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Anthropological Survey of Jaluit Atoll:

Terrestrial and Underwater Reconnaissance Surveys and Oral History Recordings

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Donna K. Stone, Richard Williamson, & Jeffrey Zebedy

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Forward

The following monograph is the result of research conducted between August 12 & September 10, 1996 (terrestrial research) and April 25 & May 9, 1997 (underwater research) at Jaluit Atoll, Republic of the Marshall Islands. The research consisted of three sections: the non-intrusive, terrestrial archaeological reconnaissance survey, the non-intrusive, underwater archaeological reconnaissance survey, and the collection of traditional Oral Histories. While the projects are complimentary and were all sponsored by the Republic of the Marshall Island's Historic Preservation Office, the three projects were independent of one another. The responsibility of unifying the three projects into a cohesive monograph was the responsibility of Boris Deunert, the archaeologist at the Historic Preservation Office at the time the research was conducted. Unfortunately, he left his position before the final draft was completed and edited. In the fall of 1998 Richard Williamson and Donna K. Stone finished compiling the final draft. Although the text was almost finished, several chapters had to be completely updated and re-written and the sections *A Brief History of Jaluit Atoll* in Report 1 and the *Introduction* to Report 3 were written by Donna K. Stone. The final draft was reviewed by Mark Rudo of the National Park Service. Our thanks go to him as well as his colleagues Paula Falk Creech and David Look. Our further thanks go to the Minister of Internal Affairs and Chairman of the RMI Advisory Council for Historic Preservation, the Hon. Hiroshi Yamamura, as well as the Secretary of Internal Affairs and Historic Preservation Officer, Mr. Frederick deBrum. Finally, our deepest thanks goes to the people of Jaluit Atoll and all those who helped make this research possible.

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Richard V. Williamson
Majuro Atoll, Marshall Islands
October 1999

Report 1.
Jaluit Atoll Non-Intrusive Reconnaissance Survey

I. Introduction

This report represents the results of archaeological research conducted on Jaluit Atoll, Marshall Islands between August 12 and September 10, 1996, by the Historic Preservation Office, Majuro, Marshall Islands. All field documents, including completed site survey forms, field notes, maps, photographs are housed at Historic Preservation Office, Majuro Atoll, Republic of the Marshall Islands. Collected artifacts are housed at the Alele Museum, Majuro Atoll, Republic of the Marshall Islands. The US National Park Service provided funding.

1.1 Object Oriented Research

The research questions were determined by the limit of conclusions likely to be reached through an archaeological reconnaissance survey. The main issues of the investigation were as follows:

1. Where are the exact locations of sites having a high potential for yielding significant knowledge regarding prehistoric settlement and occupation?
2. Where are the exact locations of historic sites having played an important role in the early "western" colonization and administration of particularly Jaluit?
3. Where are the exact locations of traditional sites being associated with Marshallese legends known today?
4. Christiansen's (1994) monograph formed the basis of this survey regarding WWII sites. How accurate is Christiansen's report; are significant sites missing? Has any notable deterioration of sites occurred, and what are the main factors causing such deterioration?

Pertaining to individual sites the following questions were addressed:

5. Are there immediate threats to the sites caused by erosion, vandalism, and other destructive forces?
6. How does the site compare with similar sites in the Marshall Islands?
7. What activities (either recognizable through surface features or information obtained from local elders) were carried out at the sites?
8. What, if any, were the historic impacts to the site (for example change of burial practices, etc.)?

1.2 Theme Delineation and Definition

A) Factual

Apart from the obvious task to properly address and possibly solve the research questions outlined in Section 1.1, other potentially important issues need to be considered. When dealing with prehistorical and historical aspects of a culture, considering their standing in time and space, one should not neglect the contemporary culture. When conducting ethnological, archaeological or any other kind of research, the investigators should investigate the possible

benefits for today's society. Therefore it seemed of utmost importance to involve local governments and residents at the earliest stages of the research project. Rather than informing local residents what they should regard as important or culturally significant, the researchers should consider their ideas and their selection of meaningful sites and objects.

The researcher must realize that the native people rely considerably on imported goods and that they live in a money-oriented society. When budgeting a research project, sufficient funds should be set aside for payments to both local laborers and informants. People living in urban centers prefer monetary compensation, while rural communities often prefer compensation in goods. Close contact with local governments and residents can be mutually beneficial and may pave avenues for future research.

Considering this, one objective of the Jaluit Non-Intrusive Reconnaissance Survey was to establish community awareness of illegal actions such as the export of artifacts, land modification activities without a permit, and vandalism or inappropriate reuse of prehistoric and historic sites and the associated artifacts. Local government representatives, being the implementers of legislation governing the atoll or island, should be actively involved in the research and the possible solutions of the problems stated above (Part 1.1). Only when local governments see the need and effectiveness of Historic Preservation will the national government be able to establish local Historic Preservation Offices that will not fail to serve their purpose.

B) Spatial

Although the present research was intended to cover the entire landmass of Jaluit Atoll, the spatial outline of the research was soon altered. The initial survey of Jaluit, Jaluit and Pinglap Islands, indicated that it would be impossible to survey the entire atoll in the time allotted. Additionally, a devastating typhoon hit Jaluit Atoll in 1957. The typhoon blew with such enormous velocity that local survivors estimated waves of over seven meters. The tidal action buried some islands under a meter of coral and gravel rubble and in some instances wiped out small islands and altered the shape of the larger ones. The center of the typhoon hit half of Jaluit Atoll and miraculously left the islets southwest of the northwestern-southeastern axle virtually untouched. It was therefore decided to survey those islands, assuming they would have the greatest potential of yielding intact prehistoric and historic sites. Two exceptions were Imiej and Imroj, both of which are larger islands and were only partially destroyed by the typhoon and are historically known to have played an important role in WWII and early religious practices. Altogether nine islands were surveyed: Jaluit, Taka, Menge, Ai, Elizabeth Island, Pinglap, Imroj, Imiej, and Bokenake.

C) Temporal

There were no temporal limitations placed on the sites being recorded during reconnaissance survey. A site was considered very significant if it met at least one of the Marshall Islands' formal criteria [RMI Historic Preservation Legislation, "Regulations Governing Land Modification Activities, Section 6(2)(a)]:

(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.

1.3 History and Previous Research

1.3.1 A Brief History of Jaluit Atoll

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).

Marshallese self-rule was endangered in the early 1500s when Spaniards sighted the atolls, but there is no record of contact. Around 1788, the British sea captains Gilbert and Marshall were responsible for the first complete charts of the Marshalls and their names were later applied to the island groups they discovered. Significant contact between Europeans and the Marshallese did not occur until the Russian Otto von Kotzebue and his crew spent several months in the Ratak islands in 1817 and 1824. Jaluit was not sighted until 1803, by the British ship *Rolla* (Hezel 1983). In 1857, American missionaries succeeded in setting up their first outpost on the southern Ralik atoll Ebon. In the mid-1860s Hawaiian Christian teachers were placed on Jaluit to begin preaching and opening schools (Hezel 1983).

The copra trade dates from about 1860 and by 1873 the A.Capelle & Company had moved its headquarters to Jaluit. Godeffroy & Son also located its main office at Jaluit (Hezel 1983). The first trading post was built on Jaluit when Thomas Farrel, an Auckland merchant, and James Lyle Young, an Irishman, opened a chain of trading stations in the Marshalls.

The late 1860s and early 1870s saw a growing problem with Pacific labor recruiters, blackbirders, who secured and transported human cargo to work on plantations throughout the world. As competition for island laborers increased, the labor traders turned to more disreputable means of securing their cargo; abduction. By 1873, the worst of the labor recruitment had ended. Only in the Marshalls, where Jaluit was used as a depot for native laborers recruited in the Gilberts to work on sugar plantations in Hawaii, did it continue to any extent.

In the early 1880s Jaluit was the major commercial depot of the Marshalls as well as the political municipality as it was the home of the high chief, Kabua, of the southern Ralik islands. Two of the three great trading firms had their headquarters on the islands. About thirty different vessels, most of them German, were making over a hundred calls a year (Hezel 1983). Jaluit had become the busiest port in Micronesia. Jaluit's new port town consisted of not much more than

two trading establishments, a few frame houses occupied by the firms' foreign personnel, and a couple of saloons; but to visiting seamen it was the most urban port around. The trading stores sold coal to steamships in need of refueling and just about everything else to anyone who wanted to shop. Considering the era and location, Jaluit was a place where one could purchase practically any commodity of the civilized world.

A man named Black Tom Tilton ran the Union Hotel in Jaluit. Tilton was a run away slave from Delaware who settled on Jaluit in 1878 (Hezel 1983). Marshallese and foreign sailors alike patronized Tilton's, and other local bars. Drunkenness was soon a growing problem. Kabua made a law prohibiting the sale of liquor to islanders throughout the western chain of the Marshall Islands. British officials endorsed the new law as well as opposed the sale of weapons.

German copra traders succeeded in persuading their government to formally annex the Islands as an Imperial German Protectorate in 1885. Five Marshallese chiefs at Jaluit signed treaties in which German protection was officially recognized. This was the first step in a process of German political intervention that was eventually to lead to the full annexation of the Marshall Islands. Kabua was given official recognition as "King of the Ralik Islands" (Hart 1998, Hezel 1993).

The German trading companies took responsibility for governing the Marshalls from their headquarters on Jaluit (Hezel 1983). Through numerous forms of managerial harassment, they forced nearly all non-German traders to withdraw from the Islands. The Jaluit Company was formed and took control in 1888 with Jaluit as its capitol.

At the onset of WW I, Japan seized control of the Marshalls from Germany. In 1914 Jaluit became the Japanese administrative center. Later, the Japanese built an airstrip on nearby Emidj Island and shipped tons of soil from Kosrae and Pohnpei to create vegetable gardens on the island (Hart 1998).

In 1917, the British and Japanese agreed to recognize each other's claims in the Pacific when the war ended. When the Japanese took over they fortified the island and started a fishing industry. Limited elementary education and medical became available on Jaluit. The US captured the atoll during WW II, but then mostly ignored it. In the 1950s Catholic and Protestant missions were set up and Jaluit began to prosper again.

1.3.2 Previous Research

The lack of previous research conducted was one, if not the main, criteria for the selection of Jaluit Atoll. Although the National Register Program Division of the National Park Service, San Francisco mentions Jaluit Atoll for a possible survey to be initiated as part of the preservation projects FY ’80, the survey was never conducted. Even the comprehensive study carried out under the leadership of Paul H. Rosendahl (1979, 1987) during March-June 1977 did not include Jaluit. 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.

Although no previous research had been conducted on Jaluit Atoll, 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). Of special interest for this study, was the prevailing opinion of initial settlement patterns. Riley (1981 and 1987), as well as, Dye (1987) mention that older sites were usually located alongside the lagoonal strand and later sites were found in the interior, particularly on the larger islets. Without being able to date the sites on Jaluit other than relying on the accounts of local residents, supposedly older sites were found alongside the ocean strand and interior, while later occupation tended to favor the lagoon side of the island. Subsequent research, including test excavations, should investigate this phenomenon.

1.4 Evaluation of Research Design and Methods Used

A) "Non-intrusive" reconnaissance survey

The Jaluit reconnaissance survey was "non-intrusive." The team did not remove any artifacts and/or food remains other than those in danger of being lost due to the natural erosion process, vandalism, or extremely fragile surface artifacts. The purpose of a "non-intrusive" survey was fourfold. First, by leaving all artifacts *in situ* future researchers will be able to recognize and properly interpret the sites. Second, the survey team had neither the time nor the equipment (see Section 1.4C) to take the necessary steps for recovering and analyzing artifacts, not to mention the appropriate curation afterwards. Third, given the laws and customs of the Marshall Islands, the consent of a variety of individuals needed to be obtained for each parcel of land (*weto*) before even a reconnaissance survey could be performed. In order to keep from biasing the data and collecting artifacts in one locale where permission had been granted and not from another locale where permission had not been granted, a "non-intrusive" approach was chosen. Fourth, the grantor of the monies used in this research, the US National Park Service, prohibits "unnecessary" archaeological excavations.

The reconnaissance survey proceeded by 1) recording all sites encountered; 2) sketch mapping sites (using tape and compass) and indicating approximate location on existing maps; 3) preparing written descriptions also mentioning land ownership and contact persons; 4) photographing sites; and 5) listing possible threats to sites.

B) Some remarks on Nomenclature

While consulting various sources of literature, a clear inconsistency of nomenclature was noted. Per common archaeological definition, a platform would be a slightly elevated area exhibiting one if not all of the following features:

1) establishment of a planum
2) rock or coral alignments (in some cases walls) on two or more sites
3) compacted soil or gravel layers

While most authors (Riley 1987: 187) distinguish between unfaced and faced platforms, (faced exhibiting definite coral block alignments and unfaced being basically nothing but coral

gravel spread with no coral block alignment), other authors (Spennemann 1990:96) refer to them as coral gravel spread not necessarily being a platform.

Since the majority of the sites found in the Marshall Islands display coral gravel spread, a common nomenclature seems to be appropriate. The authors prefer Spennemann's definition as most of the coral gravel areas are not elevated, the main criteria used to define a platform. Without further evidence, a gravel pavement cannot be assigned to either historic or prehistoric occupation, nor can its function (burial ground, house site, or habitation area) be clearly stated. Therefore, the authors simply refer to these sites as "coral gravel paved area."

C) Survey Equipment

Considering the available survey equipment it was obvious that the team would have to improvise in the field. The survey equipment consisted of:

1 Silva compass
1 Brunton compass
1 semi-functional camera
5 rolls of film
notebooks, pencils, and clipboards (metal)
2 30m cloth tape measures
2 5m metal tape measures
1 roll of flagging tape

The lack of compasses and flagging tape for each team member excluded a systematic walk-through survey. Additionally, not every feature of a site could be photographically documented due to the limited supply of film. The outcome of the photographs was also questionable since the camera was only partially functional. Therefore it was decided to rely on measured field drawings. The Brunton compass proved to be unreliable for field drawings, causing major delays in the reconnaissance survey. The lack of detailed maps or aerial photographs made establishing the exact location of a site often an unrealistic task.

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 (See Section 7.2). Since precisely locating sites on the various islets was problematic (See Section 1.5) the use of guides was essential. Information was obtained in casual meetings throughout the duration of the fieldwork; no formal questionnaire was developed.

[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.

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 (Menge, Bokenake, Jaluit) the following method was applied. The crew (generally two) 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 left out due to the lack of appropriate clearing tool (machetes). When a site was noted, the location, nature, and extent of the surface deposit were recorded and a site number was assigned. Precise mapping of the sites was a problem. Pacing the site to the nearest high water mark was in many instances the only solution.

1.5 Limitations of Research

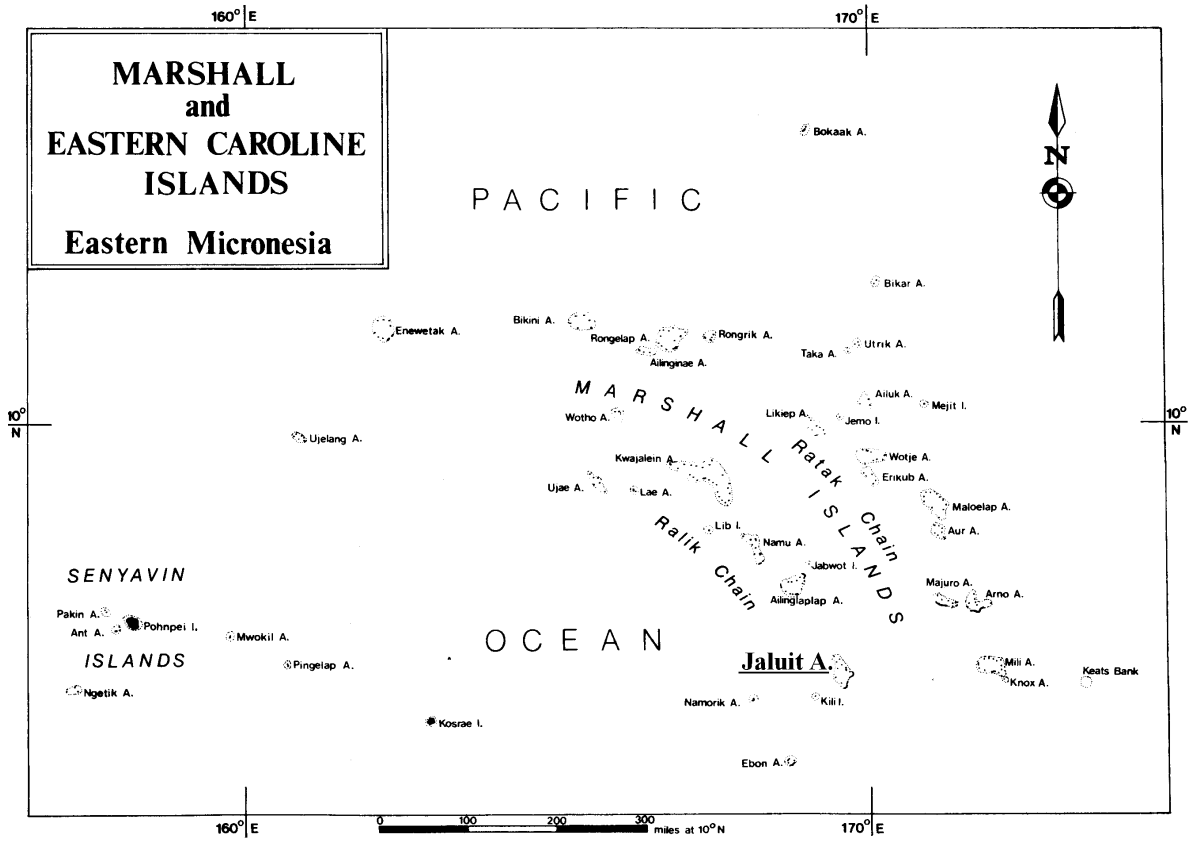
The following research was mandated by specific management needs and therefore the research was determined by those needs. Although the field investigations proceeded from a problem-oriented methodology, the limits of information to be obtained through a reconnaissance survey did hamper the ability to thoroughly test all questions proposed. In addition, limits of time and money will constrain the scope of follow-up research. Ideally, the clear definition of problem(s) should enable the researcher to establish criteria for a carefully directed search of information. "The division of the problem(s) is an important step in the problem analysis. Each of the investigations undertaken to solve these sub-problems becomes a separate section in the outline of the final report of the study. With every step (the solution of one sub-problem) the researcher is able to establish a hypothesis that can be tested with the next step" (Deunert 1996:13). These necessary "next steps" will not be included in this preliminary and limited research but will be mentioned as subsequent research requirements in the recommendations.

The purpose of this introduction is to acquaint the reader with the background, scope, and research methodology of this reconnaissance survey. Section II will discuss the environmental setting of Jaluit Atoll and the Marshall Islands in general. Section III discusses traditional land tenure and subsistence. Sections IV and V describes the sites and associated artifacts. Section VI attempts to compare those findings with sites and their inventory encountered on other atolls within the Republic of the Marshall Islands. Long and short-range recommendations are discussed in section VII Summary and conclusions are located in Section VIII.

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 independent coral islands (Map 1). The atolls and islands are situated in two almost parallel chain-like formations known as the Ratak (Sunrise) group and Ralik (Sunset) group. The total number of islands is approximately 1,225 spread across an area of over 750,000 square miles. The total land area is only 70 square miles (181 square kilometers). The mean height of the land is about 7 feet (2 meters) above sea level. The highest point in the republic is at Likiep Atoll, where the elevation reaches a maximum altitude of twenty feet (six meters). 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).



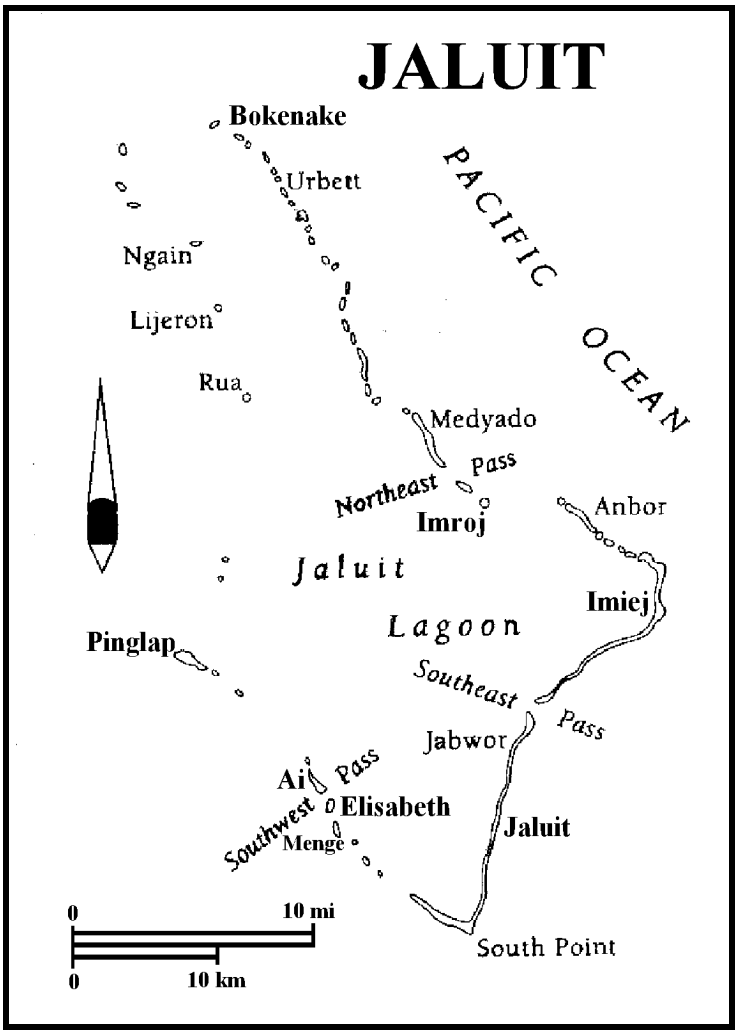
Map 1: Republic of the Marshall Islands

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). Research conducted on Enewetak Atoll indicates that the

reef had emerged three times in the past. Radiocarbon- dates estimate that the Marshall Islands are less than 3,000 years old. Curry et al. (1970) provide depositional feature radiocarbon dates for the Jaluit Atoll (2730±105 BP and 2290±95 BP).

Underwater 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 Arno 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).

Jaluit Atoll is part of the Ralik Group of the archipelago of the Marshall Islands. It is located 6° north latitude and 160° 35' east longitude. The atoll contains approximately 91 islands, low-lying coral formations rising to a maximum height of 5 feet above sea level. It has a land area of 5.67 square miles and the reef encloses an area of 289.69 square miles (Map 2).



Map 2: Jaluit Atoll. Map produced by Lucille Roberts

2.2 Climate

The climate of Jaluit 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. Tropical storms are rare but do occur. In the past three years there have been three major storms. Tropical Storm Ophelia hit Jaluit Atoll in 1958 and left the atoll with a considerable amount of environmental damage. Ophelia hit during the dry-season as did other undocumented storms over the years.. The trade winds are frequently locally interrupted during the summer months by the movement of the zone of intertropical convergence across the area.

The atoll has an annual rainfall of 4033 millimeters (158 inches), a high amount compared to the atolls and islands to the north where the rainfall ranges from 1016 to 1270 millimeters (40 to 50 inches) annually. Jaluit is considered one of the wettest atolls in the Pacific Ocean (Amerson 1969). The highest rainfall generally occurs during the *Anon Rak* season, also known as 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. 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 Soil Types

According to Merlin et. al. (1992:5) scientists categorize atoll soils in the Marshall Islands into the following types:

1. **Shioya series sands:** comprising grayish brown sands and gravels. This type is found closer to the beach.

2. **Arno series loamy sands**: black or dark brown loamy sands or sandy loams with high organic content. It is found further inland than the soils of the shioya series sands and occur on many atolls beside Arno. This soil is considered "old," and is found under forests.

3. **Jemo Series soil:** Even though this type can be found throughout the Pacific, it is named after the atoll of Jemo in the Marshall Islands. This type is found under *kanal* (Pisonia grandis) trees. It has a spongy or peaty surface and is acidic. *Kanal* roots push boulders and slabs of rocks to the surface. Seabird droppings nesting in the *kanal* forest add to the decomposing litter of leaves and twigs. Rain water helps to

dissolve these materials and carries them downward where chemical reactions often produce a hard phosphate-rich layer (hard pan) which is relatively imperious to water movement.

4. **Mangrove peat**: (partially carbonized plant matter) An organic soil.

5. **Taro mucks:** Artificial; humans add organic materials such as plant leaves to taro pits over a long period of time create them. The ground water under taro pits rises and falls with the tides some times coming within 30cm of the surface. These mucks are fertile soils.

All five soils were found on the islets that make up the atoll of Jaluit.

2.4 Vegetation

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, migrated to the southern Marshalls before the advent of man (Hatheway 1953).

The vegetation that grows on Jaluit Atoll is divided into five main categories (Merlin et al. 1992:12). These plants serve as wind breakers, salt spray repellents, food, and are used by locals for weaving and medicinal purposes. The classification is as follows:

1. **Salt-water aquatic vegetation** includes algies, seaweed, and sea grasses. Even though it is rare in the Marshall Islands, Jaluit has many sites that are being continuously flooded by salt water. The vegetation found at these locations consists of only a few flowering plants that are usually restricted to marine environments. Most common on Jaluit is the *Wujooj in lojet* as it is called in Marshallese or "turtle grass" (Thalassia hemprichii) (Merlin et al. 1992:12)

2. **Coastal area vegetation** is made up mostly of trees, shrubs, vines, and herbs. The shioya soils are generally found in this zone. The vegetation has been categorized into four classes as follows:

   A. Herbaceous Strand or non-woody vegetation such as *atat* and *markinenjojo* (parasitic vines that grow on more stable shrubs).

   B. Littoral Shrubland a more woody vegetation such as *konnat* and *kidren*. Common on edges of coastal forest.

   C. Pandanus (*bob*) Shrub also known as "screwpines." This kind of vegetation is common on rocky, windswept coasts.

   D. Littoral Forest is usually made up of big trees such as *lukeej* (Calophyllum inophyllum), *kono* (Cordia subcordia), etc. This type of vegetation is common on all tropical islands. The most common ones to be found on Jaluit Atoll are

kidren (Tourneforita argentea), *konnat* (Scaevola sericea), *kaonon* (Cassytha filliformis), and *atat* (Triumfetta procumbens).

3. **Atoll Forest** is found further inland from the ocean side of an islet. This type of forest (mixed broad-leafed forest) is common throughout the tropical region. As it is described by Merlin it "has a low to medium height with closed canopy" (1992:16). It is here that the Jemo series soil is found. The main plant dominating this area is the *kanal* (Pisonia grandis). However, other species are also found and these include coconut trees, hibiscus trees, screw pines, lantern trees, orange flower trees, breadfruit trees, indian mulberry, alexandrian laurel and others.

4. **Mangrove forest**. This type of forest is also called swamp-forest, as the plants that occupy this area are semi-aquatic. They are one-family plants that grow in swampy areas. There are four types of mangroves on Jaluit and all can easily be distinguished from one another by their physical appearance. "The *bulabol* (Sonneratia alba) or white mangrove and *kimeme* (Lumnitzera littorea) can be recognized by exposed cone or pencil-shaped roots that stick up through the muddy soil from extensive, cable like root stock. The red mangrove (Rhizophora mucronota) and the *jon* (Bruguieria gymnorhizza) or the black mangrove can easily be identified by their aerial prop roots" (Merlin et al. 1992:18).

5. **Cultivated Vegetation** is found on inhabited islets of Jaluit. Legend states that these islets have been cultivated since man first settled them. An example would be at Pinglap, where a large man-made taro pit which still exist with some *iaraj* or taro growing unattended (Cyrtosperma chamisonnis) (fieldnotes: 7). Generally, cultivated plants are dependent on humans, due to the tropical climate. Common types of plants cultivated on Jaluit are *keepran* or bananas (Musa), *ni,* or coconut trees (Cocos nucifera), *ma* or breadfruit trees (Artocarpus altilus) and *iaraj* or taro (Cyrtosperma chamisonnis), but it is not unusual to find *bob* or screwpines (Pandanus tectoris) being cultivated around permanent settlements.

2.5 Sea Level Changes

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. As predicted by scientists (global warming red alert), the archipelago 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. At present the littoral shrubland along the coastline is visibly eroded (Fieldnotes13-14.) and most of the vegetation growing in this area will soon be washed away by the incoming tide. Most of the historical sites that are located within this area are vanishing and their significant historical value is being 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 was a god-given sanctuary away from the harshness of other areas is therefore part of the sociocultural identity of the people. However, 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 and Subsistence

3.1 Social Hierarchy

Jaluit belongs to three different chiefdoms that have ruled the Ralik Chains for hundreds of years. The three reigning *Iroijlaplap* (paramount chiefs) were and still are of the Kabua, Litokwa, and Loeak families. All three chiefs hold land rights on different sections of the atoll. In addition, the commoners also have certain rights to the lands. The *Iroijlaplap* (paramount chief) can remove any subject from the land, however, this sort of situation rarely occurs because the *alab* (lineage head) and the *drijerbal* (workers) make up the subjects or *kajur* (commoners). The term *kajur* literally translates into English as power or powerful. Therefore, it is said that the more *kajur* the chief controls; the more power he possesses. This is true because they (*kajur* and *alab*) were not only caretakers of the land but were also the warriors, fishermen, and navigators. Unlike the Ratak Chain, the title *iroijidrik* or lesser chiefs is non-existent in the Ralik Chain (Capelle: 1997).

The subjects (*alab* and *drijerbal)* render services to the chief in exchange for land use. As mentioned above, the three categories of people *(iroij, alab* and *drijerbal* have certain rights to land ownership. This is in accordance with the Marshall Islands' matrilineal society (Tobin 1952:14.) and most people are born with assured land rights. There are cases, however, where people obtain land rights through the patrilineal side or where land is given as gift or payment from the paramount chief. There are a numerous ways a person can inherit or obtain land rights. Nonetheless, the distribution of land is always follows the matrilineal system. Land given to a commoner by the chief will be inherited by commoner's oldest daughter who in turn will pass it to her oldest daughter and so on. The following list[2] will demonstrate land terms and descriptions of land acquisition.

1. 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.)

2. Although land rights are normally passed down matrilineally, there are situations where the clan becomes extinct and only the descendants of the brother remained. These rights are called *ajiri* (child or children.) and are passed down paternally.

3. *Kokajiriri* (adoptive rights) is a system in which the adoptive child inherits land rights from the foster mother's *bwij* (clan) lands. The child does not lose land rights to the biological mother's lands.

4. Acquired land rights through marriage is also common. If a married couple with children live on the wife's land and the wife dies before the husband, the man has the right to stay on the land as long as this is supported by his children.
5. *Kalimur* (will) is a land right that is given in favor. The *alab* may choose her/his successor according to contributions or *ekkan* (tributes) made by the candidates.

[2] Adopted from Land Tenure in the Marshall Islands by: Jack Tobin 1952: 15

All lands are categorized according to the type of rights landowner hold over them. The general category is as follows:

A. *Lamoren* or *Kabijuknen*- is the land that is inherited matrilineally; it is the *mon bwij* house of clan.

B. *Nlnnin*- is the land that is inherited patrilineally. The father gives this land to his children with the *bwij's* consent. This land is *ajiri*, house of children.

C. *lmonoje*- Land that is given away by a chief for outstanding services. Within this category, there are several other types; such services are:

-*Drljutak loto and Drijutok lomalal*, are the trustworthiest bodyguards. However, the *Drijutak loto* may be related to the royalty that he guards while the *Drijutak lomalal* is just a loyal commoner, yet they guard the *iroij* with their lives and are rewarded with land.

-*Imon kolotlot or jemlok* represents land that is handed over when the chief or *alab* is bed ridden or about to die. This land is considered *kalimur* or will.

-*Imon Ato* is land that is given by the chief to the bather of his child or children. *Enen tutu* (bathing island) is the term used if an island is given instead of land parcel.

-*Morijinkwot* is land given by the chief to a warrior who has shown courage and bravery during war that resulted in victory.

-*Waienbwe* is land given to the *Dri bubu* (sorcerer) or the chief's advisor who predicts the future and knows when time is favorable or unfavorable for war, fishing, building, sailing, etc.

-*Kwodrailem* is land given to the bailer who did not sleep during the long voyage because he was busy bailing out the chief's canoe.

-*Kitre* is a land given to a woman for the purpose of courting or marriage gift in the case of a married couple. However, a woman can acquire *kitre* land if she is adored or admired even if she is not married to the admirer.

-*Katleb* is land that is given to commoners even though it is occupied. The occupants are sent away. The rewarded person may then use the land either for permanent or temporary settlement. S/he keeps all the land rights.

-*Metak in buru* is land that is given by the chief to the wife that he has cast-off or divorced.

-*Lowio* is land that has never been used before and it's overgrown with bush. It is usually awarded to the person who clears it and keeps it tidy.

The lands on Jaluit were acquired through the categories mentioned above, however, as stated before they were passed down through the clan (mother's side). The *alab* and *drijerbal* change land ownership. The chief is the only individual with permanent land rights, unless defeated in war.

The chief controls most land rights on Jaluit. In the past the three paramount chiefs of Jaluit managed the land in a way that not only provided them 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 chiefs. The procedure is a cycle that has been repeating for hundreds of years.

3.2 Agriculture

Until the German-era, the inhabitants of Jaluit Atoll lived mostly off the lagoon, reef, ocean, and land. The modes of agriculture were cultivation and preservation of the following crops:

1. *Iaraj* or taro (Cyrtosperma) was usually eaten boiled or cooked in an *um* (earth-oven).

2. *Keepran* or banana (Musa) was eaten ripe and boiled.

3. *Bob* (Pandanus) was prepared and preserved for the dry season and long voyages. The process is long considering the results. Entire families prepare the *makwon,* but in some cases, the whole island population is involved. The preparation begins by digging a pit ten feet long and four to five feet deep. Stones are placed in the pit and a fire is lit to heat the stones. Once the stones are hot enough, leaves are laid on top of them. The pit is filled with pips of pandanus until the hole is filled. Additional leaves are added, covered with sand, and left for two days to cool (Mason 1947: 48). Thereafter, the pips are retrieved and syrup is extracted from the cooked fruit by of rubbing and scraping it against rough implements. After the sap is acquired, it is placed on wooden frames and dried in the sun; the drying process makes the sap look like cake. The dried sap is packed ball-like in pandanus leaves and stored or distributed among the fleet of canoes if it was prepared for voyaging.

4. *Ma* or breadfruit, is another mainstay for the prehistoric Marshallese. There are two types, Arctocarpus incisca and integrifolia, regular one and the one with kernels (Mason 1947:50). Breadfruit can be prepared several ways. It can be cooked on ashes or open fires and scraped with a bivalved clamshell or the kernels are extracted and roasted. It can also be preserved in a similar fashion as the pandanus. The ripe breadfruits are skinned using a cowry shell with a ground edge on one end and a hole punched into the other end (Fig. 1). It is used much like a modern potato peeler. The shard edge cuts off the skin, which is discarded through the hole at the other end. After removing the skin, the breadfruit is cut into squares and packed into baskets woven of green coconut leaves. Then the baskets are soaked in salt water for several days until rancid. The breadfruit meat is kneaded and the acidulous mass buried and

covered with breadfruit leaves in a shady spot for a week. After one week, the soft mass of tangy breadfruit is retrieved and again kneaded (into balls), packed, and cooked. This method of food conservation can last up to six months. The food is called *bwiro* in Marshallese.

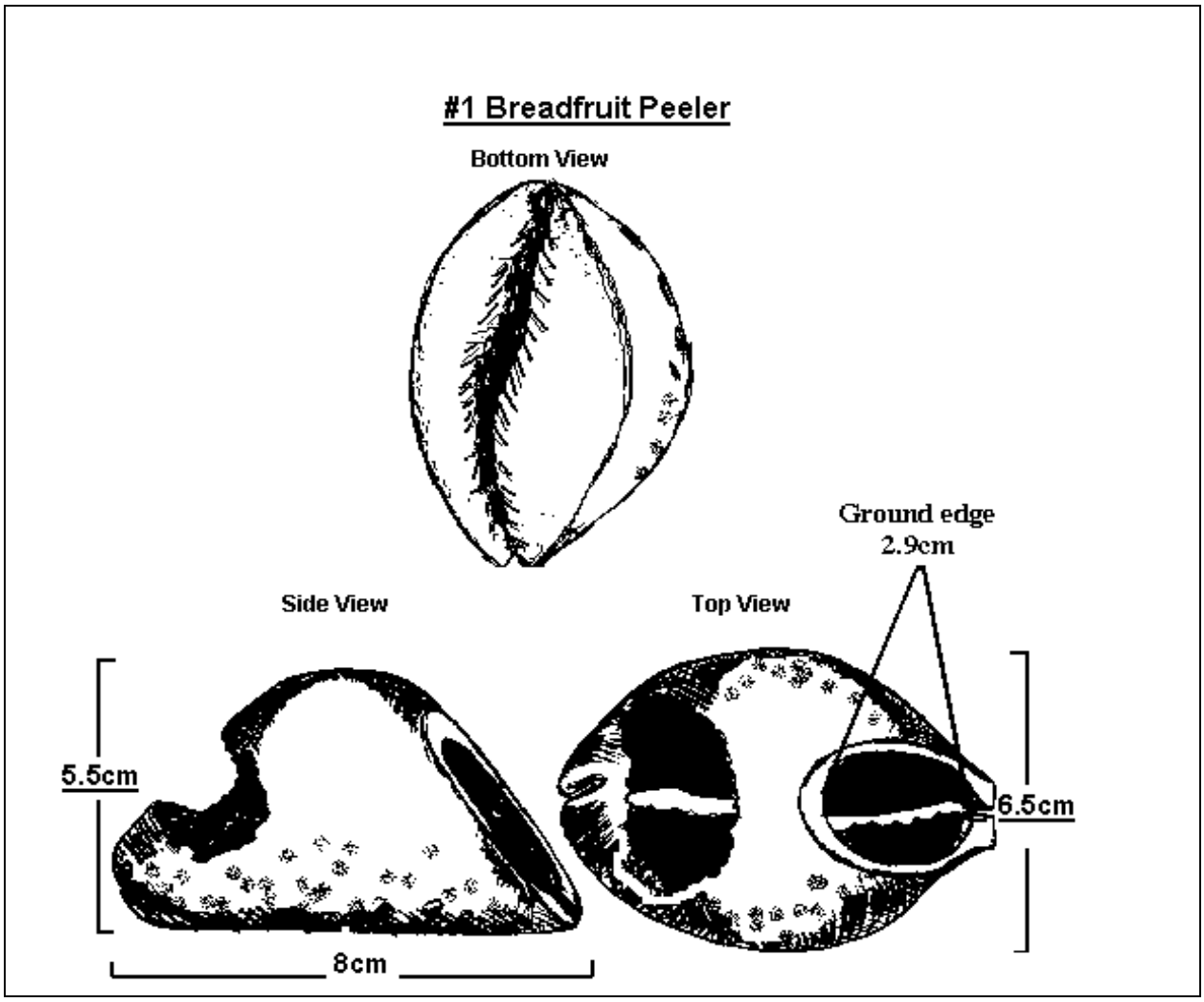


Fig. 1 Breadfruit Peeler found on Pinglap. Drawing by Jeffrey Zebedy.

1. *Makmok,* "is a flour extracted from arrowroot (Mason 1947:50). The flour is cooked and mixed with water in a coconut shell. Later it is stirred to the consistency of a pap; often mixing it with grated coconut. There are three kinds of arrowroots cultivated on Jaluit atoll; these are (Arum esculantum, sagittifolium, and macrorhizon). However, Majuro, Bikini, Kwajalein, Ailinglaplap, Ujae, Namrik, Aur, and Maloelap are the major cultivators of arrowroot and producers of *makmok.*

3.3 Aquaculture

According to Labedbedin *"Aelon in Jaluit, ej Aelon in Jelele"* refers to Jaluit Atoll as rich in marine resources (Knight 1980). The phrase literally translates as "The island of Jaluit,

the island of meat"(Ueno: personal communication, March 1996). Jaluit has an abundance of fish in its waters and at least a dozen species of edible shellfish scattered for miles on the reef flats and in the lagoon.

The people of Jaluit invented clever ways of harvesting their shores. Some of these inventions are unique and are not known to be practiced anywhere else in the archipelago of the Marshall Islands. Yet, the methods are as effective as any other technique used in the region. The types of fishing techniques used in prehistoric times are as follows:

1. *Kabuil* - This is a nighttime fishing technique using torches (coconut fronds) Using this method, two or more people wade in the shallows on the reef, one holding the torch and others armed with spears or clubs looking for fish. The light of the torch attracts the fish and they are speared and clubbed. Usually, small fish are caught.

2. *Kottoor*- is a technique of fishing in which the *mae* (fish trap) is employed. The *mae* is made using corals piled together, forming a fence like structure on the reef and is generally closer to a channel or pass. During high tide fish swim to these man-made coral heaps. The fish are then entrapped at low tide and can be caught. These traps differ in sizes and shapes according to their locations. Fish caught using this technique range from *kuban* (Convict tang) to *mera* (Parrotfish).

3. *Wu*- is a fish trap that is submerged in 15 to 30 feet of water. Left unattended for at least five days, it is then brought up and its contents collected. This trap is made of twigs of *kone* (ironwood tree) lashed together with sennit ropes. The customary shapes are rectangular and conic. Fish caught with this technique range from *mone* (Unicorn fish) to *kuro* (Grouper).

4. *Bopo*- is a form of night fishing where, like *kabuil,* torches are used to attract fish. However, instead of wadding in knee deep water, canoes are used and fishing takes place beyond the reef in the open ocean. Instead of being armed with a club or a spear, one is equipped with a net attached to a pole. The net (lacrosse) is designed (loop at the end of the pole) so the user may scoop it in the water with ease. Such nets are usually about 66 centimeters in diameter and about a meter deep while the pole is 2 to 3 meters in length. The only fish caught with this technique is *jojo* (flying fish).

5. *Alele*- is a fishing technique where all men of the community are involved including the persons of highest status in the community. As Maddison describes (1996:3.3.2) "...the *mwio, ormwe* and *liok* well tied and the coconut fronds well twisted, *ujaiki,* around the rope." It is usually made as long as possible for it is utilized to scare fish during the time when the tide is going out. During this time, usually in the morning, fishermen paddle out into the lagoon in several canoes. They jump into the water, form a line, hold the *mwio,* and swim towards the shore. As schools of fish come to the deeper waters, the movements of the *mwio* often confuse them. While the school of fish swims in confusion, the *mwio* is closed into a circle and the ends are joined together. When the circle is fully closed, the chief gives the order to spear the school while trapped inside the circle. The kind of fish caught with this technique are species that swim in *ujal* (schools).

6. *Ittuur*- "...is similar to *alele*, however, it is conducted in deeper waters near or on coral heads" (Maddison 1996:3.3.4.). It is a kind of chase and entrapment in which the school of fish is pursued on to the coral head and while surrounded by the *mwio,* is slaughtered. Fish caught with this technique are *molle or ellik* (rabbit fish).

7. *Ekkonook*- is a type of fishing unique to Jaluit and it is considered sacred. Like the *alele* technique, it requires all the men in the village. However, instead of using the *mwio* they use only a single sennit rope called *iia* (rainbow). According to Maddison (1996:3.3.4) "this fishing method is based on the knowledge and belief of the *iia* rope held at a particular depth under water, is seen by the fish as a much bigger object." The expedition starts early in the morning by doing the *komen* or trying to locate the school of *ikaidrik (*rainbow runners*)* (this process is accomplished by locating *aol* or baitfish). When located, the men launch their canoes and follow the school until it reaches a coral head. At this time, the fishermen are in a state of readiness called *tiol.* The *aol* jumps in an attempt to escape the *ikaidrik.* As the fishermen chant, the *aol* and *ikaidrik* are both come to the surface. While surfacing, the men jump into the water with the *iia*. This startles the *ikaidrik* causing them to vomit. The school of rainbow runners is weakened after they vomit their breakfast. Thus, the school is vulnerable and confused. The school is then encircled and brought to the shallower water on the coral head. The canoes enter the circle and the fish are scooped into the canoes using nets similar to the ones used in *bopo.* After such expeditions, the whole population is fed. This kind of fishing is done during the months of May to August. During the months that the *ekkonaak* is not performed, the people collect shellfish, another good source of protein.

IV Field Investigation

4.1 Introductory remarks

A total of 29 prehistoric, historic, or traditional sites were uncovered during the field session. Additionally, Lucy Martin Harris and Matt Harris recorded six underwater sites, and Langinbo Frank and Kevin Lynch recorded another six traditional sites during subsequent surveys. Often, the actual age of a site was either conjectured, considering dominant surface features, or local informants made statements about the possible age. Riley describes graves as possibly prehistoric, if "faced with small coral stones placed up-right at the perimeter. Historic graves range from those that are lined with soda or beer bottle to those with concrete monuments over them" (Riley 1987:189). Although this observation seems to be true for most of the sites, certain precautions in dating have to be taken if recent reburial has occurred, Japanese soldiers were buried next to Marshallese, or graves have been restored.

During WWII several traditional burial grounds were abandoned, either because the inhabitants feared that Japanese would desecrate the graves and use the burial ground for their own dead, or families moved to the urban centers of Majuro and Ebeye. Only recently certain families started reusing their traditional burial grounds, restoring old graves and/or building graves in a traditional manner (Capelle 1997).

Especially on Jaluit, the Japanese occupation is remembered as a time of cruelty and unjustified punishment for minor offenses of Japanese imposed rules. Therefore the Japanese were afraid of the desecration of their graves by Marshallese. Indeed, some Japanese graves have been vandalized and almost no surface indicators of a burial are left behind. Since it is common practice in Japan to repatriate the ashes of the dead, the Japanese had to derive measures to assure the relocation of the graves for later repatriation. Knowing of the delicate nature of Marshallese burial grounds, they inhumed their dead in traditional Marshallese cemeteries. Japanese period graves could range from those that are lined with beer bottles, upright coral slaps, or to those lined with concrete.

In some instances graves have been restored, particularly if high-ranking people were buried at the site. If the original coral slab lining was destroyed it was either replaced with rows of beer bottles or concrete lining.

In order to obtain accurate dates, test excavations would have to be conducted, an endeavor proposed for subsequent research. (Section 7.1) The authors of the present report developed the following "serration" considering the oldest to the youngest burial practices:

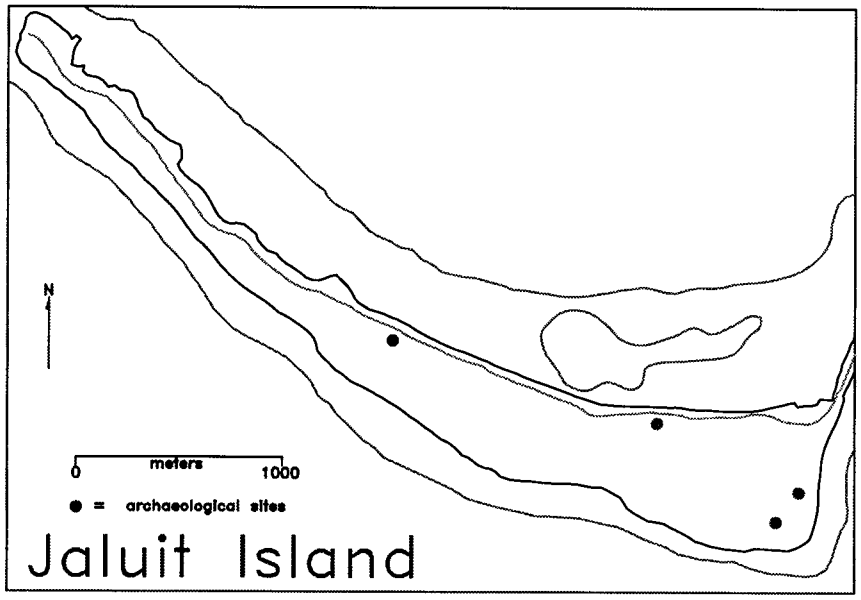
(1) heap of coral slaps
(2) lining of upright coral slaps
    a) oval shape
    b) rectangular
    c) rectangular with head stone
(3) rows of bottles
(4) concrete lining.

Phases 1, 2 a), and b), were considered prehistoric, the rest historic.

Habitation sites were considered prehistoric or historic due to their location on the islet or information obtained from local informants, a rather ambiguous procedure, which should be further tested. Other testing criteria were based on coral-lined trials, remnants of rails, lorries, artifacts, food remains, or trash pits.

4.2 Jaluit, Jaluit

Four sites were found on Jaluit, Jaluit, the southernmost islet of the Jaluit Atoll (Map 3).



Map 3: Jaluit Island. Map produced by Lucille Roberts.

Site MI-JL-JL 001 (Marshall Islands - Jaluit Atoll - Jaluit Island -Site No.)

An early habitation site with extensive midden area is bounded on the north by the main road and on the east by a newly established house site. Site boundaries to the south and west are characterized by the absence of coral spread, surface artifacts, and food remains. The semi-circular shape of the site measures 25m x 30m. The site has been leveled in order to allow house construction and coral has been spread over the entire section except for a central midden area. The midden displays rich, dark-brown humus, also containing bones of various animals, food shells, and historic bottle glass. According to local residents, the site was occupied over five generations before a new house site was set up in close proximity. The landowners also found two adzes. Unfortunately, one was lost; the other one is a two-beveled adze made of tridacana sp. (Photo 13 in Section V)

Site MI-JL-JL 002

MI-JL-JL-002 is a burial site. On the north the extensive burial ground is bounded by the main road and extends approximately 70m inland, while the total width of the site from west to east totals 50m. According to local residents, the burial ground was used continuously for over 300 years. The use ceased during WWII, when Japanese occupational forces started burying Japanese soldiers and Marshallese in a single mass burial. It is said that the mass burial contains all those Marshallese remains, which were exhumed in the entire Republic to make room for Japanese military installations. Although not confirmed by our informants on Jaluit, it is hypothesized that one dominant feature of the site was the former location of a church. The mound, flattened on top, is surrounded by a "moat" and coral has been spread similar to other house sites. It is suggested at this point to conduct a transect excavation through the mount in order to systematically search for buried cultural deposits and to prove or disprove the above-mentioned hypothesis. The last encountered feature is double coral lined and of quadrangular shape. It represents another mass burial where the Marshallese victims of the first American air raid on Jabor were buried.

Site MI-JL-JL 003

The approximately 150 years old copra production site MI-JL-JL 003 is of irregular shape and measures 50m x 50m. The site was used until recently and might find reuse when copra prices start picking up again. No permanent structures were erected and temporary shelters were built of local materials. There was neither a planum established or coral spread. Only one slab was noted to have been deliberately set. Site ML-JL-JL 003 is bounded on the north by the swamp and on the south by the ocean shore approximately 50m from the high water mark. No measured drawings were made due to the lack of dominant features.

Site MI-JL-JL 004

Located south of an extensive swamp area on the south-eastern portion of the islet, site MI-JL-JL 004 consists of a large area of dark soils mixed with coral pebbles, but also large deposit of sand and silt indicating flooding. The site was only known by some elders, who informed the team that "several 100 years ago" people used to drive their canoes through the swamp and anchor at this site, which is said to be the oldest known habitation site on Jaluit Atoll. A tidal wave caused by the last typhoon closed up the canals and heaped up the originally smooth coral spread. At least three burials are possible. The "burial size" mounds with ditches around them might indicate early burial practice, prior to the use of stone alignments (Photo 1). The mounds are simple coral heaps. Another particularly interesting feature is a coral lined structure measuring 690cm x 270cm. Coral pebbles have been spread in the middle of the carefully established enclosure. Test excavations are highly recommended at this site in order to obtain exact dates and to be able to securely state the function of the structures encountered.

Photo No. 1 Coral lined grave.

4.3 Imiej

The aim of going to Imiej was two-fold. The team was to note structural damage to sites due to bombing, faulty construction, secondary use, erosion, and damage caused by vegetation. In addition, Christiansen's (1994:Appendix) maps were to be verified. Although sires not previously mentioned by Christiansen were encountered, none of them were individually recorded due to time constraints.

A) Christiansen's report

In order to verify the accuracy of Christiansen's maps, exact reference points had to be established. The Imiej seaplane ramp and crane pier were chosen for this purpose. Ideally, all sites shown on Christiansen's maps would be accurately measurable in relation to the initially plotted position. Using the compass, tape measures, and basic triangulation the team would be able to establish distances and bearings of the site in relation to the plotted position. Unfortunately, Christiansen's maps proved to be inaccurate and non-useable in the field. Some sites being termed "non-existent" were destroyed, but definitely "existent" at least archaeologically; others termed "existent" could not be found, at least not where indicated on the map. Sites lacked specific explanations in the legend and were hardly mentioned by numbers in the main body of the text. Additionally, all barrack foundations shown had incorrect bearings. Distance measurements were poor, particularly in North part of the map. All in all, it was a frustrating effort to confirm data. It is therefore strongly suggested to establish an accurate map, which might also be used for tourist groups interested in a guided tour of Imiej.

B) Observations

As mentioned above, the task of relocating sites identified by Christiansen was difficult and time consuming. Therefore only few sites and their assigned numbers will be mentioned in the descriptions below. Other sites, mainly those found in sections 3, 4, 5 and 6, will be mentioned according to their use in WWII without referring to an exact location on the map. In 1993 Look and Spennemann (1993) prepared a management conservation plan for WWII resources observing and assessing deterioration patterns in a number of different types of objects and artifacts. For each different type of material Look and Spennemann derived measures of treatment. The most commonly found materials would be iron and steel alloys, copper alloys, aluminum alloys, wood, concrete buildings and structures. In order to recommend future treatment procedures for specific sites on Imiej, the deteriorational states would have to be known. Hence, the following assessment was done.

General Observation-Lagoon Strand

Although located alongside the lagoonal shoreline, no deterioration was noted on the service apron caused by saline mist. This phenomenon is explainable through the leeward location on the islet. Nonetheless, other structural damages were noted. The service apron finds use as today's main habitation area, whereas the flat concrete structure served as foundation for new houses. Recently, new slab foundations with steel reinforcement were poured on top of the service apron, due to cracking of the non-steel reinforced WWII structure. Sinking and cracking is evident with minor patchwork done. Bomb craters have been filled with coral gravel. Some of the concrete gutters have been removed and found use in today's housing structures.

A former power plant 100m northwest of the service apron was in immaculate condition with mechanics still operable. Only slight surface rust was noted. Except for minor bents, a nearby bombshell rack was in similar condition.

General Observation- Interior

Not being exposed to ocean spray the probable deterioration of inland sites would have to have other causes. These could be vandalism, WWII destruction, vegetation encroachment, poor concrete strength and quality, use of coral and seawater in the concrete mix, and humidity.

The strongly eroded iron studs of the hangars were collapsed and piled up in one area. The self-supporting structure was obviously not anchored to the concrete foundation since no anchor bolts were found. The concrete pavement is now overgrown with vines, which seem to be non-aggressive to the concrete and are easily removed. An adjacent storage place, which exhibits no obvious bombing damage, appears to be well preserved. Some vegetation encroaches to the outside of the building. Although a number of hairline cracks[1] were noted, spalling did not occur. The massive, only slightly rusted iron doors are still intact and swing freely in their hinges. The rails of the ceiling crane are still in place, but deformed through an obvious detonation of ordnance inside the building. Several air raid shelters, despite being heavily overgrown with aggressive and non-aggressive vines, were also filled with debris and soil. The soil layer supports plant growth in the shelters creating a very humid microclimate, which in turns enhance corrosion of exposed steel reinforcement. The same is true for the

[1] Hairline cracks are due to excessive microcracking and increases the exposure to the elements and vegetation effects.

numerous manholes filled with debris and often garbage. Water intrusion in structures that have been partially destroyed by bombs, possess additional threats to the structural soundness; again, enhancing plant growth and corrosion of iron. A pile of anchors located next to hangar 2 is good example for the obviously preservation enhancing location on inland sites. The completely unprotected anchors were only covered with a thin layer of porous rust. Concrete cisterns still serve as water catchments, but also as "swimming pools" and laundry facility. Collapsed concrete roofs have been exchanged with corrugated iron. A few cisterns are used as taro pits.

General Observation - Ocean Strand

Sites located alongside the ocean strand of Imiej are the least preserved. Even aluminum artifacts, in general excellently preserved, show signs of deterioration. The concrete of air raid shelters and defense bunkers has a very rough surface often exposing steel reinforcements. Increased corrosion and spalling then causes larger areas of the surface to detach until the structure becomes physically unstable and eventually collapses. Iron structures are deteriorated to a point that single features are non-discernible (cranes, guns and tanks). Most of these iron artifacts will not be preservable.

Detailed Study[2]

The camouflage paint of the air raid shelter (originally identified as site B207 by Christiansen, 1994) is still intact. The lagoon side (leeward) of the building is used as a cooking area because of the additional weather protection through an overhang. The daily cooking activities caused soot damage to the outer walls and the overhang of the building. The various plants and trees initially planted for additional camouflage pose now serious threats to the structure. Mosses, fungi, ferns, as well as the contact with decomposing plants and soils aid the chemical breakdown of the concrete. Roots penetrate hairline cracks gradually expanding them and exposing steel reinforcement to the highly corrosive environment. Corroding and therefore expanding iron parts cause exfoliation and delamination of small pieces at first, but later even larger areas leading eventually to complete architectural failure of the structure. This particular air raid shelter though slight damage through intrusive vines in the outer overhang occur, is mainly affected by bullet/ordnance damage to the exterior walls, also exposing steel reinforcements. Other iron parts built for direct exposure to corrosive environments, such as doors and window covers, exhibit slight surface rust with patches of paint still in place. The hinges are stiff but are still operable. Additionally, much graffiti has been scratched in the painted plaster. No internal inspection of the building was conducted.

The pilot quarters portion of the structure B323 (Christiansen 1994 designation) was bombed and apparently received at least two direct hits. The exterior and the interior walls are missing, leaving only pillared gallery (Photos 2 & 3). Surface painted cement layers are still visible in places, while other pillars have been stripped to their steel reinforcement base. Although the roof of the back area of the central portion of the structure is intact, run off water seems to intrude and has damaged the plastered walls. Much graffiti was noted. The double-area stove and firebricks are in excellent condition. The concrete cooking structure was cracked by bomb impact but exhibits minimal degeneration. In a similar state is a Japanese soaking tub with bench and rusted water heater. The only obvious signs of deterioration were noted on some

[2] Partially derived from Ceil Roberts' field notes August 24, 1996.

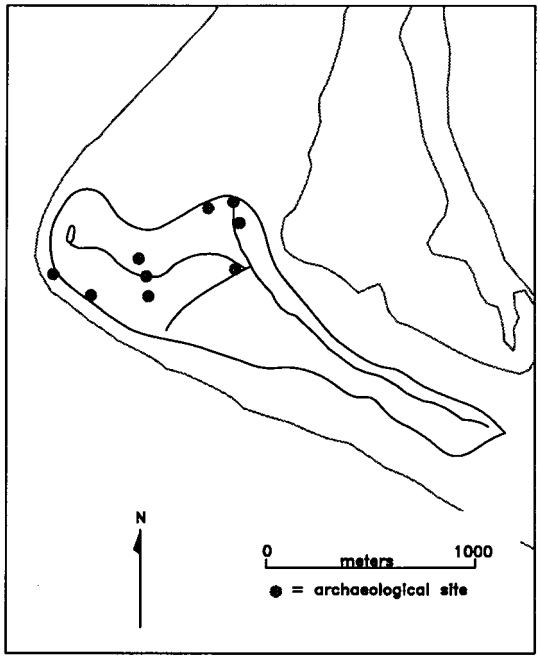
pieces of hardwood, horizontally counter set around access to the water heater, which show evidence of wood boring insects. Iron conduits with web-sheathed copper wiring are visible in places where plastered walls are damaged. Switches and outlets have been removed from the rusty iron outlet boxes. Much horizontal iron flaking is noticeable on exposed ceiling rebar. Strong evidence of water intrusion can be found in the area next to the outside door, including leaching and redeposition of sediments over the door opening. A large quantity of white leachate has been noted over the water heater, but appears to be stable. The entire structure shows evidence of coarse coral-based concrete/rebar construction overlaid in finer-grained materials suitable to individual locations (i.e. outer layer of the entry steps is coarser, than the finish layer on pillars and arched base; fine but tractioned layer in gallery floor, real gypsum plaster in bath area walls.)

Photo No. 2. Photo of gallery.

Photo No. 3 Detailed photo of gallery

4.4 Pinglap

A total of 9 sites were found on Pinglap one of the largest islets of the atoll (Map 4).



Map 4 Pinglap Island. Map produced by Lucille Roberts.

Site MI-JL-PI 001

Site MI-JL-PI 001, an extensive midden area (Photo 4) with coral spread indicating various occupational periods, is 78m west to the lagoonal high water mark. The site varies from 30m to 40m wide and 40m to 50m long. The whole area is paved with a thick, coral-gravel fill of irregular shape, which typically surrounds house compounds. The site inventory ranging from tridacana shells, scorpion conch shell, and intact breadfruit peeler to bottle glass and ceramics indicates various occupational periods. Even the glass bottle fragments indicate different historic periods, whereas the thick, light blue and clear glass might be assigned to the "German" period and the olive green, brown and clear but foggy glass to the "Japanese." Site MI-JL-PI 001 represents one of the sites found without the help of local informants and guides and its existence was long forgotten by local residents. This might be the reason why the team was able to find an intact breadfruit peeler, which would have been otherwise a much-desired collector's item.

Photo No. 4 Shell midden

Site MI-JL-PI-002

(Editor's note: There was no description for this site in this section in the original text. The following information comes from the author's description of the site in Section VI, Comparison of Sites). Site MI-JL-PI-002 is a historic gravesite (Photo 5). The site consists of two graves, both believed by locals to have been Japanese. Local informants state that one of the graves was exhumed by a Japanese delegation in the late 1970s.

Photo No. 5 Japanese soldier's grave.

Site MI-JL-PI 003

The extensive burial ground, site MI-JL-PI 003, is directly located alongside a rapidly eroding shoreline. Although no skeletal material was found on the beach, it is very likely that several graves have been washed out. The burial ground consists of ten (10) clearly recognizable single graves plus three seemingly incomplete coral slab alignments. The site roughly measures 10m x 15m and is located in the northern part of Pinglap about 80m west of site MI-JL-PI 002. Three different kinds of graves were noted. While burials B2, B3, B7, and B8 are of irregular shape with various sized coral slabs, roughly outlining the grave, burials B1, B6, B9, and B10 show an oval to rectangular shape with carefully aligned thin coral slabs. Burials B4 and B5 are larger, carefully aligned, but of irregular shape. No clear orientation of the graves is discernible. The local guide informed the team that the site is known as *Bonen*, where the clan of the *Dri Bako* (roughly translated as clan of the sharks) is buried. The site itself is considered sacred and people should not make unnecessary noises. The head of the clan, supposedly buried in B7, was able to cause typhoons while blowing in a shell horn. Excessive noise might disturb the peace of the *Alab*, causing a typhoon. The shell horn (Photo 6) has been secured by local residents and will be returned once the site is stabilized (revetment/fence). It is said that the tridacana shell was used for offerings, but the interpretation of a digging utensil or mortar is also possible. The legend of the *Dri Bako* picturesquely describes the kidnapping of the *Alab's* son by the Spanish. The son was then brought aboard a Spanish Galleon. The raging *Alab* blew in his shell horn, which caused a typhoon driving the ship back to the shore. Only the *Alab's* son survived the inevitable crash.

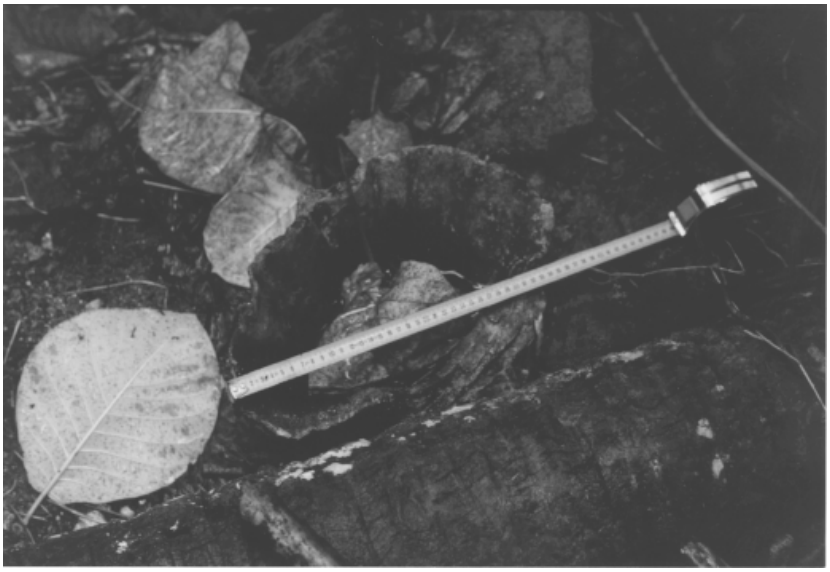


Photo No. 6 Tridacana shell found on Pinglap (Dri Bako Burial)

Site MI-JL-PI 004

The complex prehistoric habitation site MI-JL-PI 004 is located in the center of the islet about 170m from the ocean shore. The fairly extensive site (100m x 70m) is known to be location of the original settlement. Two clearly recognizable "village sites" were identified on higher, elevated grounds (Fig.2). The drainage basin, possibly a lake in earlier times, was later used for taro plantations. Next to an obviously planted lime tree a fully sedimented well was identified. The well had been lined with coral blocks and has a diameter of 3m at its surface. The well once was an important part of a Marshallese array for gaining access to and storing water. The well was probably dug to the Ghyben-Herzberg lens and ensured a supply of fresh water. The well was known to be "never exhausting." Various food shells remains and a charcoal layer of 10cm thickness indicate long term use of the site.

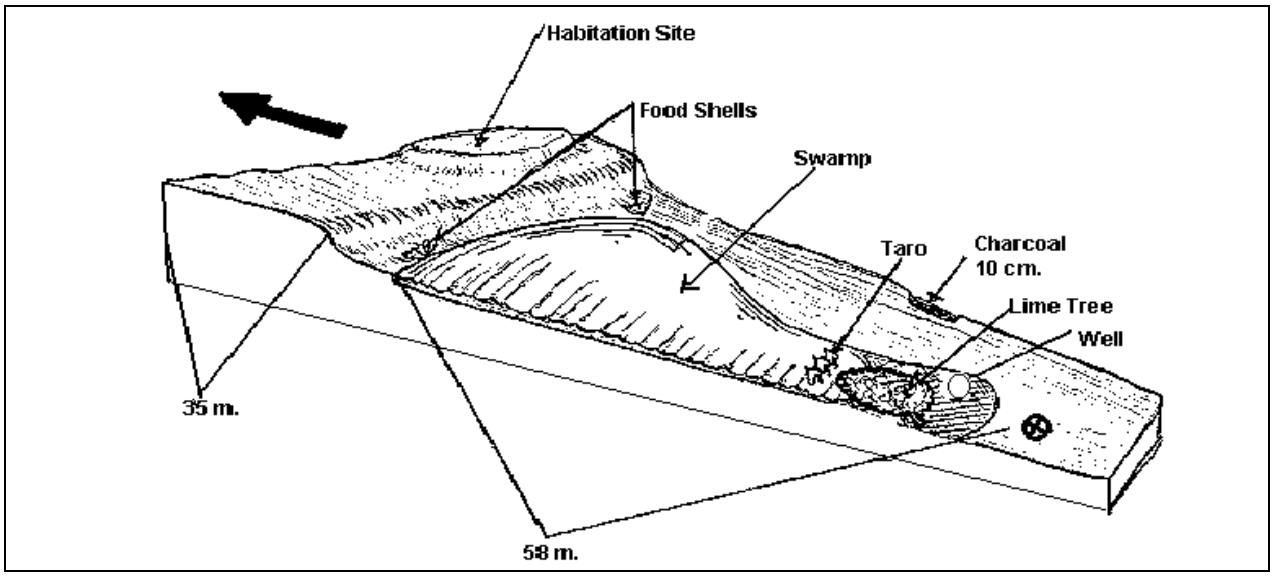


Fig. 2 Site MI-JL-PI004. Drawing by Jeffrey Zebedy.

Site MI-JL-PI 005

Site MI-JL-PI 005 is located in close proximity of site MI-JL-PI 004. Covered today with primary growth vegetation, the site was used to erect permanent dwellings for copra gatherers and to dry the copra in the artificially created, sunny clearing. The use of the site ceased with the beginning of WWII. Originally established under German administration the site was later used by the Japanese. A rail found in situ indicates a lorry system to the beach for easy transportation. It also indicates the centrality of the site. Clear, green but mainly blue bottle glass additionally points to the German period. A planum was established and coral spread in order to provide a flat foundation for houses and prevent plant growth.

Site MI-JL-PI 006

This ship wreck site encompasses an area of reef flat approximately 50m by 50m, from the outer reef edge to very near the high water mark. The most obvious features include a 3m long cast iron one-piece anchor (Photo 7), two large piles of chains (each link is 20cm in length), and a pile of what appear to have been 30cm long iron bars. The last three features are solidly accreted to the reef. In addition, there are many small pieces of iron, about the size of a human fist, strewn about and firmly stuck to the reef flat. The remainder of the shipwreck is supposed to be just off the edge of the reef at an unknown depth, though the team was unable to verify its presence.

Photo No. 7 Anchor.

Site MI-JL-PI 007

Little can be said about, much less interpreted from the few surface indicators of Site MI-JL-PI 007. Located just north of site MI-JL-PI 004 it also represents a centrally located site and is therefore considered “early." The only surface indicator, however, is coral gravel evenly spread over a fairly extensive area measuring 50m x 30m. The intentionally established planum

in the otherwise sloped area points to the erection of dwellings. Unfortunately, there were no other signs of human occupation such as charcoal rich soil layers, trash pits, food remains, and tools.

Site MI-JL-PI 008

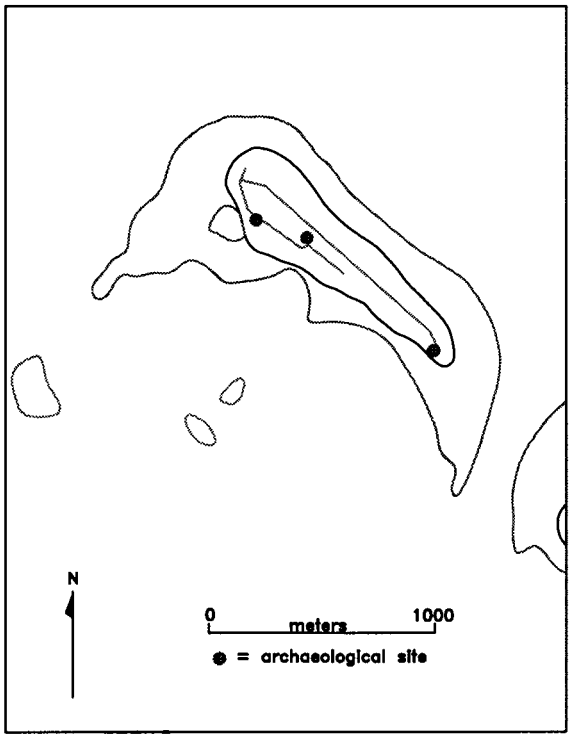
This large (350cm x 150cm) single grave of a former *iroij* is not supposed to be known by foreigners. The Historic Preservation Office was asked not to publicly release the name of the *iroij* buried and the location of the grave. Therefore the site is not marked on Map 4. Further information held at the HP Office in Majuro might be released to researchers upon written authorization of Jaluit Atoll Local Government. The burial, outlined with upright coral slabs, is of oval shape, rounded at one end and slightly pointed at the other, with no obvious orientation.

Site MI-JL-PI 009

Although not identified through intensive search, site MI-JL-PI 009 is commonly referred to as the oldest known burial ground on Pinglap. According to informants, the first graves were dug more than 500 years ago. Today the site seems to be buried under a thick humus layer. The graves were described as coral heaps and coral slab lining. The location is marked on Map 4.

4.5 Imroj

A total of five sites were recorded on Imroj islet. All of the sites are historic (Map 5).



Map 5: Imroj Island. Map produced by Lucille Roberts.

Site MI-JL-IJ 001

Site MI-JL-IJ 001 is located in the northern part of Imroj, sandwiched between the main road to the east and the lagoonal shoreline to the west. The site is often referred to as the burial ground of A*lab* Molik. The four single graves identified have been arranged in different fashions. The supposedly oldest burial (B1) is of irregular shape with various sized coral slabs roughly outlining the grave. It is arranged in a similar fashion to Burials B2, B3, B7, and B8 found at site MI-JL-PI-002 on Pinglap. Burial B2 on the other hand is of oval shape with pointed ends. Although several coral slabs are missing, the slab placement is meticulous, allowing almost no gaps between the upright slabs. Burial B3 was vandalized, but consisted of rows of Japanese beer bottles. The last of the four burials is complete and rectangular in shape; no coral slabs were missing. All four graves show clear northern orientation.

Site MI-JL-IJ 002

Located south of the road at the southern portion of the islet, site MI-JL-IJ-002 consists of an extensive area of coral spread and five clearly recognizable graves. Although only five definite and one possible graves were found, several others are likely, as the coral lining was removed. It might be speculated that the whole area with coral spread might have been the original extension of the burial ground. Burial 1, which is supposed to be *Alab* Jitakion's grave is of rectangular shape. Similar to burial B3 coral slabs on one side are missing, which could point to the removal of the head stone. Both graves show northeastern orientation. The rectangular coral alignment of burial B4, on the other hand, is complete, but the orientation of the grave is different. The roundish to oval shape of burials B2 and B5 is in complete contrast to the previously mentioned graves.

Site MI-JL-IJ 003

Site MI-JL-IJ 003 represents the oldest known church in the Marshall Islands (Photo 8).

Photo No. 8 Imroj Protestant Church

Established under German colonial rule, the site is eligible to be nominated as a historic landmark. Although the framework is not original, it is believed that the foundation is the same. The original church was destroyed during WWII. In 1946-47 it was rebuilt using local materials, it deteriorated a few years later. In the 1950s the building was remodeled with imported wood, corrugated iron, and thatched roof; but once again it was destroyed, this time by a typhoon. Today's concrete with steel reinforcement and brick structure is said to resemble the original appearance of the church, only the roof being shaped differently.

Site MI-JL-IJ 004

Although located next to Imroj Protestant Church, the graves of site MI-JL-IJ 004 were originally located on Jabor. During the German administration of the Marshall Islands their administrative headquarters was located on Jabor, Jaluit, where, among other structures, a small field hospital had been erected. Both local residents and sailors of German cargo ships were treated in the Jabor hospital. Some of the sailors died and were buried on Jabor. During the Japanese administration, massive fortifications were constructed on Jabor. The German burials, in the way of planned construction, were relocated to Imroj and the original wooden crosses were exchanged for granite gravestones from Northern Germany. The graves were lined with coral slabs and later concrete.

Site MI-JL-IJ 005

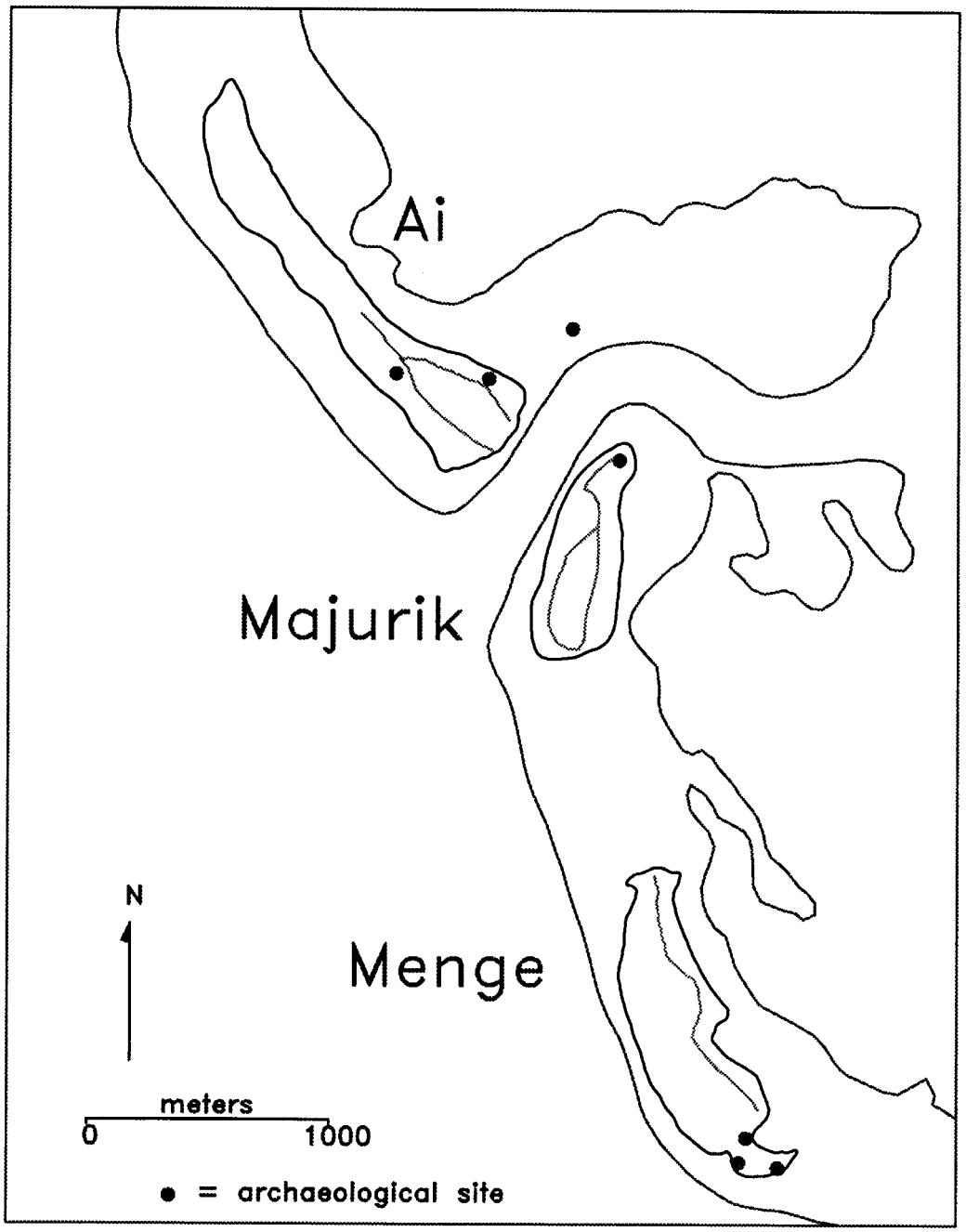
Site MI-JL-IJ 005 represents the only underwater site investigated during this field session. According to local reef fishermen, a crashed Japanese Zero plane was supposed to be at a depth of 4m. They informed us that half of the plane had been removed in the late 1950s in order to rebuild a similar plane in Japan. The team was able to locate the plane at a depth of 28m (low tide depth). It was densely covered with coral growth. The few exposed aluminum parts were in excellent condition. At a depth of 32m several vehicle parts, such as axles, a steering rod, and a manual transmission, were visible.

4.6 Elisabeth Island (Majurik)

Only one site was discovered on the densely populated Elisabeth Island (Map 6).

Site MI-JL-EI 001

Site MI-JL-EI-001 is located at the northern most portion of the islet. The cemetery consists of possibly eleven single graves. Two of them, the graves of *Iroij* Lajutok and Litokwa, are built with a concrete enclosure and single vaults (Photo 9). The two head stones display royal insignia. Behind the main burials are six more graves. Enclosed with concrete they line up in a single row. About 15m east of these graves are two single graves with an enclosure made of brown glass bottles. A mound adjacent to these graves indicates another burial. All graves show a northeastern orientation.



Map 6: Ai, Menge, and Elisabeth (Majurik) Island. Map produced by Lucille Roberts.

Photo No. 9 Lajutok and Litokwa graves

4.7 Ai

A total of three sites were found on Ai, although only the southern part of the islet was accessible (Map 6).

Site MI-JL-AI 001

Site MI-JL-AI 001 represents a fish trap located at the southern tip (lagoon side) of Ai Islet, on the reef flat, approximately 250m due east of the shore. The structure is lined with coral boulders stacked to a total depth of approximately 1m. The coral alignment is V shaped with a gap at its narrowest point that opens to a semi-circle that encloses the gap. The trap points toward the shoreline and opens to the lagoon. The trap is in good condition and is still being used by local residents.

Site MI-JL-AI 002

Site MI-JL-AI 002 represents a habitation site and path (Photo 10) which was used during historic and possibly prehistoric times. The site is still occasionally used today. The habitation site measures 300m x 50m and is located northwest of site MI-JL-AI 001. Associated cultural remains include food shells, coral spread, and intentionally set boulders. The path measures approximately 2m at its widest point and is lined with upright, flat coral slabs leading north from the habitation site. According to local guides, the path runs the entire length of the islet, a statement that could not be verified due to dense vegetation hindering further investigations. The path itself is thought to be of the German period, if not earlier.

Photo No. 10 Coral lined path on Ai Islet.

Site MI-JL-AI 003

Site MI-JL-AI 003 represents an irregular shaped burial site measuring about 30m x 20m. The site consists of eleven clearly recognizable graves, with the possibility of still more. Of the eleven, two are rectangular and coral lined; one has a double coral alignment, and another one has a single coral alignment but is larger. These graves might represent older burials. Within a few meters from the above-mentioned graves is an enclosure that contains at least nine graves aligned in a similar fashion but with beer bottles instead of coral. One milk glass jar was used in grave edging.

4.8 Menge

Three sites were identified on the southern portion of Menge (Map 6).

Site MI-JL-ME 001/Site MI-JL-ME 002

The local guides described site MI-JL-ME 001/Site MI-JL-ME 002 as the remains of a "ceremonial boat" once used in burial ceremonies of high-ranking individuals. The remains, though, where those of a much larger boat, made of wood and iron. Considering its preservational state, the boat cannot be much older than 100 to 150 years. The team was able to identify what appears to be the "crash" site, MI-JL-ME 001, where the boat hit the shore on the southern tip of Menge, as well as the final "deposition" site MI-JL-ME 002. Strong winds, pushed parts of the boat further inland to its final resting place embedded in mud and recently

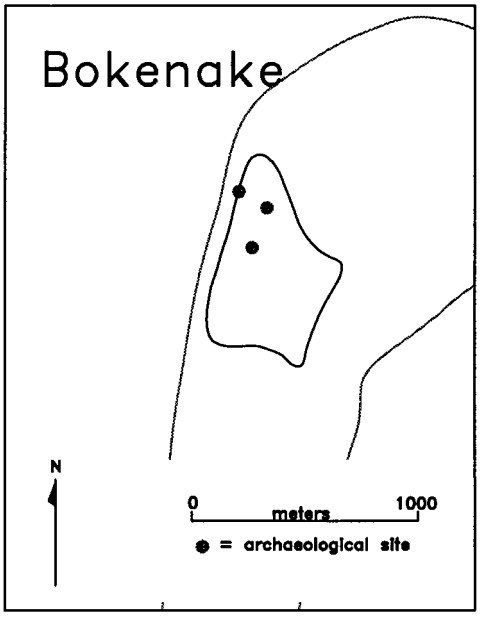
accumulated soil. Indicators for the "crash" site are iron stakes and shackles similar to these found at the deposition site. The few visible surface remains indicate a wooden hull, whereas the iron was used is either reinforced or connector of single wooden parts.

Site MI-JL-ME 003

Site MI-JL-ME 003 is located on a small islet on the southern portion of Menge. Physically belonging to the island of Menge it is separated from the main islet by a small channel. Informants reported that this particular part of Menge belonged to one family, who used the small islet as a family burial ground until the turn of the century. During WWII the Japanese chose this location for the burial of their dead as subsequent relocation of the graves would be easy and vandalism was unlikely because of the Marshallese graves in close proximity. Although all the graves show an exact northern orientation, the surface features vary. The Marshallese graves are larger, of rectangular shape, and lined with coral slabs in an upright position. Except for burial B3, which was built adjacent to burial B2, the graves have headstones. Burial B4, either Japanese or Marshallese, shows concrete lining with an opening where the headstone should be. All other graves were lined with Japanese beer bottles, but have been vandalized and the bottles have been heaped up 2m north of the graves. One grave has been dug up and the body removed. About 4m north of the site an artificial terrace has been built with no apparent function.

4.9 Bokenake

Four sites were recorded on Bokenake, one prehistoric and three traditional sites (Map 7).



Map 7 Bokenake Islet. Map produced by Lucille Roberts.

Site MI-JL-BO 001

Site MI-JL-BO 001 represents a traditional site associated with the legend of Lajubadbad[1]. The site is commonly known as the Jokitak dancing tree. The massive, single standing tree is located in Monkono weto in the northern part of Bokenake. The legend says that the villagers commonly gathered at this site and performed dances around the Jokitak tree, praying for the safe and successful return of the fisherman attempting to fish between Jaluit and Ailinglaplap. An unusually large fish, called *Al*, often destroyed the fisherman's canoes, killing many of them. Eventually the chiefs of the Ralik Chain had to cease traveling between the western, central, and southern atolls in fear of being killed by *Al*. The open sea between Ailinglaplap and Jaluit was therefore called "*Meto in Al*," which literally means "the ocean belonging to *Al*" (refer to MI-JL-BO 002).

Site MI-JL-BO 002

This traditional site is located on the coral flat reef in the northwestern portion of Bokenake. Parts of this particular region of reef flat show a deep channel running perpendicular to the existing shoreline. The site is commonly referred to as the "fish haul in site." As mentioned above, an unusually large fish named *Al*, was terrorizing local fisherman. For a long time no one dared or was able to kill *Al*. Finally, Lajubadbad volunteered to catch the fish. He prepared himself for this event by questioning the *Bubu* (oracle). The *Bubu* told him that he would be capable of catching the fish without being harmed. In order to do so Lajubadbad had to obtain a special fishing line, hook, and bait. The fishing line had to be manufactured from a certain tree called Armwe only found on Jeh, Ailinglaplap. No other fishing line would be strong enough to catch the enormous fish. The fishhook had to be made of wood from the Kone tree found on Woja, Ailinglaplap. The bait to be used had to be a fish called Ek Mouj from Airok, Ailinglaplap. Outfitted with this equipment, Lajubadbad was able to catch the fish and brought it to his mother on Bokenake. When they hauled in the heavy fish, the channel in the coral reef flat was created (Refer to MI-JL-BO 003).

Site MI-JL-BO 003

The last site associated with the legend of Lajubadbad represents the cooking area of the large fish. The 147m long ditch runs parallel to the existing western shoreline of Bokenake. Large boulders line and partially fill the ditch. Charcoal rich soil is present in some areas. Legend states that the fish was divided in three pieces, each piece representing one of the three groups of Marshall Islands. Therefore the three groups of the Marshall Islands; the Ean in Meto, including Ailiglaplap, Jabat, Namu, Lip, and Kwajalein; Rak in Meto including Jaluit, Ebon, Namrik, and Kili; and Kabin Meto including Ujae, Lae, Wotho, Bikini, and Eniwetok were formed. The legend of Lajubadbad was made into a play by the youth of Ailiglaplap and has been recorded on video by the Alele Museum. The tape can be viewed at the museum.

Site MI-JL-BO 004

The extensive habitation area of site MI-JL-BO 004 is located in the northern portion of Bokenake. In an area roughly measuring 150m x 150m charcoal-rich soil mixed with coral gravel, as well as, various midden areas were noted. A 30m x 40m area define the main site. At this location no boulders were found and a planum had been carefully established. Intermittent

[1] Legend was told by Monono Dawoj, Director for Language Program at Interior and Social Welfare

coral spread was noted. Various food shells were dispersed over the total area with major accumulation at one spot (Photo 11).

Photo No. 11 Shell midden on Bokenake Islet.

V. Artifacts

As outlined in Section 1.4, it was the intention of the researchers to leave all artifacts *in situ.* One exception was made. A breadfruit peeler (*Libbukwe in Kabwiro)* found at site MI-JL-PI 001 was considered to be in danger of destruction if it was not removed and curated. The raw material used for the scraper was a tiger cowry (Cypraea tigris), which measures approximately 8cm in length and 6cm in width. The ground edge is 2.9 cm in diameter. "The peeler is a cowry shell with a ground edge on one end and a hole punched into the other end (See Fig. 1). It is held with the basal (slotted) side towards the palm of the hand, it is moved downward and away from the body and basically functions like a carpenter's plane or a modern potato peeler. The sharp edge cuts off the skin which leaves the shell through hole in the other end" (Spennemann 1993:103.) Other artifacts mentioned below were items from local resident's private collections.

One artifact was a pandanus pounder of extremely heavy coral (Photo12) The pounder measured 27.2cm long, 6.4cm wide and 4.7cm thick. The handle area measured 3.2cm wide/thick. No weight measurements were taken. Also shown are two of the numerous Japanese rice and sake dishes collected by local residents.

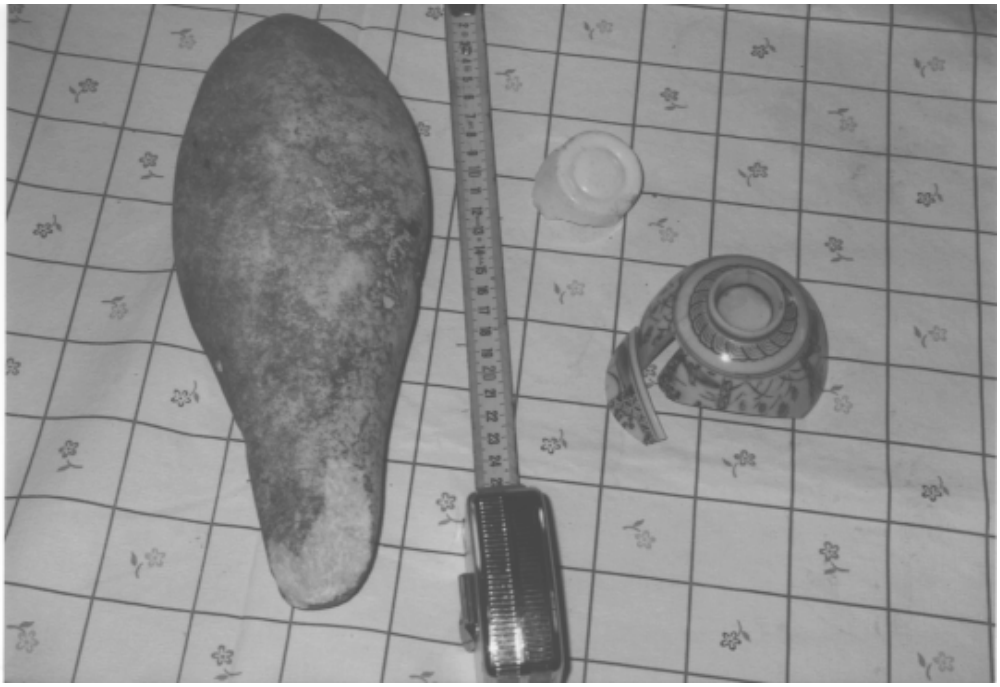


Photo No. 12 Pandanus leaf pounder and Japanese rice bowls.

Of particular interest was a rectangular block of granite with illegible Japanese inscriptions. The block is probably a survey marker, a conclusion reached because of the clearly visible cross on top. Local authorities confiscated the block when a dive tourist tried to board the plane to Majuro with it. According to the diver, the block was found just off the coast of Pinglap Islet.

The only adze recovered from surface collections by local residents came from Jaluit, Jaluit. The complete double-beveled Tridacana sp. adze measured 12cm long, 5.1cm wide, and 2.1cm thick. No weight measurements were taken. (Photo 13)

Photo No. 13 : Double-beveled adze

VI. Comparison of Sites

The following chapter will acquaint the reader with Marshallese sites similar to those encountered during the reconnaissance survey. A comparison is necessary in order to make judgments on the significance of the particular sites encountered. Proper evaluations will enable the HPO to propose sites to the National Register of Historic Places and provides the Advisory Council on Historic Preservation with the necessary background knowledge to make this decision.

Of the six habitation sites encountered on Jaluit Atoll, Sites MI-JL-JL 001, MI-JL-JL 004, and MI-JL-PI 004 appear to be prehistoric. Sites MI-JL-PI 001 and MI-JL-AI 002 possibly extend into prehistoric times, but are definitely associated with the Japanese, and possibly the German, period. Historical cultural remains, including bottle fragments, blue and white sake dishes, rice bowls, and other imported materials, are present at these two sites. Habitation sites such as MI-JL-JL 001 are widely distributed throughout the Marshall Islands. Common features include coral gravel spread, midden material, humus, and animal bones. Two other sites with similar features have been found on different islands; site MI-ML-MI-2 on Mili (Dye 1987:40) and site MI-MJ-24 on Majuro (Spennemann 1990:96.). Riley (1981:26-30) identified twenty-two similar sites (listed as house gravel) on Majuro. Dye (1987:73) excavated a site on Lib Island (Site MI-ML-LB-3) similar to the mound site MI-JL-PI 001. The mound indicates cultural deposits that have accumulated over a long period of occupation. Site MI-JL-PI 007 is presumed to be a habitation site based on the fact that it yields gravel paving. However, Dye (1987:287-297) argues that not all gravel pavements are necessarily habitation sites, unless they provide other indicators similar to those mentioned above. All the sites uncovered (prehistoric and historic) are unique in size and shape.

Nine grave sites were recorded. Seven of them, MI-JL-PI 003, MI-JL-PI 008, MI-JL-PI 009, MI-JL-IJ 001, MI-JL-IJ 002, MI-JL-IJ 004, and MI-JL-AI 003, are prehistoric. Prehistoric features include: no uniform orientation of the graves, differentiation in size and shape, and coral slab alignment at the perimeter of the graves. Dye (1987:44) recorded a site with similar characteristics on Arno Atoll (Site MI-ML-Ar-1.) Sites MI-JL-JL 002 and MI-JL-PI 002 are from the Japanese period. MI-JL-JL 002 represents a mass burial, where both Japanese and Marshallese were interred. Sources indicate that most of the human remains are Marshallese, idividuals who died prior to the Japanese administration and were previously buried elsewhere. This site is the only of its kind ever recorded. The other historic gravesite (MI-JL-PI 002) consists of two graves, both believed to be Japanese. According to local informants, one of the graves was dug up by a Japanese delegation in the late 1970s. This type of site can also be found on Majuro Atoll, MI-ML-MJ 20 (Riley 1981:42.)

Other sites encountered in the survey were fish traps, wreckage, and copra production sites. The only fish trap recorded was found on the southern coral flat reef of Ai Islet. The trap on Ai (Site MI-JL-AI 001) is “V”-shaped and fairly different to those recorded on Arno Atoll (Sites MI-ML-AR 2-3) which are of irregular shape (Dye 1987:46.) Fish traps encountered in Majuro (Spennemann 1990:222-223), while not “V”-shaped, do feature a circle enclosure, which is attached to the V’s angle. The actual age of the Ai fish trap could not be determined.

Three wreckage sites (excluding those sites mentioned by Martin and Harris) were located. One is fully submerged, another is exposed on the reef, and the last one is on dry land. The remains of the wreck off Pinglap Islet (Site MI-JL-PI006) are composed of an anchor, and two masses of corroded chain links embedded to the reef flat. According to informants, the site represents the remains of a Spanish Galleon which ran aground after kidnapping a local boy from the islet. The site is the only one of its kind ever recorded in the Marshalls. The other site located off Imroj is a submerged "Japanese Zero" plane. This type of site is common throughout the Marshalls, especially on atolls that were involved in WWII battles. Look and Spennemann (1993:22) recorded a similar site in Majuro. The last wreck site represents a boat believed to be a traditional "ceremonial boat" used in the funeral of a high ranking Marshallese. The present research concluded that the boat could be no more than 150 years old, judging from the materials used in the construction of the hull. This is the only site of its kind ever recorded in the Marshalls.

The last type of site encountered was a copra production site. Two such sites were recorded. MI-JL-JL 003 represents a site only temporarily used for producing copra. It is not in use today. The other site (MI-JL-PI 005) was originally established during the German administration and continued to be used during the Japanese administration. Although not in use today, informants stated that the site could be used once again, if the price for copra is raised. Such sites are very common throughout the Marshall Islands, particularly on atolls, which were used as trading stations, namely; Ebon, Jaluit Ailinglablab, Enewetak, Kwajalein, Wotje, Likiep and Majuro (Jaji Helkena, personal communication March 12, 1997).

VII. Management Plan

Cultural Resource Management (CRM) has become an important part of archaeological work in the Republic of the Marshall Islands. It has been codified into law by such federal regulations as the Historic Preservation Legislation of 1992. CRM is based on the realization that cultural resources, particularly archaeological sites, are nonrenewable and that prudent care must be taken to utilize these resources efficiently. CRM can involve *in situ* preservation or extraction and curation. The authors would like to stress the importance of *in situ* preservation rather than extraction and curation. The reason is two fold:

1) The Historic Preservation Office is the sole recorder and protector of archaeological sites and is extremely limited in its abilities to fulfill those functions. This is mainly due to limited financial and human resources, the expanse of the Marshall Islands, and the inaccessibility of the outer islands away from the administrative center Majuro Atoll. At this point the Historic Preservation Office's main concern should be the protection of sites threatened by development, vandalism, and erosion. In previous years, however, archaeological excavations were carried out at sites that were not threatened by the above mentioned activities. Whereas other significant prehistoric and historic sites, and their potential data, were lost forever. The current version of the Historic Preservation Legislation sufficiently protects only those sites included in the RMI National Register of Historic Places (NRHP). Common procedure for a site to be included in the register is the nomination of such a site by the Historic Preservation Office. Officially filed Site Register Forms stating the significance level of the site must be presented to the Advisory Council on Historic Preservation (ACHP) for evaluation. If the ACHP agrees on the significance of the site, it will then be included in the NRHP.

2) Second, the Alele Museum does not have enough space to store artifacts according to modern standards and demands in artifact curation. If the preservation and protection of the tangible remains of the Marshall Island's national heritage cannot be granted, then the extraction of such remains (i.e. through excavations) becomes extremely dubious. Besides tangible cultural resources, the HPO has to expand its concerns to include non-physical relics. "Intangible culture elements, such as traditional knowledge, respect for elders, or craft skills, are more varied and less easily dealt with programmatically than physical relics of the past. [Resources] must be identified in the light of local concerns, not according to arbitrary determinants of significance -- especially not according to criteria established for other cultures." (Poyer 1990:131; see also Section 1.2a). Elders with explicit traditional knowledge might die in the near future without having handed down their knowledge to younger people. Intensified ethnographic research should be high on HPOs agenda.

The following recommendations might be viewed in the light of the above. They have been divided into long-range recommendations (5+ years) and short-range recommendations (Immediately- 3 years). The recommendations are restricted to Jaluit atoll but might be considered for other locations as well.

7.1 Long range recommendations

The archaeological sites on Jaluit 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). After successful completion of the physical preservation of archaeological remains, further use of these resources has to be planned. As development is booming and the tourism industry rapidly growing, the HPO might seem to fighting a losing battle. Jaluit environmentalists and preservationists are in steady confrontation with developers. Although the 1992 Preservation Act established that developers are responsible for the costs involved in archaeological investigations to be conducted prior to the commencement of construction, there is no precedent case for developers being prosecuted due to violations of that law. 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 and possibly reconstruction. The following sites should be considered for restoration:

The whole landmass of Imiej Island is an excellent showcase of the Pacific war. Partial restoration or simple clearing of the sites and footpaths would allow tourists to visit actual sites associated with real events in WW II. Guided tours and handouts would generate the revenue needed to restore more sites and yield potential employment for local residents. Site MI-JL-PI-003, properly stabilized, would allow tourists to visit a traditional burial associated with a well-known legend. The first known church in the Marshall Islands is on Imroj. Bokenake has several traditional sites. In addition, the numerous underwater sites would be possible touris destinations. A tourism management plan for Jaluit 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 archaeological sites, serves little purpose if the results of this work are not disseminated to both the general public and scholars alike. 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.

7.2 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. At those sites where significance could not be ascertained due to the limits of the survey, a more detailed study needs to be executed. Intensive survey, including detailed recording and limited test excavations, are recommended as the most appropriate immediate course of action for the following sites:

MI-JL-JL-001
MI-JL-JL-002
MI-JL-JL-004
MI-JL-PI-001
MI-JL-PI-003
MI-JL-PI-004
MI-JL-IJ-003

Stabilization is recommended for the following sites:

MI-JL-PI-002
MI-JL-PI-003
MI-JL-ME-003
Various sites on Imiej (to be determined later)

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 and/or exhumations. Highest priority should be given to sites MI-JL-PI-003 and MI-JL-ME-003. Both are significant burial sites and are threatened by coastal erosion. The historic properties on Imiej 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" have to be included in the RMI National Register of Historic Places.

VIII. Summary and Conclusions

As mentioned in the introduction, the objectives of the present project were determined by certain cultural management needs. During the 1996 annual NPS consultation meeting in Palau, the Historic Preservation Office presented a cultural resource management plan (HPO file 2962), as well as, immediate needs to be addressed within the next fiscal year. The RMI Historic Preservation Office staff stressed the importance of cultural resource inventories in order to assess preservation stages and propose necessary stabilization measures. It was decided to select one atoll for both terrestrial and underwater reconnaissance surveys. Jaluit seemed to be a logical choice due to upcoming development projects that could potentially threaten cultural resources. The archaeology unit of the RMI HPO was dispatched to conduct a reconnaissance survey of Jaluit Atoll between August 12 and September 10, 1996.

Part I of this report acquainted the reader with the research design, scope of work, and methodology involved in solving the pre-stated problems. It gave information on previously conducted research, as well as, a critical evaluation of the sources and techniques used.

Part II described the environmental setting of Jaluit. 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 was not only used as necessary background information in order to complete RMI National Register Forms, but also provided clues to the likelihood of areas primarily used for agriculture.

Gaining knowledge on land tenure and subsistence strategies was important for evaluating the significance of sites concerning their standing in time and space. Part III also provided valuable information on the artifacts and archaeological data most likely to be uncovered in the field investigations. Although no subsurface testing was conducted, a predictive model could be derived on the basis of this information.

During the various field investigations a total of 41 prehistoric, historic, or traditional sites have been recorded. Six sites were found on Jaluit, Jaluit, nine sites on Pinglap, five sites on Imroj, one on Elisabeth Island, four on Ai, three on Menge, four on Bokenake, one on Eowo, one on Namuden, and one called Lenwe. In addition, six underwater sites were recorded (see Report 2). Each site was been described, drawn to scale, and the location marked on field maps. Dominant surface features and associated artifacts were described separately. Site specific information provided by informants has been incorporated in the site descriptions. Additionally, a predictive model for the age determination of graves and habitation sites has been developed. Research conducted on Imiej revealed that Christiansen's 1994 report on WW II sites of Imiej has to be considered "inaccurate." It was suggested to carefully review Christiansen's maps and report to further facilitate management decisions regarding these resources.

Although primarily intended to be a non-intrusive reconnaissance survey, one artifact was collected. Several other artifacts were given to the team for study while on Jaluit Atoll. A complete enumeration and evaluation of those artifacts can be found in part V.

Part VI compared the sites found during the reconnaissance survey with similar sites encountered in the Marshall Islands. The comparison was necessary in order to make informed judgments on the significance of each particular site. Some sites might be of significance to Jaluit Atoll, but might represent a commonly encountered site in the Republic of the Marshall Islands. Several sites in Jaluit are unique and very significant at both the local and national level.

Finally, the authors recommend certain long and short-term management measures based on the findings of the reconnaissance survey. The Historic Preservation Office and Alele Incorporated was critically evaluated and improvements were suggested to meet modern demands in Cultural Resource Management.

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Report 2.
Jaluit Underwater Survey

Introduction

1.1 Introductory remarks

The field work for this survey entitled “The Jaluit Underwater -Archaeology, Phase II Project” took place from 25 April to 9 May 1997. Working on behalf of a request by the Historic Preservation Office based at Majuro Atoll the underwater survey team utilized video and still cameras to document 6 underwater sites, the details of which will be described in this report.

During the period of the survey, the team made 36 “man-dives” encompassing 681 minutes of total actual bottom time. Additional underwater sites were also surveyed based upon information deemed from local sources on Jaluit, the details of which will be encompassed within this report. The survey team discovered five of the sites in water well within recreational and sport diving depth and decompression limits. These sites would have significant value for tourism involved with diving activities as well as historic significance. The following codes have been used for site reference:
MI - Marshall Islands, JL - Jaluit, LA - Lagoon, 000 - Site number

1.2 Number and type of sites identified

1) Site MI-JL-LA-001. “Scattered wreckage of Kawanishi H8K, Japanese flying boat, in shallow water off Emiej island sea-plane base." (Lagoon).

2) Site MI-JL-LA-002. “Intact wreckage of Kawanishi H8K, Japanese flying boat, in deep water close to a coral head off Emiej sea-plane base." (Lagoon).

3) Site MI-JL-LA-003. “Shallow scattered wreckage of “bottle wreck” - a German trading vessel, in shallow surf zone off Kapenbock island." (Lagoon).

4) Site MI-JL-LA-004. “ Wreckage of US Plane (Douglas Devastator) intact - in shallow water close to Pinglap Island." (Lagoon).

5) Site MI-JL-LA-005. “ Scattered wreckage of destroyed US bomber (B-25) off Imroj Island." (Lagoon).

6) Site MI-JL-LA-006. “Intact wreckage of Takana, Japanese fishing vessel. Close to Jabor (Jabwad) main-dock." (Lagoon).

1.3 The map

For the course of the survey Nautical Chart # 81817, Defense Mapping Agency, DMA stock # 81BMA81817 was used for reference. For accuracy in chart locations and site latitude / longitude verification a Magellan NAV 5000 DX Global Positioning Unit (GPS) was utilized.

1.4 The survey

With time constraints and adverse weather conditions and data on site information already known in advance the site survey began with known sites off of Imiej Island. As Imiej was a Japanese seaplane base and received the majority of the attacks at the time of the US bombing campaign (4 to 5 seaplanes were reportedly sunk on their moorings on November 20 1943) this was the obvious place to start. The survey revealed two Kawanishi flying boats (one had had a limited survey by Henrik Christiansen - previous site designation - B455). The other in deeper water was far more intact than the latter. Without the use of a proton magnetometer the other sites mentioned in Christiansen's (1994) report could not be located.

The information on site location was accurate as such that little time was used searching for the wrecks (Christiansen 1994). Once a confirmed the discovery was made the team was able to maximize bottom time actually performing the survey. The survey included still photo and video documentation and site measurement. The initial dive at each site involved video footage that allowed an overall impression of the site as well as established identifying characteristics of each wreck and /or any artifacts that were missed by the naked eye. The second and third dives involved still photo documentation and measurement of the sites including key measurements of broken wreckage separated from the main-body of the site.

In measuring the sites surveyed different techniques were utilized applicable to each site. These techniques ranged form the circular search technique (with line and reel) used specifically on site MI-JL-LA001 and an expanding square compass technique for sites MI-JL-LA-003 and MI-JL-LA-005. An additional site surveyed was a coral pinnacle that supposedly held a US Plane atop it (information deemed from local sources). A compass controlled parallel search pattern was conducted but no sign of wreckage was discovered.

In addition to the sea-planes surveyed at Imiej information was obtained on a US bomber resting on a coral head close to Pinglap Island on the western side of the lagoon (Site MI-JL-LA -004). Two dives revealed the remains of a US Navy Douglas Devastator Torpedo Bomber (TBD 1). Measurements were taken to confirm the identity of the aircraft.

Off Imroj island two dives were made on the scattered wreckage of a B-25 (Site MI-JL-LA-005) - the correct identity of this aircraft is still open to question as little remains of the wreck to identify it easily. Finally off Jabor a survey was conducted on the remains of a Japanese fishing vessel (Site MI-JL-LA-006). This vessel was not a result of the bombing in 1943 but rather was sunk in recent years. It was however worth noting in this report as it's location and closeness to Jabor may prove of interest to future historians and/or recreational divers.

A survey was also made of the sparse remains of a German ship, possibly a trading vessel from pre-World War II (Site MI-JL-LA-003). This site is highly impaired by wave action and erosion .In order to survey as thoroughly as possible the team made 4 dives in varying degrees of sea-states utilizing an expanding square search technique. Underwater video was also recorded however little evidence of the ship remains other a few glass bottles.

II. Site History, Specifications and details

2.1 Site MI-JL-LA 001 - Scattered wreckage of Kawanishi H8K in shallow water off Imiej Island.

A) Site description and location

Jaluit Atoll (Imiej Island) located approximately 400 ft. from the lagoon shore between the two seaplane ramps. The wreck is encountered at a depth of 55 feet in the sand surrounded by scattered coral heads.

Co-ordinates: 06.00.766 N / 169 .43. 020 E

The remains of the aircraft are seriously scattered in many pieces. The wing is intact with a portion snapped off on the starboard side and identifying the site as an aircraft is still possible. The water depth (approximately 55 feet) indicates that on sinking the aircraft did not have enough time to invert, as did the plane at site MI-JL-LA-002. This plane is therefore sitting up right in the sand. The aerial bombardment seriously destroyed the majority of the hull and as such the forward area is almost destroyed. (Henrik Christiansen states that this area was intact when he surveyed the wreck - 1993, damage could therefore have come from anchoring on the site in recent years)-the fuselage is in pieces. The forward 20-mm nose gun is still in place and two further turrets are in the site area. One turret is sitting up right in the sand while another is half buried with the gun barrel almost completely covered.

From the state of the plane it is evident that it was either at anchor or on a mooring and not underway at the time of the bombing (the area of the site is not as large as would be if the plane had been shot down from the air). Much of the site is slowly becoming covered in sand from shifting tides and this sand hides many of the artifacts. Two of the propellers are partially concealed by sand while two others are up right. The tail section is up right in its original position, however lying away from the fuselage remains to the starboard side. Neither shells nor ammunition rounds were found although it is possible that collectors may have acquired them.

Artifacts: Turret Machine-Guns -(3 located including nose gun)
Sapporro Beer bottle - (1 found)
Gas Cylinders -(4 found in cabin area)
Anchor -(1 found)
Propellers -(4 found)

B) History

The standard ocean patrol flying boat for the early part of the Pacific War for the Japanese was the Kawanishi H6K (known to the Allied forces as “Mavis”). Kawanishi had a technical agreement with Short Brothers however the H6K looked like a Sikorsky S.42. It was

an excellent aircraft and 217 were delivered from the production line, which also included 36 transport versions. The question of a replacement was a challenge however in 1938 when the Japanese Navy Armed Forces published a specification requirement calling for 30 % greater speed and 50 % greater range.

The result was the H8K. The design team under Dr. Kikihura created a flying boat that has served as the biggest single jump in the technology of such aircraft in all history. It was beyond dispute the best and most advanced flying boat in the world until many years after the war. Early trials however proved disastrous as the great weight and narrow- beamed hull resulted in uncontrollable porpoising. The cure was found in adding a second step in the planing bottom, adjusting the powerful double -slotted Fowler flaps and adding a horizon mark on the large pilot post above the bows. The Kohnan plant built 17 H8K1 in total, 114 H8K 2 and 36 of the H8K 2-L transport versions (Allied name "Emily"). They flew alone on brave and daring 24-hour missions. Their first sortie, on March 1942, was to have been a bombing raid on Oahu, Hawaii with an intermediate refueling from a submarine but the target lay under a dense low cloud.

Later versions of the H8K2 had radar and retractable floats.

C) Specifications

The Kawanishi H8K or "Emily" was a purposefully built reconnaissance and attack flying boat. There were two versions of this aircraft produced by the Japanese: the H8K Type 1 and the H8K Type 2.

Origin: Kawanishi Kokui KK.

Type: Reconnaissance and attack flying boat.

Engines: Four Mitsubishi Kasei 14 cylinder two-row radials (H8K 1 Model 11), 1,520 HP Kasei 12 (H8K2 Model 12) 1,850 HP Kasei 22

Dimensions: Span 124ft. 8 in. (38 m); length 92 ft. 3.5 in. (28.1m); height 30 ft.0 ½ in. (9.15 m)

Weights: Empty (H8K 1) 34,000lb (15,500kg); (H8K 2) - 40,500lb(18, 380kg). Loaded (H8K 1) 64,343lb (31,000kg); (H8K 2) 71,650lb (32,500kg).

Performance: Maximum speed (H8K 1) 270 mph (433 km/h): (H8K 2) 282 mph (454 km/h). Initial climb 1,575 ft. (480m) / min. service ceiling 28,800 ft (8770m); range usually 3,000 miles (4800 km) but overload reconnaissance range 4,474 miles (7,200 km).

Armament: Normally five 20 mm in power driven nose, dorsal and tail turrets and three 7.7 mm manually aimed from beam and ventral windows; weapon load slung beneath inner wing comprising two torpedoes or bombs to total weight of 4,410lb (2000kg). (H8K2-L) one 20 mm and one 12.7 mm both manually aimed.

History: First flight late 1940 (production H8K1) August 1941.

User: Japan (Imperial Navy).

2.2 Site MI-JL-LA 002 - Intact wreckage of Kawanishi H8K in deep water

A) Site description and location

Jaluit Atoll (Imiej Island) located approximately 1000 feet from the lagoon shore on the Southwest side of the first coral pinnacle encountered. The wreck is lying in approximately 90 feet of water.

Coordinates: 06.00.766 N / 169. 43. 020 E

This is an excellent example of an 'Emily" flying boat inverted but very well intact. The tail section has separated from the body of the aircraft and lies broken and resting against the port wing. The majority of the wreck is in excellent condition. The site has four propellers all still attached to their engine cowlings on the wings. The depth of the aircraft and its current condition give rise to the theory that it sustained a bomb to the tail that instantly separated it from the aircraft body. The resulting loss of tail caused the compartments to flood with water which caused the plane to flip over while sinking (it was an extremely heavy aircraft). The cockpit and forward part of the aircraft are all intact, as is the forward nose gunner's area. The nose gun is still in place and on examining the cockpit, 20-mm shells are scattered everywhere as well as magazine rounds. Of the floats only one remains intact and up right while three more are resting alongside the wings. The forward cabin areas are of immense interest as not only are rounds scattered everywhere but there are also large boxes (possibly ammunition boxes) and at least one chair. As is often the case with the interior of wrecks this area is also home to a large school of Cardinal fish (Apogon gilberti). The aircraft itself is aluminum and so the body should remain fairly intact over a relatively longer period of time than if it were made of steel. At present the site is resting in a high silt and fine layer of sand covers zone and much of the artifacts.

Artifacts:
- Large ammunition type boxes - (3 found)
- Forward Gunner Seat - (1 located)
- Chair - (1 found in cockpit)
- Bullets fused together 20mm (1 box found)
- Individual bullets 20mm (11 found -including 4 fused together)
- Gas cylinder (1 found)

B)/C) History and Specifications

Refer to site MI-JL-LA 001

2.3 Site MI -JL-LA-003 - Scattered wreckage of bottle wreck

A) Site description and location

Local information suggests these are the remains of a German trading vessel pre-World War II. The remains of the wreckage are visible in the surf zone of Kapenbock Island facing into

the Southeast pass between Jabor (Jabwad) and Enybor Island. The majority of the wreckage (engine) is visible at low tide on shore while the artifacts and other remains range at a depth of 10 to 30 ft. of water.

Coordinates: 05.55.783 N / 169 .38. 551 E

This site is in an area prone to strong north and southeast swell as well as being in a high tidal flow current zone. The effects of this can be seen on what little remains of the wreckage on the shore of the island. The current and surge effects have advanced the deterioration of this site to its present condition. At a depth of approximately 10 feet a mast or davit is part of the remains of the vessel while spread over an area approximately 110 degrees from this mast are a large array of different shaped bottles, most encrusted by sponges and corals.

Artifacts: Possible wine bottles: (18 found - empty)
Mast or Davit (1 found)

B)/C) History and Specifications

Not known

2.4 Site MI-JL-LA 004 - Intact wreckage of US Navy Douglas Devastator

A) Site description and location

Jaluit Atoll near Pinglap Island. The aircraft is located on the western face of a coral pinnacle approximately one and a half miles northeast of Pinglap Island. The wreck is encountered at a depth of 60 ft. (the nose) inclined to a maximum depth of 69 feet (the tail).

Coordinates: 05.58.651 N / 169 .27.088 E

The aircraft is intact aside from the propeller and engine cowling which is separated and located approximately 15 feet from the main body of the aircraft. The glass canopy is still intact however the forward pilot's window is broken. No weapons were found- these may have already been removed. Due to the position of the plane it is impossible to determine if a torpedo is still present. Considering the plane is on the far western side of the atoll it is possible it was heading in this direction following an attack at Imiej. If this is the case it should have already fired its torpedo before crashing. Most aircraft shot down in the fighting campaigns are badly damaged however this aircraft is in excellent condition. Its shallow depth makes it easily accessible and yet it is well protected from waves caused by the northwest winds that can move an aircraft. As with the aircraft at site MI-JL-LA-002 the cockpit, pilots, and radio operator's area are now the habitat of a school of cardinal fish (Apogon gilberti). A large hard coral is growing on the front of the aircraft while the gauges are also partly encrusted with sponges and corals.

Artifacts: Coral encrusted dials *in situ* (3 visible)
Joystick *in situ*
Foot peddles in cockpit *in situ*

B) History

In the early 1930s the US Navy ordered three new aircraft carriers, the “Ranger", “Yorktown”, and “Enterprise". Among their complement were to be squadrons of torpedo bombers. On 30 June 1934 orders were placed for two prototypes of different designs - the Great Lakes XTBG-1 and the Douglas XTBD-1. The Douglas was the first cantilever monoplane designed for such a duty. This was a radical new design with very thick wings (thus less susceptible to bullet damage). Also the landing speed was only 59 mph and the main wheels protruded far enough for safe landings. The large canopy over the pilot / radio operator and gunner opened into six sections for “open cockpit” vision. The center crewmember aimed the torpedo sighting through doors in the belly end from a prone position. The monoplane design proved to have a far overall superior performance. On February 3, 1936 Douglas received the order for 110 aircraft (at the time the largest peacetime order for aircraft placed by the US Navy). This production TBD had a taller canopy with crash pylon, power folding wings and a few other changes. Altogether 129 were delivered and 100 were still the only carrier-based torpedo bombers in US service at the time of Pearl Harbor. Named "Devastator", they immediately were called into action. These aircraft proved to be formidable during the campaigns in the Gilbert and Marshall Islands.

They were proven obsolescent, however, during the battle of Midway when flak and Zeros in a single fight shot down 35 of them. The Avenger soon replaced the Devastator. The plane at Pinglap most likely came off of the “Yorktown” during the February 1, 1942 attack. During this attack 11 torpedo bombers and 17 scout bombers were launched. Disagreeable weather conditions caused seven aircraft to be lost. This aircraft could possibly be one of them, as we found no evidence of strafing or bullet holes on the aircraft body.

C) Specifications

The Douglas TBD Devastator was a 3-seat carrier based torpedo bomber.

Origin: Douglas Aircraft Company
Type: Three-seat carrier based torpedo bomber.
Engine: one 850 hp. Pratt and Whitney R-1830 -64 Twin wasp 14-cylinder two-row radial.
Dimensions: span 50 ft (15-24 m); length 35 ft 6 in. (10.82 m); height 15ft 1 in (4.6m)
Weights: Empty 7,195-lb (3,264-kg) maximum loaded 10,194lb (4622kg)
Performance: Maximum speed 206 mph (332 km/h); initial climb at maximum weight 900 ft 9274 m)/min; service ceiling 19,700 ft (6000m); range with full weapon load 435 miles (700 km).
Armament: One .30 inch colt browning fixed on right side of nose, one 0.5 inch manually aimed in rear cock-pit single 21 inch (1,000lb / 45kg) Bliss-Leavitt torpedo recessed into belly, light bomb racks under wings for total additional load of 500lb. (227kg).
History: first flight (XTBD -1) January 1935. Production delivery 25 June 1937.
User: US Navy

2.5 Site MI-JL-LA 005 - Scattered wreckage of possible B-25 bomber

A) Site description and location

Jaluit Atoll (Imroj Island) located approximately 800 feet from shore directly west from the church. The site is located close to a large coral head at a depth of 100 feet.

Coordinates: 06.04.255 N / 169.36.471 E

Little remains of the plane itself. Locals and others who have seen the site believe the aircraft is a B-25 bomber. The most obvious evidence of an aircraft is two propellers, landing gear, and two aerial bombs. Body panels are scattered over an area approximately 500ft long by 150ft wide. As the site is in such poor condition there is little of interest to divers. Much of the remains are encrusted with coral so that identifying the site and artifacts is very difficult. Local knowledge states that three pilots swam ashore from a 3-seater aircraft at Imroj. This may be pertinent however the crew of this aircraft would have certainly been more than three men. It is also highly unlikely that the crew of this plane would have survived considering the scattered debris of the destroyed plane. At present the site is close to the northeast channel but is not affected by wave or current action as it receives protection from this by its depth.

Artifacts: Bombs (2 found)
Propellers (2 found)
Landing gear (1 located)
Aircraft body panels (over 30 visible)
Wing flap (1 found, damaged)
Engine fuselage (1 found partly encrusted)

B) History

A company with no previous experience of twin engine aircraft, bombers, or warplanes designed the B-25. It has since been described as the best aircraft in it's class in world war two and was made in larger quantities than any other American twin engined combat plane. The army initially ordered 184 planes, the first 24 being B-25's and the rest B-25A's with armour and self-sealing tanks. The defensive armament was a 0.5-inch manually aimed in the cramped tail section and a single 0.3-inch manually aimed from waist windows and the nose. Bomb load was 3,000lb (1,361kg). The B had twin 0.5 inch in an electrically driven dorsal turret and a retractable ventral turret, The tail gun being removed. Subsequent models were alphabetically C through J however the aircraft at Imroj is more than likely a B or A.

C) Specifications

There is little left to accurately distinguish this site as a B-25 bomber. It is most definitely a twin engine plane and the size of the propellers lend itself to being a B-25 which was a four to six man medium attack bomber, a.k.a. the North American NA -62 B-25 Mitchell. "Mitchell" was the name of the officer court-martialed in 1924 for his arduous belief in air power.

Origin: North American Aviation Inc. Inglewood and Kansas City
Type: Medium bomber and attack with crew from four to six.
Engines: (B-25 A, B) two 1,700 HP Wright R-2600 -9 double cyclone 14 cylinder two tow radials (C, D, G) two 1,700 hp R-2600 -13 (H-J F10) two 1,850 HP (emergency rating) R-2600 -29
Dimensions: Span 67ft 7 in. (20.6m) length (B-25 A) 54ft 1 in (B, C, J) 52ft 11in (16.1 m): (G, H) 51FT (15,54m) height (typical) 15ft 9 in. (4.80 m)
Weights: Empty (J typical) 21,100lb (B) 28,640lb (C) 34,000lb (15,422kg) (G) 35,000lb (15.876kg) (H) 36.047lb (16.350kg) (J) normal 35,000lb overload 41,800lb (18,960kg).
Performance: Maximum speed (A) 315 mph (B) 300 mph (C, G) 284 mph (459 Km/h) (H, J) 275 mph (443 km/h) initial climb (A typical) 1,500 ft (460 m)/min (late models typical) 1,100 ft 9338 m0/min service ceiling (A) 27,000 ft (8,230 m) (late models typical) 24,000 ft (7315m) range (all typical) 1,500 miles (2414 km).
Armament: See text
History: First flight (NA-40 prototype) January 1939 (NA-62, the first production B-25) 19 August 1940 (B-25 G) August 1942.
Users: Wartime - Australia, Brazil, China, France, Italy, Mexico, Netherlands, Soviet Union, UK, and USA (AAC, AAF, and Navy).

2.6 Site MI-JL-LA-006 - Wreck of 'Tanaka' /intact Japanese fishing vessel

A) Site description and location

Jaluit Atoll (Jabor [Jabwad] Island) situated on the southeast facing side of the second coral head directly west of Jabor main dock approximately half a mile from shore at a depth of 117 feet.

Coordinates: 05.54.955 N / 169 .38 .193 E

This wreck occurred in the last 5 years (information from locals) and is therefore not a World War II vessel. It is however interesting as it is upright and intact with its masts still upright. The compass binnacle has been opened and the compass removed. The interior of the bridge is in disarray with boxes and cabinets everywhere. The dock lines are still tied to their cleats. Several of the hatches are opened allowing interested parties to enter the wreck for further exploration.

Its close proximity to Jabor protects the wreck from rough waters and wave action erosion. Its relatively deep depth also protects it from storm affects. Those interested in purely World War II craft would be disappointed however this site has great value for recreational wreck divers.

Artifacts: Dock lines (6 found)
Mattress (1 found)
Boxes (4 found)

B)/C) History and Specifications

Not known

III. Summary, Conclusions, and Recommendations

Underwater World War II aircraft and ships are of great interest to recreational sport divers. Some of the most famous and popular tourist destinations for divers include an important ship or aircraft from a World War (Truk Lagoon, Bikini, Scapa Flow, the President Coolidge in the Solomon's, etc.). As such these site are good for the economy as they attract tourist to the area. Many dive resorts intentionally sink a vessel to attract and divers. A ship or craft actually submerged during battle holds more appeal, as people become interested in the whole history of the area and the vessels themselves. With the sites exposed to a constant salt-water environment their deterioration is inevitable. Their removal and relocation to a climate-controlled environment is the only method that allows for their preservation. This is not a practical solution.

Also of interest is the research potential of these underwater sites. As the date of submersion is often known through historic records they are significant to marine biologists studying sponge and coral growth. Historians researching a particular aircraft or vessel and/or damage caused from aerial bombardment would also much to learn from these wrecks.

Marine growth and sand will eventually conceal much of the sites. The most immediate problems plunderingof artifacts (gauges from aircraft, shells etc.) which will eventually leave no more than the hulk of aircraft or ship causing unnecessary damage to the craft. Another immediate problem is damage caused by anchoring. Most of these sites form artificial reefs attracting fish. Fishermen who come to fish may possibly drop anchor on the sites causing serious damage. It is hypothesized that this may be a cause of the damage to the body of site MI-JL-LA-OO1 as the fish were abundant at this site.

Recommendations

1) A mooring system should be implemented if tourism or more research is to be done on the sites. This would prevent damage caused by anchoring. This system will only work if enforced.

2) Educate the public on laws preventing the removal of any and enforce these laws.

3) Educate the public on the importance of historic preservation to their economy and future.

Report 3.
Traditional Sites on Jaluit

Introduction

Traditional sites are natural features in the environment to which oral traditions are attached. Prehistoric Marshallese culture was largely an oral society where information was passed down by word of mouth from generation to generation. Knowledge was embodied in stories and chants.

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.

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.

The following six stories and their related traditional sites were recorded by Langinbo Frank and Kevin Lynch. The storyteller's credit appears after each individual story. The stories are presented in both English and Marshallese. The Marshallese versions have not been edited. The English versions were not edited with the exception of spelling and sentence structure.

Donna K. Stone
Majuro, Marshall Islands
January 1999

Traditional Site 1.

Lamanjideb

One story that takes place on Jaluit Atoll is called "Lamanjidep". There were three *wetos* (piece of land) on Jaluit called Boklan, one, two and three. This story takes place in Boklan One. This is where a demon named Lamanjidep lived. There were many swamps, known as *pat* in Marshallese, where the people of the *iroij* (chief) played an old Marshallese sport called *Anidep.* It was a native football game played with a ball made from pandanus leaves. The daughter of the iroij also played on the *pat*.

The iroij lived in Bulala, one of the *weto* located in the east of Jaluit, or *lonene.* One day, while the people were playing on the *pat*, the chief's daughter was suddenly abducted by the demon, Lamanjidrep. He took her into his house on Boklan One. Once inside, he asked his mother to take good care of the *iroij's* daughter so he could eat her later.

In the *weto*, there was a Breadfruit tree just near Lamanjidep's house. This tree almost looked like *mijiwaan* (a type of breadfruit with seeds inside). When you cook this breadfruit, the fruit will remain the same and never be cooked. That's how Lomanjidep got his food. This breadfruit tree was cut down so it no longer exists.) Lomanjidep prepared some breadfruit. As he was planning to eat the *iroij's* daughter later, he reminded his mother to look after her so that she wouldn't run away.

One day, Lamanjidep's mother asked the girl where she was from. The daughter of the *iroij* told her that Lamanjidep had stolen her away from the people when they were on the *pat*. That was how she came to be in the house of Lamanjidep. The mother asked if she wanted to go back and see her parents, and the girl answered yes. So the mother gave her four of the Lamanjidep's favorite valuables. The first three were all *kor (*a coconut shell container) of ants. The three *kor* contained different kinds of ants, one of *lon*, another of *kinal* and the third of *kalep.* The last item was a *Daka in niin* (a clamshell mallet) which the mother always used for her work. As she gave these things to the *iroij's* daughter, she told the girl to release one of the three *kor* on the way back to the iroij's house. This way, when Lomanjidep tried to catch her, he would stop to collect his valuables while she got away.

So the *iroij's* daughter left with these things. Suddenly, Lomanjidep came home and couldn't find her. He asked his mother whether she knew where the girl was. She told the demon that the girl had run out just as he came in. Lomanjidep didn't wait. He ran straight after her. When he was about to reach her, she threw one of the *kor* on the ground. The demon stopped when he saw the ants, so the girl ran further on. The demon suddenly remembered the chase and again pursued the girl, this time running even faster.

By the time he was about to catch her, she threw a second *kor*. Again he stopped to gather the ants. The third time, she did the same thing to protect herself from Lomanjidep. At last, she released the *Deki in-niin* and ordered the demon to stop and take the *Deki in niin* with him. The girl got into her parent's house safely.

As told by Jenare Leon

Photo 1. Miram Tolwi at the *pat* where Lomanjidep captured the *irooj's* daughter

Lamanjideb

Ilo aelon in Jaluit, Jaluit ewor juon bwebwenato. Bwebwenato in ej kon juon timon etan Lomanjidep. E j bed ilo weto en etan "Boklan Nomba 1". Ilo weto in ewor juon bat. Bat in ejkin jikin anideb an armij ro an Iroij eo im ledrik eo nejin irooj eo. Aolep ien armij rein an iroij eo im ledrik eo nejin rej ikkure in anideb ijin. iroij eo ej jokwe ilo juon weto ilo Jitakeen etan weto in "Bulala".

Juon ien armij ro im ledrik eo rej kab anideb wot ak etal timon eo "Lamanjidep" im jibwe im kokake ledrik eo nejin iroij eo em boke nan imweo imon ej bed "Boklan" bar juon weto ilo Jaluit en. Ke erro ej tobralok mweo ej kadelonlok ledrik eo nan ibben jinen im kalimuri jinen bwe en likkun lale ledrik eo kijen. Kio elikit ledrik eo ak etal im kakijen tok kijeerjel.

Ilo "Boklan Nomba juon", ewor juon ma. Ma in ej ma eo kijen Lamanjideb. Ne rej komate ma in ejaje mat. Jokdon ne renaj boil im bar boil ak ejaje mat. Ma in ej juon mijwan. Emoj ear euidem an kakijen tok kijeerjel em lak boj juon ien eba ban jinen bwe en lukkun lale im kojbarok wot ledrik eo. Lale bwe en jab jako. Kio etal, etal em jipadoklok nan an komkom kijeerjel jinen im ledrik eo.

Juon ran lelap eo jinen ar kirlok ledrik eo im kajitkini ia eo ej itok jene. Ledrik eo eba, ij itok jen bat en, ijo leen nejim ar jibwe io jene ilo jikin anidreb en. Kio Lelap eo kajitkini, kwoj konan ke rool nan iben jinom em jemam? Ledrik eo eba aet. Kio lelap eo eba itok bwe na in liwaj jitonboro ke an leen neju. Juon kor in lon, juon kor in kinal, juon kor in

kallep im kab deka in nin eo an lelap eo. Men kein konaj biki im ne konaj loe Lamajideb an iwoj in jibwe yuk, kon kab kotlok juon kor bwe en lutok bwe en mad bwe en wor ien am naj ettor im kotobar lok ijene koj itok jene.

Kio lelap eitok kokak ledrik eo elak itok Lamajideb, "Eba jino etke ejako ledrik eo kijo?" Jinen eba eneo ej riwoj em ettor. Kio Lamajideb ekimlok ak ekotobar lok ledrik eo. Ear kotobar lok em enanin jibwe ak lok ledrik eo ejolok juon ian kor ko, juon ian men ko raurok ibben Timon eo. Timon eo kio ejolok an kobel ledrik eo ak eoktak tok em ainmen ko. Ej moj an aine ak ebar jino an kobel ledrik eo, ej nanin bar jibwe ak ledrik eo ebar jolok juon kor. Timon eo ebar mad ibben men ko.

Kar eindeo aerro kain eo, kain eo em lak eliktata, Timon eo ej ten jibwe ledrik eo wot ak ledrik eo ejolok Deka In Niin Eo, kio Timon eo ejolok an kobel ledrik eo em ebok Deka In Niin eo em rool ak ledrik eo ejibadok lok jinen im jemen.
- Jenare Leon

Traditional Site 2

THE GREAT WARRIOR, LANE

This story is about Lane and his two brothers Nijo and Letan. They sailed east from one of the western atolls of the Marshall Islands called Kwajalein to Jaluit Atoll. They sailed many days and nights until they reached Bokenake, a small island of Jaluit. They dropped anchor and Lane went ashore to look for a human giant from the village.

Lane himself was no ordinary man. He possessed the crafts of wizardry, sorcery, or magic. With such powers, he knew that he would defeat the giant.

The human giant was waiting for him on the beach called " Bokan Kottor ". For a moment, they stared at each other. With a cast of one stone, Lane killed the giant. He went on to kill all the men of Bokenake.

After that, the brothers left Bokenake and sailed toward the eastern islands. But before they reached the islands, an old woman, who possessed powers similar to Lane, went ahead of them and informed the people on these islands that Lane had killed the men on Bokenake and that he and his brothers were on their way to their islands. They sailed pass the islands until they reached Imroj, another islet of Jaluit.

They went past the channel between Kinajon and Imroj. There they anchored their canoe to a coral head, leeward of a shoal called Na Wetak. It was morning at low tide. When the men on Imroj heard that Lane and his brothers were at this place, they went after them. By the time they reached the brothers, the tide was high and with the power that Lane possessed he conquered them and killed them all.

Lane and his brothers left Imroj and headed to a secondary lagoon on the lagoon side of islet called Namolar and they waited for dawn. At dawn, the men on nearby islet Mojae saw their canoe. They headed to towards Lane and his brothers. When the brothers saw them they waited until for the men to come closer. Lane and his brothers then went to the men and defeated them.

Nijo, Lane's second brother, ran away. He ran to a passage between " Laniran " another small island and "Namolar " and waited for his brothers. Lane and the other brother pursued him and when they reached him, Lane told him that he ran away because he was a coward. Lane then applied his power to his brother. Afterward, they set sail again early in the evening. This time they were heading to" Kabin Aelon En " to kill all the men there.

The brothers sailed all night and when they reached the villages, all the men were out fishing. They went ashore, beaching their canoe on the island of Ae, one of the small islands at Kabin Aelon En of Jaluit Atoll. They went to a nearby house. Outside the houses was a pit or trench which Lane and his brothers used to rest and sleep in. Around midnight, Lane told one of his brothers to keep a watchful eye on the lagoon to see if anybody was voyaging during the night, and if so, to see where they would stop for the night. The brother saw one canoe coming in and knew where it was heading. He went back to his brothers and told them.

The villagers didn't sleep that night as they were eating fish and other foods awaiting the fisherman. While Lane and his brothers were sleeping an old woman brought them a big basket full of fish and coconuts. The old woman knew what the three had done to the men at Boknake and the other islands they had visited, but she didn't tell the people of Ai where the brothers had their campsite. This was Lane's magical power at work, always keeping them safe and avoiding any ill-fated incidents which might befall them.

The brothers ate the food brought by the old woman. Then Lane told his brothers, "When it is almost time for the tide to come in, we will pull out our canoe". When dawn came, the tide was coming in so Lane and his brothers launched the canoe as planned. They made for a coral head at the channel, close to the far end of Ai Island and paused until the people of the village noticed they were waiting at anchor. This made the men eager to capture the strangers. The tide was still coming in and by the time they reached Lane and his brothers; it was already at its high point. The men were floating and swimming. Lane and his brothers had no trouble killing them. They used their paddles to hit the men in water. When they were all killed, the three brothers headed back towards Kwajalein.

The only surviving men of Jaluit Atoll were the men of lmiej, Jabot, and Jaluit Islands. On their way to Kwajlein, the Chief of Jaluit, Kaiboke was on his way home. As the two parties were about to pass each other, Lane instructed his brothers not to say a word to the chief until he has fully passed them, and he also instructed them to pull the sail up for a speedy getaway. The chief greeted them and asked them where had they been. When the chief's canoe passed them in the other direction, they started to reply that they were just at Jaluit. The chief asked them how things were on Jaluit and they replied, "You go and look at your *Pit*" (a place where the chief grew his fruit plants). From the way they replied, the chief knew they had killed the men on Jaluit and he told his crew.

As told by Tina Jorkan

Photo 2. The coral head where Lane anchored his canoe to kill the people of Namolar

LANE

Bwebwenato in kon Lane ej juon bwebwenato ar walok tok jen aelon in Jaluit. Lane im lomaro jatin Nilo im Letan raar jerak kon juon wa jen Kabinmeto kan, nan aelon in Kwajlein im itak ije tak im lak likin Bokenake juon ene jidikdik ilo Jaluit Atoll, erjeel emmaan ie ak anko, ak ewenenelok Lane nan an ioon juon lakijonjon rej ba elej Bokenake en. Emoj an kar Lane buuj bwe en an ilen mane. Erro ioon doon ilo ijen im naetan Bokan Kotoor, ej bad ilo maan boke en Bokenake. Erro ioon doon im, Lane elak kadkad lok, elel manun lakijonjon eo im mij. Kio, Lane ewonene lok wot im man aoleb emmaan in Bokenake. Ejelok en emour.

Erjeel bar jerak. Raar tobtob tak ilo aeto entak ak ettor juon lelap em kairuj aoleben aeto en ke emij aoleb emmaan in Bokenake, ejelok wudin juon emmaan emour. Im wa eo waan lomaro en ej jerak jen ijen kom naj loe. Erjeel le jen Aeto En im itak wot nan Imroj. Erjeel delon ilo to en ikotaan Kinejon im lmroj. Ejibbon ien eo im rej kottar an baat ak erjeel emaan ilo juon wod metoen Nawetak. Lak ibwij tok eo, aolop emmaan in Imroj kio im iruj. Reiruj im kaioktok im jibadok tok wa eo waan Lane. Jar eo rar kaioklok wa eo am etal em ibwijier. Emoj Lane im lomaro jatin rekar dendenot ir lok lok em emij aoleb emmaan ro. Unin aer mij konke Lane ar bubu kadede nan erjeel bwe en ejelok jerata ak jeraman wot ej walok nan erjeel. Ke ej mij jar eo ilo Imroj en, erjeel bar itak im lak nam en ilo Namolar erjeel emej wa eo torerein barijet in nam en. Kio emmaan in Mejae, juon ene jidikdik ej bed turin Namolar, rej iruj im kaiok lok wa eo. Rej kaioklok ak ebuul lok wa eo waan Lane im erjeel bar dendenote lamaro ro ilo wa ko im mij aoleb. Lukon aerjeel man lamaro ak eko Nijo nan juon toor Larniran im Namolar im kottar ie. Lane im Letan ej moj aerro man lamaro ek erro jibarok lok ijo Nijo ej

kottar ie. Kio Lane ejibarok lok Nijo im ba nan e "unin am ko konke kobikot" . Elkin an ba eitem anjinberane Nijo bwe en jab bar bikot. Ej moj an anjinberane ak e Lane eba, erjeel en jerak ban Kabin Aelon En im man jar ko ie. Erjeel etal, im jeraklok. Lak tobar lok ijen, aoleb emmaan in Mejrirok im Ae emoj aer woj ain doon am etal in enod. Rej bobo, enod rot en me jej enod jojo, ak erjeel etal wot em erok wa eo ilo Ae. Lak moj, erjeel wonene lok nan juon komlal ej bed ilo juon mm. Erjeel delon nan lowaan komlal eo im babu im kakije bajjjik. Ke ej tobar lok lukon bonon eo Lane ejilknlok juon iaan lomaro jatin bwe en etal im lale wa ta eo enaj bo tok im kokallaki ia eo enaj bo lok ie kadede. Ej moj ak ebar rool nan komlal eo im bar babu im kakije dikdik. Armij ro enen erwoj ar jab kiki bwe rej boub in komman mona. K ej rol lok aoleb emmaan jen aer kar enod ak bobo, aoleb am jaje kiki kon aer woj aoleb boub in komennan. Lane im lomaro jatin rokab kiki im kakije wot ak juon lelap ej jorjor lok kon kilok in ek, ma, im ni. Lelap eo elelok kilok eo im iakwe likao ro im bar jeblaak ak ejab kairuj armij ro. Unin, konke bwe ko an Lane jeramman wot ejelok jerata. Erjeel mona im bar kiki. Ruj lok in raan eo juon, erjeel jibarok maan wod en Ae im kottar an armij ro ene eo iruj kake erjeel. Ke erjeel ej kottar emoj an baat. Ka ej iten ibwij tok, eiruj armij ro ilo one eo im kaioklok im jibadok lok erjeel. Rar kaioklok erjeel etal, etal em eibwijleplep er. Kio, erjeel oktak tok bar denot er etal, etal em emij aolab emmaan ro. Ke ej dedelok aerjeel man emmaan ro am ejelok en amour, erjeel jerak. Kio erjeel ej jerak in jibadok Kwajlein. Erjeel ej jerak am diwoj tok ilo to en ak Irooj eo an Jaluit ej baj delon tok kon wa eo waan. Irooj eo ej kebaaklok wa eo waerjeel em lamoj lok im kajitoklok, ej et enaan in en eo. Lomaro rokottar an likkun le wa eo waan Irooj eo am lamoj tok "kwon etal lali to kan am". Irooj eo ej ron wot ak ejela ke ewor jerata, ak kio Lane im lomaro jatin emoj aer jako lok.
-Tina Jorkan

Traditional Site 3.

Lijtamban kab Liktamban

These are the names of the two small islands in one of the *pat* (swamp) on Jaluit Atoll. They are called islands because they are surrounded with *jon* (streams), *kimeme* (a plant), *pulabol* and many other things that live in the *pat*. These are the real dry lands.

There were also two *ni* (coconut trees) on each island. The names of the islands were Liktamban and Lijutamban. They were located very close to the *weto* Buojkep. If you go there during high tide, you will find it amusing to see two small pieces of land in the middle of the *pat*.

This is also funny because the names of these islands are human names, but you'll see two pieces of dry land instead of humans. So nowdays, the people of Jaluit get angry through

jealousness because the two islands show how people on Jaluit lived. Therefore, this is Lijutamban kab Liktamban.

If you go to Jaluit you will see these two islands still remain.

As told by Tina Jorkan

Photo 3. The *pat* which has the small islands Liktamban and Lijutamban

Bwebwenato in Lijutomban in Liktnomban

Ilo aelon in Jaluit ewor ruo ene jidik rej bed ilo juon "Bat" ak lwe iolaplap in Jaluit, Jaluit ilo weto en rej etan "Buojkob", etan ene kein rej "LIJUTOMBAN im LIKTOMBAN". Unin aer ba ene men kein konke rojejiur jen jokjok in ene. Ewor ruo ni ilo kajojo ene kein im itoterein ene kein eobrak kon mar einwot jon, kimeme, bulabol im elon men ko rej bed bulon bat en.

Ne ej ibwijpeplep e bat en elikun alikar an walok ke ene men kein, botap ekkar nan bwebwenato in ej kwalok ke armij men kan (ruo telap). Ekar nan bwebwenato in armij in eneen Jaluit robanban itok wot jen et kein etan limarein, "Lijutomban im Liktomban", robanban. Elaine konaj etal nan Jaluit, konaj loe ene kein im konono kaki ilo bwebwenato in ilo am naj kajitikin armij in Jaluit elaptata armij in weto in "Buojkob".
- Tina Jorkan

Traditional Site 4.

KAN JIBUUKI

There was a village called Imejko. Two brothers lived in this village as well as a *mejenkwad* (demon). Today, if you go to this village, you can see a *lenwe* (rock) on the shore.

This rock is the *mejenkwad* that ate all the friends of a younger brother. Each time the elder brother made a plan, the younger brother ignored him.

One day, the brothers were arguing about which direction they would take. The younger brother, as usual, disagreed with the older brother's decision. So the younger brother gathered all of his friends and went the other way, where the *mejenkwad* ate all his friends. This is the chant that was said by the demon as he prepared to eat the people:

> *"Kwojab bo ke jeim eba, emman ke kijo jen an ak kijo ie irok ak kwoloke juon, kwoloke ruo, kwoloke kiddid ej jan in li-bejwa, kwoloke jar, kwoloke jar eo kan jibuuki."*

In the English, this translates as:

> "As you never listened to your brother, it is good that I can eat from my left or from my right, as you can see one, two, and also you can see, see a kididid (a wandering tattler bird) cry like a *li- bejwa*. Chase them! Chase them! And eat hundreds!"

As the demon began to eat the hundreds, they tried to get away. They came across a famous magician named Etao, who lived at the end of the island. The younger brother went to Etao's house; he was one of three who were still alive. The rest had fallen prey to the demon. Such is the fate of those who disobey their elders.

The younger brother told Etao that the demon was unlikely to pursue them, as his stomach was full. But the demon came just before dark. Etao suggested to the *mejenkwad* take a rest. He also proposed that they tell some stories to pass the time. The two of them argued for a while about who would tell their story first. It was agreed that Etao would begin.

Etao's initial plan was to try and kill the demon. Being the sly and clever person that he is, Etao sang a song that would put the demon to sleep. The short song went like this:

> *"Ekojan dep eo nejin Etao,*
> *Edda wewe, edda wewe, edda wewe,*
> *ekojan, dejjan dejjan, dejjan, ekojanjan."*

The magician repeated the chant. The demon was half-asleep, but was still able to answer with his own chant:

> *"Kojab bo ke jeim eba emman ke kijo jen ion, kijo jen irok ak kwoloe juon kwoloe ruo, kwoloe kiddid ej jan in li-bejwa, koble jar eo koble jar eo kan jibuuki."*

It wasn't long before the demon fell soundly asleep. Etao told the younger brother and his friends to beat him up. Then they went outside and set fire to the house, burning the demon inside. In this way, the demon was killed. The name of the village where the demon died is Lieanke, at the end- point of Bokenalu.

This is a true story, and evidence of it still exists. If you go to the island of Lijmon, you will see a bird named *kaboj*. When in the presence of this bird, talking loudly will cause the wind grow stronger. The weather will take a turn for the worse.

The home of Etao is at the bottom of the ocean. Etao was able to use his powers to turn himself into many things.

As told by Tina Jorkan

KAN JIBUUKI

Bwebwenato in ej kon "ELEKWE" juon Timon ej bed ilo juon weto etan "Imejok". Imejok ej juon weto ilo Jaluit Atoll. Ekar nan bwebwenato in Elkwe ej timon eo im ar kan aolepen armij ro an ladrik eo edik itok wot jen menin jab bokake. bwe bwebwenato in ekar bed ruo ladrik jeim-jein jeim-jati ie. Juon ran erro ar akweel kon ia eo im ekkar bwe ren etal ie lok. Bwe ladrik eo eritto ar ba ren etal ilik lok ak ladrik eo edrik ar ba jaab. Erro ar akweel etal, etal em ejelok men en etobrak ak ledrik ao edrik ebok armij ro an bwe timon in en kab kan er. Ijo ke mokta jen an timon eo kan armij ro ar kebelok juon roro.

"Kwojab bo ke jeim eba, emman ke kijo jen an ak kijo ie irok ak kwoloke juon, kwoloke ruo, kwoloke kiddid ej jan in li-bejwa, kwoloke jar, kwoloke jar eo kan jibuuki."

Emaat rane buuki emoj kar eindein an timon eo kebalok roro in an em kan rane buuki. Kiio erwoj jino kaiur lok nan ijo "Etao" bed ie ilo jabon Jitoen ilo juon ene. Elak jede lok ruo wot armij emaat jarlebju eo iben timon eo. ltok wot jen an kar ladrik eo edrik kar jab bokake ladrik eo jein. Ilo tore eo im ej etal ladrik eo edrik eba nan Etao, ta eo im ar walok nan armij ro mokta. Ladrik eo eluukun ikije lok, Etao ar ba bwe en drelon lok bwe armij ro mottan ro imweo. Ladrik eo ejaje ke emoj an Timon eo kan armij ro woj an. Etao ar kadelon ladrik eo im ar ba nan erjeel bwe erjeel en etal bwe en nooj erjeel bwe Timon eo ej itok wot. Ladrik ro reba nan Etao bwe eban itok bwe elap lojien kon wot an kar kann armij ro. Erjeel eja bed wot ak ej jikrok lok Timon eo. Ke ej jikrok mweo al ej ten tulok lok ak ebwe an ban. Kio Timon eo eba, iakwe iuk Etao, Etao eba "iakwe iuk! Drelon tok. Einwot ebaj lap am ikijelok?" "Aet", Timon ar ba. Etao eba, "komaron kiki imwin im lak ilju kwetal wot ilo ial ne am lok." Emoj emman ibben Timon eo. Kio erro itok in inok. "Kwe, kwe, kwe, kwe" eindeo aerro jo nae doon won eo ej jino innon iaerro. Ekkot wot jo an Timon eo. Kio Etao ejino innon eo an.

"Ekojan dep eo nejin Etao, edda wewe, edda wewe, edda wewe, ekojan, dejjan dejjan dejjan ekojanjan."

Timon ejin kiki tak. Ak kio ien an baj Timon eo kwalok innon eo an.

"Kojab bo ke jeim eba emman ke kijo jen ion, kijo jen irok ak kwoloe juon kwoloe ruo, kwoloe kiddid ej jan in li-bejwa, koble jar eo koble jar eo kan jibuuki."

Emoj kar eindeo aerro kwalok innon ko aerro etal, etal em ekiki Timon eo. Kio Etao eba lamaro ren etal erean tile mweo bwe Timon eo en bwil ibben.

Ekar nan Ri-bwebwenato in ej kwalok ke bwebweneto in ej juon bwebwenato eo emool itok wot jen juon koklal eo ej walok itok wot jen bwebwenato in. Koklal in ej juon bao etan "Kaboj" ej bed ijen em Timon ar joke ie. Koban etal im elamojmoj ie bwe enaj lap koto im no. Ak ne Etao emj an erom juon bar etan bar in Lonwe. Ej bed jemlokin deen. Etao einwot ad jela elap an kajur im emaron koman bwe en erom jabrewot kain.
- Tina Jorkan

Traditional Site 5.

LOKOBAR

This story occurred at Ai. Ai is a small island of Jaluit Atoll. It is one of the islands that the great warrior Lane visited and killed all the male inhabitants, as it was mentioned in the earlier story (The Great Warrior, Lane).

Lokobar, the story tells us, was a very handsome and popular man who turned into a tree. He had his way with all the women on the island except for one woman from Mejrirok, another island close to Ai.

Every time Lokobar saw this woman, he acted differently. He would show off and perform strange dances. People noticed than whenever they see the leaves on this tree turned red they know that Lokobar is showing off again to the woman on Mejrirok.

Today, this is still happening, as described in the story. The leaves on this tree turn red during the month of July.

The name of the woman on Mejrirok is Linintok. She has turned into a rock. She is located south of Mejrirok lagoon side. Lokobar is located in a pit on Ai Island. If people try to transplant this tree to a different island, it would not grow.

As told by Jenare Leon

Photo 4. Leaves of the Lokobar tree which turn red during the month of July

LOKOBAR

Bwebwenato in ar walok iio juon aeto etan Ai. Ai ej juon aeto ej bad ilo Jaluit Atoll. Ej juon ian aeto ko lakijonjon eo Lane ear murmur ie ilo an walok ilo juon ian bwebwenato eo iman.

Aeto in Ai ej ijo im ebed bwebwenato in Lokobar. Lokobar einwot bwebwenato kake ilo bwebwenato in ej juon emaan eo im elikuun wulieo im bunbun eo im emoj an erom juon wojke. Elap an kora ro woj ilo ene in konan. Botap ejab likun konan leok an nan kora rein ijelokin wot juon ian kora ro ilo bar juon ian aeto ko ilo Jaluit Atoll etan Mejrirk. Mejrirok ebed wot turin Aie. Aolep ien ne lein Lokobar ej lo kora in, einjuon wewein an makitkit. Emaat jonan an witlam, katojoj im kakilton jejain kar elolo. Armij rojela ke Lakobar ebar ien an witlam im katojoj bwe bolok ko bilkan rouktak kolarier nan biroro. Rojela ke ebar ien an katojoj nan kora in ilo Mejrirok.

Rainin menin ej walok wot, ewor ien an bolok ko ilo wojke in oktak kolarier jen kirin nan biroro. Ekar nan ribwebwenato in, ekka an walok men ilo allon in Julae.

Etan kora en ilo Mejrirok im konono kake ilo bwebwenato in ej "Linintok". Emoj anerom juon bar ej bed lik turok in Mejrirok. Lokobar ej bed ilo juon bat ilo Ai. Ei juon wojke. Ne armij rej bok en katke ilo aeto kojet ibelakin Jaluit en eban eddok. Ilo Ai wot enaj eddok ie.
- Jenare Leon

Traditional Site 6.

Lemenniblok

On one small island of Jaluit, named Eowo, there lived two old people and their two sons. The name of the old man was Lemenniblok. The oldest son's name was Anbokadrik and the other was Widkaj.

Each day the old man went fishing in order to catch fish for his wife so that she would be able to breast-feed their youngest son. He always caught the biggest fish, and his wife was proud of him. The family was one of the happiest families on the small island, as the fishes were both large and delicious.

So things were fine, until one day, Lemenniblok returned home with fish smaller than his usual catch. When he went fishing the following day, the same thing happened. So the wife became concerned about what was happening to the old man. She wondered why only the small fish were biting. She thought it might be because he fishes everyday, now there is less and less in number.

One day she asked the old man why he only caught small fish. The old man told her that he couldn't do anything, as the fish was getting fewer and smaller than before. Lemenniblok was telling the old woman a lie. He was still catching big fish, but was giving the best of the catch to another lady named Libiniju, who lived at *lonene* on a *weto* called Elbonbon.

The family remained together, and one day the old man told his wife that he would take the older son with him as he went to search for fish. She agreed with Lemenniblok's idea. So the father and son prepared the things they needed and headed eastward to fish. This place was on the ocean side of Jaluit, near where Libiniju lived.

When the pair had left to fish, the old woman had an idea. She ran quickly to the place where her husband and son were headed, reaching it before they had arrived. Once there, she could see her son and husband on the ocean side near Libiniju's house. She watched as the old man told the older son to take five huge fish to Libiniju. When they arrived at her house, they found the woman lying down. The old man told her not to lay down, but get up and look at her fish. He instructed his son to make a fire and cook the fish. Meanwhile, he and Libiniju went to the seashore where they stopped and affectionately embraced each other.

Suddenly, the wife of the old man knew exactly where the biggest of the fish had been going. Her husband had been giving them to his lover.

A change came over the woman. She went back to Eowo and took her youngest son to her younger sister's house on another small island named Ene Armij. As she got to the house, she gave her sister the fish and the young son, asking her to take good care of him. After handing over the son, she turned into *Lerro* (which allows a woman to fly in the air like a bird). She flew to another island where all the *mejenkwaad* (demons) gathered together.

Now the old man and the eldest son went back to their house. His wife's sister was there, looking after the youngest son. The baby was crying. The old man asked his wife's sister why this was so. The woman explained that the boy was hungry. At this the old man asked where the boy's mother was. She explained that what the old man had done had caused his wife to fly away in the sky.

As soon as the old man heard this news, he set off with the two sons to find their mother. They had sailed for a long time when the older son saw an island. He said to his father, "Look, there is an island in front of us that was never there before!"

The father told the son that they would head for this strange island. As they reached the shore, the old woman appeared. She yelled at her family, asking them why they had come. They shouted back, explaining that they wanted her to calm the youngest son. The wife was concerned that as her entire island knew what was going on, she wouldn't be able to face Eowo again. She took the youngest son, breast-fed him, returned him to her husband, and told them all to return immediately. So they sailed home.

On the way back, the old man warned his son to keep a sharp eye out for any strange happenings. The trip was uneventful until they passed Eowo. Then the woman appeared. She had wings that enabled her to fly in the sky. As she came close to the sailing canoe, she changed herself into *mejenkwaad*. The old man watched the transformation, and knew the *mejenkwaad* was his wife.

Lemenniblok showed his son a flower. He told the son, “if this flower appears *dretam* (east side of the canoe) under the *betak* (part of a sailing canoe), you will know that I am dying. If it appears *dwojo* (west side of canoe), then I'm still alive."

After saying these words, he dove into the water and descended into the deep. Suddenly, the flower appeared *dretam* of the canoe. The older son knew that he had lost his father. At last, the boys went back to Eowo, where they grew up.

Nowadays, if you go to Jaluit, you may sometimes see the big fish that the old woman gave to her younger sister. These fish are known as *molmol* and are only found at Eowo.

As told by Jenare Leon

BWEBWENATO IN LEMENNIBLOK IM LERRO EO IBBEN

Ilo juon ene jidrikdrik ilo aelon in Jaluit etan " EOWO " ar wor ruo ritto ro im ruo nejierro ladrik rar bed ie. Etan 1o1ap eo Lemenniblok im elan lelap eo ejab alikar. Etan ladrik ro nejierro, ladrik eo eritto etan in Anbokadrik im ladrik eo edrik etan in Widkaj. Aolep ran 1o1ap eo ej etal im enod kijen lelap eo kein an koman denin ittin nan an kaninin ladrik eo nejierro edik. Jonan an kein ellap konan, lelap eo ibben elikun kijon emonono ibben im likun emman aerean bed im mour ibben doon mantak. Ta unin ke ek elap im iuwi wot men ko lolap eo ej biklok kijeirean. Kar eindeio an 1o1ap eo enodlok kijierean em lak baj juon ien eddik lok ek

ko ej biktok. Raan ko tok elik, eddik lok wot ek ko, kio lelap eo ejino aool. Kio eba ibben make, " Ta in etke eddiklok ek kein lolap ie ibba ej biktok, ta emaat lok ek kon an enod aolep ran ke?" Emoj kar eindieo an lelap eo aool em lak baj juon ran, ekajitikinn lolap eo ibben, enanin eddik ek kein konam le?" Lolap eo eba, jenaj et ke alikar ke emaat lok ek. Ej riab bwe emaat ek ko rellap kon an kobojboj kaki nan juon kora ej loe ilo ionene in Jaluit en etan lien " LIBINIJU " ej bed ilo weto en etan " ELBONBON."

Kio erean bed em lak juon ran lolap eo eba nan lelap eo ibben, ij bok ladrik ie nejirro eritto komro etal in enod. Lelap eo ibben eba emman. Kio lolap eo em ladrik eo erro kobooj kein enod ko aerro em etal. Erro ar enod taktok jen likin ene erean ej bed ie lok nan likin Jaluit en. Ijo em wato eo Libinju ej jokwe ie. Ilo ien ke lolap eo em ladrik eo rej jako lok, kon an jiklok juon lomnak ibben lelap eo ebuul iman em kottar lolap eo em ladrik eo ilikin Jaluit. Elak reilok ej lo erro. Erro ej atolok ilikin mweo Libinju ej jokwe ie. Lelap eo erelok wot em lale wewein aerro makitkit. Kio lolap eo eba. ladrik eo nejin en bklok lalem ek killep. Erro biklok em lak etal lieo Libinju ej babu bajjok. Kio lolap eo eba iole e kwojab babu ak kon lali ek ka kijom. Ewalok tok lio ak eba oh, jeja batur wot ak kio jej bojen mona ek. Lolap ao kio eba ladrik eo nejin en kojo kijeek eo im komat ek ko ak erro Libinju etal em lak ion kabbe erro itom ekit bajjok em kojkak bajjok ak ladrik eo wot em boub im komati ek ko kijen lieo. Kio lelap lukun ibben lolap eo ekim lok ak eba, kwoj baj ba unin an jelok konan lolap en ek killep menin an koboboj kaki nan lijoonen. kio juon eo kain mejatoto ewalok nan lelap eo ibben. Ejino an ton oktak wewein. Kio erol em kakotkot lok nan ene eo enerean, EOWO. Etaal em lak eneo ebok laddk eo nejin edrik em boklok nan ibben lieo jatin ej bed ilo bar juon ene jidrikdrik eja ilo Jaluit en wot etan en "ENE ARMIJ" Etal em lak en en eba, jatu e, lieo jatin eba na e, eba kwon lali men kane denin ittim im ladrik ne nejirro. Kio lelap eo emj an oktak em LERRO. Lieo jatin ejujen em bok ladrik eo. Ej moj an bok ladrik eo ak ebellok lio ibben Lemenniblok kelok em jibarok lok juon ene ekkar nan bwebwenato in enen timon ak men rot ne rej ba Mejenkwaad.

Kio lolap eo em ladrik eo nejin erro jerak em jibarok lelap eo em ladrik nejierro edrik. Ke erro ej tobarlok ene eo erro ej ron an ladrik eo jan. Lolap kio eoktak em ikimlok. Ewor an lomnak nanaik lelap eo ibben. Ke erro ej jikrok mweo imon lelap jatin lieo ibben, lolap eba nan lelap eo, eita ladrik ne ke ej jan. Lelap eo eba, ej jan bwe ekwole. Ako ewi jinen lolap ar kajjitok. Lelap eo eba, bwe ta eo kwar komane nan e ke ekellok em mootlok. Lolap eo ej ron wot jin ak eba nan ladrik eo nejin eritto bwe en jibwe tok ladrik eo jatin erjeel jerak im bikot lelap eo erjeel naj loe ia. Emoj erjeel ar jerak, jerak, jerak em ladrik eo eritto elak reilok elo juon ene. Eba nan jemen, jema eniwot ene men ne iman, einwnot jero kijon enod ijokein tok ak jejanin kar elolo ene ijene. Emoj lolap eo eba jeel kebak waj mok. Emoj erjeel kebak lok em lak ene ewalok juon kora.

Erjeel lak reilok lieo, lelap eo. Kio lelap eo elamoj lok, wodod ah kom ar wajikot. Emoj erjeel ba ah enta ladrik ie le ke elikun jaje aenoman. Lelap eba likun ne eruj enein ke kom ba lo Eowo im aolep men ko oteMjej. Jibwe tok ladrik ne bwe na in kaninini. Emoj eitok em kaninini kanini em ej jako an jan eba emoj kair komjeel em jerak. Emoj erjeel jerak, jerak em kaieoklok Jaluit em ijekan lok nan likin Eowo ijo erjeal ij tan toor ie. Ke erjeel ej jerak jen en eo lelap eo ej bed ie, lolap eo eba nan ladrik eo nejin eritto bwe en lale wot ewor ta ewalok. Emoj ladrik eo ar ronjake wot men eo jemen ar ba nane. Ejelok men en ar walok nan erjeel mae ien eo eejeel ej mweaar arin Eowo. Erjeel lak relok ewalok lieo, lelap ibben lolap im jinen ladrik ro. Emoj an

bok bein bao em ketok, ketok em lak ion wa eo erom juon Mejenkwaad. Leo elak erre enelok eba bwe baj ta nene ke einwot Mejenkwaad. Ej jela wot ke lieo eo. Eba nan leo nejin, le ne kwonaj lo wut ie wuti enaj walok tok iretam iumin betak ie kwoj jela wot ke ijako. Ak ne ewalok wut ie iwoja, kwoj jela wot ke imour. Ej moj an ba naan kein nan ladrik eo nejin ak ekelok em tuwaake le eo. Ejako jako em lak walok tok ewalok iretam, kio ladrik eo nejin eba ibben make, le ejako jema ar kojkan. Kio ladrik ro rewenene lok em bar rool nan mweo imweer, ilo Eowo.

Ki elane kwonaj etal nan Jaluit en, kwonaj etal em lo ek kan lelap eo ear lilok kijen lieo jatin nan an koman dennin ittin. Ek kan ej ek rot ne "molmol" eworr ien aer toor. Rej toor ilo ene en Eowo.
- Jenare Leon