

Construction of a Tule Mat Sleeping Pad

by Susan Labiste

The genus of plants botanists term *Schoenoplectus*, offers a rich history and a cornucopia of uses. Dense patches of tulle rise like forests of green spikes from wetlands or areas of seasonal flooding. Once you recognize the genus, you will see them everywhere. These plants, so frequently unappreciated in roadside ditches and irrigation ponds, have always been of value to humans. Today it provides wildlife with food and habitat. It acts as a biological filter, improving water quality. It is and was used by many Native American groups both as a food resource and for manufacturing items of material culture. Thatching for homes, baskets, mats, boats, decoys, hats, clothing and shoes are among the items of material culture constructed of tulle by Native Peoples. Most of us know these plants as tulle or bulrush. They belong to a larger group of graceful and useful plants in the sedge family (Cyperaceae).



Characteristics of Tulle

Schoenoplectus, or tulle, is widespread throughout the United States. An identifying feature is the cylindrical or three angled stem. In many species the stem is the most prominent feature, often with only small, vestigial leaves appearing at the base of the plant. Tiny flowers appear near the tips of the stems in spikelets which are arranged in clusters. Species range from less than a foot to over fifteen feet in height. It is not always easy for the non-botanist to distinguish members of this genus from one another. In California alone twenty-three species are listed, some of which hybridize with each other. There are about 80 species of *Schoenoplectus* worldwide.

The interior of each tulle stem is filled with spongy tissue packed with air cells. It is the pithy interior of the tulle that makes it such a unique and useful material. This detail of its anatomy serves to make it both flexible and a poor conductor of heat. As anyone who has attempted to sleep outdoors on the bare ground is aware, an insulating pad is critical to maintaining body heat.

The effectiveness of the tule in providing insulation can be attested to by its use by Native Peoples as a sleeping pad, in shoe construction, and even in leggings.

Gathering and Processing Materials

The stem or stalk of the tule is the plant part used in constructing a tule mat. The gathering time for tule stalks used in basketry or tule mat construction is seasonal. In most areas members of this genus are dormant in the winter. Winter stalks are usually brown, brittle, and pretty much useless. Stalks grow actively through spring and during the summer. Gathering is generally done at the peak of maturity and up through the time when the tips are beginning to die back. Spring-cut tule may not yet be fibrous enough to make a resilient twining material. Choose a species of a size and strength appropriate for your intended project. Generally this is one of the larger species with a cylindrical stem such as *Schoenoplectus acutus*.

Tule is cut green, and allowed to dry. Freshly cut stalks are fragile. Careless handling can easily cause them to fold over, creasing the fold and damaging the fibrous outer tissue. Care must also be taken to avoid damaging green tule as it is transported to a drying area. Lay cut stalks together and bind them carefully so they may be carried as a bundle without crimping. It is easier to handle fresh tule without damaging it if the seed heads are trimmed away. Find a flat protected area, open the bundle and allow the tule stalks to dry. When they are dry the tule can be bundled together and stacked upright. When you are ready to make your mat, size and cut the tule into equal lengths. Generally, the length of the stalk corresponds to the width of the mat.

Dried tule stalks are more resilient than green tule. The drying process shrinks and toughens the stalk. However, it must be rehydrated prior to being worked. To rehydrate the tule, the entire length of the dried tule must be kept damp long enough to make each stalk flexible. This can be done by submersion if a suitable body of water is available, or the tule may be hosed down and left under a wet towel. When the tule is no longer crunchy when bent, and it has a feel similar to leather, it is ready to work. Rewetting is necessary periodically during the construction process.

Construction of the Tule Mat

When the tule is ready, lay the stalks out on a flat area. As they are set out, turn them so every other one is facing the opposite way. Tule have wide butt sections and tapering tips. If your tule tapers rapidly from a broad base, it may be necessary to trim off the butt section. Alternating the butt ends with the tips allows the mat to maintain a rectangular shape rather than a fan shape.

The following photographs and drawings serve to illustrate a technique for creating a sleeping mat of tule, twined with natural cordage. It is just one of many styles, and I encourage the reader to explore the styles employed by Native People in your own geographic area.

Once the materials are ready, the first step is to create a border. This is not just a design element for the finished mat, but an important part of its structural integrity. Borders may be of twined or braided tule. (See Figure 1 for an illustration of a twined border) As the tule is twisted and its foam core is compressed it becomes tougher and far more abrasion resistant. Without a border, the mat is susceptible to wear at each point where the cordage contacts the outermost tule stalk.

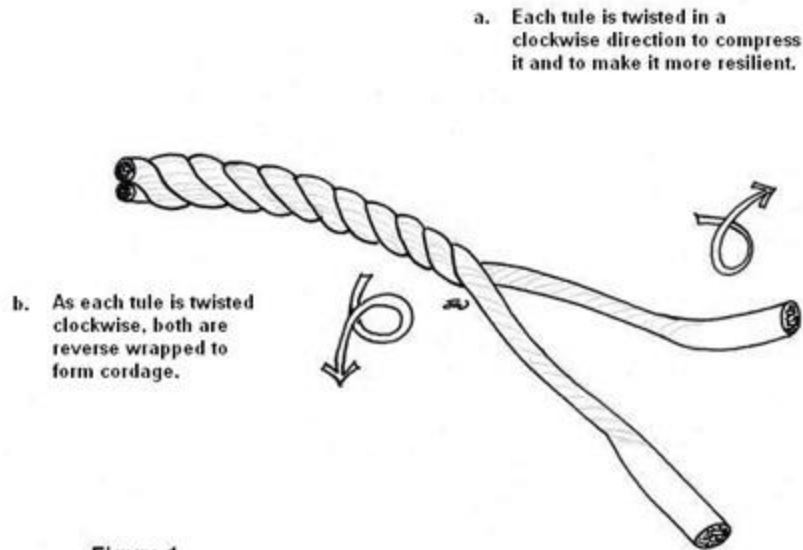
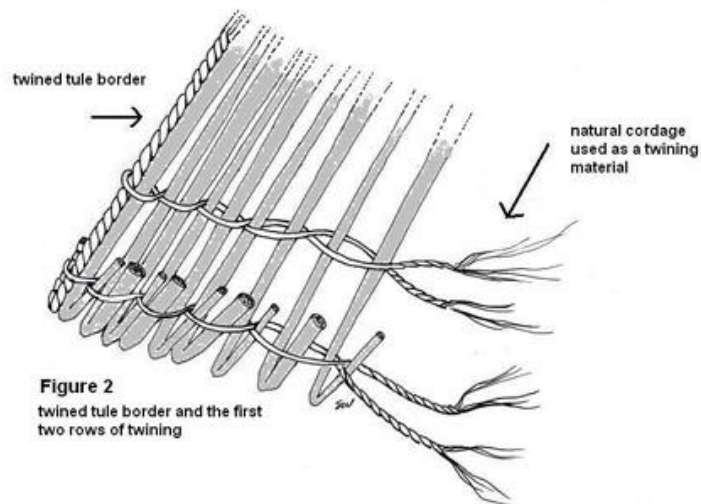


Figure 1
twined tute border

Tute stalks may be bound together into a mat using several different techniques. Mats may be twined together using lengths of twisted tute. A tute mat made with tute cordage has larger gaps between rows of tute because tute cordage is a thick twining material. This method's greatest advantage is that it does not require a fiber plant like dogbane. Another mat-making method is to sew the tute together with cordage. Here a needle is employed to pull the cordage at a right angle through the center of each stalk from one border to the other. Sewn mats create closely spaced tute stalks. With this method, a single row of twining along each side's cut edges stabilizes the mat.

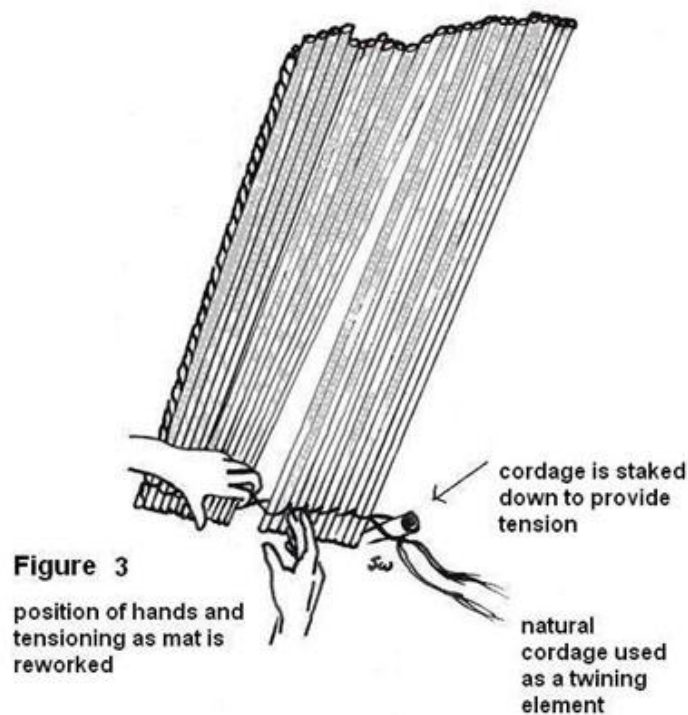


This article shows a technique using cordage as the twining material. The method termed "twining" differs from weaving. With twining, each time the two pieces of cordage are passed over and under the tute, it is given a half twist to the right. With weaving there is no half twist. The cordage used as twining material for this project is itself a twined product. Each row of twined cordage binds the tute together. Rows are spaced about every 5 to 8 inches depending on



the size and purpose of the mat.

The twining technique illustrated here progresses left to right, rotating clockwise with each twist. The first row of twining runs from one border along the edge of one side of the mat to the border at the opposite side. The first row of twining incorporates the folded over ends of cut stalks. Fold at least two inches over for large sized tule mat. This helps prevent the cordage from slipping. Measure a length of cordage to fit your first row. Twining material may be measured at approximately two and one third times the distance from one braided border to the other. The center of the measured section of cordage is placed over the twined border and the border's folded edge. The lower half of the cordage is then pulled up around the first tule, joins the upper piece of cordage, and the two strands are twisted in a half turn. Be consistent with your half turns, always rotating clockwise. Tule are bound together two at a time. The folded edge of the last tule in each pair is incorporated into the next twist of twine as it binds the next two tule. (See figure 2) The first row incorporates twice the volume of tule and must be pulled very tight, crimping the softened tule. If it is not pulled tight enough, the ends of the mat will flare outwards. If the mat flares despite your efforts, do not despair. Reworking the row (See figure 3) will compact it further. Reworking can also tighten a mat which has shrunk after drying. After the first row is tied off, the second row may be started with a simple twist around the border and first tule. The second, third and further rows are more easily twined, simply incorporating two tule at a time.



As the weaver works, there are times when two hands seem inadequate. See photographs 1 and 2 for some hints on positioning and manipulating materials. The first obstacle comes after two tule have been laid in place. The half twist in the twining process has been made, but now each hand holds a piece of

twine, and another two tule need to be added. Bring the twine from the underside up and cross it over the other piece of twine. Hold tension on both pieces of twine until the cross over is made. Now, tension on the piece of twine brought up from below will make a temporary friction binding. This allows the other hand to be free. Start the first row on a flat surface, as you gain control, move the work onto your lap. As the mat becomes larger, roll the starting end up to make the piece more manageable. Turn the mat frequently to check your work. It is easy to miss a tule when you are learning the process. Complete all the rows across each few feet of matting. That way, if time does not allow completion of the mat in one sitting, the twine ends may be tied with an easy release type of knot and the whole piece may be rolled up and set aside until it can be worked again. If the cut ends need to be reworked after they have dried, roll up the mat and rehydrate the cut ends by soaking them in a five gallon bucket of water. Eventually these mats will show signs of wear. When a portion of the mat is damaged, repair is straightforward. Simply open the twining stitch with an awl at the point where the tule is broken. Hold it open while you remove the old tule stalk and insert a new one in its place.

This method produces a tough, closely spaced tule mat which is comfortable, provides good insulation and is resistant to soiling. These mats are light weight, and durable. When not in use they may be rolled up and stored upright. The mat in the photograph has served as a sleeping mat during the Rabbitstick Rendezvous 2005, numerous camping trips, and many school programs. It shows little sign of wear.





Photograph 2

Bring the cordage from the underside up and across the cordage from the top. The resulting friction binding allows the left hand to be free.

