RESEARCH REPORT

Mauna Kea, HI (Native Hawaiians) (2009)
(Native religion)

Description
Science and Religion at 14,000 Feet

"If we say yes to more development, we are saying yes to the desecration of our temple and our ancestors, yes to the destruction of our waters, and yes to the possible extinction of life itself."

Kealoha Pisciotta
President, Mauna Kea Anaina Hou

"What I have learned is that the fact that the mountain is sacred obviously does not affect any kind of facilities up there. The question is, how do you deal with the people- or how do you communicate with the people- who think that the mountain is sacred?"

Rolf-Peter Kudritzki
Director, University of Hawaii's Institute for Astronomy

14,000 feet above the Pacific Ocean, the White Mountain bears the scars of decades-old conflict. Mauna Kea ("White Mountain" in the Hawaiian Language) is at the center of a debate between astronomers, Native Hawaiians, and environmental advocates. Mauna Kea has, since time immemorial, been the single most sacred earthly location in Native Hawaiian religion. The summit is also a rich and valuable- but fragile- ecosystem, home to a myriad of species that are found nowhere else on Earth. However, in the 1960's, a consortium of Western scientists identified the summit of the mountain as the ideal location for astronomical observation. Working on "ceded lands" which were taken from the Hawaiian people after the overthrow of

their kingdom by European and American merchants, these scientists erected the world's premiere observatory on the summit. The invaluable discoveries made by the telescopes atop Mauna Kea have revolutionized the way we understand our place in the universe. The story of Mauna Kea is a complex one, posing questions about the ethics of West vs. East, science vs. religion, and progress vs. conservation.

The Mountain

A dormant shield volcano on the Big Island of Hawaii, Mauna Kea rises 13,796 feet above sea level, making it the highest point in the Pacific Basin. When measured from sea floor to summit, it's the tallest mountain in the world- 4,000 feet taller than Mt. Everest. The peak of the mountain towers over the rest of the island and the Pacific Ocean beyond, facing a slightly smaller shield volcano and sacred site, the still-active Mauna Loa. The whole mountain is of great environmental, geological, and aesthetic importance to the human population of the Big Island. The mountain holds the headwaters for the whole island, the primary source of fresh water for its inhabitants. Its massive slopes are home several fragile ecosystems, dependent on narrow ranges of elevation and climactic conditions. What's more, Mauna Kea's distinctive beauty and diversity is a strong draw for tourists. The Secretary of the Interior has named it a National Natural Landmark, stating that it's "the most majestic expression of shield volcanism in the Hawaiian Archipelago, if not the world."

The summit itself is composed of over one hundred cinder cones, massive piles of volcanic rock that are the remnants of the violent eruptions which characterized the later stages of Mauna Kea's activity. Like all alpine regions, is a supremely fragile and unique ecosystem, owing to harsh conditions and short growing seasons found at such high altitudes. The

summit of Mauna Kea is home to no fewer than eleven species of arthropods that are found nowhere else on Earth. The most noted of these is the wekiu bug, whose habitat has been all but destroyed by the infrastructural development on the mountain: since the 1960's, when development began, wekiu populations have declined by more than 90%. The wekiu bug may be the hardest-hit by construction on the summit, but all organisms that live in this fragile ecosystem feel the impact of machinery, construction refuse, and casually discarded chemicals that are used in the telescopes' operations.

The Observatory

Mauna Kea is able to support such a unique cast of characters in part because the specific conditions at the summit are found nowhere else on the planet. Ironically, the conditions that support this life are the same that may indirectly cause to its destruction at the hands of careless infrastructural development and resource competition. Mauna Kea juts into the clearest, calmest, and darkest skies found on Earth. According to the University of Hawaii, Institute for Astronomy, at 14,000 feet in this part of the world, the University of Hawaii, Institute for Astronomy rises above 40% of the atmosphere and 90% of the water vapor, giving the telescopes an all-but unobstructed view of the night sky. The W.M Keck Observatory reports that the summit sees an average of slightly more than 300 crystal clear nights per year. Surely, there are hundreds of mountains on the planet that are taller- and less significant- than Mauna Kea, but the vast majority of these are found in ranges, among other peaks of similar height. Mountain ranges affect the atmosphere above them, causing air currents and weather patterns that would warp incoming light and yield distorted images from the telescopes. But Mauna Kea alone is too small to create its

own weather disturbances, so not only is the night sky above it clear, but it is still as well. Furthermore, Mauna Kea stands alone on an island in the middle of an uninhabited ocean, thousands of miles from dense human population. The Big Island's residents operate under strict nighttime light pollution regulations, making their skies some of the darkest on the planet. All of these factors combine to create the most ideal possible conditions for terrestrially-based astronomical observation on Earth. Once astronomers discovered this, the race was on to build on the summit.

Today, Mauna Kea is home to the world's premiere observation facilities. There are currently thirteen working telescopes claiming the mountain, including the famed twin W.M. Keck telescopes. Standing eight stories tall, these are the largest optical and infrared telescopes operating in the solar system. The Keck telescopes are the darling of the astronomical world, and deservedly so. Since their construction in the mid-1990's, their unrivaled power and precision, as well as their advantageous home on Mauna Kea, has contributed greatly to mankind's understanding of the physical and distant universe. The summit is owned by the State of Hawaii, obtained as "ceded lands" from the former Kingdom of Hawaii when it was overthrown by European and American merchants, mercenaries, and plantation owners in 1893. Today, the summit is controlled by the Bureau of Land and Natural Resources (BLNR), who leases it to the University of Hawaii Institute for Astronomy (UHFIA). The UHFIA in turn subleases sectors to each of the institutions or national governments that operate telescopes there, including the United States, the United Kingdom, Canada, France, Chile, Australia, Argentina, Brazil, the Netherlands, Japan, California Institute of Technology, and the University of Hawaii. Clearly, there are a lot of people

who have heavily vested intellectual and monetary interests in maintaining access to the summit of Mauna Kea.

Mauna Kea as a Sacred Space

Herein lies the crux of the conflict. While Mauna Kea is undeniably a scientifically indispensable location, it is also one of the most sacred places in the universe for Native Hawaiian people. Native Hawaiians believe that supernatural forces fill the natural realm- sea, sky, and earth. These forces are personified in countless universal, individual, and family deities, who exert active control over nature and humanity (Loumala). All the land on the mountain that rises above tree line is thought to be in the realm and the temple of the Creator, or Wa Akua. In ancient Polynesian oral history, the summit is considered the meeting place of Earth Mother and Sky Father, parents of the entire human race ï¿½“ Mauna Kea is the birthplace of humanity, where heaven and Earth meet. In addition, it's known as the burial grounds of many of the most revered members of the Hawaiian pantheon. "The burials up there are the burials of the highest-born people, the sacred ancestors," saysKealoha Pisciotta, a Native Hawaiian who is active in the fight to preserve Mauna Kea. The spiritual landscape of the summit is covered with hundreds of sacred sites and family shrines. Furthermore, Natives have been ascending Mauna Kea to gather traditional medicines, worship, and conduct ceremonies since time immemorial- and these practices continue today, in spite of the disruption of the past 40 years. In fact, the entire summit is eligible for listing on the National Register of Historic Places, based on its presences as a "concentration of historic properties that are historically, culturally, and visually linked within the context of their setting and environment." This is important to note: while the history contained on this summit is critical to the population's spiritual, cultural, and therefore practical

survival, the effort to preserve Mauna Kea is not solely motivated by a desire to reconnect with the past. The summit is still very much a living sacred location, an integral part of an existing- and ongoing- Native religion. Its importance to Native Hawaiians cannot be overstated. Said one Native man active in preservation efforts: "It's our Garden of Eden," though to such an analogy defies the specificity of the place for Native Hawaiians.

History

This is the core of the conflict that has stormed for forty years. In 1959, Hawaii was made a state and shortly after that, the Bureau of Land and Natural Resources leased the land to the University of Hawaii to begin construction on some of the thirteen telescopes that dot the summit today. Rather than charging payments to the tenants, the UHIFA instead commands some use of each of the telescopes on the summit. This, along with loose land use stipulations, allowed Mauna Kea to rapidly develop into a leading observatory, and with open access to thirteen of the world's most powerful telescopes, the UHFIA has become one of the premiere astronomy programs in the world. It's a perfectly symbiotic relationship between the UHIFA and those who operate the telescopes, but one that has left out Native and environmental voices entirely. As a result, development was rapid, sporadic, haphazard, and above all, unregulated. Lacking enforceable- or enforced- land management guidelines, the fragile natural landscape has been devastated by piles of trash, construction refuse, chemical runoff, and pollution from the observatory residents and employees. Not only was there little attempt made to preserve this ecosystem, but there has historically been no heed paid to the hundreds of sacred sites and family shrines: if they stood in the path of a telescope, they were destroyed. Even some out-of-the-way shrines were robbed and graves were

arbitrarily disturbed, and Native practitioners were denied access to many sacred sites that lay within the security bounds of the telescopes.

In a 1998 report, responding to mounting public outrage, the Hawaii State Auditor issued a criticism of the University of Hawaii for their botched management of the summit. In response to this report, the University penned a new Twenty Year Master Plan which claims to reflect "the community's deeply rooted concerns over the use of Mauna Kea, including respect for Hawaiian cultural beliefs, protection of environmentally sensitive habitat, recreational use of the mountain, as well as astronomy research." In reality, the Master Plan fails to provide an enforceable limit on future development: it allows for construction of three more new observatories, as well as modifications on existing facilities. Furthermore, native voices were no more than cursorily addressed in the planning process.

The Recent Battle

In the early 2000s, NASA collaborated with the UHFIA to begin work on the Outrigger Telescopes Project, planning to build six smaller telescopes around the perimeter of the existing twin Keck scopes. Using a technique called inferometry, these six telescopes would work in conjunction with the Keck scopes, producing what NASA calls even sharper, more precise images and allowing us to look still deeper into the expanse of space. Public and authority opinion was divided around these new scopes; construction and control of these telescopes would create job opportunities for Hawaiians, and in addition, NASA proposed to donate two million dollars to Native Hawaiian causes. The Native groups involved rejected this offer immediately, however, asserting that no sum of money can compensate for the desecration of their most sacred places.

The initial plan did include an environmental and cultural impact statement, but almost every committee that reviewed the statement found it weak and inaccurate. Finally, in 2002, the State of Hawaii sued the University of Hawaii for their past mismanagement and lack of legitimate limits for the future of the mountain.

NASA responded with an updated report that concluded, in part: "From a cumulative perspective, the impact of past, present, and reasonably foreseeable future activities on cultural and biological resources is substantial, adverse and significant ... In general, the Outrigger Telescopes Project would add a small incremental impact." Thus cleared in court, in 2004, BLNR granted the UHIFA a land use permit to begin construction on the Outrigger Telescopes, despite continual and heightening public outrage over the conditions and future of the mountain. NASA'S report considered only the area encompassed by the Keck Observatory. Almost immediately, a Native activist organization known as Mauna Kea Anaina Hou, along with the Sierra Club and an individual Native with genealogical ties to the mountain teamed up and filed suit against the BLNR and the University of Hawaii. The battle raged in court for two years. Cultural descendents, native Hawaiians, and cultural and anthropological experts testified in the appellants' favor, highlighting the heavy cultural, religious, and environmental damage that had already been inflicted on the summit, and striving to prevent further abuse. Their goal was the instatement of a unified, comprehensive, and enforceable management plan, instead of the piecemeal writs issued by individual organizations. Finally, in 2006, the land use permit was revoked. In a memorandum of decision, Judge Hara stated, in part: "The resource that needs to be conserved, protected, and preserved is the summit area of Mauna Kea, not just the area of the [Outrigger Telescopes]

Project. Allowing management plans on a project-by-project basis would result in foreseeable contradictory management conditions for each project." In light of this decision, coupled with unforeseen funding cuts, NASA abandoned its plans for the Outrigger Project.

Native groups and naturalists the world over rejoiced at this victory, but we must remember how tenuous and temporary a victory it is. The summit still lacks protection by the kind of comprehensive, conservative management plan it needs. There are no mechanisms in place to prevent sacred site desecration. And new threats emerge all the time: today, the University of Hawaii is in the planning stages of a new facility called Pan-Starrs that would be even larger and more invasive than the Keck telescopes. Furthermore, and perhaps most critically, the policy-makers need to introduce a plan to authoritatively and actively included Native and environmental voices in the decision-making process. If these changes are not implemented in the near future, the summit of Mauna Kea will be a total loss. This will serve a crushing and totally unjust blow to all who draw strength, pride, and history from this fragile and sacred place.