services for the cooperative aquaculture facilities permit to the Department of Land and Natural Resources. The Aquaculture Veterinarian provided critical diagnostic services to farmers for disease outbreak problems.

FY2023 Projects:

- Contracted the University of Hawai‘i to evaluate the bioproducts (e.g., bio-fuels, bio-plastics, bio-composites) potential of five native seaweed species. The resulting information will be key to strategizing on which

native seaweed species have the best potential for downstream economic growth.

- Contracted with EPIX Analytics to conduct a risk assessment, based on a science-based, systematic evaluation process, to assesses the hazards and risks associated with restorative aquaculture using indigenous seaweed and bivalves. The resulting information will assist future permitting decisions for restorative aquaculture activities.

- Contracted with the University of Hawai‘i to digitize the “Permits and Regulatory Requirements for Aquaculture in Hawai‘i” document. The document was created in 1993 and revised in 2011. By digitizing and hosting the document on the UH Seagrant website, it will serve as an information resource for new and existing aquaculture practitioners.

- Contracted with Hatch Blue to improve the HDOA Aquaculture Development Plan by incorporating components of the best-in-class aquaculture plans, including restorative aquaculture activities. HATCH brings a unique global perspective as an aquaculture accelerator funding entity as well as an internationally recognized aquaculture consultant. A globally competitive strategy provides HDOA with a solid foundation for future aquaculture development.

PESTICIDES BRANCH
Greg Y. Takeshima
Branch Manager

The Pesticides Program regulates the distribution and use of pesticides through a program of licensing pesticide products, testing the competency of restricted use pesticide applicators, and educating and monitoring pesticides distribution and applicators. This is to ensure the efficient, effective, and safe use of pesticides to minimize adverse effects on humans and the environment.

Funding for the Pesticides Branch staff, general operations, and special projects are provided through three sources; general funds, federal grant funds, and the Pesticide Use Revolving Fund (PURF). 20 of the Pesticides Branch's 28 positions are currently funded by the Pesticide Use Revolving Fund, 5 positions are general funded, and 3 are grant funded.

Prior to transferring enforcement staff payroll costs to the PURF, special projects supporting stakeholders were provided to further pesticide related research, outreach, and programs. Due to the increase in payroll the Branch has had to reduce services and special projects to ensure grant commitments, immediate operations, and legal requirements were met. Farmers and other stakeholders directly benefit from the services which were provided by the PURF in the form of experimental data to support special local needs (SLNs) registrations for minor and diversified crops. Without the support of SLNs, farmers and other producers have reduced options and tools to mitigate pest control opportunities.

The following are highlights of the Pesticide Branch for FY23:

Implementation of the Commercial Pesticides Disposal Program

The Hawai‘i Pesticides Disposal Program (PDP) was brought back after a 15-year hiatus and provided an opportunity for free commercial pesticide disposal to agriculture and small businesses statewide. The collection event took place on the island of O‘ahu in September. Maui's collection even is scheduled for early December, while Moloka‘i, Lanai, Kaua‘i, and two events in Hilo and Kona for Hawai‘i island are still being planned.

Extensive outreach is being conducted prior to each event with weekly online presentations provided by the Pesticides Branch project manager. Media outreach to Hawai‘i Public Radio and several news releases have substantially increased turnout to the events compared to previous disposal events.

The O‘ahu event provided disposal services to 31 participants with 7,400 pounds of pesticides being removed and properly disposed of. The Maui event currently has 38 registered participants awaiting the disposal event to be held in December.

Section 18 Emergency Exemptions for the Use of Demon Max on Coconuts and Other Palms to Control Coconut Rhinoceros Beetle (CRB)

The Plant Industry Division first detected CRB on Kauaʻi, Maui, and Hawaiʻi island in 2023. These are the first detections of CRB on the neighbor islands and an application was submitted to the Pesticides Branch to request a Section 18 Crisis Exemption for the use of Demon Max through both aerial (unmanned aerial vehicles) and ground applications.

The crisis exemption which originally only included Kauaʻi was approved on August 16th, 2023. An amendment to include Maui and Hawaiʻi island was approved on November 16th, 2023. An extension of the crisis exemption was granted to HDOA due to the submission of a quarantine exemption request submitted with the crisis exemption amendment. The Pesticides Branch awaits full approval from the U.S. EPA, which is expected in late December 2023 or early January 2024.

Special Local Needs (SLNs) Registrations

Several SLNs were processed throughout the year to provide products for specific uses and sites:

- An insect growth regulator SLN was submitted to provide treatment options in Nāhiku Valley on the island of Maui to combat Little Fire Ant (LFA) populations.
- A novel approach to LFA control was provided via the SLN process. Advion WDG is incorporated into a gel-bait matrix and may be applied in and around residential, recreational, commercial, and natural landscapes, golf courses, and other non-crop areas.
- Fruit flies are a common pest to most fruiting crops; to reduce their numbers to a more manageable population an SLN was provided for the application of Dibrom 8 Emulsive to windbreaks and roosting areas. The emulsion is mixed with an attractant and is not directly applied to any crops but is successful in reducing pest pressure through understanding fruit fly behaviors.

Registration Database Upgrade

Approximately 3,300 pesticide product renewals must be processed annually and approximately 300 new pesticide products request initial licensing. The Registration and Technical Review Unit has successfully tested and transferred the licensing process from a cumbersome off-the-shelf system to a custom licensing system. The system provides multiple layers of efficiency for seasoned staff and reduces the learning curve for new staff. Costs to license the off-the-shelf database have been reduced by over 50% due to the new system.

Educational Outreach and Certification of Applicators

Education staff are tasked with providing regulatory recommendations to both Pesticide Law violators, retailers, and other stakeholders. Outreach events included Worker

Protection Standards trainings, personal protective equipment seminars, label interpretation, presentations at the Hawai‘i Pest Control Association’s Integrated Pest Management training, and sister agency guidance (Hawai‘i Department of Transportation).

Due to the reduction in staffing at the University of Hawai‘i, the Education Section has increased its response to Certified Applicator Exam training. Sessions for both private and commercial certification study guide review have provided opportunities for prospective certified applicators to learn the requirements of becoming a certified applicator.

Examinations for certified applicators are a priority for the Education and Certification Section to ensure certified applicators are well versed in label comprehension and interpretation, mathematics, safety, and other regulatory requirements. Examinations are provided on Kaua‘i, Maui, and Hawai‘i island once a month, and on O‘ahu twice a month.

Ongoing Enforcement Activities

The Pesticides Branch continues to enforce and regulate both Federal and State Pesticides Laws. In federal fiscal Year (FFY) 2023 the Pesticides Branch conducted 174 inspections including record keeping, marketplace surveillance, worker protection, RUP dealers, agricultural use, and structural use inspections. While the total number of inspections decreased due to a reduction in staff and time spent training new staff, an overall decrease of actual pesticides violations outpaced the reduced number of inspections.

	FFY 2023	FFY 2022	FFY 2021
Total Inspections	174	244	434
Official Actions	20	74	200

In FFY 2023, 1 in every 6 inspections resulted in an official action by the Pesticides Branch. Compared to FFY 2022, 1 in every 3 inspections found a violation, and FFY 2021, 1 in every 2 inspections. For reference, the Pesticides Branch Enforcement Section was nearly fully staffed in FFY 2021 with only 2 vacancies, in FFY 2023 the Pesticides Branch carried 5 vacancies out of 10 budgeted staff, working at approximately 50% staffing levels.

In conjunction with the Education Section’s efforts, violations related to worker protection safety were reduced to one (1) violation, down 90% from FFY2022. After an investigation has officially concluded, Education Section staff are required to follow up with any violators to ensure full compliance and comprehension is achieved to reduce repeat violations.

Initiation of a Pesticide Drift Monitoring Program

The Pesticides Branch was tasked with developing a Pesticide Drift Monitoring Program to identify if schools are being affected and/or impacted by pesticide use throughout the State. In 2022, the Pesticides Branch received a completed Drift Monitoring Plan to address the methodology of implementing the program. $500,000 of general funds was provided to the Pesticides Branch by the Hawai‘i State Legislature and another $116,000 was budgeted through the Pesticides Use Revolving Fund to initiate the program.

Six schools will be selected to participate in the program, three immediately adjacent to agricultural production and three schools not located near agriculture will be selected as the control group. Monitoring will take place over the next 4 years and the collected data will be analyzed. The information will be summarized and be made available to better provide and understand the impacts of agricultural applications of pesticides.

Restricted Use Pesticides (RUPs) Use Annual Report

Certified applicators are required to submit to the Pesticides Branch an annual report on the use of RUPs. To reduce errors and increase reporting accuracy the Pesticides Branch requires 100% of certified applicators to submit their use reports, whether a certified applicator applied an RUP or not.

2020 was the first year of required reporting. While the Pesticides Branch provided several workshops and numerous outreach events, submission rates were at approximately 75%. Due to changing methods and increased notifications, submission rates have substantially increased to over 97%.

The Pesticides Branch has developed an RUP Reporting smartphone application and will provide training seminars to certified applicators. The use of the app will decrease transcription errors and provide certified applicators a digital option for submitting data to the Pesticides Branch.

The data is transcribed, analyzed, summarized, and provided to the public on HDOA’s website:

https://hdoa.hawaii.gov/pi/main/rup-use-reports/

PLANT PEST CONTROL BRANCH
Darcy Oishi
Acting Branch Manager

The primary function of the Plant Pest Control Branch is to reduce population densities of plant pests that cause significant damage to agriculture and the environment to manageable levels. With Hawai'i's year-round mild climate and wide selection of available host plants, new immigrant plant pests (insects, mites, weeds, plant diseases, etc.) quickly become established. The overall objective of the Plant Pest Control Branch is to minimize the effect of these invasive plant pests in Hawai'i. This is accomplished through pests being detected, identified, delimited, contained, eradicated and/or controlled through biological, chemical, or mechanical means. The Branch consists of the Biological Control Section and the Chemical/Mechanical Section and includes the Hawai'i State Apiary Program and the Hawai'i Ant Lab.
Projects and Accomplishments of the Plant Pest Control Branch included the following during FY 2023:

I. BIOLOGICAL CONTROL SECTION

The Biological Control (Biocontrol) Section of the Plant Pest Control Branch (PPC), Hawai'i Department of Agriculture (HDOA) protects Hawai'i's agricultural enterprises and natural resources using biological control methods of insects, weeds, and diseases that are currently established, or which may enter the State and cause economic or environmental losses. The Biocontrol Section is committed to finding natural enemies to control plant pests. This section comprises the following units: Plant Pathology, Taxonomy/Exploratory, Insectary, and Apiary.

The units work together to implement the various phases of biological control programs, including the detection of new immigrant pests, exploration for natural enemies of targeted pests in their native regions, collection, and shipment of promising control agents to certified quarantine facilities in Hawai'i, identification of the agents, propagation or culture of prospective agents under quarantine, study, and testing to determine their suitability for use as biological controls, liberation from quarantine of approved agents, and, finally, mass production and release of the agents into the environment to effect control of the targeted pest.

In June 2023, HDOA-PPC held a Biocontrol Section strategic meeting at the Honolulu PPC office to determine the direction the section was taking going into the next fiscal year. The meeting was attended by the former Plant Industry Division Administrator, Acting PPC Branch Manager, Hawai'i Island District Entomologist, Apiary Technician, Exploratory Entomologist, Insectary Entomologist, Insectary Technician, and Insect

Taxonomist. This was the first in-person section meeting in years and a very positive and motivating experience, especially for our Hilo staff who flew in for the meeting.

Taxonomy Unit

The Taxonomy Unit gathers and develops information for and provides information to interested parties on the occurrence, distribution, host plant association, and economic importance of insects within the State. The Plant Pest Control Branch Insect Taxonomist serves as the authoritative specialist and advisor in taxonomic entomology involving insect identifications, emphasizing insects of agricultural importance, their parasites, and their predators.

Sample Submissions and Identifications of Plant Pests, Insects, and Other Arthropods

Over 150 submissions of insects and related organisms have been identified by the Insect Taxonomist on Oʻahu. Eleven were submitted by the pest control industry and eight were submitted by the Plant Quarantine Branch. See Hawaiʻi Island District for submissions to the Hawaiʻi Island District Entomologist.

Seventy arthropod specimens were curated and added to the State's Zoological Reference Collection, which now houses over 173,300 specimens.

Over 500 pest calls, pest report emails, and inquiries from the general public, pest control operators, University of Hawaiʻi Extension Agents, partner agencies, etc., and 643-pest.org reports regarding various pests were received, processed, and responded to by the Insect Taxonomist. Since the COVID-19 pandemic, HDOA-PPC has been encouraging the public and our partners first to submit digital photos via email when requesting identification (ID) assistance. Many times we can provide an ID with sufficient images, eliminating the need for physical samples to be submitted to our offices and for specimens to be mailed to Oʻahu from the outer islands. These digital ID numbers are included with the "Pest Calls".

Insects and related arthropods & misc plant pests identified	150
Plant Quarantine Branch identifications	8
Submissions by the pest control industry	11
Pest calls (including emails and 643pest.org reports)	500
Specimens added to the Entomology Reference Collection	70

New Pest Detections of Insects and Other Arthropods

New species records recorded	24
New immigrant species	6
New U.S. records	1
New Hawai‘i State records	5
New island records	9

An aphid, *Uroleucon nigrotibium* (Olive, 1963) (Hemiptera: Aphididae)

New state record

Farmers on Maui alerted HDOA-PPC and the University of Hawai‘i (UH) to severe swarms of aphids on various crops and plants in June 2023. HDOA-PPC staff on Maui collected samples from various crops and plants in the Asteraceae family including sunflower, lettuce, and *Bidens pilosa* (Spanish needles). Samples were slide mounted and submitted to the United States Department of Agriculture (USDA) National Identification Services (NIS) for confirmation. Both the HDOA-PPC Taxonomist and the USDA National Aphid Specialist, Dr. Gary Miller, determined this species is in the genus *Uroleucon* and could possibly be *Uroleucon ambrosiae*, but with the disclaimer that the genus *Uroleucon* is a very taxonomically challenged group and needs revision. Specimens collected by farmers from Moloka‘i on various “leafy greens” such as lettuce and additional specimens from Maui infesting lettuce (submitted to UH) were subsequently sent to USDA for molecular analysis.

This molecular identification is based on 658bp of the barcoding region of COI (LCO1490/HCO2198). The top hits in both BOLD and GenBank are Ur *Uroleucon nigrotibium*, with multiple specimens having 100% sequence identity. However, there are specimens identified as several other species in both databases with >99% sequence identity. The BOLD algorithm indicates *U. nigrotibium* as the best identification.

Slide-mounted specimens collected on the Big Island in 2012, from *Senecio madagascariensis*, appear to be the same species, but it’s difficult to say without additional molecular analysis whether they are the same.

The genus *Uroleucon* needs revision with both morphological and molecular analysis to determine clear species lines. *U. nigrotibium* is specific to *Solidago* species in literature, however, our species has been collected from various Asteraceae species, typical of the genus *Urolecuson*. In any case, this is the first official state and island record for Maui.

***Macrohomotoma gladiata* Kuwayama, 1908 (Hemiptera: Carsidaridae), A psyllid infesting Chinese banyan**

New state record

In November 2022, the Hawai‘i Department of Agriculture, Plant Pest Control Branch (HDOA-PPC) was contacted by a business in the Māpunapuna industrial area about a tree fully covered in a “snow-like” white substance. Upon a site visit, a single *Ficus microcarpa* (Chinese banyan) tree was found to be heavily infested with psyllids. Immediate surveys in the surrounding areas found additional infested trees. Specimens were identified as *Macrohomotoma gladiata* and digital images were confirmed by Dr. Diana Percy (Natural History Museum & University of British Columbia) on November 17, 2022, and specimens were confirmed by Dr. Cheryle O’Donnell, USDA-NIS in January 2023.

***Phalacrotophora epeirae* (Brues, 1902) (Diptera: Phoridae), A predatory fly of spider eggs**

New state record confirmed

Egg sacs of *Gasteracantha* spiders filled with fly pupal casings have been collected on Kaua‘i in 2014 and 2017, however, specimens of the emerging flies were damaged. It was not until a resubmission of fresh samples in 2023 by Plant Quarantine Branch (PQB) Inspector Laura Ishii that the incumbent Taxonomist was able to identify the predatory flies. It was difficult to track down a specialist to confirm the identification, but the Melzer Lab at the UH Mānoa assisted by running molecular analysis on the specimens. With the morphological identification and the molecular data, we were able to identify the flies as *Phalacrotophora epeirae*, a predatory fly of spider eggs.

While this predator may seem beneficial to those who dislike spiders, this is of concern for our many endemic spider species.

Anchonus duryi Blatchley, 1916 (Coleoptera: Curculionidae), A weevil

New state record

A single adult weevil was collected at Maui Nui Botanical Garden, Kahului, Maui in 2017. Still, it remained unidentified until 2022 when Dr. Lourdes Chamorro (USDA-NIS, National Weevil Specialist) and the Taxonomist worked through unidentified weevil specimens in Hawai’i.

Luckily the original collector, PQB Inspector Erika Magarifuji, was willing to go back to the exact site and found additional beetles. This beetle was collected from fallen, dead, rotting branches of *Aleurites moluccanus* (kukui). There was no evidence of beetles attacking live branches of the tree. This species is known from Florida and the Americas. Zimmerman (1964) also reported it from the S. Pacific: “This species is a flightless ground-dweller and appears most often to be found beneath decaying wood or other vegetation on the ground.”

Reference:

Zimmerman, E.C. 1964. *Anchonus duryi* in Southeastern Polynesia (Coleoptera: Curculionidae: Hylobiinae: Anchonini). Psyche J. Entomol. 71: 53–56.

***Oricoruna arcotensis* (Mani & Kurian, 1953) (Hymenoptera: Pteromalidae), A parasitoid associated with cottony cushion scale**
New state record, possible new U.S. record
Icerya purchasi, the cottony cushion scale (CCS), has been resurging as an invasive pest in recent years. CCS has been established in Hawai‘i for well over a century but has been under good control by historically released biocontrol agents. Unfortunately, CCS has been negatively impacting native wiliwili trees statewide and the HDOA-PPC Insectary Entomologist looked closer to determine why existing biocontrol agents and natural enemies are not as effective as they once were. One known parasitoid of CCS in Hawai‘i is the fly *Cryptochaetum iceryae*.

Cottony cushion scale-infested wiliwili foliage was collected from Koko Crater Botanical Garden on O‘ahu in August 2022 and held for natural enemy emergence. Interestingly, adult Pteromalid wasps emerged from CCS attacked by *Ctyptochaetum iceryae*. These parasitoids were identified as *Oricoruna arcotensis* by Dr. Roger Burks (University of California Riverside) and it appears this may also be a possible new U.S. record.

Oricoruna arcotensis is a known associate of CCS in literature, however, almost all literature points to O. *arcotensis* as a primary parasitoid of CCS. According to the Insectary Entomologist, observations and dissections show that O. arcotensis acted as a hyperparasitoid of *Ctyptochaetum iceryae* in this case. According to Dr. Burks, further studies should be conducted to determine if this is indeed a regular occurrence in Hawai‘i and if *O. arcotensis* is negatively impacting the control of CCS. Species in closely related genera (*Coruna*) are known hyperparasitoids.

***Baeoentedon balios* Wang, Huang & Polaszek, 2014 (Hymenoptera: Eulophidae), A parasitoid of whiteflies**
New state record
A single adult parasitoid emerged from the ficus whitefly, *Singhiella simplex*, collected from infested *Ficus microcarpa* in Honolulu, Māpunapuna, O‘ahu, in November 2022. This parasitoid is a fortuitous natural enemy of whiteflies and beneficial as all whiteflies are pests in Hawai‘i. Images were sent to and confirmed by Dr. Huang, one of the authorities who described the species.

***Anastatus semiflavidus* Gahan, 1914 (Hymenoptera: Eupelmidae), A parasitoid of stinkbug eggs**
New state record
Five parasitoid wasps emerged from the eggs of the nonnative stinkbug, *Brochymena quadripustulata*, collected on *Prosopis pallida* (kiawe), in Sand Island Park on O‘ahu in July 2022. Images were sent to Dr. Gary Gibson (Canada National Collection and

World Eupelmidae Expert) for confirmation. According to Dr. Gibson, "If it was in the USA “proper” I would say it is *Anastatus semiflavidus* Gahan, or at least what presently is interpreted as that species, the genus being badly in need of a modern revision for the region." In literature, A. *semiflavidus* seems to be a parasitoid of various groups of insect eggs (Lepidoptera, Hemiptera). Any generalist parasitoid is of concern as we do not know what effect it will have on beneficial or native insects.

***Liponera* sp. (Hymenoptera: Formicidae), an ant**
Newly updated identification, New Island Record
DLNR Entomologist Karl Magnacca alerted the Insect Taxonomist to a possible new ant species he collected from pitfall traps on Lehua island, off Niʻihau. The reproductive males were identified as *Liponera* sp. and could not be identified to species with certainty without workers. *Liponera* sp. has not been recorded in Hawaiʻi previously.

A review of ant collections in the Bishop Museum and HDOA’s Entomological Reference Collection found the same male ant species, however, misidentified as *Ooceraea biroi (=Cerapachys silvestrii*). These males collected from Oʻahu as far back as 1974 were misplaced with workers of true *O. biroi* in both collections. Specimens from Lehua were sent to Dr. Ben Hoffmann (CSIRO Australia) for molecular analysis to determine a species identity. This represents a new island record and corrected misidentification.

New Island Records
Kauaʻi
- *Oryctes rhinoceros* (Linnaeus, 1758) (Coleoptera: Scarabaeidae), cococnut rhinoceros beetle
- *Stephanitis typica* (Distant, 1903) (Hemiptera: Tingidae), a banana lacewing bug
- *Myrmarachne nigella* Simon, 1901 (Araneae: Salticidae), an ant mimic spider

Oʻahu
- *Diacrotricha fasciola Zeller*, 1852 (Lepidoptera: Pterophoridae), a moth on starfruit
- *Diversinervus cervantesi* (Girault, 1933) (Hymenoptera: Encyrtidae), a parasitoid of scale insects

Molokaʻi
- *Pseudacysta perseae* (Heidemann, 1908) (Hemiptera: Tingidae), avocado lace bug

Lānaʻi
- *Pseudacysta perseae* (Heidemann, 1908) (Hemiptera: Tingidae), avocado lace bug

- *Protaetia orientalis* (Gory & Percheron, 1833) (Coleoptera: Scarabaeidae), Oriental flower beetle

Pest Risk Assessment

Plant Pest Control Staff performed 17 pest risk assessments in response to USDA requests for Port Policy changes. Staff recommendations based upon assessments were accepted by PPQ insuring the continued protection of Hawai'i for these pests despite changes in port policies for the continental United States with one exception, Ditylenchus dipsaci. This nematode is a major threat to allium production. It can affect both garlic and onion production. HDOA questioned some of the core assumptions in the USDA stance and wrote: "it is imperative for USDA and Hawai'i to continue to regulate the movement of D. dipsaci and prevent its establishment into growing areas that are favorable for establishment of the nematode. HDOA further notes no comprehensive surveys have been done for this species and confirmation of its presence in Hawai'i using molecular techniques should be pursued." The USDA denied the request, our first denial in over 15 years, and encouraged HDOA to request funding from USDA to do comprehensive surveys and molecular diagnostics to verify the presence of this pest in Hawai'i.

Publications

Hayes K.A., C.C. Christensen, J.R. Kim, T.M.B. Maruno, C.M. Kishimoto, **J.N. Matsunaga,** D.G. Robinson, N.W. Yeung. 2023. New records of Otala lactea (Müller, 1774) and *Zachrysia provisoria* (Pfeiffer, 1858) in Hawai'i: using collaborative networks to combat invasive sleeper populations. BioInvasions Rec. 12(2): 513–534. https://doi.org/10.3391/bir.2023.12.2.15

Hoffmann B.D., **J.N. Matsunaga**, M. Montgomery, **D. Oishi**, and W.T. Tay. 2023. The establishment of a trap-jaw ant, *Odontomachus ruginodis* in Hawai'i. BioInvasions Rec. 12(4): 965–971. https://doi.org/10.3391/bir.2023.12.4.09

Simpson, A., P. Fuller, K. Faccenda, N. Evenhuis, **J. Matsunaga**, and M. Bowser. 2022. United States Register of Introduced and Invasive Species (US-RIIS) (ver. 2.0, November 2022): U.S. Geological Survey data release. https://doi.org/10.5066/P9KFFTOD

Insectary Unit

The Biocontrol Section, Insectary Unit receives, evaluates, and propagates beneficial organisms for use in the biological control of agricultural and forest pests in the State. The unit receives and screens in the Insect Containment Facility all incoming shipments of insects, and related organisms; determines, segregates, and eliminates undesirable introductions; conducts and evaluates host specificity tests; studies the life habits and host preference of beneficial organisms; and develops suitable techniques for mass rearing.

The primary purpose of this position is to assess, evaluate, and release biological control agents for the potential control of invasive arthropods and plant species that are agricultural or forest pests in Hawai‘i; assess the extent of new pest infestations detected in Hawai‘i; maintain facilities and equipment; and conduct outreach and educational activities as needed.

Erythrina Gall Wasp Project

Eurytoma erythrinae Gates & Delvare (Hymenoptera: Eurytomidae) was first released in November 2008 to control the invasive erythrina gall wasp (EGW), *Quadrastichus erythrinae* Kim, (Hymenoptera: Eulophidae), which invaded the Hawaiian Islands in April 2005 and decimated hundreds of Erythrina trees, including our endemic wiliwili. Eurytoma erythrinae is an ectoparasitoid that attacks EGW by feeding on several of the immatures in galls to complete its development. Six months after the first release, E. *erythrinae* established successfully in the pest habitat and wiliwili trees began to recover.

Although *Eurytoma erythrinae* was successful in saving the *Erythrina* trees, damage by EGW on flowers, seed pods, and seedlings of the endemic wiliwili trees persists. Galls formed by EGW on flowers and seedlings are usually small and scattered but the E. *erythrinae* parasitoid fares well only on large galls. Furthermore, the formation of seed takes approximately three months, and all flower stages are susceptible up to mature seed formation. Seedlings are likewise vulnerable and easily succumb to EGW damage. Hence, the future survival of *E. sandwicensis* remains threatened.

Evaluation of a second biocontrol agent, *Aprostocetus nitens* Prinsloo & Kelly 2009, was completed and the Hawai‘i Department of Agriculture has submitted an application for its release to aid *E.erythrinae* in combatting EGW [see Appendix B].

In anticipation of the approved release of *A. nitens*, HDOA-PPC did a recent field assessment on the production of wiliwili seeds and how young wiliwili trees are surviving in the field. This study was unfortunately only carried out on the Island of O‘ahu because of the restrictions of the COVID-19 pandemic. The results of this study showed that EGW damage on wiliwili stands close to urban areas is more severe compared to isolated stands. For example, at Koko Crater Botanical Garden, our assessment revealed that only 6% of flowers developed into mature seeds and young tree mortality was 30% compared to Makua Ke‘eau, a forest reserve area on the Waianae side which had an 85% mature seed development and 0% tree mortality. This study reinforces the need for a second biocontrol agent for the continued reproduction and preservation of wiliwili in the wild.

In January 2023, HDOA-PPC published the Final Environmental Assessment (FEA) and Finding of No Significant Impact (FONSI) for the proposed statewide field release of *Aprostocetus nitens* Prinsloo & Kelly (Hymenoptera: Eulophidae: Tetrastichinae) for biological control of the erythrina gall wasp, *Quadrastichus erythrinae* Kim (Hymenoptera: Eulophidae) with the Environmental Review Program. An application to place *A. nitens* on the HDOA List of Restricted Animals (Part A) and to allow the import and field release from the HDOA-PPC Insect Containment Facility (ICF) was submitted to the HDOA Plant Quarantine Branch (PQB) and awaits approval by the Board of Agriculture. The FEA has also been submitted to the USDA Plant Protection and Quarantine for consideration in the Federal permitting process.

The HDOA-PPC Insectary Entomologist has been maintaining the *Aprostocetus nitens* colony in ICF and assuring its survival while awaiting State and Federal permits for release. This includes propagating host plants for EGW and keeping them healthy and clean, infesting them with EGW, and finally exposing them to the biocontrol agent, *A. nitens*.

Macadamia Felted Coccid Project

Macadamia felted coccid (MFC), *Acanthococcus ironsidei* (Williams, 1973), is a scale insect in the family *Eriococcidae*, the felted scales, and is a very invasive pest of macadamia trees in Hawai‘i. MFC infests macadamia trees by sucking sap from stems, branches, foliage, and nuts with its syringe-like mouthparts thus, resulting in the formation of yellow spots on the leaves, stunted growth of young tissues, and losses in nut production. Heavy to severe pest infestation may result in the dieback of fruit-bearing trees or the death of young ones.

The macadamia felted coccid was first detected on macadamia trees in South Kona on the Big Island in 2005. It has since spread to other parts of the island and is impacting commercial as well as small-scale macadamia growers. Horticultural oils have been used for control of MFC, but thorough spray coverage of trees is seldom achieved. Moreover, although natural enemies have been found present on Big Island farms, their impact is not sufficient to bring the pest numbers down to low levels. MFC remains a perennial threat to macadamia farmers and the macadamia nut industry in Hawai‘i.

A potential biocontrol agent of MFC was collected by HDOA in Australia in 2013 and is currently held in the HDOA-PPC Insect Containment Facility. *Metaphycus macadamiae* is a tiny, microscopic wasp that parasitizes MFC by inserting one egg into an adult scale where it hatches into a larva, develops within, and matures into an adult, killing the host MFC in the process. This parasitoid completes development within the host in two to three weeks depending on the rearing temperature. Twelve economically important and endemic Hawaiian species of insects have already been evaluated against *M. macadamiae*. Thus far, HDOA-PPC anticipates this biocontrol agent is host-specific to

MFC and there will be no significant impact on the environment upon field release in Hawai‘i.

Maintenance of the *Metaphycus macadamiae* colony is ongoing in the Insect Containment Facility and includes propagating macadamia seedlings (see Hawai‘i Island District report), keeping host plants clean from other pests, exposing macadamia seedlings to macadamia felted coccids when they are about 12 inches in height, and finally, exposing MFC-infested macadamia seedlings to the biocontrol agent, *M. macadamiae*.

This year, HDOA-PPC staff conducted a recent statewide survey of macadamia farms to determine the most current distribution of MFC on Kaua‘i, O‘ahu, Maui, and Hawai‘i Islands. Partner agencies from Pūlama Lāna‘i and UH assisted in surveys on Lāna‘i and Moloka‘i. The Hawai‘i Macadamia Nut Association kindly worked with us to send out surveys to member farmers on Hawai‘i Island to determine the current status of infestation. Results found that MFC is still limited in distribution to Hawai‘i Island. It is imperative that this biocontrol agent is available for farmers to use as a tool to manage the very invasive macadamia felted coccid and to prevent this pest from spreading to other islands.

A Draft Environmental Assessment for the proposed statewide field release of *Metaphycus macadamiae* Polaszek & Noyes (Hymenoptera: Encyrtidae) for Biological Control of Macadamia Felted Coccid, *Acanthococcus ironsidei* (Williams) (Hemiptera: Eriococcidae), in Hawai‘i, has been drafted and will be submitted for publication upon completion and analysis of final risk assessment tests.

Nettle Caterpillar Project

Darna pallivitta (Lepidoptera: Limacodidae), stinging nettle caterpillar (SNC), is a voracious foliage-feeding, stinging, invasive caterpillar first found on Hawai‘i island in September 2001. This invasive pest fed on high-value crops, including, ornamental foliage, pasture grasses, and indigenous flora. Moreover, and equally as important, is if one encounters the larva. Its nasty and painful sting could result in an allergic skin reaction. This invasive pest created a new issue that nurserymen had to deal with because of overhead expenses incurred from a shortage of farm help due to fear of getting stung by SNC and the urgent medical care that may go with it.

The stinging nettle caterpillar spread to the islands of Maui, O‘ahu, and Kaua‘i soon after its discovery on the Big Island. Initial efforts to contain the pest with chemical pesticides and other preventative measures proved not only ineffective but costly. Hence, HDOA-PPC began to search for a natural enemy to research as a potential biocontrol agent.

Aroplectrus dimerus Linnaeus is a hymenopteran parasitoid (Family Eulophidae) collected from Taiwan during exploration in 2004 and attacks the larva of SNC in all instars of development. Risk assessment evaluation of twenty-five species in 13 families of Lepidoptera showed that the parasitoid is highly specific to SNC and would not pose a threat to non-target organisms in Hawai‘i. A. *dimerus* was approved for liberation in Hawai‘i by State and Federal regulatory agencies in 2010.

In May 2010, HDOA-PPC began statewide field releases of *Aroplectrus dimerus*. SNC and *A. dimerus* populations were assessed during a 12-month field study. After one year, it was determined that A. *dimerus* had successfully established in the environment. Surveys showed that both single and multiple field releases of this biocontrol agent at a site was sufficient to suppress SNC larvae more than 80-90%. Adult SNC moths continued to decline over time.

The effectiveness of *A. dimerus* as a larval biocontrol agent translated to a steady decline in moth abundance over time, bottoming out to its lowest pest density within three years after its liberation. Moth catches tallied in nearly 200 pheromone-baited traps deployed on the islands of O‘ahu, Hawai‘i, Maui, and Kaua‘i were at the lowest since the invasion of SNC. Persistent parasitization of SNC larvae by *A. dimerus* had effectively suppressed the pest larvae from completing development into mature moths, thus, negating pest build-up to epidemic proportions.

The introduction of this highly specific natural enemy in Hawai‘i has continued to mitigate the damage inflicted by the stinging nettle caterpillar on high-value plants. In addition, people have been relieved of burning stings and skin allergies. Similar assessment as well was echoed by community residents and plant growers in their statements, like, “We do not get stung anymore”, “we hardly see the stinging caterpillar”, “thankful for the job the wasp has done”, “understand and appreciate more the value of biological control”, among others.

Accolades from a farm nestled in a gulch on Maui attests further to the merits of the parasitic wasp. The farm is a 10-acre commercial planting of ‘ti’, *Cordyline fruticosa*, a foliage crop commonly used on the islands for decoration, culinary dishes, and native Hawaiian cultural practice. At the peak of infestation, practically all the plants on the farm were heavily infested with pest SNC larvae that all plants were pockmarked with holes or virtually eaten up close to defoliation. The farmer had all but given up plowing his plants under and then switching cultivation to another crop until the parasitoid was introduced. Six to eight months later, pest caterpillars were considerably subdued, and moth trap catches dropped dramatically, by ten-fold, to an almost undetectable level. Consequently, foliage production picked up, harvests bounced back, and the entire farm was saved.

More than 17,000 parasitoids were liberated statewide. Of this number, 40% were released on O‘ahu, 30% on the Big Island, and 15% each on Maui and Kaua‘i. *Aroplecturs dimerus* is already established throughout the island chain and kept SNC in check at a level that would not have been possible in its absence.

A few months after the release of *Aroplectrus dimerus*, a hyperparasitoid (a parasitoid attacking the beneficial biocontrol agent parasitoid) emerged in a holding jar of field-collected sinting nettle caterpillars that were parasitized by the recently released agent *A. dimerus*. The SNC larvae were collected from a Waimānalo, O‘ahu nursery where a large population of SNC larvae had ravaged potted areca palm plants. Parasitized SNC were examined in the lab and revealed that some pupae of the biocontrol agent *A. dimerus* appeared darkened. Dark colored hyperparasitoids emerged from the *A. dimerus* pupae shortly after.

This tiny hyperparasitoid was determined to be *Pediobius imbreus* Walker (Hymenoptera: Eulophidae), a generalist parasitoid wasp that has been established in Hawai‘i for over a century. First collected in 1917, P. imbreus was reared as a hyperparasitoid from the cocoon of the braconid wasp *Bracon (=Microbracon*) *omiodivorus*, which is a common primary parasitoid of caterpillars. Another documented host record is the Ichneumonid wasp *Cremastus (=Trathala*) sp. collected in 1949.

The adult *Pediobius imbreus* hyperparasitoids collected from Waimānalo are black with a yellow-green iridescence, the female about 1.6 mm in body length and the male about 1.4 mm (about 1/16th inch). According to the original description of *P. imbreus*, normal coloration is with a blue-green iridescence, which matches the five older specimens in the HDOA insect collection dated between 1917 and 1951. However, the newer Waimānalo specimens have a yellow-green iridescence, which may cause some confusion. This difference may be due to a Waimānalo color variant or the result of dead specimens changing color over time.

Hyperparasitism rates of *Pediobius imbreus* on *Aroplectrus dimerus* attacking SNC larave from the three Waimānalo field collections range from 18 to 80%. One The high percentage of hyperparasitism at this single site may be an artifact of the concentrated release of *A. dimerus* into an artificially high population of caterpillars on potted areca palms at a single plant nursery. Further examination of SNC larvae on other islands found P. imbreus parasitizing *A. dimerus* statewide.

Due to the high prevalence of this hyperparasitoid statewide, population flare-ups of stinging nettle caterpillars have continued. Therefore, biocontrol section staff continue to rear *A. dimerus* and engage in augmentative (supplemental) releases of this biocontrol agent in the field. Approximately additional 1840 parasitoids have been released since PPC started augmentative releases about two years ago.

Rearing *A. dimerus* also requires rearing of the pest host, larval SNC, and propagation of SNC host plants. Although SNC has a wide host range, areca palms and ti leaves suit our purposes better in the Insectary. Areca palms can support all the life stages of SNC, and adult moths prefer to lay their eggs on areca palm fronds. Furthermore, Insectary staff continue to keep host plants healthy and free of other pest insects which is essential for the continuation of our *A. dimerus* colony.

Hawai‘i Island District

The Hawai‘i Island District Entomologist IV, based in Hilo, handles a broad range of pests and projects across the Big Island. HDOA-PPC no longer has a Kona Entomologist position to assist the Hilo Entomologist or a Pest Control Technician which previously assisted the Hilo Entomologist until the positions were deleted.

The Entomologist receives pest calls and requests from the Big Island Species Committee (BIISC), USDA Agricultural Research Service (USDA-ARS), Hawai‘i Invasive Species Council (HISC), UH College of Tropical Agriculture and Human Resources (UH), and private pest control companies.

Emails- Around 200 emails requesting assistance with insect identification and consultation
Phone calls- Around 200 calls requesting assistance for insect identification and consultation
Walk-ins- There are 3-5 public walk-in customers a week requesting assistance with insect identification and consultation.

New pest record of significance

Paratachardina pseudolobata, lobate lac scale, discovered infesting *Hibiscus* and *Ficus* in Keahou. This is the first detection of this invasive scale insect in the field in West Hawai‘i Island.

Apiary Unit assistance

The Hawai‘i Island District Entomologist accompanies the Apiary Program Technician on honey bee queen breeder inspections, swam trap checks, and nuisance swarm calls from the public (see Apiary Program report below for more details) throughout the year.

Current Projects

The Entomologist regularly collaborates with partner agencies on projects including:

- Coconut rhinoceros beetle surveillance (BIISC)
- Africanized honey bee risk assessment and prevention (HISC, UH)

- County of Hawai‘i honey bee ordinance drafts and augmentation (Hawai‘i County Council)
- *Acaloleopta aesthetica* research and development (USDA-ARS)
- Assisting private pest control companies with identifications and other inquiries
- UH Diagnostic Lab assistance
- Biocontrol of weeds including devil weed, clidemia, and lantana (USDA Forest Service)

Macadamia felted coccid
Continued to assist O‘ahu Biocontrol staff in maintaining the *Metaphycus macadamiae* colony in the Insect Containment Facility by propagating macadamia nut seedlings. Seedlings and macadamia nuts were collected, propagated, irrigated, fertilized, and weeded weekly. Plants were inoculated with MFC and shipped to O‘ahu for *M. macadamiae* rearing.

***Acalolepta aesthetica*, “Queensland longhorn beetle” (QLB)**
In recent years, QLB has spread exponentially throughout the upper/lower Puna areas and Hilo and Hāmākua areas. To understand the biology and life cycle of this invasive pest, the Entomologist reared and researched colonies of QLB in the lab throughout each 9-month lifecycle. Larvae and adults were exposed to bolts of wood from host trees and allowed to feed and oviposit eggs for rearing purposes. Maintenance of QLB colonies involves bi-weekly harvesting of adequate host material and washing and cleaning cages. Additional larvae and adults were distributed to USDA-ARS for lifecycle research, biocontrol efficacy tests, and other research and development experiments.

***Prosapia bicincta*, Two-lined spittlebug (TLSB)**
In past years, TLSB has spread rapidly across the west side of the island but has not spread to Waiki‘i or Waimea, North Kohala. Surveys are conducted to determine if TLSB is established in these areas. According to Dr. Mark Thorne (UH), the infestations are not as bad as previous drought years. UH, researchers have observed a fungal pathogen in the field that might contribute to the natural control of this very invasive pest.

Secusio extensa
S. extensa is a biocontrol agent purposefully released against fireweed (*Senecio madagascariensis)* in Hawai‘i and is also a great biocontrol agent for Cape ivy (*Delairea odorata*). Both plants are very invasive weeds in Hawai‘i, particularly on the Big Island and Maui. The Entomologist receives occasional requests for *S. extensa* pupae or larvae to inoculate Cape ivy infestations on O‘ahu from Biocontrol staff as Cape ivy is present but in low densities. The Entomologist collects *S. extensa* from the field, gathers Cape ivy host plant material, rears ravenous larvae, and ships pupae to the O‘ahu Insectary staff for release in the field.

Apiary Unit

The Hawai‘i Department of Agriculture (HDOA) Apiary Program (located in Hilo, Hawai‘i Island) is dedicated to protecting the beekeeping industries in Hawai‘i by implementing science-based regulations, conducting regular monitoring, preventing the spread of invasive honey bee pests, offering interactive educational opportunities, and maintaining open communication with beekeepers across the state. The program was established in 2011, and although honey bees are not native to Hawai‘i, they have been present for over 150 years, providing exceptional honey and playing a crucial role in pollinating many plants that support local agriculture. The beekeeping industries in Hawai‘i include queen bee rearing for domestic and international export, honey production, and producing an array of value-added products from the hive.

The HDOA Apiary Program activities throughout the state

- Monitor traps near state ports of entry to prevent the arrival of invasive pests and diseases of honey bees. Our goal is to maintain biosecurity and environmental safety
- Conduct quarterly inspections of all honey bee queen breeder operations in Hawai‘i to ensure queen bees for export are in good health and apparently free of pests and diseases. This is done to maintain the health and well-being of our bee populations
- Offer technical assistance to beekeepers to support them in maintaining the health and vitality of their colonies
- Assist residents who need help removing honey bee swarms and hive relocation in Hawai‘i
- Vigilantly monitor any suspicious or illegal activities related to bringing honey bees, queen bees, or used equipment into Hawai‘i. Illegal importation of honey bees, queen bees, or used bee equipment into Hawai‘i can result in a class C felony and penalties of up to $200,000 [150A-14(C)]

Apiary Program Activities and Highlights for 2023

- **Maintaining queen breeding inspections:**
    - Eight honey bee queen breeders received honey bee inspections every quarter (8 breeders on the Big Island)
        - 20-25 hives assessed per inspection
        - A total of about 35 inspections
        - About 750 hives have been inspected
    - Processed 109 Export Certificates to queen breeders. These export certificates allow the breeder to export queen bees from Hawai‘i to Canada
        - Three breeders ship to Canada and the U.S. mainland

- Six breeders ship to the U.S. mainland only

Queen Breeders & Export Certification	
Queen Breeding Companies	8
Hawai‘i Island Queen Breeders	8
Domestic Annual # Inspections	33
Canadian Annual # Inpsections	9
# Breeders Shipping to Both Canada & U.S. Mainland	3
# Breeders Shipping to U.S. Mainland Only	6
Annual # of Export Certificates to Canada	109
Annual # Hives Examined	750
Annual # Apiaries Visited	95
Failed Inspections	2

- **Hawai‘i continues to remain free of the following detrimental honey bee pests:**
  - Africanized honey bees (*Apis mellifera scutellata*)
  - Asian honey bees (*Apis cerana*)
  - *Varroa jobcobsoni*, *Acarapis woodi*, and *Tropilaelaps clareae* (parasitic mites)
  - Apimyiasis
  - Nosema

- In 2023, there were no detections of the following:
  - Stonebrood disease
  - American foulbrood disease

- Small hive beetle is consistently present through every inspection, with every hive
- Wax moths are only observed in weak hives but not in high enough populations to be considered a major pest

Honey Bee Hive Health	
European Foulbrood Positive Hives	1
American Foulbrood Positive Hives	0
Stonebrood Positive Hives	0
Visible Nosema Symptoms	0
# Inspections with Varroa Mite Count over 1%	3

- **Maintaining biosecurity at maritime ports:**
  - Checked honey bee swarm traps at all Big Island ports of entry (Hilo Harbor, Hilo Airport, Kona Airport, and Kawaihae Harbor).
  - Checked swarm traps every two weeks for Africanized honey bee (AHB) swarms
  - Processed all HDOA swarm traps that caught honey bee swarms and processed Invasive Species Committees' (ISC) swarm traps (pictures and data sent over)
  - Swarms from traps were tested for brood diseases and varroa mite levels, and samples were sent to UH Mānoa for Asian and Africanized honey bee genetic analysis *(Apis cerana* and *Apis mellifera scutellata*)
  - Educated and worked with port workers on what to look for concerning honey bee pests, swarms, and invasive hornets/wasps
  - Preformed swarm trap training for Kauaʻi Invasive Species Committee, Maui Invasive Species Committee, Oʻahu Invasive Species Committee, USDA, and Hawaiʻi Invasive Species Council (HISC) staff
  - Kauaʻi staff maintained 12 swarm traps on island which caught a single swarm. No varroa mite was found in the trap.

Biosecurity	**Hilo Maritime**	**Kawaihae Maritime**	**Hilo AOA**	**Kona AOA**	**Total**
# of Traps Maintained Near Ports of Entry	4	8	18	8	**38**
# of Times Traps Were Checked Annually	18	18	18	18	**72**
Annual # of Swarms Processed	0	5	5	1	**11**
Total Annual # of Traps Checked					**2736**

- **Current Projects:**
  - Working on an Early Detection Rapid Response Plan of Action and educational material for AHB
    - Working with the ISC groups and training their employees in hopes they can effectively maintain AHB swarm traps throughout the state (except for Hawai‘i island)
    - Participating in monthly meetings with the AHB working group
  - Tracking the evolving *Vespa mandarina* (northern giant hornet) and *Vespa velutina* (yellow-legged hornet) situation in the U.S. mainland
  - Experimenting and formulating the best types of traps and lures to place at maritime ports for invasive hornets, and honey bees
  - Participating in the national survey for hornets in our local area
    - This involves setting up sentinel traps in key locations to understand our current wasp/ hornet population and also to potentially catch hornet species not yet reported in Hawai‘i
  - Continuing to work with the USDA Baton Rouge honey bee lab on assorted honey bee issues
  - Created educational flyers for the public concerning honey bee pests, diseases, environmental concerns affecting honey bees, basic beekeeping tips, honey bee behavior, and state of Hawai‘i regulations
  - Created and updated standard operating procedures for the Apiary program
    - Biosecurity
    - Interisland honey bee regulations
    - Queen breeder certificates
    - Canadian certification
    - Pest level tolerance

- **Public & community outreach:**
  - Responding to calls from the public concerning honey bee nuisances
    - Swarm removal calls in residential and public places
    - Educate citizens on bee behavior and biology
  - Working with Hawai‘i County Council Member Ashley Kirkawitz and beekeepers (hobbyist and commercial alike) to finalize a new ordinance for honeybees in the County of Hawai‘i
    - Assisting educationally and professionally to help guide the ordinance to benefit honey bees, beekeepers, and the general public in a way that continues to promote agriculture while protecting the health of all and maintaining proper biosecurity measures in mind

Calls from the public	
Swarms	28
Hive Assistance for beekeepers	7

- **Other:**
  - Maintaining HDOA Apiary and fine-tuning beekeeping skills to better help the beekeepers and understand the changing environment and conditions under which queen breeders go through as well, to better assist them

II. Chemical/Mechanical Control Section

Little Fire Ant, *Wasmannia auropunctata*.

The Little Fire Ant (LFA) is established and widespread on Hawai‘i Island. Populations on Maui, O‘ahu and Kaua‘i can be quite larfe and extensive, but staff of the CM section continue to provide assistance in control programs. Kaua‘i and Maui CM staff continue to work with their respective Island Invasive Species Committee, the Hawai‘i Ant Lab (HAL) and their respective Counties. Kaua‘i CM personnel assisted Hawai‘i Ant Lab and Kaua‘i Invasive Species Committee members in monitoring and treating for LFA at infested properties. Kaua‘i CM staff also responded to pest calls from Island residents who reported being bitten by red ants. Little fire ants have not been detected on O‘ahu, and no new infested sites have been found on Kaua‘i. On Hawai‘i Island, CM staff provide technical support for other agencies as well as surge support for other islands.

Staff from Hawai‘i and Maui Islands were flown to O‘ahu to address LFA issues at a nursery in Waimanalo with a long-standing history of having a infestations of LFA since 2013. Previous efforts to work with the owners of the nursery have provided varying levels of success but the lack of follow-through by the owners have caused the efforts by the department to fail. The nursery consists of a growing area with pot sizes at the nursery range from starter plug trays up to 95-gallon pots and a total of 90,000 pots. HDOA staff applied bifenthrin via pot drenches as well as pot dipping to roughly 300 pots ranging in sizes from 2-inches up to 3-gallon pots. HDOA is currently working on developing a mitigation plan to include nursery owners. Using chemicals supplied by HDOA, Hawai‘i Ant Lab and O‘ahu Invasive Species Committee applied metaflumizone ant bait and (S)-Methoprene insect growth regulator gel baits to 80% of the nursery and before the operation ended for the day. The CM section recommends the integration of bifenthrin granule formulations into potting mix for sustained control of LFA and other invasive ants within the nursery setting.

On Maui, of the 40 sites surveyed in 2023, no RIFA or LFA have been detected. Surveying for LFA and RIFA remains a high priority. C/M Maui works with MISC to

delimit and treat new infestations when they are discovered. There are currently 6 sites being actively treated by C/M and MISC. There have been no new LFA sites discovered on Maui in 2023.

On Kauaʻi, 54 properties encompassing 140 acres are infested with LFA. In 2023, 9 public report calls were received. 67 surveys were conducted and 5. Kauaʻi CM staff works closely with KISC, County of Kauaʻi Vector Control and others to combat the spread of LFA in island.

Coqui Frog, *Eleutherodactylus coqui*.
Like LFA, coqui frog is established on Hawaiʻi Island. Coqui efforts are focused on the islands of Kaui and Maui with responses to reports based on male vocalizations being prioritized. High pressure sprayers are available from the HDOA to Community groups, plant nurseries, and private individuals at no charge on these islands. Kauaʻi CM and personnel of the Kauaʻi Invasive Species Committee (KISC) worked in Lāwaʻi to successfully eradicate coqui frogs from a 15 acre site. The last calling frog was heard in June 2011, and KISC monitored the site for 12 months after to ensure that frogs were no longer present. CM staff on Hawaiʻi, Oʻahu, and Kauaʻi received phone reports as well as live and expired specimens of greenhouse frogs which were mistaken for coqui frogs. There were no control projects in place for greenhouse frogs by the CM Section. Oʻahu CM staff assisted nurseries and applied 1,620 gallons of citric acid at several commercial nurseries to treat the infested sites and control eggs, juvenile, and non-vocalizing coqui frogs.

- Number of acres treated with citric acid 0.277+
- Number of coqui captured or killed 67
- Number of coqui calls received 17
- Number of commercial nurseries assisted 2
- Number of acres surveyed 21

Coconut Rhinoceros Beetle, *Oryctes rhinoceros*.
The Coconut Rhinoceros Beetle (CRB), whose larvae feed on decaying organic matter and adults attack and feed on palms and other plants when infestations are high has been contained to Oʻahu by the Coconut Rhinoceros Beetle Response Project administered by the University of Hawaiʻi since 2013. However, beginning in 2023, it appears an event occurred in existing border protection programs the beetle has managed to establish footholds on a statewide basis.

The first detection off of Oʻahu was made on Kauaʻi at two locations in traps deployed as part of the DLNR Port Monitoring Program in May 2023. Subsequent detections were made on Kauaʻi and now there are seven sites where beetles were caught in traps and three locations where larvae were recovered. A pilot project was launched in response

to detections of coconut rhinoceros beetle on the island of Kauaʻi. While infestations turned out to be more widespread than anticipated, however, the department saw an opportunity to use techniques developed by the University of Hawaiʻi's Coconut Rhinoceros Beetle Response. A team consisting of Plant Pest Control, Plant Quarantine and University of Hawaiʻi staff were deployed to conduct treatments at the Wailua Golf Course with the collaboration of staff from Kauaʻi County. Kauaʻi County voluntarily shut down portions of the golf course for treatment work and training of on island staff. A drone owned and operated by the University of Hawaiʻi was deployed to apply cypermethrin, a pesticide under a crisis exemption label, to allow for use on the crowns of palm trees. The operation was a success. A total of 44 trees were treated utilizing the drone with application of cypermethrin to the spear of each palm before the drone crashed. The drone could not be repaired so the program pivoted and procured a lift to treat an additional 47 trees using the same chemical with application to the crown. The 44 drone applications exceeded expectations. HDOA field crews allowed the pilots to operate in an optimized fashion with recharging, reloading of pesticides, and traffic control managed by HDOA personnel, allowing the pilots to focus on aerial applications. The treatments, in this more controlled and limited population of beetles, allowed the program to determine existing trapping systems are capturing a smaller fraction of the population than originally thought. Treatments resulted in 41 dead beetles recovered as a result of the treatment during the operational period of October 9 through 13. We suspect residual activity of the pesticide is still resulting in beetle mortality over six weeks after the treatment.

After the first detection of CRB on Kauaʻi in May 2023, the first detection of CRB on an island other than Oʻahu, CRB surveillance has increased on Maui. Coconut palms are routinely inspected for leaf damage as well as organic material origination from Oʻahu. C/M Maui assists Plant Quarantine Branch in the inspection of 20ft shipping containers as they are emptied of compost made on Oʻahu, for use on Maui, as Maui does not produce nearly as much compost as is needed for farming and landscaping. The demand for compost has increased for use in remediating soil after the October 8 wildfires. During a noxious weed survey at a big box store in Kahului in September, bags of compost and potting mix made on Oʻahu were inspected and found to have CRB exit holes. After taking the damaged bags to a secure room, they were opened and sifted through which resulted in the discovery of one dead adult CRB. Following the press release of the CRB adult found in bagged compost, C/M Maui responded to 29 reports from the public of suspected CRB damage to palm trees, none of which were confirmed to be CRB. In November a tree trimmer reported suspected CRB larvae in a dead coconut palm tree they were contracted to remove. CM Maui was the first to respond to the scene and routed the larvae to the entomologist on Oʻahu for official identification as the first live CRB detected on Maui. C/M Maui has since deployed 34 pheromone traps in the immediate area and conducts weekly checks and palm surveys.

Following the Maui detection of a dead beetle in compost in September on Maui, the Branch launched a statewide assessment of packaged compost including trace forward and trace backward infestations to discern the relative risk of compost coming in through various mechanisms to Kauaʻi, Maui and Hawaiʻi Counties and the risk posed to these counties for the potential introduction of CRB through this pathway.

Cogon grass*, Imperata cylindrica*.
An incipient population of cogon grass was detected by Noxious Weed Specialists. The infestation was assessed, and a control program was launched. Access to the affected properties was obtained and herbicide applications were initiated. Heavy equipment was contracted to help uproot material to facilitate herbicide applications. The Plant Pest Control Branch is currently exhausting the seed bank of cogon grass through repeated herbicide applications. Unless new infestations appear on island, this control program is successful.

Seed Inspection:
Routine surveys of agricultural and vegetable seed vendors were conducted around the State to ensure that seed packages sold to consumers were properly labeled or expired.

- A total of 48 locations were inspected statewide for compliance with Hawaiʻi Administrative Rules 4-67 Seed Rules.
- Hawaiʻi Island staff removed 50 lbs of grass seed from shelves of 1 distributor due to expired seed licenses and expiration of seed packets.
- Kauaʻi staff made one noxious weed seed interception.
- Maui staff removed 550lb of expired agricultural seed and over 700 expired vegetable seed packets removed from sale.
- 70 packets of seeds and 23 bags of live roots of the restricted noxious weed Asclepias tuberosa were also removed from sale.

Under an agreement with the US Department of Agriculture, Animal and Plant Health Inspection Service, the CM staff examines seed lots entering the U.S. from foreign ports. This year, USDA did not request any examination of seeds. Consistent with a general trend, no gemination tests were performed on vegetable and agricultural seed lots to ensure compliance with the labeling requirements of the Hawaiʻi Administrative Rules 4-67 Seed Rules. There were 55 Seed Importer's Licenses issued by the Branch to seed vendors and distributors who sell and/or package seeds for sale I Hawaiʻi. A total of $1,375 was collected from fees associated with these licenses.

CBB-CLR Pesticide Subsidy Program

- Act 105 the 2014 Legislative Session (HB 1514) established the CBB Pesticide Subsidy Program to assist Hawaiʻi coffee farmers with the cost of pesticides containing *Beauveria bassiana* for Coffee Berry Borer control. The program

launched in 2016 for reimbursements to coffee farmers who purchased *Beauveria bassiana* products from July 1, 2016 through June 30, 2018.

- Act 065 (HB 186) of the 2017 Legislative Session, extended the program until June 30, 2021. The subsidy program was funded by the pest inspection quarantine and eradication revolving fund.
- Act 138 (SB 855) of the 2021 Legislative Session added the cost of pesticides for Coffee Leaf Rust control and the department added an additional $300,000 to the subsidy program funds, extending the program sunset date to June 30, 2024.
- Act 216 (SB 743) of the 2023 Legislative Session extended the program until June 30, 2026 covering products purchased until June 30 2025 and increased the percentage of reimbursement to 75%.

The program supports coffee farmers statewide in their struggles with two newer devastating, invasive pests- Coffee Borer Beetle discovered in 2010 and Coffee Leaf Rust in 2020. The program reimburses receipts from the previous year for products used to control them as part of the farmers' IPM. The state program manager verifies farmers and their applications, then Hawai'i County disburses the funds. Initial funding for $450,000 was supplemented in 2019 with $260,000 and the DOA added $300,000 in 2021, totaling $1,010,000. The legislature added $150,000 in 2023. The program is capped at $600/acre reimbursement for each CBB and CLR products, and $6,000 each per farm business. The Pesticides division maintains an eligible product list for the program.

Total CBB Subsidy Reimbursements				**$894,794**
program fiscal year	% of receipts	# farmers	acres protected	Total annual reimbursed
2016-17	75%	246	2289	**$144,244**
2017-18	50%	177	2453	**$157,175**
2018-19	50%	172	1500	**$151,315**
2019-20	50%	133	1419	**$107,945**
2020-21	50%	104	1190	**$82,236**
2021-22	50%	101	1071	**$95,918**
2022-23	50%	105	1673	**$155,961**
2023-24	50%			
2024-25	75%			
2025-26	75%			

Plant Quarantine Branch
Jonathan Ho
Acting Branch Manager

The primary purpose of the Plant Quarantine Branch (PQB) is to implement the State's Biosecurity Program, pursuant to Hawai'i Revised Statutes (HRS), §150A-52, which indicated the primary objectives are to:

1. **Establish a multi-dimensional system to prevent the entry into the State and interisland movement of pests and prohibited or restricted organisms without a permit; and**

2. **Respond effectively to eradicate, control, reduce, and suppress incipient pest populations and established pests and seize and dispose of prohibited or restricted organisms without a permit.**

Permit Processing and Issuance

The PQB issues permits to import and/or possess restricted plants, non-domestic animals, microorganisms, and soil into the state. Microbial product registrations are also issued for the importation of microbial products into the state. Under certain circumstances, permits for intrastate movement are also issued. Permits can be issued for single shipments or unlimited shipments within one year from date of issuance. This system balances the needs for the private individual and the commercial business against the need for regulation of regulated commodities and associated fees.

In FY 23, PQB issued 816 permits for the importation of restricted plants, non-domestic animals, microorganisms, and soil. 256 Letters of Authorization for the importation of Nonrestricted Microorganisms were issued. 326 Microbial Product Registrations were issued. 130 intrastate permits were issued.

Snake Handling Program

PQB places a high priority on preventing the introduction of any snake species into the State. As Hawai'i has no native snake species, should one become established, it could lead to a similar situation as on Guam, where the introduction of a single species, the Brown Tree Snake, *Boiga irregularis*, significantly altered the ecosystem on a landscape scale and affected people's way of life due to risks to infrastructure.

To mitigate this risk, the PQB created a Snake Handling Program, which is held annually, and trains 5-8 staff at a time. There is a portion done in Honolulu using classwork and snakes already in our possession, with the final one-week training done in Guam. Guam was selected for this program as it provides the staff with the safest

opportunity to deal with wild snakes with minimal risks of personal injury as the BTS are only mildly venomous and there are no known cases of a person dying or becoming seriously ill as a result of being bitten. Searching for and handling a wild snake is the closest representation to what could actually happen in Hawai‘i during a rapid response event. The training is done in conjunction with USGS, but encompasses Hawai‘i specific issues, such as determining if a snake is venomous or not, before capturing, whereas in Guam, only BTS are found, so this issue does not arise.

Since the inception of the program, HDOA has trained approximately 70% of its staff statewide. A typical training session involves 3 trainers and two to three trainees per trainer. Trainers are on Guam before the trainees to set up facilities, capture snakes for initial use, and ensure that search areas are safe. This program ensures that the PQB has the capacity to deploy staff statewide for any credible report of a snake.

Pest Referrals / Rapid Response

The PQB responds to all credible reports of actionable pests or prohibited animals across the State. In FY 23, there were 306 reports received for a variety of organisms including Coqui frogs, snakes, raccoons, iguanas, and bearded dragons.

Some notable responses:

> In August 2023, a racoon was captured in the Kalaeloa area. Trapping and monitoring activities were a multi-week joint effort, with the HDOA, PQB, the Naval Facilities Engineering systems Command, and the U.S. Department of Agriculture, Wildlife Services. The racoon was tested for rabies and found to be negative.
>
> In July 2023, a live juvenile *Boa constrictor* was captured abroad a cargo ship in Honolulu Harbor. Notification to the HDOA, PQB was through the U.S. Customs and Border Protection agency. No other snakes were found.
>
> In February 2023, a live Skunk was captured by a resident in Hilo after a multi-week search and trapping effort by PQB staff in Hilo. The skunk was found to be negative for rabies.
>
> In January 2023, a live snake was turned in to the Honolulu Zoo under the Department’s amnesty program.

Activities Requiring Hawai‘i Board of Agriculture Approval

The PQB processed thirteen submissions that required Board of Agriculture actions which included initiation of rulemaking or issuance of permits for importation.

Some notable requests processed were for releases of biocontrol agents including: a moth, *Euselasia chrysippe,* for biocontrol of the noxious weed *Miconia calvescens;* a beetle, *Syphraea uberabensis* for biocontrol of the noxious weed *Tibouchina herbacea*, and a parasitoid wasp, *Phymastichus coffea* for biocontrol of the Coffee Berry Borer, *Hypothenemus hampei*. A joint request for the list placement of various mosquito species, *Culex quinquefasciatus*, *Aedes albopictus,* and *A. aegypti* for mosquito suppression by the Hawai'i Department of Land and Natural Resources (DLNR) and the Hawai'i Department of Health. There was a petition to change the placement of a specific strain of the fungus *Beauveria bassiana* to enable importation for use as a biopesticide. DLNR requested list placement of the Northern Largemouth Bass, *Micropterus salmoides salmoides,* for fisheries stocking research.

PQB implemented Interim Rule 22-1 to prevent the further spread of the Coconut Rhinoceros Beetle (CRB), *Oryctes rhinoceros*, and related CRBhost materials within the Island of O'ahu and from O'ahu to other areas in the State.

Initiated proposed changes to Hawai'i Administrative Rules Chapter 4-72, Plant and Non-Domestic Animal Quarantine, Plant Intrastate Rules, to among other things:

1. Implement PQB Interim Rule 22-1, regarding quarantine restrictions on the CRB and CRB host materials;
2. Implement fees for inspections and the processing and issuance of permits;
3. Establish authority to prohibit the movement of infested materials within the State;
4. Include penalties for non-compliance; and
5. Make other changes for clarity or simplification and other non-substantive changes correcting grammar, punctuation, or typeface.

The rules are proceeding through the public hearing process and are expected to be completed in CY 2025.

Investigations

The penalties for violating HRS 150A are criminal. The Department maintains an MOU with the Hawai'i Department of the Attorney General (HDAG) to investigate violations. PQB inspectors conduct inspections (administrative searches) at ports of entry statewide to ensure that shipments of regulated commodities are compliant with statutes, administrative rules, permit conditions, and other regulations prior to entering the state. PQB inspectors may take administrative action on shipments of regulated commodities that are non-compliant, e.g., refuse entry into the state, require treatment or destruction, etc. The PQB maintains a policy to warn violators in writing for first-time violations. As a result, there have been no incidents of repeat violations for FY '23. For FY 23, there were a total of 70 investigations, with the majority for the importation of regulated commodities without a valid permit prior to importation.

QUALITY ASSURANCE DIVISION
Leo Obaldo, PhD
Division Administrator

The Quality Assurance Division consists of two branches, the Commodities Branch and the Measurement Standards Branch, and two major programs, the Hawai‘i Produce Safety Program and Hemp Program. The Branch programs are designed to support the Division’s mission of ensuring food safety and quality in agricultural products, measurement accuracy and fairness in the marketplace. The Division serves both the consumer and producer of agricultural products by providing inspection and certification services and enforcing laws and rules.

Hawai‘i Produce Safety Program: The Hawai‘i Department of Agriculture, under a grant from U.S. Food and Drug Administration (FDA), has established a Hawai‘i Produce Safety Program that advances efforts for a nationally integrated food safety system by encouraging the safe production of fresh fruits and vegetables and promoting understanding and compliance with the requirements of FDA’s Rule: Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption (“Produce Safety Rule or PSR”). The Hawai‘i Produce Safety Program (“Program”) has employed and maintained two key personnel with main focus to assess State’s produce crops and inventory, establish a farm inspection protocol, and develop and provide education, outreach and technical assistance to farms regarding the Produce Safety Rule. Basically, the Program is designed to help grow Hawai‘i’s produce industry by aiding produce farms to meet FDA FSMA food safety requirements, access markets, and promote public health.

The Program’s jurisdiction consists of approximately 4,150 farms that grow, harvest, pack, or hold produce in Hawai‘i, representing up to 57% of Hawai‘i’s estimated 7,328 total farms according to 2017 Agricultural Census. Based on this data, USDA National Agricultural Statistics Service estimates the total number of farms that are covered by the Produce Safety Rule to be about 533, consisting of 433 very small businesses with produce sales up to $250K, 41 small businesses with produce sales up to $500K, and 59 large businesses with produce sales over $500K. The Program has developed a farm inventory database to identify and verify all sizes of farms growing covered commodities that are subject to PSR inspection and would need educational assistance to comply with the federal rule. To date, the Program has identified and verified about 44% of the total covered farms.

The Program has also developed the capability and expertise to provide produce safety educational and outreach services to farmers such as: (1) Produce Safety Alliance (PSA) Grower Training which is required under PSR Section 112.22(c) for farmers growing covered commodities. (2) On-Farm Readiness Reviews which is a free, voluntary, confidential, non-regulatory educational farm visit to provide an assessment of the farm’s readiness for PSR inspection. (3) Produce safety technical assistance including the use of translated

educational materials and brochures intended for Limited English Proficiency farmers and rural audiences. The Program has administered 37 PSA Grower trainings independently and through collaboration with partners such as University of Hawai‘i College of Tropical Agriculture and Human Resources and Oregon Department of Agriculture Produce Safety Program. A cumulative total of more than 699 participants were trained in the PSA Grower training course - majority farmers, some employees of government and non-government organizations.

Overall, the Program’s mission is to continue supporting the implementation of FDA’s Produce Safety Rule in Hawai‘i to help more farmers meet food safety requirements, access better markets, and promote public health.

Other Produce Safety Related Activities: Administered the implementation of Act 136 SLH 2022, which mandates HDOA to establish and implement a food safety certification training program in partnership with Hawai‘i’s agricultural community. HDOA had a contract agreement with UH-CTAHR to establish and implement a food safety training program to prepare small and medium-sized farms/farmers obtain a USDA Good Agricultural Practices certification to meet the requirements of their buyers. The contract started on June 16, 2023 for a period of 2 years ending June 15, 2025. The total amount contracted to UH-CTAHR was $238,321.00. As part of the agreement, UH-CTAHR has subcontracted $100,600.00 to a community partner, North Shore Economic Vitality Partnership (NSEVP), to conduct trainings on each island for farmers who prefer to proceed with the GroupGAP audit process.

Hemp Program: Act 228 SLH 2016 established the Industrial Hemp Pilot Program under HDOA for the cultivation and distribution of industrial hemp. Under this program, applications are reviewed and applicants are licensed and monitored to ensure that they meet program objectives, and that the industrial hemp does not exceed the levels of delta-9 tetrahydrocannabinol allowed by federal law. Act 14 SLH 2020 ended this pilot program on October 31, 2020 and assigned HDOA new regulatory duties regarding hemp: monitoring the import, export, and in state transport of live hemp seed, hemp flower, and leafy materials, and providing inspection and enforcement of the buffer zone requirements of the act. Under Act 14, the commercial hemp production in Hawai‘i is managed under the U.S. Domestic Hemp Production Program. This means hemp growers in Hawai‘i are licensed by the United States Department of Agriculture (USDA). As of December 11, 2023, there are 97 USDA active licensed hemp growers in Hawai‘i and the estimated acreage planted was about 20 acres. On July 12, 2023, Act 263 SLH 2023 amended the hemp laws in the state and established a hemp task force to be jointly convened by the Department of Agriculture and Department of Health. Act 263 was enacted to support the Hawai‘i hemp growers by appropriating funds to the department to hire a hemp consultant to work with the hemp task force to identify the infrastructure needs of hemp farmers and the hemp industry, considering the unique needs and geographic spread of Hawai‘i’s licensed farmers and various hemp sector needs. In addition, the task force is charged to develop an outline of farmer and industry needs and strategies and actions that can inform public policy concerning the

development of a hemp industry in the state that also supports rural agricultural development in the state. The task force is expected to report its findings and recommendations, including any proposed legislation, to the legislature prior to the convening of the regular session of 2025.

COMMODITIES BRANCH
Keith Otsuka, *Acting Manager*

The Mission of the Commodities Branch is to "Set the Standards" and provide assurance that standardized, high quality, safe, and authentic Hawai`i agricultural products can be showcased in Hawai`i as well as throughout the world market through a fair and just agricultural business climate.

The Commodities Branch enhances the economic stability of Hawai`i's agricultural industries by maintaining grade standards for locally produced fruits and vegetables, nuts, coffee, flowers and foliage, processed foods and other agricultural products. The branch provides unbiased, professional, and timely service-for-fee grade, condition, and origin certification and food safety audits, to add value and desirability to agricultural products. Under federal- state cooperative agreements, the branch provides federal certification for fresh and processed fruits and vegetables, eggs, seafood, and meat, which may not otherwise be available to local clients, as well as state certification for origin and quality of green coffee, and origin of certain products.

The branch provides just and unbiased enforcement to assure safety and fair business dealings in agricultural products, to protect the agricultural community as well as the general public.

The branch administers laws and rules pertaining to fresh fruit, vegetable, coffee, egg labeling and advertising; minimum export quality; licensing of dealers in agricultural products; certificate of ownership/movement requirements on the movement of agricultural commodities to help to deter agricultural theft.

Listed below is a brief overview of the major programs within the branch and developments that have impacted the branch's activities:

- The branch's Milk Control program has historically regulated and maintained the stability of the dairy industry in the Honolulu and Hawai`i milk sheds by licensing producers and distributors of milk, establishing milk production quotas, setting minimum class 1 price paid to dairy producers, and conducting retail milk surveys and inspections. This special funded program should be entirely self-funded through licensing fees assessed to milk producers and processors. However, with only one milk producer, and one processor remaining in the state program, it is no longer self-sustaining. The Commodities Branch is no longer able to hire and sustain a milk specialist to fully implement the Milk Control Program and is working towards reassessing

Hawai‘i Revised Statutes and Hawai‘i Administrative Rules to address foreseeable changes within Hawai‘i's milk industry.

- Shell Egg Program: Under a cooperative agreement with USDA, branch staff provide federal shell egg grading and certification to the egg industry. With the addition of a second USDA Shell Egg Plant coming online in 2022, there has been a dramatic increase in demand for shell egg inspection services. The branch is working toward meeting the increased workload, in the face of retirements and resignations, and is actively recruiting and training new staff to meet the demand for this and for all of the services we provide.

- Fresh Fruit and Vegetable Program: Under a cooperative agreement with USDA, branch staff sample and grade produce for quality and condition. A major part of the work being conducted are mandatory 8e import inspections, for commodities such as New Zealand Onions and Kiwifruit, which are being imported directly into Hawai‘i from foreign countries. Inspections are also conducted on request by producers and handlers of produce, to assist with claims to recover costs to local buyers of defective imported produce.

- Food Safety Auditing Program: Under a cooperative agreement with USDA, branch staff conduct Good Agricultural Practices (GAP) and Good Handling Practices (GHP) food safety audits at farms, distributors, and packing warehouse facilities throughout the state. Currently, the branch has only one licensed auditor performing GAP, Harmonized GAP, and Harmonized GAP+ audits statewide. The branch is in the process of training and licensing a second auditor. Trainees must meet all USDA training requirements and evaluated as a lead auditor at least twice by a representative of the USDA before being licensed.

- Processed Foods Program: Under a cooperative agreement with USDA, branch staff conduct inspection on processed food products such as honey, frozen pineapple chunks/juice, noni juice, roasted coffee, and roasted macadamia nuts. Under a cooperative agreement with US Department of Commerce (USDC), Commodities Branch staff provide seafood (fish & shellfish) inspection and auditing services including HACCP protocol. Conducted seafood sensory training for staff with the USDC NOAA, on differentiating wholesome versus unwholesome seafood products.

- Country of Origin Labeling (COOL): Under a cooperative agreement with USDA, the branch conducted COOL audits/reviews at 13 retail establishments on fresh fruits and vegetables, meat, fish, and shellfish products.

- Coffee Certification Program: Commodities Branch staff provide voluntary fee-for-service coffee grading and certification services for our local coffee industry, and staff has provided timely service to all requests for product

certification. Working with Hawai‘i Coffee Association and various members of Hawai‘i’s coffee industry on changing Hawai‘i Administrative Rules regarding grading standards and classification of green coffee to improve the overall green coffee quality.

- Seed Certification Program: Commodities Branch staff provide voluntary fee-for-service inspection and seed certification services, which maintain varietal purity based on company established traits.

- Transgenic Papaya Monitoring: Commodities Branch staff provide voluntary fee-for-service inspection and non-transgenic papaya testing utilizing “Identity Preservation Protocol” program for tighter control of non-transgenic papayas that are exported to Japan.

- Dealer Licensing: Commodities Branch staff maintain a licensing program called the Dealers in Farm Produce License, which is required for anyone who handles or sells any Hawai‘i Grown Agricultural Product obtained or purchased directly from a Hawai‘i Farmer or Grower for the purpose of resale. The license is designed to be able to assist Hawai‘i growers in case of non-payment from those purchasing product directly from them. Partnered with the Hawai‘i County prosecutor's office to conduct investigations on agricultural theft related complaints and education efforts with the farmers in deterring agricultural theft. The prosecution of theft cases is a slow process, but there has been at least two convictions reported, one for livestock theft and one for theft of produce.

- Reassessing the Commodities Branch manpower capability to address the continuation of federal cooperative agreements to perform regulatory functions efficiently and effectively such as inspections of fresh fruits and vegetables and shell eggs, GAP audits on behalf of the USDA, and seafood inspections for the USDC NOAA.

MEASUREMENT STANDARDS BRANCH
Richard Cohen, *Manager*

The Measurement Standards Branch works to protect consumers, businesses, and manufacturers from unfair trade practices, based on a measurement process or subject to a standard of quality. The goal is to minimize losses and inaccuracies due to incorrect or fraudulent commercial measuring equipment, processes, or substandard products that would cause losses to both consumers and merchants.

The Standards and Technical Services Section of the branch assures us that state measurement equipment standards conform to the highest national standards. It performs metrological calibration of the enforcement standards used by the branch and the field standards used by certified registered service agencies in testing, repairing,

and calibrating commercial devices. The calibrated standards are used in all inspections and calibration corrections.

The Standards and Trade Practices Enforcement Section has the responsibility of assuring the consumer and commercial businesses that they have equitable transactions involving measuring instruments, labeling, content of packaged commodities, and pricing are accurate and fair to all parties.

Listed below is a brief overview of the major activities, accomplishments and developments that have impacted the branch's activities:

- The State Metrologist received advanced training and certification from the National Institute of Standards and Technology (NIST), and attended the Western Regional Metrologist's Conference in Anchorage, Alaska for the training.

- The State's metrology laboratory has received re-certification by the National Institute of Standards and Technology for an echelon one lab which is highest of standards for inspection, calibration, and certification of which there are only seven others in the United States. As custodians of the State level measurement standards, the laboratory serves as the basis for ensuring equity in the marketplace and as reference standard for calibration services for the State and various industry members.

- The metrology laboratory inspected and calibrated 671 mass test standards, 847 mass enforcement standards for inspectors and service agencies conducting business in the State of Hawai`i. The metrology laboratory inspected and calibrated 45 volumetric test standards, nine volumetric enforcement standards, and 23 volumetric field standards for service agencies conducting business in the State of Hawai`i.

- The branch received and analyzed 76 labels for compliance with state and federal regulations, 2154 gas and diesel meters at 176 retail fueling stations were inspected by state inspectors and licensed registered service agents, 3967 various types of scales used for commercial sales were examined and approved for use statewide.

- 1385 Taxi Meters were issued permits after being examined by certified service agencies and branch inspectors.

- 22,091 commercial measuring device licenses were issued by the branch to over 3,000 businesses for use in fair commercial trade practices within the State. This resulted in generated revenues of $582,951.

- The branch licenses annually 307 Measure Masters and 56 registered service agencies that perform work overseen by Measurement Standards.

- Recruitment continues for two additional inspectors in O‘ahu and one inspector in Maui. There is one inspector in Hilo on the Island of Hawai‘i, who also handles inspections in Kona where possible changes in the coffee labeling law would warrant adding an inspector in the future.

- The branch investigated 41 combined complaints of fuel quantity, quality, and pricing discrepancies from Labeling and net weight packaging errors. The branch continually educates consumers and merchants on fair trade practices and correct policies and procedures.

- Overcharging on consumer goods in various retail stores was also investigated. Price verification inspections resulted in 98% average accuracy.

- Implemented Act 222 SLH 2022, which mandates HDOA to conduct an independent study to assess the economic impact on local coffee farmers and the local coffee industry from potential changes to coffee labeling requirements established in section 486-120.6, Hawai‘i Revised Statutes. Analysis shall include studying the impacts of a change to a minimum coffee blend ratio of fifty-one per cent and one hundred per cent. The study is ending on December 29, 2023 and a report will be submitted to the legislature 20 days prior to the start of 2024 regular session.

- Upgrading the WinWam computer program to meet ETS system security requirement and to properly manage all registered measuring devices, device licensing, and inspections of devices for improved efficiency and accuracy.

- Adopted new Hawai‘i Administrative Rules with the Hawai‘i Cacao and Chocolate Association, pertaining to Hawai‘i-Grown Cacao and Chocolate Products. The rules were developed to protect Hawaiian cacao and chocolate products from unfair competition.

The Measurement Standards Branch is reviewing current rules and laws and will be adopting procedures and standards established nationally by the National Conference of Weights and Measures and NIST for new measuring devices introduced to the marketplace from new technologies. As well as new policies and procedures that have been adopted for better and more accurate conformance of commercial measurement devices, packaging, labeling, and pricing.