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Anthropological Survey of Likiep Atoll

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The following manuscript is the result of research conducted from February 11-14, 2000 at Likiep Atoll, Republic of the Marshall Islands. The research consisted of non-intrusive, terrestrial archaeological reconnaissance survey and the collection of oral histories. The projects were all sponsored by the Republic of the Marshall Island's Historic Preservation Office.

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All historic photos appear courtesy of Leonard deBrum and the Joachim deBrum Memorial Trust Corporation.

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Majuro Atoll, Marshall Islands
March 2001

I. Introduction

This report represents the results of archaeological and anthropological research conducted on Likiep Atoll, Marshall Islands from February 11-14, 2000, by the Historic Preservation Office, Majuro, Marshall Islands. All field documents, including completed site survey forms, field notes, maps, and photographs are housed at Historic Preservation Office, Majuro Atoll, Republic of the Marshall Islands. No artifacts or food remains were collected. The US National Park Service Historic Preservation Fund grant provided funding.

1.1 Project Objectives

The purpose of the survey was two-fold. The first was to identify, record, and evaluate the historic, prehistoric, and traditional sites located on the atoll in accordance with the survey and inventory program area of the Historic Preservation Office. The second was to educate the inhabitants of the atoll on the importance of protecting and preserving the sites that the team identified. As such, the Historic Preservation Office made every effort to include the local population, their elected officials, and traditional chiefs and landowners in every step of the research. Local informants and guides were used throughout the research and formal and informal lectures covering the activities of HPO staff were conducted at the schools, town halls, and churches of each island that was visited.

1.2 Evaluation of Research Design and Methods Used

A) "Non-intrusive" reconnaissance survey

The research conducted was a "non-intrusive" reconnaissance survey. The team did not remove any artifacts and/or food remains. The sites were identified through either a walking survey or from knowledge of local guides. The sites were recorded using a Geographical Position System (GPS) unit and that data was entered into ArcView Geographical Information System (GIS) software to generate maps. Information for Site Survey Forms was entered into the GPS unit in the field and was transferred into the database software that is contained in the ArcView program. Slide photographs as well as digital photos of all sites were taken. All notes, survey forms, GPS data, and photographs are housed at the Historic Preservation Office, Majuro Atoll, Republic of the Marshall Islands.

Evaluation was based upon the Republic of the Marshall Islands site significance levels established by the RMI Historic Preservation legislation of 1992. Determining the definition of significance varies if the site is prehistoric, historic, or traditional. All traditional sites are determined as significant. Prehistoric or historic sties can be evaluated as being "very significant," "significant," "less significant," insignificant," or "undetermined significant" [RMI Historic Preservation Legislation, Regulations Governing Land Modification Activities, Section 6.]

A Prehistoric site was considered "very significant" if it met at least one of the Marshall Islands' formal criteria:

(i) the resource is the only one of its kind known on the atoll concerned; or
(ii) the resource is part of an ensemble of sites, even if the individual sites as such would not be considered to be very significant; or
(iii) the resource is rich in cultural artifacts and undisturbed by construction activities; or
(iv) the resource is particularly well preserved; or
(v) the resource is connected with oral traditions important beyond the limits of the individual atoll on which the resource is located.

A Prehistoric site was considered "significant" if it met at least one of the Marshall Islands' formal criteria:

(i) the resource is the only one of its kind known on the islet concerned; or
(ii) the resource is rich in cultural artifacts and undisturbed by construction activities; or
(iii) the resource is well preserved; or
(iv) the resource is connected with oral traditions.

An historic site was considered "very significant" if it met at least one of the Marshall Islands' formal criteria:

(i) the resource is the only one of its kind known in the Republic; or
(ii) the resource is part of an ensemble of sites, even if the individual sites as such would not be considered to be very significant; or
(iii) the resource is considered to be a prime example of the workmanship of a particular architect, builder or craftsman; or
(iv) the resource is rich in cultural artifacts and undisturbed by construction activities; or
(v) the resource is particularly well preserved and shows little or no alterations to the original appearance of the structure; or
(vi) the resource is connected with historic events or persons or oral traditions important beyond the limits of the individual atoll on which the resource is located.

An historic site was considered "significant" if it met at least one of the Marshall Islands' formal criteria:

(i) the resource is the only one of its kind known on the atoll concerned; or
(ii) the resource is considered to be a good example of the workmanship of a particular architect, builder or craftsman; or
(iii) the resource is rich in cultural artifacts and relatively undisturbed by construction activities; or
(iv) the resource is well preserved and shows only limited alterations to the appearance of the original structure; or
(v) the resource is connected with historic events or persons or oral traditions important for the individual atoll on which the resource is located.

As the survey was designed to be non-intrusive, no test excavations were conducted and no artifacts were collected. The purpose of the survey was purely to identify and record the sites in order to allow evaluation of each site's significance level, which will be used to establish eligibility for inclusion on the RMI National Register. Future researchers can use this information in assessing which sites are deemed significant enough to warrant further research, analysis, interpretation, and/or protection and restoration. The survey followed the standards and guidelines of the grantor, the United States Department of Interior National Park Service Historic Preservation Fund.

B) Nomenclature

In assigning sites, the system used in the Marshall Islands includes three two-letter abbreviations and then a site number. The first abbreviation identifies the site as located in the Marshall Islands (MI), the second is the atoll, Likiep (LK), the third the islet, Likiep (LK). Therefore the site MI-LK-LK-001 is the first site identified on the islet of Likiep in the Likiep Atoll.

C) Survey Equipment and Team Members

The following equipment was used in the survey:

1 Trimble GPS unit with Pathfinder Office 2.02 software
ArcView 3.0a GIS software
1 Sony Mavica MVC-FD83 digital camera
1 Canon EOS Rebel 2000 SLR camera with slide film
2 5m metal tape measures
1 30m cloth tape measure
1 roll of flagging tape
Notebooks, pens and pencils
1 compass

Field team members included Staff Archaeologist, Richard Williamson; Staff Ethnographer, Donna K. Stone; Assistant Archaeologist, Hemley Benjamin; and Langinbo Frank, Video Technician. Donna K. Stone, Staff Ethnographer, provided historical background.

D) Informants/Guides

Fieldwork relied heavily on informants and guides. The informants provided information on the location and history of sites, while the guides, if not the informants themselves, lead the team to the sites. Key-informants[1] were the elders of the community, who as custom dictates were also the government leaders, and so were the most knowledgeable about atoll history. They provided a never exhausting pool of knowledge to be further investigated ethnographically. Since precisely locating sites on the various islets was problematic the use of guides was

[1] Ethnographically defined as individuals who have been interviewed intensively or over an extensive period of time for the purpose of providing a relatively complete ethnographic description of the social and cultural patterns of the group. In the present case "key-informant" refers to those individuals who provided general and specific information on almost every site investigated.

essential. Information was obtained in casual meetings throughout the duration of the fieldwork; no formal questionnaire was developed.

E) Survey Methods

The survey did not include the total landmass of each islet visited. When informants or guides could not lead the team to the potential sites on the islets the following method was applied. The crew was distributed at five to eight meter intervals and surveyed the islets from north to south or east to west. Areas of the extremely dense vegetation were not surveyed due to the lack of appropriate clearing tools (machetes). When a site was noted, a site number was assigned, a GPS position was taken, the area was photographed, and site survey forms were filled out. In areas of dense vegetation, the GPS position was sometimes taken several meters away from the site itself.

1.3 Limitations of Research

Although the purpose of the survey was to identify potentially significant sites, it must be remembered that the survey was non-intrusive. Shovel test pits were not conducted and given time and money constraints, much of the survey relied heavily upon the local informants and their knowledge of historic sites. The survey attempted to be as extensive as possible, but included no follow-up intensive research. As such, this report should be considered preliminary and only includes those sites readily identified either visibly or with the aid of an informant. Given previous research in the Marshall Islands that has included either shovel test pits or more intensive excavations, it is apparent that prehistoric archaeological sites in this type of non-intrusive reconnaissance survey will be highly underrepresented. This is especially true in the Marshall Islands where the lack of durable artifacts such as ceramics is lacking.

A further limitation was encountered with the generation of maps using the GPS unit and ArcView GIS software. Problems encountered were two-fold. First, it was impossible to remove the selective availability that the US Department of Defense uses to "scramble" GPS coordinates, thus giving some error in the recording of exact locations of the sites. Second, the digitized map of the Marshall Islands used by the HPO is one that was originally made by the Japanese during their administration of the Republic. The map was updated by the U.S. during the Trust Territory of the Pacific Islands administration, but still prone to many errors. While most of these errors were external, there were instances of internal inaccuracies. Unfortunately, this was still the most up-to-date map available at the time of the research. However, in recording the GPS readings in the field, the GPS unit that was used did allow for the recording of a series of readings (120 points were recorded) that averaged out to one reading per site. This should remove some of the inaccuracy caused by the selective availability. Regarding the maps, as the data is stored electronically in ArcView GIS software, when an updated map of the Marshall Islands is available, the new digitized map can be replaced for the older version. For the purpose of this report, the maps cannot give much more than a "general" location of each site. However, in the section describing the sites, the GPS coordinates for each site are provided.

1.4 Previous Research

Previous researchers have taken steps to preserve and stabilize the Joachim deBrum house with two major preservation projects. The first was in 1977, under the supervision of Edward B. Jelks (Jelks & Jelks 1978). The second was in 1984 when further preservation and maintenance of the site was started but not completed. In 1985, an application was submitted by Alele Museum Curator, Carol Curtis, to register the entire Likiep Village District as a U.S. Historic landmark. Jon O'Neill conducted a Conservation Assessment of the Joachim deBrum House in 1999 (O'Neill and Spennemann 2001).

The comprehensive study carried out under the leadership of Paul H. Rosendahl (1979, 1987) during March-June 1977 included Likiep and Jibal Islands on Likiep Atoll. That expedition, which became known as the "Louis L. Kelton-Bishop Museum Expedition to Eastern Micronesia," covered parts of Majuro, Mili, Arno, Aur, Maloelap, Wotje, Likiep, Wotho, Lae, Namu, Ailinglaplap, and Ebon Atoll, as well as, Lib Island in the Marshall Islands. Three sites were found on Likiep Atoll. One on Jibal Island and two on Likiep Island (one of which is the Joachim deBrum house complex). The prehistoric sites consisted of surface artifacts and shell middens. A total of thirty-three prehistoric artifacts were recovered (Rosendahl 1987).

In our survey, only one of Rosendahl's sites was relocated, the Joachim deBrum house. Rosendahl assigned site numbers according to the Bishop Museum site designation system for Micronesia using Mi for Micronesia; ML for Marshall Islands. Specific site numbers for the Marshall Islands consist of an atoll name abbreviation and a number assigned in order of recording. The Bishop Museum site designation for the house complex is MiMLLk-3.

Also, previous researchers have included overviews of the history and prehistory of the Marshall Islands. Some of the better overviews include Beardsley's 1994 report (1994: 1-28) and the Historic Preservation Plan United States Army Kwajalein Atoll (1996: 3.3-3. 21).

1.5 A Brief History of the Marshall Islands

The people of the Marshall Islands refer to their parallel-chained archipelago as *Aelon Kein*, "these atolls." According to folklore, the first discoverers and settlers of the Islands were a handful of wayfarers seeking an uninhabited autonomous area where they could live (Hart 1992). What little we know about early Marshallese comes from oral history and early accounts by explorers.

Marshallese autonomy was threatened as early as 1526 when the first of eight known Spanish ships passed through the area. The first recorded sighting, probably Bokak Atoll, was made by Alonso de Salazar, commanding the *Santa Maria de la Victoria*, but no contact was made (Levesque 1992a, Sharp 1960). In 1529 contact was made by Alvaro de Saavedra of the *Florida* which laid anchor to take on provisions at Eniwetak or Bikini and stayed for eight days. He also discovered Utirik, Taka, Ujelang, and made landings at Rongelap and Ailinginae. The Spanish flagship *Santiago* and five other ships in the expedition under Ruy Lopez de Villalobos is credited for the western discovery of Wotje, Erikub, Maloelap, Likiep, Kwajalein, Lae, Ujae, and Wotho, landings were made on some of the islands. (Levesque 1992a, Sharp 1960).

In 1565, Alonso de Arellano of the Legaspi expedition sighted Likiep, Kwajalein, and an island thought to be Lib (Sharp 1960) while Legaspi himself is credited with sighting Mejit, Ailuk, and Jemo. Some trading was done at Mejit. The following year the mutineer Lope Martin commanding the *San Jeronimo* made several sightings and was eventually stranded in the Marshalls, probably on Ujelang. Two years later the Spanish ships *Los Reyes* and *Todos Santos,* under Alvaro de Mendana went ashore at what is probably Ujelang. Namu was also thought to be sighted. (Levesque 1992b)

Fifty seven years passed before another vessel is reported to pass through the Marshalls. The Dutch ship *Eendracht* and ten other vessels of the Nassau Fleet, commanded by Admiral Gheen Schapenham sighted Bokak (Hezel 1979). In spite of Spain's annexation of the Marshall Islands in 1686, the Spanish established no trading posts, trade routes, or left any lasting influence.

In 1767 Captain Samuel Wallis of the British ship *Dolphin* sighted what is thought to be Rongerik and Rongelap (Sharp 1960, Hezel 1979). Even though the Spanish were the first known westerners to see the Marshall Islands credit is given to Captain William Marshall, commander of the *Scarbough*, who together with Thomas Gilbert of the *Charlotte* for the discovery or more appropriately, the rediscovery of the Marshall Islands in 1788. Marshall and Gilbert mapped these island groups and traded with the various atolls. They are the first westerners to sight Mili, Arno, Majuro, Aur, and Nadidik (Sharp 1960). They also sighted the previously discovered Wotje, Erikub, Maloelap, and Ailuk.

Captain Henry Bond aboard the British merchantman vessel *Royal Admiral* sighted Namorik and Namu in 1792. Two years later The British ship *Walpole*, under the command of Captain Thomas Butler sighted Eniwetak. Thomas Dennet was the first westerner to sight Kili as well as reporting on Ailinglapalap, Lib, and doing some trading on Namu in 1797. Other vessels sailed through the area including the British ship *Hunter*, the British brig *Nautilus*, the ship *Ann & Hope* of Providence, *Ocean*, *Herald*, and *HMS Cornwallis*, to name a few. These ships sighted atolls and islands that had been previously reported but did not stop and trade. Jaluit was sighted by the *Rolla* in 1803 and again in 1808 by Captain Patterson of the British merchant brig *Elizabeth* both of which landed and did some trading (Sharp 1960, Hezel 1979, 1983).

The first scientific exploration of the Marshalls was conducted by a Russian, Otto von Kotzebue, in 1816-17 and 1824. It is during this time that first significant contact between Europeans and the Marshallese was made. Von Kotzebue and his crew spent several months in the Ratak islands in 1817 and 1824, specifically Wotje, Maloelap, and Aur Atolls (Kotzebue 1821, 1830; Chamisso 1986).

The account left by this expedition provides the first early ethnographic material, including an interesting description of how Kotzebue was urged to help Lomade defeat Latete, a powerful southern Ratak *Irooj*, and become *Irooj* of all Ratak. Although Kotzebue declined the offer his influence was noted. Traditional warfare practices began to change soon after Kotzebue's first visit. Metal hatchets given as gifts were attached to wooden poles. Lomade's troops used these new weapons to defeat the powerful Majuro *Irooj* and establish control over the Ratak Chain (Erdland 1914, Kramer and Nevermann 1938).

Other ethnographic observations come from Lay and Hussey (1828) who survived the *Globe* mutiny at Mili Atoll and Paulding (1831) a U.S. Navy lieutenant who helped to retrieve Lay and Hussey. These early observers published accounts which give us an insight to

traditional personal appearance, manners, food, dwellings, and in a lesser extent, facets of political and social organization reflecting traditional practices.

The prospects of profitable trade lured the German entrepreneurs into the Marshalls in the latter part of the 19th century. Subsequent contact with Europeans gradually increased as whalers concentrated their activities. They were hunting to provide lamp oil to meet European and American demand. With the disruptive and intolerant whalers, as well as the English blackbirders in search of cheap labor to work the mines and plantations in the New World and Australia, encounters turned hostile. Numerous ships were attacked by the Marshallese and the crews killed; brutal retaliations followed. The mood of contact in the first half of the 19th century was one of confrontation (Hezel 1979, 1983; Dye 1987)

The treacherous reefs, small number of whales, and the new methods of distillation of kerosene from crude oil soon put the whalers out of business. The blackbirders, however, continued their raids until the 1870's.

In 1857 two American missionaries from the American Board of Commissioners for Foreign Missions, Congregationalists from the New England area, succeeded in setting up operations on Ebon (where as recently as 1852 a ship from San Francisco had been attacked and the entire crew killed) (Hezel 1979). The Marshallese *Irooj* opposed the missionaries and the establishment of new congregations throughout the 1860s because it eroded their power. This loss of power was somewhat alleviated by establishment of permanent trading stations as the demand for copra rapidly increased. The chiefly power base gradually shifted from control over the land to control over the trade between the Marshallese and foreigners (Dye 1987). Ebon remained the mission center, from which occasional trips were made throughout the southern atolls, until 1880, when the station was moved to Kosrae in the eastern Carolines.

Changes in the Marshallese way of life had been rapid and extensive. The dominant contact with the outside world had been through missionaries sent or trained by the American Board. Yet virtually no ethnographic description is to be found among the voluminous records kept by the missionaries. Instead, they were "not only indifferent, but supremely scornful of the religious beliefs [of the Marshallese]. They tried to extinguish them completely and destroy every trace of them" (Knappe 1888). The ethnography summarized by the Germans, Erdland (1914) and Kramer and Nevermann (1938), coincided with major structural changes in Marshallese way of life. Writing in about 1905, the German ethnographer and priest Erdland commented, "the present generation no longer has any exact knowledge of the inner coherence of the ancient traditions" (1914:307).

Other factors also influenced these changes. The copra trade dates from about 1860 in the Marshalls and American, Australian, and German firms often had resident traders on the various atolls. Beachcombers added to the resident white population, often filling the role of trader as well.

European political empires reached into the Pacific in the 1880s and German traders were exercising increasing influence in the Marshalls. In 1885, the Marshall Islands became a protectorate of Germany, as "the Marshall islands were not under the sovereignty of any civilized state" (Pauwels 1936). During the German era, which lasted until 1914, the atolls were visited regularly by traders, missionaries, and administrative officials. Administration of the area was carried out by the German trading company, Jaluit *Gesellschaft*. This firm, which resulted from a merger of companies active in the area, Robertson and Hernsheim, and *Deutsches*

Handels- und Plantagen-Gesellschaft (D.H.P.G.) (formerly Johann Godeffroy und Sohn), had exclusive trading rights in the Marshalls. Despite complaints about this monopoly by the Australian firm, Burns, Philip and Co., the New Zealand company, Henderson and MacFarlane, and others, the German government continued to act on the advice of the Jaluit *Gesellschaft* until 1902 when it assumed direct administration of Micronesia (Hezel 1983).

This form of administration, with primarily an economic focus, had little impact on the health and educational level of the Marshallese. In this regard, the missionaries were of greater importance. Select groups of Marshallese were educated in the German language to serve as interpreters and the services of a doctor were available on occasion. Copra was the main product of the Marshalls and production was stimulated by taxes assessed through the traditional leaders as well as through the availability of Western goods. This form of indirect rule strengthened the traditional political organization of the Marshallese, while the German administration dealt mostly with conflicts between foreigners and the *Irooj* (Hiery 1995).

Warfare between the islands *Irooj* was eliminated, an act which froze the relative social positions of the *Irooj* and their *jowi* (clan) and created a condition of inflexibility in the social system; in addition it allowed increased trading and missionary activity and thus contributed to more rapid cultural change (Spoehr 1949). German ethnographers were active in this period and it is largely through their efforts, especially in the many volumes published on Micronesia by the German South Sea Expedition of 1908-1910, that much is known of the traditional way of life (Kramer and Nevermann 1938 is a result of this expedition).

In 1914, at the conclusion of World War I, the Marshalls were taken from Germany by Japan. They shifted to a system of direct rule through a set of community officials and greatly expanded the administrative staff. Traders of other nationalities were excluded and the Japanese attempted to expand copra production. Protestant and Catholic missionary activity was allowed to continue unhampered, and in general the Marshallese appear to have gotten on well with the Japanese (Spoehr 1949). The Japanese did conduct ethnographic research, however most of this material has yet to be translated into English.

The Japanese military, through the South Seas Defense Corps, governed the Marshalls until 1918. From 1918 until 1920, a combined civilian and military government was in charge. In 1920 Japan was awarded Micronesia as a Class 'C' mandate by the League of Nations. The terms of the mandate were upheld until 1933 when Japan withdrew from the League of Nations (although they continued to submit annual reports through 1937). After 1933, the Japanese considered the Marshalls and the rest of their Micronesian mandate, an integral part of the Japanese Empire (Peattie 1988).

During the Japanese era, the administration had several goals; the economic development of Micronesia, the use of the islands as an immigrant settlement for Japan's rapidly increasing population, the Japanization of the islanders through education, language training, and enforced cultural change, and eventually, the use of the islands for military bases in anticipation of World War II (Peattie 1988).

For the Marshallese, improvements in health and sanitation were minimal. The "availability of adequate medical care was directly related to one's ability to pay" and despite a sliding fee scale, "the poorer and generally unhealthier native received less care" (Shuster 1978).

Education was also segregated and of differential quality. Ethnic Japanese were offered a school system identical to the one in Japan; while the Marshallese received three years of primary education consisting mostly of Japanese language instruction and ethics classes, with an additional two years for the more promising students (Hezel 1995).

The Japanese administration also attempted to make a number of changes in the Marshallese social and political organization. They appointed non-*Irooj* Marshallese leaders, which was contrary to the existing political structure, thus weakening the position of the traditional leader (Bryan 1972). The Japanese also attempted to change the Marshallese social organization of matrilineality to conform to the Japanese system of patrilineality, more like their own system, with little success.

In early 1930s, Japan began to construct fortifications on Kwajalein, Eniwetak, Jaluit, Wotje, Mili, and Maloelap. Marshallese were conscripted to labor on these buildings and were resettled (Peattie 1988). World War II started in 1941. In 1944, U.S. forces concentrated on gaining supremacy in the Pacific. Kwajalein, Majuro, and Eniwetak were captured within one month. All of the other atolls except Wotje, Maloelap, Mili, and Jaluit were checked for Japanese in the next two months. In those bypassed atolls, the Marshallese escaped or were removed under cover of night and resettled temporarily on Majuro, Arno, or Aur atolls (Smith 1955). The U.S. fortified Eniwetak and Kwajalein atolls as military bases.

After World War II, the United States took over trusteeship of the Marshall Islands. Beginning with Spoehr's work on village life in Majuro (1949), ethnographers have concentrated on community studies. The primary sources are Mason (1947, 1954) whose focus is economic organization; Kiste (1967, 1974) who deals with resettlement issues; and Davenport (1952, 1953) and Chambers (1969, 1972) concentrating on oral traditions.

1.6 Important Historical Events for Likiep Atoll

~500 BC - 2000 BC The first Micronesian navigators arrive in the Marshalls, calling the atolls *Aelon Kein Ad* (our islands). Dates and origins of the settlers are still uncertain. Relatively little is known about the prehistory of the people. They are thought, like other Pacific Islanders, to have originated in Southeast Asia and to have established themselves on their scattered islands centuries before European voyagers reached this area. Early accounts depict Marshallese society as having much in common with other Micronesian Islands, such as the Carolines. Chieftainship was strong and material culture, given the paucity of natural resources, was relatively advanced. Early Marshallese were regarded as superb canoe builders and sailors.

1494 The Treaty of Tordesillas cedes ownership of all of Micronesia to Spain.

1527 Three ships under Alvaro de Saavedra, sent from Mexico to seek news in the Moluccas of the Magellan and Loaisa expeditions, are sent to the area of the Marshalls (Sharp 1960, Levesque 1992).

1542 26 December, The expedition of Ruy Lopez de Villalobos anchor at an inhabited island group which coordinates correspond to Likiep. The fleet spends about 11 days at this atoll because Villalobos is sick and needs a rest (Levesque 1992a).

1565 3 January, Alonso de Arellano, commander of the *San Lucas*, gives the first firm report of Likiep (Sharp 1960, Levesque 1992b).

1788 The *Scarborough* (Captain John Marshall) and *Charlotte* (Captain Thomas Gilbert) sight Mili, Arno, Majuro, Aur, Maloelap, Erikub, and Wotje Atolls while proceeding to China from Botany Bay. The name Marshall Islands is later applied to the group as a whole by Russian hydrographer A. J. Krusenstern (Sharp 1960).

1800s Wotje, Utrik, Mejit, Maloelap are allied with Aur and *Irooj* Lomade against Arno, Majuro, etc. (Chamisso 1986). Lomade inherited his position as *Irooj* from his great-great-grandmother Litarau matrilineally through Legerinoa, Leom, and Limidjoa (Kramer and Nevermann 1938).

1800 Before German times Likiep was temporarily uninhabited, but was visited by Wotje people from time to time for fishing, turtle and bird catching or for wood supplies (Kramer and Nevermann 1938).

1817 Likiep's population is 300 (Chamisso 1986).

1817 On 4 January, the Russian brig *Rurick*, commanded by Lt. Otto von Kotzebue, sailed into Wotje lagoon. On 8 January, Kotzebue took ashore seeds and yams, chickens, and goats. He named this bit of land Goat Island. He meets Rarick, the captain of a Marshallese canoe who greets him (Rarick is a local of Wotje, Wotje Atoll). Kotzebue makes friends with Lagediack (a navigator) who draws maps of Wotje, Erikub, Ailuk, Utirik, Bikar, Likiep, Maloelap, Aur, Majuro, Arno, and Mili (Chamisso 1986).

1817 Kotzebue met up with *Iroojlaplap* Lomade and was told he was about 30 years old; he was a native of Arno who had gained his power by murdering all of the *Irooj* of Aur, Maloelap, and Utirik (Chamisso 1986). The Ratak islands that did not belong to Lomade (Majuro, Arno, and Mille), belonged at that time to the *Irooj* Latete, against whom Lomade was waging war (Kramer and Nevermann 1938).

1817 Lomade, the *Iroojlaplap* over Aur, Maloelap, and Wotje, desired to attack his enemies of Majuro, Arno, and Mili under Latete. Captain von Kotzebue gave him some lances and grappling hooks, for which he received in return six bundles of preserved pandanus. The new weapons put an end to the war in six days. Of the several hundred persons engaged only five had fallen. When Kotzebue visited the second time in 1824, he found Wotje was again at war, occasioned by disputes among the chiefs, whose armed forces the common people had to join (Finsch 1893).

1817 On 5 November, the Russian brig *Rurick* and tender *Nadesha,* commanded by Lt. Otto von Kotzebue anchor off Likiep for a day. *Iroojlaplap* Lomade had visited previously so the residents knew who they were (Chamisso 1986).

1820s American whalers seeking food and water begin visiting the Marshall Islands. Some of these occasionally leave men ashore who become beachcombers and, later, traders (Hezel 1983).

1823 *Iroojlaplap* Lomade Juen, of the clan Rimwejoor, conquered all the islands of the Ratak and ultimately conquered Kwajalein, Lae, Ujae, Wotho, Rongelap, Bikini, Eniwetak, and Ujelang in the Ralik (Kramer and Neverman 1938, RMI Ministry of Education1996).

1824 On 6 May, the Russian sloop *Predpriatie*, commanded by Lt. Otto von Kotzebue on his second expedition charts the reef off Likiep for a day (Chamisso 1986).

1831 Edward J. Milne, a Scotsman and son of a Presbyterian minister is born.

1837 Anton Jose deBrum, a Portuguese citizen, is born at Pico in the Azores.

1838 Georg Eduard Adolph Capelle is born in Hanover, Germany.

1840 Kaibuke had become the second-highest chief of the southern Ralik after he married the daughter of the paramount chief. Kaibuke was feared on account of his attacks on foreign ships. He attacked Kili and Jaluit and brought them under his rule (Kramer and Nevermann 1938).

1840 The first typhoon recorded for the Marshall Islands happens in the 1840s. It devastates Likiep Atoll and the flooding costs the lives of the greatest part of the population. Likiep is abandoned (Anonymous 1893).

1842 Kaiboke Lobadeo of Ebon assumes power as the *Iroojlaplap* of the southern part of the Ralik chain (Kramer and Nevermann 1938, RMI Ministry of Education 1996).

1854 A typhoon strikes Likiep Atoll (Kramer & Nevermann 1938).

1857 Rev. Hiram Bingham, Jr., of the American Board of Commissioners for Foreign Missions (ABCFM), creates missionary outpost on Ebon. Kaiboke supports their work (Hezel 1983).

1858 Edward J. Milne lives in New Caledonia and narrowly escapes with his life after supplying arms for the local people (Hezel 1983).

1859 Adolph Capelle comes to Ebon on the *Pfeil*, to trade for the German firm, *Hoffschlaeger und Stapenhorst*. He is the first foreign trader to reside in the Marshalls (Hezel 1983). When Capelle first arrived, *Irooj* Jimata of Ebon consulted the oracle. When it was favorable three times, he said, "You are my friend" (Kramer and Nevermann 1938).

1860s American and Hawaiian Protestant missionaries arrive at the Marshalls (Photo 1), sent by the Hawaiian Evangelical Association, an auxiliary of the American Board of Commissioners for Foreign Missions (Hezel 1983).

Photo 1: First Protestant Church, Likiep, circa 1900.

1860s About this time, J. C. Godeffroy und Sohn, of Samoa, establishes trading stations on Mili, Aur, Jaluit, Ebon and Namorik. A few years later, two other German companies, Hernsheim & Co. and A. Capelle & Co., are also in business there. Copra is their principal interest (Hezel 1983). Capelle is the first to teach Marshallese how to make copra (Finch 1893).

1860 Likiep's population is 300 (Bryan 1972).

1860 Joachim deBrum (Photo 2) is the first born son of Jose and Likimeto deBrum.

Photo 2: Joachim deBrum, circa 1880.

1861 Edward J. Milne is living at Erromanga Island, and then spent some time in Queensland and Samoa (Hezel 1983).

1863 *Iroojlaplap* Kaiboke dies of typhoid fever (Kramer and Nevermann 1938).

1864 Jose deBrum (Photo 3) leaves whaleship and settles in Ebon (Hezel 1983).

Photo 3: Jose deBrum, circa 1878.

1864 Adolph Capelle, with the newly arrived Jose deBrum as a partner, establishes his own trading company A. Capelle & Co. (Hezel 1983) (Photo 4).

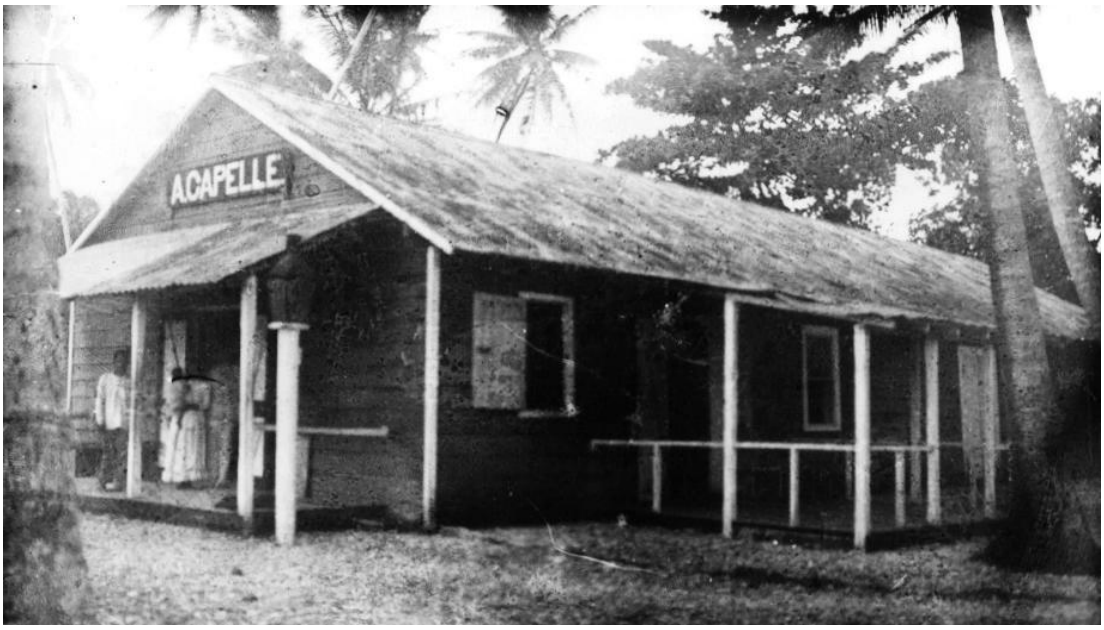


Photo 4: A. Capelle & Co. headquarters on Jaluit, date unknown.

1864 Isaac E. Madison comes to the Marshalls (Mason 1946).

1866 Edward J. Milne comes to the Marshalls in a small schooner and is soon hired by Capelle to serve on one of their vessels. Based on Jaluit, he was captain of the schooner *Jimata* (Hezel 1983).

1873 Adolph Capelle takes on Edward J. Milne, a free-lance trader, as a partner in Capelle & Co. and the Capelle & Co. moves its headquarters to Jaluit. Edward J. Milne spends most of his time at the Capelle offices on Jaluit (Hezel 1983)

1875 Charles Ingalls, a young American physician, is brought to Micronesia by Bully Hayes to cure the chief of Butaritari (Hezel 1983).

1876 Loeak and Kabua fight about who should be *Iroojlaplap*. Loeak chases Kabua from Ebon (Kramer and Nevermann 1938).

1876 Ingalls signed on for Capelle & Co. as a trader on Majuro after working shortly on Jaluit for Farrell's company (Hezel 1983).

1877 In August 1877, Jose deBrum purchases the entire Likiep atoll from *Iroojlaplap* Lortoka (Jortoke) of Wotje for" merchandise valued at $1250.00" (Hezel 1983).

1877 Otto Loser, J.T. Elson, and Isaac E. Madison witness the purchase of Likiep by deBrum. Madison acts as interpreter to the Marshallese chiefs (Mason 1946).

1877 Edward Milne dies on Jaluit on August 10, 1877 (Hezel 1983).

1878 Germany enters into a treaty with inhabitants of the Ralik chain, granting special trade privileges. Kabua (Lebon) presents himself to the German government as the

Iroojlaplap. Kabua, Lagajimi, Nelu, Loeak and Launa all sign the treaty (Kramer and Nevermann 1938)

1878 Likiep's population is 300 (Kramer & Nevermann1938).

1878 Jose deBrum transfers the deed to Capelle & Co. in return for $886.73. Subsequently an agreement is signed with the residents of Likiep allowing them to remain on the island if they agree to work for Capelle at the fixed rate of $2.00 a month. Likiep is to be the base from which Capelle & Co will conduct its future commercial venture throughout the area. Charles.H. Ingalls, an American, joins the partnership with Capelle and deBrum (Hezel 1983) (Photo 5).

Photo 5: Jose deBrum and Adolph Capelle, circa 1878

1878 Isaac E. Madison is living on Jaluit, probably working for Capelle & Co. (Mason 1946).

1880 Charles Ingalls is sent by Capelle & Co. to Pohnpei to work as an agent for the company there (Hezel 1983).

1880 Loeak goes to Jaluit from Ebon to challenge Kabua in battle. After a bloodless fight, Loeak returns to Ebon (Kramer and Nevermann 1938).

1880 Likiep's population is 25 (Spennemann 2000).

1882 Adolph Capelle becomes the first American consul in the Marshalls (Hezel 1983).

1883 Capelle & Co. is forced to sell holdings on Kosrae, Ponape, and seven islands in the Marshalls Islands to *Deutsche Handels- und Plantagen-Gellschaft* (Hezel 1983).

1884 The schooner *H.L. Tiernan* of San Franciso owned by Crawford and Company puts in at Likiep in 1884. The vessel is thought to have landed guns (Hezel 1979). According to several early reports, at this time, Likiep is the possession of the American firm, Tiernan Venture. (Anonymous 1885, 1886).

1885 Capelle & Co. agrees to sell all the copra it produces and collects to Robertson & Hersheim (Hezel 1983).

1885 Under mediation of Pope Leo XIII, German government annexes the Marshalls.

1885 27 October, the German warship *SMS Nautilus* visits Likiep (Hezel 1979).

1885 Loeke is the dominant chief in southern Ralik. Murjil, *Irooj* of Aur, controls northern Ratak. In northern Ralik and southern Ratak, individual atolls are in most instances ruled by independent local *Irooj* (Kramer and Nevermann 1938).

1886 By agreement with Great Britain, the Marshall Islands became a German protectorate.

1886 Isaac E. Madison moves to Likiep where he remained a resident.

1886 Likiep's population is 300 (Spennemann 2000).

1887 The German Jaluit Company (Jaluit *Gesellschaft),* an entity entrusted with governance of the Marshalls. It buys out two foreign competitors based in San Francisco and Auckland. However, Burns, Philp & Co. of Sydney, which has been trading in the Marshalls for some years, continues to do so and remains until World War I (Hezel 1995).

1890s C.H. Ingalls dies and deBrum and Capelle buys out his interest in Capelle & Co. from Ingalls widow (Jelks and Jelks 1978).

1890 A schnooner-yacht *Nyanza* comes to Likiep. The owner, J. Cuming Dewer, wrote a book concerning it (Voyage of the *Nyanza*).

1892 Likiep has a small shipbuilding establishment (Photo 6). Four large schooners including the *Jaluit* (20 tons) belonging to *Irooj* Kabua and the *Laurak* (20 tons) belonging to the *Irooj* Loiala, are built by the sons of deBrum and Capelle (Germany Reichstag [1894-1895] 1896).

Photo 6: Shipbuilders in Likiep, circa 1900.

1893 The Jaluit Company operates trading stations on Namorik, Kili, Likiep, Ailuk, Mejit, and Rongelap. The island of Kili is now the property of the Jaluit Company, which has laid out coconut plantations (Langhans 1898).

1899 In January 1899 flooding of several atolls occurs. On Likiep, three islets (Lato, Tinegar and Kapenor) are affected, with between 100 and 130 m of land washes away (Spennemann and Marshner 1994-2000).

1901 Jose deBrum dies in Likiep.

1902 Adolph Capelle and his wife, Limenwa, were Protestants but brought German Catholics to Likiep to teach their children and establish the church. A Catholic mission station (Photo 7) under the direction of Fr. Joachim Leo Keifer, a sacred heart missionary, opens in Likiep in July and a school is established, teaching only the children of Europeans and Marshallese *Irooj* (Erdland 1914).

Photo 7: First Catholic Church on Likiep founded in 1902.

~1904 Joachim deBrum (Photo 8) builds his house, now referred to as the deBrum House (Jelks & Jelks 1978)

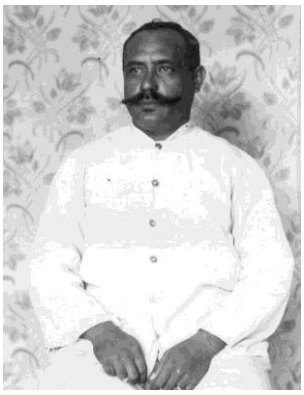


Photo 8: Joachim deBrum, circa 1900

1905 Georg Eduard Adolph Capelle dies.

1905 Likiep's population is 200 (Spennemann 2000).

1910 Likiep's population is 252 (Spennemann 2000).

1910 Joachim builds house for Likomju deBrum.

1910 Kabua dies (Kramer and Nevermann 1938).

1914 The Marshalls are captured from Germany by Japan.

1920 Marshall Islands are mandated to Japan by the League of Nations, together with the other occupied islands. The group is administered as a separate district. The Marshallese are given little voice in their own government, but the copra industry is left in their hands. Copra, however, has to be exported to Japan at a price fixed by the Japanese (Hezel 1995).

1921 The Japanese take over the copra industry from the Germans, replacing the Jaluit *Gesellschaft* with *Nanyo Boeki Kaisha* (Peattie 1988).

1930 Likiep's population is 472 (Spennemann 2000).

1934 Japan withdraws from the League, but retains possession of the Marshalls. Fortification of the Marshall Islands begins as Japan prepares for war. The Japanese military begins building airstrips, power plants, and bunkers on Wotje, Eniwetak, Jaluit, Milli, Maloelap, and Kwajalein (Peattie 1988).

1935 Likiep's population is 495 (Bryan 1972).

1937 Joachim deBrum dies in Likiep.

1939 World War II begins in Europe.

1944 April, Likiep is secured by U.S. Forces. Marines meet a plantation owner, Carl F. Hahn (See Section 4.1, Photo 63), a native German who tells the Marines he was shipwrecked in the Marshalls in 1891, had married a Marshallese woman (Elise deBrum) and had lived there ever since (Heinl et al. 1954).

1945 End of World War II grants effective control of the Marshalls to the U.S.

1945 Likiep's population is 500 (Bryan 1972).

1946 U.S. begins its nuclear testing program in the Marshalls. Bikini atoll is evacuated to Rongerik for first tests under Operation Crossroads.

1947 Joachim deBrum house is locked up and left under the protection of caretakers who live nearby (Jelks and Jelks 1978).

1947 The Marshall Islands become part of the United States Trust Territory of the Pacific Islands (TTPI) following three years of American military administration. 1951 US Department of the Interior assumes responsibility within US Government for the TTPI from the Department of the Navy.

1954 US nuclear testing program detonates Operation Castle "Bravo," a 15 megaton shot, the most powerful hydrogen bomb ever tested by the U.S., on Bikini atoll. Radiation from

the test forces evacuation of Marshallese and U.S. Military personnel on Rongelap, Rongerik, Utirik and Ailinginae (Deines et al. 1990).

1958 Likiep's population is 636 (Spennemann 2000).

1965 The Congress of Micronesia is formed, with representatives from all of the TTPI islands. It is created by the U.S. administration in preparation for greater self-governance by Micronesians.

1967 Likiep's population is 422 (Spennemann 2000).

1970 Likiep's population is 253 (Bryan 1972).

1973 Likiep's population is 406 (Spennemann 2000).

1976 The Joachim deBrum House is nominated for inclusion on the US National Register of Historic Places.

1977 The Joachim deBrum House is officially listed in the Supplemental Publication of the National Register of Historic places becoming the fist registered historic site in Micronesia (Jelks & Jelks 1978).

1979 Amata Kabua is selected as the first president of the Marshall Islands.

1979 Government of the Marshall Islands officially established, and country becomes self-governing.

1979 Typhoon Alice strikes Likiep.

1980 The Airline of the Marshall Islands (AMI) begins operation, serving eight locations; Eniwetak, Bikini, Kwajalein, Mille, Likiep, Maloelap, Wotje, and Majuro.

1980 Likiep's population is 481 (Spennemann 2000).

1982 Official name changed to the Republic of the Marshall Islands (RMI).

1982 The Joachim deBrum Memorial Trust Corporation was formed and chartered by the RMI government with Leonard deBrum as Chairman.

1983 Amata Kabua selected second time as president.

1983 Voters in the RMI approve the Compact of Free Association with the United States.

1986 U.S. Congress approves the Compact, resulting in its entry into force. The Compact grants the RMI its sovereignty and provides for aid and US defense of the islands in exchange for continued US military use of the missile testing range at Kwajalein Atoll.

1987 In third election, Amata Kabua is selected as president.

1988 Likiep's population is 482 (Spennemann 2000).

1990s Settlement of compensation claims as a result of the US nuclear testing in the Marshalls still proceeds, and is associated with various agreements being made as part of the Compact of Free Association package. There are also outstanding court cases. Almost 5000 Islanders had sought compensation from the Nuclear Claims Tribunal and, up to September 1993, some 380 had been granted compensation totaling about $14 million, only a quarter of which had been paid (Deines et al. 1990).

1990 UN Security Council terminates the RMI's Trusteeship status.

1990 Typhoon Owen strikes at Likiep.

1991 In fourth election, Amata Kabua is selected as president.

1991 RMI joins the United Nations.

1992 In August Tropical Storm Kent hits Likiep while in November Typhoon Gay stricks.

1994 The U.S. Department of Energy begins releasing thousands of previously classified nuclear test era documents, many of which confirm the wider extent of the fallout contamination in the Marshall Islands.

1996 In fifth election, Amata Kabua is selected as president.

1996 Amata Kabua dies.

1997 Imata Kabua selected to finish the late Amata Kabua's term.

1999 The Likiep Plantation Haus, a hotel, is constructed in Likiep.

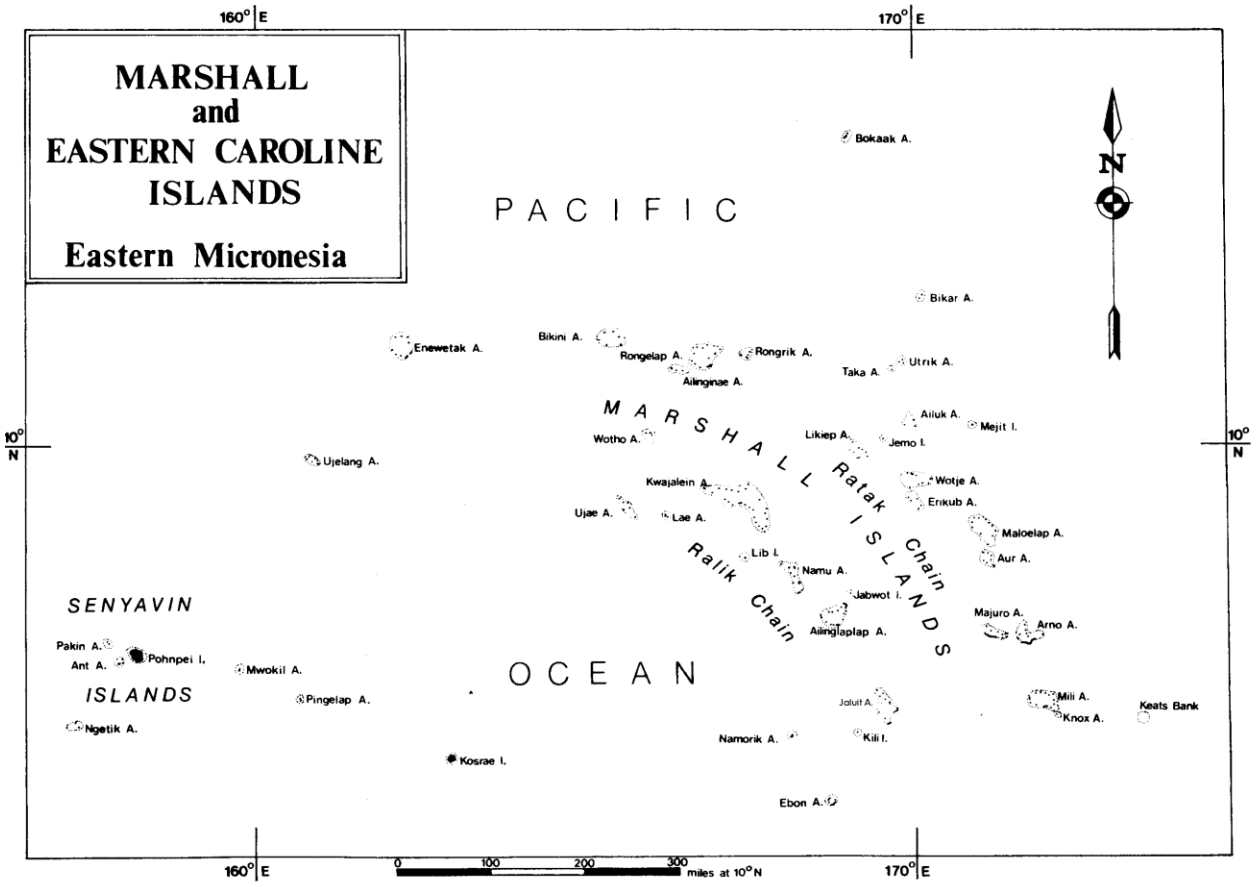
2000 Kessai Hesa Note selected as president.

2001 Current Compact of Free Association expires.

II. Environmental Settings

2.1 Physiographic and Biological Setting

Located in the central Pacific between 4° and 14° north latitude and 160° and 173° east longitude, the Republic of the Marshall Islands consists of 29 low-lying coral atolls and five coral islands (Map 1). Twenty-two of the atolls and four of the islands presently inhabited. The atolls and islands are situated in two almost parallel chain-like formations. The eastern group is the Ratak (Sunrise) Chain and the western is the Ralik (Sunset) Chain which together extend about 700 miles (1130 km) north to south and approximately 800 miles (1290 km) east to west. Isolated by ocean, the Republic is more than 2,000 miles (3230 km) from the nearest trading centers, Honolulu and Tokyo. Its nearest neighbors are Kiribati to the south and the Federated States of Micronesia to the west.



Map 1: Republic of the Marshall Islands

There are approximately 1,225 islets spread across an area of over 750,000 square miles (1.2 million square km). With a total land area of 70 square miles (110 square kilometers), a mean height of 7 feet (2 meters) above sea level, and soils that are nutrient poor, the nation's agricultural base is limited. The marine resource base, however, is extensive. The combined lagoon area totals 4,037 square miles (6511 square km). Coral reefs fringe the atolls and serve as

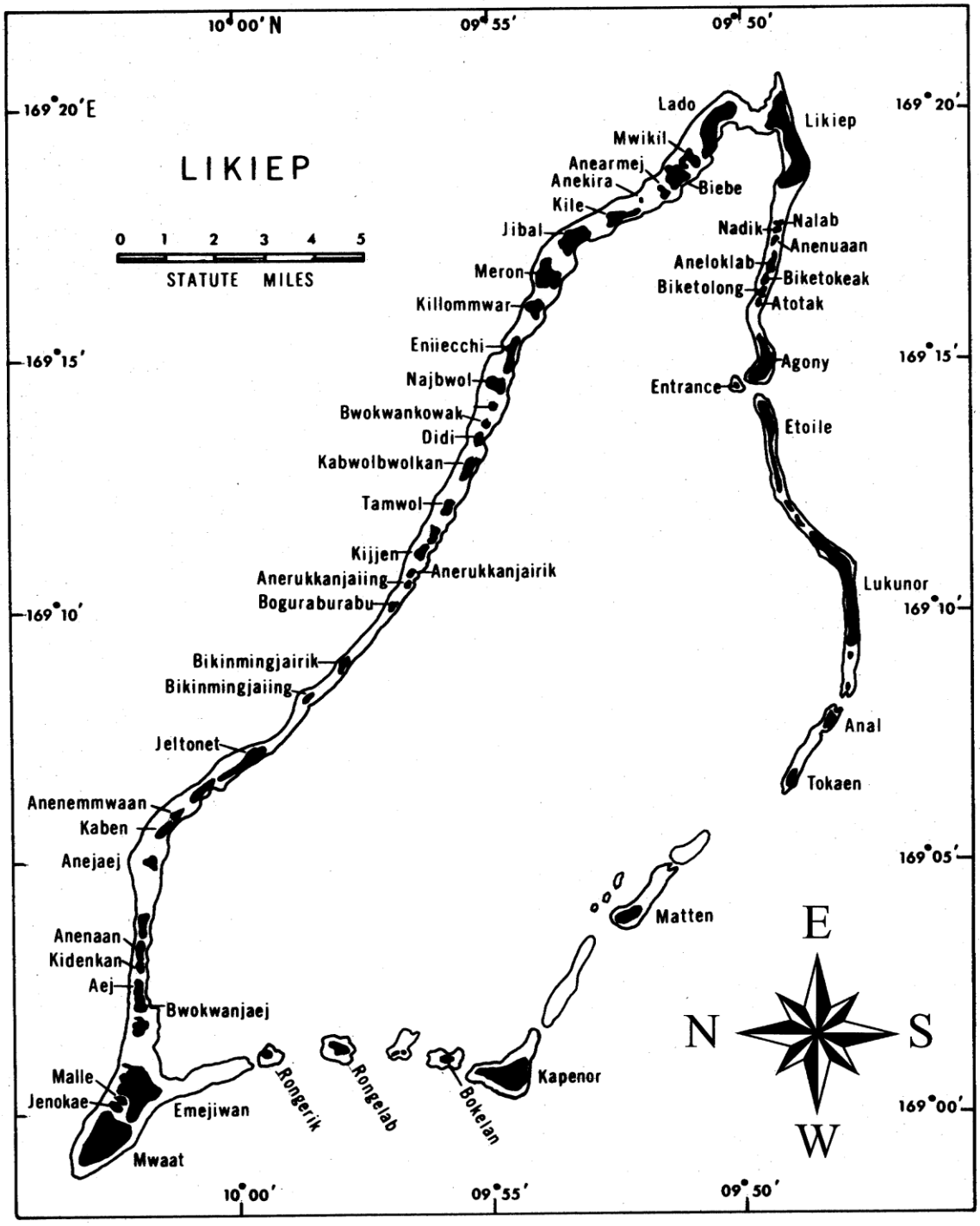
the only defense against the ocean surge. The clearance over the reef in the sections that are covered by water is usually no more than a couple of feet (Permanent Mission of the Republic of the Marshall Islands to the United Nations, 1992).

Generally speaking, an atoll consists of a series of low-lying islets and submerged reefs arranged about a central lagoon, which mixes with the open ocean via one or more channels and/or shallow passes. In the Marshall Islands, the islets composing an atoll usually form an oval shape around a central lagoon of 150 foot (45 m) average depth. The surrounding ocean depth plunges to over 5,000 feet (1525 m) within two miles (3 km), and to 10,000 feet (3050 m) within ten miles (16 km) of the typical atoll (Fosberg 1990; Wiens 1962).

Dye (1987) suggests a probable development history for the Marshall Islands. He states that approximately 70 million years ago the volcanic cores of the Marshall Island atolls erupted forming new volcanic islands. The islands, slowly subsiding but standing above sea level, were colonized by species of reef-building corals, and the process of reef flat construction began (approximately 40 million years ago).

Underwater ocean maps show that there is also an abundance of underwater seamounts, some of which reach almost to the surface, such as Keats Bank east of Mili Atoll. Most of these guyots are aligned along the same axes as the Ralik and Ratak Chains, so that these underwater features as a whole have recently been termed Ralik and Ratak Ridge (Spennemann 1993).

Likiep Atoll is part of the Ratak Group of the archipelago of the Marshall Islands (Map 2). It is located 10^{o} north latitude and 169^{o} 10' east longitude. The atoll contains approximately 65 islands. It is a large atoll, about 23 miles long and approximately 9 miles wide. It has a land area of 3.96 square miles and a lagoon area of 163.71 square miles. The highest point in the Marshall Islands is at Likiep Atoll, where the elevation reaches a maximum altitude of twenty feet (six meters).



Map 2: Likiep Atoll.

2.2 Climate

The climate of the Marshall Islands is predominately a trade-wind climate with the trade winds prevailing throughout the year. Minor storms of the easterly wave type are quite common from March to April and October to November. The islands are not generally considered to be in the typhoon belt, but because they are low with small land masses are easily subject to flooding during storms. Tropical storms are rare but do occur. The first typhoon recorded for the Marshall Islands happened in the 1840s. It devastated Likiep Atoll and cost the lives of the greatest part of the population. People interviewed in the early 1900s still remembered the 1840s flooding (Spennemann and Marshner 1994-2000). In 1854 a typhoon struck Likiep Atoll (Kramer & Nevermann 1938). In January 1899 flooding of several atolls occurred. On Likiep three islets (Lato, Tinegar and Kapenor) were affected, with between 100 and 130 m of land washed away (Spennemann and Marshner 1994-2000). In 1979 (Typhoon Alice) and again in 1990 (Typhoon Owen) Likiep was hit. In August of 1992 Tropical Storm Kent hit Likiep while in November of the same year Typhoon Gay struck.

The only atoll for which complete weather data exists is Majuro, where a U.S. National Oceanic and Atmospheric Administration Weather Station is located. Annual rainfall varies considerably from north to south; the southern atolls receiving 120-170 inches (300-430 cm), and the northern atolls receiving 40-70 inches (100-175 cm) (NOAA 1989). The highest rainfall generally occurs during the *Anon Rak* season, also known the breadfruit season (June to October). Precipitation is generally of the shower type; however, continuous rain is not uncommon. During the *Anon Ean* season, also known as the pandanus season (January to March), the rainfall decreases with February noted to be the driest month of the year.

One of the outstanding features of the climate is the extremely consistent temperature regime. Daily temperatures recorded for both northern and southern atolls fluctuate between the high seventies and mid eighties with no seasonal variation. The range between the coolest and the warmest months averages less than 1 degree Fahrenheit. Nighttime temperatures are generally 2-4 degrees warmer than the average daily minimum because lowest temperatures usually occur during heavy showers in the daytime. In spite of this, the weather is always hot and humid with the average temperature of 81 degrees Fahrenheit all year around (Permanent Mission of the Republic of the Marshall Islands to the United Nations, 1992).

2.3 Vegetation

There is no written record of the original vegetation of the Marshall Islands. The precise date when plants first occur in the Marshall Island atolls is still debated (Dye 1987). It is possible that 44 species of plants, including various herbaceous species, shrubs, and trees, drifted to the southern Marshalls before the arrival of man (Hatheway 1953). The early inhabitants probably altered the vegetation of the atolls by introducing new species. During the twentieth century, coconut plantations developed by the German, Japanese, and American administrations replaced most of the original vegetation of many atolls (Fosberg 1990). Today as much as 60 per cent of the nation's land area is covered with coconut (*Cocos nucifera*) (OPS 1991).

Many areas not dedicated to coconut plantations have been put to other uses such as cultivation of taro and other plants. Species that have been introduced are reliant on the presence of humans for propagation (Fosberg 1990).

The vegetation that grows on the Marshall Islands include mixed broadleaf forest composed of a small number of tree species (*Tournefortia argentea, Guettarda speciosa, Pisonia grandis, Pandanus tectorius, Allophylus timoriensis, Cordia subcordata, Hernandia Sonora*); a few shrubs (*Scaevola sericea, Suriana maritama, Pemphis acidula, Tournefortia*); and a layer of ground cover consisting of several species (*Lepturus repens, Thuarea involuta, Fimbristylis cymosa, Polypodium scoloprendria*). Several mono-specific forests occur in the Marshall Islands (*Neisosperma, Pisonia grandis, Tournefortia argentea*) (Fosberg 1990). Shrubs such as *Pemphis acidula, Suriana maritama*, and *Scaevola sericea* typically grow along shorelines while herbaceous plants occur mainly under forests. Limited strands of mangroves (*Bruguiera*) occur larger islands of the wet southern atolls (Stemmerman 1981) and are found in swampy areas containing brackish water on several of the Cultivated plants (*Musa, Cocos nucifera, Artocarpus altilus, Cyrtosperma chamisonnis, Pandanus tectoris*) are commonly found on the inhabited islets of the Marshalls. These various plants serve as wind breakers, salt spray repellents, food, and are used by locals for weaving and medicinal purposes.

Practically all the islets of Likiep are planted with coconuts. Around 60 per cent of the atoll's total land area is planted with coconut trees but because of limited replantation it is estimated that at least 50 percent them are senile (Ministry of Interior and Outer Islands Affairs 1989). On most of the islets there is a strip of natural scrub and scrub forest along the seaward coast that serves as a windbreak. This is mainly mixed broad-leaf forest and scrub, with *Scaevola* on its outer edge (Fosberg 1990). There are 81 species of vascular land plants and many exotic plants not found on other atolls on Likeip (RMIEPA 2000).

2.4 Sea Level Changes

Due to being so low in elevation, the recent sea level rise caused by global warming or "greenhouse effect" is a critical threat to the Marshall Islands. The rising of the sea during the last two decades has devastated the low-lying atolls economically and culturally. It is estimated that the normal trend for sea level rise has been approximately 1.3 inch to 3 inch increase over the span of 100 years. However, it is figured that within the next 50 years there will be a 1.7 inch increase alone. As predicted by scientists (global warming red alert), the islands of the Marshalls is among the Pacific nations that will be affected by the rising of the sea level within the next fifteen to twenty years. Under normal conditions, coral and the other components of the coral reef can maintain a healthy landmass. At present, visibly eroded scrublands are along the coastline and most of the vegetation growing in this area will soon be washed away by the incoming tide. Any archaeological sites that are located within this area will vanish and their significant historical value will be lost to the tides.

For many years, the Marshall Islands Government has been concerned with the issue of global climate change. As the Marshall Islands lie in open ocean, the islands are very close to sea level. The vulnerability to waves and storm surges is, at the best of times, precarious. Although the islands have by no means been completely free from weather extremes, they are more frequently referred to in folklore as "*jolet jen anij*" (gifts from god). The sense that

Marshall Islands are a god-given sanctuary away from the harshness of other areas is therefore part of the sociocultural identity of the people. When any variation in the weather hits the Marshall Islands, the effects can be severe. When Typhoon Paka passed through Ailinglaplap in late 1997, food crops were severely hard hit and outside food had to be brought. *El Niño* induced drought that followed caused the entire Marshall Islands to be declared disaster areas, and emergency water making equipment and food supplies were shipped in from outside.

Given the physics of wave formation and the increasing frequency and severity of storms, the Marshall Islands will likely be at even greater risk of total inundation. The relative safety that the islands have historically provided is now in jeopardy. The impacts are not limited to the Marshalls and its immediate neighbors. The Marshall Islands are often referred to as a "front line state" with regard to the climate change issue. It is important to realize that once the potentially catastrophic effects begin to appear, it is likely too late to prevent further warming that will threaten virtually all of the world's coastal regions (Permanent Mission of the Republic of the Marshall Islands to the United Nations, 1992).

III. Land Tenure

Marshallese society is generally matrilineal and is composed of a number of matrilineal clans (*jowi*). The most important descent group is the lineage (*bwij*). The *bwij* is the matrilineal system in which all land rights are passed down through the mother's side. Therefore, the whole group is descended, mother to daughter, from a common ancestor or a *jowi* (clan). There were at least forty-four clans spread over the atolls and though it no one remembers how members of a *jowi* were related by blood, members considered themselves related. The lineage head (*alap*), usually the eldest male of the senior line of the lineage, is steward of the lineage land holdings.

With slightly less than 70 square miles of land in the entire archipelago and prime settlement areas being extremely limited, land has long been the most highly prized possession in the Marshall Islands and control of land is the central theme of Marshallese culture. The basic land division of the Marshall Islands, *weto*, is a strip that runs from the lagoon to the ocean side of an island. One or more *weto* are held and administered by a matrilineage line. Title is divided and shared by several levels of the society. In the pre-Christian era, the Marshallese social system distinguished between two major classes: *irooj* (chiefs) and *kajur* (commoners). The *irooj* hold title over an island or atoll. Among the *irooj*, the *iroojlaplap* (paramount chief) were the ones with the most power while the *iroojerik* or the lesser chiefs, shared the power and many of the privileges, but to a limited degree. Today, the term *kajur* is not used so often as the class has been divided into the *alap* (land managers) and the *rijerbal* (workers). The *alap* organizes and directs lineage activities and allots lands for use to different descent lines within the lineage. The *alap* and the *drijerbal* (workers) make up the subjects or *kajur* (commoners) and render services to the *Irooj* in exchange for land use. The *Irooj* managed the land in a way that not only provided themselves with food but also provided for the *kajur* (*alaps* and *drijerbals*). The k*ajur* in return cultivated the land, harvested the waters surrounding the atoll, and performed *ekkan* (tributes) to the *irooj*. The procedure is a cycle that has been repeating for hundreds of years. The common members of a lineage have land rights, although the *alap* and *drijerbal* change land ownership. The *Iroojlaplap* is the only individual with permanent land rights, unless defeated in war.

Historically, one *Iroojlaplap* (paramount chief) was able to extend his control over most of the Ralik Chain (except Eniwetak and Ujelang). Periodically the *Irooj* visited these islands to collect tribute. The Ralik Chain was subsequently divided into two districts, one including Namu and the north islands, the other Jabat, Ailinglaplap, and the islands south. Although all of these islands were owned by the *Iroojlaplap* he rarely visited those further north than Kwajalein and Ujae because they were isolated and somewhat impoverished (Alikire 1977). Within the northern atolls, stratification was less elaborate in comparison to those in the south.

Ratak was likewise structured but far less centralized. The whole chain was never integrated under a single *Iroojlaplap*, although the *Iroojlaplap* of Maloelap was able to put the islands to the north (except for Mejit) under his rule. Majuro and Arno broke away from this union, however, and again became independent political entities. The Ralik and Maloelap associations were unstable and varied in size as local lesser *Irooj* tested the strength of their islands against that of the *Iroojlaplap*. This trend toward instability encouraged the *Iroojlaplap* to move his residence from island to island to make his control evident to the local lesser *Irooj*.

Today, traditional rights of land tenure are unequivocally preserved in the Constitution, and the traditional requirement of consensus decision making, in which all persons with land rights to a certain *weto* must agree on questions of land transfer is retained.

The traditional land tenure system confounds Western-style efforts of historic preservation. Public or government land is non-existent and private landowners are accustomed to exercising ultimate control over land use and access, and are therefore unaccepting of regulations which might restrict the usage of their property (Williamson 2001).

Before German times Likiep was temporarily uninhabited, but was visited by Wotje people from time to time for fishing, turtle and bird catching, or for wood supplies and was under the control of *Iroojlaplap* Jortoka.

In the 1860s, Georg Eduard Adolph Capelle, a German national, was sent by his Honolulu-based company to investigate the establishment of a coconut oil export operation in the Marshalls. He arrived on Ebon shortly after Congregational missionaries had established on Ebon the first church in the Marshalls in 1857. Within a short time, Capelle pioneered the modern day copra industry. Soon after his arrival he met Jose deBrum, a Portuguese harpooner working on an American whaling ship, and an American businessman, Charles Ingalls, on Jaluit.

Jose deBrum married Likimeto, a niece of *Iroijlaplap* Jortaka, whose domain included Likiep and other islands in the northern Ratak. This gave him access to the *Iroojlaplap* to negotiate the sale of Likiep. In August 1877, Jose deBrum purchased the entire Likiep atoll from *Iroojlaplap* Jortoka of Wotje for" merchandise valued at $1250.00. In 1878, deBrum formed a partnership with Adolph Capelle and Charles.H. Ingalls and transferred the deed to Capelle & Co. in return for $886.73. Subsequently an agreement is signed with the residents of Likiep allowing them to remain on the island if they agreed to work for Capelle at the fixed rate of $2.00 a month. Likiep was the base from which A. Capelle & Co. was conducted its commercial venture throughout the area. The 65 islets of Likiep were divided into four sections: a joint plantation, and sections each for Ingalls, deBrum, and Capelle.

In the 1890s C.H. Ingalls died and deBrum and Capelle bought out his interest in Capelle & Co. from Ingalls' widow. His share was absorbed into the joint plantation. It was not until then that coconut plantations were laid out, the owners hiring laborers from other atolls to come to Likiep to work for them. The latter eventually settled permanently as laboring families on the atoll and lost their outside connections as far as land rights elsewhere were concerned. At that time, these laboring families had been residents for many years and had nowhere else to go. They had no legal rights to local land, however, and worked the plantations on a sharecrop basis for the landowners.

Jose deBrum and Adolph Capelle intermarried with Marshallese and subsequently with each other. Jose deBrum and his first wife, Likimeto, had a son, Joachim deBrum. After Likimeto died in 1889, Jose deBrum married Likomju, a Marshallese woman from nearby Mejit Island. Adolph Capelle married Limenwa, a woman from Ebon who was also known as Sophia.

Today, unlike other atolls, Likiep has no traditional chief ruling the land. Instead, as the land was sold to Europeans , western inheritance replaced the norm. The descendants of Capelle and deBrum remain the owners of Likiep atoll.

IV Field Investigation

Thirty-three historic and traditional sites were recorded on Likiep Atoll. Twenty-eight of those sites were recorded on Likiep Island, two traditional sites on Emejwa Island, one traditional site on Jaltonnij Island, and two sites on Aikine Island. Unfortunately, given time and resource constraints, not all of the islands of Likiep Atoll were surveyed. Undoubtly there are many more sites still unrecorded.

Mr. Leonard deBrum, chairmen of the Joachim deBrum Memorial Trust Corporation and caretaker and owner of the Joachim deBrum house, accompanied the survey team during the field investigations of Likiep Island and the Joachim deBrum house. Mr. DeBrum knowledge of the house and its history was of great assistance to the project.

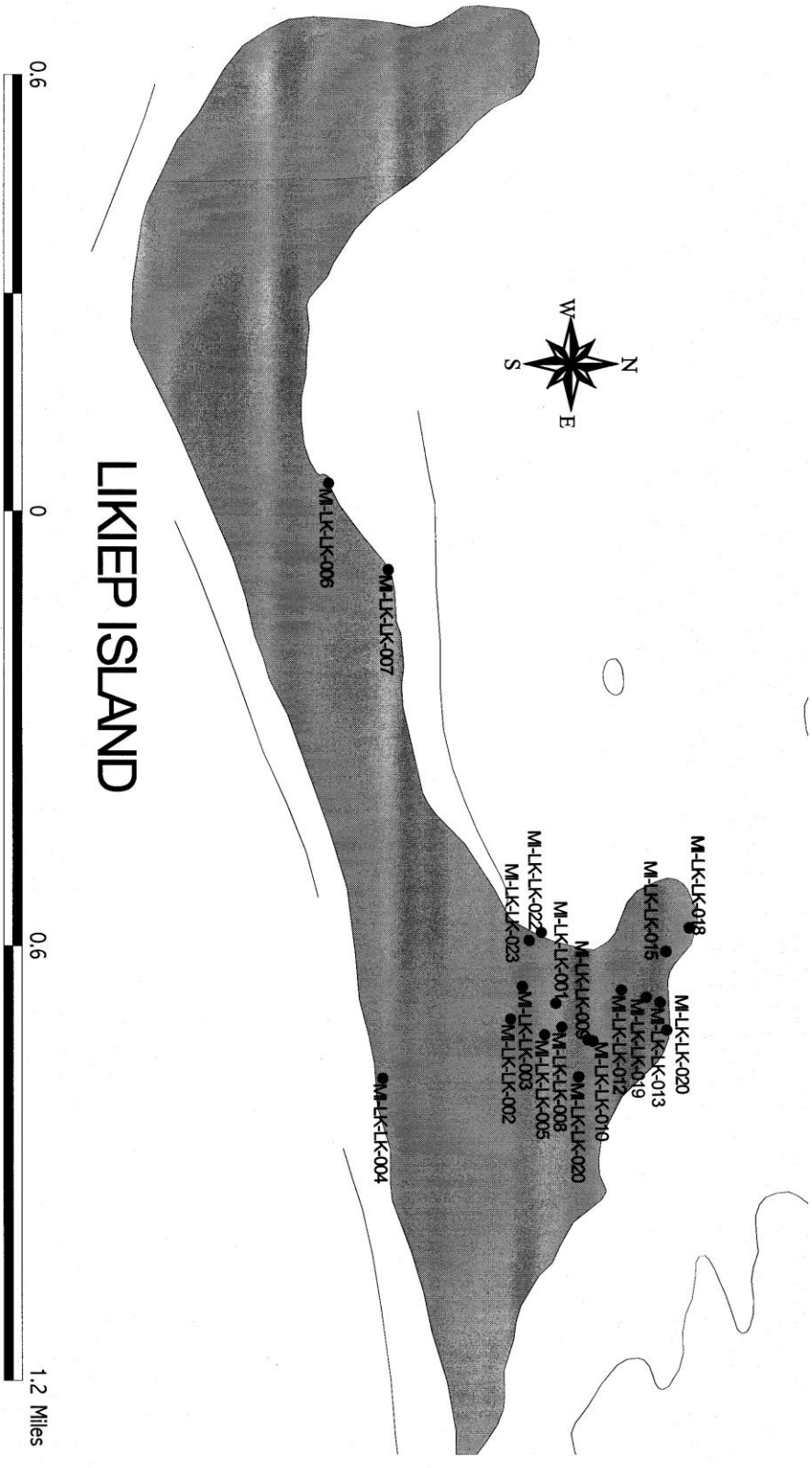
4.1 Likiep, Likiep

Twenty-eight sites were documented on Likiep, Likiep, the southernmost islet of the Likiep Atoll (Map 3). The Likiep Village Historic District dates from the 1880s to 1937. It consists of approximately 15 architecturally or historically significant buildings and structures, several related structures such as water catchments, graves of the European owners and developers of the village, numerous foundations of buildings no longer standing, as well as numerous artifacts and objects such as books, household goods, equipment, etc. Few of the original buildings that are remaining have undergone major alterations. Many new homes and other structures, however, have been built since the end of World War II. Some of these newer buildings were constructed with the wood and materials from older structures of the period which were dismantled shortly after WWII.

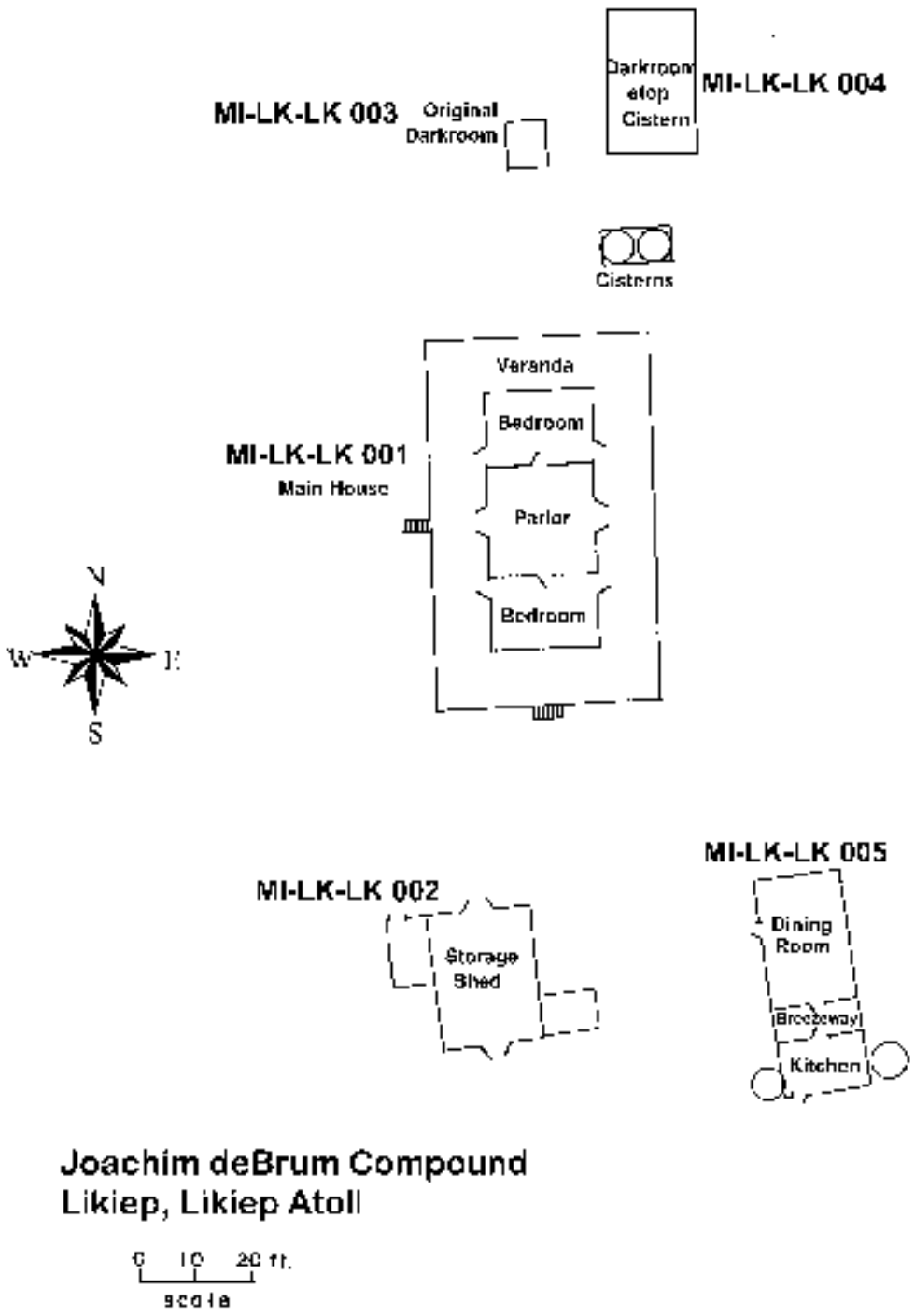
The distinctive characteristics of Likiep Village developed as a direct result of the purchase of Likiep Atoll by two Europeans, Jose deBrum and Adolf Capelle in 1877. This purchase changed the traditional system of life and land rights which had existed for hundreds of years. The effects of this change from the traditional system are still very evident on Likiep.

The architectural, agricultural, commercial, industrial, and engineering activities which developed on Likiep over a period of approximately 50 years constitutes a unique and distinct episode in these islands. The architectural style which evolved as a result of the European influence is visibly different from any other style existing in the Marshall Islands and is most evident in the Joachim deBrum Compound (Map 4).

The entire atoll of Likiep was run as a copra plantation with its headquarters on Likiep Island. Jose deBrum and Adolf Capelle and later their descendants controlled all transactions and developments on Likiep. When Joachim deBrum, the oldest son of Jose, and William Capelle, son of Adolf, became the managers, Likiep continued to grow and prosper both agriculturally and commercially.



Map 3: Sites on Likiep, Likiep Atoll.



Map 4: Plan Map of Joachim deBrum Compound

Site MI-LK-LK-001 (Marshall Islands - Likiep Atoll - Likiep Island -Site No.)

GPS Coordinates N: 9°49' 32.17"
E: 169°18' 25.04"

The Joachim deBrum house (Photos 9-14, Map 4). This house is the first site in Micronesia to have been placed on the National Register of Historic Places. The following description is based largely on the work of Jelks and Jelks (1978). Built in circa 1900 using redwood from California and other materials imported from Australia and New Guinea, it is of German architecture influence. It is a one story house consisting of a 19ft x 19½ ft central parlor, and two 13ft x 19ft bedrooms on either side of the parlor. A 10ft wide veranda surrounds the entire building (Photos 12-13). All three rooms are ceiled, as is the veranda. Originally it stood about 18 inches high on small concrete pillars and had a thatch roof. The thatch was eventually replaced with metal roofing (Photo 9).

Photo 9: Joachim deBrum House, circa 1915.

At some point the entire house was raised to its present height of about six feet (Photos 10-11). The concrete pillars were replaced with wooden pillars. The pillars along the outer edge of the veranda in front of the house were square. All of the others were round sections of tree trunk. Sixteen of the pillars were black palm while 38 were blue gum.

Photo 10: Joachim deBrum House, taken from Southwest corner

The flooring is 1inch x 12inch planks. The walls are framed with 4inch x 4inch vertical studs spaced 7-9 feet apart. The siding is 1inch x 6inch planks laid horizontally with their edges flush. The door under each gable may be opened to ventilate the attic.

Entry to the house was originally gained by two stairways which lead onto the veranda, one in front and the other on the south veranda. Entry can now only take place by use of the front stairway. A series of sliding spaced panels and a series of moveable wooden panels extending from the rail to the veranda's ceiling can be slid back and forth. Each of them had glass windows at eye level. By adjusting all these sets of panels, the back veranda could be completely closed off from the elements, or it could be ventilated when desired.

Photo 11: Back of Joachim deBrum house, taken from Northeast corner.

The house was repaired and stabilized in 1977. During the stabilization of the house repainting of both the interior and exterior was carried out. The white walls and ceilings and blue woodwork do not reflect the original colors. More repairs were carried out in 1984 when some of the veranda planks were replaced using a different type and size of wood (Photo 12-13). The new section has sustained a great deal of termite damage. (Photo 14). Also the sliding glass plates were removed during construction and were not replaced (Photo 15).

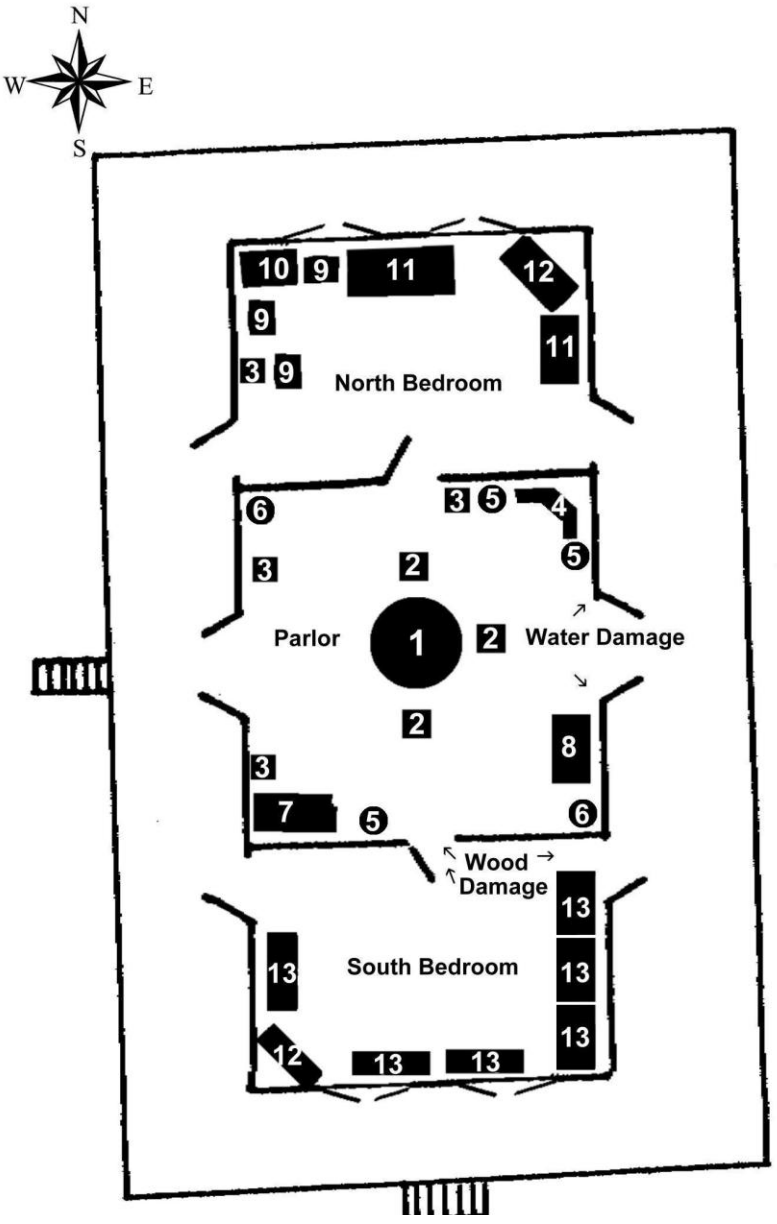
Photo 12: East Veranda of deBrum House, looking north.

Photo 13: East Veranda of deBrum house, circa 1900.

Photo 14: Termite damage on reconstructed portion of east veranda.

Photo 15: Sliding glass plates removed for construction.

The three rooms in the interior of the house are arranged with the parlor in the center and bedrooms on either side. Much of the original furnishes remain in the house. Most noteworthy of the furnishings is the set of Chinese carved teak furniture in the Parlor which, according to Leonard deBrum, was purchased by Joachim in China. The pieces are in fair condition though several joints are loose. One of the small round tables is missing a leg, and the armchairs are wired together. Map 5 illustrates the furniture in the house at the time of the survey.



Key

1. One Round, carved teak dining table with inlaid marble top.
2. Three carved teak armchairs.
3. Four carved teak straight chairs.
4. One carved teak standing screen with four silk panels.
5. Three round carved teak side tables with inlaid marble top.
6. Two carved teak corner tables with inlaid marble top.
7. One wooden roll-top desk.
8. One carved teak cabinet.
9. Three wooden trunks.
10. One wooden chest with 10 drawers.
11. Two wooden china cabinets.
12. Two wooden wardrobes.
13. Six Bookcases

Map 5: Interior Furniture Arrangement.

In the center of the parlor stands a carved teak table with marble top and 3 carved teak armchairs (Photos 16). Photo 17 illustrates the beautifully carved design of the armchairs. A

kerosene lamp (Photo 16) which hangs from the center of the ceiling in the parlor. It has a blue and green ceramic base, a white glass shade and brass fittings which have corroded.

Photo 16: Teak Table and Armchairs in Parlor

Photo 17: Close-up of Armchair Design

In the north east corner of the parlor stands a carved teak standing screen with silk panels, two small teak tables (one of which is missing a leg), and four carved teak sconces hang on the wall (Photo 18). The silk panels in the standing screen are damaged and have faded from their original color. There is a considerable amount of water damage on the inside east wall of the parlor.

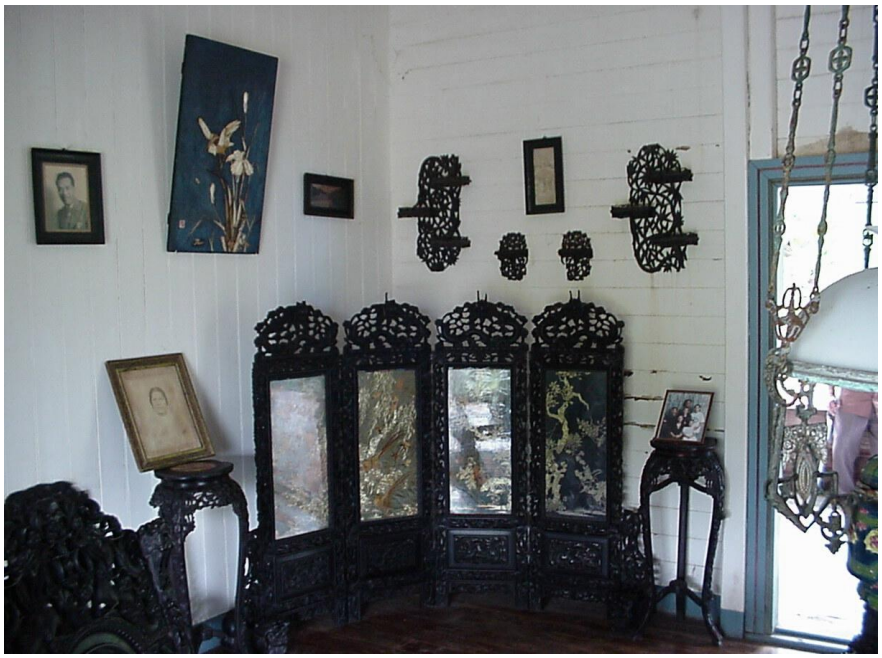


Photo 18: Teak Screen, Side Tables, and Sconces.

In the north west corner of the parlor stands one of the teak straight chairs as well as a teak corner table (Photo 19). Resting on the table are family photographs and a brass bell handing on a carved teak stand. The bell itself shows evidence of bronze disease.

Photo 19: Teak Straight Chair and Corner Table (with Bronze bell hanging on carved teak stand)

In the south west corner of the parlor is a roll top desk, a small teak side table, and another of the straight teak chairs (Photo 20). The desk suffers from termite damage and is missing the roll top. Atop the desk is a brass clock under a bell jar, a microscope under a bell jar, and a 7-day barometer in a wooden and glass case. To the left of the desk is side table on which are family photos and a carved teak elephant statuette with ivory inlays.

Photo 20: Desk, Side Table (with Teak Elephant Statuette), and Straight Chair.

In the south east corner of the parlor stands a large teak cabinet (Photo 21) which is ornately carved (Photo 22). To the right of the cabinet is another corner table which exhibits a white marble statuette as well as family photos (Photo 23).

Photo 21: Teak Cabinet. Note water damage on upper and lower wall.

Photo 22: Close up of Cabinet Design.

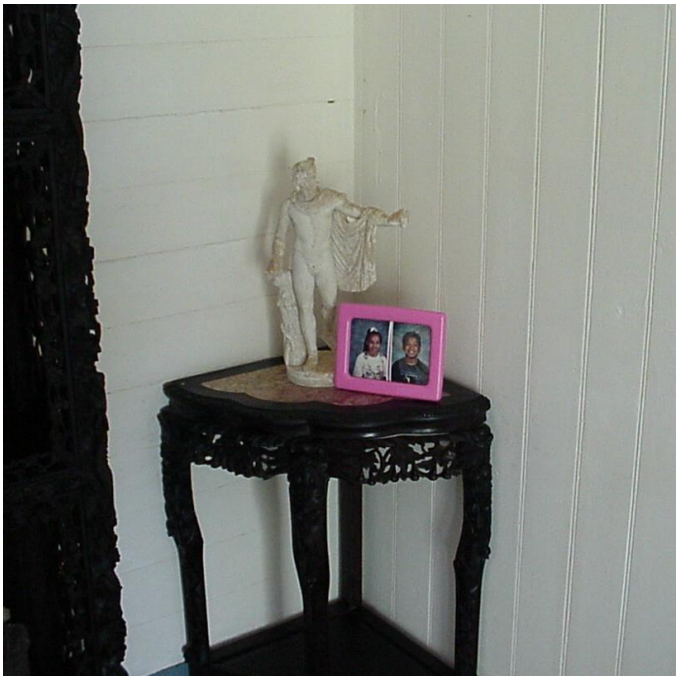


Photo 23: Teak Corner Table with White Marble Statuette.

The north bedroom is in use by the caretaker. On the western side of the room two wooden trunks are being used as tables (Photo 24). In the northwest corner of the room stands a wooden chest with 10 drawers (Photo 24). The chest is situated along the north wall and is slight disrepair and needs cleaning and oiling. To the right of the chest is a third wooden trunk.

Photo 24: Wooden Chest and Trunks

In the center of the north wall is a china cabinet (Photo 25) filled with china and glassware.

Photo 25: Wooden China Cabinet with China and Glassware.

A wardrobe is in the north east corner (Photo 26) and to its right is a second smaller china cabinet (Photo 27) which is in need of minor repairs, cleaning and oiling.

Photo 26: Wooden Wardrobe in North Bedroom.

Photo 27: Wooden China Cabinet.

The south bedroom is currently being used as a library. The floor of this room has sustained both rot and termite damage (Photos 28-29) and is in great need of repair.

Photo 28: Wood Damage on Floor in Southern Bedroom.

Photo 29: Wood Damage on Floor in Southern Bedroom.

Many books fill the six wooden bookcases which are located along the outer walls (Photos 31-32). In 1999, the books were cataloged (O'Neill and Spenneman 2001). Although we did not remove the books from their shelves, it is obvious that they are in great need of stabilization and repair. A second wardrobe is located in the southwest corner of the bedroom (Photo 32).

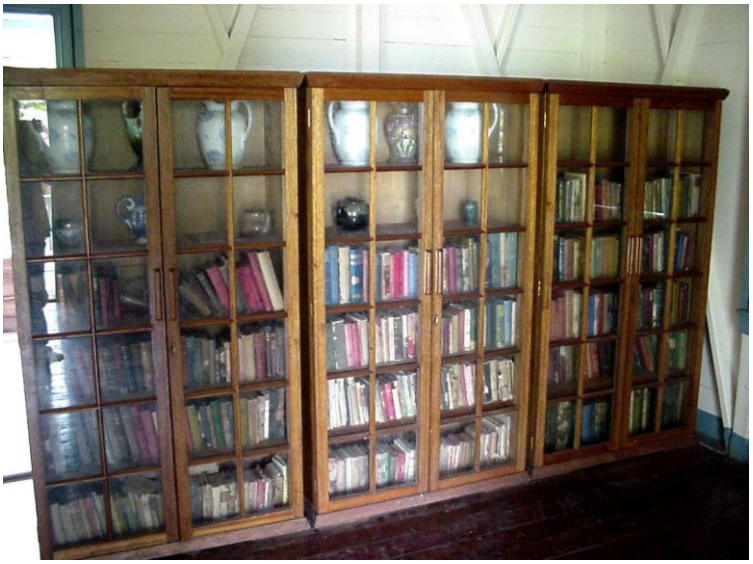


Photo 30: Bookcases and Books in Southern Bedroom.

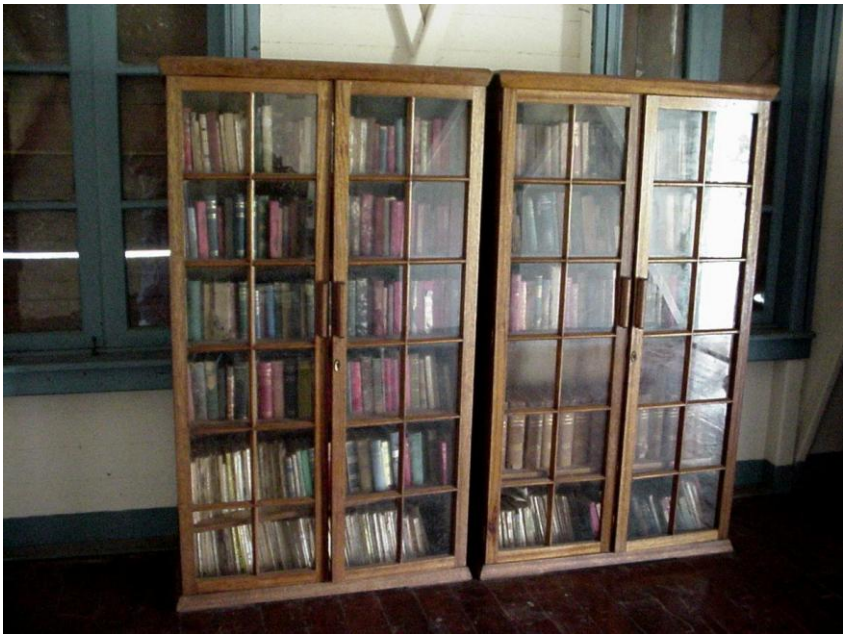


Photo 31: Bookcases and Books in Southern Bedroom.

Photo 32: Wooden Wardrobe and Bookcase in Southern Bedroom.

The historic Joachim deBrum house (Site MI-LK-LK 001), is determined "very significant."

Site MI-LK-LK 002

GPS Coordinates N: 9°49' 29.15"
E: 169°18' 26.08"

The Joachim deBrum storage building (Photo 33) is located to the south of the main house (Map 4). A one-story wooden building set on short blue gum pillars 1-1 ½ feet high. The building itself is 18 x 25 ft and has a wooden floor and metal roof. There are large double doors at both ends but no windows. There is no ceiling or attic.

Photo 33: Storage Shed

There wasn't time for a complete inventory of the building, however, it contains significant ship building tools, shoe-making iron, fish spearheads, dozens of lamp chimneys, pipe cutters, saws, augers, axe heads, molding planes, two stoneware jars, and a sewing machine, all of which are in disarray (Photo 34). There is also a cabinet that contains Earthenware china. Several shelves of the cabinet have collapsed and some of the china has been broken (Photo 35). This was pointed out to Leonard deBrum and he stated he would see that the china was moved to a safer location.

The shed was largely rebuilt during the stabilization project in 1984, when the roof and siding were replaced (Roberts 1984). The roofing now sags and the walls have been damaged by termites. The floorboards are also damaged by termites and rot. This historic site is determined "very significant."

Photo 34: Miscellaneous items inside storage shed.

Photo 35: Damaged shelving with china, inside storage shed.

Site MI-LK-LK 003

GPS Coordinates N: 9°49' 30.02"
E: 169°18' 23.62"

This small concrete foundation (Photo 36) of approximately 8ft x 8ft is all that remains of Joachim deBrum 'original darkroom' built about 1917 and used for only a year or two before he replaced it with the darkroom built against the cistern. It is located about 30ft north of the main house (Map 4).

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 36: Original Darkroom foundation.

Site MI-LK-LK 004

GPS Coordinates N: 9°49' 20.12"
E: 169°18' 29.89"

The Joachim deBrum large catchment (Photo 37). A rectangular above-ground concrete cistern approximately 30 fet north of the main house (Map 4) and measures 15ft by 19ft and is 11ft tall. An office was built on top of the cistern around 1919 and a photographic darkroom was built against the north wall. Neither the office nor darkroom are still in existence.

About halfway between the rectangular catchment and the main house is another cistern (Photo 38). This one is also made of concrete and consists of two adjacent round units, each about six feet across at the top. These were built below ground.

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 37: Joachim deBrum House Water Catchment.

Photo 38: Cistern.

Site MI-LK-LK 005

GPS Coordinates N: 9°49' 31.49"
E: 169°18' 26.95"

Remnants of the Joachim deBrum cookhouse/dining room (Photos 39-40). This is located about 20 feet southeast of the main house (Map 4). The structures have been torn down (since 1984) and all that remains is a shattered concrete slab and collapsed hand pump (Photo 41), both of which are overgrown with vegetation. The dining room was originally 15ft x 23ft and the kitchen 10ft x 15ft. The two were separated by a 6ft wide breezeway.

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 39: Dining Room and Cookhouse, circa 1921.

Photo 40: Remnants of deBrum Dining Room and Cookhouse, facing north.

Photo 41: Remains of Hand Pump.

Site MI-LK-LK 006

GPS Coordinates N: 9°49' 17.19"
E: 169°17' 48.47"

Site MI-LK-LK 006 represents a traditional site associated with the legend of how the sail came to Likiep Atoll (Photos 42-43). The site is commonly known as Jolikiep. The legend says that Letao met an old man named Jolikiep and gave him the sail. The reef has a 'sail' shape with footprints which represent the footprints of Jolikiep's children. For traditional story see Section 6.6. For more stories about Jolikiep see Section 6.7. For another sail story see MI-LK-JT 001.)

This traditional site is determined "significant."

Photo 42 Traditional Site, Jolikiep.

Photo 43: Site of Jolikiep, circa 1900.

Site MI-LK-LK 007

GPS Coordinates N: 9°49' 21.58"
E: 169°17' 54.31"

Site MI-LK-LK 007 represents a traditional site associated with the legend of a whale (Photo 44). No further information was recorded.

This traditional site is determined "significant."

Photo 44: Traditional Site, MI-LK-LK 007.

Site MI-LK-LK 008

GPS Coordinates N: 9°49' 32.73"
E: 169°18' 26.58"

Site MI-LK-LK 008 is the concrete pillars of the former Raymond deBrum house which was built in 1908 (Photo 45). Joachim deBrum built this house for his oldest son, Raymond (Photo 46). Its area is 9.3m by 7.25m. Each pillar is approximately 30cm x 30cm at the base and tapers to 23cm x 23cm where it breaks off at a height of 40cm. Originally there were 30 pillars (5 rows of 6 pillars set approximately 2 meters apart). Only 11 remain intact above ground. What seems to be a step was also discovered There is a papaya tree growing in the center. The concrete is made of huge chunks of coral. This house was reported to have burned down in the 1920s (personal communication: Leonard deBrum).

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 45: Pillars from Raymond deBrum house.

Photo 46: Raymond deBrum as a child.

Site MI-LK-LK 009

GPS Coordinates N: 9°49' 34.58"
E: 169°18' 27.50"

This site is the housing complex of Likomju deBrum (Photo 47), the second wife of Jose deBrum (Photo 48-49). The house was built in 1907 with materials from Germany and Australia. This house is not in use today but many old objects associated with Likomju's life

still remain inside, including books, some of which were moved from the deBrum store when it was torn down.

The house has three rooms with a wide veranda on all four sides. It is built on a concrete slab instead of pillars. This house is in great disrepair. The corrugated tin roofing has corroded and some panels are loose while others are missing altogether. Some of the veranda supports have fallen down and the wooden slate walls have rotted causing separation at the structural joints. The house requires immediate stabilization and restoration if it is to survive much longer.

Photo 47: House of Likomju deBrum

Photo 48: Likomju deBrum and family.

Photo 49: Likomju deBrum and children. Imanuel (sitting); left of Likomju – Kathrine and Melander; in back, L to R, Rose, Domingo, Anton, and Capelle.

There is a water catchment attached to the house (Photo 50). It was built in 1908 with cement from Germany. It is not being used. A shower room is located on the property. It was built in the 1930's and still has its original floor although the walls were replaced after WWII. A ground well, built in 1927 is located nearby. At one time it was connected to a pump that carried water to the shower room and to the cook house. There is little evidence of the dining room and cook house but the well continues to function and now provides water for the Likiep Plantation Haus hotel (personal communication: Joe deBrum).

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 50: Water catchment and Pump house of Likomju deBrum

Site MI-LK-LK 010

GPS Coordinates N: 9°49' 35.01"
E: 169°18' 27.62"

This site (Photo 51) was the home of Domingo deBrum (Photo 52-53). The original home was built in 1920. All that remains is a cement foundation measuring 485cm x 610cm. The foundation is constructed using a box technique. The outer support walls of the foundation are 15cm in height and the box was filled with sand. 2 cm concrete slabs are cover the box frame. They are spaced approximately 45cm apart.

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 51: Foundation of Domingo deBrum's house

Photo 52: Domingo deBrum

Photo 53: Left to Right, Anton, Jr., Domingo, and Melander deBrum.

Site MI-LK-LK 011

The remains of Melander de Brum's home built circa 1921 (Photo 54). All that remains now is part of a cement slab which lays underneath a modern shed. The undisturbed portion of the slab measures 2m x 1.5m. According to Joe deBrum, the home was originally Domingo's as well and after his death, Melander deBrum (Photos 53 and 55) inherited the house but no conformation could be found during the investigation.

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 54: Melander deBrum House foundation.

Photo 55: Melander deBrum and Wife at Wedding.

Site MI-LK-LK 012

GPS Coordinates N: 9°49' 36.92"
E: 169°18' 24.05"

This site is the Godfrey Capelle house and water catchment (Photos 56-59). The house was built in 1921. The house is currently occupied and the water catchment is in use.

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 56: Godfrey Capelle's house.

Photo 57: Godfrey Capelle's house.

Photo 58: Close up of deteriorating pillar from Godfrey Capelle house.

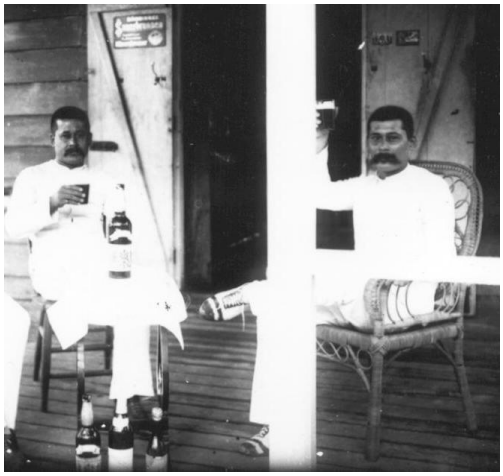


Photo 59: Left to Right, Godfrey and Freddy Capelle.

Site MI-LK-LK 013

GPS Coordinates N: 9°49' 39.57"
E: 169°18' 24.79"

This residential site was once the home of Elise deBrum Hahn (Photo 60-62). It was built in 1922. When Likiep was secured by U.S. Forces during WWII, marines met a plantation owner, Carl F. Hahn, a native German who told them he was shipwrecked in the Marshalls in 1891, had married a Marshallese woman, Elise deBrum (Photo 63), and had lived there ever since (Heinl et al. 1954). The house is currently occupied and the water catchment is in use.

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 60: Elise deBrum Hahn house.

Photo 61: Elise deBrum Hahn water catchment.

Photo 62 Closeup of pillars from Elise deBrum Hahn house.

Photo 63: Elise and Carl Hahn.

Site MI-LK-LK 014

The site is the foundation of the Community Hall which was built in 1927 by the Japanese (Photo 64). It is located to the northeast portion of Likiep. The concrete foundation block still has some remains of the veranda posts. GPS coordinates were taken from MI-LK-LK 015, which is immediately adjacent to the north of the foundation.

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 64: Community Hall foundation.

Site MI-LK-LK 015

GPS Coordinates N: 9°49' 40.06"
E: 169°18' 21.28"

This is a large water catchment, built circa 1886 (Photo 65). According to our informant, Spanish settlers constructed the catchment. This is unlikely, however, as the Spanish never occupied Likiep and that it was built during the German occupation. Nevertheless, it is referred to as the Spanish catchment. It measures 8.2m x 6.9m and is 1.35m high on the outside. Inside is 2.05m deep. The walls are approximately 80cm thick and constructed of three layers, limestone blocks, clay bricks, and cement. Adolph Capelle built an office on top of the catchement (Photos 66, 67, and 69).

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 65: Large Water “Spanish” Catchment.

Photo 66: Adolph Capelle’s office (built above catchment) and dwelling house.

Photo 67: Side View of Capelle’s Office above Catchment.

Site MI-LK-LK 016

This site is the remains of the old "Spanish" Dock that was built in 1886 (Photos 68-69). Constructed of large slabs of coral and crushed coral, the structure is approximately 14 m long. It extends out into the lagoon another five meters. Only large rock fragments remain as the dock has been greatly disturbed. Due to its proximity to the "Spanish Catchment", no GPS coordinates were taken.

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 68: Old "Spanish" Dock

Photo 69: Dock, Capelle's store and office above catchment, circa 1900.

Site MI-LK-LK 017

Site MI-LK-LK 017 is approximately 20 meters north of the Spanish catchement. This site is the remains of a pedestal built in 1927 by the Japanese (Photos 70-71). We were told that it was the base of a sundial, however others mentioned that it was a stand for a telescope so that Capelle and deBrum could view the outer islands to check up on their copra plantations.

The base measures 55cm x 55cm x 90cm. The bricks measure 7.5cm x 13cm and the base is 11 courses high with a 1cm layer of mortar between the bricks. On top of the base is approximately 1cm of cement. A metal bolt is located in the center of the cement.

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 70: Site MI-LK-LK 017

Photo 71: Site MI-LK-LK 017, circa 1900.

Site MI-LK-LK 018

GPS Coordinates N: 9°49' 41.66"
E: 169°18' 19.67"

This is the site of the old Copra Warehouse (Photos 72-73). The warehouse was torn down in 1999. All that presently remains is the concrete foundation (Photo 74).

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 72: Construction of Old Copra Warehouse.

Photo 73: Old Copra Warehouse.

Photo 74: Concrete Slabs of Old Copra Warehouse.

Site MI-LK-LK 019

GPS Coordinates N: 9°49' 38.77"
E: 169°18' 24.54"

This site is the Adolph Capelle Cemetery (Photo 75). Adolph Capelle (Photo 76) was buried here in 1905. His wife Sophie, who died in 1923, is also buried here as are three other individuals.

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 75: Capelle Cemetery.

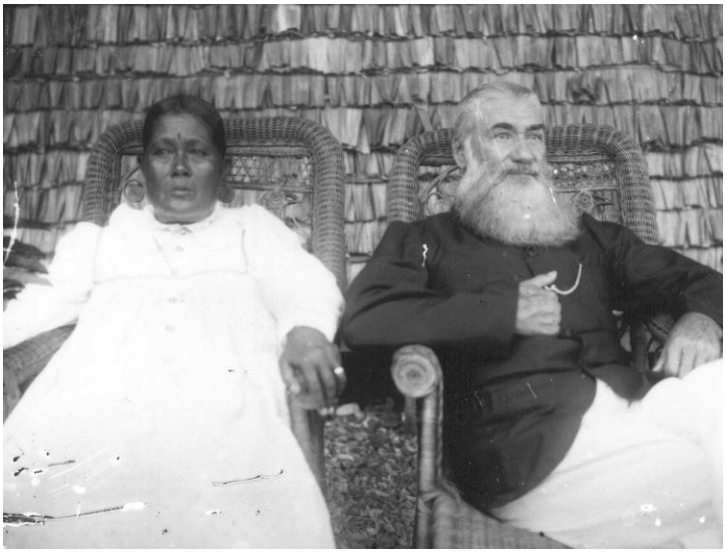


Photo 76: Limenwa (Sophia) and Adolph Capelle.

Site MI-LK-LK 020

GPS Coordinates N: 9°49' 40.06"
E: 169°18' 26.88"

This house (Photo 77) belonged to Erine (Capelle) Hazzer (Photo 78). It is not raised on pillars but instead has a concrete foundation, much like that of MI-LK-LK 014. The house is currently occupied and the original water catchement is used.

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 77: Erine Capelle Hazzer house.

Photo 78: (L to R) Adlina, Vilma, Emilia (on mat), Erine, and Mira holding baby.

Site MI-LK-LK 021

This historic burial site is the village cemetery (Photo 79). Joachim deBrum and his wife, Lijoan, as well as other family members are buried here.

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 79: Likiep Village Cemetery.

Site MI-LK-LK 022

GPS Coordinates N: 9°49' 31.37"
E: 169°18' 19.86"

This is a historic dock site (Photo 80). A WWII era land-base dock was found floating on the ocean side of Likiep in 1944. It was hauled it to it's present position and attached to land. It is located lagoon side of the Catholic Church. It was originally to be used as a dry dock but it quickly began to rust. Today, it is dangerous to walk on as it is collapsing (personal communication: Joe deBrum).

This historic site is one of the few sites at Likiep associated with WWII and so it is determined "significant."

Photo 80: WWII dock.

Site MI-LK-LK 023

GPS Coordinates N: 9°49' 30.51"
E: 169°18' "20.41

This is the Catholic Church at Likiep (Photo 81). The original church building was a thatched hut established in 1902 (Photo 7). It was rebuilt and named *Holy Rosary* on December 25, 1950. A new church building was completed in 1988.

Although the modern church is not considered historic, the site itself should be determined "very significant."

Photo 81: Catholic Church.

Site MI-LK-LK 024

This is the Priest House (Photos 82-83) and water catchment (Photo 84), which was built by the Germans in 1912. It is still in use and in good repair.

As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 82: Priest House, present day.

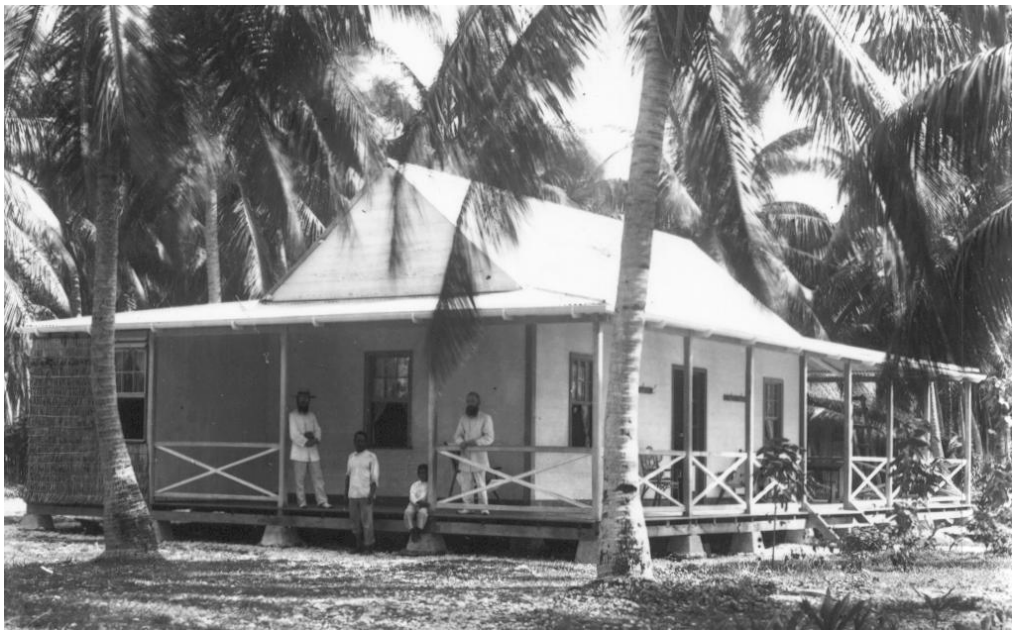


Photo 83: Priest House, circa 1900.

Photo 84: Water Catchment.

Site MI-LK-LK 025

This site is the Nuns Quarters (Photo 85). It was built after WWII and used as a school until the 1950s when it was occupied by the nuns. This historic site is determined "very significant."

Photo 85: Nun's Quarters.

Site MI-LK-LK 026

This Water Catchment system was built after WWII. It is located east of the Nun's Quarters. It is still in use. This historic site is determined "significant."

Photo 86: Water Catchment.

Site MI-LK-LK 027

This site is the oven that was used for the Catholic school (Photo 87). It was built after WWII. This historic site is determined "significant."

Photo 87: Catholic school oven.

Site MI-LK-LK 028

This is a residential site which was once Miram Capelle's house (Photos 68-69). It was built in 1928. Cement pillars and front and back steps are all that remain. Only two of the pillars are *insitu*. The others have been displaced.

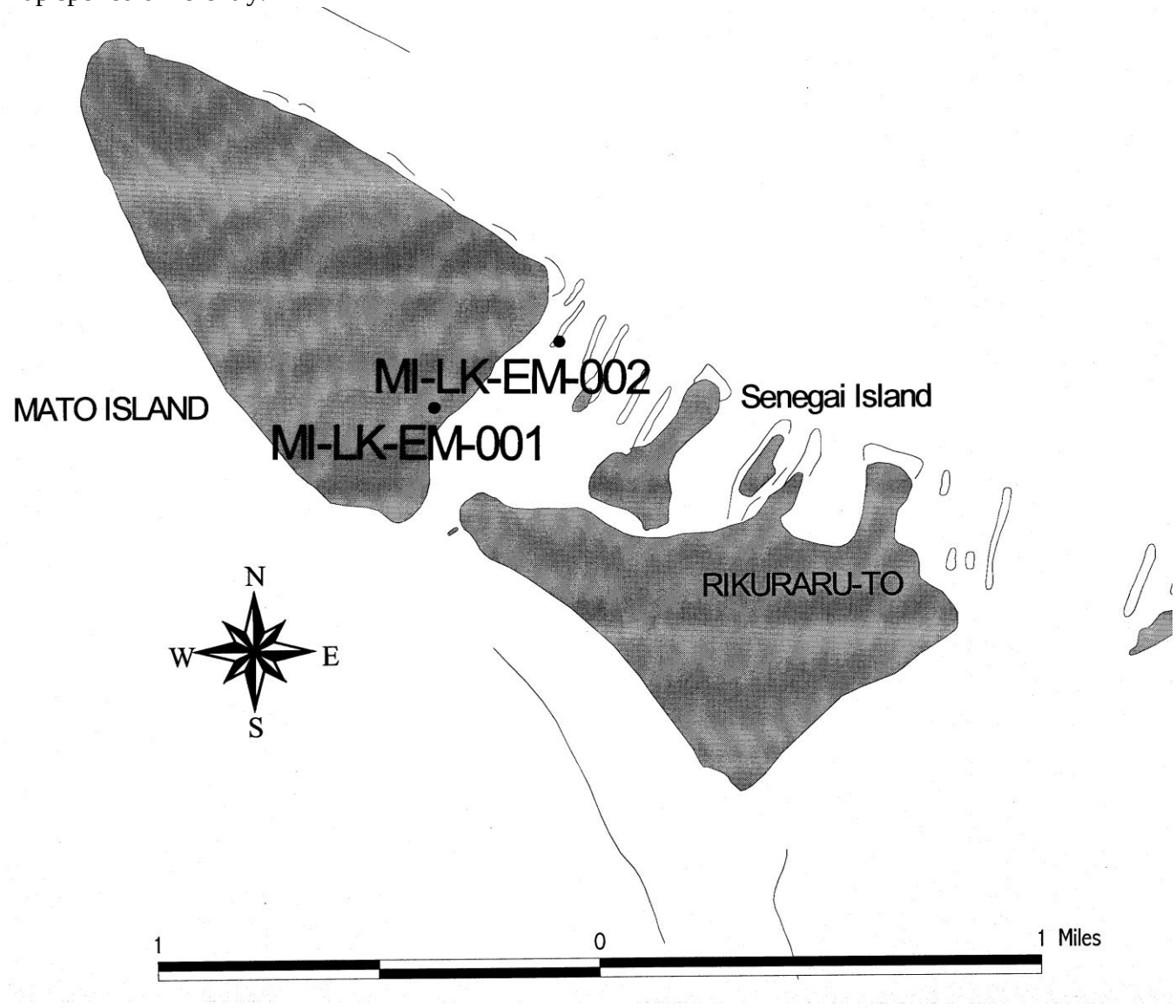
As this historic site is part of the ensemble of sites that comprise Historic Likiep Village, this site is determined "very significant."

Photo 88: Remnants of Miram Capelle house.

Photo 89: Miram Capelle.

4.2 Emejwa, Likiep

Two traditional sites were recorded on Emejwa Island (Map 5). Note: Island names on map spelled differently.



Map 6: Sites on Emejwa, Likiep Atoll

Site MI-LK-EM 001

GPS Coordinates N: 10°02' 04.68"
E: 169°00' 27.08"

This traditional site is where Letao gave boys fire (Photo 90. It is a fishing site located on Lotonke *weto*. For associated traditional story see Section 6.2. Sections 6.3 and 6.4 are different versions of the same story.

This traditional site is determined “significant.”

Photo 90: Traditional Site MI-LK-EM 001

Site MI-LK-EM 002

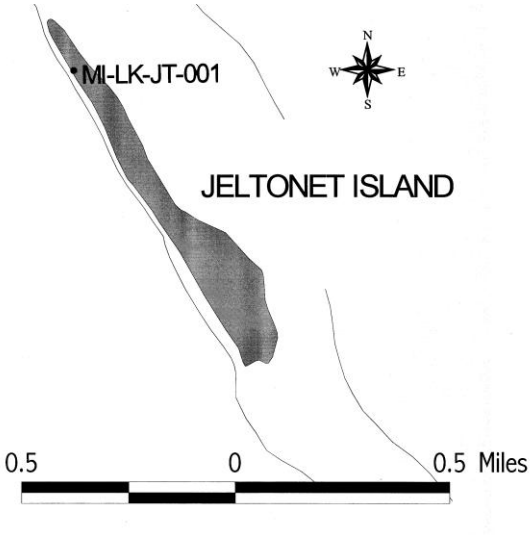
GPS Coordinates N: 10°02' 12.37"
E: 169°00' 40.76"

This traditional site is related to a story about two children who were swimming in a pond and a fish came and ate them. It is located on Welokinwoje *weto* (Photo 91). This traditional site is determined “significant.”

Photo 91: Traditional Site MI-LK-EM 002

4.3 Jaltonnij, Likiep

One traditional site was recorded on Jaltonnij Island (Map 6). Note: Island names on map spelled differently.



Map 7: Sites on Jaltonnij, Likiep Atoll

Site MI-LK-JT 001

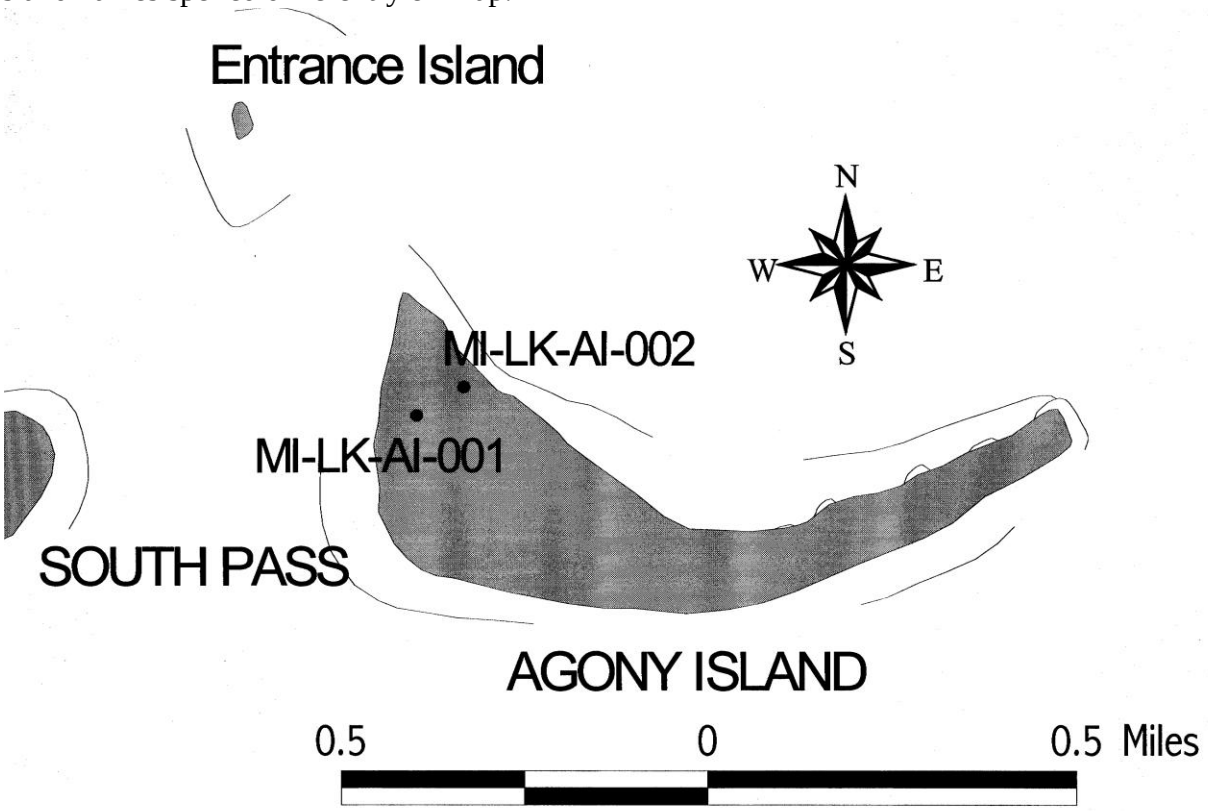
GPS Coordinates N: 10°00' 09.50"
E: 169°06' 32.09"

This is a traditional site commonly known as Loktanur's sail (Photo 92). It doesn't show up in the photo because it was high tide. When the reef is visible there is a shape of the sail. This site is associated with the well known story which tells of a mother, Loktanur, who because of her youngest son's obedience, gives him the first sail which allows him to win a canoe race and become the *Iroojlaplap*. See Section 6.6 for another traditional sail story. This traditional site is determined "significant."

Photo 92: Traditional Site MI-LK-JT 001

4.4 Aikine, Likiep

Two sites, one historic and one traditional are located on Aikine Island (Map 7). Note: Island names spelled differently on map.



Map 8: Sites on Aikine, Likiep Atoll

Site MI-LK-AI 001

GPS Coordinates N: 9°49' 54.82"
E: 169°13' 41.02"

The site is the graves of Jose deBrum and his wife, Likimeto deBrum (Photos 93-96). They are located on Tur *weto*. Both graves are marked with headstones although they were not placed there until recently. There are three more graves in which the former *alab*'s of the *weto* are buried. They are located behind Jose's grave and are marked with glass bottles (Photo 97).

This historic site is determined "very significant."

Photo 93: Graves of Jose and Likimeto deBrum.

Photo 94: Jose deBrum tomb stone.

Photo 95: Likimeto deBrum tomb stone.

Photo 96: Likimeto deBrum.

Photo 97: Graves marked with glass bottles.

Site MI-LK-AI 002

GPS Coordinates N: 9°49' 56.42"
E: 169°13' 44.22"

This site is a traditional site associated with an old woman named Liboliwa who destroys boats of people she does not like (Photo 78). This traditional site is determined "significant." See Section 6.5 for associated traditional story.

Photo 98: Traditional Site MI-LK-AI 002

V. Management Plan

Cultural Resource Management (CRM) in the Republic of the Marshall Islands, while becoming an important part of archaeological work, is still in its infancy. CRM is based on the realization that cultural resources are nonrenewable and that prudent care must be taken to utilize these resources efficiently. While the immediate goal of the HPO survey was to identify the historic sites of Likiep Atoll, the long-term goal should be the education of the local and national population on the importance of preservation of these sites. While the Historic Preservation Legislation of 1992 has codified CRM into law, the cultural traditions of the Marshall Islands, namely the importance of land rights to private landowners, makes the practice of CRM difficult to legislate. And while the Act has established that developers are responsible for the costs involved in conducting archaeological investigations prior to the commencement of construction, there is no precedent case for developers being prosecuted due to violations of that law. Therefore, education is still the most important tool that the HPO can use in site management and preservation.

5.1 Long range recommendations

The historic and traditional sites on Likiep Atoll are valuable resources. As such, they warrant an active preservation effort. Primary concern must be the stabilization of the sites (see short-range recommendations). It is important to note that past preservation efforts have actually damaged the integrity of the Joachim deBrum house. While stabilization is recommended, if it can not be performed professionally no actions should be taken at all. During the stabilization of the house repainting of both the interior and exterior was carried out. Paint splatters were noted on some of the furniture. More repairs were carried out in 1984 when some of the veranda planks were replaced using a size and lower quality of wood (Photo 12-13). The new section has sustained a great deal of termite damage (Photo 14). Also the sliding glass plates were removed during construction, were never replaced, and now are located on the veranda where they can be damaged or destroyed (Photo 15).

The Marshallese Cultural Society of Kwajalein has recently received a grant from the Australian Agency for International Development to restore the Joachim deBrum glass plates. Some of the money will be used to purchase air conditioners to help preserve the house. While these intentions are good, it is our recommendation that before any action is implemented a thorough study should be conducted to determine what effects this will have on the Joachim deBrum house and its contents.

After successful completion of the physical preservation of architectural and archaeological remains, further use of these resources has to be planned. The best move for the HPO seems to be raising public awareness and to actively involve local governments in their preservation efforts. Those preservation efforts should also be directed towards possible sources of income for outer island residents through tourism. Sites that have potential tourist possibilities should to be selected for restoration:

In 1977 the Joachim deBrum house was officially listed in the U.S. National Register of Historic Places, making it the first registered historic site in Micronesia (Jelks & Jelks 1978). In 1985, Carol Curtis attempted to register the entire Likiep Village as a U.S. Historic Landmark.

That application was returned for lack of information, as well as at that time some of the individual sites with in the village had not crossed the 50-year threshold. The application should be re-submitted if the RMI wishes U.S. recognition of the Likiep Village as being an historic district. Whether the HPO follows up on the U.S. nomination process or not, given the historic significance of the Likiep Historic Village to the people of the RMI, every site that is part of the original village – no matter what current state of preservation – has been determined "very significant." In order to maintain the integrity of the original design of the village, even highly disturbed foundations should be preserved.

In addition, given the limitations of the present survey, it is highly recommended that a more intense survey be conducted using proper mapping equipment (transit, etc.).

The whole Likiep Historic Village on Likiep Island is an excellent and unique showcase of the German Occupation period in the Marshall Islands. Partial restoration or simple clearing of the sites and footpaths would allow tourists to visit these sites. Guided tours and handouts would generate the revenue needed to restore more sites and yield potential employment for local residents. Sites MI-LK-LK 001 (Joachim deBrum house), 002 (Joachim deBrum storage shed), 009 (Likomju deBrum House), 012 (Godfry Capelle), 013 (Elise deBrum Hahn), 020 (Erine Capelle Hazzer), as well as the "Spanish" Catchment and Dock (015, 016) properly stabilized, would allow tourists to see Likiep much as it was in the early 1900s. It is unfortunate that the original copra warehouse has been destroyed as it would make for an excellent tourist site concerning early copra making in the Marshall Islands. A tourism management plan for Likiep seems to be a valuable investment for the future. It might be added that the recovery of data, as well as the preservation and possible restoration of historic sites, serves little purpose if the results of this work are not disseminated to the general public. Some of the ways through which this information can be disseminated include training local guides and the production of handouts. Exhibitions, public lectures, and publications should also be considered.

5.2 Short range recommendations

The primary goal of every preservation action should be the proper stabilization of sites being threatened by natural forces or human impact. This is especially true for sites which have been determined to be of significance to Marshallese pre- and early history.

Immediate stabilization is recommended for the following sites:

Site MI-LK-LK 009 (Likomju deBrum House)

Site MI-LK-LK 013 (Elise deBrum Hahn)

Site MI-LK-LK 020 (Erine Capelle Hazzer)

Stabilization is also recommended for the following sites:

Site MI-LK-LK 001 (Joachim deBrum house); furniture, books, and other items located in the house need to be inventoried, cataloged, and stabilized it they are to be protected.

Site MI-LK-LK 002 (Joachim deBrum storage shed); artifacts present need to be inventoried, catalogued, and stabilized if they are to be protected.

Site MI-LK-LK 012 (Godfry Capelle).

Site MI-LK-LK 015, the “Spanish” Catchment

Site MI-LK-LK 016, the “Spanish” Dock

Prior to any stabilization, the site must first be cleared (check for nesting birds or other habitats that might be destroyed in the course of action), mapped, photographed, and studied. In some cases this might involve excavations. Highest priority should be given to sites Site MI-LK-LK 009, Site MI-LK-LK 013 and Site MI-LK-LK 020. These sites are significant historic properties and are threatened by exposure to the elements. The historic properties should be stabilized making use of the general methods outlined in Looks and Spenneman’s 1993 “Management and Conservation Plan.” A step-by-step procedural manual can be found in the Historic Preservation Plan (1996:4-18-4-22). A detailed mapping program should also be initiated, including plane table mapping of major sites. All sites determined “significant” or “very significant” should be included in the RMI National Register of Historic Places.

VI. Oral Traditions

6.1 Introduction

Prior to the introduction of a written language, Marshallese cultural was largely an oral society where information was maintained through oral traditions. Elder generations passed down beliefs, values, and philosophies by telling stories and chants to the younger generations. Many places in the Marshall Islands, which have special cultural significance, offer a wealth of folklore associated with their pasts.

The themes of Marshallese stories are universal: good versus evil; heroism and success of the underdog; the repercussions for children of disobedience; family respect; and sibling and peer rivalry. They are flavored with demons, ghosts, giants, and personified fish and animals. Supportable historical fact is often combined with mythology in the same story.

There is a growing awareness among the Marshallese people of the important roles their oral traditions play in preserving Marshallese cultural identity. In all of the stories, morality prevails, and acceptable behavior and traits of character are exemplified so that they may be passed on from old to young, past to present, and hopefully from generation to generation.

There are many variations in the creation accounts. Regardless, the different versions introduce key characters import to Marshallese cosmology.

According to Erdland's sources, the Ralik version of creation begins with a being Lowa (or Loa) who lived on the sea. An extensive, low table reef in the south and a swamp in the north bordered the sea. Lowa spoke to the sea, 'See your island reef' and the reef formation appeared. The he said, 'See your sand' and the earth appeared on the reef. Again, he spoke: 'See your plants' and plants were growing. Again, he spoke, 'See your birds' and they appeared. One of the birds, a white gull, flew up and, while circling, spread out the sky, like a spider weaving its web between two bushes. When Lowa finally said: 'See your human beings' four human beings appeared, one in each direction: Irojrilik, in the west; (LoKomraan) Lakameran (Daymaker) in the east; (Lorak) Rerek in the south, Lajiminanmen (Lajbuineamuen or Lalikian) in the north.

Then a boil grew on the leg of Lowa, from which, when it burst open, emerged Wulleb and Limdunanij. Limdunanij gave birth to two male beings: Lanej (Master of the Heights), and Lewoj (Master of the Middle of the Island).

Wulleb and his sister's children sat down one day on a stalk of arrowroot. Which, growing up to the vault of the sky, enabled them to ascend. Their peaceful companionship, however, was of short duration. Soon the brothers plotted to kill their uncle, and Wulleb, Lanej, and Lewoj waged war in the dome of the sky. After they had observed each other mistrustfully for several nights, Wulleb's retina tore, and he fell down from the dome of the sky on Imroj. Thus, matrilinearity begins.

When he sighed aloud as the result of his fall, Iroijrilik awoke, came to him, and spoke: 'Well, this is Wulleb, and he has fallen from the sky!' Wulleb answered: 'My nephews and I watched one another by night; then when my retina tore, I fell down.' Iroijrilik then spoke, 'Let us go into the hut.' They went into it and three months passed.

When Wulleb had spent some time with Iroijrilik, a large and extremely painful boil developed on the extensor side of his leg. After it became ripe it broke open, two little boys issued from it, the elder of whom was called Jemeliwut, and the younger Letao.

Wulleb sent them to Lijbage (Tortoise woman) on Bikar Island in order to get magical tortoise shell from her. Lijbage – who, with her granddaughter Lijwei, had come from the Gilbert Islands – gave Letao a magical potion, which he drank despite all his disgust. By doing so, he became a crafty hero who not only conquered several atolls, but also embittered the life of his brother, Jemeliwut that the latter settled on Majuro Atoll, married there, and finally changed into a silver tree. Letao went everywhere seeking adventure and met sudden death in the Gilbert Islands.

According to Reymond (1899) in Das Weltall, the Ratak version of creation starts with two serpents (or worms), the male was called Wulleb and and the female, Lejman (Woman Rock). They developed into human form in a shell. To make a larger world, Wulleb lifted the arch of the shell, using a stick to expand it to the present height of the sky and width of the oceans.

From a boil on Wulleb's forehead emerged Lewoj and Lanej, who were sent to the sky by Wulleb in order to put up the stars. Lejman also had two female offspring, Lino (tidalwave) and Ni (coconut).

Then Wullip collected in a coconut shell the blood from a cut on his leg, and from this blood came Letao (one with the white eyebrow, the powerful, the crafty, the favored one) and Jemelud (father of the rainbow). They went out to conquer. Prior to the conquest of the islands they had already ascended to the vault of heaven in order to defeat their older brothers. That their ascent in the north was successful is clearly shown by the fact that the Northern Hemisphere is less inhabited (studded with stars) by far than the Southern Hemisphere. A bird flew to tell one of the sky gods their plans to defeat their brothers. This god captured Letao's small son, set him impossible tasks, which the son accomplished, then lowering himself to earth on a thread. Letao had settled on Mejit. Bikar was formed by a rock which Letao threw at the bird which had come to spy on him.

For clarification, from the Ralik chain the cosmological genealogy is as follows:

Lowa

Wulleb — Limdunanij

Jemaliwut, Letao — Lanej, Lewoj

From the Ratak chain the cosmogonic genealogy is as follows:

Wulleb — Lejman

Jemaliwut, Letao, Lanej, Lewoj — Lino, Ni

Other accounts add information, some contradictory. According to Knappe the first being was Wulleb who lived with his wife on the invisible island of Eb. One day a tree grew from Wulleb's head, split his skull, and out came Letao and Jemeliut. Letao quarreled with his father and went away, flying through the air with a basket of earth some of which spilled through

a hole, so that the islands came into existence in the sea. Then Letao planted the land, created land and sea animals, and married his mother. Then the bird Babuk came with the female sexual organ in his beak. Letao hid it. Lejman found it and put it on. Neither wore clothes at this time but Lejman became ashamed and took two mats as covering (beginning of clothing). From their union came the first people. In this version, Letao is credited with creating the animals and plants. According to Knappe (1888) the woman wasn't ashamed at her nakedness but because she had an incestuous relationship with her son.

Davenport's version states that Lowa sent a man who put all the islands in a basket and arranged them, first the Carolines, then the two chains of the Marshalls, Namorik was dropped out of order. The basket was eventually thrown down and became Kili.

In several versions, Lowa sent two men to Ailinglaplap to tattoo all the living creatures,' thus giving them colors and markings (Davenport 1953, Chambers 1969, Buckingham 1949). Lowa sent two men down to Bikini with measurements for the first canoe (Buckingham 1949, Davenport 1953). A woman bore a son and a coconut. At his request, she buried the coconut, which grew into the first coconut tree. Again, at his request she husked a coconut and the husks floated to Iroijirilik, who made sennit with them. The sennit was taken by a bird and flew into the air with the rope making a net and widening and raising the sky, holding it up. Rain is water separated into drops falling through the net (Kramer and Neverman 1938, Buckingham 1949, Chambers 1969). Everyone went to Namu to honor Liwatonmour, founder of the *Irooj jowi*. From this gathering came all *jowi*, with *Irooj* as the highest (Chambers 1969).

There are many other stories, which explain the origin of the sailing canoe (Liktanur and her son's canoe race) (Kramer and Neverman 1938, Erdland 1914, Buckingham 1949, Davenport 1953), the origin of navigation (Buckingham 1949), origins of animals, breadfruit (Mackenzie 1960), and taro (Bikajle 1960).

6.2 Likiep – first fire[2]

Where I'm standing and telling this story is where the 12 boys were *karjo* fishing. While they were fishing, a man named Letao showed up. He asked the boys to give him their fishing stick. None of them would do it except the youngest one. Letao began to fish and he caught so many fish that he amazed the boys.

After Letao fished, he looked for two sticks or part of a tree. He told the youngest boy that he's going to teach him how to make a fire. He started to handle the stick and all of a sudden, a fire appeared. That was the first fire ever brought to this world.

Letao played a stupid trick on the little boy by telling him to take the fire and put it in a safe place in his house where nobody would see it. The boy did as Letao instructed. He went to his house and put the fire where the dirty clothes were kept. A moment later, the whole house was totally burned down. When the little boy realized that his house has been burned down, he ran to this spot to look for Letao but he didn't find him. He had already disappeared because he knew that the house would catch on fire.

[2] Story collected by Langinbo Frank and translated by Kenny Paul.

6.3 Kramer's Version of the First Fire

Once there were two brothers, Letao and Jemeliut. Their mother got angry and set out for Ronglap, they followed after her, but did not find her. Finally, they learned that the woman had moved to Likiep, so they followed her. When the two arrived in Likiep, the people were *gerang* fishing[3]. Letao said to one of the fisherman, "Give me your fishing rod."

The person addressed answered, "Where is your rod; fish for yourself!" Then Letao said, "Good, you shall remain in your place and not go home any more!" He then transformed him into a *kone* tree, a type of tree that always grew in the shallow water, among the rocks. It was solid and heavy, stuck to the rocks. All the people who did not oblige him shared the same fate; they remained stuck to the ground. Only when he asked a boy for his rod, was it granted to him.

Then Letao caught many fish with his fishing rod, all of which he gave to the little one, and he also showed him the art of making fire, so that he could roast them. The people did not know about fire yet and ate their fish raw. When Letao asked the boy whether he would rather have raw or cooked fish, he cried, "Cooked! Oh, cooked!" "Good," said Letao, "take the fire to your parents," he put it in a basket, and the boy went away. When he arrived home, however, the basket started to burn; the house caught fire and burned down. Then the boy ran to Letao and cried, "You burned everything, the house and everything in it." Then Letao answered, "Just go back, everything is all right." When the boy reached home, everything was in order.

From that time, the people in Likiep Island and eventually all the atolls in the Ralik and Ratak Chains had fire and knew how to cook their food (Kramer and Nevermann 1938: 239-40).

6.4 Erdland's Version of the first fire

Once there were two brothers, Letao and Jemeliut. While in Likiep they became thirsty. The elder brother spoke, "When we arrive over there, there will be a shell filled with water!" When they arrived, no water was there. Then the younger spoke, "When we arrive over there, water will have been drawn!" They drank and moved on.

On the way, they saw people fishing for *jo* fish. Letao asked for a fish pole to fish with. The person he spoke to, however, replied, "Where is your own fish pole? Go away!" Then Letao spoke, "When the fish nibble, your feet will become stuck," and the fisherman's foot was stuck to the earth. Letao asked another person for a pole and when the man says, "Where is your own fish pole? Go away!" Letao spoke, "When the fish nibble, your feet will become stuck," and the fisherman's foot was stuck to the earth. This continues to happen until all of the fishermen are stuck to the earth.[4]

When he now asked a boy for his fish pole, the boy answered, "Here you are!" Letao, full of joy, fished and caught many fish. Then he spoke to the boy, "Bring wood to make fire!" The boy asked, "What is a piece of wood for making fire?" "A dry piece of wood!" The boy fetched some and rubbed, and a fire was kindled, on which three breadfruit and the fish were

[3] A basket stands on three poles about two meters long, set up tent-like, which cross each other at the height of about one and a half meters. The basket sets in the upper three prongs. Three crossbars are fastened on below, so that three people can climb up to put the fish in (Kramer and Nevermann 1938).

[4] The fisherman became petriefied. These petrified people are still to be seen today north of the island Lodo on Likiep Atoll. If one travels northward from the island Likiep on the lagoon side you can see various stone blocks on the sea side, which look like fishermen arranged in a row (Erdland 1914).

baked. The boy blinked with his eyes and looked at the fire in surprise, demanding it as his own. He said to the two brothers, "What is to be done with this thing?" They answered, "Take it and place it on dry palm leaf husks and put the whole thing in your mother's little basket!" When they went away, the hut burned and they said, "It is in flames!" (Erdland 1914: 192-194)[5]

6.5 Likiep – Li-Koliwa[6]

According to my understanding about this coral called LiKoliwa. LiKoliwa was a woman who lived on this Island. She died many years ago and her spirit lives in the sea. Her job was to destroy any ship or vessel that came close to the island. Nowadays, we can see that she's already turned into a coral. Anytime you come and visit this island you see how strong and big the wind and waves are. It's like this everyday, because her spirit still lives on this island.

6.6 Likiep - The story of the first sail[7]

I know that the sail came from Ailinglaplap Atoll. After Ailinglaplap a man named Letao took it to Majuro, and continues his journey to this island. It's where he met the old man Jolikiep and handed over the sail to him and his children. Nowadays, if you come here, you will see the shape of the sail on the coral reef along with footprints. These footprints are from Jolikieps' children.

6.7 Letao Recovers Missing Wife for Jolikiep, Kramer's Version

The head chief Jolikiep had a wife. A strong man called Kerang had become involved with her, and both of them fled to another island of the lagoon. Jolikiep was very angry. Letao asked him why he was sick. He answered, "My stomach is sick." But Letao already knew what the trouble was and questioned him again. Then the answer came, "I am sad." Letao said, "Why?" Jolikiep replied, "My wife ran away." "Where is she?", Letao asked. Jolikiep said, "She has been stolen." Letao asked who did it, but Jolikiep did not know.

Letao had two boys, Limjaben and Kolorao, they were good-looking. They lived apart from each other. When Letao told Limjaben what had happened, he set out to go to Kolorao. When he arrived, Kolorao's two wives were just opening *bob* fruit. He asked them where Kolorao was, since he did not know him yet. They wanted to know his name and impressed it upon their minds, repeating it all the time on the way. But when they reached Kolorao, they had forgotten the word. They returned once more to Limjaben and asked him once again. Then they returned to Kolorao, whom they told that somebody wanted to see him. He asked, "Who?" They replied, "A young man." "What is his name?" asked Kolorao again. Then she said correctly, "Limjaben." "Oh, that is my brother," cried Kolorao and hurried to him. When the message was communicated, they both returned to their father Letao, who had transformed himself into an octopus in order to make beautiful hair (arms) for Kolorao. That he might also have a beautiful, red mouth, he caught a *jera* fish; then he sent it to Kerang. But Kolora could not get into the house, because there was a big fence of cord around it. Because he wanted to get inside, he cut a hole and reached the woman in this manner; he asked her, "Are you alone in

[5] Another version of this story states that while Letao was disguised as a papaya tree one of the boys decided to run and hide the fire in his house. Of course, the house burned to the ground, but Letao quickly restored it.
[6] Story collected by Langinbo Frank and translated by Kenny Paul. See site MI-LK-AI 002.
[7] Story collected by Langinbo Frank and translated by Kenny Paul. See site MI-LK-LK 006.

the house?" When she affirmed this, he asked further, "Where is your husband?" She answered, "He went away."

Questions and answers were exchanged as follows. Letao, "Why?" She replied, "To go fishing, he wants to catch Kerang." Letao, "Good, then come with me." "Good!" she replied. Letao then asked her what she had in the house. She replied she had nothing. "Nothing at all?" asked Letao. "Nothing," she replied. "Absolutely nothing?" asked Letao. "Nothing!, Oh yes, a net". "That is what I need," said Letao.

She gave it to him, and he soon cut a hole in it. The he put it aside and went away with the woman. Kerang came soon afterward, saw the net, and took it away. In the meantime, Kolorao had gone into the bush with the woman. He said to her, "Let us pick *kanot* leaves." She filled her arms with them. Soon Kerang came after them with the net and threw it over both of them, then he lifted the load upon his shoulder and trudged home. In the meantime, they crept out through the hole, so that he only found the leaves when he opened the bundle at home. He shook out the net, and there were actually only leaves in it. Then he ran after them again with the net. But exactly the same thing happened. The third time, the couple had already reached the house of Letao. He gave the woman back to Jolikiep. Kerang, however, went away empty (Kramer and Nevermann 1938: 276-77).

6.8 Letao Recovers his Daughter-in-law for Lewoj and Lanej, Erdland's version[8]

Kolorao and Limjaben are Letao's sons. Kolorao's wife was a beautiful woman, a native of Likiep. Lewoj and Lanej wished to take her. Both sent someone to Kolorao, who sent the woman. And the woman simply went.

Both wished that Kolorao would die. So they sent the woman to Letao. Letao sent the woman to Lukonwor, an island on the southwestern side of Likiep, to burn brush hoping to keep the beautiful woman away from his cousins. She is supposed to pull weeds and burn off shrubs on the island so that the smell and a bedraggled appearance will deter the two lovers.

Thereupon a hideous spirit, Kiran, came to carry off the woman as his wife and took her to his own island.

The chiefs were sad. They said, "Bring Letao here!" Letao came, and they said, "Can you bring the woman here since otherwise we shall die of sadness?" He went to the island Lolim and took his youngest son Limjaben with him. Both went and landed in Lukonwor. Letao spoke to him, "Go, and tell your elder brother to come here!" When he went, the women were alone in the hut and Kolorao was absent. They saw no one, for the island was densely overgrown. They trembled. "Women! Where is your husband?" And they said to themselves, "How does he know that we have a husband?" Then they said, "Where are you from?" And he answered, "From Lolim, but where is Kolorao?" "He is at the outer shore, he is pulling weeds there!" "Tell him to come here. If he says, 'to whom?, tell him to Limjaben!" They repeated his name, "Lime Lim Limjaben, Limjaben. Lime Lim Limjaben." The man said, "I wish they would forget my name!" And they said, "What is his name? I don't know his name! I don't know it since we have forgotten it!" Then they said, "Let us return to him!" Both went and said, "What is your name?" He burst out laughing and said, "Limjaben". They went again,

[8] Story told to Erdland by Loien

repeating the name, and again forgot it. They found Kolorao. They said, "Go to Limjaben!" And he said, "That is my younger brother!"

They went to him in the hut, and Limjaben spoke, "Women! Go and say that our father is welcome to eat with us!" Letao wants to play a trick on the women and changes into a poulp. In all his metamorphoses, however, Letao must again assume his natural form as soon as someone says the word *kuojkuojwaj* to him, which probably means "take your condemned man's meal." So Letao became a poulp and the women said, "He has disappeared, we have seen no one!" Then Limjaben said, "Speak; Prepare to die Letao." Thereupon the poulp arose and when it arose it became a man. Then Letao said, "Go, and say Let Kolorao come here!"

Kolorao came to sit down; his father oiled the hair of his head and tied it in a tuft. Thereupon he clothed himself in a mat and put a protective mat over it. His father plucked at the mat to adjust it and cut off the fiber ends. Then he sang, "Come, east wind, and blow into the mat end of this man." He did this in order to find out where the woman was staying, Letao lets the mat end blow in all directions so that the smell of the fine palm oil will attract the love-crazed women. The east wind started up and blew into the mats end blew, and when it blew, many women appeared. He looked for the beautiful woman, but she was not among them. "North wind, blow into the mat end of this man!" It blew southward, and as it blew many women appeared, but the beautiful woman was not there. "West wind, blow into the mat end of this man!" It blew eastward and blew hither, many women appeared, but she was not there. When the missing woman is not among them, he assumes that she has been captured so he thinks of Kiran.

Now Letao gave Kolorao an old coconut seed, a stick for making fire, and a mussel knife. He went. When he came to Kiran's island there was no path leading inland there, but only shrubbery. Thereupon he started to make a fire. The fire started up, and he burned the old palm meat. A rat caught the odor and came to eat the palm seed. Kolorao, however, went in where the rat had come out, namely, in a bamboo tube and ran to Kiran's hut, from which, however, the latter was absent. He abducted the woman and cut through the bottom of the fish net.

Both rushed off, but when they looked around, they saw Kiran seizing the fish net in order to catch them in it. They ran cross-country to the high water mark, broke twigs off the salt-water bush, covered themselves with them, and lay down. Kiran came to catch them, but they fell through the bottom of the net, so that Kiran rushed off with the leaves. They went to Letao, and Letao brought the woman back to Lewoj and Lanej (Erdland 1914: 197-201).

VII. Summary and Conclusions

As mentioned in the introduction, the objectives of the present project were very clear and focused on site survey and inventory and education. The present work at the HPO is focusing on surveys of all the atolls within the Republic in order to produce a complete site inventory and National Register.

Part I of this report discussed the project's research design, scope of work, and methodology. It also included a section on previous work and the history of the Marshall Islands and Likiep Atoll.

Part II described the environmental setting of Likiep. Typhoons can drastically alter the landscape of low-lying atolls in the Pacific. Sea level changes pose additional threats to atoll environments. It is predicted that the global warming trend will have a tremendous impact on atoll communities within the next century. Information provided on vegetation and soil types provide clues to the likelihood of areas primarily used for agriculture.

Part III discussed land tenure and subsistence strategies. This is important for evaluating the significance of sites concerning their standing in time and space. How certain areas may provide a better chance of recovering subsurface material in future intensive excavations.

Part IV reported the results of the field investigations. A total of thirty-three historic or traditional sites were recorded. Twenty-eight sites were documented on Likiep, Likiep (two traditional sites and 26 historic sites). There were two traditional sites recorded on Emejwa, one traditional site on Jaltonnij, and two sites on Aikine, one traditional site and one historic cemetery. It must be noted that given the methodology of the survey this inventory is incomplete. A more intensive survey still needs to be conducted.

Part V listed possible long-term and short-term management plans for the preservation of the sites on Likiep Island.

Part VI lists the traditional stories associated with Likiep.

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