OLA I KE KAI O KANALOA

KAHOʻOLAWE OCEAN MANAGEMENT PLAN

Kahoʻolawe Island **Reserve Commission**

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PREPARED FOR

Kahoʻolawe Island Reserve Commission

BY

DAMES & MOORE

IN ASSOCIATION WITH

Akala Products, Inc.
Cultural Surveys Hawaii
Environmental Assessment Company
Mr. Robert Luʻuwai
Morgan & Associates
Native Hawaiian Legal Corporation

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Kūkulu Ke Ea A Kanaloa

(The life and spirit of Kanaloa builds and takes form.)

‘O Wākeakahikoluamea,	Wākea, son of Kahikoluamea, was the husband;
‘O Papa, ‘o Papahānaumoku ka wahine,	Papa, who gives birth to islands was the wife.
Hānau Kahikikū,	Kahiki of the rising sun and Kahiki of the
Kahikimoe,	setting sun were born.
Hānau Ke‘āpapanui,	Born were the foundation strata.
Hānau Ke‘āpapalani,	Born were the heavenly strata.
Hānau Hawai‘i;	Born was Hawai‘i,
Ka moku makahiapo,	The first-born island,
Ka makahiapo a lāua.	The first-born child of them.
‘O Wākea lāua ‘o Kāne,	Of Wākea together with Kāne,
‘O Papa, ‘o Walinu‘u, ka wahine.	Of Papa, Walinu‘u, the wife.
Ho‘okauhua Papa i ka moku,	Papa conceived an island,
Ho‘īloli iā Maui,	Was ill with morning sickness from Maui.
Hānau Mauiloa he moku;	Born was Mauiloa, an island,
I hānau ‘ia he alo lani,	Born with a heavenly presence.
He u‘ilani, u‘ilani,	A heavenly beauty, heavenly beauty,
Hei kapa lau māewa.	Was caught in the swaying kapa.
He nui Mololani no Kū, no Lono,	Mololani -- an important one to Kū, to Lono,
No Kāne mā, lāua ‘o Kanaloa.	To Kāne, and also to Kanaloa --
Hānau kapu ke kuakoko.	Was born during sacred pains.
Ka‘ahea Papa iā Kanaloa, he moku,	Papa was prostrate with Kanaloa, an island,
I hānau ‘ia he pūnua, he nai‘a,	Who was born as a young bird, as a porpoise,
He keiki ia na Papa i hānau.	A child that Papa gave birth to.

Mele a Pāku‘i
Traditional

"The kino (physical manifestation) of Kanaloa is restored. Forests and shrublands of native plants and other biota clothe its slopes and valleys. Pristine ocean waters and healthy reef ecosystems are the foundation that supports and surround the island.

Nā poʻe Hawaiʻi (people of Hawaiʻi) care for the land in a manner which recognizes the island and ocean of Kanaloa as a living spiritual entity. Kanaloa is a puʻuhonua (refuge) and wahi pana (sacred place) where Native Hawaiian cultural practices flourish.

The piko of Kanaloa is the crossroads of past and future generations from which the Native Hawaiian lifestyle spreads throughout the islands.

Vision Statement
Kahoʻolawe Island Reserve Commission

ʻŌLELO MUA

(Preface)

Another name for Kahoʻolawe is Kanaloa, the Hawaiian god of the ocean, its fishes and marine creatures. Kahoʻolawe has been described as a kino (sacred form) of the god, or as a refuge of the life force and energy of Kanaloa.

From 1941 to 1994, Kahoʻolawe and its surrounding waters were under the control of the U.S. Navy. Both the island and waters of Kahoʻolawe were used by the Navy and allies of the United States as a live fire training area. Unexploded ordnance (UXO) is present in significant quantities and poses a threat to the safety of anyone accessing the island or its waters.

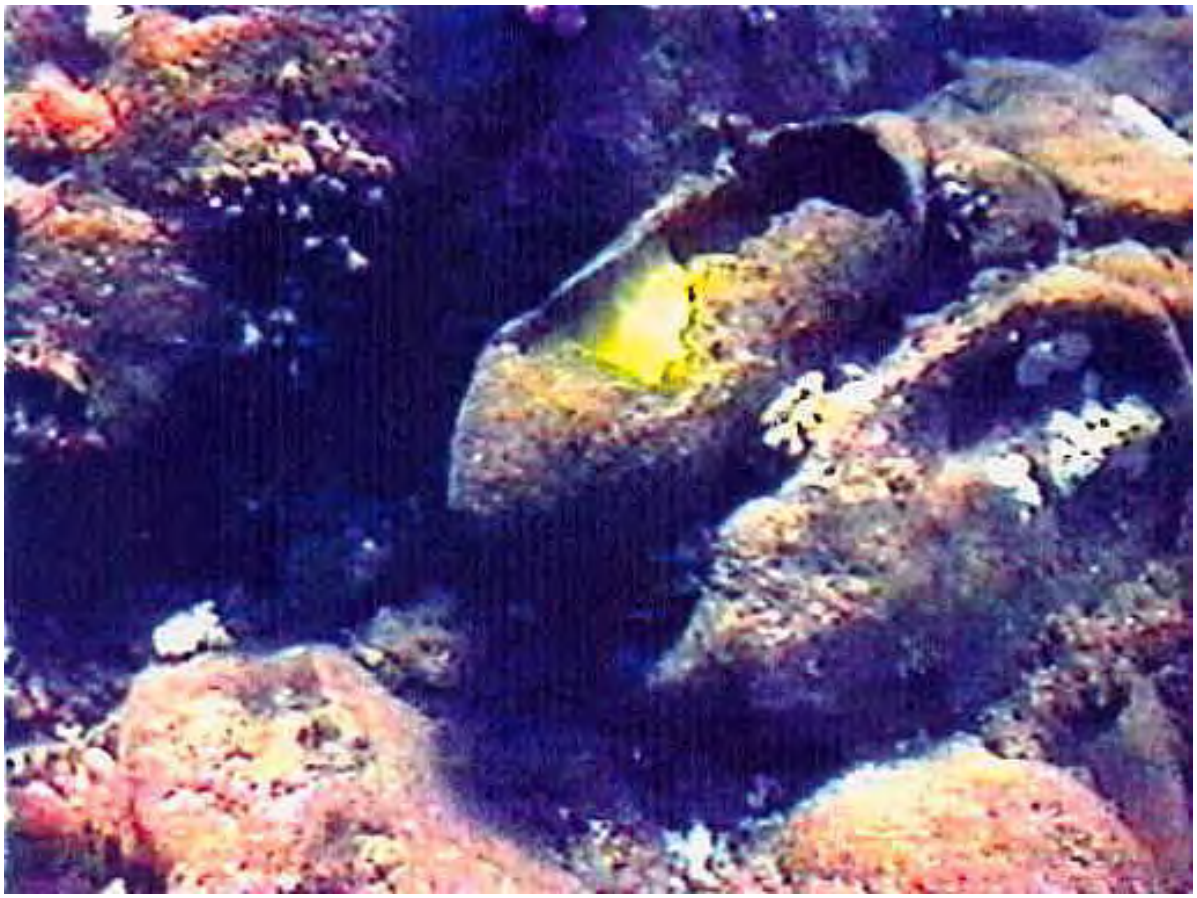
A decades-long struggle by the people of Hawaiʻi, particularly the Protect Kahoʻolawe ʻOhana, succeeded in stopping the bombing of Kahoʻolawe and helping to spark the rebirth and spread of Native Hawaiian culture and values. In 1994, the island of Kahoʻolawe was conveyed back to the State of Hawaiʻi. By an act of Congress, the Navy is responsible for the cleanup of ordnance on Kahoʻolawe. Consequently, the Navy continues to exercise final control over access to the island until the year 2003 or the end of the ordnance cleanup, whichever comes first.

Kahoʻolawe is of tremendous significance to Native Hawaiians, and a treasure and resource for all of Hawaiʻi's people. In recognition of the special cultural and historical status of Kahoʻolawe, the island and the waters within two miles of its shores have been designated by the State of Hawaiʻi as the Kahoʻolawe Island Reserve (KIR). The KIR was established for: the preservation and practice of Native Hawaiian rights for cultural, spiritual and subsistence purposes; the preservation of Kahoʻolawe's archaeological, historical, and environmental resources; rehabilitation, revegetation, and habitat restoration; education; and fishing. Commercial use of Kahoʻolawe and its resources is prohibited.

The Kahoʻolawe Island Reserve Commission (KIRC) was established to manage Kahoʻolawe, its waters, and its resources in trust for the general public and for the future Native Hawaiian sovereign entity. To guide fulfillment of this responsibility, the KIRC has developed this Kahoʻolawe Ocean Management Plan (OMP). The vision of this plan is that through careful and cooperative stewardship, Kahoʻolawe will be the crossroads of past and future generations of Hawaiʻi's people, and that the traditional Hawaiian values of resource care and management may again take root throughout Hawaiʻi.

HOʻĀKAHELE
(Warning)

WARNING: Kahoʻolawe and its surrounding waters contain quantities of unexploded ordnance that are dangerous to health and safety. The island of Kahoʻolawe and the waters within two miles of the island comprise the Kahoʻolawe Island Reserve. Unauthorized entry into the Kahoʻolawe Island Reserve is prohibited (HAR §13-260). For more information, contact the Kahoʻolawe Island Reserve Commission, State of Hawaiʻi.



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Kahoʻolawe Island Reserve Commission

Noa Emmett Aluli, Palikapu Dedman, A. Frenchy DeSoto, Nalani Kanakaʻole, GeorginaKawamura, Collete Machado, Craig Neff, Michael Wilson

Kahoʻolawe Island Reserve Commission Staff

Dawn Chang, Lora Contreras, Ray Enos, Keoni Fairbanks, Marc Hodges, Momi L. Singson,

Project Team

Paul Bartram, Richard Brock, Hallett Hammatt, George Krasnick, Nahoa Lucas, Robert Luʻuwai, Charles Morgan, David Shideler

Technical Reviewers and Commentors

William Aila, Dennis Aki, Billy Akutagawa, Mary Alo, Lee Altenberg, Glenn Au, Randy Awo, Morrow Bagda, Roselle Bailey, Vernon Bal, Alex Bode, Ed Chang, Jr., Alfred Ching, Jr., William Choy, Michael Crosby, Moki Day, Linda Delaney, Walter Dennison, Bill Devick, Duke Enomoto, Blossom Feiteira, Al Frias, Jr., Paul Fujishiro, Rick Gaffney, Frank Goto, Mike Hamnet, Isaac Harp, Tammy Harp, Skippy Hau, Don Heacock, Kim Holland, Lance Holter, Rebecca Hommon, Claire Hughes, Walter Ikehara, Skippy Ioane, Bruce Johnson, Chuck Johnston, Lynn Kahoʻohanohano, Sol Kahoʻohanohano, ʻAulani Kahoʻohanohano, Wendell Kam, Keith Keau, Donald Kobayashi, Reginald Kokobun, Leslie Kuloloio, Manuel Kuloloio, Ed Lindsey, Kimberly Lowe, Kalei Luʻuwai, Attwood Makanani, Donald Masaka, Davianna McGregor, Sidney Medeiros, Robert Moffit, Gary Moniz, Michael Nahoʻopiʻi, Leighton Nakamoto, John Naughton, Eugene Nitta, Dennis Niles, Nathan Nishimura, Leo Ohai, Nat Padgett, Dave Parsons, Charles Penque, Carol Petrea, Charles Pires, Kelson “Mac” Poepoe, Jeff Polovina, Ernest Reese, David

Rodrigues, Sal Santos, Robert Schroeder, Don Schug, Kitty Simonds, Dinah Starbuck, Wayne Tanaka, Glenn Tanoue, Allen Tom, Michael Trask, Curtis Tyler, Anthony Ventura, Conrad Ventura, David Ventura, Ben Walin, Elaine Wender, Brian Yoshikawa

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Organizations and Agencies

ʻAhahui Malama i ka Lokahi, Fresh Island Fish Company, Hawaiʻi County Council, Hawaiʻi Department of Health, Hawaiʻi Department of Land and Natural Resources (Division of Aquatic Resources, Division of Boating and Ocean Recreation, and Division of Conservation and Resources Enforcement), Hawaiʻi Fishing News, Hawaiʻi Institute of Marine Biology, Hawaiʻi Tuna, Inc., Hawaiian Islands Humpback Whale National Marine Sanctuary, Maʻalaea Boat and Fishing Club, Maui County Council, Maui Trailer Boat Club, National Marine Fisheries Service, Protect Kahoʻolawe ʻOhana, Tropic Fish & Vegetable Center, United Fishing Agency, United States Navy, University of Hawaiʻi, Western Pacific Regional Fishery Management Council

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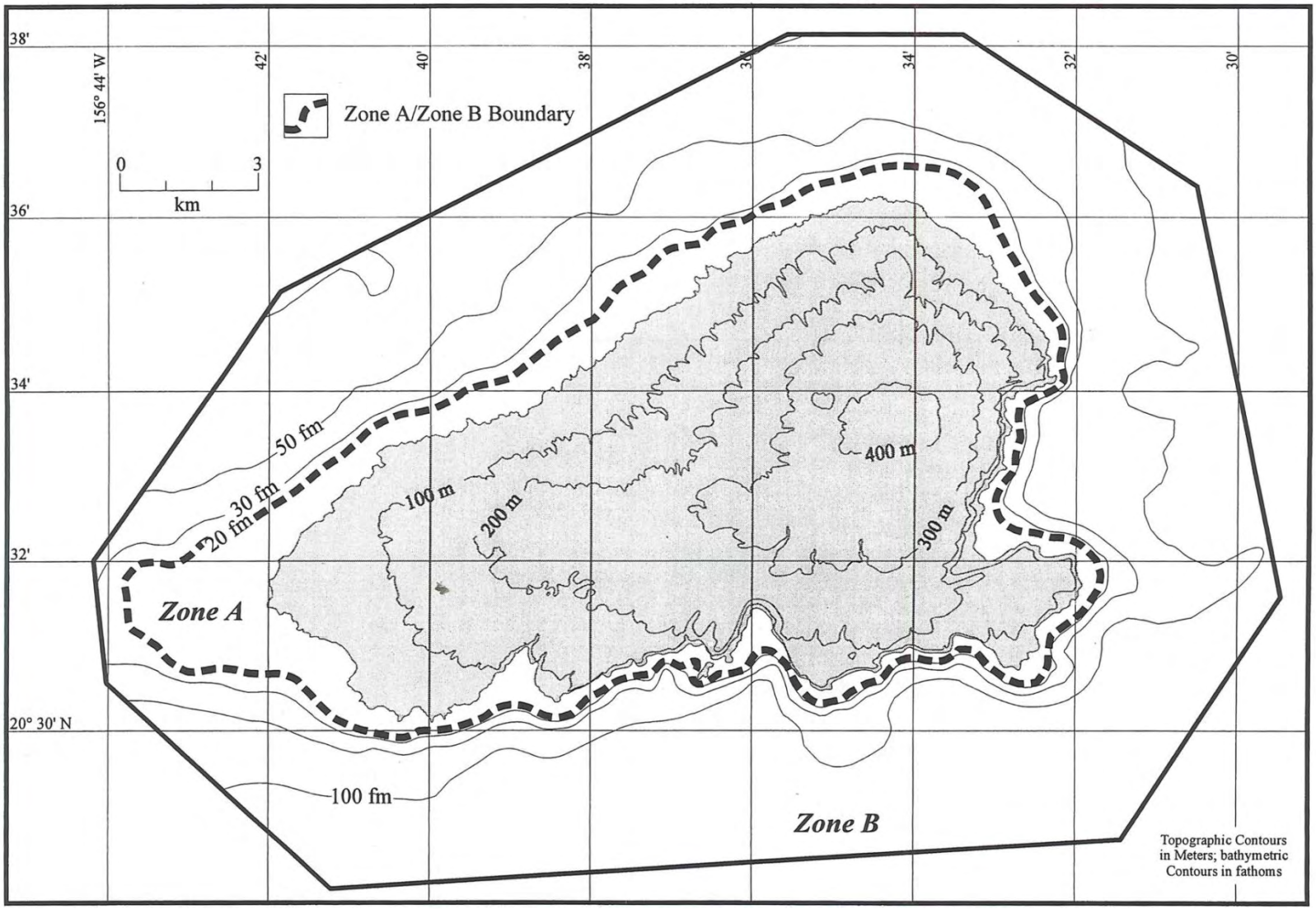
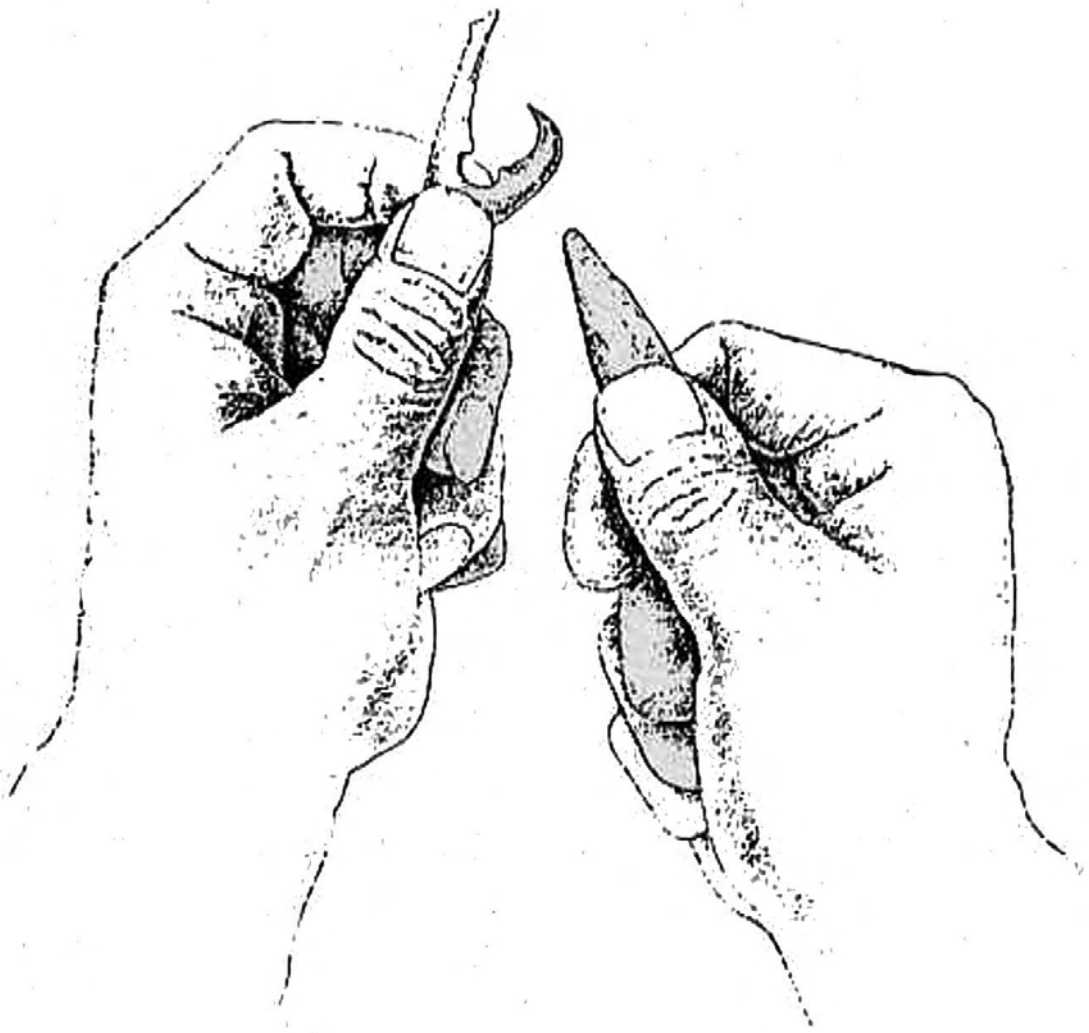
DRAWINGS

Rodney Chiogioji

Figure 1
Kahoʻolawe Island Reserve





1.0 OCEAN MANAGEMENT FRAMEWORK

1.0 OCEAN MANAGEMENT FRAMEWORK

1.1 NOHONA KANAKA (HISTORY OF USE)

Kahoʻolawe's cultural significance is integrally linked with the ocean that surrounds it. Kahoʻolawe is also named Kanaloa, after the Hawaiian god of the ocean and the foundations of the earth. Kahoʻolawe is a kino lau (body form) of Kanaloa. Marine manifestations of Kanaloa include koʻa (coral), koholā (whale), naiʻa (porpoise), and heʻe (octopus).

1.1.1 Ka Wā Kahiko (Ancient Period)

Hawaiian fishing traditions associate Kahoʻolawe with the early development of the kūʻula practice. A kūʻula is a stone image of the god of fishermen, and also the name for a heiau (shrine) near the sea for the worship of fishing deities. One of the first kūʻula heiau in Hawaiʻi was established by Aʻiaʻi[1] at Hakioawa on Kahoʻolawe. There are 69 recorded coastal fishing shrines around the island. These may mark fishing grounds located in the ocean offshore.

There are also numerous inland shrines that appear to have a connection to fishing. Kahoʻolawe was one of the residences of Kamohoaliʻi, the shark god brother of the volcano deity, Pele. Shrines to Kamohoaliʻi are found inland on the cliffs above Kanapou Bay, which is said to be a breeding ground for sharks.

Kahoʻolawe also figured significantly in the long voyages between Hawaiʻi and Tahiti. Lae O Kealaikahiki was a launching and ceremonial area for voyages between Tahiti and Hawaiʻi in the 13th century. Moaʻulaiki, near the center of the island, was the location of a traditional training school for kahuna kilo hōkū and kahuna kilo honua.

Before 1779, knowledge passed from generation to generation through chants and storytelling. Specifics of the pre-written history of use of the island's marine resources are therefore sparse, but we can assume that subsistence uses were similar to those described later. Archaeological evidence indicates there was a small, permanent population on the island. These kamaʻaina probably developed an intimate understanding of the island's ocean resources through sustainable subsistence use. Kahoʻolawe's written history begins in 1779, when descriptions of the island first began to appear in European ships' logs.

1 Spelling source is Elizabeth Renon, a native of Kaupō, Maui, as referenced in comments received from the State Historic Preservation Division, dated February 3, 1997.

Table 1
Fishing Methods Practiced At Kahoʻolawe By A.D. Kahaulelio

Methods Used	Fish Mentioned as Caught	Location	Source: *Nupepa Kuokoa*
Hāhā (hand collecting)	Heʻe pali (small Octopus)	nā kahakai (sea coast) & kahakai papali (small coastal cliffs)	Aperila 18, 1902:3
Hāhā (hand collecting)	Makaiauli ʻOpihi (Limpets)	at Kanapou Bay	Iune 27, 1902:3
Kuikui (pole fishing for Ulua)	Ulua (Jacks)	kahakai pali (coastal cliffs)	Mei 16, 1902:3
Paeaea Uhu (pole fishing for Parrotfish)	Uhu (Parrotfish)	kahakai (sea coast)	Mei 16, 1902:4
Kākā (bottom fishing)	Kahala (Amberjack); ʻUlaʻula (Red Snapper); Opaka (probably Blue Snapper); Hapuʻu(Grouper); Koāe (Goatfish); ʻUlaʻula Niho (probably Red Snapper); ʻŌpakapaka (Blue Snapper); Hāhānui (uncertain); ʻŪkīkiki (young Snapper); Lehe (Snapper); Uku (Grey Snapper); Ulua (Jacks); Makukia (uncertain); ʻŌʻio (Bonefish)	between the points of Kealaikahiki and Kukui at depths of up to 1200ʼ	Maraki 7, 1902:2; Maraki 14, 1902:4
Kūkaula (bottom fishing)	ʻŪkīkiki (young Snapper); ʻUlaʻula (Red Snapper); ʻŌpakapaka (Blue Snapper); Oholehole (uncertain); Hāhānui (uncertain); Kahala (Amberjack); Ulua (Jack); Lehe (Snapper);	depths of 300ʼ-480ʼ	Maraki 7, 1902:6
Lawaiʻa lūheʻe (fishing for Octopus)	Heʻe (Octopus)	around Kahoʻolawe	Aperila 4, 1902:6 Aperila 18, 1902:3
Hano mālolo (net fishing for Flying Fish)	Mālolo (Flying Fish); Puhikiʻi (Flying Fish); Iheihe (Half-beaks)	"Kahoʻolawe" probably off-shore	Aperila 18, 1902:3
ʻUpena papa (bag net fishing)	Wekeʻula (Red Goatfish)	depths around 60ʼ side facing Lahaina	Mei 16, 1902:3
ʻUpena pāloa (various nets)	Wekeʻula (Red Goatfish)	depths around 60ʼ side facing Lahaina	Mei 16, 1902:3
Lau Apoapo	ʻŌpule (various wrasses); Pala (uncertain)ʻŌmalemale (Parrotfish); Pānuhunuhu (Parrotfish); Māʻili (uncertain); Kole (Surgeon fish)	Leeward side of Kahoʻolawe from Kanapou to Kealaikahiki	Feberuari 28, 1902:6

1.1.2 19th Century

Much has been written by 19th century and 20th century Hawaiian scholars about traditional fishing equipment and techniques, but little of this information is place-specific. The most comprehensive written account with references to Kahoʻolawe is provided by A.D. Kahaulelio, a mid-nineteenth century fisherman and author. He refers to 41 years of deep-sea and inshore fishing experience, and makes reference to specific place names on Kahoʻolawe, the types of fish and other marine life found there and the methods used by his family to harvest them. Table 1 summarizes this information. Descendants of the Kūkahiko family of Makena, Maui, can also trace their ties to Kahoʻolawe back to the 19th century, when family members traveled to the island in canoes to fish in near shore waters. In 1903, nine fishermen were actively fishing at Kahoʻolawe and selling their catch on Maui.

1.1.3 Early 20th Century

The Kūkahiko family and other Maui fishermen fished the waters of the island before World War II using various methods. Shoreline species were caught by throw net, spearing and hand collecting at Honokanaiʻa. Deeper-water fish were captured offshore with kākā line and kāʻili line. Moi were taken by surround net in Kanapou Bay.

Kahoʻolawe Ranch Company grazed sheep, goats and cattle on the island during this period. Ranch workers, including the ranch manager, Manuel Pedro, and their families fished on Kahoʻolawe. Shore fishing with poles, throw nets and nearshore lau nets was practiced on the northwest coast, in and around Kuheia Bay. A few Maui families have harvested bottomfish in deeper areas offshore of Kahoʻolawe since the 1920s and 1930s.

1.1.4 Navy Period

The U.S. Navy and its allies used Kahoʻolawe as a bombing target from 1941 until 1990. Fishing access was tightly regulated when the U.S. military took over, however, fishing by a few Maui residents continued, without permission of the Navy. In 1955, the Navy established a “danger zone” around the island. In the late 1960s, due to pressure from the Hawaiʻi congressional delegation, the Navy opened access to boaters within three miles of Kahoʻolawe for one weekend each month. Commercial trollers reporting catches from around Kahoʻolawe, however, remained few in number, less than 15 per year at most, until the bombing stopped in 1990. Subsequently, the

number of trollers reporting commercial landings approximately tripled. The number of commercial fishermen catching bottomfish in the waters of Kahoʻolawe was only a handful until the late 70s and early 1980s when it increased to just over one dozen. The number declined during much of the 1980s, then increased to nearly 30 bottomfishermen around the time the bombing of Kahoʻolawe was halted in 1990. Following a peak of activity in 1991, the number of bottomfishermen reporting landings in the waters of Kahoʻolawe has steadily declined towards its earlier level of about a half dozen fishermen.

From the 1980s on, the only sanctioned access to the shoreline area by other than Naval personnel was by the Protect Kahoʻolawe ʻOhana and their guests, as mandated by a 1980 court-ordered Consent Decree. The PKO revived cultural, spiritual and subsistence uses of Kahoʻolawe's marine environment. While there, they dove, threw net, pole-fished and gathered ʻopihi and limu for consumption on the island.

1.1.5 Post-Military Period

Bombing of Kahoʻolawe ceased on October 22, 1990. The Navy transferred title to Kahoʻolawe and surrounding waters to the State of Hawaiʻi in 1994. Under a Memorandum of Understanding between the State and the Navy, the Navy is responsible for the cleanup of ordnance on Kahoʻolawe. Consequently, until the year 2003 or the end of the cleanup, whichever comes first, access to the island requires both KIRC and Navy permission. Access to the surrounding waters requires KIRC permission. The State, through the KIRC, is responsible for environmental restoration and natural resources management. Administrative rules promulgated by the KIRC have extended the Navy program of closed waters, except for two weekends each month.

In 1990, NOAA initiated several studies about the marine resources and fishing practices in Kahoʻolawe waters as part of the assessment of the feasibility of a National Marine Sanctuary. In 1992, Congress established the Hawaiian Islands Humpback Whale National Marine Sanctuary, but excluded the waters within three miles of Kahoʻolawe from the Sanctuary because of liability and safety concerns related to the presence of unexploded ordnance. In addition, the law provided for the Secretary of Commerce to review the Kahoʻolawe exclusion on an annual basis. In 1996, the law was amended by Congress to delete the annual review process and instead provide for the potential inclusion of Kahoʻolawe waters into the Sanctuary only upon a specific request from the Kahoʻolawe Island Reserve Commission.

The 1980 Consent Decree between the Navy and the PKO requires the Navy to provide for the PKO to access the island ten months of each calendar year for various purposes, including religion, culture, science and the environment. A Letter of Understanding between the PKO and the KIRC acknowledges the continuance of this Consent Decree access for as long as the Navy controls access to the island.

Since the bombing was stopped, fishing off Kahoʻolawe, both legal and illegal, has increased. State commercial fish catch reports indicate that there was a marked increase in most types of fishing around the island between 1990 and 1993. State commercial fish catch reports for recent years indicate that trolling has become the most important fishing gear in terms of fish weight harvested off Kahoʻolawe. Despite restrictions, illegal fishing off the island appears to have increased. Reports of illegal fishing are continual, and State enforcement officers have intercepted numerous violators.

1.2 THE KAHOʻOLAWE ISLAND RESERVE

1.2.1 Establishment of the KIR

Act 340 of the Session Laws of Hawaiʻi, 1993, found that *"Kahoʻolawe is of significant cultural and historic importance to the native people of Hawaiʻi,"* and that *"a new management regime"* was needed to "*effectively meet the unique challenges of restoring, preserving and determining the appropriate use of Kahoʻolawe."* Act 340, therefore, established Chapter 6K of the Hawaiʻi Revised Statutes and created the Kahoʻolawe Island Reserve (KIR), which includes the island of Kahoʻolawe and the submerged lands and waters extending two miles from its shoreline. This statute also created the Kahoʻolawe Island Reserve Commission (KIRC) to manage the KIR and to oversee the departments and agencies of the State with respect to this management.

1.2.2 Statutory Requirements For The Reserve

Chapter 6K HRS establishes the permitted uses of the reserve:

(a) The Kahoʻolawe island reserve shall be used solely and exclusively for the following purposes:

> *(1) Preservation and practice of all rights customarily and traditionally exercised by native Hawaiians for cultural, spiritual, and subsistence purposes;*

(2) Preservation and protection of its archaeological, historical, and environmental resources:
(3) Rehabilitation, revegetation, habitat restoration, and preservation; and
(4) Education.

(b) The island shall be reserved in perpetuity for the uses enumerated in subsection (a). Commercial uses shall be strictly prohibited.

In addition to the uses enumerated above, Chapter 6K directs the commission to:

...adopt rules pursuant to chapter 91 to permit fishing in the waters around Kahoʻolawe that are consistent with the purpose of this chapter and that take into consideration the health and safety of the general public.

The statute further requires that:

...the State transfer management and control of the island and its waters to the sovereign Hawaiian entity upon its recognition by the United States and the State of Hawaii.

Other legal requirements that pertain to the management of the KIR include Article XI, §1 of the Hawaiʻi State Constitution, which states that all public resources are held in trust for the people by the State, and further requires that the State shall conserve and protect such resources. The fisheries of the KIR are not konohiki fisheries and thus are the responsibility of the State. Therefore the KIRC, as the State entity that manages the KIR, is the trustee of the KIR for the public, and must manage the ocean resources of the KIR so that these resources are not degraded.

Pursuant to the Hawaiʻi State Constitution §XII-7, HRS §1-1, HRS §7-1, et seq., and as construed by the Hawaiʻi Supreme Court in *Public Access Shoreline Hawaiʻi v. Hawaiʻi Planning Commission* (79 Haw. 425, 903 P.2d 1246 (1995), *cert. denied*, ---U.S.---(1996)) (the "PASH" decision), the KIRC must consider and provide for the reasonable exercise by Native Hawaiians of rights customarily and traditionally exercised at Kahoʻolawe prior to November 25, 1892. The KIRC, however, must regulate the exercise of such rights in the interests of safety, resource sustainability, and the other purposes of the KIR enumerated in HRS Chapter 6K.

1.2.3 Current Rules of the KIR

Chapter 13-260, Hawai'i Administrative Rules, describes the boundaries of the Reserve (Figure 1) as follows:

(a) The Kaho'olawe island reserve restricted area means the entire island of Kaho'olawe and the waters of the Kaho'olawe island reserve encompassing waters seaward of the shoreline of Kaho'olawe island to a distance of two nautical miles as shown on Exhibit "000", dated June 20, 1994, which is located at the end of this subchapter and made a part of this chapter. The boundaries are described as follows:

Beginning at a point at the high water mark of Lae o Kealaikahiki Point; then by azimuth measured clockwise from True South, 103 degrees for a distance of 2.70 nautical miles to a point located in the ocean waters; then 215 degrees for a distance of 3.80 nautical miles; 242 degrees for a distance of 6.65 nautical miles; 270 degrees for a distance of 2.00 nautical miles; 302 degrees for a distance of 3.32 nautical miles; 350 degrees for a distance of 4.80 nautical miles; 032 degrees for a distance of 3.35 nautical miles; 085 degrees for a distance of 9.19 nautical miles; 132 degrees for a distance of 3.67 nautical miles; then along straight line to the point of beginning

(b) Restricted zones:

(1) Zone A means all the area within the Kaho'olawe island reserve, including the island, and the waters from the shoreline to a depth of twenty (20) fathoms of water.

(2) Zone B means all the area within the Kaho'olawe island reserve from a depth of twenty (20) fathoms of water to the boundary of the reserve.

Administrative Rules regarding fishing and other uses have been adopted by the Kaho'olawe Island Reserve Commission that are consistent with regulations enforced by the U.S. Navy during its 50-year administration of the island (HAR §13-260). Entry into the waters within two miles of Kaho'olawe is prohibited without authorization from the KIRC. The waters in Zone A are open for fishing only for "...[c]ustomary and traditional Native Hawaiian cultural, spiritual and subsistence use, in areas deemed safe...." (§13-260-4(b) HAR) "... for direct personal consumption while staying on the island..." (§13-260-2, HAR).

Trolling is permitted in Zone B on two weekends per month, provided that the vessel remains underway at all times (§13-260-4(a) HAR). These "open weekends" are based on the Hawaiian fishing calendar and scheduling is done six months in advance. As with Zone A, Zone B is open for on-island subsistence fishing.

1.2.4 Ocean Management Planning for the Future of the KIR

During the establishment of the current Administrative Rules for the KIR, the KIRC committed itself to fully reexamine the issues of ocean management in the KIR. This Ocean Management Plan (OMP) reports the results of that reexamination. It has been developed to guide formulation of programs, policies and rules that are comprehensive, culturally appropriate, and provide the necessary degree of resource protection for the long-term sustainable use of the KIR's marine resources. The plan has been developed to support the vision of the KIRC and extend its principles to the marine resources of the KIR. In development of the OMP, the anticipated locations and the nature of activities planned for the island have been taken into consideration, and uses for areas have been designated appropriately. In the long term, it is envisioned that kahu (stewards) residing on the island will help manage on-island activities, including fishing.

The OMP was developed in three phases. The first phase included information gathering from a variety of sources including facilitated workshops with contemporary user groups, principally fishermen. The second phase involved production of issue papers on key considerations in development of the OMP (including unexploded ordnance, Native Hawaiian rights, traditional fishing practices, fishery management and the conditions of the fisheries resources). With these products providing background and the "vision" of the KIRC providing the context, the draft OMP was prepared.

In the third phase, public meetings on the draft OMP were held throughout the state, and the input received used to finalize the plan. The OMP is intended to be a broad policy document to guide the KIRC in rulemaking and implementation of ocean management programs.

1.3 THE KIRC VISION

The KIRC has adopted a Vision Statement included in the Preface of this document to guide its management of the KIR. This statement, consistent with the statutory provisions of HRS Chapter 6K, envisions a restored, sustained ocean environment that supports the cultural activities on Kaho'olawe and serves as a model for the rest of the State. Through this plan, the KIRC seeks to develop a comprehensive management regime emphasizing ancestral and traditional knowledge, a cultural approach of respect and connectivity to the environment, and integration of ancient and modern

resource management techniques. The vision statement suggests certain objectives and fishery management goals. These are summarized in Table 2.

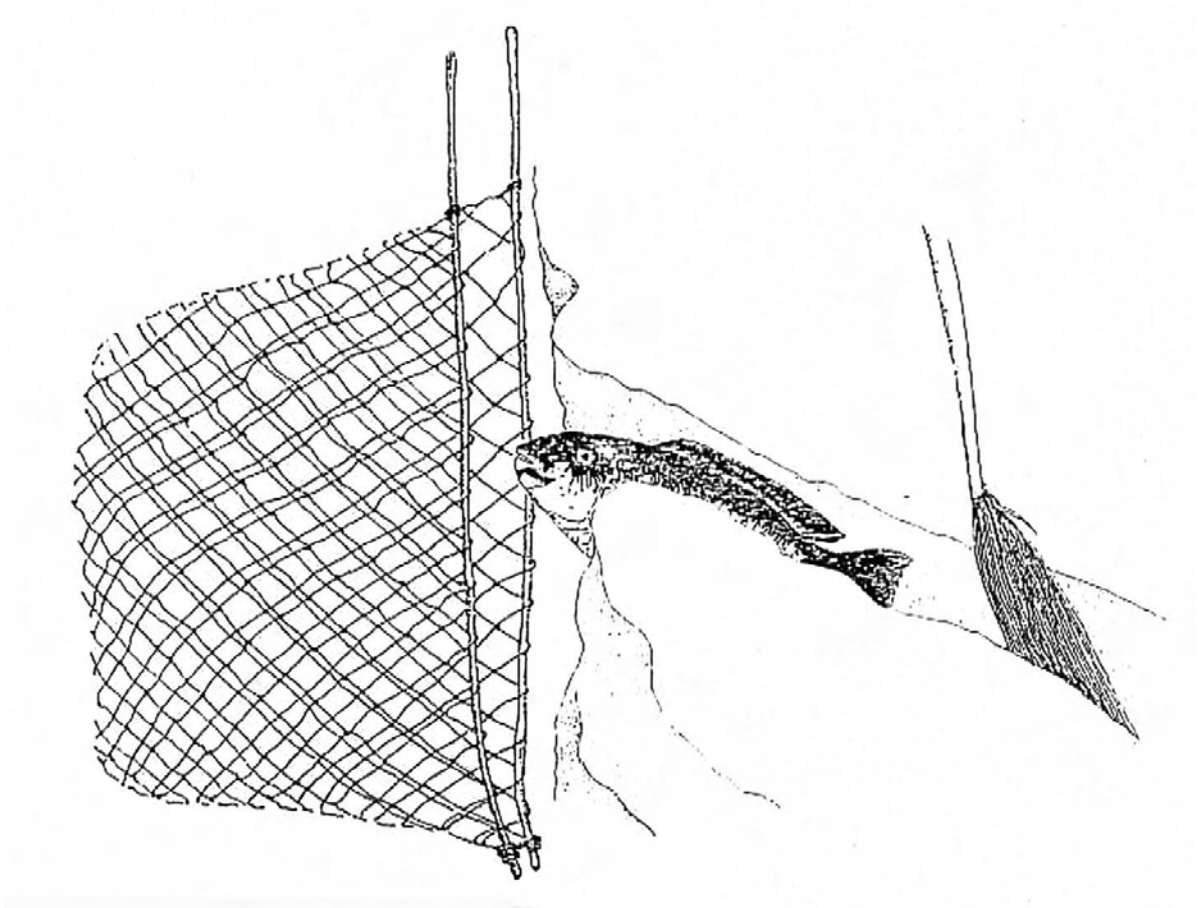
1.4 THE UNIQUE MANAGEMENT OPPORTUNITY

Kahoʻolawe represents a unique management opportunity for a number of reasons. The island is undeveloped, lacking a permanent population or agriculture. It has a history of access management. It represents the only opportunity in the Main Hawaiian Islands to manage an entire island ecosystem, including both the watersheds and the coastal waters. The management vision for the island is based on reestablishing traditional cultural, spiritual and subsistence practices on the island. Because the KIRC combines all of the regulatory authority usually spread among both state and county agencies, it will be possible to implement a combination of traditional Hawaiian and modern marine resource management approaches. There is a unique opportunity to practice and teach traditional methods of fishing, fishing implement manufacture, and cultural activities associated with fishing. There also will arise unique opportunities to research and document the effects of the revegetation efforts and the management plan on marine fisheries and habitats. Ultimately, and most importantly, there is an opportunity to rekindle and perpetuate Native Hawaiian values associated with living in harmony with the natural environment of these Hawaiian Islands.

To exclude commercial activities, including commercial fishing, from approximately 90 square miles of State waters, will be seen by some as an unreasonable restriction. This reserved area, however, is but an insignificant fraction of the State's total ocean area. On the other hand, setting aside an area for traditional, indigenous management practices is tremendously significant, especially as the people of Hawaiʻi strive to restore Native Hawaiian cultural perspectives and values.

Table 2
Ocean Management Objectives And Goals
Arising From The KIRC Vision

KIRC Vision Statement	Objectives Arising From the Vision	Specific Fishery Management Goals
A. ***The kino of Kanaloa is restored...Pristine ocean waters and healthy reef ecosystems are the foundation that supports and surround the island.***	1. Restoration 2. Healthy marine resources 3. Marine resources support island	1. Restore degraded fisheries 2. Fisheries maintained in "healthy" condition 3. Fisheries able to sustain on-island activities
B. ***Nā poʻe Hawaiʻi care for the land in a manner which recognizes the island and ocean of Kanaloa as a living spiritual entity.***	4. Caretakers 5. Code of behavior 6. Connection of land and ocean 7. Spirituality	4. Fisheries managed by caretakers 5. Fishing governed by code of conduct 6. Holistic management approach 7. Relationship with island
C. ***Kanaloa is a puʻuhonuʻa and wahi pana where Native Hawaiian cultural practices flourish.***	8. Cultural refuge and sacred place 9. Cultural practitioners	8. Practice traditional form of fishery management 9. Practice Hawaiian fishing arts and sciences
D. ***The piko of Kanaloa is the crossroads of past and future generations from which the Native Hawaiian lifestyle spreads throughout the islands.***	10. Perpetuate culture and initiate new practitioners	10. Teach Hawaiian fishing methods and values



2.0 OCEAN RESOURCES

2.0 OCEAN RESOURCES

2.1 KE KINO O KANALOA

He pūkoʻa kani ʻāina.

Kahoʻolawe Island is one of the eight major Hawaiian Islands and lies to the southwest of southern Maui. Kahoʻolawe is a high island approximately 11 miles long and 7 miles wide, encompassing about 28,800 acres. Steep sea cliffs border the southern and eastern coastlines of the island. Bays and beaches fronting more gentle slopes occur on the northern and western sides of the island. Its eastern shores are exposed to the prevailing northeasterly trade winds. Of great significance to Kahoʻolawe's ocean resources is the fact that the island has little reef flat habitat, being surrounded by fairly steep reef slopes except off the westernmost tip. Offshore bathymetry around the island generally reflects the character of the adjacent coastline. Along the eastern and southern shores, the bottom drops off steeply with little intertidal zone or reef flat. The 100-fathom isobath is typically less than three-quarters of a mile offshore. Along the northern and western shores, the bottom drops away less steeply, with the 100-fathom isobath being about two miles from shore. Figure 1 illustrates these features.

High-energy wave impact is an important natural force in structuring the development of habitat in many shallow areas around the island. Oceanic swells from the ʻAlenuihāhā Channel impinge on much of the eastern and southern coasts of the island. Storm generated surf may impact nearshore habitats around Kahoʻolawe from other directions throughout the year. Destructive wave forces, especially during severe storms, have reduced habitat heterogeneity, keeping much of Kahoʻolawe's fringing reef in an early stage of succession. Hawaiian corals, living at a latitude near the northern limit for coral growth, are typically slow growing, and thus storm events that damage the reefs do not have to occur with much frequency to have a long-lasting impact.

The loss of vegetation on the island caused by its use as a bombing target and overgrazing by feral animals has resulted in severe erosion, and offshore deposition of large quantities of silt has heavily impacted nearshore habitats surrounding the island. Total annual soil loss from the island has been estimated at about two million tons. Coral communities and other hard substrata have been buried, reducing the habitat available to fishery resources. Corals observed are generally limited to robust species

that are relatively tolerant of silt-laden environments. Shorelines, particularly embayments, along the east, northeast, and northwest coasts of the island have been particularly impacted.

An apparent reduction in recent years in the sediment load in nearshore areas around Kahoʻolawe is believed to be the cumulative result of the curtailment of use of the island as a bombing target, the removal of goats, and the initiation of revegetation efforts on the island. A combination of offshore sediment movement due to the action of waves and currents, and reduced input of sediments from the island may have resulted in the exposure of more hard substrata in the nearshore region. Colonization of newly re-exposed hard substrata by reef corals appears to have begun.

2.2 NĀ KOʻA

He poʻi na kai uli, kai koʻo, ʻaʻohe hina pūkoʻa.

The word koʻa has several meanings including coral or coral head, an offshore location characterized by an aggregation of fish, and a fishing shrine (heiau koʻa).

2.2.1 Offshore Koʻa

Offshore koʻa are places where fish naturally aggregate due to bathymetric or oceanographic characteristics. Historically, the attractiveness of such areas was sometimes enhanced by the fishermen, who would palu (chum) the area for a period of time prior to harvesting. Locations of offshore koʻa were treasured secrets, passed down from generation to generation. Many times reciprocal heiau koʻa were located onshore. Sometimes fishermen would build rock structures (imu) on reef flats to enhance the available habitat. Fish attracted to the structures would be fed until harvested.

2.2.2 Fishing Shrines

Heiau koʻa are the most numerous of the various kinds of shrines constructed by Native Hawaiians, indicating the great importance of fishing in the Hawaiian culture. Fishermen leave offerings and pray at the koʻa before fishing. The first fish caught are often left there as an offering. The four major gods, and the many others comprising the Hawaiian pantheon, assume a variety of characteristic forms. In particular, Kū, as the protector of craftsmen, has numerous forms, Kūʻula being the principal god of fishermen. Fishermen often had personal representations of Kūʻula, carved from

stone, coral or sea urchin spines. Such were found at the Kamohio fisherman's shrine on Kahoʻolawe.

Often the chief distinction of a fishing shrine is its location, such as a rocky point at the end of a ridge, or the terminus of a sand beach. The koʻa shrine, in addition to its religious significance, also facilitates the location of offshore koʻa by providing a reference point for triangulation to the fishing grounds. The ability to find such grounds is often the difference between fishing success and failure.

Kamakau considers koʻa to be a subset of heiau and calls them heiau koʻa. Other authors treat koʻa as a relatively unique and discrete entity from heiau.

Kamakau writes:

> *Heiau koʻa, fishing shrines, were sometimes large, but most of them were small. Some consisted of a house enclosed by a wooden fence, and banana offerings were made in them; but most were exposed to view and were just rounded heaps of stones with a kuahu altar where pigs were baked. When the offering had been made and the pig eaten, the koʻa was left exposed but the imu and its stones were covered over with dirt and packed down. Heiau koʻa were close to the beach or in seacoast caves, on lands with cliffs. The purpose of the heiau koʻa was important. The koʻa brought life to the land through an abundance of fish; there was no other purpose for the koʻa than this. There were many kinds of gods of the people who worshiped fishing gods. The people whose god was Kuʻula built Kuʻula koʻa; those whose god was Kanemakua built Kanemakua koʻa, and those of Kinilau, Kamohoaliʻi, and Kānekoʻa did likewise, and so there were many, many koʻa.*

Kamakau further notes the use of koʻa in association with voyaging. "The heiaus for distant voyaging (nā koʻa heiau holomoana) were separate kuahu set up when people wanted to go to other lands of this archipelago, or to lands of Kahiki ["abroad"] perhaps, or to unknown lands." Yet another function of koʻa was as "houses of... ʻeʻepa ["peculiar"] beings of many forms," particularly ʻaumakua of the moʻo ("water spirit") category

2.2.3 Kahoʻolawe Koʻa

Koʻa can be devoted to one or to several species of fish. Sometimes specific deities are associated with certain fishes or circumstances. Some of the koʻa of Kahoʻolawe are associated with the deity Aʻiaʻi, son of Kūʻula. Thrum relates an account furnished by a Mr. Moses Manu:

> *Thus was the good work of Aʻiaʻi in establishing kūʻulas, stations and fish stones continued all around the island of Maui. It is also said that he visited Kahoʻolawe and established a kūʻula at Hakioawa, though it differs from the others, being built on a high bluff overlooking the sea, somewhat like a heiau (temple), by placing stones in the form of a square in the middle of which was left a place wherein the fishermen of the island laid their first fish caught as a thank offering. ʻAwa and kapa were also placed there as an offering to fish deities.*

Inez Ashdown, a part-time resident of Kahoʻolawe and Maui historian, relates the following in an unpublished article "The Valiant Island":

> *AʻiaʻI's 2 koʻa at Kanapou Bay, at Kūheeia Bay, and on Lānaʻi are in memory of his father and to remind people of the Laws of the Sea or the Kānāwai regarding fishing etc....His 2 koʻa at Lae o Ku-aka-iwa and Puʻu Koaʻe point to deep sea fishing, also...His two koʻa at Hanakanaia Bay (which should be Hono-o-ke-Honu or Hono-kana-iʻa) for the turtle or Honu-god which protects Kahoʻolawe, were built by Aʻiaʻi.*

In Inez Ashdown's annotations on a copy of McAllister's *Archaeology of Kahoʻolawe* (page 10) can be found the following:

> *Aʻiaʻi built these ["nine fishing shrines"*– she does not say where they are located*] in honor of his father Kūulakai and mother Hina-pu-ku-iʻa. Some were more modern & evidently built by devotees among fishermen.*

In another article, titled "Kahoʻolawe," Ashdown states:

> *Twin koʻa to Kūʻula form a top of an imaginary triangle, the point of which indicates a deep sea fishing hole. Those koʻa on Kahoʻolawe were built as memorial altars to his father, Kūʻula, by the obedient kindly gentle son named Aʻiaʻi, the brilliant. The wife of Kūʻula is Hina-puku-iʻa and her name refers to the abundance of sea creatures, the fish which we must protect. The largest and most noted koʻa on this ʻĀina of Kanaloa which once was rich with verdure and water and sea foods is at Haki-o-wa which is a lae or point near the north side of Kanapou Bay...*

It seems probable that Ashdown is relating versions of long standing traditions of certain koʻa on Kahoʻolawe having been constructed by Aʻiaʻi, the legendary builder of the earliest koʻa in the Hawaiian Islands.

The exact number of ancient Hawaiian koʻa sites on Kahoʻolawe is uncertain. Nevertheless, the koʻa of Kahoʻolawe are unique from an archaeological/historical perspective because of their large number, excellent state of preservation, and the association of specific traditions with some of them. There may be more intact koʻa features on Kahoʻolawe than on any other Hawaiian island.

Since the late 1970s, contemporary koʻa have been built and ancient koʻa reused on Kahoʻolawe. This re-establishment and expansion of Hawaiian traditions will continue in the future.

2.3 NĀ IʻA

Heʻiʻa ia no Kahoʻolawe, heʻuku.

2.3.1 Kāheka and Kai Pāpaʻu (Near Shore)

The near shore marine habitats at depths less than 30 fathoms surrounding Kahoʻolawe may be divided into two groups: shoreline ecosystems and subtidal ecosystems. Shorelines considered here are those composed of basalt and limestone, and sandy beaches. These are described below with emphasis on some of the species important to subsistence fisheries found in each. Table 3 summarizes species found in these habitats.

Sandy beaches provide a habitat with an unstable bottom unfavorable to many coral reef invertebrate and fish species. Species found on the upper parts of the beach include the ʻōhiki (ghost crab) and the pāpaʻi (mole crab) which may be used as bait for a number of fishes. In many cases sandy beaches continue subtidally in a seaward direction where there are found a number of fish species of importance. This group includes the moi (threadfin) which will occur in schools that shelter in the churning surf. Other species found in the shallow sandy subtidal include ʻōʻio (bonefish), schooling ʻamaʻama (grey mullet), āholehole (flagtail), weke (yellowstripe goatfish), weke pueo (nightmare goatfish) and pāpio (juvenile ulua). Further offshore on sandy bottoms one encounters pāpaʻi kua loa (kona crab), uku (grey snapper), laenihi (sand wrasse), and pū (helmet shell). In the water column above the sand are occasionally

seen uku, kākū (barracuda), lai (leatherback) and small schools of ʻōpelu (mackerel scad) that transit the area.

The other major shoreline type is comprised of solid basalt or limestone. These shorelines dominate the Kahoʻolawe coast. In the intertidal are a number of esteemed invertebrates including the black ʻaʻama crab, the shallow water ʻopihi ʻālinalina (yellow foot limpet), ʻopihi makaiauli (black foot limpet) and the hāʻukeʻuke (shingle sea urchin) along with pāoʻo (blennies) and pipipi (nerites). Where the shoreline forms a bench, tidepools are often present. Tidepools serve as a refuge habitat for the juveniles of a number of reef fish species including āholehole (flagtail), manini (convict tang), kūpīpī (blackspot sergeant major), mamo (sergeant major) and a number of hīnālea (wrasses). The intertidal is an important area for the gathering of limu (seaweed) including favorites such as limu kala, ʻakiʻaki, huluhuluwaena, māneʻoneʻo, paheʻe, alani and pālahalaha. In adjacent tidepools many of these same limu are found along with wāwaeʻiole, ʻaʻalaʻula, līpoa, alani, manauea and līpeʻepeʻe.

Where the rocky substratum continues deeper into the subtidal, it can provide suitable habitat for a number of important species of invertebrates including heʻe (octopus), ula pā papa (slipper lobster), ula (green spiny lobster), leho ahi (Mauritius cowry), ʻopihi kōʻele (the large yellow foot limpet), and wana (black sea urchin). The development of invertebrate and fish communities in shallow rocky subtidal habitats is strongly influenced by wave impact. Where high-energy waves frequently impinge, invertebrates such as corals cannot become well established due to abrasion, scouring and breakage. Corals are an important component of this zone, providing habitat and food for many other coral reef species. Rocky substrates, however, such as basalt boulders sitting on a hard bottom exposed to occasional high energy conditions may also provide considerable shelter, and as a consequence, fish communities in these types of areas may be well developed.

Seaward in hard bottom settings a number of important fish species are found including surgeonfishes such as manini (convict tang), ʻapi (whitespot surgeonfish), māikoiko (whitebar surgeonfish), naʻenaʻe (orangebar surgeonfish*)*, palani (eyestripe surgeonfish), pualu (ringtail and yellowfin surgeonfishes), pākuʻikuʻi (achilles tang), māʻiʻiʻi (brown surgeonfish), maiko (bluelined surgeonfish), kole (goldring and black surgeonfishes), māneʻoneʻo (sailfin tang), humuhumu ʻeleʻele (black triggerfish), ʻamaʻama, and lauʻīpala (yellow tang). In the water column along these shores are uouoa (false mullet), āholehole, kākū, nehu, ʻiao, pāpio, and nenue (rudderfish). More strongly associated with the substratum and shelter are uhu (parrotfish), pālukaluka

(redlip parrotfish), uhu ʻahuʻula and uhu uliuli (spectacled parrotfish), pōnuhunuhu (stareye parrotfish), a number of types of hīnālea including ʻāwela (the Christmas wrasse), hou (the surge wrasse), ʻaʻawa (tableboss) and hīnālea lauwili (the saddleback wrasse), kīkākapu (butterfly fish), lauhau (fourspot and teardrop butterfly fishes) and lauwiliwili (milletseed butterfly fish), goatfishes such as moano (the manybar goatfish), moano kea (blue goatfish), weke (yellowstripe goatfish), red weke (yellowfin goatfish), malu (sidespot goatfish), munu (doublebar goatfish) and kūmū (whitesaddle goatfish). In this area are also seen three introduced species including roi (blue-spotted grouper), taʻape (bluelined snapper) and toʻau (snapper). The taʻape has been implicated in the decline of native species such as the kūmū that are found in the same habitats. Other species in this area include poʻopaʻa (hawkfish), nūnū (trumpetfish), humuhumu mimi (bridled triggerfish), humuhumu lei (lei triggerfish), humuhumu hiʻu kole (pinktail triggerfish), mū (emperor fish), kala (bluespine unicornfish), kala holo (sleek unicornfish), kala lolo (spotted unicornfish), umaumalei (orangespine unicornfish), pākiʻi (flatfish), poʻou (ringtail wrasse), mālamalama (lined coris), hilu (yellowstripe coris), and kūpoupou (cigar wrasse).

More cryptic species that usually shelter under the rocks during the day in these habitats include squirrel fishes such as menpachi (soldierfish), ʻalaʻihi (red squirrelfish), ʻūʻū kane pou (spiny squirrelfish), rockfish such as the nohu ʻomakaha, nohu, cardinalfishes such as the ʻupāpalu, ʻāweoweo (bigeye), puhi paka (yellowmargin moray), puhi lau milo (undulated moray), puhi ʻoniʻo (whitemouth moray), and puhi ūhā (white eel). Diurnally cryptic invertebrates of importance include ula (green spiny lobster and black leg spiny lobster), ʻula pā papa, loli (beche-de-mer), heʻe, pipi (pearl oyster) for use in lure and hook making, ʻōkupe (rock oyster), pū (helmet shell) as well as ʻolē (conch) used for food and as a means of communication (horns).

There are many other species of fishes present, many of which are small as adults and thus probably not of great importance to subsistence fisheries. In general, the diversity of species present increases with depth, but this may not be the case with respect to biomass or standing crop. Another group of fishes that is usually more abundant as one moves seaward through areas of relatively high cover are some of the predators of the reef system. Among these are many species preferred and sought-after by traditional and contemporary fishermen, including uku, the jacks i.e., ʻōmilu, paʻopaʻo (yellow ulua), the threadfin ulua (kagame), the three spot pāpio, the white ulua, the pig ulua (lehe or butaguchi), the black ulua, wahanui (gurutsu), kākū, lai, and kāhala (amberjack). In terms of landings, two of the most important fish species found in rocky subtidal habitats (as well as in sandy habitats) form schools, these are ʻōpelu

(mackerel scad) and akule (bigeye scad). Juvenile akule are known as hahalalū and form schools in the July to December period that often frequent protected bays and harbors. The adults will form large schools and spawn in near shore waters from February through August. They are often caught using seine nets in this period. ʻŌpelu schools are often associated with certain bottom features (koʻa) and may be caught in these areas. ʻŌpelu spawn from March through August and the adults are important both for human consumption and as bait for a number of pelagic species (tunas, etc.). Subtidal species are summarized in Table 4.

2.3.2 Kai Hohonu (Offshore)

The distribution of fish and invertebrates seaward of the 30 fathom isobath is largely determined by the same factors as influence shallow near shore communities. In these deeper waters, the influence of wave impact is much less, and thus corals may be appropriate hard bottom exists. Corals require reasonable levels of sunlight, however, and below about 30m there is a decrease in coral cover in most Hawaiian settings due to lower light levels. Fish distribution, however, depends more on the complexity of the substratum than the presence of corals. Where the bottom is topographically complex and provides adequate shelter, fish and invertebrate communities are usually well developed. In these deeper fish communities, most of the fish and invertebrate species mentioned above are also found. These species are summarized in Table 5.

Larger predator species are usually in greater abundance in the deeper water areas (i.e., here greater than 30 fathoms). Thus ulua, uku, mū, kāhala, etc. are encountered more often and pelagic predators are sometimes seen. Among the pelagic predators are kamanu (rainbow runner), kawakawa (bonito), ono (wahoo), ʻahi (yellowfin tuna), aku (skipjack tuna), mahimahi (dolphin fish), ʻahaʻaha (needlefish), and mālolo (flying fish). Further seaward, these pelagic species are more commonly encountered. In the deeper areas are also found coastal pelagic species such as the ʻōpelu and lai that are seen in shallower waters. Besides uku, mū, ulua, and kāhala, closer to the bottom are moe lua, uku, kūm□ ū, moano kea and most of the other species found in shallower depths as noted above. With increasing depth are found the complex of sought-after bottomfish including the lehe, uku, and snappers such as the ʻōpakapaka, kalekale, ʻūkīkiki (gindai), ʻulaʻula (ehu), ʻulaʻula koaʻe (onaga), and hāpuʻupuʻu (grouper).

2.4 FEDERALLY PROTECTED SPECIES

He mea laha‘ole.

Koholā (whales), nai‘a (dolphins), and ‘īlio-holo-i-ka-uaua (Hawaiian Monk Seals) frequent the KIR. These species are protected under the Federal Marine Mammal Protection Act. Certain of these species are also protected under the Federal Endangered Species Act. Under federal law, these species may not be approached, harassed, injured or killed. The ‘īlio-holo-i-ka-uaua may be the only marine mammal to present a special management challenge in the KIR. They frequently rest on beaches in the Honokanai‘a area, and may not be disturbed when resting.

Honu (sea turtles) are protected under the Federal Endangered Species Act and may not be approached, harassed, injured or killed. Honu may also present a special management challenge. Honu frequently rest on beaches in the Honokanai‘a area, and may not be disturbed when resting.

Table 3
Common Intertidal Species

Hawaiian Name	Common Name	Scientific Name
	Sandy Bottom – Invertebrates	
ʻōhiki	ghost crab	*Ocypode ceratophthalma*
pāpaʻi	mole crab	*Emerita pacifica*
	Hard Bottom – Seaweeds	
ʻaʻalaʻula (wāwaeʻiole)	a green seaweed	*Codium reediae*
ʻakiʻaki	a red seaweed	*Ahnfeltia concinna*
alani	a brown seaweed	*Dictyota* sp.
huluhuluwaena	a red seaweed	*Grateloupia filicina*
limu kala	a brown seaweed	*Sargassum echinocarpum*
līpeʻepeʻe	a red seaweed	*Laurencia succisa*
līpoa	a brown seaweed	*Dictyopteris plagiogramma*
manauea	a red seaweed	*Gracilaria coronopifolia*
māneʻoneʻo	seaweed	*Laurencia nidifica*
paheʻe	a green seaweed	*Porphyra* sp.
pālahalaha	a green seaweed	*Ulva fasciata*
wāwaeʻiole	a green seaweed	*Codium edule*
	Hard Bottom – Invertebrates	
ʻaʻama	crab	*Grapsus grapsus*
hāʻukeʻuke	shingle sea urchin	*Colobocentrotus atratus*
ʻopihi ʻālinalina	yellow foot limpet	*Cellana sandwicensis*
ʻopihi makaiauli	black foot limpet	*Cellana exarata*
	Hard Bottom – Fish	
āholehole (juvenile)	flagtail	*Kuhlia sandvicensis*
hīnālea (juvenile)	wrasses	
kūpīpī	blackspot sergeant major	*Abudefduf sordidus*
mamo (juvenile)	sergeant major	*Abudefduf abdominalis*
manini (juvenile)	a surgeonfish	
pāoʻo (ʻoʻopu)	lennies	*Istiblennius zebra*
pāoʻo (ʻoʻopu)	blennies	*Entomacrodus marmoratus*

Table 4
Common Subtidal Species

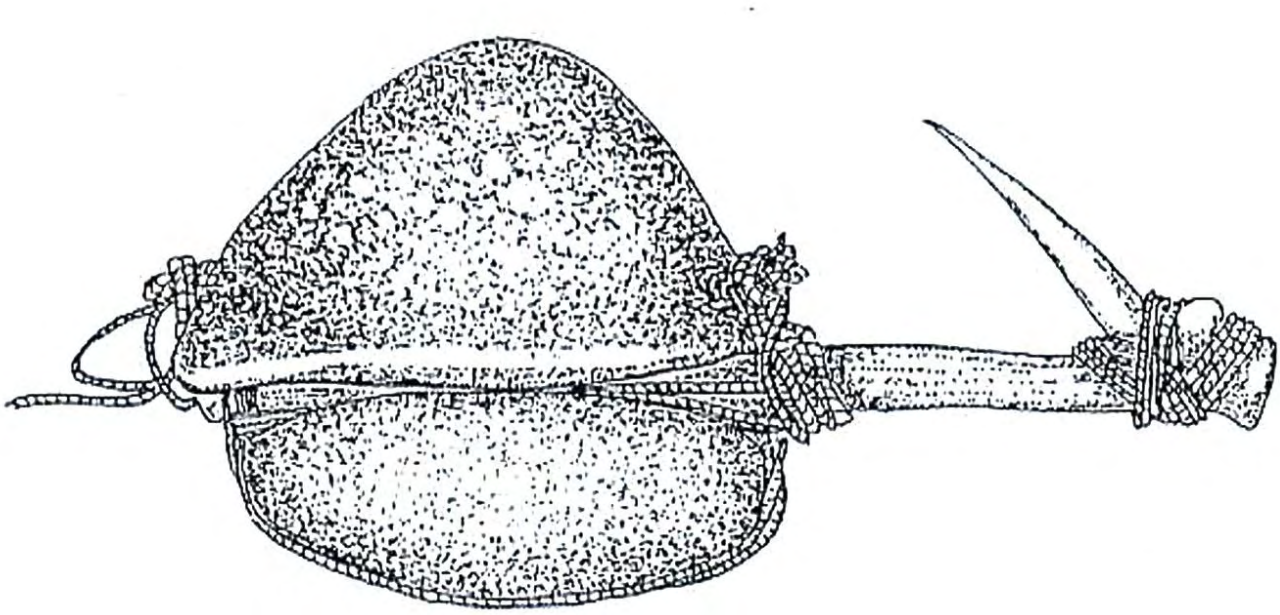
Hawaiian Name	Common Name	Scientific Name
	Sandy Bottom – Invertebrates	
pāpa‘i kua loa	kona crab	*Ranina ranina*
pū	helmet shell	*Cassis cornuta*
	Sandy Bottom – Fish	
āholehole	flagtail	*Kuhlia sandvicensis*
‘ama‘ama	grey mullet	*Mugil cephalus*
kākū	barracuda	*Sphyraena barracuda*
laenihi	sand wrasse or nabeta	*Xyrichtys pavo*
lai	leatherback	*Scrombroides lysan*
moi	threadfin	*Polydactylus sexifilis*
‘ō‘io	bonefish	*Albula vulpes*
‘ōpelu	mackerel scad	*Decapterus macarellus*
pāpio	juvenile jacks	*Caranx* sp. (family Carangidae)
uku	grey snapper	*Aprion virescens*
weke	yellowstripe goatfish	*Mulloides flavolineatus*
weke pueo	nightmare goatfish	*Upeneus arge*
	Hard Bottom – Invertebrates	
he‘e	octopus	*Octopus cyanea*
leho ahi	Mauritius cowry	*Cypraea mauritiana*
loli	beche-de-mer	*Stichopus* spp.
‘ōkupe	rock oyster	*Spondylus tenebrosus*
‘olē	triton, conch	*Charonia tritonis*
‘opihi kō‘ele	yellow foot limpet	*Cellana talcosa*
pipi	pearl oyster	*Pinctada margaritifera*
pū	helmet shell	*Cassis cornuta*
ula	black leg spiny lobster	*Panulirus marginatus*
ula	green spiny lobster	*Panulirus penicillatus*
ula pā papa	gray crayfish	*Paribaccus antarcticus*
wana	black sea urchin	*Echinothrix diadema*
wana	black sea urchin	*Echinothrix calamaris*
	Hard Bottom – Fish	
‘a‘awa	tableboss	*Bodianus bilunulatus*
āholehole	flagtail	*Kuhlia sandvicensis*
akule	bigeye scad	*Selar crumenophthalmus*
‘ala‘ihi	red squirrelfish	*Adioryx xantherythrus*
‘ama‘ama	grey mullet	*Mugil cephalus*
‘api	whitespot surgeonfish	*Acanthurus guttatus*
‘āwela (hou)	Christmas wrasse	*Thalassoma trilobatum*
‘āweoweo	bigeye	*Heteropriacanthus cruentatus*
hahalalū (halalū)	juvenile akule	*Selar crumenophthalmus*

Hawaiian Name	Common Name	Scientific Name
hilu	yellowstripe coris	*Coris flavovittata*
hīnālea	wrasses	
hīnālea lauwili	saddleback wrasse	*Thalassoma*. duperrey
hou	surge wrasse	*Thalassoma purpureum*
humuhumu ʻeleʻele	black triggerfish	*Melichthys niger*
humuhumu hiʻu kole	pinktail triggerfish	*Melichthys vidua*
humuhumu lei	lei triggerfish	*Sufflamen bursa*
humuhumu mimi	bridled triggerfish	*Sufflamen fraenatus*
ʻiao	silversides	*Pranesus insularum*
kāhala	amberjack	*Seriola dumerilii*
kākū	barracuda	*Sphyraena barracuda*
kala holo	sleek unicornfish	*Naso hexacanthus*
kala	bluespine unicornfish	*Naso unicornis*
kala lolo	spotted unicornfish	*Naso brevirostris*
kīkākapu	butterfly fish	*Chaetodon* spp.
kole	goldring surgeonfishes	*Ctenochaetus strigosus*
kole	black surgeonfish	*Ctenochaetus hawaiiensis*
kūmū	whitesaddle goatfish	*Parupeneus porphyreus*
kūpoupou	cigar wrasse	*Cheilio inermis*
lai	leatherback	*Scrombroides lysan*
lauhau	fourspot butterfly fish	*Chaetodon quadrimaculatus*
lauhau	teardrop butterfly fish	*Chaetodon unimaculatus*
lauʻīpala	yellow tang	*Zebrasoma flavescens*
lauwiliwili	milletseed butterfly fish	*Chaetodon miliaris*
māʻiʻiʻi	brown surgeonfish	*Acanthurus nigrofuscus*
maiko	bluelined surgeonfish	*Acanthurus nigroris*
māikoiko	whitebar surgeonfish	*Acanthurus leucoparieus*
mālamalama	lined coris	*Coris ballieui*
malu	sidespot goatfish	*Parupeneus pleurostigma*
māneoneo	sailfin tang	*Zebrasoma velifrum*
manini	convict tang	*Acanthurus triostegus*
moano	manybar goatfish	*Parupeneus multifasciatus*
moano kea	blue goatfish	*Parupeneus cyclostomus*
me lua	Pfluger's goatfish	*Mulloidichthys pflugeri*
mū	emperor fish	*Monotaxis grandoculis*
munu	doublebar goatfish	*Parupeneus bifasciatus*
naʻenaʻe	orangebar surgeonfish	*Acanthurus olivaceus*
nehu	anchovy	*Stolephorus purpureus*
nenue	chub or rudder fish	*Kyphosus biggibus*
nohu	rockfish, scorpionfish	*Scorpaenopsis cacopsis*
nohu ʻomakaha	rockfish, scorpionfish	*Scorpaenopsis diabolus*
nūnū	trumpetfish	*Aulostomus chinensis*
ʻōmilu	blue trevally	*Caranx melampygus*
ʻōpelu	mackerel scad	*Decapterus macarellus*
pākiʻi	flounder	*Bothus pantherinus*
pākuʻikuʻi	achilles tang	*Acanthurus achilles*
palani	eyestripe surgeonfish	*Acanthurus dussumieri*
pālukaluka	redlip parrotfish	*Scarus rubroviolaceus*
paʻopaʻo	yellow ulua	*Gnathanodon speciosus*
pāpio	juvenile jacks	*Caranx* sp. (family Carangidae)

Hawaiian Name	Common Name	Scientific Name
pāpio	three spot p□ pio	*Caranx orthogrammus*
pōnuhunuhu	stareye parrotfish	*Calatomus carolinus*
poʻopaʻa	hawkfish	*Cirrhitus pinnulatus*
poʻou	ringtail wrasse	*Chelinius unifasciatus*
pualu	yellowfin surgeonfish	*Acanthurus xanthopterus*
pualu	ringtail surgeonfish	*Acanthurus blochii*
puhi lau milo	undulated moray eel	*Gymnothorax undulatus*
puhi ʻoniʻo	whitemouth moray eel	*Gymnothorax meleagris*
puhi paka	yellowmargin moray eel	*Gymnothorax flavimarginatus*
puhi ūhā	white eel	*Conger cinereus*
hu ʻahuʻula (uhu uliuli)	spectacled parrotfish	*Scarus perspicillatus*
uhu	parrotfish	*Scarus sordidus*, *S. psittaceus*
uku	grey snapper	*Aprion virescens*
ulua	black ulua	*Caranx lugubris*
ulua	pig ulua or butaguchi	*Pseudocaranx dentex*
ulua aukea(?)	white ulua	*Caranx ignobilis*
ulua kihikihi	kagami or threadfin ulua	*Alectis indica*
umaumalei	orangespine unicornfish	*Naso lituratus*
uouoa	false mullet	*Neomyxus chaptalii*
ʻupāpalu	cardinalfish	*Apogon kallopterus*
ʻūʻū	menpachi or soldierfish	*Myripristes amaenus*
ʻūʻū kane pou	spiny squirrelfish	*Adioryx spinifer*
wahanui	gurutsu	*Alphareus furcatus*
weke	yellowstripe goatfish	*Mulloides flavolineatus*
weke ʻula (red weke)	yellowfin goatfish	*Mulloidicthys vanicolensis*
	roi, blue-spotted grouper	*Cephalopholis argus*
	taʻape, bluelined snapper	*Lutjanus kasmira*
	toʻau, snapper	*Lutjanus fulvus*

Table 5
Common Offshore Fish Species

Hawaiian Name	Common Name	Scientific Name
ʻahaʻaha	needlefish	*Belone platyura*
ʻahi	yellowfin tuna	*Thunnus albacares*
aku	skipjack tuna	*Katsuwonus pelamis*
hāpuʻupuʻu	grouper	*Ephinephalus quernus*
kāhala	amberjack	*Seriola dumerilii*
kalekale	von Siebold' snapper	*Pristipomoides sieboldii*
kamanu	rainbow runner	*Elagatis bipinnulatus*
kawakawa	bonito	*Euthynnus affinis*
kūmū	whitesaddle goatfish	*Parupeneus porphyreus*
laʻi	leatherback	*Scrombroides lysan*
mahimahi	dolphin fish	*Coryphaena hippurus*
mālolo	flying fish	*Cypselurus simus*
mālolo	flying fish	*Oxyporhamphus micropterus*
moano kea	blue goatfish	*Parupeneus cyclostomus*
mū	emperor fish	*Monotaxis grandoculis*
ono	wahoo	*Acanthcybium solandri*
ʻōpakapaka	brown snapper	*Pristipomoides filamentosus*
ʻōpelu	mackerel scad	*Decapterus macarellus*
pāpio	juvenile jacks	*Caranx* sp. (family Carangidae)
pāpio	three spot p□ pio	*Caranx orthogrammus*
ʻūkīkiki	gindai or snapper	*Pristipomoides znatus*
uku	grey snapper	*Aprion virescens*
ʻulaʻula koaʻe	onaga or red snapper	*Etelis coruscans*
ʻulaʻula	ehu or red snapper	*Etelis carbunculus*
ulua	black ulua	*Caranx lugubris*
ulua	pig ulua or butaguchi	*Pseudocaranx dentex*
ulua aukea(?)	white ulua	*Caranx ignobilis*
ulua kihikihi	kagami or threadfin ulua	*Alectis indica*
weke ʻula (red weke)	yellowfin goatfish	*Mulloidicthys vanicolensis*



3.0 OCEAN RESOURCE MANAGEMENT ISSUES

3.0 OCEAN RESOURCE MANAGEMENT ISSUES

3.1 PUBLIC SAFETY AND UNEXPLODED ORDNANCE

Mālama o pā ʻoe.

3.1.1 Presence and Distribution of UXO

The most vexing of the long-term problems associated with future use of the KIR is unexploded ordnance (UXO) and the risks presented by it to users of the KIR. From the time the U.S. declared war on Japan after the Japanese attack on Pearl Harbor in 1941 until 1990, Kahoʻolawe and its adjacent marine waters were continuously used as a military test and practice range. Operations including bombing, gunnery practice, torpedo testing, and a simulated nuclear blast were all carried out on the island. The most intensive activity took place during World War II and the Vietnam War. Kahoʻolawe is considered the most artillery-battered island in the Pacific. Today, a wide range of UXO is present in the KIR.

There is little information available concerning the amounts and types of ordnance deployed, the locations of the deployments, and the percentages of ordnance that did not explode after deployment. In addition, natural processes of erosion, water movement and sediment redistribution have been operating on the UXO of Kahoʻolawe, in some cases for more than fifty years. These processes expose, redistribute and rebury UXO. While some areas are known to contain more ordnance than others, no area is completely safe until effectively swept for and cleared of ordnance.

3.1.2 Levels of Interaction for Different Activities

The potential for damage and tragedy caused by UXO is proportional to the level of interaction associated with the type of activity and also the frequency of the activity expected in different areas. The following list describes the general kinds of activities, with their associated levels of interaction, which are expected to take place in the KIR. The activities are ranked by decreasing probability of interaction with UXO.

1. Direct contact activities: These activities include boat landing, walking, shoreline gathering (e.g., spearing from above water, ‘opihi picking), some forms of netting fish, and underwater spear fishing.

2. Line fishing: These activities range in probable level of interaction from shoreline fishing, with a relatively high probability for interaction, to deep-water (assumed for this study to be the KIR waters with water depths deeper than twenty fathoms) trolling, with practically no potential for impact. Activities with intermediate probabilities include shallow water trolling and bottomfishing.

3. Anchoring: Clearly, the deeper the water, the lower the probability of interaction.

4. Non-invasive activities: These activities include scuba and snorkel diving without bottom contact and boating.

3.1.3 Effects on Life and Property

In the formulation of policies regarding the regulation of the above activities in the KIR waters and along the coastline, it is important to have some assessment of the possible consequences of detonating UXO accidentally. Given the wide diversity of ordnance and the more than fifty years over which it was used on the island, it is not possible to assign quantitative probabilities to the likelihood of interaction with, detonation of, or extent of damage caused by UXO. However, based upon the general characteristics known for the military high explosives to be expected, it is possible to describe possible results should full detonation occur.

Damage from explosions above water occurs from the direct shock wave of the explosion as well as from the shrapnel and other projectiles created by the blast. Such projectiles can have damaging effects beyond the range expected for direct damage from the shock wave. In addition, if the explosion is focused, as is possible from a burial pit or crevice in rocks, its effect has a larger range that is not possible to quantify without known geometries and compositions of the pit or crevice.

The danger of damage caused by shrapnel is much less in water, because water is much denser than air and will rapidly slow projectiles caused by a blast. Underwater, however, the liability of damage from the explosive shock wave is much higher. In air,

much of the blast energy is converted to heat through compression of air in the advancing pressure wave. Water is a much more efficient transporting medium for pressure waves than air, and thus underwater UXO detonation will have more far-reaching effects than detonation in air.

Considering the above, it is possible to infer general outcomes for detonation of UXO through the kinds of activities assumed to take place in the KIR waters, as follows:

1. Direct contact activities: The consequences of full detonation of even the smallest high explosive ordnance would be grave and probably fatal to the individual or animal that causes the detonation and probably also to bystanders. The consequences of ignition or detonation of the low explosives also expected to be present would be unpredictable, ranging from negligible to fatal.

2. Line fishing: The liability of the fisherman will vary with distance from the blast, assuming the baited end of the line is the instrument that detonates the charge. Even the smaller charges could be harmful or fatal within 60 feet, while significant damage to the individual is unlikely if the distance is greater than 2,000 feet.

3. Anchoring: If a boat is less than 240 feet from the anchor when it detonates a 100 lb. charge or 750 feet when it detonates a 1,000 lb. charge, then significant damage to the boat might be expected. Because the high-pressure wave crest associated with an explosion is followed by a low-pressure trough, a second risk to boats is loosening or ejection of through-hull fittings, possibly leading to uncontrollable leakage.

4. Non-invasive activities: Given the basic assumption of this scenario, i.e., that UXO will require some significant physical impact for detonation, these activities should be very unlikely to cause any detonation.

3.1.4 Clearance and Management Recommendations

Cost and current technology limitations prohibit clearing UXO from all the submerged lands of the KIR. Thus, prioritization of areas for eventual UXO clearance is required. Based on the degree of historic and anticipated use, the areas where submerged lands should first be cleared are Hakioawa, Kaulana, Kuheia, Ahupu, Honokoa and Honokanai‘a Bays. The submerged lands which should be cleared in these areas are those shoreward of the respective bay mouths and any locations outside of the bays where permanent moorings will be installed.

The tremendous rate of erosion on Kaho‘olawe is likely to deposit UXO from the uplands of Kaho‘olawe into the surrounding waters. This process prevents effective permanent clearance of UXO from the waters until the uplands are cleared of UXO. Therefore, with the exception of submerged lands critical to completion of the Omnibus Cleanup and areas essential to safe, authorized accesses to be held during that period, clearance of the submerged lands identified above should not commence until the respective upland watersheds are cleared of UXO.

All shoreline areas and submerged lands of the KIR must be assumed dangerous until effectively cleared of ordnance. In order to reduce the risk of injury due to UXO the KIRC intends to:

- Pursue clearance of UXO from selected submerged lands at the earliest practicable time,
- Limit the number of persons entering the KIR,
- Thoroughly warn entrants into the KIR of the danger due to UXO and inform such entrants of precautions which may be taken to reduce exposure to this danger, and
- Avoid authorization of activities that may lead to excessive exposure to this danger.

3.2 HARVESTING AND SUSTAINABILITY OF I‘A

He i‘a kokoke ka ka lawai‘a.

Fishing is usually concentrated in areas where fish are most plentiful and where access is best. Fish are most abundant where natural shelter and food are most abundant. Thus with all other things being equal, fishing will usually initially focus on those areas

that have easy access and high abundance due to good habitat. These areas are often in shallow water, close to land. Thus, the first areas to show a decline of fishery resources are usually those closest to the shore. It is also these shallow water habitats that often have the greatest exposure to degradative forces originating from land. For example, runoff carrying both soil and freshwater (such as occurs following heavy rainfall) will affect those benthic and fish communities closest to shore to the greatest degree. Furthermore, capture techniques often become more indirect with increasing depth, i.e., nets and direct methods such as spearing become less effective, whereas hook and line and trapping become more important. Fishing methods play a significant role in the resulting composition and size of the catch. For example, nets are usually set in relatively shallow water and result in large catches, but in deeper waters hook and line methods are usually confined to the taking of a single to a few fish at a time. Therefore, declines in fishery resources are often initially most obvious in shallow water communities, while the resources of the deeper, more seaward areas may remain intact longer.

3.2.1 Large Pelagics

Pelagic fishes are those that reside in the open ocean. These species have regional populations and geographic ranges that cover the tropical Pacific and beyond. Pelagic species may migrate over vast distances, entering the Exclusive Economic Zones of many different countries, and do not often dwell in any given area for very long.

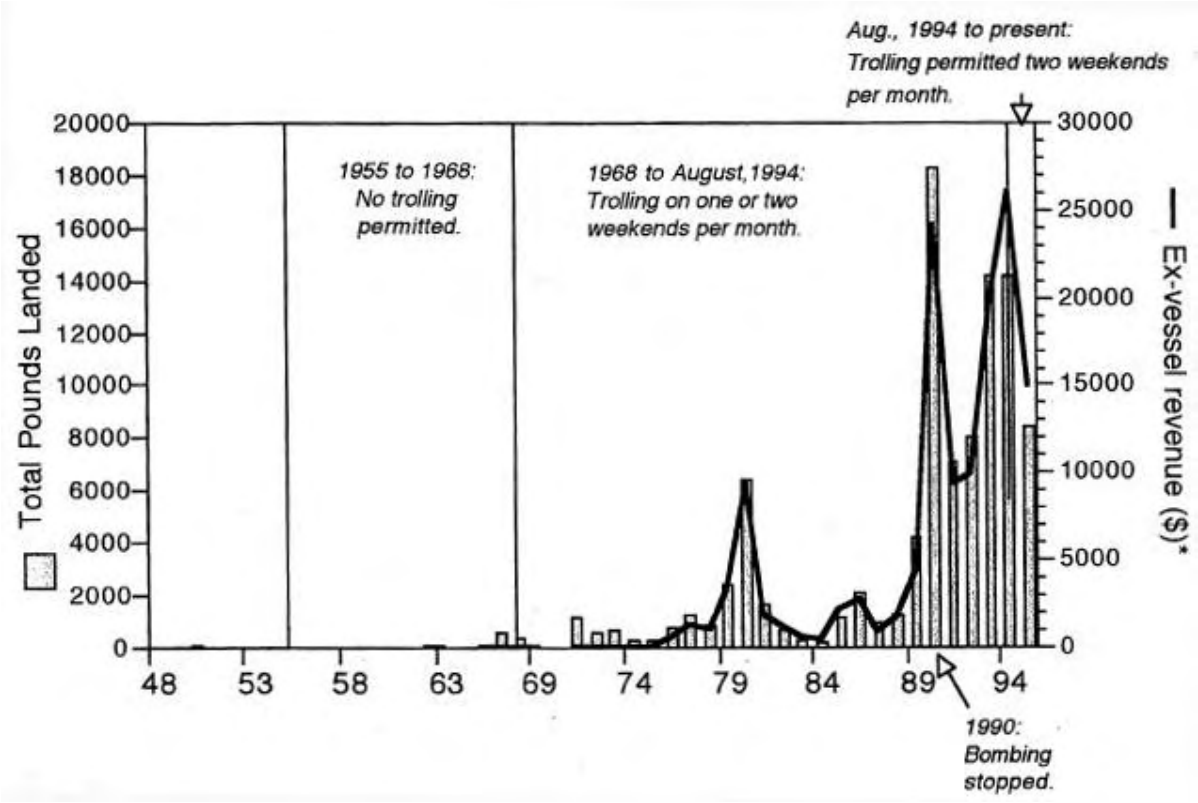
In past decades it was believed that pelagic fish resources could safely sustain a great deal more harvest worldwide. However, there is now considerable international concern that many such species are being harvested in the world's oceans at a rate that is approaching, equal to, or even exceeding the maximum sustainable yield (MSY).

The commercial quantity and value of pelagics caught around Kaho‘olawe (HDAR statistical units 306 and 307) over the past 50 years is illustrated in Figure 2. The data are from the HDAR C3 commercial fish catch reports. Key regulatory periods are indicated as follows: 1955 - Navy establishes Danger Zone, no fishing; 1968 - Navy allows fishing on one or two weekends per month; 1990 - bombing of Kaho‘olawe is halted by President Bush; August 1994 - KIRC promulgates HAR §13-260 permitting trolling on two weekends per month. Typically, due to chronic under-reporting by commercial fishermen, the legal circumstances surrounding Kaho‘olawe, and nature of the reporting system, reported commercial catch is considered a substantial underestimate of actual catch. In addition, because legal entry into the waters

surrounding Kaho‘olawe has been restricted for years, it is likely that the proportion of commercial catch from Kaho‘olawe’s waters which was not reported was even greater. Further, the catch illustrated in Figure 2 does not include the recreational and subsistence catch. It should be noted that the catch data in Figure 2, do not by themselves reflect resource abundance. Thus, the increase in catch reported in recent years is likely due to an increase in effort rather than an increase in the abundance of pelagics.

The sustainable yield of pelagics in the KIR is not known, but it is reflective of the status of pelagic species in the Central Pacific as a whole. Because of the large oceanic range of many pelagic species, management of these species on the geographic scale of the waters of the KIR will have a very small effect on the populations of these species as a whole. Rather, long-term successful management of these species requires cooperation among resource managers throughout the Pacific. The KIRC should be prepared to participate in this management at the appropriate time.

Figure 2
Commercial Catch and Value of Pelagics from Kaho‘olawe’s Waters:
1948-1995

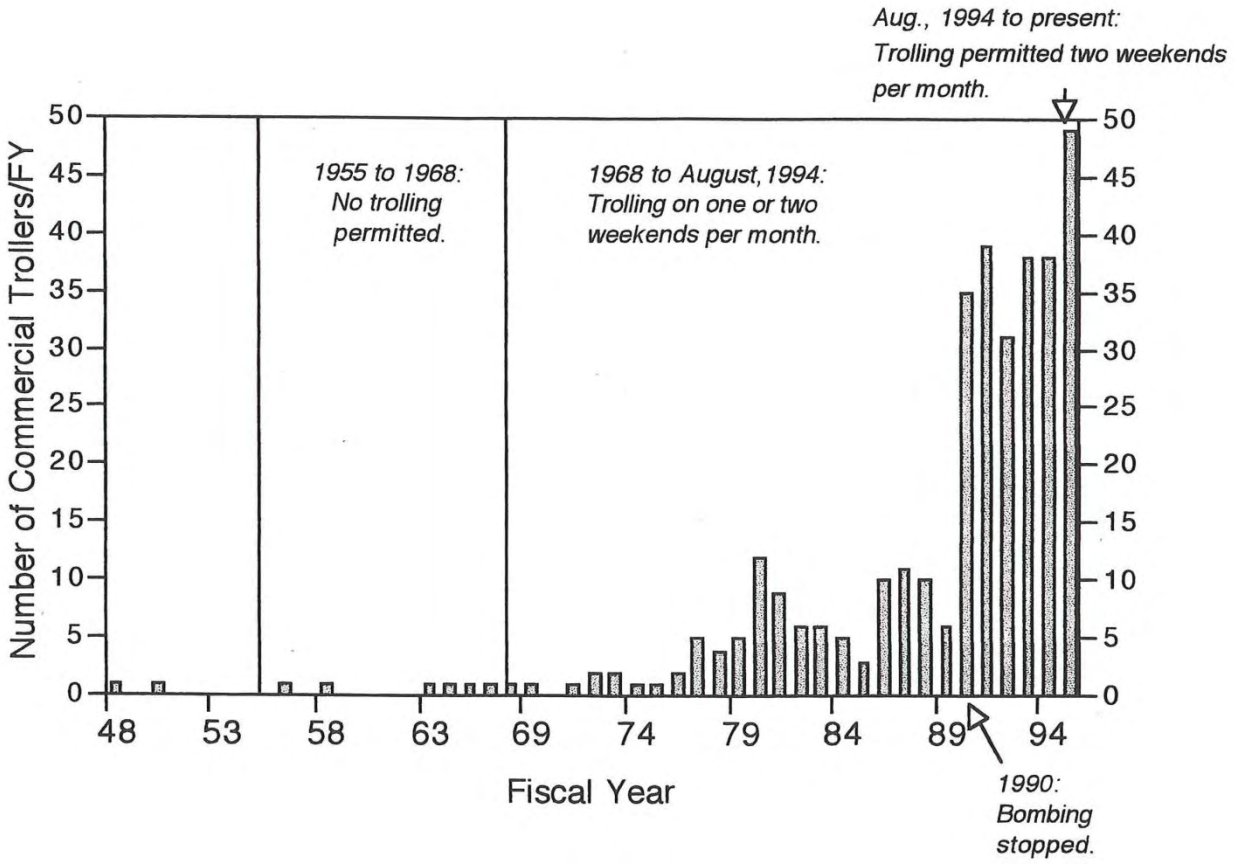


Some fishermen advocate opening the KIR waters for unrestricted trolling from the boundary of the KIR inward to the 20-fathom isobath. Unregulated trolling in the KIR, however, is incompatible with the purposes of the KIR, effective resource management, and public safety.

Unregulated trolling access may interfere with cultural use of the KIR and compete with Kaho‘olawe-based harvesting of pelagic resources. Trespass and illegal harvest are already major problems for the management of the KIR. Unregulated trolling would eliminate the buffer area between the KIR boundary and the bottomfish resources, eliminate the buffer area between the boundary and the shoreline and reef resources, and eliminate the majority of the buffer area between the boundary and the island. This would complicate enforcement and expose the bottomfish as well as reef and shoreline resources to greater illegal harvest pressure. It may also increase the potential for trespass onto the island, thereby increasing the risk of death or injury from UXO. Because pelagics can generally be caught anywhere, there is no compelling reason to allow unregulated trolling in the KIR. However, enforcement assistance and

baseline data gathering are reasons to consider allowing some amount of regulated trolling in offshore waters of the KIR. The historical number of commercial trollers reporting landings of pelagics from around Kahoʻolawe is shown in Figure 3.

Figure 3
Number of Commercial Trollers in Kahoʻolawe's Waters: 1948-1995



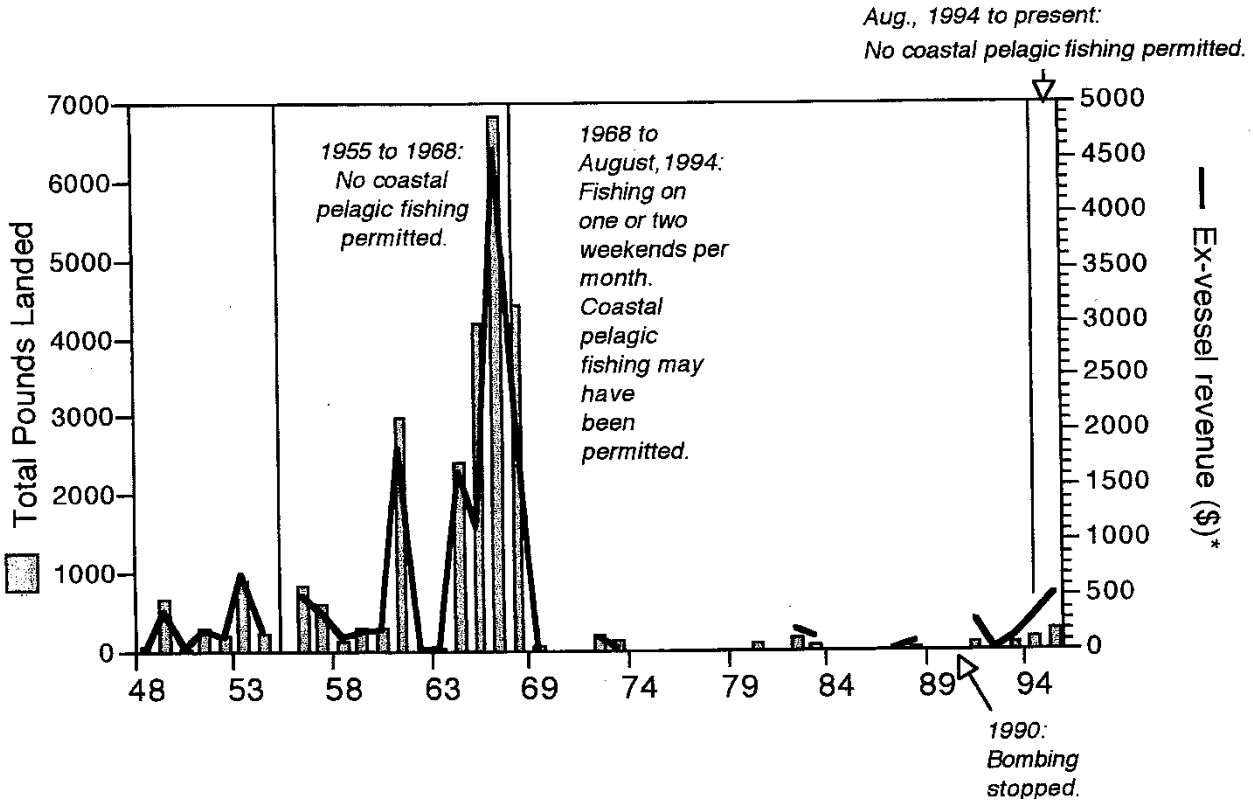
3.2.2 Coastal Pelagics

The coastal pelagic species of primary interest in the KIR are the akule/hahalalū and ʻōpelu. These schooling fishes migrate in the coastal waters around the islands and are an important part of Hawaiʻi's commercial catch. Akule and hahalalū will often enter harbors and shallow bays during the summer months; and ʻōpelu form schools at specific locales or koʻa, a behavior which assists in their capture.

Harvest of these species is often seasonal, but relatively large catches are possible. Commercial catch of coastal pelagics in Kahoʻolawe's waters has been highly variable. In 1903, akule comprised 66% (18,000 pounds) of the total reported catch from the

waters of Kaho‘olawe. During the 1940s and 1950s, total annual catch remained below 1,000 pounds (Figure 4). For a few years thereafter, catch ranged up to about 7,000 pounds, primarily due to very large catches made by nets on a few occasions. From 1969 onwards, total catch was a mere few hundred pounds. The total annual revenue received for the catch has likewise been variable, and for the last three decades has been below $500 (Figure 4). The number of commercial fishermen catching coastal pelagics has been no more than a handful throughout the period of record (Figure 5).

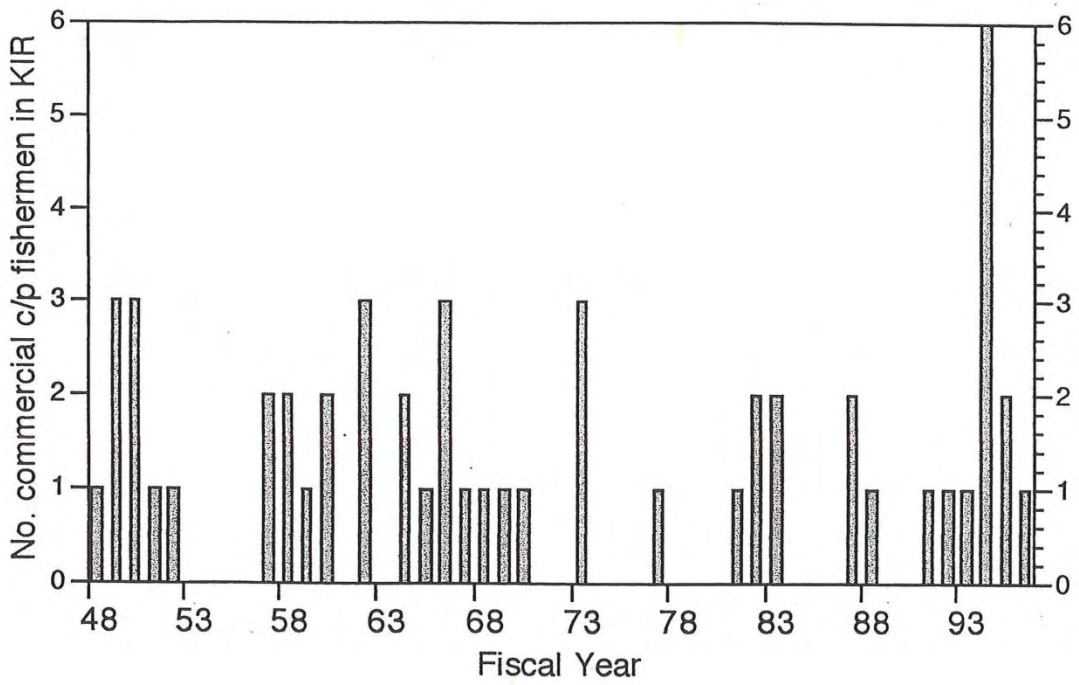
Figure 4
Commercial Catch and Value of Coastal Pelagics from Kaho‘olawe’s Waters: 1948-1995



The catch of coastal pelagics per unit of fishing effort in the waters of Kahoʻolawe has declined dramatically. The catch per unit effort in 1995 (the most recent year for which data are available) was 14.3% of its value at the beginning of the period of record in 1948. These best available data indicate that in the waters of Kahoʻolawe the coastal pelagics as a group are showing signs of significant stress. Active management of the harvest of coastal pelagic fish resources of the KIR is therefore appropriate.

Because of the variability in abundance of these species, in earlier times catches were often preserved by drying. In the future, these species may prove to be a significant source of protein for consumption in the KIR. Rediscovery and proper management of the offshore koʻa could increase the yield of ʻōpelu. Fishing for these species would require presence in Kahoʻolawe's nearshore waters, with attendant possibilities for trespass onto the island, interaction with UXO, and the taking of shallow water and shoreline species. However, a very limited amount of fishing, conducted under the auspices of the KIRC, would be useful for the monitoring of the status of these species in the KIR.

Figure 5
Number of Commercial Coastal Pelagic Fishermen in Kahoʻolawe's Waters: 1948-1995



3.2.3 Bottomfish

Bottomfish occupy deep water habitats, often near ledges and areas of high topographic relief. The bottomfish of Hawai‘i occur primarily in waters from 30 to over 150 fathoms deep. They make up an economically-valuable and highly sought-after species complex. Species within this complex include the ‘ōpakapaka, ‘ula‘ula, and ‘ula‘ula koa‘e, the uku, the hāpu‘upu‘u, the lehi, the kalekale, and a number of ulua species. In terms of value and landings, the ‘ōpakapaka, ‘ula‘ula, ‘ula‘ula koa‘e and uku are the major species of the fishery.

The islands of Maui, Kaho‘olawe, Lāna‘i and Moloka‘i comprise “Maui Nui.” Because of the relatively shallow channels among the islands of Maui Nui, the bottomfish of the KIR are considered part of the larger Maui Nui bottomfish stock. The greatest harvesting of bottomfish in the Main Hawaiian Islands (MHI) occurs within Maui Nui.

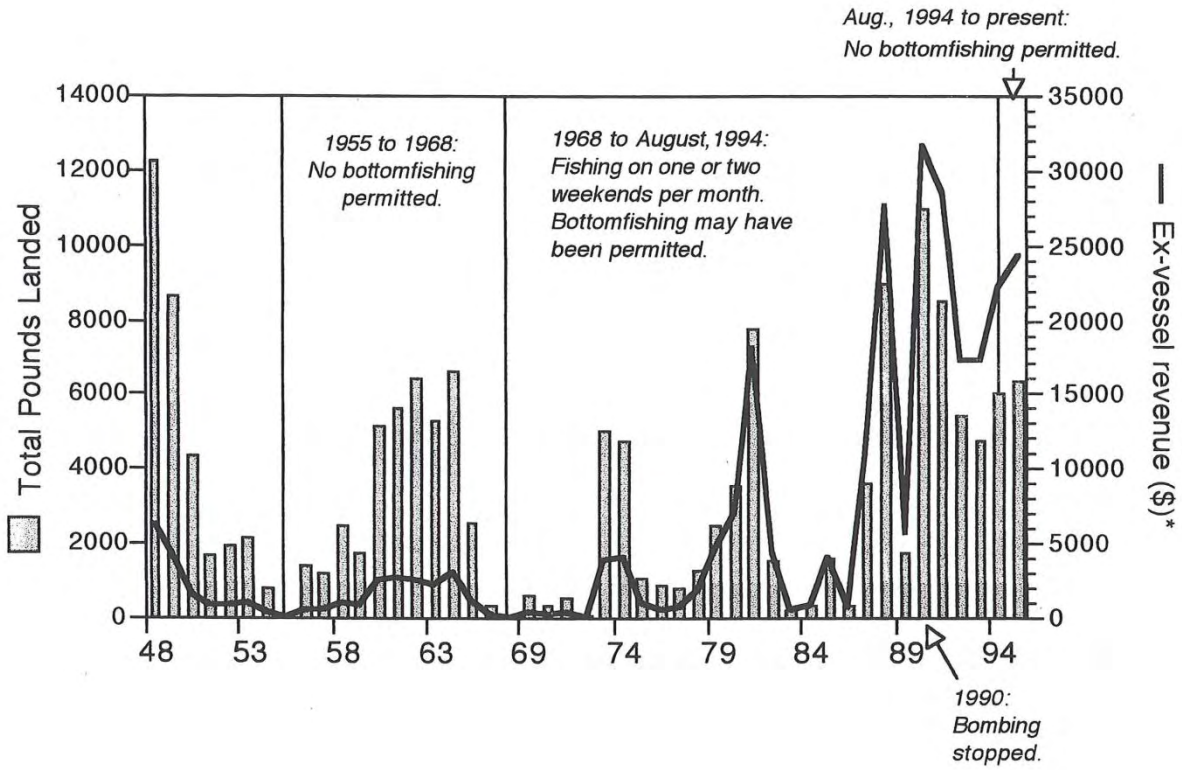
The KIR contains roughly five percent of the bottomfish habitat found in the Maui Nui bank, and roughly two percent of the bottomfish habitat in the MHI. Despite legal restrictions on access to Kaho‘olawe's waters since about WWII, bottomfishing there has continued throughout the past five decades. Total commercial landings of bottomfish in the KIR during the period of record (1948 to 1995) have been variable (Figure 6). During the past five years, the total annual revenue received by commercial fishermen for the catch of bottomfish in Kaho‘olawe’s waters has fluctuated between $15,000 and $35,000 (Figure 6). The number of commercial fishermen catching bottomfish in the waters of Kaho‘olawe was only a handful until the late 1970s and early 1980s when it increased to just over one dozen. The number declined during much of the 1980s, then increased to nearly 30 bottomfishermen around the time the bombing of Kaho‘olawe was halted in 1990. Following a peak of fishing in 1991, the number of bottomfishermen fishing the waters of Kaho‘olawe has steadily declined towards its earlier level of about a half dozen (Figure 7). Although the bottomfish resources of the KIR have been closed to nearly all fishing since August of 1994, poaching is occurring. The commercial catch of bottomfish reported from the waters of Kaho‘olawe comprises roughly 1% of the commercial bottomfish catch of the MHI.

The bottomfish stocks of the MHI have been heavily utilized for much of the 20th century. Prior to the 1970s, the stocks were fished by full-time professional bottomfishermen. Thereafter, the increasing availability of fiberglass boats, fathometers and, more recently, Global Positioning Systems, opened the bottomfish fishery to a very

large number and wide array of commercial, part-time commercial, subsistence and recreational vessels.

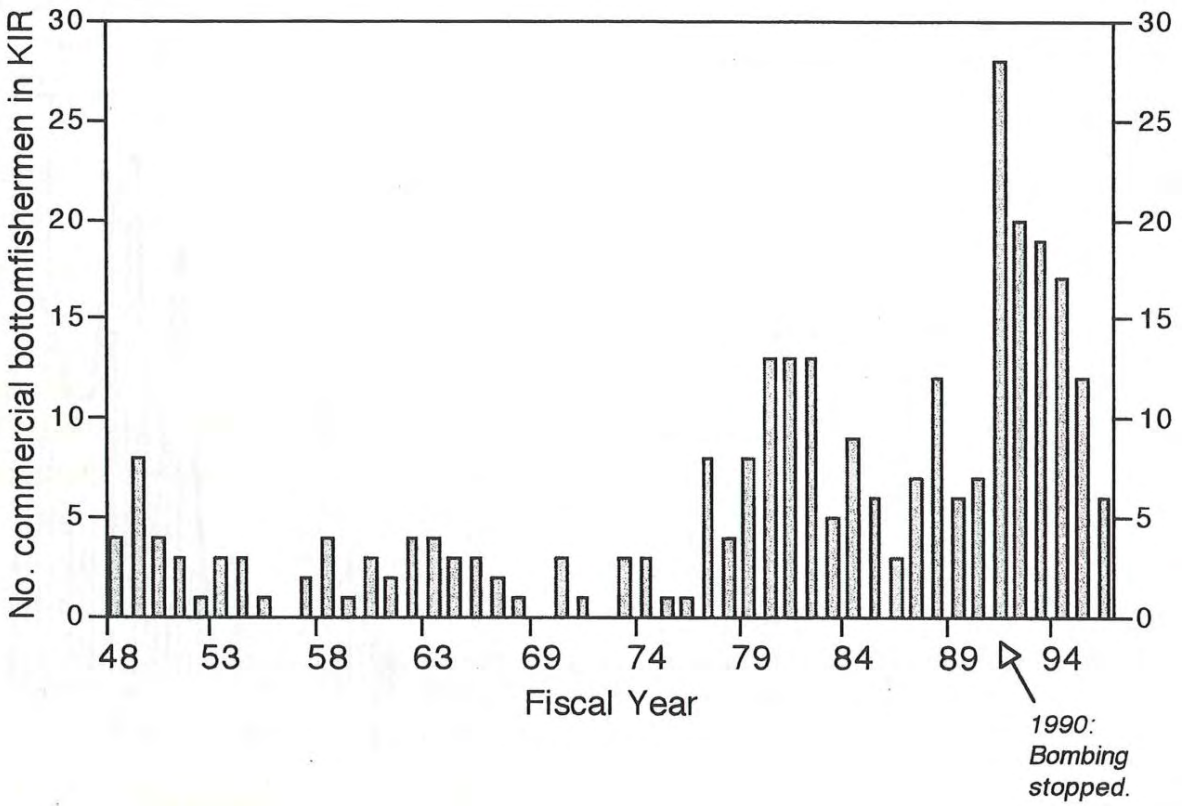
As fishing pressure in the MHI has grown, particularly during the last decades of this century, the essentially unmanaged MHI bottomfish stocks, particularly those of the four major species, have dwindled significantly. The Division of Aquatic Resources of the Hawai'i State Department of Land and Natural Resources (HDAR), together with the Western Pacific Regional Fishery Management Council (WESPAC) and the National Marine Fisheries Service (NMFS), is working to establish a management program to prevent a collapse of the major bottomfish stocks of the MHI. All available information indicates that the major bottomfish stocks of the KIR are in the same need of active management intervention as the bottomfish stocks of the MHI as a whole.

Figure 6
Commercial Catch and Value of Bottomfish from Kaho'olawe's Waters: 1948-1995



The maximum sustainable yield calculated from available data for the bottomfish of Maui Nui indicates that a maximum of between 12,000 and 15,000 pounds of bottomfish (all species combined) may be caught each year in the KIR. This annual yield estimate is considerably higher than the landings reported by commercial fishermen in Figure 6. While Figure 6 is a good index of landings, it is likely an under-representation of the actual commercial catch because of chronic under-reporting by fishermen. Further, it does not reflect the non-commercial catch (thought to equal the commercial catch). Bottomfishermen have expressed to the KIRC that this calculated sustainable yield of bottomfish could be caught in the KIR in just a few days. At the same time, there are a number of factors which indicate that this estimate could be too high. Whether the estimate is too low or too high, it will provide the point of departure for the establishment of harvest quotas, should bottomfishing be permitted in the KIR.

Figure 7
Number of Commercial Bottomfishermen in Kaho'olawe's Waters: 1948-1995



Based on the best available data, any bottomfishing in the KIR would have to be carefully regulated. These data further indicate that, in all likelihood, the amount of bottomfishing in the KIR which would be both sustainable and allow for bottomfish stock restoration would be a fraction of the amount of bottomfishing that has occurred in the waters of Kahoʻolawe to date. Furthermore, unregulated access to the waters of the KIR for bottomfishing is incompatible with UXO security and resource protection requirements. However, a very limited amount of bottomfishing, conducted under the auspices of the KIRC, would be useful for monitoring of the status of these species in the KIR.

3.2.4 Reef Fish

There are a wide variety of reef and shoreline fishes in the KIR. Likewise, there are a wide variety of methods used to catch them. Figure 8 illustrates the reported commercial landings of selected reef and shoreline fish species in the waters of Kahoʻolawe, and the associated revenues received therefrom, during the period of record (1948 to 1995). During the past five years, the total annual revenue received by commercial fishermen for the catch of reef and shoreline fish in Kahoʻolawe's waters has fluctuated between $200 and $1,600. The number of commercial fishermen reporting catches from Kahoʻolawe's waters for the same period was just a few prior to the mid 1970s, increased to about one dozen through the mid 1980s, declined through 1989, then jumped to 16 during 1990 when the bombing of Kahoʻolawe was halted (Figure 9). The number has declined steadily thereafter. Although the reef and shoreline fishes of the KIR have been closed to most fishing since August of 1994, poaching of these fishes is occurring.

As with most fisheries, increases in human population and advances in fishing technology have caused the reef and shoreline fish stocks of the MHI to experience heavy and increasing fishing pressure throughout the latter half of the 20th century. Much of the reef and shoreline fisheries of the MHI are considered overfished. The available information suggests that statewide catches of key species have been in decline since the turn of the century. Reef and shoreline fisheries are insufficiently managed in the MHI and are in need of active management intervention. HDAR is moving to better understand and manage the reef and shoreline fishery of the MHI, including development of a recreational fishing license program.

The available data indicate that the reef and shoreline fishery of Kahoʻolawe has likewise declined significantly throughout the period of record (1948 to 1995). The 1995 catch of reef fish per unit of fishing effort in Kahoʻolawe's waters is 17.8% of its value in 1948

(the first year of record). Active management of harvest of the reef and shoreline fish resources of the KIR is therefore appropriate. Fishing for these species would require presence in Kaho'olawe's nearshore waters, with attendant possibilities for trespass onto the island, interaction with UXO, and taking of other shallow water and shoreline species. However, a carefully regulated amount of fishing is expected to be an important part of on-island programs, and will be useful in monitoring the status of these species in the KIR.

Figure 8
Commercial Catch and Value of Reef and Inshore Species from Kaho'olawe's Waters: 1948-1995

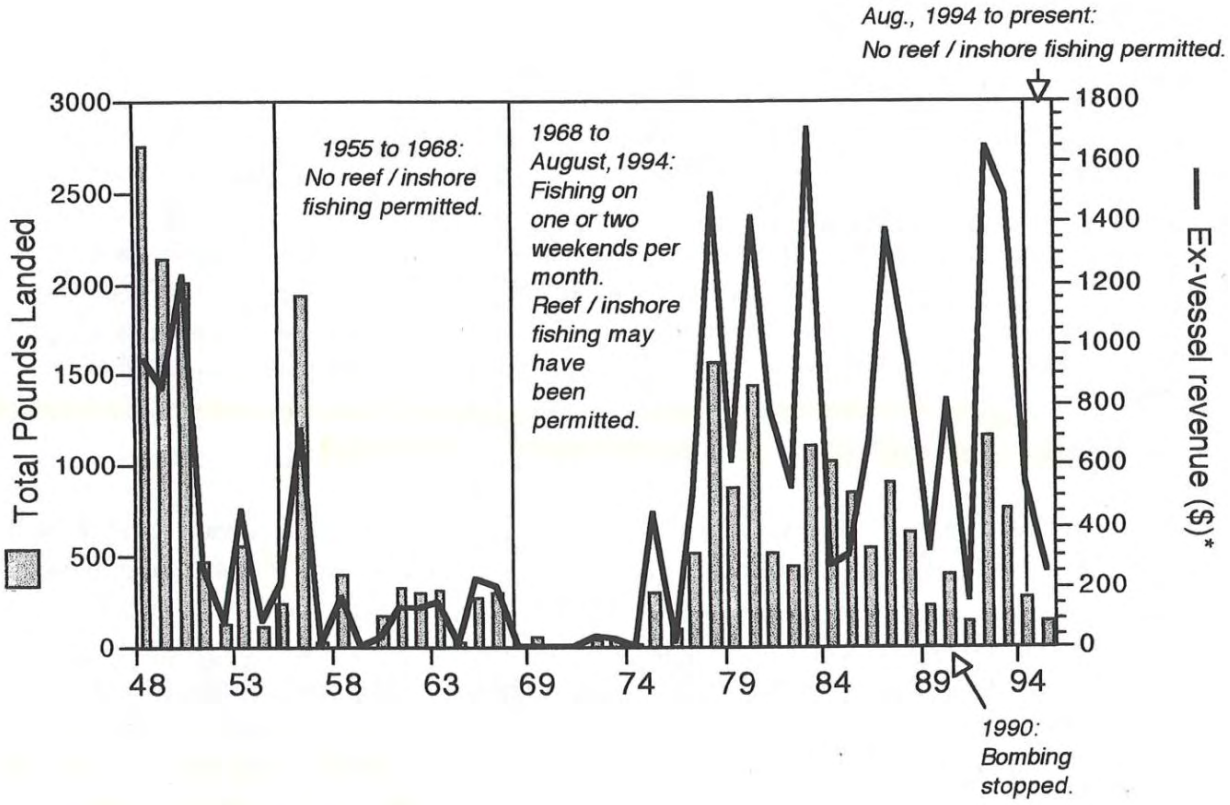
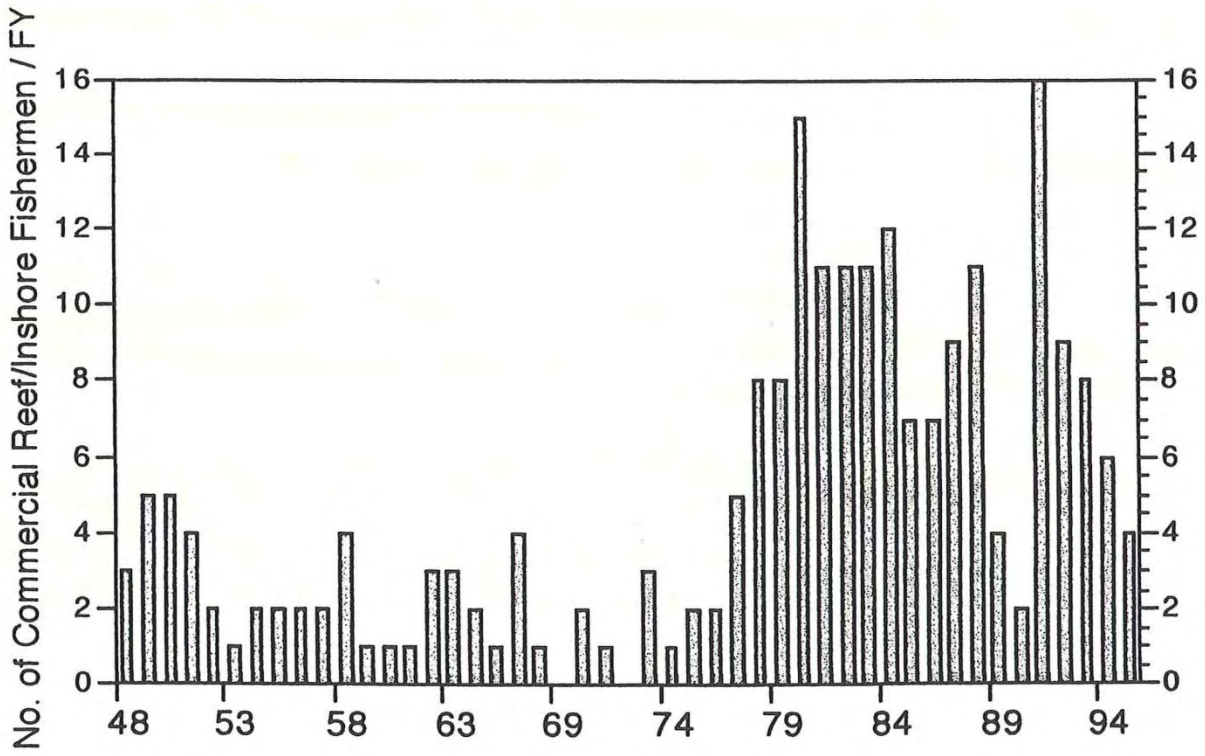


Figure 9
Number of Commercial Reef and Inshore Fishermen in Kahoʻolawe's Waters:
1948-1995



3.2.5 Macroinvertebrates

This group is made up of a diverse fauna including ula, pāpaʻi kua loa, ʻopihi, leho, pūpū, hāʻukeʻuke, wana, heʻe, ʻaʻama, loli, etc., most of which occur primarily on or around the reef or along the shoreline. Most of these species are a significant food resource. They were and continue to be targeted by resource gatherers throughout Hawaiʻi. Because of their desirability, frequent proximity to the shore, and usual relative ease of harvest, most of these species are quickly depleted by gathering. Stocks have been declining statewide since the turn of the century. Members of this group are likely to be the first to reflect the effects of gathering, and may be good indicators of the level of human activity, including illegal presence and resource harvest in the KIR.

Of these, only the ula is an intensively managed fishery species in Hawaiʻi, and this management is only for commercial harvest in the Northwestern Hawaiian Islands. Once abundance information for the ula is gathered in the KIR, the sustainable yield of

this species can be calculated. The others are not actively managed, and less is known of them. Methods for calculating sustainable yields for these others will have to be developed afresh or adapted from similar species in regions other than Hawai‘i.

Field observations indicate that many of the macroinvertebrate resources have been strongly impacted by harvesting. The macroinvertebrate resources of the KIR require active management if gathering of these species is to be sustainable. A carefully regulated amount of harvest is expected to be an important part of on-island programs, and will be useful in monitoring of some of these species in the KIR.

3.2.6 Tools for Management of Harvesting

Long before any association with westerners, Hawaiians depended on fishing for survival, and developed social and cultural controls over fishing so that it would provide a sustainable supply of food. Fishery management traditions in the Hawaiian Islands are over 1,000 years old. Western concepts of property ownership were introduced to Hawai‘i in the 19th century and western-style fishery management soon followed.

Collection and consumption of marine resources were highly regulated activities in traditional Hawaiian culture. Numerous kapu were associated with the act of fishing, as well as with preparation of fishing gear such as hooks, lines, nets and traps. Other kapu and ceremonies were associated with canoe building and launching, initiation of a new lawai‘a (fisherman), and distribution and consumption of the catch. Many of these kapu may be inappropriate today because they were based on either class distinctions or gender. For example, moi were reserved for ali‘i, while women were prohibited from eating ulua, kūmū, and certain other types of fish. Other kapu concerned when and where fishing could take place. During each month there were four kapu periods dedicated to the major gods, during which fishing was prohibited. In particular, the Kapu of Kāloa (Kanaloa) began on the night of ‘Olepau and continued until the day of Kāloakūlua, a period of roughly a day and a half centered about the 24th day of the lunar month. As part of the revival of traditional Hawaiian cultural practices, the application of traditional kapu on Kaho‘olawe will be explored.

Limits on the season, individual size, species, catch or “bag” limits, and gear are commonly used tools to manage the rate and focus of natural resource harvesting. The rulemaking authority of HDAR (via the Board of Land and Natural Resources) for the KIR was transferred to the KIRC by HRS §6K. Thus, the Hawaii Administrative Rules

regarding the harvesting of ocean resources promulgated by HDAR do not have effect in the KIR. However, state statutes that establish specific restrictions regarding ocean resource harvesting remain in effect within the KIR. Some of the existing statutes have been considered by many fishermen and biologists to be insufficient to achieve sustainability. It is likely that the KIRC will need to establish additional harvest restrictions.

Restricted access protected the ocean resources of Kahoʻolawe from over-exploitation during the period of Navy administration. The ability to control access is the first and most effective tool in the management of gathering in the KIR.

Effective resource management is enhanced by, and often depends on, effective **education** of resource users. Such education is usually focussed on principles of conservation and safety, and is often mandatory. The Hawaiʻi Hunter Safety Education Program is a very successful example.

Monitoring of the status and abundance of the ocean resources of the KIR is necessary for effective resource management, and documentation of the effects of watershed restoration. Monitoring is also an excellent avenue for education. An effective monitoring program should include both catch reporting and direct resource monitoring.

The HDAR administers a catch reporting system for commercial landings. Because there is currently no requirement for reporting of recreational or subsistence catches, however, this system will not be useful in the KIR. A more detailed, site-specific, catch and effort reporting system will be essential to monitor restoration and sustainability of the resources of the KIR.

3.3 ENFORCEMENT

Mālama i ke kala ka iʻa hiʻu ʻoi.

Sufficient enforcement is an essential element of any ocean resource management program. Unfortunately, lack of sufficient enforcement has been described as the "Achilles heel" of fisheries management worldwide, and is an important factor in the global decline of fisheries. Present-day Hawaiʻi is no exception.

In pre-Western Hawai‘i, traditional ocean resource conservation rules (kapu) were vigorously enforced. This traditional authority, however, has been replaced by Western law. When compared to traditional punishment, current penalties allowed by law are greatly relaxed. In addition, enforcement of many contemporary Hawai‘i ocean resource management rules is given a low funding priority. Further, when violators are cited, imposition of stiff penalties by the courts is infrequent.

At the same time as ocean resource harvest controls have been greatly relaxed, the impetus for harvest has been greatly expanded. By most accounts, the current population of Hawai‘i is significantly greater than that of pre-Western Hawai‘i. Furthermore, whereas once Hawai‘I’s ocean resources were harvested primarily for subsistence use, harvesting has been intensified by commercial use.

As a consequence of reduced fishing pressure during the decades of Navy administration, fish populations at Kaho‘olawe are less impacted by fishing than those in many other areas of Hawai‘i. Consequently, Kaho‘olawe is regarded as something of a “last frontier” for fishermen, and there is a corresponding strong desire on the part of many fishermen to exploit the remaining resources of Kaho‘olawe. Currently, trespass and illegal harvest are major problems for management of the KIR.

Adequate enforcement of KIRC rules is absolutely critical to the success of the Kaho‘olawe ocean management program. HRS §6K and §199 state that DOCARE shall enforce the rules promulgated by the KIRC. Following the conveyance of Kaho‘olawe to the State in 1994, the Maui County Division of DOCARE formalized and increased its patrols of Kaho‘olawe waters. However, DOCARE’s funds and equipment for patrol of the KIR are limited.

Ultimately, enforcement may rely on agency personnel, volunteer deputies, self-policing by resource users, or some combination of these methods. Experience with protected marine areas in many parts of the world indicates that the greater the community support for the rules, the less effort must be allocated to agency enforcement efforts. Thus, many managers of protected marine areas strongly advocate working with the community of stakeholders to develop as much community support for the ocean management program as possible.

3.3.1 Penalties

HRS §6K, as it was first passed, provided that violation of KIRC rules was a misdemeanor punishable by up to a $1,000 fine and one year imprisonment. Fines levied for violations, however, rarely even approached this amount. In order to provide for a more flexible and firm penalty system, HRS §6K was amended in 1997 to provide for the application of administrative penalties directly by the KIRC. Development of the administrative penalties system will produce sanctions more in line with the gravity of the violations, and better deter trespass and poaching within the KIR.

3.3.2 Enforcement Boundaries

The size, distance from Maui and often rough waters of the KIR make enforcement of the KIR rules inherently difficult. Because of its paramount importance to the success of resource management in the KIR, every effort should be made to support and simplify enforcement to enhance its effectiveness. Boundaries in the water can be difficult to enforce due to the difficulty some boaters experience in determining the exact position of their vessel. As a result, there is often a "grey area" of uncertainty on either side of a boundary where strict enforcement of the boundary is less appropriate or difficult to prosecute. This "grey area" phenomenon, in effect, reduces the enforceable size of the area contained within the boundary. In addition, the closer a boundary is to a protected resource the easier it is for violators to cross the boundary into the protected area, take the resource, and depart back across the boundary before enforcement can reasonably intercept them. Both of these facts indicate that the greater the buffer area between the boundary and the resource, the better the protection of the resource. Trespass and illegal harvest are already problems for the management of the KIR. In order to protect the cultural uses of the KIR, subsistence resource gathering, bottomfish and reef shoreline resources, and to protect against increased trespass onto Kaho'olawe, the boundary of the KIR should be maintained and enforced at two miles.

The waters of the KIR are currently divided into two zones. Zone A is comprised of those waters between the shoreline and the 20 fathom isobath. Zone B is comprised of those waters seaward of the 20 fathom isobath out to the two mile boundary of the KIR. The current rules permit trolling on two weekends per month in Zone B. The KIRC is contemplating a continuance of this or a similar policy at some point in the future. In order to better protect the nearshore and shoreline resources and to better prevent trespass into the shallow waters and onto the island, the boundary between Zone A and

Zone B should be moved outward. The 30 fathom isobath is a more accurate ecological demarcation between the nearshore and offshore. The deep waters along the southern shore, however, require a 100 fathom Zone A boundary to protect shoreline resources. The recommended Zone A boundary is shown in Figure 10 and described as follows:

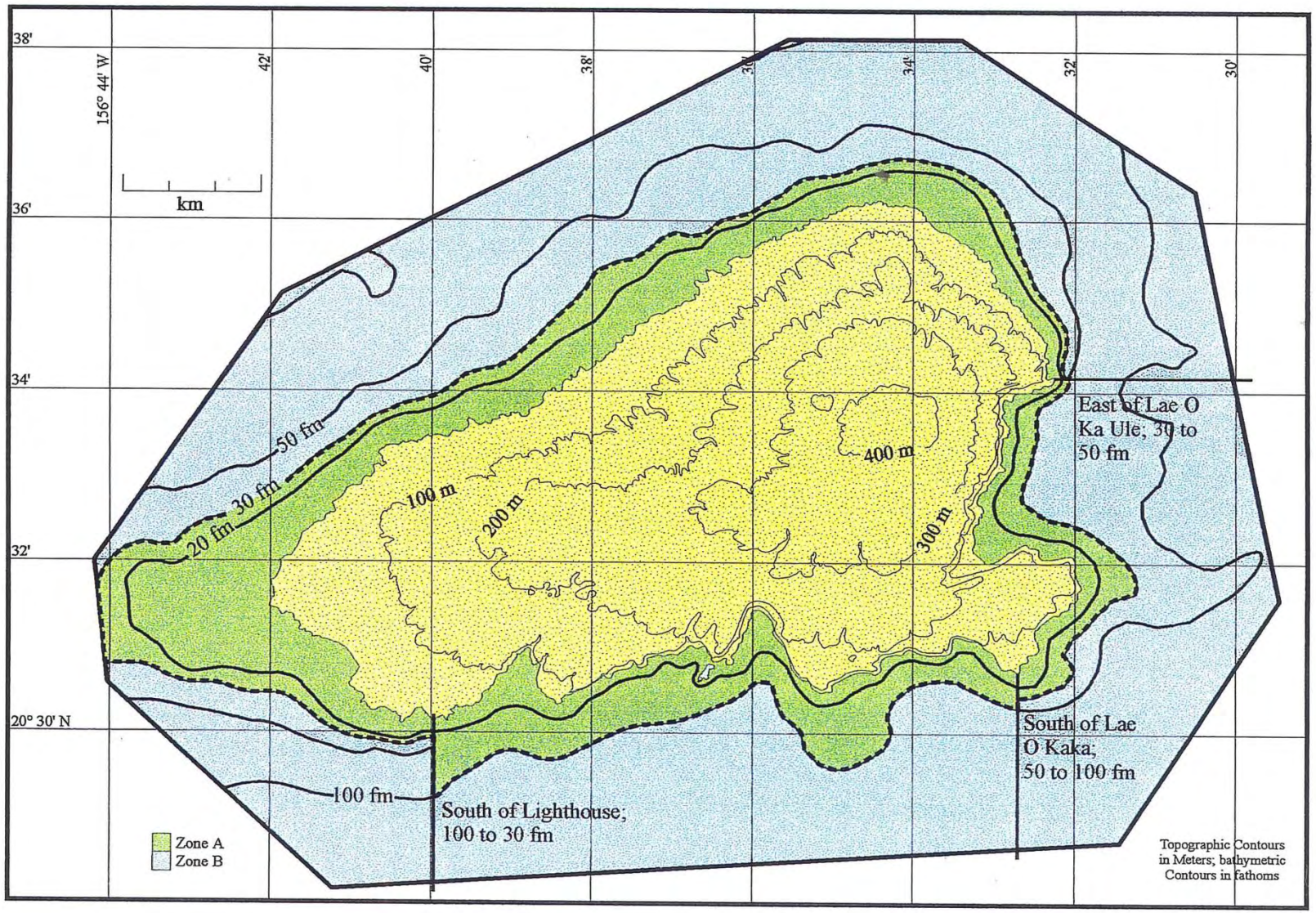
> a) Zone A begins at the point on the 30 fathom isobath which is due south of the lighthouse at Puhi Anenue, then
> b) follows this 30 fathom isobath clockwise to the point on the 30 fathom isobath which is due east of Lae o Ka Ule, then runs due east to the 50 fathom isobath, then
> c) follows the 50 fathom isobath from Lae O Ka Ule clockwise to the point on the 50 fathom isobath which is due south of Lae O Kaka, then runs due south to the 100 fathom isobath, then
> d) follows the 100 fathom isobath from Lae O Kaka clockwise to the point on the 100 fathom isobath which is due south of the lighthouse at Puhi Anenue, and finally runs from this point due north to the point of origin at the 30 fathom isobath.

3.4 CARRYING CAPACITY

Kaho‘olawe ‘ai kūpala.

The island’s population and use should be planned such that the marine resources of the KIR are not taxed beyond their carrying capacity. The *Use Plan* provides guidance on estimating the future population of the island. Specific coastal sites identified in that plan are expected to be the focus of activity. These consist of four kahua kauhale (educational and cultural centers) and a number of kahua ho‘omoana (overnight campsites). The visitor population is difficult to project but the majority would stay at the four centers, where they would participate in catch, preparation and consumption of marine resources as part of educational and cultural experiences.

Figure 10
Recommended Boundary Between Zones A and B, Kaho'olawe Island Reserve



The largest cultural center, at Honokanai'a on the southwest coast, could possibly host up to 100 visitors, whereas smaller centers at Ahupu and Kuheia, on the northwest coast, and at Hakioawa, on the northeast coast, could host up to 50 visitors each.

Minimum daily protein needs can be met by the consumption of 150 grams (0.33 lb.) of fish per person, or the equivalent of about 0.75 pounds of whole fish when corrected for an edible yield of 40%. The edible portion would be greater if fish heads and guts are consumed. Although traditional, this practice should be discouraged because of the risk of ciguatera poisoning from eating these parts of reef fish. If the daily population averages 100, and all protein is derived from fish, the annual protein requirement would be approximately 27,375 pounds of whole fish.

The average annual reported commercial harvest of all marine fauna from the waters of Kaho'olawe during the last five years was about 19,000 pounds. Of this, about 10,600 pounds were pelagic fishes, 150 pounds were coastal pelagic fishes, 6,200 pounds were bottomfish, and 2,000 pounds were reef/shoreline fishes, transient shorefishes, and invertebrates. This reported commercial catch is probably a significant underestimate of actual commercial catch, and does not include the non-commercial catch (which is thought to be of a magnitude equivalent to the commercial catch). Thus, it is very likely that far more than 19,000 pounds were caught. However, while the harvest of pelagics on the spatial scale of the KIR would not generally be considered unsustainable at this time, the available data indicate that the harvest of coastal pelagic fishes, bottomfishes, and reef/shoreline fishes in the waters of Kaho'olawe has been excessive. The status of the invertebrates at Kaho'olawe is not yet known, but they are probably not free from the stress of significant harvest.

If 27,375 pounds of fish per year would be required to satisfy the protein needs of a population of 100 people, the coastal pelagic and reef/shoreline fishes of the KIR probably should not be relied upon to provide the complete protein requirements of the daily population staying in the KIR. While there are numerous complications in calculating carrying capacities and sustainable yields for marine fauna populations, these data indicate that, not surprisingly, the pelagic and bottomfish fauna can provide far greater sources of protein for on-island use than the reef/shoreline fauna. Further, the pelagic fauna may be a greater potential source of protein than the bottomfish.

Aside from UXO cleanup operations, on-island activities are expected to continue at a relatively low level for the near future. It will be many years before the cultural centers are implemented and the level of non-cleanup activity increases to the hypothetical magnitude of a daily population of 100 persons staying on the island. This long phase-in period should be used to monitor the marine resource base and better assess its carrying capacity.

In any case, the marine fauna of the KIR should not be relied upon as the sole, or even a major, source of protein for people on-island. In the short-term, protein needs should be met with foods brought into the KIR. The marine fauna of the KIR should be considered a cultural and educational resource first, and an on-island protein source only when really necessary.

3.5 TRUST RESPONSIBILITY AND PROTECTION OF USE RIGHTS

He ʻike ʻana ia i ka pono.

3.5.1 Trust Responsibility to the People of Hawaiʻi

Until the KIR becomes part of the sovereign Hawaiian entity at some future date, the KIR remains part of the State of Hawaiʻi. Thus, the KIRC has a responsibility to all the people of Hawaiʻi. This responsibility encompasses promulgation of use and access rules for the KIR which are fair, which protect existing rights, and which protect the resources of the KIR. The KIRC must implement a policy of management for resource sustainability and restoration. HRS §6K requires the preservation and protection of environmental resources, as well as the restoration of habitats. This, in turn, requires application of more conservative management measures than presently guide use of the state's marine resources in general.

3.5.2 Trust Responsibility to the Native Hawaiian Nation

Because the KIR is to be held by the state, under HRS §6K-9, in trust for the eventual return to a sovereign Native Hawaiian entity, the KIRC has a fiduciary duty to ensure that the marine resources of the KIR, which are a part of the trust corpus, remain viable for the new nation. This responsibility implies that the condition of the KIR's resources should be maintained or improved prior to transfer, not depleted or degraded. To do this it will be necessary to manage the resources for their restoration and sustainability. This, in turn, requires application of more conservative management measures than presently guide use

of the state's marine resources in general. This philosophy has guided preparation of this ocean management plan.

3.5.3 Protection of Use Rights

In Hawai'i, the common law doctrine of custom entitles Native Hawaiians to certain rights that are not based on race. Article XII, §7 of the Hawai'i State Constitution provides that:

> *The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua'a tenants who are descendants of native Hawaiians who inhabited the Hawaiian islands prior to 1778, subject to the right of the State to regulate such rights.*

These rights would include fishing and gathering of marine resources within the KIR, as well as other ocean activities that are "traditional and customary."

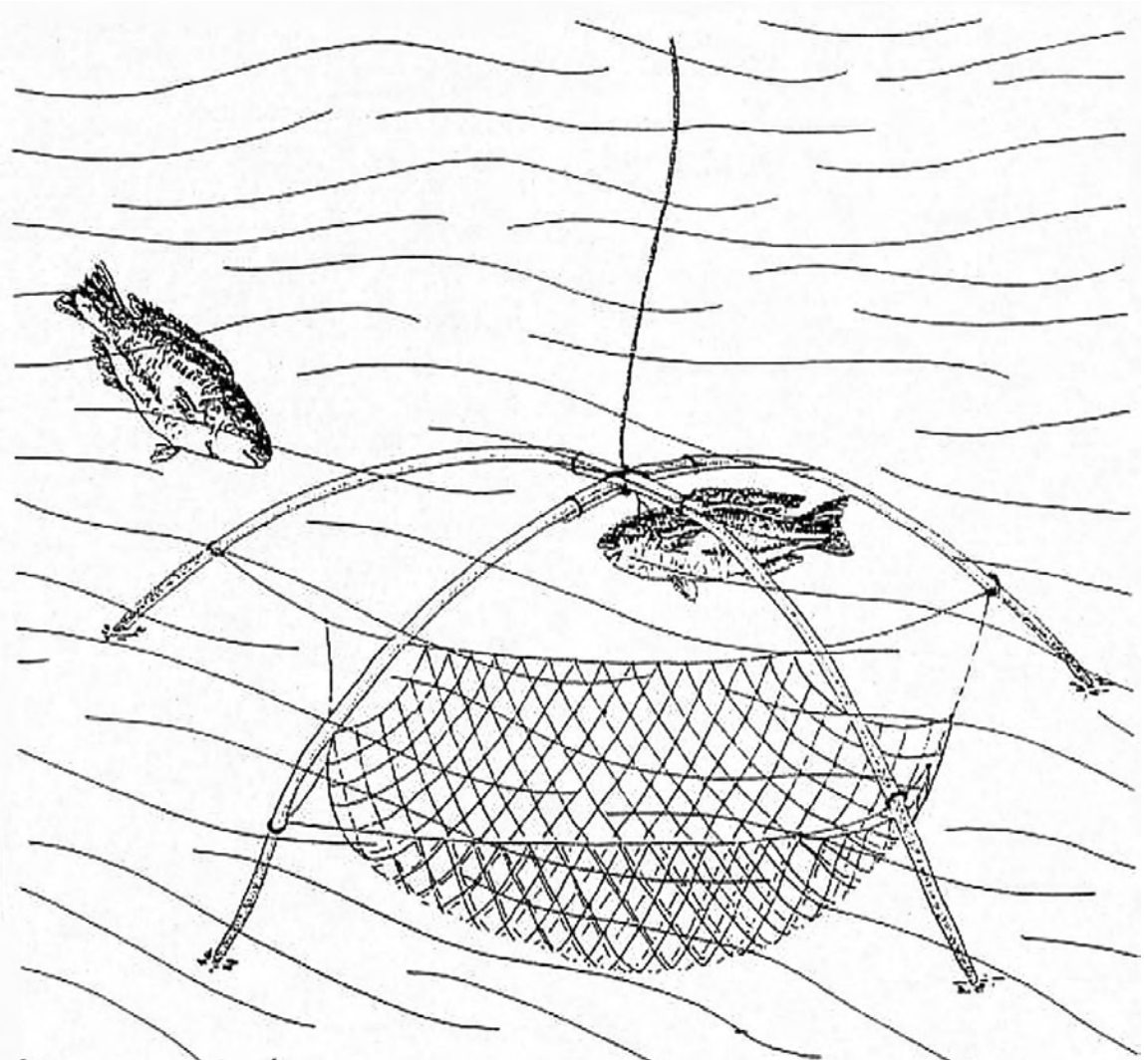
In the "PASH" decision, these rights were extended beyond ahupua'a boundaries. The Hawai'i Supreme Court held, in this case, that the Hawai'i County Planning Commission was required, under Article XII, §7, to consider the impacts of granting a county shoreline permit for development at Kohanaiki, Kona, Hawai'i, on the traditional and customary practices of Native Hawaiians residing near the permit area who use the shoreline area for the harvesting of shrimp. As set forth in the PASH decision, all government agencies must balance the competing interests of the landowner (or, in this case, the purposes of Chapter 6K) against the rights of Native Hawaiians seeking to exercise those practices. Neither of these interests are absolute, as the PASH court noted, but the state is required to balance any competing interests. This "balancing" role is not different in kind from that inherent in land use regulation. Nevertheless, the PASH court made it clear that "unreasonable" and "non-traditional" uses are not protected.

Traditional and customary fishing rights may be based on tenancy or on custom. Under Hawai'I's early case law as it developed in connection with private fisheries, a tenant had the right to fish in the fishery as an incident of his tenancy in the

ahupua‘a. As defined in early case law, the word “tenant” is synonymous with the word “occupant.” That is, any person who lawfully occupies the ahupua”a is a tenant within the meaning of the law. In the case of Kaho‘olawe (assuming that the entire island of Kaho‘olawe comprises a single ahupua‘a), any person who resides on Kaho‘olawe would be entitled to fish in the Kaho‘olawe fishery, subject to regulation by the KIRC.

As set forth in the PASH decision, rights based on custom are separate and distinct from those based on tenancy. In order to determine the legitimacy of claims based on tradition and custom, the PASH court set forth “some specific, although not necessarily exhaustive guidelines.” First, the custom must have predated November 25, 1892, the date of enactment of HRS §1-1. Second, the custom must be “consistent,” i.e., it must be objectively defined and applied. Finally, the custom must be “reasonable,” i.e., the custom is reasonable even though no acceptable rationale can be assigned, as long as there is no “good legal reason” against it.

The KIRC, by implementing the programs in this plan, will provide for the practice of traditional and customary fishing rights. It’s clear that the nature and scope of such traditional and customary fishing practices will ultimately be decided on a case-by-case basis by agencies, following the guidelines set forth in the PASH decision. Accordingly, the KIRC’s rules will include provisions that allow Native Hawaiians the opportunity to continue traditional and customary use.



4.0 OCEAN MANAGEMENT POLICIES AND PROGRAMS

4.0 OCEAN MANAGEMENT POLICIES AND PROGRAMS

4.1 DEVELOP CULTURAL APPROACH TO MANAGEMENT

He pono ka pākiko ma mua o ka hoʻokelakela wale aku.

The island of Kahoʻlawe and its surrounding waters are the kino of Kanaloa. The same consideration that is given to the island is accorded to the waters, the seafloor, the reefs and ocean life forms. Hence, the land and the ocean are viewed as one. The waters of the Reserve are just as important to protect as the soil and archaeological sites. This management approach has as its basis honor and respect for the akua Kanaloa which gives rise to an intimate relationship with the marine environment and its myriad manifestations as a source of spiritual and physical sustenance.

This approach is required in order to provide for day-to-day, and generation-to-generation, sustainability of the resources as well as the kanaka. If there are no resources, there can be no cultural practices. Thus, the resources must be protected and restored. An important part of this approach is a limitation on commercial activities, including fishing, that allows protection and preservation of the Reserve's resources consistent with traditional Native Hawaiian cultural values, concepts and practices. Guidelines for gathering and other human activities are formed by the detailed understanding and extreme sensitivity to the ocean resources arising from this philosophy. The KIRC seeks to re-establish, maintain and perpetuate this understanding, sensitivity and approach to ocean resource management in the waters of Kahoʻolawe.

These considerations provide the basis for the KIRC's management policies for the Reserve. The policies have been developed through consideration of the key management issues discussed in Chapter 3, the resource base described in Chapter 2 and the vision and statutory requirements presented in Chapter 1. All of the marine resources of the Reserve shall be managed for conservation and restoration while providing for subsistence consumption, traditional and customary Native Hawaiian cultural and spiritual practices, and education of persons while they are on the island of Kahoʻolawe for an authorized purpose. In addition, any harvesting of the Reserve's resources shall be managed so as to protect the public, to the extent practicable, from the hazard posed by the presence of unexploded ordnance in the Reserve.

4.2 RESTORE AND PROTECT THE OCEAN ENVIRONMENT (KE KINO O KANALOA)

*K*o *koā uka, ko koā kai.*

In order to restore and protect the ocean environment, the KIRC will:

- implement programs of revegetation to reduce siltation,
- adopt rules to protect water quality,
- work with the Navy to remove UXO from priority submerged lands, and
- design on-island facilities to minimize discharges.

Respecting and caring for the waters of the Kahoʻolawe Island Reserve as the kino of Kanaloa has implications for how ocean management programs will be developed and implemented.

Although this Ocean Management Plan provides a framework for protection and rehabilitation of the KIR's marine resources, this must be done in concert with similar undertakings focused on the KIR's terrestrial resources. Ecologically, the land and the surrounding ocean are inextricably linked through the processes of erosion, runoff and siltation. Culturally, the Hawaiian concept of ʻāina recognizes the oneness of land and water. Appropriately and necessarily then, restoration of marine habitats will in no small measure depend on the effectiveness of the terrestrial revegetation efforts presently underway. As revegetation proceeds and delivery of sediments to the marine environment slows, areas now characterized by soft, silt-covered bottoms will proceed to cleanse themselves through the action of waves and currents. As the silt is washed into deeper water, hard substrata will reappear, providing opportunities for coral colonization and reef formation. Recent observations suggest that cessation of bombing and removal of the ungulate populations from the island have been enough to initiate this transformation, and numerous small coral colonies are evident on the newly exposed hard substrata.

While marine habitat restoration will be primarily a passive activity, depending on upland soil conservation efforts and the dynamics of sediment transport in the ocean, conservation of the marine resource base as it develops over time will be a very active area of management for the island's caretakers.

4.3 PROTECT THE PUBLIC FROM THE HAZARDS OF UNEXPLODED ORDNANCE

E akahele ka mea akāhi a kāhi.

Chapter 6K HRS directs the KIRC to take into consideration the health and safety of the general public. The principle issue in this regard is the presence of unexploded ordnance (UXO) on the island and in the waters of the KIR. It will never be possible to absolutely guarantee the safety of users of the KIR. This is one reason access will be controlled and users will be escorted.

The KIRC recognizes that the presence of UXO in the KIR poses a danger to persons accessing the KIR. The KIRC will, to the extent practicable, warn the public of the danger posed by the presence of UXO. The KIRC will manage use of the ocean resources of the KIR so as to minimize the danger to users posed by the presence of UXO while still allowing for the established purposes of the KIR.

The KIRC will further investigate the potential for cleanup of UXO from selected submerged lands of the KIR. Submerged lands which will receive special consideration for UXO cleanup are those shoreward of the mouths of the bays at Hakioawa, Kaulana, Kuheia, Ahupu, Honokoa and Honokanai‘a and areas which may be considered for installation of moorings. The KIRC will not initiate cleanup of UXO from any submerged land until the respective watershed is first cleared.

4.4 RE-ESTABLISH AND MAINTAIN TRADITIONAL CULTURAL PRACTICES AND VALUES

Ua lehulehu a manomano ka ‘ikena a ka Hawai‘i.

The KIRC envisions the KIR as “...the foundation for the revitalization of Hawaiian cultural, religious, and subsistence practices.” The KIRC will re-establish and maintain traditional practices and values in its ocean management program. A distinctly Hawaiian educational approach using, for example, master fishermen to instruct apprentices in traditional techniques of gear manufacture, fishing practices and ecological observations, will be used. Cultural appropriateness will guide implementation of resource monitoring, research and enforcement.

4.4.1 Cultural Education

A major objective for the KIR is revitalization of the Hawaiian culture. This will be done through education of those accessing the island. Marine resources are important in the Hawaiian culture for subsistence, ceremonial, and religious purposes. The intent of this OMP is to focus marine resource uses into traditional avenues. Thus, there is a strong educational component. Use of the ocean will be interwoven with attempts to impart an understanding of the ocean, its natural variability, sustainability of its resources, etc. While fishing is inherently a pleasurable activity involving immersion in and understanding of the natural environment, it was not a "recreational" activity among Native Hawaiians. Fishing was a subsistence activity, and was surrounded by religious rituals and ceremonies. It was important to properly approach the activity mentally and spiritually. On-island training will serve to reintroduce these principles to participants. The broader goal is for those who have taken part in the on-island experience to return home to the other islands taking with them and spreading a heightened awareness of Hawaiian values and culture.

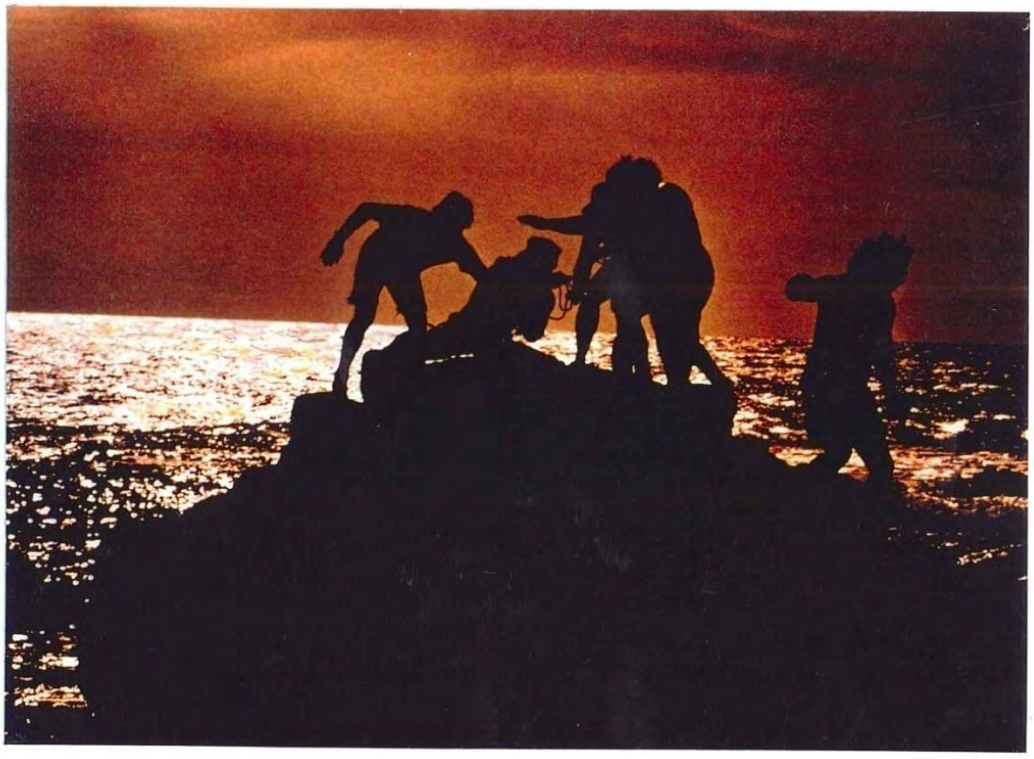
In traditional island fishing communities, information and practices passed from one generation to the next taught an awareness of resource limits and a code of conduct to foster sustainable use. Continuity and evolution of local knowledge occurs as each generation verifies the core of ancestral knowledge and adds its own observations and experiences. Surveys of other Pacific Island fisheries show that management is most effective when it is community-based and when rules can be adjusted according to the observations of master fishermen and resource stewards. Direct and continuous involvement of resource users in fishery regulation, monitoring, and enforcement is necessary to give credibility and legitimacy to any resource management system.

Persons gathering resources in the KIR will first attend an educational briefing on basic cultural protocol, the rules governing gathering in the KIR (i.e., the locations and purposes of the different management zones, the current kapu, etc.), and how to complete the catch reports. The briefing will be conducted both before and during access, and will be led by the KIRC-authorized escort that accompanies the access and is thoroughly familiar with the subject matter. When volunteer escorts such as master fishermen and cultural practitioners are available, the briefing may be expanded to include instruction by the master fishermen and cultural practitioners on traditional fishing methods and cultural practices related to fishing.

A mandatory resource user education program should be developed as a prerequisite for persons wishing to independently gather ocean resources in the KIR. One possible model for this program is the Hunter Education Program run by DOCARE. In a manner analogous to that program, trained volunteers, themselves master fishermen, would provide instruction in cultural protocols associated with fishing, traditional fishing techniques, Hawaiian conservation values, and the KIRC's rules, including the management zones, catch reporting and UXO safety. Funding and support for this program will be sought from independent sources, and will draw upon the existing expertise and experience of other Hawaiian, community and governmental organizations.

The KIR can offer a broad range of opportunities for educating future generations in Hawaiian fishing techniques and values. Potential exists for several levels of experience:

- Short-term, youth-oriented introduction of conservation and dependence on marine resources for survival and self-sufficiency;
- Medium-term, master-apprentice teaching of traditional gear manufacture and maintenance, fishing practices, habitat enhancement and fish aggregation techniques (ko'a); and
- Long-term training in responsibilities as caretakers of marine resources.



Phase-in of medium- and long-term educational programs will require many years. Initially, short-term experiences in the KIR will be emphasized. These experiences will be enhanced by differentiating appropriate areas by resource use theme; i.e., some areas will be reserved exclusively for traditional, pre-western fishing methods and materials, whereas others will be open to modern fishing methods and a third group of areas will be kapu to fishing. These areas are described further below.

4.4.2 Cultural Practices

While many cultural practices will be expressed through educational programs, other aspects of a living restored culture are anticipated in the future. Kahoʻolawe provides the opportunity to re-discover a Native Hawaiian approach to spiritual practices, residency, and other aspects of resource management. For example, the known heiau koʻa (fishing shrines) situated on land are intimately connected with use of the surrounding ocean waters, and have been considered in development of ocean management policies. It is appropriate that these cultural sites associated with traditional Hawaiian fishing be incorporated into any revival of Hawaiian fishing culture. On the other hand, contemporary cultural expressions can be implemented through the construction of new koʻa structures at appropriate locations which would serve as the focus for contemporary cultural activity. Policies and programs to foster continuing cultural practices within the Reserve will be developed over time as the UXO clearance progresses and larger areas are available for reasonably safe use.

4.5 MANAGE FOR SUSTAINABILITY

Ua ola no o kai ia kai.

The KIRC recognizes that it holds the ocean resources of the KIR in trust for the people of Hawaiʻi and for the future sovereign Native Hawaiian entity. Therefore, the KIRC will manage the ocean resources of the KIR to ensure their sustainability *in perpetuity*. Where such resources are degraded, the KIRC will, wherever practicable, pursue their restoration.

A very conservative approach is being recommended for harvesting of the KIR's marine resources. The initial emphasis is to allow the island's marine ecosystems to recover to former pristine conditions. Both community structure and population densities will respond to alleviation of fishing pressure combined with restoration

of habitat. Poaching has been and will remain a factor determining the nature and abundance of the fish and invertebrate communities around the island. The controls recommended in this plan will allow for the long-term sustainable harvesting of marine resources from the KIR. The controls are flexible enough to accommodate natural fluctuations in resource abundance due to such factors as variable recruitment success or major storm events. Both education and enforcement efforts will be put into place to facilitate compliance with the necessary controls.

4.5.1 Resource Monitoring

The KIRC is emphasizing monitoring of the resource base and its natural variability to acquire the long-term understanding that will lead to sustainable management of the resources. Monitoring of the condition and abundance of the ocean resources of the KIR is essential for effective management of these resources. Monitoring is also an excellent avenue for education.

Monitoring, or observation, of the condition of marine resources will be a part of the daily activities of the resource users. Traditional communities, which rely heavily on nearshore marine resources for subsistence, develop an intimate knowledge of them. The pool of knowledge about marine resources will continually improve as resource users acquire personal experience in the KIR. Local knowledge has two important advantages for strengthening the monitoring program: it is based entirely on an accumulation of long-term observations adapted specifically to the local marine environment, and it is relatively sophisticated in terms of understanding of local marine ecology, fish behavior and interrelationships among organisms and elements of the physical environment. The KIR offers an opportunity to demonstrate how traditional monitoring can be systematically documented and blended with western methods of data acquisition for fishery management. An effective monitoring program for the living ocean resources of the KIR should include both direct resource observation and, where resources are harvested, catch reporting.

4.5.2 Resource Surveys

KIRC staff and volunteers will conduct field monitoring of resource status and abundance, manage collection of the fishery-dependent data (catch and effort tracking), analyze the data, and prepare resource status reports. These reports will

contain recommendations to the KIRC for changes to area boundaries and other management measures, as necessary.

4.5.3 Catch Reports

Catch reporting is the process whereby persons who gather resources report their catch to the resource manager. The HDAR currently collects catch reports only from commercial fishermen. Subsistence and recreational catches are not reported. Further, the HDAR system is focused primarily on pelagic and bottomfish resources, not reef resources. Consequently, the HDAR system will not provide all of the information necessary for KIR management. The KIRC will develop and implement an effective program for direct resource monitoring and catch reporting for ocean resource gathering in the KIR.

Fishing (even if unsuccessful), gathering, or any other type of resources collection will require completion and submittal of a catch report. The information to be provided by the participant will include the location in which the activity took place, date, time of day, duration, gear or method used, and nature of the catch, including name or species, number or amount collected, and size or weight. These data will be used by KIRC staff to evaluate resource status.

4.6 PROVIDE FOR ACCESS AND USE

Ka i‘a mana nui.

The KIRC will manage the ocean resources of the KIR so as to encourage the exercise of permitted uses, provided that the level of such uses shall be within the bounds established by considerations of: safety with regard to unexploded ordnance, resource restoration and sustainability, the exercise of Native Hawaiian rights, and the established purposes of the KIR.

KIR fisheries management will encourage restoration of the traditional code of behavior (i.e., to take only the amount of resource needed). Harvesting activities will also be subject to those existing gear, bag limit, seasonal, species, size and life-history-stage restrictions which are required by existing statutes, and as additionally imposed by the KIRC.

The KIRC shall maintain a program of controlled access. Most people accessing the KIR will do so through cultural, educational or restoration programs sponsored or authorized by the KIRC. Persons wishing access to the KIR shall apply to the KIRC for access approval. The KIRC will evaluate the application based on whether the proposed activity is compatible with the purposes of the KIR set forth in HRS §6K, will result in excessive exposure to UXO based on information available to the KIRC, is compatible with sustainable resource management, is compatible with the exercise of Native Hawaiian rights, and other pertinent factors. Access to the KIR will be extremely limited during the Navy UXO clearance project period.

4.6.1 Fishing

The KIRC recognizes that marine resource harvesting, particularly fishing, is an integral part of the culture and subsistence rights exercised by Native Hawaiians. Harvesting is also an integral component of the educational value of marine resources. Consequently, providing for marine resource harvesting in accordance with Native Hawaiian culture and customary and traditional subsistence practices is a primary goal of the KIRC in its management of the marine resources of the KIR. Harvesting of marine resources in the KIR, however, must be balanced with the KIRC's legal mandates to restore these marine resources, utilize these marine resources for educational purposes, and hold these resources in trust for the public and the sovereign Hawaiian entity. The KIRC must also manage the harvest of the marine resources of the Reserve in accordance with its responsibility to protect the public from the hazards posed by the presence of unexploded ordnance in the Reserve.

HRS §6K directs the KIRC to adopt rules to permit fishing that are consistent with the other purposes of the statute and take into consideration the health and safety of the general public. Therefore, the OMP provides for fishing within an Hawaiian subsistence cultural context.

Subsistence and cultural uses of the KIR during the Omnibus Cleanup period extending through 2003 will necessarily be limited by UXO hazards and cleanup activities. Implementation of many cultural and educational programs will be delayed until the cleanup is complete.

4.6.1.1 Harvest and Consumption for Subsistence Use Only

To assure long-term resource sustainability and to maintain the island's carrying capacity, fishing and other resource gathering in the waters of the KIR shall be exclusively for on-island subsistence, educational and cultural use. Harvesting of living ocean resources shall be done only by persons authorized by the KIRC to be in the KIR, and the catch shall be consumed or used while participating in such authorized access. All ocean resources gathered shall be consumed or used within the KIR. Ocean resources gathered within the KIR may not be removed from the KIR.

Marine resources may be harvested only by persons whose access to the Reserve has been approved by the KIRC and who have completed the KIRC cultural protocol and conservation training programs. There shall be no commercial use and no catch shall be removed from the island.

4.6.1.2 Off-Island Fishing

Entering the KIR without being associated with an on-island activity, fishing, and removing the catch from the KIR is considered "off-island fishing." Off-island fishing has in the past been permitted in Zone B in the form of trolling on two weekends per month. Off-island fishing will not be permitted in the waters of the KIR. The KIRC will re-evaluate its policy with regard to off-island fishing beginning one year after the promulgation of the administrative rules which implement this Ocean Management Plan. Any off-island fishing which may thereafter be allowed shall be by permit issued by the KIRC, and permittees shall comply with KIRC catch reporting requirements.

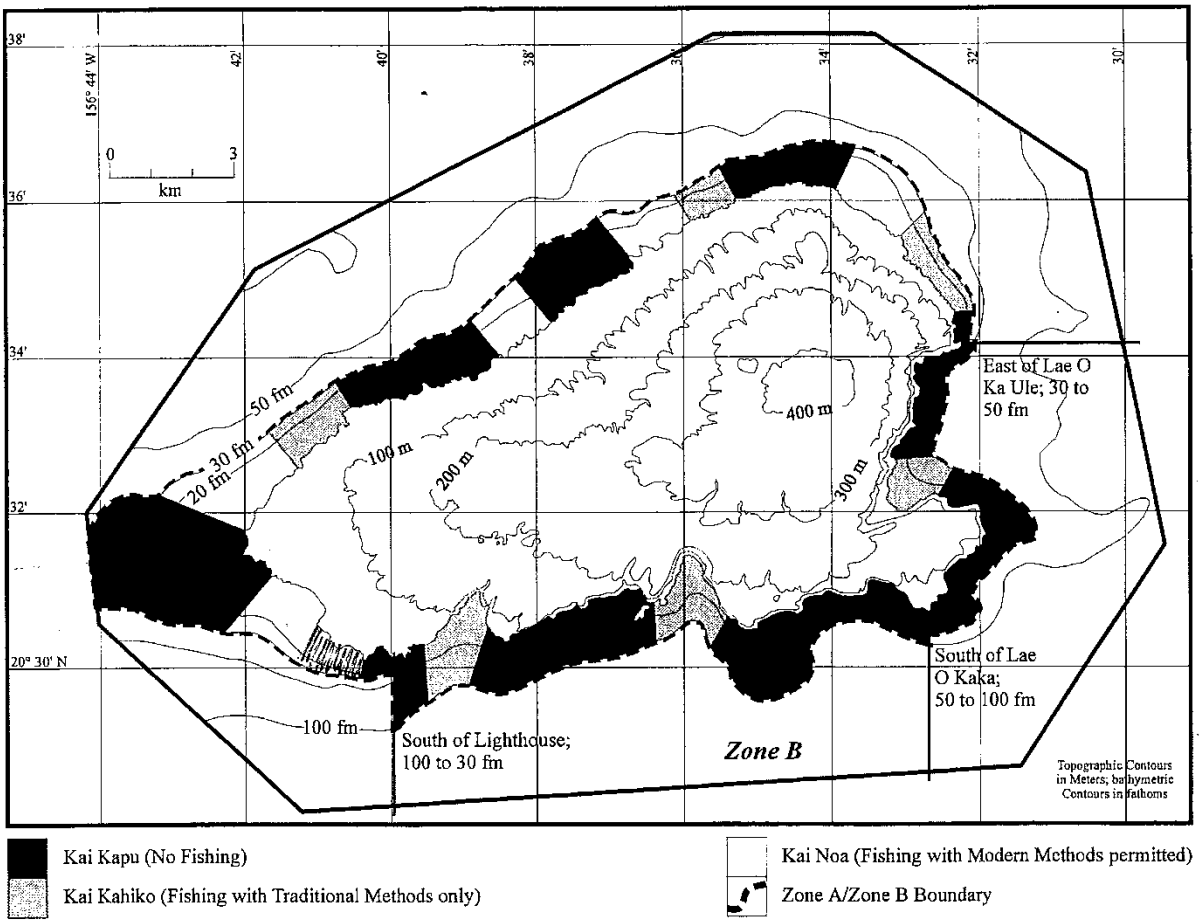
4.6.2 Ocean Management Zones

Ocean resource management in the KIR will provide for a mix of traditional Hawaiian and modern harvesting techniques. Three types of areas will be established to manage resource harvesting in Zone A:

- Kai Kapu areas. These areas will be off limits to all types of resource harvesting. They will be set aside for the preservation and restoration of the resource base.
- Kai Kahiko areas. These are areas where harvesting will be permitted only with Hawaiian implements and watercraft constructed of materials available to Hawaiians prior to 1776 (except iron).
- Kai Noa areas. These are areas where harvesting with modern implements will be permitted.

The proposed initial locations and configurations of these areas are shown in Figure 11. The size, location or designation of any of these areas may be changed from time to time by the KIRC upon review of the information provided by the monitoring programs or other relevant considerations.

Figure 11
Proposed Zone A Management Areas



Gathering in Zone B with conventional implements and watercraft will be permitted. Special protection and management strategies for offshore ko'a will be developed as locations are relearned and implications identified. Also traditional relationships and protocols between the offshore ko'a (fish houses) and on-shore ko'a (shrines) will be explored to further develop guidelines for this management zone.

4.6.3 Fishing Kapu

Despite the unpredictability of the biological environment, some aspects of nearshore fisheries are relatively stable over time. The more stable parameters include habitat,

spawning periods, migration and aggregation patterns, which the KIRC will protect through establishment of harvest limits.

All marine resources of the KIR are explicitly kapu unless released from kapu by the KIRC. Resources will be released for harvest by the KIRC as appropriate based on considerations of sustainability, safety, cultural needs, etc. Authorization of resource harvesting will be accompanied by harvest limits such as bag limits, gear type restrictions, seasonal prohibitions, etc. These limits will be determined by using information gathered in the resource assessment and monitoring process. These limits will be more conservative than those used by the state at large.

4.6.4 Native Hawaiian Use

The KIRC recognizes Native Hawaiian traditional and customary rights and will provide for the exercise of these rights. The KIRC will hear and evaluate claims of Native Hawaiian traditional and customary rights and provide for the exercise of rights so recognized. The KIRC will regulate the exercise of these rights in the interests of safety and resource sustainability.

Ocean resource management by the KIRC will be consistent with the PASH decision, recognize traditional and customary use as provided by law, and be proactive in the integration of Native Hawaiian rights into management of the KIR.

4.6.5 Fishing by Cleanup Personnel

Harvest by ordnance cleanup workers shall be for subsistence use only in a manner consistent with the purposes of the Reserve and guidelines established for other Reserve users. However, special restrictions may be required in areas where potential harvest by cleanup workers would adversely impact the resources.

4.6.6 Other Resource Uses

The KIRC will evaluate all requests to access the island or its waters based on their cultural appropriateness, educational value and potential safety considerations.

4.7 ENFORCEMENT OF KIRC RULES

E hume i ka malo, e ho‘okala i ka ihe.

The KIRC recognizes the critical importance of rules enforcement in order to protect public safety, protect the resources, achieve its management objective and implement its policies.

The KIRC will pursue an integrated enforcement program. This program will include education and volunteer observer and/or deputy participation. Primary patrol and arrest authority will remain with DOCARE. The KIRC will continue to work with DOCARE and the Navy to expand enforcement efforts.

4.8 KIRC ADMINISTRATIVE RULES AND MANAGEMENT DECISIONMAKING

E mālama i ka ʻōlelo, i kuleana e kipa mai ai.

The OMP is intended to be a broad policy document to guide the KIRC in rulemaking and implementation of ocean management programs. The management measures comprising this plan will be incorporated into a revision of Chapter 260, Hawaiʻi Administrative Rules. The KIRC will use the decisionmaking mechanism illustrated in Figure 12 for management of living natural resources of the KIR.

4.8.1 Technical Advisory Group

The KIRC will convene a Technical Advisory Group (TAG) composed of fisheries scientists, natural resource managers, cultural practitioners and fishermen to assist the KIRC in ocean resource management, including the development of resource surveys, catch reporting system, appropriate fishing kapu, and other matters.

4.8.2 Resource Management Decisionmaking Process

The KIRC will be proactive and responsive in its management of the ocean resources of the KIR. Harvest of ocean resources will be managed through a flexible and responsive feedback process illustrated in Figure 12. The status of ocean resources will be assessed using information obtained through direct resource monitoring conducted by KIRC staff, observations made by resource users, and through the catch reporting system. This resource status information will be analyzed by staff with the assistance of the TAG when needed. Based on the analysis, staff will develop recommendations for management for KIRC consideration. The KIRC will implement its management through a number of means, including approval or denial of access requests, imposition of conditions on access approvals, and placement or lifting of kapu on sites, times, species, catch limits, gear types or other measures. Where necessary, management programs will be implemented through administrative rule amendments.

Figure 12
Management Decisionmaking Process

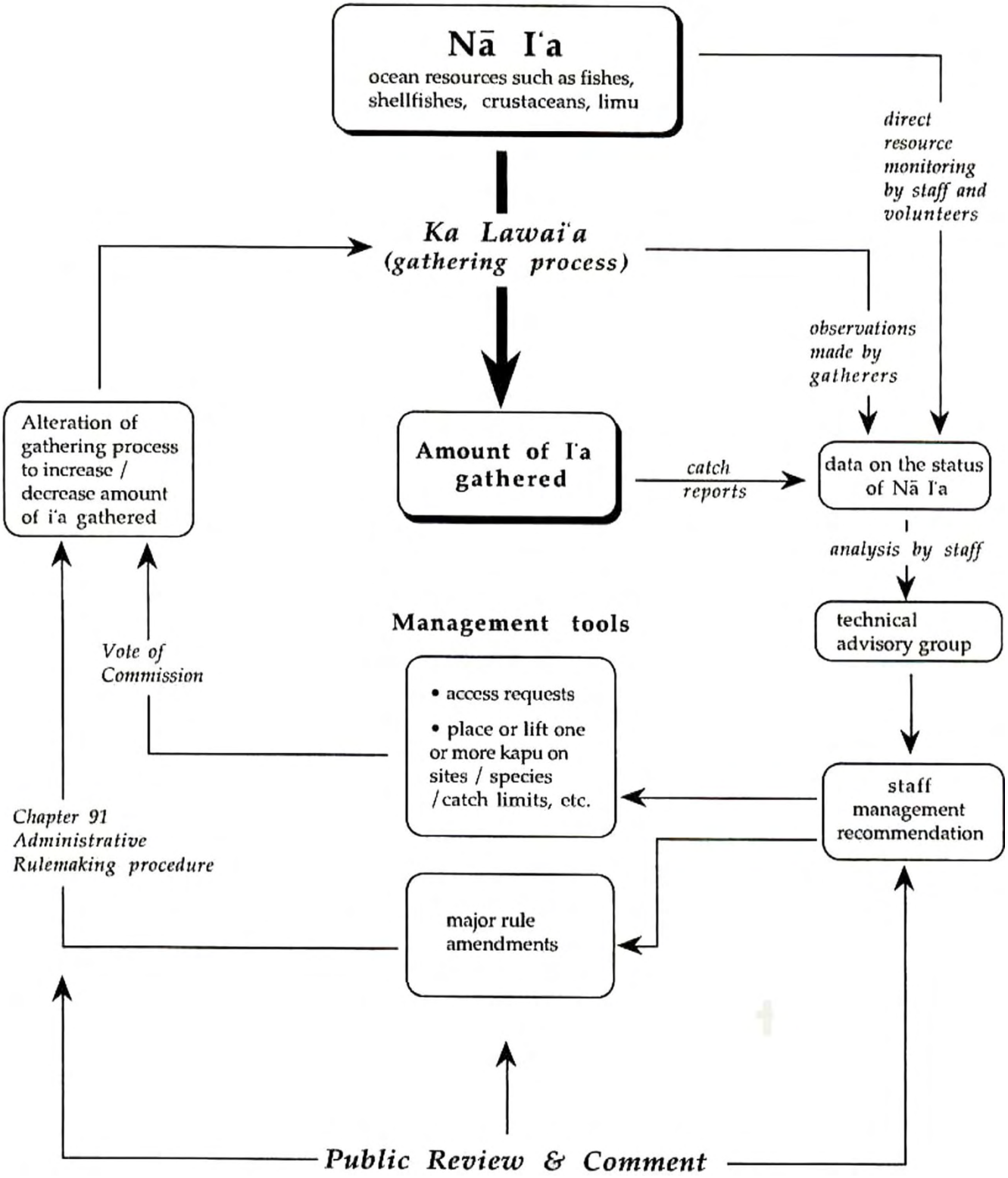


Table 6
ʻŌlelo Noʻ Eau

OMP Section	Section Name	Hawaiian Saying	English Translation	Interpretation	Proverb Number
2.1	Ke Kino O Kanaloa	He pūkoʻa kani ʻāina.	A coral reef that grows into an island.	A person beginning in a small way gains steadily until he becomes firmly established.	932
2.2	Na Koʻa	He poʻi na kai uli, kai koʻo, ʻaʻohe hina pūkoʻa.	Though the sea be deep and rough, the coral rock remains standing.	Said of one who remains calm in the face of difficulty.	905
2.3	Na Iʻa O Kanaloa	He iʻa ia no Kahoʻolawe, he uku.	It is the fish of Kahoʻolawe, the uku.	He shall be made to pay.	603
2.4	Federally Protected Species	He mea lahaʻole.	A rare thing.		815
3.1	Public Safety and Unexploded Ordnance	Mālama o pā ʻoe.	Be careful lest the result be disastrous to you.	Watch your step lest evil attach itself to you. A warning not to break a kapu.	2122
3.2	Harvesting and Sustainability of Iʻa	He iʻa kokoke ka ka lawaiʻa.	A fisherman always finds fish nearby.	Said of one who can get what he wants because he is smart.	605
3.3	Enforcement	Mālama i ke kala ka iʻa hiʻu ʻoi.	Watch out for the kala, the fish with a sharp tail.	Beware of a person who is well equipped to defend himself.	2117
3.4	Carrying Capacity	Kahoʻolawe ʻai kūpala.	Kahoʻolawe, eater of kūpala.	The kūpala is a wild plant whose tubers were eaten in time of famine. It grew on Kahoʻolawe.	1317

OMP Section	Section Name	Hawaiian Saying	English Translation	Interpretation	Proverb Number
3.5	Trust Responsibility and Protection of Use Rights	He ʻike ʻana ia i ka pono.	It is recognizing of the right thing.	One has seen the right thing to do and has done it.	620
4.1	Develop Cultural Approach to Management	He pono ka pākiko ma mua o ka hoʻokelakela wale aku.	Better to be economical than too liberal.		912
4.2	Restore and Protect the Ocean Environment	Ko koā uka, ko koā kai.	Those of the upland, those of the shore.		1821
4.3	Protect the Public from the Hazards of Unexploded Ordnance	E akahele ka mea akāhi a kāhi.	Let the person who is inexperienced watch his step.		254
4.4	Re-establish and Maintain Traditional Cultural Practices and Values	Ua lehulehu a manomano ka ʻikena a ka Hawaiʻi.	Great and numerous is the knowledge of the Hawaiians.		2814
4.5	Manage for Sustainability	Ua ola no o kai ia kai.	Shore dwellers find subsistence in the sea.	A fisherman lives by his own efforts.	2838
4.6	Provide for Access and Use	Ka iʻa mana nui.	The fish of many divided parts.	The octopus, with its eight tentacles.	1369
4.7	Enforcement of KIRC Rules	E hume i ka malo, e hoʻokala i ka ihe.	Gird the loincloth, sharpen the spear.	A call to prepare for war or to prepare for the project at hand.	299
4.8	KIRC Administrative Rules and Management Decisionmaking	E mālama i ka ʻōlelo, i kuleana e kipa mai ai.	Remember the invitation, for it gives you the privilege of coming here.		348

ʻŌlelo Noʻeau, Hawaiian Proverbs & Poetical Sayings. Mary Kawena Pukuʻi. Bishop Museum Press, Honolulu, 1983.