

# Why Mauna Kea Should be Preserved and Protected

By Kealoha Pisciotta  
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## A brief Mo'olelo about Mauna Kea

The significance of Mauna Kea to the Kanaka Maoli:

The summit of Mauna Kea represents many things to the indigenous peoples of Hawai'i (much of which is outside the range of this mo'olelo). The upper region of Mauna Kea resides in Wao Akua - the realm of the Akua - the Creator. It is also considered the temple of the Supreme Being and is acknowledged as such in many oral histories and written history throughout Polynesia, which pre-date modern science by millennia.

It is home of Na Akua (the Gods), Na Aumakua (the ancestors) and the meeting place of Papa (Earth Mother) and Wakea (Sky Father) whom are considered in many oral histories to be the progenitors of the Hawaiian People. Mauna Kea it is said is where the Sky and earth separated to form the great expanse of Space and the Heavenly Realms. Mauna Kea in every respect represents the zenith of the Native Hawaiian peoples ancestral ties to Creation itself.

There are many sacred places atop Mauna Kea. Which include Heiau (Temple), 'Ahu (Shrine), 'Iwi (Burial) and many other geological features which also hold sacred value to the Native Hawaiian people. Among these is Waiau (the Sacred Lake) considered among other things to be a doorway into the Po (the Heavenly Realm of the Ancestors).

Our ancestors knew these things about Mauna Kea and kept its secrets for us to love, protect and preserve. Those that ventured there in the days of old did so with care and reverence, to worship, to observe the heavens (also for Navigation) and to harvest the tools to make the large ocean voyaging canoes and further because it is the burial ground of the highest born and most sacred ancestors.

The summit of Mauna Kea is also home to some of the most rare and endangered plant and animal life on earth. In the lower regions of Mauna Kea there is the Native Hawaiian ecosystem called the Mamane/Naio forest and that is where the Mamane tree grows and in these trees is where the endangered Palila bird lives. In the upper regions of the summit area is where the endangered Dark- Rumped Petrel, a high altitude bird dwells. There are numerous bugs as well, the most famous of them is the Wekiu bug. At least three of the bug species discovered in the summit region were completely new species to science, including a wolf spider.

According to the Kumulipo (Chant of Creation), before man was created all other living things were created. When the process of creation was complete the gods too were complete and walked the earth with man. It is believed that all living things no matter how big or small have purpose and make complete the whole. When a living thing ceases to exist then the process of Creation is unbalanced and begins to unravel.

Mauna Kea is also considered one of the world's premiere astronomical sites. Because of the rarified atmosphere surrounding Mauna Kea which makes for excellent seeing conditions for modern astronomy it is home to some of the world's largest and most advanced astronomical observatories.

## Threats to the Sacred Mountain:

The threats to the cultural and environmental integrity of the sacred mountain called Mauna Kea are many! Outlined below is an overview of some of the most obvious and pressing of these threats:

- **The Astronomical community** Astronomical Expansion unbounded.
- No Resource Management: No Protections of the Natural and Cultural Resources.
- **No Enforcement**: No Personnel to Enforce State and Federal Statutes.
- Commercial Use and Eco-tourism: Excessive Numbers with No Controls.
- Public/Recreational Use: Unlimited Access with No Safety and Controls.

## Threats Become Violations

## The Astronomical Community:

The most critical and potentially threatening activities to both the cultural and environmental integrity of Mauna Kea is the expansionist mana'o (philosophy) of the astronomical community, the astronomical occupation and developmental desires of the astronomical community in general.

The search for the understanding into our cosmological origin I believe is a noble endeavor and should be supported. Although technology has changed the way we view the heavens as well as for some the cosmogenic models - or the study of mans place in creation; I believe that many of the same questions that are being asked today my ancestors asked thousands of years ago.

Modern astronomy and its place atop Mauna Kea at this juncture is not the controversy, but rather the expansionist or colonial mind-set of the empire builders within the astronomical community at large.

The obvious fear is that developmental desires of the astronomical community are unbounded. Without some kind of conscientious intervention by the responsible agencies and the community at large there will be no way to recover the environmental and cultural beauty and integrity of one of our most sacred treasures - Mauna Kea.

### **Background:**

In 1968, the University of Hawai'i (UH) received a 65 year lease on the lands that are currently called the Mauna Kea Science Reserve (MKSR), the lease runs until the year 2033. The Science Reserve and all lands of Mauna Kea are Ceded Lands, of which by Law the Public and Native Hawaiians are beneficiaries.

In 1983, the University put together an Advisory Committee as was authorized by the Board of Regents and recommended by the former Governor George Ariyoshi to create a Master Plan and to conduct and Environmental Impact Statement (EIS) for Mauna Kea.

The resultant 1983 Mauna Kea Complex Development Plan and EIS established policies and regulations that not only governed the Development of Astronomy but was also meant to establish controls to protect the resources and interests of the Public and Native Hawaiians.

One of the regulations set by the 1983 Master Plan and EIS was a limit set on the number of telescopes allowed in the Mauna Kea Science reserve (MKSR) by the year 2000.

### **That number was 131**

This limit allowed for 13 Telescopes, that is 11 major and 2 minor telescopes. This limit was derived based on the carrying capacity of the Mountain and in order to prevent negative impact to the cultural and environmental resources of Mauna Kea.

Today however, there are over 25 telescopes (observatories, antennas, mirrors or light collecting surfaces) that have been built or are under construction on Mauna Kea. This number does not include the "foundations" or "pads" and support structures of the "Interferometer's" or "Astronomical Arrays". *(\*Please see attached picture of Interferometers in Arizona).* If were to include the interferometer's that number would be well over 50! To understand how this could have happened one must understand the basic principles of interferometry.

### **Interferometers and Astronomical Arrays:**

In 1994, the Board of Land and Natural Resources (BLNR) approved the construction of the Smithsonian Millimeter Array (SMA) which is an interferometer currently under construction on Mauna Kea. It is a interferometer consisting of eight (8) six (6) meter antenna's and twentyfour(24) individual pads or foundations on which these antennas can be moved around on. The two farthest pads are over 1/2 of a mile apart.

### **This is a very large area of impact!**

Interferometry by definition: is the combination of light collected from two or more antennas or elements at separate locations.

Interferometry was originally created to get around the gravitational constraints imposed upon large mirrors, which limited how big a telescope could be built. If we tried to build a mirror the same diameter as the Smithsonian Interferometer (which is 1/2 of a mile across) gravity would simple collapse it. Interferometry is also appealing because it is cheaper to build a suite of smaller antennas or to add more pads to be placed farther apart than it is to build a single large mirror. Traditionally single mirror telescopes cost roughly the cube of the mirrors diameter.

There are three basic components of Interferometer's that impact the land:

1. The number of antennas or elements,
2. the number of pads or foundations on which to place these antennas on and,
3. the space between the pads or foundations (*\*N.B. which is usually referred to as the Baseline*).

The problem therefore is that despite the scientific definition it has been the position of the former State BLNR Chairman Mike Wilson and the Institute for Astronomy (IFA) that the large SMA interferometer is **only "one" telescope**. While by definition and common sense this would hardly be true and would convince most otherwise.

Because an interferometer is a device unlike any telescopes that were build in the past that constituted a MAJOR or MINOR telescope counting interferometers in the same way is ridiculous.

Unlike traditional single mirror telescopes interferometers have no physical limit as to how big they can be or can be expanded to; indeed there are interferometers that are larger than the earth itself (these employ antennas in space as well).

All that is needed to make a larger interferometer is to add more antennas, pads or foundations or by moving the existing foundations farther apart. That is also to say that at this juncture the only thing that would stop the SMA from expanding further is funding. If the SMA were to get more funding they could build more antennas, pads or expand the area of impact.

Therefore counting interferometers is a useless measure for assessing impact to the land and resources. The State and IFA's decision to count interferometers as a single facility not only violates the spirit and intent but also the letter of the 1983 Master Plan/EIS.

Under the current criteria, any of the telescopes can expand into interferometers, any size they want and ignore the impact. Indeed the KECK telescope received 50 million dollars from NASA to do optical interferometry by adding 5 smaller telescopes (called outriggers) to their existing two mirrors. These "smaller" telescope's mirrors happen to be about half the size of the worlds largest optical telescope.

Many of the telescopes have future plans to expand into some form of interferometers. In theory, if all of the telescopes on Mauna Kea were operating in the same wavelength (of light) they could connect together and all be counted as one telescope.

### Resource Management and Enforcement:

**The second most critical threat to the integrity of Mauna Kea is the continued lack of a comprehensive Management and Preservation Plan. Providing for the protection of the natural and cultural resources of Mauna Kea. This has been the case since development began atop Mauna Kea in 1968.**

**As a result of public outcry -the 1998 Hawai'i State Legislature authorized State auditor Marion Higa to conduct an Audit of the Management of Mauna Kea and the Mauna Kea Science Reserve. *\*N.B. Please see the 1998 State Audit of Mauna Kea and the Mauna Kea Science Reserve and also the Seirra Club Summary of the 1998 Mauna Kea Audit.***

**The audit found that since the early seventies the Management Plans issued forth by the University of Hawai'i were not comprehensive, in that they identified only the minimum requirements for environmental, cultural and historic preservations, protections and rights. The audit further found that the Management Plans were not only lacking but were plagued with delays and in most cases were poorly implemented if at all.**

**In short the audit findings of both the University and DLNR management and oversight of Mauna Kea were dismal and disheartening, highlighting an unfortunate bias towards protecting the interests of the International Astronomical Community over the Public interest. This bias has lead to numerous State and Federal violations concerning environmental impact, historic preservation, and abridgements to native Hawaiian religious rights by all responsible agencies.**

**The State has a fiduciary duty to protect the interests of Public and the Native Hawaiian!**

### Enforcement:

**Since there been no comprehensive or adequate Management Plan implemented, there has been virtually no enforcement or enforcement mechanism put in place for the protection of the environmental and cultural rights/resources atop Mauna Kea. In particular there have been no enforcement personnel free of conflict of interest (i.e. those not employed by the astronomical community). There were some attempts by the IFA to place "monitors/security" personnel, however, such monitors lack the jurisdiction to enforce State and Federal statutes.**

**It is usually not considered reasonable to allow an agency to police itself particularly when they haven't the jurisdiction to enforce the rules. This was clearly the case, regarding the removal of the po'o stone from the authors shrine by an IFA "monitor". (*\*N.B. Please see attached letters regarding specific incident*)**

Furthermore, it should be noted that enforcement personnel plays a greater role than simply to enforce the regulations but they can also serve to assist in public safety as well.

#### Commercial Use and Eco-Tourism:

The Commercial Use permits issued by the Board of Land Management (1995) allow for as many as 104,000 tourist per year (N.B. this number does not include the number of tourist who venture there on their own or recreational users). Furthermore, the Commercial Use Permit language was almost completely devoid of any specific or restrictive language outlining what areas (within the Science Reserve or Natural Area Reserve) could or would be accessed by these commercial vendors. This many users is excessive, particularly with no enforcement mechanism in place and operational to address any violations that could occur. Inevitably, inadvertent disturbance, destruction and desecration will occur under such conditions.

#### Recreational and Public Use/Safety:

The recreational users like the commercial users have no regulations; and again there is no enforcement to deal with violations. Included in recreational use is unlimited access to all

sacred sites, where inappropriate activities can occur. There is recorded history of looting,

desecration and abuse of sacred sites (i.e. spray painting on rock shelters, rearranging of shrine configurations, looting of adze and other antiquities, swimming in the lake, and skiing from the

summit, on, over and around known shrines and shrine complexes). Every winter there are skiing contests, yet there are no areas designated for this kind of activities which could have a very

negative impact on the shrine complex on the summit and other areas.

There are many hazardous areas and conditions found on Mauna Kea. Unlimited public access and no enforcement personnel increases the possibility of injuries and liability.

#### How do concerned citizens compel the State of Hawai'i to take a stand?

As a concerned citizen, Native Hawaiian beneficiary, and Native practitioner whose rights to worship were specifically violated by employees of the IFA (and the University and State of

Hawai'i); I could only hope that the above discussions would have some convincing arguments to compel the responsible state agencies to take action. However, I have been involved in this

struggle for nearly 8 years and have lost some hope at this stage. It is my hope however, at this juncture to simply point out some of the most glaring reasons why I believe the State should take a stand:

1. The State has a fiduciary duty to protect the interests of the Public and the Native Hawaiian.
2. The 1998 State auditor's report outlined in detail where the responsible State agencies failed to protect the public's interest and instead promoted and protected Astronomical

#### **Development.**

3. The Public's interest takes a back seat while countless violations occur and the State remains liable and must incur all of the costs.
4. The Astronomical Community is not comprised of simply poor astronomers just trying to look at the night sky. In fact the Astronomical Community is comprised of 10 of the richest Nations of the World. The US Federal funding for Mauna Kea Astronomy is made up of NASA and

National Science Foundation monies that are Line Items on the US Congressional Budget

5. Many of Observatories on Mauna Kea receive substantial federal funding, constituting federal undertakings and therefore are required to comply with the both National Historic

Preservation Act and the National Environmental Protection Act.

6. The Observatories pay \$1.00 or nothing at all for their sub-leases, and in many cases did not even bother to obtain a sub-lease agreement before construction, in which case the State

barely even received their \$1.00.

7. Prior to 1995, when DLNR approved the "Revised Mauna Kea Management Plan", regulation of commercial and recreational activities and protection of the cultural and environmental

resources of the Science Reserve rested with the University and the IFA. However, the

"Revised Management Plan" placed these costs and responsibilities back into the hands of the State.

8. Historic sites have been destroyed, desecrated, and looted. Employees of the University and IFA have removed and destroyed modern cultural and religious sites and yet are still

employed and the State still has not provided any enforcement.

9. The Public and Commercial users have unlimited access to all of the sacred sites and still there is no safety or enforcement mechanism and the State remains liable.

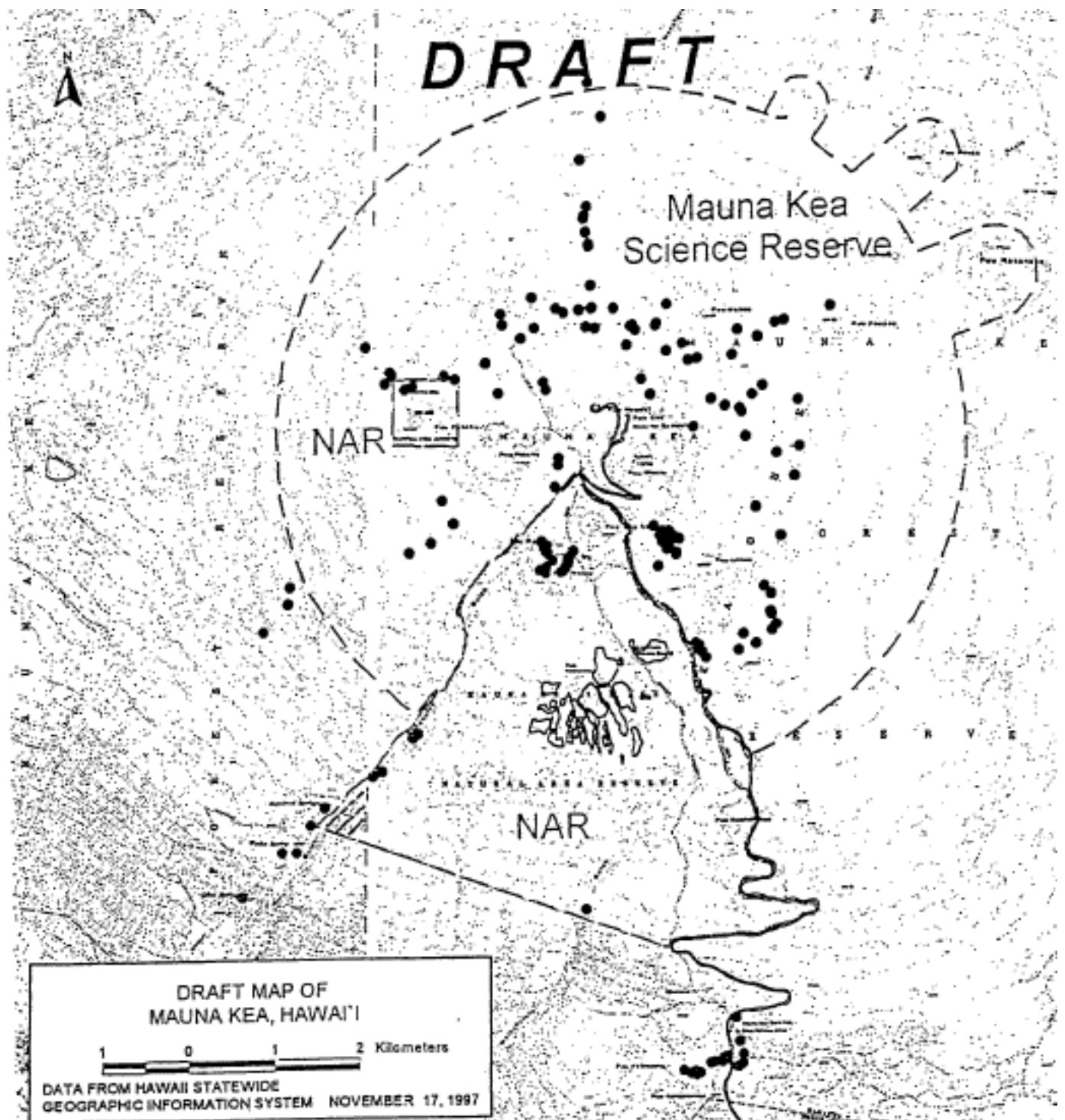
In conclusion, the Astronomical Community has been allowed to build two times the number of Telescopes without having completed the ARCHEOLOGICAL SURVEYS or

HISTORIC PRESERVATION PLANS. Yet they would continue to develop and it looks as though their plans for the future further promote development and expansion.

I think it is fair to say at this juncture, that the Astronomical Community has exceeded its quota of Telescopes for this millennium and even the next. Therefore, the question remains

should the State allow further development and expansion into the future. I must argue, that in light of the dismal record of violations and lack of good faith efforts by the University and IFA, that the State's answer must unequivocally be NO.

**THE STATE MUST TAKE STAND IN BEHALF OF ALL OF THE PEOPLE OF HAWAI'I THAT  
ENOUGH IS ENOUGH!**



\*Note: Dots indicate recorded shrines (Ahu).  
Survey is not yet complete