

Marshallese have a prodigious amount of knowledge and skills ranging from traditional medicine and massage, astronomy and social order, dendrology and horticulture to non-instrument navigation and seafaring. Among these is the skill which symbolizes all of the great seafaring nations: canoe building, a technology which even today has received the admiration of modern day sailors. Even today's aerodynamic engineers are in awe of the design technology of the outrigger canoes still sailing today. These are the designs which plied the waves and have evolved through and survived for 50 generations.

Marshallese voyagers sailed in the open ocean up to 500 miles as a matter of necessity. From the bird's eye view, one can see the Republic of the Marshall Islands is geographically made up of two chains of atolls running more or less parallel north and south: the *Ratak* or Sunrise chain in the east and the *Ralik* of Sunset chain in the west. The Republic is made up of 29 atoll groups and 5 islands totaling more than 1,200 islands and islets with a total combined land area of no more than 70 square miles.

With very limited land area and a vast amount of ocean surrounding their islands, it is easy to understand why Marshallese have had to become so familiar with the sea.

Rather than a vast emptiness surrounding them, for the Marshallese sailors, the sparkling blue ocean has been a dynamic network of continuous pathways, enabling the voyagers to reach near and distant

destinations. An it has been the all important outrigger sailing canoe that has made their survival possible.

For over 2,000 years, the Marshallese evolved their outrigger canoes for speed and utility. It wasn't until the early 16th century that the first Europeans from Spain spied the Marshallese fine crafts (and shipwrecked on their low lying reefs) while securing a route to the Philippines from Acapulco. The Marshall Islands remained relatively untouched by European influence, until 1817, when Captain Otto von Kotzbue first visited the *Ratak* and *Ralik* chains aboard the Brig RURIK. Aboard were Adelbert von Chamisso, the naturalist, who first gave a detailed description of the Marshallese outrigger.

"We admitted the rapidity with which their boats sailed close to the wind. It had one disproportionately large sail, of fine woven mats, which was in the shape of an acute angled triangle. The skill with which they put about their boat in tacking deserved the admiration of every seaman. I immediately ordered to lay-to-and admired the ingenious construction of it; and the surprising skill more." (Kotzbue O. von, 1821)

The remarkable skill of the Marshallese seafarers to evolve their swift outrigger combined three inventions of the utmost utility in sailing. First the masters designed a watercraft that always keeps its main hull to leeward and its small outrigger

counter-balance up on the windward side. Always keeping the main hull to leeward is possible as the canoes tacks because the sailors pivot their mast and move their sial from one end to the other. Thus the canoe is able to sail with either end forward thereby keeping the outrigger on the weather side.

With these reversible ends in mind, the Marshallese were able to further evolve their sailing craft. Their second notable design invention is an asymmetrical main hull which helps lift their craft to windward, much as a bird's wing lifts its weight into the sky. This asymmetrical main hull's two sides differ: the lee side (or side away from the wind) is flattened, while the hull's side which stays to windward is more shapely for lift like the top of a bird's wing. The flattened lee side of the main hull helps pull the vessel up to windward reducing the need for a deep keel, centerboard or leeboards.

The third notable design characteristic of the Marshallese canoe is the use of a lee platform. This extension lashed out to leeward of the main hull extends over nothing but the ocean. This seemingly precarious lee platform enables the voyagers to carry a greater quantity of cargo. Most voyaging canoes had small thatch houses built up for women and children. There is a sophisticated balance to these wide outriggers designed for ultimate windward speed and cargo carrying capacity!

The engineering of these well-designed craft were equally matched by a brilliant navigating system. The ancient landfinders developed their system of navigation by incorporating knowledge of directional stars, by keeping track of their course through dead reckoning of underlying local reefs and bird flight patterns. Also, the Marshallese specialized in a keen awareness of current and wave patterns that reflect off their islands. A knowledge, of these specific wave patterns can help a navigator to pinpoint their canoe's whereabouts. Lessons to learn these wave patterns have been captured in the famous Marshallese "Stick Charts", their traditional teaching tool for future mariners (and a whole other story).

With this combined excellence of watercraft design and navigational skill the Marshallese traveled as far as the Hawaiian Islands to the east, Pohnpei to the west, Wake (*Eneen-Kio*) to the north and Kiribati to the south (Nakayama & Ramp 1974:Pp.6,26,84). Geoff Irwin exclaimed that "Once Micronesian navigation methods were perfected, voyages were restricted only by supply and spirit." (Aug 30, 96)

So for thousands of years, the outrigger canoe has been the sole means of transportation upon which the life of the Marshall Island people relied. They crafted three different sizes of canoe types for their different needs. The extremely large canoes, called *Walap*, measured up to 100 ft and were capable of carrying as many as 50

people! The mid-sized sailing canoes, known in the living Marshalese language as the *Tipnol*, are 18-30' and capable of carrying up to 3-10 people. The *Tipnol* is built for speed (speed is built into all of the canoes) and is often used for fishing both inside the lagoon as well as in the open sea. The third type by size is a small paddling canoe, many times rigged with a sail and known as the *Korkor*. This one or two person *Korkor* was specifically designed for fishing and travel inside the protected waters of the lagoon or in good weather, to be used on the lee, ocean side of the islands.

As the shape of the canoe hull's draft gets deeper the design names change to: *Taburbur*, *Malmel*, *Toljeik* and finally, the *Jekad*, in Marshallese, refers to a land finding coastal bird also called the black noddy (*Anous tenuirostris*). The welcome sight of a noddy, or *Jekad*, can often be seen twenty miles offshore. At dusk the *Jekad*, or noddy, will fly home and thus lead the sailors toward an atoll which otherwise may only be seen from ten miles away. Thus it is fitting that the bird's name be honored in a hull type (that reflects the life of bird spent much of the time in the deep water).

(Information provided by Waan Aelon in Majol project, Majuro Atoll)



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Marshallese Canoes

MIVA

tel (692) 625-6482

fax (692) 625-6771

tourism@ntamar.net

www.visitmarshallislands.com

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