Sails *(Pe'a)*

While drawings and descriptions made by early European visitors of the traditional Hawaiian sailing rig do exist, "details concerning the mast and the sail," notes Buck, "are scanty." Like so many other features of the Hawaiian canoe, the type of sail used in Hawai'i became specialized, a uniquely Hawaiian form of oceanic sprit sail called a "crab claw." This sail was found on double canoes, which were "always equipped to carry sail," and often on single canoes as well. Its origin is unknown, though it is generally assumed to have evolved from a more ancient form of sprit sail in the Marquesas and/or Tahiti. Reportedly, a more ancient triangular-shaped sail survived and was occasionally used alongside the "crab claw" sail.

The Hawaiian "crab claw" sail was three-sided, with its apex down near the bottom of the mast. Apparently a bolt rope was hemmed in the edges of the sail and laced or tied at intervals to the mast and spar *(paepae)*. The lower end of the spar, which "functioned as a boom sprit," was tied to the mast near its foot.

Emerson also claims that the "peak," or tip of the spar, "was kept in place by a stick called the *o*, the foot of which was crotched and rested in a loop of line attached somewhat below the middle of the mast."

The main sheet, *kaula paepae*, was attached somewhere near the middle of the spar, and was carried back to an aft *'iako* for securing and tendering. The rigging and sheets were typically made of *'ili hau*, a tough cordage made from the bark of the *hau*. The mast, called *pou* or *kia*, was generally made of *'ōhi'a lehua* and the carved spar of *hau*.

The rather slender spar curved upward, with a rope apparently leading from its upper end to the top of the mast down to the deck. Adjustment of this rope controlled the amount of "bag" in the sail, and if, as Haddon and Harnell note, the upper end of the spar was "bent in toward the masthead . . . This gave the free margin [leech] a deeply crescentic form," so clearly depicted in Webber's drawings.

Many accounts and drawings by early European visitors, as well as petroglyphs, figure a "pendant made of streamers of bark cloth *(tapa)* flying from the upper end of the boomsprit." In some cases feathers took the place of the *tapa* streamers, and on occasion also graced the top of the mast. There is also the suggestion, as seen in a petroglyph in Kaluapulani Gulch on Maui, that a sail sometimes had bunches of streamers attached at intervals along its spar edge.

The sail material was most often matting made of finely plaited one-eighth to one-quarter-inch-wide strips of *lauhala* (pandanus leaf). Malo notes that, "the young leaves, *mu-o*, made the best mats, and from them were made the sails for the canoes." The sail was made by sewing together about eight- to sixteen-inch-wide panels, called *'ie* with *olonā* or sennit. These panels were overlapped horizontally before being sewn up. Surprisingly, a *lauhala* mat sail is quite light, weighing less than a canvas sail of the

same size. Emerson also notes that "where a white effect was desired" in the sail, strips "of the white *lauhala*, *lauhala keokeo* which grows on Hawaii but not I believe on Oahu," were used. He goes on to say that, "the sail of the Hawaiian canoe in ancient times was made of different materials . . . *hala*, the *loulu*-palm, the fine *makaloa*-rush of Niihau . . . and other vegetable fibers that abounded in the islands."

According to an informant, Koali'i, when the sail was "for a king, for a distinguished priest or for a war canoe, the sail was dignified with the name *la* or *pea la* . . . and was a work of art. This name apparently . . . [came] from an emblem also termed *la* that was woven in its centre . . . [that] consisted of a circle with twelve rays of a red color pointing inward toward its centre, where was inscribed another smaller circle, the central part of which was white in color." This sail was distinguished from that of the commoner sail by being of "a special pattern, more finely wrought and highly decorated . . . the leech and luff, and the other borders of the *la* were reenforced and at the same time decorated by interweaving fibres of *olona*, or cocoanut *aha* . . . When finished the *la* was an article not only of great decorative value . . . but also of exceeding strength and durability . . . [to] be handed down as a precious heirloom from one generation to another." Kamakau also notes that the sail of an *ali'i* had distinguishing features. "The bottom of the mast *(kia)*, and sail *(pe'a)*, and the arched parts of the sail were decorated with red cording." Fornander and other writers note that on occasion the sail, pennant, and even hull, paddles, and cordage of a particularly high chief would be colored red, denoting his exalted status.

Emerson reports that the sails used on the islands of Hawai'i, Maui, Moloka'i, Lāna'i and O'ahu were the standard "crab claw" but that "the fashion of *La* that prevailed on Kauai . . . appears to have been quite unique, different from anything found elsewhere . . . [it] was heart-shaped in figure. It seems to have been used without a spar to spread it instead of which light poles of the tough elastic wood called *maile* were sewed to its border in place of a bolt-rope . . [it] was braided in a variegated pattern, called *pawehe*, red, black and white *makaloa*." Though not seen by Emer-

son, this heart-shaped sail form was described to him by several independent Hawaiian informants. Fornander makes an isolated reference that might allude to this strangely shaped sail described by Emerson. He notes that on one of Kamehameha's first expeditions, "the kind of sails used was mats braided round and flat."

Saturday, January 3, 1789, just over a decade since Cook's arrival in Hawai'i, John Meares records from on board his ship, the *Iphigenia*, seeing a boat coming around Diamond Head into Waikīkī; in attempting its identification "the natives were deceived as well as the people in the ship; for they all imagined it to be the *North West America* [a brig], which had not been seen for some days, till the canoe came within a short distance. She had got jib, main-sail, and fore-sail as well as those of a schooner."

Acculturation had been shockingly swift. Two thousand years of an unbroken legacy of vegetable-fiber sail that had powered the most ambitious and successful ocean assault in man's history, erased in just over a decade! And it was no wonder, with early European visitors such as Vancouver in 1793 recounting how he and his crew members were waiting for Kamehameha "to come off in great state in one of his largest canoes, that we had rigged for him with a full suit of canvas sails, sloop fashion, to which I had added a union jack and a pendant." Vancouver goes on to note somewhat wryly that Kamehameha cruised for some time about the bay before he came alongside. "On his [Kamehameha's] arrival we found him highly delighted with his man of war, but he observed, that she would make a much better appearance with a few swivels [cannons] properly mounted."

The sailing double canoe Mo'olele, ***a 42-foot koa-and-fiberglass replica of a traditional interisland sailing canoe, is capable of speeds of 15 knots*** **(below right).** ***The illustration of a sailing canoe off of Ni'ihau by Webber*** **(below left),** ***an artist with Capt. Cook, accurately depicts the rigging and design of the sails.***

Sails of western design were quickly adopted by Hawaiians after contact. Not long after Cook's arrival, canoes were seen with gaff rigs similar to that pictured above on the "Alabama," photographed in Honolulu Harbor in 1906.

Freycinet, in 1813, says of the canoes he observed that, "today they are rigged as cutters, that is to say they are fitted with a yard, boom and mainsail, and two jibs—a purely European installation." By 1800 the old "crab claw" design had been largely replaced by European spritsails. While not as numerous as in pre-contact Hawai'i, sailing canoes were not uncommon throughout the nineteenth century. Apparently there were a number of different rigs tried on canoes during the late 1700's and 1800's, though the sprit-sail or so-called gaff rig seemed to have predominated. A jib was very often added, particularly on a double canoe.

Although Freycinet noted that "all the canoe sails that we saw were made of canvas," plaited *lauhala* apparently held its own especially for the poorer people. In 1823, Ellis notes, "the sails they now use, are made of mats [*hala*]." In 1893 Keohoki'i states that "in 1869 Moe-honua had a canoe rigged with a *lauhala* sail *(pe'a lauhala)*. It was triangular with base down and the *paepae* or boom, at the lower border. It was on the canoe named *Ohule."* Other isolated accounts report the use of *lauhala* mat for sail material well into the 1800's as well as an occasional fisherman who still used the traditional "crab claw" design.

By the later 1800's sailing canoes were seen less and less frequently, except in Hilo where both single- and double-hulled sailing canoes were used for fishing into the early 1900's. Once a year, on Regatta Day, sailing canoes could also generally be seen. In the 1930's sailing canoes became very popular as racing craft at Waikīkī, only to die out completely just before World War II.

Mast *(Pou, Kia)*

The methods of positioning, stepping and rigging the mast and sail were slightly different for a single canoe than for a double canoe; in neither case is it perfectly clear how these were done. The positioning of the mast on the single canoe was typically at the front *'iako*, stepped either on top of the *'iako* or in front of it on the hull bottom.

Placement of the mast in an outrigger canoe varied. Photographs from the 1880's to 1950's show it to be stepped in the stern about as often as in the bow. Whether the mast was ever placed in the stern of pre-contact canoes will probably never be known. However, many old-timers maintain that the mast was placed in the stern of the canoe, just in back of the aft boom. The reasoning is sound. The stern of a canoe is significantly larger in volume than the bow, giving the stern a much greater displacement. With the compression load of the sail rig driving the hull down into the water, the fuller and more buoyant stern would have been depressed much less than the finer bow. In rough water this was particularly important, for a heavy sea and a strong wind would have easily combined to depress the bow with its lower freeboard to the point where seas would readily pour in.

On the double canoe, most accounts place the mast midway between the two hulls, as Webber's drawings at the time of contact, and later others, illustrate. However, there are accounts that indicate, as does Malo, that the mast "was set up in the starboard canoe, designated as *ekea*, the other one being called *ama*." Haddon and Hornell felt size was the determining factor in the location of the mast. "The conclusion most probable is that the mast was stepped in the starboard or weather hull in small double canoes without a *pola* [platform], where a notched heel would enable it to fit upon the second *iako*, whereas in larger vessels it was stepped in a socket or shoe [*ku kia*] upon the *pola* but immediately above the second *iako*." The second *'iako* was traditionally thicker and stronger than any of the others to better withstand the considerable strain and compression load exerted by the mast and sail.

On a double canoe the mast was secured by a pair of shrouds on either side, tying to the *'iako* both fore and aft of where the mast was stepped, with the occasional addition of a back stay *(pū o hope; kaula hope)*. Paris adds two fore stays attached to the outer end of a bowsprit, "probably an innovation inspired by European usage."

The mast for an outrigger canoe was secured similarly, with a shroud attaching on each side to the foreboom, a forestay to the bow of the canoe *(pū o mua; kaula ihu)*, and occasionally a running back stay. Emerson states that the mast "was set in the forward part of the canoe. It passed through a hole in the *nohoana* [seat] or board placed just in front of the forward *iako* . . . and was then stepped in a block resting on the bottom of the canoe . . . It was held in place by shrouds called *kaula pu* which passed from the mast head and were attached to the forward *iako* on each side, also by a stay called a *kaula ihu* which was attached to the prow." Emerson's positioning of the mast agrees with Webber and others. Stepping in front of the foreboom also lowers the center of balance, affording greater stability as well as enabling the foreboom to be used for aft securing points, eliminating the need for a back stay.