

THE THIRTIETH LEGISLATURE
APPLICATION FOR GRANTS
CHAPTER 42F, HAWAII REVISED STATUTES

Type of Grant Request:



Operating



Capital

Legal Name of Requesting Organization or Individual: Db:

Hawaii Pacific University

Oceanic Institute of Hawaii Pacific University

Amount of State Funds Requested: \$ 211,400

Brief Description of Request (Please attach word document to back of page if extra space is needed):

Oceanic Institute of Hawaii Pacific University (OI) is seeking Grant-in-Aid funds to produce a variety of fish and shrimp species for a broad group of Hawaii stakeholders. This request for funding builds on a previous CIP GIA award to renovate OI's fish and shrimp hatchery. Using OI's newly renovated biosecure, environmentally controlled hatchery, OI will supply baby fish and shrimp to: 1) Hawaii's aquafarmers who manage Hawaiian fishponds, 2) stock into Hawaii's nearshore waters to enhance recreational fisheries and provide ecosystem services to support coral reef health, 3) Hawaii's aquafarmers interested in culturing high-quality seafood such as shrimp, 4) public and private schools in Hawaii who maintain aquariums for educational purposes, and 5) researchers in Hawaii who need live marine organisms to conduct their research across a variety of discipline including genetics, immunology, and virology. Target populations to be served include Hawaii's aquafarmers, local research communities, local high school and university students, local recreational fishermen, and Hawaii residents and visitors who will benefit from locally produced seafood.

Amount of Other Funds Available:

State: \$ _____

Federal: \$ _____

County: \$ _____

Private/Other: \$ _____

Total amount of State Grants Received in the Past 5 Fiscal Years:

\$ 650,000

Unrestricted Assets:

\$ 35,584,143 (HPU consolidated)

New Service (Presently Does Not Exist): ☐ Existing Service (Presently in Operation): ☒

Type of Business Entity:



501(C)(3) Non Profit Corporation



Other Non Profit



Other

Mailing Address:

41-202 Kalaniana'ole Hwy., Ste. 9

City:

Waimanalo

State:

HI

Zip:

96795

Contact Person for Matters Involving this Application

Name:

Shaun M. Moss

Title:

Executive Director

Email:

smoss@hpu.edu

Phone:

808-259-3110


Authorized Signature

Jennifer E. Walsh, SVP & Chief Strategy Officer

Name and Title

Jan. 17, 2025

Date Signed

Application Submittal Checklist

The following items are required for submittal of the grant application. Please verify and check off that the items have been included in the application packet.

- ☒ 1) Hawaii Compliance Express Certificate (If the Applicant is an Organization)
- ☒ 2) Declaration Statement
- ☒ 3) Verify that grant shall be used for a public purpose
- ☒ 4) Background and Summary
- ☒ 5) Service Summary and Outcomes
- ☒ 6) Budget
 - a) Budget request by source of funds ([Link](#))
 - b) Personnel salaries and wages ([Link](#))
 - c) Equipment and motor vehicles ([Link](#))
 - d) Capital project details ([Link](#))
 - e) Government contracts, grants, and grants in aid ([Link](#))
- ☒ 7) Experience and Capability
- ☒ 8) Personnel: Project Organization and Staffing



AUTHORIZED SIGNATURE

Jennifer E. Walsh, SVP & Chief Strategy Officer

PRINT NAME AND TITLE

Jan. 17, 2025

DATE



STATE OF HAWAII
STATE PROCUREMENT OFFICE

CERTIFICATE OF VENDOR COMPLIANCE

This document presents the compliance status of the vendor identified below on the issue date with respect to certificates required from the Hawaii Department of Taxation (DOTAX), the Internal Revenue Service, the Hawaii Department of Labor and Industrial Relations (DLIR), and the Hawaii Department of Commerce and Consumer Affairs (DCCA).

Vendor Name: HAWAI'I PACIFIC UNIVERSITY

Issue Date: 01/14/2025

Status: Compliant

Hawaii Tax#: 20279474-01
New Hawaii Tax#: T-0370413568
FEIN/SSN#: XX-XXX3930
UI#: XXXXXX0488
DCCA FILE#: 13419

Status of Compliance for this Vendor on issue date:

Form	Department(s)	Status
A-6	Hawaii Department of Taxation	Compliant
8821	Internal Revenue Service	Compliant
COGS	Hawaii Department of Commerce & Consumer Affairs	Exempt
LIR27	Hawaii Department of Labor & Industrial Relations	Compliant

Status Legend:

Status	Description
Exempt	The entity is exempt from this requirement
Compliant	The entity is compliant with this requirement or the entity is in agreement with agency and actively working towards compliance
Pending	A status determination has not yet been made
Submitted	The entity has applied for the certificate but it is awaiting approval
Not Compliant	The entity is not in compliance with the requirement and should contact the issuing agency for more information

**DECLARATION STATEMENT OF
APPLICANTS FOR GRANTS PURSUANT TO
CHAPTER 42F, HAWAII REVISIED STATUTES**

The undersigned authorized representative of the applicant certifies the following:

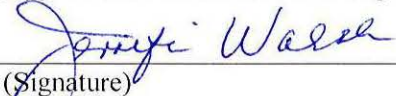
- 1) The applicant meets and will comply with all of the following standards for the award of grants pursuant to Section 42F-103, Hawaii'i Revised Statutes:
 - a) Is licensed or accredited, in accordance with federal, state, or county statutes, rules, or ordinances, to conduct the activities or provide the services for which a grant is awarded;
 - b) Complies with all applicable federal and state laws prohibiting discrimination against any person on the basis of race, color, national origin, religion, creed, sex, age, sexual orientation, or disability;
 - c) Agrees not to use state funds for entertainment or lobbying activities; and
 - d) Allows the state agency to which funds for the grant were appropriated for expenditure, legislative committees and their staff, and the auditor full access to their records, reports, files, and other related documents and information for purposes of monitoring, measuring the effectiveness, and ensuring the proper expenditure of the grant.
- 2) If the applicant is an organization, the applicant meets the following requirements pursuant to Section 42F-103, Hawaii'i Revised Statutes:
 - a) Is incorporated under the laws of the State; and
 - b) Has bylaws or policies that describe the manner in which the activities or services for which a grant is awarded shall be conducted or provided; and
- 3) If the applicant is a non-profit organization, it meets the following requirements pursuant to Section 42F-103, Hawaii'i Revised Statutes:
 - a) Is determined and designated to be a non-profit organization by the Internal Revenue Service; and
 - b) Has a governing board whose members have no material conflict of interest and serve without compensation.
- 4) The use of grant-in-aid funding complies with all provisions of the Constitution of the State of Hawaii (for example, pursuant to Article X, section 1, of the Constitution, the State cannot provide "... public funds ... for the support or benefit of any sectarian or nonsectarian private educational institution...").

Pursuant to Section 42F-103, Hawaii'i Revised Statutes, for grants used for the acquisition of land, when the organization discontinues the activities or services on the land acquired for which the grant was awarded and disposes of the land in fee simple or by lease, the organization shall negotiate with the expending agency for a lump sum or installment repayment to the State of the amount of the grant used for the acquisition of the land.

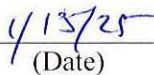
Further, the undersigned authorized representative certifies that this statement is true and correct to the best of the applicant's knowledge.

Hawaii Pacific University

(Typed Name of Individual or Organization)



(Signature)



(Date)

Jennifer E. Walsh, Ph.D.

SVP & Chief Strategy Officer

(Typed Name)

(Title)

Application for Grants

If any item is not applicable to the request, the applicant should enter “not applicable”.

I. Certification – Please attach immediately after cover page

1. Hawaii Compliance Express Certificate (If the Applicant is an Organization)

If the applicant is an organization, the applicant shall submit one (1) copy of a Hawaii Compliance Express Certificate from the Comptroller of the Department of Accounting and General Services that is dated no earlier than December 1, 2024.

2. Declaration Statement

The applicant shall submit a declaration statement affirming its compliance with [Section 42F-103, Hawaii Revised Statutes](#).

3. Public Purpose

The applicant shall specify whether the grant will be used for a public purpose pursuant to [Section 42F-102, Hawaii Revised Statutes](#).

The authorized representative of the applicant certifies that the requested grant shall be used for public purpose pursuant to Section 42F-102, Hawaii Revised Statutes.

II. Background and Summary

This section shall clearly and concisely summarize and highlight the contents of the request in such a way as to provide the State Legislature with a broad understanding of the request. Please include the following:

1. Applicant’s Background

Founded in 1960, Oceanic Institute of Hawaii Pacific University (OI) is a nonprofit research and development organization dedicated to marine aquaculture, biotechnology, coastal resource management, and job creation. OI’s mission is to develop and transfer environmentally responsible technologies to increase aquatic food production while promoting the sustainable use of ocean resources. OI works with community, industry, government and academic partners, and non-governmental organizations to benefit the state, the nation, and the world. In 2014, OI merged with Hawaii Pacific University, the largest private university in Hawaii, to become the University’s first directed research unit.

OI is located on 56 acres in Waimanalo, Hawaii and employs a team of about 20 scientists, professionals, and support personnel. **This property is unique because of access to clean, oceanic seawater and the ability to discharge the seawater into permitted dispersion wells.**

To create a similar facility *de novo* in Hawaii would take tens of millions of dollars (construction costs and land) over many years (lengthy permitting process for seawater access and disposal). OI conducts applied research which is integrated across several technical programs including marine fish and shrimp aquaculture, applied marine biotechnology, and training and education. OI has a 50-year history developing maturation, hatchery, nursery, and growout techniques for more than 10 species of tropical and subtropical marine fish, 7 species of tropical and subtropical marine invertebrates, and 5 species of marine microalgae. **The ability to produce a predictable supply of a variety of marine organisms, at all stages of their life cycle, is unique and this inventory of live biological material represents a valuable resource for commercial farmers, research communities, and educational institutions at local, national, and global levels.** Over the past 10 years, OI has sent live marine organisms to more than 10 states in the U.S., 7 foreign countries, and several U.S.-affiliated Pacific Islands. These organisms have been used for STEM education activities and for a variety of research purposes related to such fields as genetics, immunology, molecular biology, nutrition, pathology, physiology, and virology. Importantly, OI has provided a variety of live marine organisms locally, nationally, and globally to support aquaculture activities for aquatic food production and marine conservation, and OI researchers use these organisms directly to support federal and state research grants, as well as private contracts. Over the past 50 years, OI has played a critical role in Hawaii by providing baby fish and shrimp to local aquafarmers to support local food production, providing biological material for Hawaii-based researchers, and serving as a training ground for future leaders in food security and resource management. OI hopes to continue to serve in this capacity long into the future.

2. Goals and Objectives Related to the Request

Some of OI's infrastructure used to produce marine organisms required modernization and renovation to ensure the continued production of baby fish and shrimp for Hawaii's aquafarmers and to conduct on-going and new aquaculture research. Specifically, OI's marine fish and shrimp hatchery was built in the late 1970s and had undergone little renovation over the years. This facility is used to rear a variety of marine fish and invertebrates through their complex and often fragile larval stages. The original fish hatchery was designed as an "open air" facility where there are large gaps between the walls and ceiling (see **Fig.1**). In 2024, OI received \$50,000 from a private foundation to help offset some of the costs to enclose the hatchery to better control important environmental parameters (e.g. photoperiod and water temperature) and to ensure adequate levels of biosecurity. Importantly, the State of Hawaii appropriated \$650,000 for OI to renovate the marine fish and shrimp hatchery in response to OI's submittal of a CIP Grant-in-Aid proposal during the previous funding cycle. On 25 July, 2024, Dr. Shaun Moss, Executive Director at Oceanic Institute of Hawaii Pacific University, received a letter from Mr. Quirino Espejo, Jr, Acting Executive Director at the Office of Community Services of the Hawaii Department of Labor and Industrial Relations, indicating that OI received the GIA award by the 2024 Hawaii State Legislature. Subsequent to that letter, OI has completed the eligibility verification requirements and is awaiting release of the funds, pending the release of the FY25 budget execution policies by the Department of Budget and Finance. OI's "release packet" was submitted to the Department of Budget and Finance on 2 December, 2024.

OI will use some of these CIP GIA funds in calendar year 2025 to replace existing walls to enclose the fish and shrimp hatchery space. These renovations will allow us to be completely isolated from the external environment thereby providing significantly better control over important parameters which impact our ability to raise animals and conduct effective research. Also, by creating a physical barrier between the indoor hatchery and external environment, we will improve biosecurity by mitigating the introduction and spread of potential pathogens. The hatchery is located less than 200 meters from the ocean and saltwater aerosols, containing virulent pathogens, are a constant problem. In addition, CIP GIA funds will be used in calendar year 2025 to replace an aging hatchery floor. As indicted previously, OI's marine fish and shrimp hatchery was built in the late 1970s and has undergone little renovation over the years. In 2020, OI hired Allana Buick and Bers Architectural Engineers (ABB AE) to inspect the wooden lab floor in OI's hatchery and they noted large sections showing deterioration. Replacing damaged and deteriorated sections of the wooden floor would provide additional structural integrity to the facility and provide additional biosecurity.



Fig. 1. Oceanic Institute's fish and shrimp hatchery. Note the "open air" design which compromises biosecurity and environmental control.

Once these renovations are completed, (hopefully before the end of calendar year 2025), OI will have a biosecure, environmentally controlled fish and shrimp hatchery which can support the following broad project goals:

- Using OI's newly renovated biosecure, environmentally controlled fish and shrimp hatchery, OI will **supply baby fish and shrimp to Hawaii's aquafarmers.**
- Using OI's newly renovated biosecure, environmentally controlled fish and shrimp hatchery, OI will **conduct cutting-edge research to support Hawaii's growing aquaculture industry.**
- Using OI's newly renovated biosecure, environmentally controlled fish and shrimp hatchery, OI will **serve as a platform for workforce development and job training.**
- OI will become a leader in aquaculture research and to forge long-term research partnerships with the University of Hawaii and other Hawaii-based stakeholders.

In light of the information above, key project objectives of this proposal include:

- **OI will supply baby fish for Hawaii's aquafarmers who manage loko i'a (Hawaiian fishponds) on Oahu, Molokai, Kauai, and the Big Island.** Fish species to be provided to Hawaiian fishpond operators by OI could include 'ama'ama (striped mullet), moi (Pacific threadfin), and āholehole (Hawaiian flagtail) (see **Fig. 2**)
- **OI will supply baby fish which could be stocked into Hawaii's nearshore waters to enhance recreational fisheries and provide ecosystem services to support coral reef health.** Fish species produced at OI to be released into nearshore waters could include 'ama'ama (striped mullet), moi (Pacific threadfin), kūmū (whitesaddle goatfish), papio (giant trevally), āholehole (Hawaiian flagtail), and possibly coral reef fish such as lau'ipala (Yellow tang). (see **Fig. 3**)
- **OI will supply baby shrimp to Hawaii's aquafarmers interested in culturing this high-quality seafood.** Baby shrimp will come from OI's shrimp breeding program, the longest running shrimp breeding program in the world. The shrimp species to be provided to interested aquafarmers in Hawaii could include Pacific white shrimp (scientific name: *Litopenaeus vannamei*). (see **Fig. 4**)
- **OI will supply baby fish and shrimp to public and private schools in Hawaii who maintain aquariums for educational purposes or need access to biological materials.** Fish species to be provided to local institutions of learning could include 'ama'ama (striped mullet), moi (Pacific threadfin), kūmū (whitesaddle goatfish), papio (giant trevally), āholehole (Hawaiian flagtail), lau'ipala (Yellow tang), other coral reef fish species, and Pacific white shrimp.
- **OI will supply baby fish and shrimp to researchers in Hawaii who need live marine organisms to conduct their research across a variety of discipline including genetics,**

immunology, molecular biology, nutrition, pathology, physiology, and virology. Fish species to be provided to local researchers could include 'ama'ama (striped mullet), moi (Pacific threadfin), kūmū (whitesaddle goatfish), papio (giant trevally), āholehole (Hawaiian flagtail), lau'ipala (Yellow tang), other coral reef fish species, and Pacific white shrimp.

OI is seeking Grant-in-Aid funds to produce a variety of fish and shrimp species for a broad group of Hawaii stakeholders, including Hawaiian fishpond operators, DLNR's Division of Aquatic Resources, commercial aquafarmers, educational organizations, and Hawaii's research community, among others. OI's hatchery is the only facility on O'ahu capable of producing significant quantities of baby fish and shrimp for these stakeholders. With OI's newly renovated hatchery, supported by previous CIP GIA funding, OI staff are now in a position to produce significant quantities of baby fish and shrimp for Hawaii's stakeholders. Operating funds are urgently needed to support the production of these baby fish and shrimp, including funds for labor, materials, and supplies. It is important to note that OI does receive operating funds to support specific research grants and contracts, but these funds do not allow OI to produce surplus animals to distribute to Hawaii's aquaculture stakeholders. OI is seeking Grant-in-Aid funds to produce a variety of fish and shrimp species which can be distributed directly to Hawaii's aquaculture stakeholders, above and beyond what OI's existing research grants and contracts allow.



Fig. 2. Fish species to be provided to Hawaiian fishpond operators by OI could include moi (Pacific threadfin) on the left and 'ama'ama (striped mullet) on the right.



Fig. 3. Fish species which could be released into nearshore waters to enhance recreational fisheries include kŭmŭ (whitesaddle goatfish) on the left and ʻāholehole (Hawaiian flagtail) on the right.

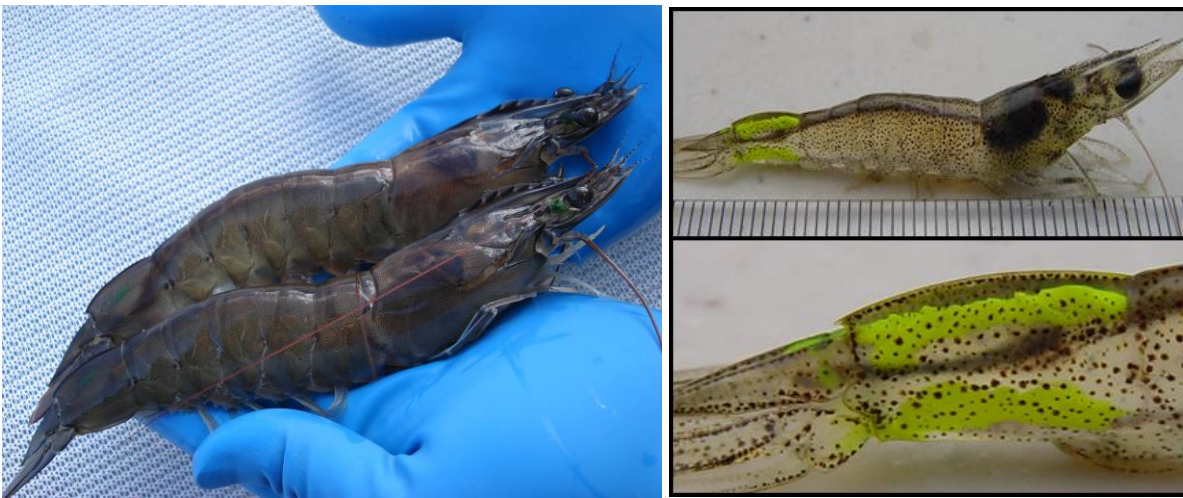


Fig. 4. The shrimp species to be provided to interested aquafarmers in Hawaii by OI would be the Pacific white shrimp (scientific name: *Litopenaeus vannamei*). These shrimp would come from OI's shrimp breeding program, the longest running shrimp breeding program in the world.

3. Public Purpose and Need to be Served

Hawaii's agriculture and aquaculture industries play a critical role in addressing food security in our State. However, because more than 85% of our food is imported, our communities are extremely vulnerable if food supply chains become disrupted. Disruptions can arise from a number of causes including dock strikes at major ports, farm production fluctuations on the U.S. mainland due to global climate change, and the destructive forces of tsunamis. Because of this vulnerability, it is imperative that we invest in ways to increase local food production. In addition to enhancing food security, local food production would provide enormous economic benefits to our State. The economic impact of food import replacement is significant and replacing just 10% of the food we currently import would amount to more than \$313 million which would remain in Hawaii. Also, local food production would allow for access to cheaper, high-quality foods and would help create jobs in the agriculture and aquaculture sectors.

Currently, about 23% of Hawaii's economy is based on tourism, and this heavy reliance on a single industry makes the State extremely vulnerable if tourism is compromised, such as during the recent COVID-19 pandemic. Importantly, Hawaii's Department of Business, Economic Development and Tourism (DBET) recently published their 2024 update on *Hawai'i's Targeted and Emerging Industries* (see link at <https://files.hawaii.gov/dbedt/annuals/2024/2024-read-emerging-industry-report.pdf>). This analysis indicates the average annual job growth rate for Hawaii's aquaculture sector, from 2013 – 2023, was 6.5%. Hawaii's aquaculture sector led all sectors in the State with the fastest growth annually during this time period (see page 18 at the link above). This document also indicates that average annual job growth in Hawaii's aquaculture sector was 3.6% higher than the national growth rate for this sector. Clearly, there needs to be critical investment in Hawaii's aquaculture industry as there is a tremendous opportunity for the State to be a national and global leader in this important sector. In addition, it is important to note that, by 2050, 50% of the State's Department of Education food budget needs to be used to buy local food (see *Civil Beat* article at the link below:

<https://www.civilbeat.org/2025/01/doe-gets-an-f-hawai%CA%BBi-schools-miss-their-first-local-food-target/#:~:text=In%202022%2C%20local%20food%20accounted,the%202023%2D2024%20school%20year.ear.>

However, in 2022, local food accounted for only 6.2% of the State's food purchases. The *Civil Beat* article states, "*The report to state lawmakers shows ground beef made up the lion's share of the department's total spending on local food, accounting for 3% during the 2023-2024 school year. Fruit and vegetables accounted for 1.83% and less than 1% for poi, dairy and locally sourced bottled water*". According to this article, no local seafood was purchased by the State DoE for our students. This clearly needs to change and we need State support to help catalyze a local aquaculture industry.

It is imperative for Hawaii to diversify its economy and production of locally grown food, including seafood, would contribute to that diversification. In addition, there are significant environmental benefits to local food production. Producing foods locally would decrease the number of "food miles" associated with shipping across the Pacific Ocean, thereby conserving energy and reducing the carbon footprint associated with food distribution. Also, by producing more foods locally, we would mitigate the accidental introduction of harmful, invasive pests which can disrupt the local agriculture economy and adversely impact our island ecosystems.

Aquaculture has a long history in Hawaii beginning around 1200 A.D. when Hawaiians built fish ponds as part of a larger, integrated food production system based on watershed management. These traditional socioeconomic subdivisions of land are referred to in Hawaiian as *ahupua`a*. Traditional Hawaiian fishponds, or *loko i`a*, were once prominent along the shores of the Hawaiian Islands as recently as the late 1700s, at the time of James Cook's arrival, when there were more than 400 fishponds in operation producing an estimated 2 million pounds of fish per year. These fishponds provided a stable source of protein which could sustain populations during food shortages. Today, most Hawaiian fishponds have fallen into disrepair but local community organizations are working together to restore traditional fishponds for cultural and educational purposes, as well as to provide a source of nutritious food.

Despite aquaculture's rich history in Hawaii, there is an urgent need to develop a more robust aquaculture industry in our State. This urgency reflects a collective desire to achieve Hawaii's sustainability and climate goals and commitments highlighted in the Hawai'i 2050 Sustainability Plan which identifies doubling local food production by 2030. **A significant barrier to the expansion of Hawaii's aquaculture industry is the lack of baby fish and shrimp to stock our aquafarms.** Many aquafarmers in Hawaii operate small-scale farms and the cost to operate their own hatchery is prohibitively expensive. **Oceanic Institute can serve as the State's *de facto* hatchery to provide baby fish and shrimp to interested stakeholders, and this will result in the lowering of a significant barrier to expansion.** OI is seeking Grant-in-Aid funds to produce a variety of fish and shrimp species for a broad group of Hawaii stakeholders, including Hawaiian fishpond operators, DLNR's Division of Aquatic Resources, commercial aquafarmers, educational organizations, and Hawaii's research community, among others. This will allow OI to better serve the aquafarmers in our State who can then produce aquatic protein for our communities. The benefits of producing more food locally are unequivocal. In addition to enhancing food security in our State, there are tremendous economic multiplier effects of increasing food self-sufficiency. However, unless innovative solutions are sought to stimulate local food production, Hawaii residents will continue to be highly dependent on imported food and unable to reap these economic benefits. We believe that the State should provide OI with funds to operate the only marine fish and shrimp hatchery on O'ahu in an effort to help achieve food security and food self-sufficiency for our State.

4. Target Populations to be Served

OI scientists have developed maturation, hatchery, nursery, and growout techniques for tropical and subtropical marine fish including striped mullet (*'ama'ama*), milkfish, (*awa*), mahimahi, Pacific threadfin (*moi*), amberjack (*kahala*), trevally (*ulua*), whitesaddle goatfish (*kumu*), coral grouper, and red snapper, as well as ornamental fish such as flame angelfish and yellow tang. In addition, OI has developed breeding and culture techniques for a variety of tropical and subtropical marine invertebrates including Pacific white shrimp, fleshy prawns, harlequin shrimp, and collector urchins (*hawa'e maoli*). OI scientists have closed the life cycle on all of these aquatic organisms and have used them to support federal, state, and private initiatives.

Over the past five (5) years, OI's fish and shrimp hatchery has benefited numerous organizations including the University of Hawai'i Sea Grant College Program, Ocean Era Inc., Paepae o He'eia, Biota, Blue Ocean Mariculture, DLNR – DAR, Conservation International, Georgia Aquarium, Northern Marianas College, Kualoa Ranch Hawaii, Taylor Shellfish Inc., Waianae High School, Waimanalo Feed Supply, Sea Life Park, the Center for Tropical and Subtropical Aquaculture, and Hawaii Aquaculture and Aquaponics Association. Specifically, this proposed project will serve five (5) target populations in Hawaii, as described below.

Hawaii's aquafarmers: OI has the capacity and capability to produce commercial quantities of baby fish and shrimp which can be provided directly to local aquafarmers to grow and sell to local communities. As indicated previously, **the lack of baby fish and shrimp to stock our aquafarms represents a significant barrier to the expansion of Hawaii's aquaculture industry**, and OI can serve as the State's *de facto* fish and shrimp hatchery to serve in this capacity. Recently, OI provided baby mullet (*pua 'ama'ama*) to Hawaiian fishpond operators on O'ahu (*He'eia* Fishpond and *Loko Ea* Fishpond), Molokai (*Keawanui* Fishpond), and the Big

Island (*Hale O Lono* Fishpond), and OI periodically provides baby shrimp to Kualoa Ranch on the windward side of O'ahu.

Local research communities: Live aquatic animals produced at OI's fish and shrimp hatchery serve as valuable research organisms for a variety of fields such as genetics, immunology, molecular biology, nutrition, pathology, physiology, and virology. OI has provided these research organisms to: 1) scientists from the College of Tropical Agriculture and Human Resources (CTAHR) at the University of Hawaii at Manoa; 2) scientists at Kewalo Marine Laboratory in Honolulu; 3) scientists at the Pacific Aquaculture & Coastal Resource Center (PACRC) at the University of Hawaii in Hilo; and 4) marine scientists and students at Hawaii Pacific University.

Local high school and university students: OI's fish and shrimp hatchery continues to serve as an important platform to train local high school and university students in the science and art of aquaculture. Aquaculture represents a unique, transdisciplinary platform for STEM education because it integrates biology, chemistry, engineering, and business in a holistic manner. Student groups who have benefitted from OI's fish and shrimp hatchery include: 1) undergraduate students at Hawaii Pacific University (HPU) through capstone courses, aquaculture workshops, volunteer internships, and paid internships; 2) graduate students enrolled in HPU's Masters of Marine Science degree program through master's research opportunities, volunteer internships, and paid internships; 3) students at Kamehameha Schools who participate in an annual aquaculture workshop hosted by OI and funded by the U.S. Department of Education; and 4) young adults participating in the KUPU Program. Currently, we have a KUPU volunteer working in OI's fish and shrimp hatchery learning how to culture 'ama'ama. In addition, in February 2025, OI will provide ~ 10,000 *pua* 'ama'ama (baby mullet) to Waianae High School through a Hawaii State Department of Education contract.

Local recreational fishermen: OI's fish and shrimp hatchery continues to produce local fish species which can be stocked into nearshore waters for stock restoration and stock enhancement. OI has a long history helping to replenish Hawaii's fisheries. From 1990 - 2000, more than 268,000 tagged mullet were released off the Big Island and these small-scale releases had a significant impact on wild stock abundance. In addition, OI released more than 500,000 tagged moi over a 7-year period and demonstrated recoveries of up to 10% in recreational fisheries (see **Fig. 5**). Recently, OI, working with the Waikīkī Aquarium, tagged and released pāpio which were raised in OI's hatchery from eggs collected at the Maui Ocean Center (see KHON new story at <https://www.youtube.com/watch?v=yX-0aeeQkZg>)

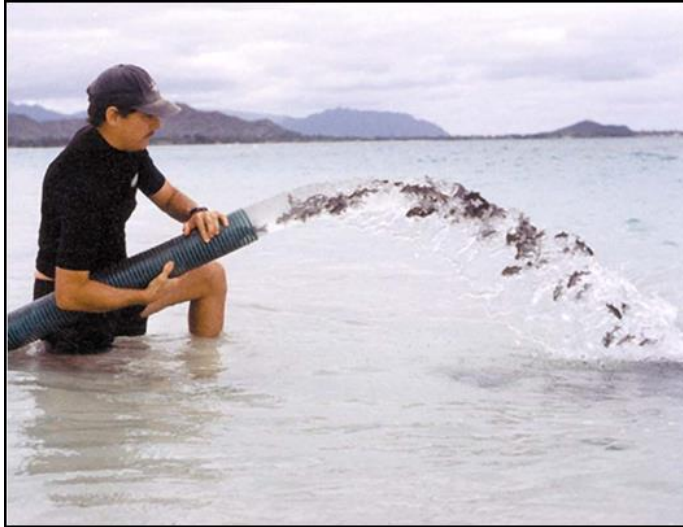


Fig. 5. OI's fish and shrimp hatchery has been use to produce baby moi (Pacific threadfin) which were tagged and released into Hawaii's nearshore waters to help replenish wild stocks.

Hawaii residents and visitors: Ultimately, the impact of this project will contribute to local food production through the: 1) provision of baby fish and shrimp to local aquafarmers; 2) creation of new knowledge through cutting-edge aquaculture research; 3) training of a technically competent workforce; and 4) replenishment of wild fish stocks for recreational fishermen. If this can be accomplished, we will have moved Hawaii towards greater food self-sufficiency and enhanced food security. This will serve both Hawaii residents and our visitors by providing high-quality food at affordable prices without having to depend on imported products to meet market demand.

In addition to contributing to local food production, GIA funding could be used to help OI produce fish for release into nearshore waters in an effort to provide ecosystem services to support coral reef health. With an estimated \$33 billion in value, Hawaii's coral reefs contribute around \$800 million annually to the local economy, supporting food resources, medicine, storm protection, and tourism while holding deep cultural significance. Despite this value, threats from climate change, pollution, and invasive species have increasingly jeopardized coral reef health around our islands. In November 2024, OI marked an historic milestone by releasing over 300 aquacultured juvenile yellow tang (lau'ipala) into the waters off Oahu. This initiative represented the first documented release of fish in Hawaii aimed specifically at ecosystem restoration rather than food production, and this is a significant milestone toward preserving Hawaii's coral reefs. For more information about this historic event, please see links below:

<https://www.hpu.edu/about-us/the-ohana/article.php?nid=nc11042401>

<https://www.hatcheryinternational.com/oceanic-institute-releases-300-juvenile-yellow-tang-to-aid-hawaiian-reef-restoration/>

<https://www.hawaiipublicradio.org/the-conversation/2024-10-29/yellow-tang-hpu-windward-oahu-conservation>

<https://www.khon2.com/local-news/%CA%BBrestoration-improving-coral-reef-health%CA%BB-one-aim-of-fish-release/>

5. Geographic Coverage

The impact of this project would be felt across most of Hawaii's main islands including O'ahu, Molokai, the Big Island, Maui, and Kauai. All of these islands have functional Hawaiian fishponds which could receive *pua 'ama'ama* (baby mullet) from OI's hatchery. Natural recruitment of wild *pua 'ama'ama* is getting rare and fishpond operators are becoming more reliant on land-based hatcheries to supply baby fish. OI has the only hatchery on O'ahu which can produce *pua 'ama'ama* and these fish can be easily transported to any outer island for stocking into the ponds. Similarly, OI can provide baby moi, papio, aholehole, and kumu for stocking in Hawaiian fishponds or for stocking in more traditional aquaculture ponds and tanks. Transporting any of these fish species to any outer island is relatively easy and often results in high survival rates (> 90%). Fish produced in OI's hatchery could also be shipped to any outer island for stock restoration and stock enhancement purposes to support recreational fishermen across the Hawaiian islands. Fish and shrimp produced in OI's hatchery will continue to be used by Hawaii's research communities which are based largely on O'ahu but also on the Big Island.

III. Service Summary and Outcomes

The Service Summary shall include a detailed discussion of the applicant's approach to the request. The applicant shall clearly and concisely specify the results, outcomes, and measures of effectiveness from this request. The applicant shall:

1. Scope of Work, Tasks and Responsibilities

OI is seeking Grant-in-Aid funds to produce a variety of fish and shrimp species for a broad group of Hawaii stakeholders, including Hawaiian fishpond operators, DLNR's Division of Aquatic Resources, commercial aquafarmers, educational organizations, and Hawaii's research community, among others.

In an effort to achieve this goal, key project tasks defining the scope of work of this proposal include:

- Care and maintenance of broodstock (adult male and female) fish and shrimp
- Spawning of broodstock fish and shrimp to obtain fertilized eggs
- Care and maintenance of fish and shrimp larvae in OI's soon-to-be renovated hatchery
- Care and maintenance of fish and shrimp juveniles in OI's nursery facilities
- Packing and distributing juvenile (baby) fish and shrimp to interested stakeholders

Task #1: Care and maintenance of broodstock (adult male and female) fish and shrimp

OI has a unique biological inventory of marine fish broodstock including 'ama'ama (striped mullet), moi (Pacific threadfin), and kūmū (whitesaddle goatfish). These broodstock represent important fish for human consumption and are important for Hawaiian fishponds and local recreational fisheries. In addition, OI has a unique biological inventory of marine fish

broodstock of interest to the marine aquarium trade and for release into the nearshore environment to provide ecosystem services to support coral reef health. These broodstock include reef fish such as lau'ipala (Yellow tang). This inventory of important fish broodstock needs to be cared and maintained in a healthy environment so that they are able to produce fertilized eggs. Without a source of fertilized eggs, OI cannot produce any fish for Hawaii's aquaculture stakeholders. Care and maintenance of healthy broodstock requires significant trained, technical labor to feed the fish, monitor water quality, clean tanks, and sample fish for disease, among other activities. It also requires proper feed and water-quality monitoring supplies.

In addition to a large inventory of marine fish broodstock, OI has a captive population of Specific Pathogen Free (SPF), selectively bred shrimp broodstock. These shrimp belong to the longest, continuously operating shrimp breeding program in the world. Similar to our fish broodstock, this inventory of important shrimp broodstock needs to be cared and maintained in a healthy environment so that they are able to produce fertilized eggs. Care and maintenance of healthy shrimp broodstock requires significant trained, technical labor to feed the shrimp, monitor water quality, clean tanks, and sample shrimp for disease, among other activities. It also requires proper feed and water-quality monitoring supplies.

Task #2: Spawning of broodstock fish and shrimp to obtain fertilized eggs

With a healthy population of fish and shrimp broodstock, OI researchers can induce the development of healthy eggs and sperm in female and male broodstock, respectively. Inducing gamete (egg and sperm) development and maturation can be accomplished by manipulating diet, photoperiod (i.e. day/light cycle), water quality, and other environmental parameters. Inducing the production of fertilized eggs from broodstock fish and shrimp requires trained, technical labor.

Importantly, although OI does not care and maintain broodstock populations of papio (giant trevally) and āholehole (Hawaiian flagtail), OI researchers have access to fertilized eggs from these two important fish species because we have a good partnership with Maui Ocean Aquarium and Disney's Aulani Resort. Both of these organizations care and maintain adult populations of ulua and āholehole, and they allow OI researchers to place egg collectors in their aquariums to collect fertilized eggs. OI researchers then bring the eggs back to OI's hatchery to rear to juveniles (see Task #3 below). These partnerships eliminate the costly expense of caring and maintaining these fish species at OI, but allows us to produce juveniles for Hawaii's aquaculture stakeholders. For more information about OI's unique partnership with Disney's Aulani Resort, please see links below:

https://www.kitv.com/news/local/disneys-aulani-resort-reveals-hidden-conservation-efforts-at-rainbow-reef-lagoon/article_d95a04e4-e888-11ed-9d77-27e819189300.html

https://www.kitv.com/news/business/hpus-oceanic-institute-cultured-fish-program-aims-to-protect-hawaiis-wild-fish/article_e50b9df8-0cb3-11ee-983b-c73b78ee7ddd.html

<https://disneyparksblog.com/aulani/aulani-resorts-rainbow-reef-fish-help-tell-their-own-sustainability-story/>

Task #3: Care and maintenance of fish and shrimp larvae in OI's soon-to-be renovated hatchery

We are grateful to the State of Hawaii for providing CIP GIA funds last funding cycle to renovate OI's fish and shrimp hatchery. This renovated facility will be used to receive fertilized eggs from OI's fish and shrimp broodstock (or from Maui Ocean Aquarium and Disney's Aulani Resort) and to raise these larval fish and shrimp into juveniles. Larval rearing of baby fish and shrimp represents the most challenging phase in the life cycle of these animals and larval stages can last from about two weeks for shrimp to over three months for reef fish. Larval rearing of baby fish and shrimp requires significant trained, technical labor to feed the fish, monitor water quality, clean tanks, and sample fish for disease, among other activities. It also requires proper feed and water-quality monitoring supplies.

Task #4: Care and maintenance of fish and shrimp juveniles in OI's nursery facilities

Once the baby fish and shrimp reach a certain age/size, they are transferred from the hatchery to a nursery facility prior to shipment to their final destination. The nursery period can last from days to weeks, depending on the species being cultured and what the intended use of the fish and shrimp will be. Nursery rearing of fish and shrimp requires trained, technical labor to feed the fish, monitor water quality, clean tanks, and sample fish for disease, among other activities. It also requires proper feed and water-quality monitoring supplies.

Task #5: Packing and distributing juvenile (baby) fish and shrimp to interested stakeholders

Juvenile fish and shrimp will be packed in bags (containing water and oxygen) and placed in sealable boxes at OI's nursery facilities and sent to an appropriate recipient, whether it is a Hawaiian fishpond operator on Molokai, a researcher on the Big Island, or high school students in Waianae. OI has shipped fish and shrimp all over the world and we expect shipping survival as high as 90%. Shipping of juvenile fish and shrimp requires a small amount of trained, technical labor and a small amount of shipping materials and supplies.

OI will use GIA funds to support the production of three (3) cohorts of fish and/or shrimp over a 12-month period. The exact species OI produces will depend on what the industry stakeholders will want. For example, in the first cohort, OI could produce 10,000 baby striped mullet ('ama'ama,) and distribute them to Waianae High School and Paepae o He'eia in Kaneohe to stock in their fishpond. The second cohort could include 10,000 baby shrimp for Kualoa Ranch and 200 Yellow tang for the Waikiki Aquarium, and the third cohort could include 5,000 baby shrimp for a researcher at the University of Hawaii and 5,000 papio (giant trevally) for a stock enhancement project with DLNR's Division of Aquatic Resources. Again, this is just an example. Once GIA funding is approved, OI will reach out to aquaculture stakeholders, and other relevant communities across Hawaii, to determine needs. OI will contact these communities through a number of mechanisms and platforms including through contact lists and emails to the communities associated with Hawaii Aquaculture and Aquaponics Association (HAAA), The Center for Tropical and Subtropical Aquaculture (CTSA), UH Sea Grant, tenants

at the Natural Energy Laboratory of Hawaii Authority (NELHA) on the Big Island, Kua’ Aina Ulu ‘Auamo (KUA), and The Hui Mālama Loko I‘a (Hui), among others.

2. Project Timeline

Task	1	2	3	4	5	6	7	8	9	10	11	12
Cohort #1												
1.1												
1.2												
1.3												
1.4												
1.5												
Cohort #2												
2.1												
2.2												
2.3												
2.4												
2.5												
Cohort #3												
3.1												
3.2												
3.3												
3.4												
3.5												
Report												

For Cohort #1:

- 1.1 Care and maintenance of broodstock fish and shrimp
- 1.2 Spawning of broodstock fish and shrimp to obtain fertilized eggs
- 1.3 Care and maintenance of fish and shrimp larvae in OI’s hatchery
- 1.4 Care and maintenance of fish and shrimp juveniles in OI’s nursery
- 1.5 Packing and distributing juvenile (baby) fish and/or shrimp to interested stakeholders

For Cohort #2:

- 2.1 Care and maintenance of broodstock fish and shrimp
- 2.2 Spawning of broodstock fish and shrimp to obtain fertilized eggs
- 2.3 Care and maintenance of fish and shrimp larvae in OI’s hatchery
- 2.4 Care and maintenance of fish and shrimp juveniles in OI’s nursery
- 2.5 Packing and distributing juvenile (baby) fish and/or shrimp to interested stakeholders

For Cohort #3:

- 3.1 Care and maintenance of broodstock fish and shrimp
- 3.2 Spawning of broodstock fish and shrimp to obtain fertilized eggs
- 3.3 Care and maintenance of fish and shrimp larvae in OI's hatchery
- 3.4 Care and maintenance of fish and shrimp juveniles in OI's nursery
- 3.5 Packing and distributing juvenile (baby) fish and/or shrimp to interested stakeholders

3. Quality Assurance and Evaluation Plan

OI will implement a rigorous quality assurance program to ensure the highest standards are maintained throughout the production of baby fish and shrimp. Key quality assurance procedures will include:

- 1) OI researches will maintain the highest quality of care for all fish and shrimp used in this project, including strict adherence to Hawaii Pacific University's (HPU) biosecurity rules at the Makapuu campus (where OI is located), as well as rules and guidelines articulated by HPU's Institutional Animal Care and Use Committee (IACUC).
- 2) In order for OI to maintain Specific Pathogen Free (SPF) status by the State of Hawaii for the shrimp breeding program, OI participates in the Hawaii Shrimp Health Certification Program (SHCP) which oversees the SPF status of shrimp broodstock. To achieve SPF status, shrimp are monitored regularly for a range of pathogens, and must remain negative for at least two years. OI has maintained this SPF status for several decades.
- 3) OI has been producing baby fish and shrimp for over 60 years and we have significant baseline data to determine if animals and life-support systems are not operating normally. We will continue to monitor our activities and conduct due diligence to ensure our animals are healthy and our systems are functioning as intended.

4. Measure of effectiveness

In practical terms, the key measure of effectiveness for this project will be quantitative metrics associated with benefits accrued to each of the target populations. For Hawaii's aquafarmers, the key measure will be the number of baby fish and shrimp produced in OI's hatchery and provided to the aquafarmers to grow out for food. For local research communities, the key measure will be the number of fish and shrimp produced in OI's hatchery and distributed to research labs on O'ahu, the Big Island, and other outer islands where scientists are conducting research in such fields as genetics, immunology, molecular biology, nutrition, pathology, physiology, and virology. In addition, a key measure will be the number of competitive federal, state and private research grants and contracts OI is awarded because of its unique infrastructure at the fish and shrimp hatchery, its unique biological inventory, and its world-renown content experts. For local high school and university students, the key measure will be the number of students experiencing hands-on learning in OI's hatchery. For local recreational fishermen, the key metric will be the number of tagged fish they catch which were born and raised in OI's hatchery. All of these stakeholder groups could receive significant benefits from this GIA-funded project.

IV. Financial

Budget

1. The applicant shall submit a budget utilizing the enclosed budget forms as applicable, to detail the cost of the request.

Attachments following Section IV. Financial

The projected cost to support the production of three (3) cohorts of fish and/or shrimp over a 12-month period is \$211,400, and these costs are allocated as indicated below.

Two (2) Research Assistants @ 1.0 FTE each	\$135,095
Project oversight @ 0.05 FTE	\$11,305
Fish and shrimp feed for 12 months	\$25,000
Materials and supplies for water quality monitoring	\$15,000
Utilities	\$25,000
Total	\$211,400

2. The applicant shall provide its anticipated quarterly funding requests for the fiscal year 2026.

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total Grant
\$52,850	\$52,850	\$52,850	\$52,850	\$211,400

3. The applicant shall provide a listing of all other sources of funding that they are seeking for fiscal year 2026.

List of all other sources of funding that OI is seeking in FY2026
(Note: All of these sources of funding for OI in FY26 have been secured.)

Source of funds	Name of project	Amount
Biota (private company)	Production of marine ornamental fish	\$748,000
Georgia Aquarium	Production of marine ornamental fish	\$95,000
U.S Department of Education	Aquaculture to teach STEM to Native Hawaiian students	\$53,706
Government of Indonesia	Shrimp breeding project	\$1,105,000
U.S. Dept. of Agriculture	Integrated Multitrophic Aquaculture	\$23,732
U.S. Dept. Commerce, NOAA	Kumu project	\$24,992
Estimated Total		\$2,050,430

4. The applicant shall provide a listing of all state and federal tax credits it has been granted within the prior three years. Additionally, the applicant shall provide a listing of all state and federal tax credits they have applied for or anticipate applying for pertaining to any capital project, if applicable.

BUDGET REQUEST BY SOURCE OF FUNDS

Period: July 1, 2025 to June 30, 2026

App

Oceanic Institute of Hawaii Pacific University_211400_OP

BUDGET CATEGORIES	Total State Funds Requested (a)	Total Federal Funds Requested (b)	Total County Funds Requested (c)	Total Private/Other Funds Requested (d)
A. PERSONNEL COST				
1. Salaries	109,500			
2. Payroll Taxes & Assessments				
3. Fringe Benefits	36,900			
TOTAL PERSONNEL COST	146,400			
B. OTHER CURRENT EXPENSES				
1. Airfare, Inter-Island				
2. Insurance				
3. Lease/Rental of Equipment				
4. Lease/Rental of Space				
5. Staff Training				
6. Supplies	40,000			
7. Telecommunication				
8. Utilities	25,000			
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
TOTAL OTHER CURRENT EXPENSES	65,000			
C. EQUIPMENT PURCHASES				
D. MOTOR VEHICLE PURCHASES				
E. CAPITAL				
TOTAL (A+B+C+D+E)	211,400			
SOURCES OF FUNDING		Budget Prepared By:		
(a) Total State Funds Requested	211,400	Marina Ong 808-259-3111		
(b) Total Federal Funds Requested		Name (Please type or print) Phone		
(c) Total County Funds Requested		Jan. 17, 2025		
(d) Total Private/Other Funds Requested		Signature of Authorized Official Date		
TOTAL BUDGET	211,400	SVP & Chief Strategy Officer		
		Name and Title (Please type or print)		

BUDGET JUSTIFICATION - PERSONNEL SALARIES AND WAGES

Period: July 1, 2025 to June 30, 2026

Applicant: Oceanic Institute of Hawaii Pacific University_211400__OP

POSITION TITLE		FULL TIME EQUIVALENT	ANNUAL SALARY A	% OF TIME ALLOCATED TO GRANT REQUEST B	TOTAL STATE FUNDS REQUESTED (A x B)
Research Assistant		1	\$50,000.00	100.00%	\$ 50,000.00
Research Assistant		1	\$50,000.00	100.00%	\$ 50,000.00
Executive Director		0.05	\$190,000.00	5.00%	\$ 9,500.00
					\$ -
					\$ -
					\$ -
					\$ -
					\$ -
					\$ -
					\$ -
					\$ -
					\$ -
					\$ -
					\$ -
					\$ -
TOTAL:					109,500.00
JUSTIFICATION/COMMENTS:					

BUDGET JUSTIFICATION - EQUIPMENT AND MOTOR VEHICLES

Period: July 1, 2025 to June 30, 2026

Applicant:

Oceanic Institute of Hawaii Pacific University_211400_OP

DESCRIPTION EQUIPMENT	NO. OF ITEMS	COST PER ITEM	TOTAL COST	TOTAL BUDGETED
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
TOTAL:				0
JUSTIFICATION/COMMENTS:				

DESCRIPTION OF MOTOR VEHICLE	NO. OF VEHICLES	COST PER VEHICLE	TOTAL COST	TOTAL BUDGETED
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
TOTAL:				0
JUSTIFICATION/COMMENTS:				

BUDGET JUSTIFICATION - CAPITAL PROJECT DETAILS

Period: July 1, 2025 to June 30, 2026

Applicant: Oceanic Institute of Hawaii Pacific University_211400_OP

FUNDING AMOUNT REQUESTED						
TOTAL PROJECT COST	ALL SOURCES OF FUNDS RECEIVED IN PRIOR YEARS		STATE FUNDS REQUESTED	OTHER SOURCES OF FUNDS REQUESTED	FUNDING REQUIRED IN SUCCEEDING YEARS	
	FY:2023-2024	FY:2024-2025	FY:2025-2026	FY:2025-2026	FY:2026-2027	FY:2027-2028
PLANS						
LAND ACQUISITION						
DESIGN						
CONSTRUCTION						
EQUIPMENT						
TOTAL:						0
JUSTIFICATION/COMMENTS:						

GOVERNMENT CONTRACTS, GRANTS, AND / OR GRANTS IN AID

Applicant: Oceanic Institute of Hawaii Pacific University 211400 OP

Contracts Total: 2,877,461

	CONTRACT DESCRIPTION	EFFECTIVE DATES	AGENCY	GOVERNMENT ENTITY (U.S./State/Hawaii/ Honolulu/ Kauai/ Maui County)	CONTRACT VALUE
1	Optimizing coral grouper culture	2019 - 2021	USDA-CTSA	U.S.	151,800
2	Culture of marine polychaete for shrimp feed	2019 - 2021	USDA-CTSA	U.S.	58,300
3	Improving live feeds production efficiency	2020 - 2021	USDA-CTSA	U.S.	46,090
4	Herbivorous reef fish: fishpond & commercial	2021 - 2022	USDA-CTSA	U.S.	11,050
5	Improving Forktail rabbitfish in CNMI region	2021 - 2023	USDA-CTSA	U.S.	63,775
6	Partnering public aquariums with aquaculture	2021 - 2022	USDA-CTSA	U.S.	46,100
7	Designing a harvest system for polychaete	2021 - 2023	USDA-CTSA	U.S.	11,618
8	Investigating low salinity in Pacific White shrimp	2020 - 2023	USDA-NIFA	U.S.	310,000
9	Engaging Hawaii's fishing community for kumu	2021 - 2023	NOAA SK	U.S.	295,409
10	Aquaculture platform-native Hawaiian student-STEM	2021 - 2026	US DOE	U.S.	549,430
11	Develop aquaculture system for Limu (seaweed)	2022 - 2023	NOAA-SK	U.S.	187,669
12	Resolving impediments to captivity in Seriolids	2022 - 2025	NOAA-Seagrant	U.S.	232,600
13	Genomic approach to improve Pacific white shrimp	2022 - 2025	NOAA-Seagrant	U.S.	217,364
14	Develop aquaculture system for Hawaiian fishponds	2023 - 2024	NOAA-PSFMC	U.S.	124,015
15	Production of mullet for Waianae High School	2024 - 2025	Hawaii State DOE	State	180,000
9	Engaging Hawaii's fishing community for kumu	2023 - 2025	NOAA-SK	U.S.	299,900
17	Integrated Multitrophic Aquaculture System for Hawa	2024 - 2025	USDA-CTSA	U.S.	71,195
18	Genetic Markers in PacificWhite Shrimp	2024 - 2025	USDA-CTSA	U.S.	21,146
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

No state and federal tax credits have been granted. We do not anticipate applying for state or federal tax credits.

5. The applicant shall provide a listing of all federal, state, and county government contracts, grants, and grants in aid it has been granted within the prior three years and will be receiving for fiscal year 2025 for program funding.

Attachments following Section IV. Financial

6. The applicant shall provide the balance of its unrestricted current assets as of December 31, 2023.

Unrestricted Assets: \$35,584,143 (Audited Financials for all of Hawaii Pacific University as of 6/30/24).

V. Experience and Capability

1. Necessary Skills and Experience

The applicant shall demonstrate that it has the necessary skills, abilities, knowledge of, and experience relating to the request. State your experience and appropriateness for providing the service proposed in this application. The applicant shall also provide a listing of verifiable experience of related projects or contracts for the most recent three years that are pertinent to the request.

1. Necessary Skills and Experience

OI has been conducting aquaculture research for over 60 years. Over a recent 4-year period, OI scientists were authors or co-authors on 76 peer-reviewed publications, book chapters, conference proceedings, and industry trade magazine articles related to aquaculture. In a recent study of institutions receiving U.S. federal aquaculture grants from 1990 to 2015, OI ranked 6th out of the top 50 institutions in the U.S. in total grant funding, beating out a number of large public and private universities (Love et al. 2017). From 2015 – 2021, OI received over \$3.4 million in competitive, federal grants related to aquaculture.

2. Facilities

The applicant shall provide a description of its facilities and demonstrate its adequacy in relation to the request. If facilities are not presently available, describe plans to secure facilities.

2. Facilities

OI's facilities are located on a narrow coastline, approximately 56 acres in area, on Kalaniana'ole Highway in Waimanalo, Hawaii (see **Fig. 6**).

Infrastructure related to marine fish and shrimp research is used to support a variety of grants and contracts and includes:

- 1) A marine ornamental fish hatchery used to produce coral reef fish with our partner, Biota LLC.
- 2) A Fish and Shrimp Hatchery used to develop and refine culture techniques for established fish and shrimp species and to develop new culture techniques for novel or difficult-to-rear marine species. This is the facility for which we received Grant-in-Aid funds to renovate.
- 3) A small, marine ornamental fish facility used to study, maintain, and culture coral reef fish.
- 4) Laboratories to culture various live feeds needed to support marine fish research including 5 species of marine algae and facilities for copepod/rotifer/artemia culture.
- 5) Tank field with eighteen (18) 30-m² tanks.
- 6) Shrimp Nucleus Breeding Center including:
 - Hatchery Module with four (4), 15-m² maturation tanks, thirty (30) 300-L spawning tanks, fifty-five (55) 120-L larval rearing tanks, fourteen (14) 250-L to 1-ton larval rearing tanks, a live-feeds production lab, and a feed prep and storage room.
 - Nursery Module with fifty-two (52) 500-L nursery tanks, eight (8) 6-10-ton tanks, and a tagging/shipping area.
 - Growout Module with three (3) 75-m² raceways covered for biosecurity, each with an independent recirculation system.
 - Over 10,000 m² of roofed laboratory and office space.
- 7) Research Shrimp Hatchery with three (3) 15-m² maturation tanks, twenty (20) 300-L spawning tanks, and thirty-two (32) 150-L larval rearing tanks.
- 8) Shrimp Mesocosm Lab with six (6) 40-m² tanks for broodstock growout and conditioning and forty (40) 1-ton mesocosm tanks for nursery and evaluation trials.
- 9) Tank field with fifteen (15) 30-m² tanks, four (4) 8-ton tanks, twenty (20) 1-4-ton tanks.
- 10) Four (4) 300-420-m² lined ponds.
- 11) Five (5) 35-m² covered raceways with independent recirculation systems.



Fig.6. Aerial view of Oceanic Institute of Hawaii Pacific University with Makai Pier in the background. Sea Life Park, a public exhibit featuring local marine life, is located in the foreground.

Infrastructure related to biotechnology support services includes a building containing two research labs, one teaching lab, and a distance learning center. Research labs are equipped with standard molecular biology equipment including multiple thermocyclers, quantitative PCR machine, biosafety hoods, centrifuges, biospectrometer, gel electrophoresis rigs, fluorescent imager, and a 16-capillary DNA sequencer. The two research labs are used for aquaculture and other marine-related research. The teaching lab is used to support training workshops on water quality analysis and molecular biology. The lab recently was used to conduct a workshop titled, *“The Use of Molecular Genetic Tools in Marine Science”* funded by U.S. Department of Commerce, National Oceanic and Atmospheric Administration. This workshop was designed for early-career, marine science professionals, secondary school teachers, and university graduate students pursuing a degree in marine sciences.

VI. Personnel: Project Organization and Staffing

1. Proposed Staffing, Staff Qualifications, Supervision and Training

The applicant shall describe the proposed staffing pattern and proposed service capacity appropriate for the viability of the request. The applicant shall provide the qualifications and experience of personnel for the request and shall describe its ability to supervise, train and provide administrative direction relative to the request.

Finance team

The finance team consists of Mr. David Kostecki, HPU Vice President and Chief Financial Officer, and Ms. Marina Ong, Associate Controller for Business Affairs at OI. A grants office is also part of the finance team, where Ms. Jody Wong, HPU's Assistant Vice President, Sponsored Projects, will ensure that procurement and compliance requirements of the project are met.

Scientific and technical team

The strength of OI lies in its professional staff and employs a team of scientists, professionals, and support personnel. OI conducts applied research which is integrated across several technical programs including marine fish and shrimp aquaculture, applied marine biotechnology, and training and education.

Key members of OI staff who play important roles in OI's research include:

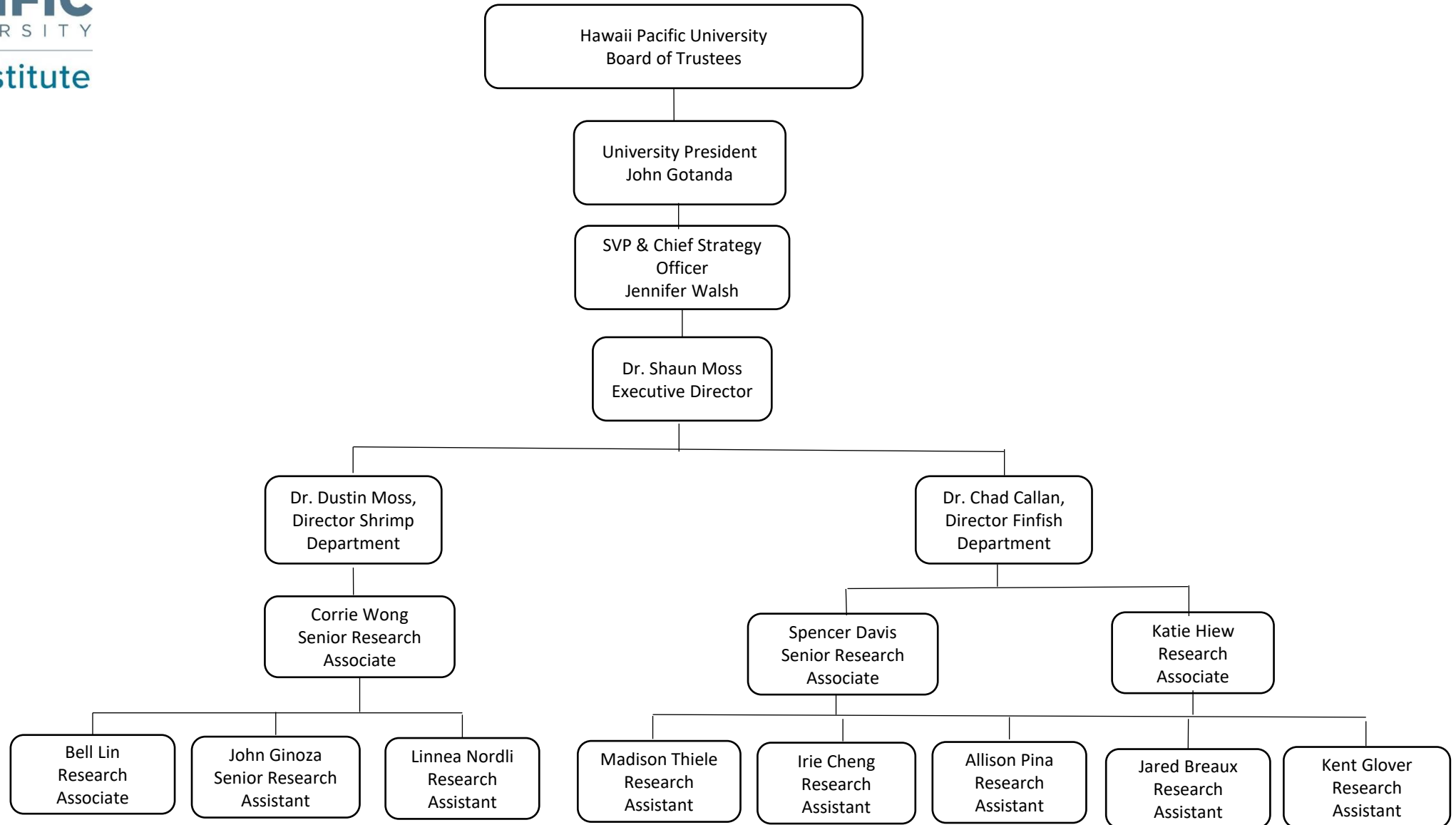
Dr. Shaun Moss, Executive Director of OI, received his Ph.D. degree in Zoology from the University of Hawaii in 1993. (see brief bio at <https://www.hpu.edu/faculty/oi/shaun-moss.html>)

Dr. Dustin Moss, Director of OI's Shrimp Department, received his Ph.D. in Molecular Biology and Bioengineering from the University of Hawaii in 2013. (see brief bio at <https://www.hpu.edu/faculty/oi/dustin-moss.html>)

Dr. Chad Callan, Director of OI's Finfish Department, received his Ph.D. in Fisheries from the University of Maine in 2008. (see brief bio at <https://www.hpu.edu/faculty/oi/chatham-callan.html>)

OI scientists and staff have expertise in many aspects of fish and shrimp aquaculture and in the application of biotechnology to solve aquaculture and marine conservation problems. Over a recent 4-year period, OI scientists were authors or co-authors on 76 peer-reviewed publications, book chapters, conference proceedings, and industry trade magazine articles related to aquaculture (see link at <https://www.hpu.edu/oi/publications.html>). In a recent study of institutions receiving U.S. federal aquaculture grants from 1990 to 2015, OI ranked 6th out of the top 50 institutions in total grant funding, beating out a number of large public and private universities. From 2015 – 2021, OI received over \$3.4 million in competitive, federal grants related to aquaculture including research on abalone, tilapia, shrimp, milkfish, coral grouper, sea cucumbers, mangrove crab, marine ornamental fish, and rabbitfish, as well as a grant to support an aquaculture workshop for Hawaii high school students. Recently, OI scientists completed a grant from the U.S. Department of Commerce, Economic Development Administration (EDA) to develop content for an aquaculture and biotechnology training program. Content includes narrated presentations covering fish and shrimp aquaculture, biotechnology, and aquaponics. This content is geared towards workforce development in these fields and all of the output from the EDA grant is available for OI to use to support workforce development in Hawaii. Currently, OI is receiving funds from the U.S. State Department of Education for a grant titled, *"Aquaculture as a Platform to Increase Native Hawaiian Student Representation in STEM Majors"*. This grant is intended to promote and encourage Native Hawaiian students, who are enrolled at HPU, to pursue STEM majors. The

Oceanic Institute of Hawaii Pacific University



ultimate goal is to help produce Native Hawaiian graduates to play increasingly important leadership roles in helping solve the complex and transdisciplinary challenges facing island communities in the future, including food insecurity, global climate change, and job diversification.

2. Organization Chart

The applicant shall illustrate the position of each staff and line of responsibility/supervision. If the request is part of a large, multi-purpose organization, include an organization chart that illustrates the placement of this request.

Attachment following Section VI. Personnel.

3. Compensation

The applicant shall provide an annual salary range paid by the applicant to the three highest paid officers, directors, or employees of the organization by position title, not employee name.

Compensation paid to the three highest employees of Hawaii Pacific University include:

- HPU President - \$599,577
- HPU Senior Vice President and General Counsel- \$383,195
- HPU Senior Vice President and CFO - \$280,495

VII. Other

1. Litigation

The applicant shall disclose any pending litigation to which they are a party, including the disclosure of any outstanding judgement. If applicable, please explain.

Hawaii Pacific University and the Oceanic Institute currently do not have any pending litigation.

2. Licensure or Accreditation

The applicant shall specify any special qualifications, including but not limited to licensure or accreditation that the applicant possesses relevant to this request.

OI is licensed and accredited in accordance with federal, state, county statutes, rules, or ordinances, to conduct the activities and provide the services for which this grant is requested. OI possesses the State of Hawai'i Aquaculture Facility Licenses numbers 18052.

Hawai'i Pacific University is accredited by the Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges (WASC).

3. Private Educational Institutions

The applicant shall specify whether the grant will be used to support or benefit a sectarian or non-sectarian private educational institution. Please see [Article X, Section 1, of the State Constitution](#) for the relevance of this question.

Hawaii Pacific University is a private, non-sectarian, non-profit educational organization.

4. Future Sustainability Plan

The applicant shall provide a plan for sustaining after fiscal year 2026 the activity funded by the grant if the grant of this application is:

OI's Fish and Shrimp Hatchery will be used to support aquaculture research activities at OI for the foreseeable future. Funding to support research and production of fish and shrimp will come from federal sources, including: 1) U.S. Department of Agriculture, National Institute of Food and Agriculture (NIFA); 2) U.S. Department of Commerce, NOAA, Saltonstall-Kennedy Program; 3) U.S. Department of Commerce, NOAA, National Sea Grant Program; 4) U.S. Department of Agriculture, Center for Tropical and Subtropical Aquaculture (CTSA); 5) U.S. Department of Education; 5) U.S. Economic Development Administration; and 6) Pacific States Marine Fisheries Commission.

Additional support for research and the production of fish and shrimp will come from the State of Hawaii, including the Department of Land and Natural Resources, Division of Aquatic (DAR) and the Department of Education, as well as from private organizations such as Ulupono Initiative and Kualoa Ranch. OI will also seek support from, and collaboration with, academic institutions in Hawaii (e.g. College of Tropical Agriculture and Human Resources (CTHAR) at the University of Hawaii at Manoa, Pacific Aquaculture and Coastal Resources Center (PACRC) at UH Hilo); U.S.-affiliated Pacific Islands (e.g. University of Guam, Northern Marianas College, Palau Community College), and on the U.S. mainland (e.g. Texas A&M University, University of Arizona). Importantly, several academic institutions in the U.S.-affiliated Pacific Islands have access to formula grants (e.g. Hatch funds) and these funds may be used to support the fish and shrimp hatchery at OI.

OI's Fish and Shrimp Hatchery also will be used for research for private-sector companies through direct contracts or SBIR collaborative government grants in the following areas:

- Development of novel fish and shrimp breeding technologies
- Production of new, difficult-to-rear fish species endemic to Hawaii
- Development of novel feed ingredient for fish and shrimp
- Development of new feed products for abalone, opihi, and sea urchins