

FLOGGING A DEAD HORSE OR RUDDER VS. SKEG

By Brian Hunter



The author at Lake Yellowstone with his Prijon *Kodiak* that sports a rudder

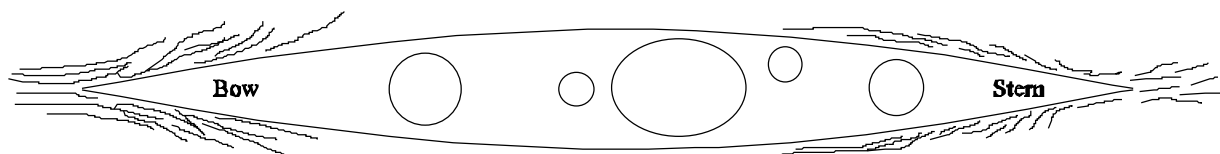
Not to flog a dead horse in this often heated debate, but I would like to share my experiences and thoughts on

rudders versus skegs. I have always been told that they both do the same thing, prevent weather cocking. The truth is while they do correct for weather cocking, they do it in exactly opposite ways: rudders cause a kayak to turn and skegs prevent a kayak from turning. Conventional wisdom says they both keep your kayak going in the intended direction in wind. The thing that separates the men from the boys or more accurately rudders from skegs is that a rudder actually steers the stern and changes the direction of the kayak but a skeg can only keep the stern locked into place, preventing the kayak from turning. Locking the stern in place is a problem when you need to maneuver with the skeg down.

Weather cocking is probably not a new term to you but let's cover it anyway. All sea kayaks have certain characteristics in common; in this case both the bow and stern are pointed. It does not matter much if the kayak is moving on the water or the water is moving under the kayak, the leading edge of the bow begins to part the water. As the water is pushed aside by the ever-widening hull, an area of higher pressure is created, locking the bow in a direction. At some point the kayak reaches its widest beam and gradually becomes smaller, terminating at the stern. This narrowing of the hull towards the stern creates an area of lower pressure leaving the following stern loose. If you are paddling backwards or the water is moving from stern to bow then the stern is locked and the bow is loose.

To sum it up, if there is relative movement between the kayak and the water from bow to stern, the bow is locked into place by an area of higher pressure and the stern is loose in an area of lower pressure. This means that the stern can be more easily moved changing the direction of the kayak. Now if the kayak is moving forward and we add a little wind to the mix, especially on the beam, the loose stern will blow downwind turning the kayak into the wind, aka weather cocking.

WEATHER COCKING: When there is movement of water past a kayak the bow creates a high pressure area and the stern creates a lower pressure, making the stern loose. Wind on the beam will push the loose stern downwind, which is called weather cocking.



As the bow moves into new water the water is pushed aside creating higher pressure.

As the kayak narrows toward the stern, the water moves back in creating a lower pressure.

Five **WAYS TO COUNTER WEATHER COCKING**, listed from most effective to least effective:

- Use a rudder with the caveat that it is controlled by gas pedal style * foot braces.
- Drop a skeg; find the best effect by changing the amount of skeg below the kayak to match the amount of correction needed for conditions.
- Employ a stern rudder and/or sweep paddle strokes.
- Paddle harder on one side of the kayak than the other.
- Edge the kayak. **

The fact that the stern is loose is actually a good thing. Some **WAYS TO USE A LOOSE STERN TO YOUR ADVANTAGE** are:

- Low brace turns
- Stern rudder paddle stroke
- Sweep strokes

* **GAS PEDAL FOOT BRACES:** There are two types of rudder controls. The preferred style, called *gas pedal controls*, has a fixed lower portion (under the arches of the foot) and a movable pedal on top by the balls of the feet that can be pressed to change the rudder angle. This allows a fixed foot brace distance. Since your feet and thighs are stationary, keeping your thighs locked into the thigh braces, you will have better control of the kayak.

The other style, called *moving foot braces*, changes the rudder angle by pulling on a cable as the sliding brace is pushed forward. This means that force must be applied to both foot braces to keep the control cables tight and the rudder at the correct angle. The constantly moving foot pegs make it more difficult to use your foot braces for proper stroking, bracing and keeping your thighs locked into the thigh braces to edge and roll your kayak.

** **EDGING A KAYAK:** Edging reduces the effects of a symmetrical hull by reducing the influence of the bow and stern when there is relative movement between water and kayak. Putting the kayak on edge reduces or eliminates leading and trailing edges from locking the direction of travel.

Hard and soft chines produce different effects. I prefer a soft chine, because it allows the kayak to slip more and provides more movement and control. I noticed this when paddling a Current Designs *Sirocco*, which turns much quicker than my Valley *Aquanaut*, because the *Sirocco* has more rocker and softer chines. I could feel it slide into a turn.

Getting back to the original question of rudders vs. skegs, the following are lists of the positive attributes and the disadvantages of each:

ADVANTAGES OF A RUDDER

- Rudders steer the kayak.
- Gas pedal style controls allow a fixed foot brace distance which is far better than moving foot braces.
- Rudders are often easier to repair. If one cable breaks, a bungee can be attached to that side of the rudder making it operational until the cable can be repaired.
- Most rudders will "kick-up" if you run ashore or ride over a submerged object; skegs won't.
- In my experience, rudders tend to break less often than skeg cables kink.
- Unlike skegs, rudders are mounted externally and do not take up valuable cargo space inside the kayak.
- When fishing from a kayak, a rudder is a big advantage as the angler can turn away from the fish to add resistance or turn towards the fish to reduce resistance.
- Rudders can control direction when drifting, this is useful when fishing, taking pictures or fiddling with a GPS, etc.

DISADVANTAGES OF A RUDDER

- Rudders with moving foot brace controls make it more difficult to use foot braces for proper stroke and bracing. This of course is eliminated by using gas pedal controls.
- In poor designs (i.e. Prijon Kayaks) rudders can make changing foot-peg distance more difficult. Sea-lect Designs has overcome this problem with a clever, effective design, more on that later.
- A kayaker might depend on the rudder to turn the kayak and not learn advanced paddling skills.
- Rudders add a small amount of freeboard when not deployed that can catch the wind. Usually when the wind is blowing, the rudder is deployed making this disadvantage a moot point.
- In some cases rudders get in the way when attempting a cowboy rescue.
- Rudders may run afoul of tow lines in a rescue.

ADVANTAGES OF A SKEG

- A skeg cannot steer the kayak and may lead to improved paddling skills.
- A skeg locks a kayak in a given direction without compensating with paddle strokes.

DISADVANTAGES OF A SKEG

- Turning a kayak with the skeg down is difficult. The skeg must be retracted, the maneuver made and the skeg redeployed. This is a huge disadvantage.
- Skegs cannot turn a kayak and must be adjusted to the weather conditions. Changes in wind speed and direction require continual adjustments.
- The skeg box takes up valuable room in the kayak that could otherwise hold cargo.
- Skeg boxes are prone to leaking and are usually tough to get at to repair.
- Forgetting the skeg is deployed when landing often ends with a kinked cable.
- A deployed skeg can snag a spray skirt when attempting a cowboy reentry.

A skeg (in my experience) is more likely to kink, requiring replacement. While I have never personally seen a rudder fail, I have seen three different skegs fail with a kinked cable. Replacing a skeg cable ranges from very easy to very difficult. Some kayaks require Original Equipment Manufacturer (OEM) replacement cables.

Skeg cables usually kink when running aground or paddling over a submerged obstacle when the skeg is deployed. Cables are also kinked when a user pushes on the deployed skeg to force it back into the skeg box. Always use the slider to retract the skeg, never push the skeg into its box. Since the kink usually occurs inside the skeg box it is not visible until the skeg is removed. For this reason a kinked skeg cable is sometimes misdiagnosed as a "sticky cable". [Check the picture on page 24 for a solution to another skeg issue.]

No doubt you have determined that I prefer rudders to skegs because they do more than keep the kayak from turning, they are much less prone to fail and I find they are more intuitive as well. I suppose my only caution is to learn how to maneuver your kayak without depending on a rudder. Edging a kayak is one way to help reduce weather cocking and is also a primary skill for maneuvering and controlling your kayak.

RETROFITTING OR CHANGING RUDDERS: If your kayak has neither rudder nor skeg, a rudder would be simpler to add, as a skeg box would be difficult to install. A semi-permanent skeg could be attached but would not be adjustable and could be in the way at times. This approach was used by the Inuits on their skin-on-frame kayaks.

There are several after-market rudder assemblies that can be added. Some kayaks come "rudder-ready" making aftermarket installation simpler. Kayaks that were never intended to have a rudder can present problems for the installer.

However, I recently installed a Sea-Lect designs rudder in a Delta kayak and had very few problems even though it was not designed for a rudder. The gas pedal style controls allow for moving the foot braces fore and aft but do not alter the rudder setup. I was not fond of the way the rudder itself is deployed as it seems to be a bit sticky, but when the moving parts wear in it should deploy smoothly.

If your kayak has a rudder but does not have gas pedal style controls, upgrading is usually not difficult. Sea-Lect offers a simple upgrade by replacing the existing foot braces with their adjustable rudder control foot braces. Start with model K747200 and look at the slightly different models to find the best one for your kayak. Here are some web links to places where I have purchased components:

<http://www.rutabaga.com/sea-lect-designs-trucourse-rudder-kit>

<http://www.duckworksbbbs.com/hardware/canoe-kayak/rudder-fb/index.htm>

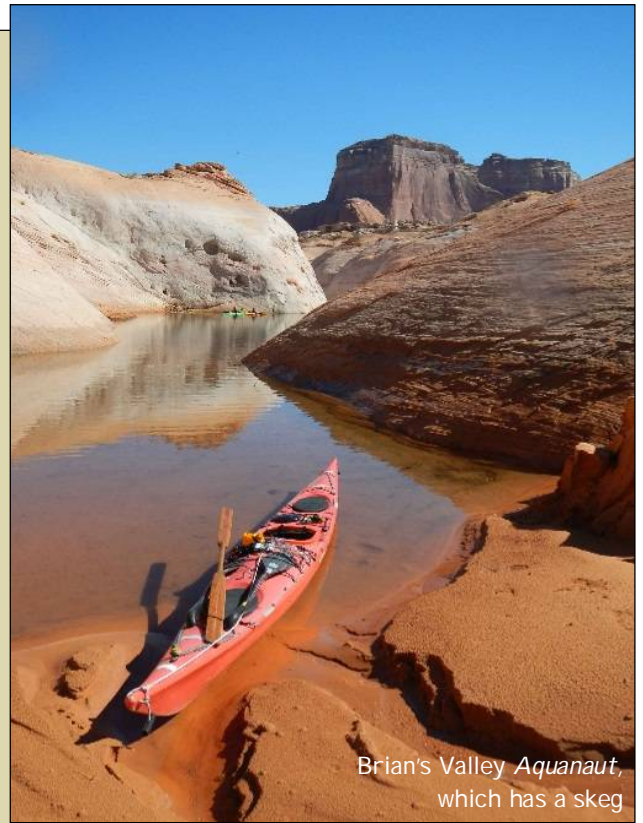
<http://www.austinkayak.com/search/rudder%20kits/page/1>

<http://www.clcboats.com/sitesearchgoogle.html?q=rudder+kits>

Here are web links for TruCourse and SmartTrack rudder kits. Both offer gas pedal controls.

<http://www.sealectdesigns.com/groups/2418-trucourse-rudder-footbrace-kit>

<http://www.smart-tracker.com/introduction.htm>



Brian's Valley Aquanaut,
which has a skeg

AN ASIDE: This article talked about using rudders or skegs to counteract weather cocking, which is when the stern of a boat swings away from the wind. If, however, the **bow** of the boat swings away from the wind causing the stern to point upwind, it is called lee cocking, an uncommon condition that causes difficult paddling and is hard to compensate for. (On the bright side, it could be a good way to improve bracing skills!)