

University of Hawai'i Hilo
Center for Maunakea Stewardship
Maunakea Comprehensive Management Plan
2023 Annual Progress Report

Prepared for
The Board of Land and Natural Resources
State of Hawai'i



View looking south towards Maunaloa from UH managed lands on Maunakea

I. Introduction

In 2009 the Board of Land and Natural Resources (BLNR) approved the Mauna Kea Comprehensive Management Plan; UH Management Areas (2009 CMP). Consistent with Hawai'i Administrative Rules (HAR) § 13-5-2, the 2009 CMP is the University of Hawai'i's (UH) "comprehensive plan to manage multiple uses and activities in order to protect and conserve natural and cultural resources." To achieve comprehensive management of the UH Management Areas, the 2009 CMP identified 12 focus areas, each with a desired outcome, and management actions (103 in total) designed to achieve the desired outcomes. As specified in the 2009 CMP, status reports and periodic updates/supplements are to be conducted to ensure the management actions remain relevant and sufficient to achieve the desired outcomes based on experience, data, and learning. Annual progress reports (APR) to DLNR are called for in the 2009 CMP and this report represents our update for FY23.

Consistent with past practice, this report covers the fiscal year 2023 (FY23), which started on July 1, 2022, and ended on June 30, 2023, but may also include matters and data outside FY23 to provide historical context, trend analyses, and relevancy with recent events. As defined in the updated Comprehensive Management Plan, progress updates are "not intended to be a status report on the resources in the UH Management Areas nor is it meant to provide a detailed status update on every CMP management action." Rather, the purpose of the 2023 APR is "to keep the department informed of progress and the future direction of our management program for Maunakea." Highlighted here are the management activities that comprised the University's strategic priorities for the period covered.

In addition, this year's report has been focused to align with UH's Annual Report on the Mauna Kea Lands pursuant to Hawai'i Revised Statutes (HRS) § 304A-1905, "Mauna Kea Lands; reporting requirements."

II. Background

In 1964 the Hawai'i State Legislature passed Senate Concurrent Resolution 16 (SCR 16) stating that the "State of Hawaii and its citizenry are most desirous and willing to co-operate and aid in the promotion of our nation's space program and research to the benefit of the County of Hawaii, the state and the nation." It was resolved that the governor set aside and establish an appropriate area on the summit of Maunakea for the installation and operation of telescope observatory and astronomical activities. In fulfillment of SCR 16, the Mauna Kea Science Reserve (MKSR) was established in 1968, and the Board of Land and Natural Resources (BLNR) and UH entered into an agency-to-agency lease granting UH a lease of the Science Reserve for a term expiring on December 31, 2033 (MKSR General Lease). The lease is gratis, a common

practice for leases between government agencies and one that supports the goal of benefiting the County of Hawai'i, the State, and the Nation.

Also in 1964, Governor John A. Burns recognized that Hawai'i has "... some obvious natural advantages in this area of scientific research, [and that Hawai'i] must capitalize on these, utilizing all our available resources at the University, in the industrial community and at the levels of State and local government." He also emphasized that Hawai'i is not "constrained by these physical advantages." "We can acquire competence in any field of scientific inquiry," and "[t]he limitations are only those we impose on ourselves." (Honolulu Advertiser, August 7, 1964).

Governor Burns understood the demand for manual labor in agriculture would decrease over time, and that future jobs would require technicians and scientists. The development of a research enterprise would provide jobs of the future. The two areas Governor Burns felt the state should pursue were in the fields of oceanography and astronomy, areas in which the State of Hawai'i unquestionably excels.

In the State's effort to establish astronomy as a viable research endeavor and establish Hawai'i as a center for astronomical research, UH entered into subleases with 11 organizations to operate astronomical observatories. BLNR approved all subleases, which are co-terminus with the MKSR General Lease. Each sublessee is obligated to provide a guaranteed percentage of viewing time to UH. Viewing time provides invaluable advantages for advancing UH, Hawai'i's only State-funded institution of higher education, as a center for excellence in research, including astronomy.

At little cost and risk to the State, UH is recognized as one of the Nation's leading astronomical research institutions and globally as the center of excellence for astronomical research. This recognition contributes significantly to the State's efforts to expand its high-technology sector. The annual economic impact of astronomy in the State in 2019 was \$220.95 million (\$261.33 million in 2022 dollars (CPI-U)), with the largest impacts found on Hawai'i Island and Honolulu, \$101.68 million (\$120.26 million in 2022 dollars (CPI-U adjusted)) and \$86.96 million (\$102.85 million in 2022 dollars (CPI-U adjusted)), respectively.¹ Additional benefits accrue to the State and local communities through opportunities in scientific, professional, technical, and administrative employment within the local community.

¹ In 2022 UHERO updated its 2014 economic impact analysis for astronomy. Numbers reported are for 2019 which was the last year of pre-pandemic operations [UHERO Astronomy Summary 2022.pdf](#).

III. Governance

To fulfill its mandate to develop a world-class astronomy program for the State of Hawai'i UH, through its Institute of Astronomy (IfA), became the responsible entity for managing the University's leased lands on Maunakea and stewardship of the mauna. In 1998 the State Auditor issued a critical report of UH's management of Maunakea which led to the development of the Office of Maunakea Management (OMKM) in 2000 located within the University of Hawai'i Hilo (UHH) and a comprehensive community-based management structure comprised of the Maunakea Management Board (MKMB), Kahu Kū Mauna (KKM), and the Environment Committee (EC). In 2019 the UH Board of Regents (BOR) approved a restructuring plan for OMKM that created the Center for Maunakea Stewardship (CMS) under UHH. Under CMS, UH consolidated functions previously managed by IfA with those of OMKM and retained the community-based structure that has been in place since 2000. These advisory groups play a central role in reviewing and providing community input on all major policies, plans, permits, and projects proposed for the University's managed lands on Maunakea. While advisory, their implied authority is evident in decisions to revise, add requirements to, and even halt projects from moving forward. In addition, in 2019 the BOR also tasked CMS with analyzing the benefits and challenges associated with various alternate governance structures for CMS, including models that would transfer management to an entity external to UH. [That report can be found here.](#) Given Act 255 (described below), no further restructuring actions were taken.

A. Act 255

Prior to the 2022 Legislative Session, the State House of Representatives established the Maunakea Working Group (MKWG) to recommend alternative governance structures for the future management of Maunakea. The purpose was to replace UH as the responsible entity for managing the Mauna Kea Science Reserve, Hale Pōhaku, and the roadway easement connecting Hale Pōhaku and the Mauna Kea Science Reserve.

After considering the Working Group's recommendation, HB 2024 was introduced which eventually resulted in Act 255 which was signed into law by Governor Ige in June 2022. Act 255 establishes the Mauna Kea Stewardship and Oversight Authority (MKSOA) that is placed within DLNR for administrative purposes and is comprised of eleven voting Board members.² Act 255

² Three ex officio members: chair of BLNR, mayor of the County of Hawai'i, and chair of the UH Board of Regents. Two members are appointed by the governor from two lists of three, one provided by the president of the senate and one provided by the speaker of the house. Six individuals appointed by the governor in six categories: (i) aina (land) resource management expertise and specific experience with Hawaii island-based management, (ii) possessing expertise in the fields of p-12 public education or post-secondary education, (iii) one name from a list of three submitted by Maunakea Observatories, (iv) business and finance experience and

establishes a five-year transition period during which the UH and the MKSOA will jointly manage certain aspects of Maunakea while MKSOA is formally organized and prepares to assume all legal responsibilities held by UH (e.g., UH's two general leases, grant of easement, and all conservation district permits held by UH for third party non-UH astronomy facilities and buildings). Act 255 also grants the MKSOA certain land disposition responsibilities currently under the jurisdiction of the BLNR and appropriates \$14M for MKSOA start-up.

B. MKSOA startup

In support of UH and MKSOA's joint management through the transition period, UH is supporting MKSOA with various aspects of their start-up needs. At the request of Governor Ige, CMS prepared a list of organizational needs and priority tasks for the MKSOA to consider in their start-up plans which has been provided to the MKSOA. On May 30, 2022 UH sent a letter to then BLNR Chair Case identifying various agreements, permits, and assets held by UH that are impacted by the establishment of the MKSOA which UH would be seeking release from and would need to transfer or be assigned to the new entity. CMS resubmitted our letter to current BLNR Chair Chang and MKSOA Chair Komeiji on August 1, 2023. [That letter may be found here.](#) The purpose of these letters was to initiate the conversation with MKSOA and DLNR so that we could identify the requirements and process to effectuate these transfers. This includes two General leases, a Right of Roadway Easement, eleven subleases, 18 Conservation District Use Permits (CDUPs) incorporating 301 conditions, 23 Chapter 343 environmental reviews and associated mitigations, and a few more special permits held by UH. UH has also made our analysis and data on governance structures available to the MKSOA (referenced previously) and has been educating MKSOA Board members of our operations and other matters through Sunshine-compliant briefings, monthly reports at their Board meetings, and weekly meetings with the MKSOA Chair.

IV. FY2022 CMP Management Action Highlights

The restructuring and consolidation of UH's management functions into CMS in FY21 and FY22, in combination with the updating of our Plans and implementation of the Administrative Rules, has enabled a more comprehensive and integrated approach to implementation of the CMP. Consistent with our FY22 Annual Report, this year's report covers a broader range of activities and metrics than have been previously included in UH's CMP updates. Table 1 provides an overview of CMP management action highlights for FY23 with additional FY data noted where it is included for context. Following Table 1 are brief summaries of some of our more strategic and notable activities for FY23.

previous administrative experience in managing a large private-sector business, (v) lineal descendent of a practitioner of Native Hawaiian traditional and customary practices associated with Mauna Kea, and (vi) recognized practitioner of Native Hawaiian traditional and customary practices. The chancellor of UH at Hilo serves as an ex officio, nonvoting member.

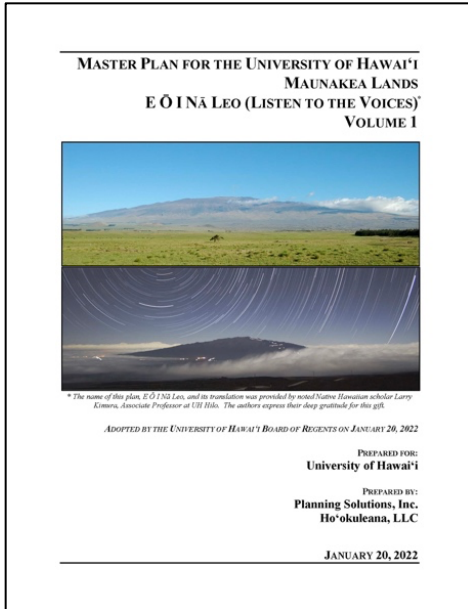
CMP Overview: Selected Management Action Status Updates		
CMP Management Objective	CMP Management Actions	Status
3.2 ...Identify, document the condition of, and protect cultural resources and historic properties in the UH Management Areas.	CR-10: Implement Historic Property Monitoring Plan (260 identified sites)	100 sites visited and documented (CY23). Note: there are 260 documented historic sites on UH's managed lands.
4.2 Increase understanding of the status of natural resources (biotic and abiotic) and identify threats to these resources to better protect and preserve unique geological features, ecosystem functions, subalpine and alpine habitats, and biological communities through adaptive management of stressors and threats.	<p>NR-1 Limit threats to natural resources through management of activities and uses.</p> <p>NR-2 Implement the Maunakea Invasive Species Management Plan (C. Vanderwoude, February 2015) and modify, amend, and update it as warranted.</p> <p>NR-5 Allow, and where possible facilitate, ecosystems to respond to climate change.</p> <p>NR-9 Increase native plant density and diversity through an outplanting program.</p> <p>NR-10 Require mitigation measures in plans for new development.</p> <p>NR-10 Require mitigation measures in plans for new development.</p> <p>NR-12 Plan and conduct habitat restoration activities, as needed.</p> <p>NR-13 Increase communication, networking, and collaborative opportunities that support management and protection of natural resources.</p> <p>NR-17 Conduct research to fill knowledge gaps that cannot be addressed through monitoring.</p>	<p>1. Vehicle and Equipment Inspections:</p> <ul style="list-style-type: none"> ▪ 119 (CY23) <ul style="list-style-type: none"> ○ 4 were rejected due to ants <p>2. Arthropod Survey:</p> <ul style="list-style-type: none"> ▪ 106 sites (CY23) <ul style="list-style-type: none"> ○ 196 Traps Set, 106 Wekiu Observed <p>3. 286 new outplants for 2023</p> <ul style="list-style-type: none"> ▪ Māmane- 27 ▪ 'Āweoweo- 222 ▪ Stenogyne- 9 ▪ Pua Kala- 1 ▪ Pilo- 24 ▪ Ko'oko'olau- 3 <p>4. 13,200 lbs of weeds removed from our restoration area through volunteer programs and staff efforts.</p> <p>5. Habitat monitoring research conducted in collaboration multiple academic institutions:</p> <ul style="list-style-type: none"> ▪ Climate monitoring - UH Mānoa ▪ Permafrost monitoring - Planetary Science Institute ▪ Water Isotopes - UH Mānoa ▪ Health Impacts of Altitude – Univ of Montana ▪ Hydrogeology – UH Mānoa /Hilo Proposed <p>6. Partnership with NARS for propagation of silverswords for outplanting in surrounding habitat. Also, conduct monthly pictures of Lake Waiau for NAR and trash collection from Waiau Ahu by Rangers.</p> <p>7. Irrigation installation for greenhouse.</p>

CMP Overview: Selected Management Action Status Updates		
CMP Management Objective	CMP Management Actions	Status
		<ul style="list-style-type: none"> 8. Implementation of native plant outplanting program at the VIS. 9. Drafting of restoration plan for Halepohaku parcel. 10. Acquired research permit for community stewardship of the Silver Sword Enclosure next to the VIS. 11. Finalized 2015 and 2016-2020 Invasive and Native Species Monitoring Report. 12. Drafted SOP for arthropod monitoring for decommissioning of observatories.
7.2 To retain and enhance recreational and cultural activities, ensure regulation of commercial activities, and support scientific studies while maintaining adequate protection of resources, educating users regarding resource sensitivity, and ensuring the health and safety of those visiting or working at Maunakea.	<p>ACT-1: Develop and implement robust access management guidelines and Procedures.</p> <p>ACT-2 Implement and enforce Maunakea Administrative Rules to reduce impacts of parking and traffic.</p> <p>ACT-3 Maintain the Ranger program to educate and encourage adherence to rules and guidelines and enforce Maunakea Administrative Rules.</p> <p>ACT-4 Maintain and strengthen infrastructure to educate and encourage adherence to rules and guidelines.</p> <p>ACT-9 Implement and enforce Maunakea Administrative Rules pertaining to commercial tour permitting.</p>	<ul style="list-style-type: none"> 1. Road Grading (Frequency): <ul style="list-style-type: none"> ▪ 78 (FY 21) ▪ 96 (FY22) ▪ 91 (FY23) 2. Total Est. Visitors to Maunakea -336,968 3. Total Est. Vehicles to Maunakea -115,535 4. Total Est. Visitor Vehicles – 104,382 <ul style="list-style-type: none"> a. Non-summit vehicles 80,222 b. Visitors to Summit – 24,160 5. Visitor Orientations and Safety Briefings at VIS: <ul style="list-style-type: none"> ▪ @ total of 12,000 -19,000/mo. ▪ 4000-6000 Visitors/mo. to summit Commercial Tour Activity: <ul style="list-style-type: none"> ▪ 9 permitted operators, 6 active, 1 inactive, 2 closed. ▪ Passenger Counts: <ul style="list-style-type: none"> ○ 1300-3700/mo. (FY23) incorporating orientation and safety briefings by operators. ○ Total of 31,695 passengers (FY23) ○ Reduces additional vehicle traffic by an estimated 400 vehicles/mo.

CMP Overview: Selected Management Action Status Updates		
CMP Management Objective	CMP Management Actions	Status
		<ol style="list-style-type: none"> Rangers continue to implement brake temp checks, 4WD use instruction, and safety briefings for vehicles traveling to the summit. In FY23, briefings and checks were conducted for an estimated 24,000 FIT vehicles that went to the summit.
<p>14.2 Determine whether management actions are achieving the goals [desired outcomes] of the CMP and provide a process for improving and updating management strategies through evaluation and revisions of the CMP.</p>	<p>MEU-1 Post tracking and assessment metrics and provide annual Progress Reports to DLNR regarding management activities.</p> <p>MEU-2 Conduct regular evaluations and updates of the CMP utilizing adaptive management means that address public input, incorporate lessons learned, and take advantage of new data and information.</p> <p>MEU-3 Revise and update planning documents, including the master plan, leases, and subleases, to maintain compatibility and consistency between them and reflect stewardship matters resolved with DLNR.</p>	<ol style="list-style-type: none"> E Ō I Nā Leo, UH’s new Master Plan, developed in FY21 and approved by the BOR in FY 22. CMP Update completed in FY22 and approved by BLNR in FY23. Sublease discussions with MKOs initiated in FY21 and were halted in FY22 per Act 255.
<p>Outreach and Education</p> <p>3.2 Increase understanding and appreciation of Native Hawaiian history and cultural practices related to Maunakea to ensure that these practices are protected and respected. Identify, document the condition of, and protect cultural resources and historic properties in the UH Management Areas.</p> <p>4.2 Increase understanding of the status of natural resources (biotic and abiotic) and identify threats to these resources to better protect and preserve unique geological features, ecosystem functions, subalpine and alpine habitats, and</p>	<p>EO-2 Require orientation of all persons accessing the UH Management Areas in a manner consistent with the MEOP and Maunakea Administrative Rules.</p> <p>EO-3 Consistent with the MEOP, continue to develop, update, and distribute materials explaining important aspects of Maunakea.</p> <p>EO-4 Consistent with the MEOP, implement the Maunakea Sign Plan (Office of Mauna Kea Management, February 2017) and modify, amend, and update it as warranted.</p>	<ol style="list-style-type: none"> Development and design of interpretive display for the VIS with installation planned for Spring 2024. Added new cultural signs at the summit to alleviate traffic to summit ahu (CY23) Research permit for community stewardship of the ‘Āhinahina Enclosure next to the VIS (CY23-CY24) Over 130 volunteers doing weed pulls, trail building, and native out planting (CY23). Online Certification Test: <ol style="list-style-type: none"> 789 Attempted 667 Certifications given. 100 Failed

CMP Overview: Selected Management Action Status Updates		
CMP Management Objective	CMP Management Actions	Status
biological communities through adaptive management of stressors and threats.	EO-5 Consistent with the MEOP, develop interpretive themes and features.	d. 22 Incomplete/Re-test/Other
5.2 Build and maintain a constituency to engage in active and meaningful stewardship of Maunakea, through education and involvement of the public, to support/enhance conservation, and sustain the natural, cultural, and astronomical resources of Maunakea.	EO-8 Consistent with the MEOP, continue and increase opportunities for community members to participate in stewardship activities.	

A. Planning, Permitting, Land Disposition

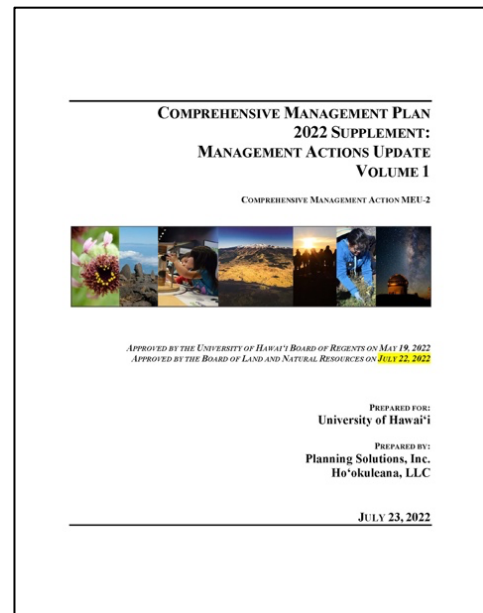


Prior to Act 255 being signed into law, UH had begun work in preparation for seeking a new land authorization (e.g., a new general lease from the BLNR beyond 2033). This included updating the “Mauna Kea Science Reserve Master Plan” adopted by the UH Board of Regents (BOR) in 2000, and the “Mauna Kea Comprehensive Management Plan,” adopted by the BLNR in 2009 (collectively, the Plans). These efforts are in compliance with CMP Management Action MEU-3 that calls for UH to “Revise and update planning documents, including the master plan, leases, and subleases, to maintain compatibility and consistency between them and reflect stewardship matters resolved with DLNR.” Among other things, the Plans integrate management actions that strive for a renewed balance across the cultural, natural, educational, and recreational values Maunakea provides the State. The Plans also address decommissioning

commitments UH has made and the replacement of the University of Hawai'i Hilo's educational telescope from the summit to the mid-level facilities at Hale Pōhaku.

The effort to update the Plans involved significant community and stakeholder input. UH's new master plan, *E O Nā Leo: Listen to the Voices*, was adopted by the Board of Regents in January 2022, and the updated Mauna Kea Comprehensive Management Plan, *Comprehensive Management Plan 2022 Supplement*, was approved by the Board of Land and Natural Resources in July 2022.³ These plans remain in effect until MKSOA adopts their own plans per Act 255. CMS recommends that our plans serve as a starting point for MKSOA when they begin their plan development.

Act 255 prohibits new leases on Maunakea until after the transition period ends and leases are taken over by the MKSOA. Consequently, all work that UH had started on an Environmental Impact Statement (EIS), a new land authorization from BLNR, and new real property sub-agreements with Maunakea observatories have ceased.



³ BLNR's adoption of the *Comprehensive Management Plan 2022 Supplement* is currently being challenged by opponents in *Teale v. Bd. of Land & Nat. Res.*, SCOT-22-0000502.

1. Decommissioning

Pursuant to the Conservation District Use Permit (CDUP) for the Thirty Meter Telescope project (TMT), the BLNR imposed special conditions regarding the decommissioning of telescopes on Maunakea, including the following:

10. The University will decommission three telescopes permanently, as soon as reasonably possible, and no new observatories will be constructed on those sites. This commitment will be legally binding on the University and shall be included in any lease renewal or extension proposed by the University for Mauna Kea.

11. Notwithstanding any lease renewal or extension, consistent with the Decommissioning Plan, at least two additional facilities will be permanently decommissioned by December 31, 2033, including the Very Long Baseline Array antenna and at least one additional observatory.

Related to decommissioning, on November 6, 2019, the BOR adopted Resolution 19-03, “Resolution to Act on Items Relating to Maunakea Management” (BOR Reso. 19-03, revised in part by BOR Reso. 21-02). Facility decommissioning projects for the Caltech Submillimeter Observatory (CSO) and UH Hilo’s Hōkū Ke’a teaching telescope are underway. Both projects are scheduled for completion in 2024.

In addition to CSO and Hōkū Ke’a, UH committed to decommissioning the United Kingdom Infrared Telescope (UKIRT) by the time the TMT project becomes operational in finding of fact 171 of the CDUP issued for TMT, and the BLNR identified the Very Long Baseline Array (VLBA) for



decommissioning in Special Condition 11 of the CDUP issued for TMT. Act 255 will require transfer of all CDUPs issued to UH for astronomy facilities owned by third parties, like TMT, to the MKSOA. Consequently, the MKSOA will need to pursue these options.

2. Thirty Meter Telescope (TMT)

On September 27, 2017, the BLNR issued its 271-page Findings of Fact, Conclusions of Law and Decision and Order containing 1070 Findings of Fact and 512 Conclusions of Law, for the Conservation District Use Permit (CDUP) allowing the construction and operation of TMT. On October 30, 2018, the Hawai’i Supreme Court affirmed the CDUP after various parties appealed. The process for obtaining the CDUP approval took approximately seven years from the permit application’s initial submission in 2010, including two contested cases, several judicial appeals,

and two Hawai'i Supreme Court decisions. Parties continue to challenge the TMT project, for example, in cases before BLNR, the State Land Use Commission, and Hawaii's circuit and appeals courts.

Unlike the other existing observatory subleases, which provide for nominal rent in exchange for viewing time and sublessee contributions to shared operations, maintenance, and stewardship of Maunakea, the TMT International Observatory (TIO) sublease provides for substantial lease rent payments. Pursuant to TIO's sublease, annual lease rent starts at \$300,000. The lease rent schedule is phased, with increases based on construction activity. Full annual lease rent payments of \$1,080,000 a year will be paid when TMT is operational. To date, \$3,435,258 has been paid. These payments are deposited into the Mauna Kea lands management special fund as the legislature directed in 2009 Hawai'i Session Laws Act 132 (codified at HRS § 304A-2170).⁴ Twenty percent of TMT lease rent collected is set aside for payment to OHA.

In addition, as part of the lease negotiations TIO committed \$1 million per year in donations to community benefits, primarily by advancing STEM education on Hawai'i Island, and a similar amount to a workforce pipeline initiative as operations become imminent to maximize employment opportunities for residents. TIO has paused these payments while they await National Science Foundation (NSF) funding. NSF initiated a Section 106 consultation process as part of their review of TIO's application for funding. This process involved months of pre-consultation meetings with the community held on Hawai'i Island in 2022. The NSF has indicated that they expect to formally launch their Section 106 process in 2024.

B. Administrative Rules

Hawai'i Administrative Rules Chapter 20-26, "Public and Commercial Activities on Mauna Kea Lands," was adopted by the BOR on November 6, 2019, and approved by Governor David Ige on January 13, 2020 (MK Rules).⁵ UH's Maunakea administrative rules may be found here: [Maunakea Admin Rules](#). Our priority regarding our rules is to continue to emphasize public education and training for CMS and observatory staff.

Act 255 repeals the MK Rules after the transition period and grants the MKSOA authority to develop its own administrative rules.

⁴ "The proceeds of the special fund shall be used for: (1) Managing the Mauna Kea lands, including maintenance, administrative expenses, salaries and benefits of employees, contractor services, supplies, security, equipment, janitorial services, insurance, utilities, and other operational expenses; and (2) Enforcing administrative rules adopted relating to the Mauna Kea lands." HRS § 304A-2170(b).

⁵ BOR's adoption of the administrative rules are being challenged by opponents in *Flores-Case 'Ohana v. University of Haw.*, No. SCRQ-22-0000118.

C. Resource Prevention, Protection, and Restoration Activities

Specific data concerning of our annual historic properties and arthropod surveys, and our invasive species management program, are listed in Table 1. Of particular note is the growing partnership we have been building with DOFAW through our propagation and outplanting



program to restore the native habitat. The success CMS has had with the propagation of 'ahinahina (SILVERSWORD) in our greenhouse led to a new agreement with DOFAW where CMS monitors and maintains the habitat in the SILVERSWORD enclosure adjacent to the VIS which allows us to expand our outplanting area. That parcel is not part of our UH managed lands, so the agreement serves as a formal mechanism that strengthens our partnership with DOFAW.

In addition, CMS is preparing an updated restoration and educational plan for the area adjacent to the Visitor Information Station. This plan supports implementation of CMP management objective 4.2 which is to "Increase understanding of the status of natural resources (biotic and abiotic) and identify threats to these resources to

better protect and preserve unique geological features, ecosystem functions, subalpine and alpine habitats, and biological communities through adaptive management of stressors and threats." That plan will be completed in FY24.



Volunteer Service Day



Mamane in Bloom Outside Hale Pōhaku



CMS Resource Management Team Conducting Annual Arthropod Survey

D. Commercial Activities

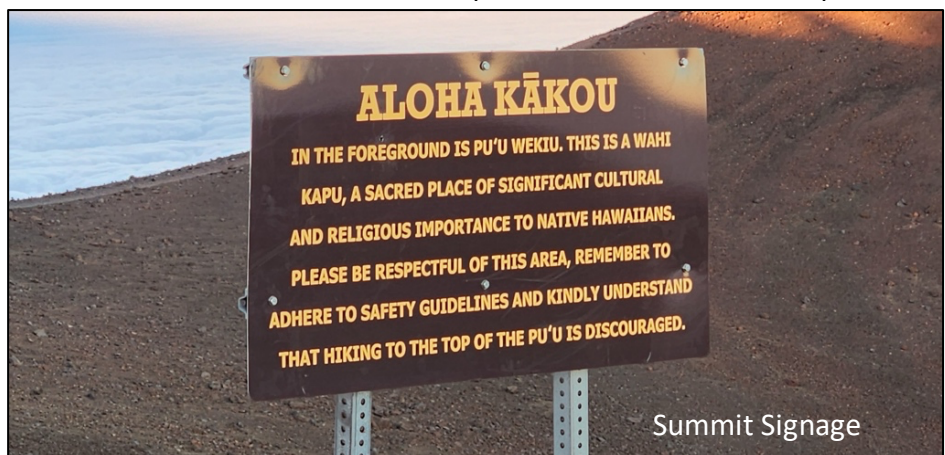
UH assumed nine commercial permits from DLNR as part of the 2009 CMP. Seven commercial tour operator permits are active. With the pandemic, only six have been operating; the seventh is planning to restart in 2023. Each commercial tour operator is charged a \$6.00/tour passenger fee, which is submitted to the Center for Maunakea Stewardship (formerly the Office of Maunakea Management (OMKM)) every month. All fees are used to cover management activities on Maunakea. Twenty percent of the fees collected are set aside for payment to OHA.

The COVID-19 pandemic significantly impacted commercial tour operators, demonstrating the risks of an overreliance on this revenue stream. With the easing of COVID and travel restrictions, commercial tour passenger numbers have increased but not to pre-pandemic levels. In FY22, passenger counts have averaged 1700-3600/mo. incorporating orientation and safety briefings by the operators. This reduces additional vehicle traffic to the summit by an estimated 570-1200 vehicles/mo.

UH began outreach to individual commercial tour operators to bring existing permits into compliance with the new MK Rules and to seek their input on fee increases and permitting requirements. UH had also been considering additional options for managing visitor access, including concessions, a shuttle system, and new permit requirements. Due to Act 255, UH temporarily paused this work but would like to continue updating commercial tour permits since it is uncertain how long it will take MKSOA to develop administrative rules. UH plans to discuss this issue with the MKSOA. In the meantime, existing permit conditions apply.

E. Education and Outreach

CMS has remodeled the Visitor Information Station (VIS) at our mid-level facilities on Maunakea and work is underway to update the exhibits that will focus on the broad array of cultural natural, and scientific resources unique to Maunakea. CMS is also working with the 'Imiloa Astronomy Center of Hawai'i ('Imiloa) who sponsored a workshop for high school students to design new portable outdoor exhibits. Those exhibits will expand our education to the public regarding the cultural resources and wahi pana of Maunakea. In FY22, CMS developed and installed new educational signage at the VIS covering Maunakea's cultural history, natural resources, astronomy, and the administrative rules. These exhibits



Summit Signage



Community Outreach

are intended to help educate and foster visitor awareness about Maunakea’s cultural heritage, natural environment, and astronomical inquiry while informing the public about safety and permitted activities. In FY23, CMS focused on improving signage at the summit to reinforce to the public the cultural sensitivity of Pu’u Wekiu.

In FY23 CMS was able to fill our outreach and education position which had been vacant for a number of years due to budgetary constraints. With this hire, CMS is updating our education and outreach plan (to be finalized in FY24), has expanded our [community outreach](#), and has begun to establish new relationships with faculty from our UH campuses and programs, the DOE, and charter schools introducing them to the ‘āina-based educational opportunities available on the mauna and to explore projects we could partner on. These

relationships have resulted in several programs being held at our Hale Pōhaku mid-level facilities including the UHH Bonner Program, Rotary Club of Hilo, and the First Nations Futures Program, all of which focus on leadership development and civic engagement with a particular emphasis on community and Native Hawaiian issues related to Hawai’i Island. Consistent with our Master Plan, CMS will continue to develop broader educational and research uses of our facilities with an emphasis on supporting our stewardship activities, STEM, and leadership development.

F. Research

UH has and continues to sponsor or support climate, environmental, habitat, and human physiology research in collaboration multiple academic institutions. The purpose of this research is to deepen our understanding of Maunakea’s resources as well as to contribute to scientific inquiry that can be uniquely advanced because of the mauna’s distinctive and special conditions. Completed and current research projects include:

- Arthropod Food webs - UH Mānoa
- Arthropod Biodiversity - Cal U of PA
- Climate monitoring - UH Mānoa
- Endosymbionts in *Nysius spp.* - UC Merced

- Permafrost monitoring (Ongoing) - Planetary Science Institute
- Water Isotopes - UH Mānoa
- Seabirds & Bats - UH Hilo
- Visitor impact study (Ongoing/Pending) – UH Mānoa/Hilo
- Physiological Effects of High-Altitude Acclimation (Ongoing) – Univ of Montana
- Hydrogeology (Proposed/Pending) – UH Mānoa /Hilo

Ongoing or pending projects are being evaluated in light of Act 255.

G. Cesspool Removal

In FY22 and FY23 UH completed the process of closing two cesspools that were not in service and replacing two others with zero discharge waste systems. All four served UH-owned facilities. Notifications have been provided to the appropriate regulating agencies.

V. FY24 Priorities

Given the numerous requirements of Act 255, and their implications, the next five-years present significant priorities for CMS as management is transitioned to the MKSOA. Near-term, developing the co-management relationship with the MKSOA is key as is defining the new working relationship between CMS, MKSOA, and DLNR. CMS priorities for FY24 include:

- Continue to improve stewardship through implementation of the 2020 CMP.
- Fulfilling our general lease, master plan, 2020 CMP, CDUP, administrative rules, and decommissioning commitments.
- Supporting the start-up activities of the MKSOA as appropriate.
- Facilitating the transfer of assets, liabilities, and legal/contractual obligations to MKSOA including our current BLNR issued leases and permits.

In FY23, MKSOA and UH agreed to form the Long-Term Transfer Working Group whose purpose is to plan the transfer of assets, liabilities, and agreements from UH to MKSOA. That group is being organized and it is anticipated that their work will be a high priority throughout the transition period that runs until July 2028. There will undoubtedly be other issues requiring CMS attention as we move through the transition process. CMS is committed to supporting the success of the MKSOA while ensuring we do not jeopardize fulfillment of UH’s obligations under our existing agreements.

VI. Acknowledgements

A five-year transition period for MKSOA to assume responsibilities is a long time for people to remain in a period of uncertainty about their future. CMS staff have remained incredibly dedicated and committed to our stewardship of the mauna and the safety and health of all those who visit, work, and learn on Maunakea. While every one of our employees are deserving of many accolades, CMS was especially grateful when our Rangers were recognized for their service and received the RCUH Employee Team Award in October 2023.



In addition, CMS lost a key member of our team in FY23, Wallace "Wally" Ishibashi. Wally's leadership resulted in the building of our greenhouse after attempts to get the project started stalled due to resource constraints. Wally gathered community support to build the greenhouse which is now supporting our successful propagation program. Wally's service was recognized in a special naming ceremony for the greenhouse that honored both him and his 'ohana. Mahalo nui e Wally.