



CAROLINA CANOE CLUB



John Kobak and the Keel-Haulers Scale

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John Kobak, 1971, in his first kayak.

John Kobak and the Keel-Haulers Scale

a *Carolina Paddler* article

By Alton Chewning

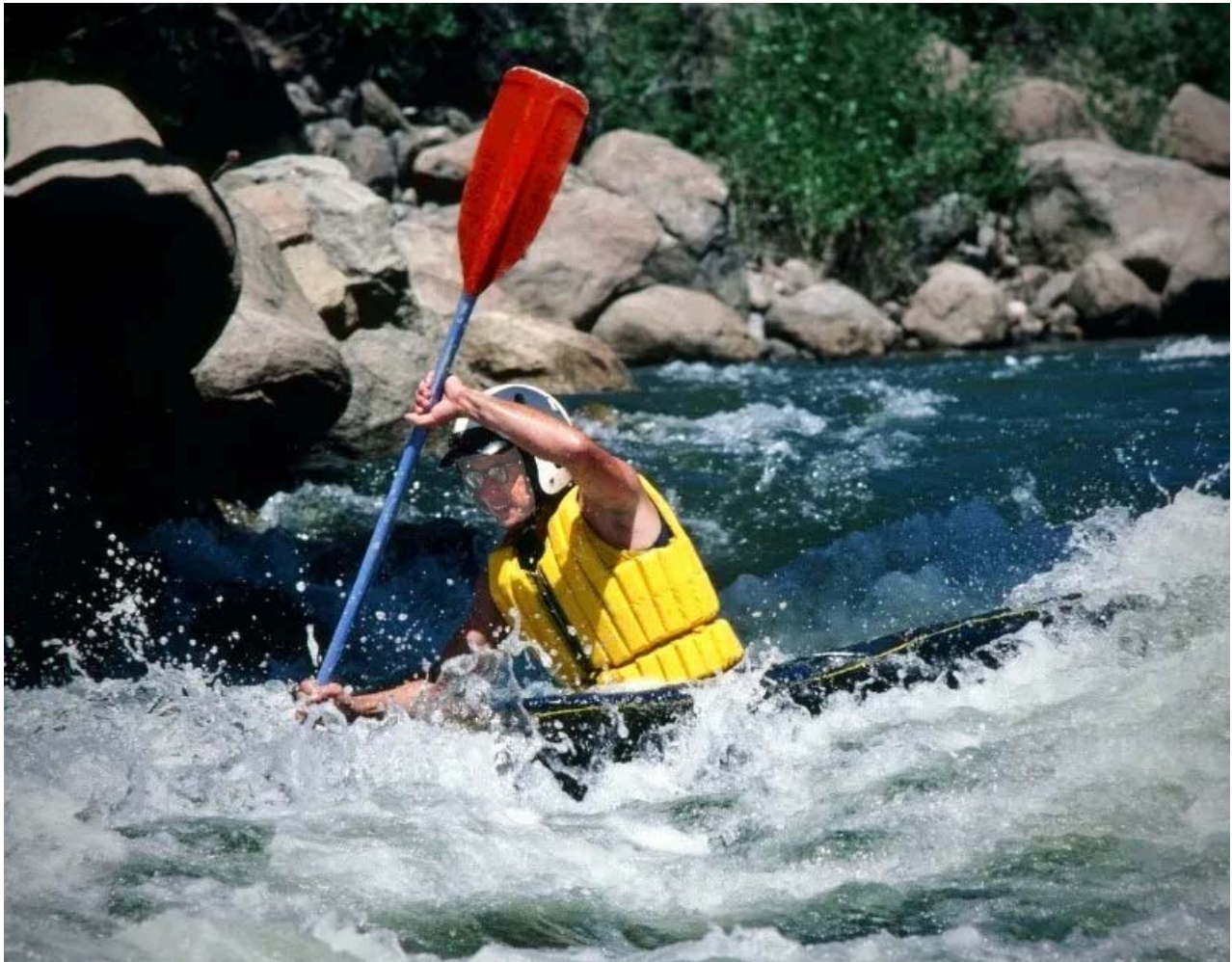
-Let's get this stated right off. The Keel-Haulers scale began as a means of self-assessment, not for comparing rivers. Paddlers could give themselves a quick test and if they were honest, they would know how prepared they were to paddle various rivers. The self-assessment was developed by Chuck Singer and John Reising of the Ohio-based Keel-Haulers Canoe Club in 1973. Using the self-assessment, a person could rate their paddling skills from 0 to 35.

Dick Priem and John Kobak lived in Cleveland, Ohio and worked together as engineers at the NASA facility there. They were both paddlers. Dick and John began refining the self-rating system and quickly realized they needed to numerically correlate river ratings to self-ratings. A paddler could score 0-35 on the self-assessment. Rivers should score 0-35. A paddler with a 25 rating should be competent on a river with a 25 rating.

Between 1974 and 1976, John and Dick worked on matching the two systems. How do you rate rivers? Kobak: "We started reading how people came up with different ratings. We fooled around with it. Let's say a river is in an isolated area where it's hard to get rescue in, that makes it more difficult. Has nothing to do with the rapid. You need to have better skills because you could get into trouble. Consider the width of a river, a big river like the New River, or a smaller river, like the Upper Yough. Big rivers are more dangerous, even though the rapids may be easier. They require more skill. We realized that from paddling and started to take that into account."

Kobak and Priem approached judging the river from a paddler's perspective. The river ratings indicate the skill level a paddler should have to attempt a river. *The ratings are not ratings of the rapids.* John explained, "Many river ratings consider that a river may have a rapid or two that are commonly walked by less skilled paddlers. We mark an * next to the rating, indicating a larger rapid typically portaged." To include that rapid into an overall rating of the river could keep some less skilled paddlers from attempting that river section. If they walked the one or two difficult rapids, the river was in their range. For clarity, the official language is this: ** If a record has an asterisk, the rating is based upon a short portage of rapid(s) that would otherwise significantly increase the rating.*

John and Dick started the list with rivers they personally knew. They would consult with other experts on rivers they did not know or know well. Kobak explained, “I would say a person has to paddle a river at least 4 or 5 times to discuss it intelligently, not one or two times. As you become more familiar with moves, and lines, you realize this river is not as hard as I thought it was.” John stressed the importance of this expert community input. The various regions of the country rated the difficulty of their rivers differently, the West tending to rate their rivers lower.



John Kobak on Arkansas River, CO, 1980. John wore glasses most of his adult life.

The original Singer-Reising ratings topped out at 35. With input from paddlers all over the country, Priem and Kobak refined the system, adding 5 points to both the Self-Assessment and the River Rating, to better reflect the subtle differences in river difficulty.

John recalled, “As we all ran more and more rivers all over the world, we were able to tie the ratings into considering river water level too. We continuously refined both the [self-rating](#) and

river rating systems and got many paddling clubs and groups into agreeing with these ratings. Some critics may not fully agree but I found that this system works for most novice to high intermediate paddlers. Experts can run most anything and forget the learning curve they had to attain to get to their skill level.”

The Basis of K-H River Ratings

John and Dick considered the following factors when rating rivers. Although they were engineers and very methodical and objective in their observations, the individual elements were not assigned a numerical score. A degree of “feel” or interpretation went into the appreciation of the following factors.

- Average Gradient
- Maximum Gradient
- Volume of River vs Gradient
- Width of River
- Ease of Rescue
- Inaccessibility
- Difficulty of Rapids
- Continuousness and/or rapid length
- Obstacles, rocks, trees, undercuts
- Water Temperature

By assigning a larger scale of numbers to the rating scale, more gradation was allowed in comparing river difficulty. This is reflected in the chart below, where Class III has 11 increments.

A comparison of the International Scale and the Keel-Hauler River Rating

Class	<u>Keel-Hauler Rating</u>
I	0 - 7
II	8 - 14
III	15 - 25
IV	26 - 33
V	34 - 37
VI	38 – 40

Keep in mind, the K-H scale is not a rating of the river itself, it is a rating of the skill needed to paddle it successfully. The K-H River Ratings only make sense when paired with the K-H Self-Ratings. The purpose of the river rating system is to correlate a river's difficulty to the personal assessment of the skills of a paddler.

- +/- 1 point – Very Similar
- +/- 2 points – Noticeable Difference
- +/- 3 points – Meaningful Difference
- +/- 5 points – Profound Difference



John Kobak on Oceana, Tallulah Gorge, GA. 1998.

Other Versions of River Ratings

In 1995 Monte Smith wrote the guidebook “Southeastern Whitewater.” Monte used a complex system of weighting factors. Here is one iteration of Smith’s river rating system.

Criteria	Weighting
Rapid difficulty	23%
Volume x gradient	20%

Average Gradient	17%
Streambed Morphology	10%
Continuousness of rapids	7%
Max gradient/mile	7%
Total Gradient	6%
Entrapments	(added later)
Inaccessibility	6%
Reputation	4%

John and other K-H experts read Smith's book and gathered several points. First, Monte's ratings, when adjusted for the differing numerical scale, matched up well with the Keel-Haulers' ratings. Secondly, Smith used many of the same parameters as the K-H's, like volume/gradient ratio and inaccessibility and added other fine points like reputation and streambed morphology. John and Dick were especially intrigued by Smith's tendency to rate less familiar rivers higher, a trend they had encountered elsewhere. After studying his system, the Keel-Haulers made a few changes and further refined their numbers. John explains, "We were quite proud that we had a system to compare paddler's skill with river difficulty that was not hard to understand. We didn't ever feel we needed to show exactly how we came up with a rating like Monte did."

Kobak concludes, "It all comes down to is, do we have a general agreement of which rivers are harder than others. There is such a big difference in International Class III and Class IV ratings. Intermediate paddlers often get into trouble thinking they can jump from Class III to IV. In the K-H system that's a span in points from 15 for a low III to 33 for a high IV, while I point out 3 points is a meaningful difference and 5 points a profound difference."

A lower self-rating does not mean that a paddler can't run a harder section, only that the paddler will be much more challenged. Kobak: "An example I often use is the Ocoee is Class III – 25 vs

Chattooga Section 4 at Class IV – 31” Again, consider the relevance of these numbers.

- +/- 1 point – Very Similar
- +/- 2 points – Noticeable Difference
- +/- 3 points – Meaningful Difference
- +/- 5 points – Profound Difference

John appreciates the influence of the Monte Smith system and other versions of river ratings that he feels are helpful. John highlights the following sources of ratings.

The now inactive Monocacy Canoe Club had a [similar system](#) to the K-H. [This article](#) explains how a ratings survey conducted by the Blue Ridge Voyagers of Northern Virginia was used in developing the system.

The California Creeks website, developed by Bill Tuthill, has a well-regarded [ratings list](#) for California and valuable links to other western rivers ratings.

The Self-Rating criteria kept evolving too. Kobak; “I kept changing the self-rating system to take into effect new techniques like Boofing and other skills. The scale tended to help the [Boy/Girl] Scout groups and Intermediate groups. They said. ‘This is obvious. What we have to do to get better, to get our rating better. We need a boat we can roll. We have to get our open boat outfitted properly with air bags, we better have a kayak rather than an open canoe. If I had more experience or if I could play in some of these big holes it would make me a better paddler.’”

Kobak admits not everyone was a fan. People who got good quickly pooh-poohed the system. Others overrated themselves and got into trouble, sometimes putting friends in danger. The friends were skilled enough, but they weren’t.



John Kobak on Pillow Rapid, Upper Gauley, WV, 2011

Self-Rating is the Key

Kobak says, “I am not aware of anyone else’s self-rating system.”

Ted Moore is the Vice-President of the Keel-Haulers Canoe Club. He’s been paddling since 1978. Ted, “I’m number 19 on the K-H longevity list (John is 1). I taught whitewater for the Red Cross, I’m an ACA instructor and Wilderness First Responder. John Kobak has been my river mentor for over thirty years.” Moore feels strongly about the importance of the Keel-Haulers self-ratings. “The Scale is saving lives every day.”

Moore explains, “If you assess your capabilities of doing anything: kayaking, surfing, long-distance hiking, you can overestimate your capabilities, or athletic abilities, or fitness. If you apply a system that is objective, you can honestly say, “either I can do this or I can’t. If I can’t it doesn’t mean, I’ll never be able to do it. It means I need to keep working on it to develop the skills and fitness.”

Moore recounts his experience with students. “At the end of the training we’d ask the paddlers to assess themselves. We’d encourage them to come on trips with us. You don’t have to join the club if you don’t want to. Never boat by yourself. Boat with people who are more advanced than you. Paddling can be a great experience, but it can also be heartbreaking.”

Moore: “I’m not aware of a K-H self-rating equivalent in the mountaineering world. It’s the only system I know about with a self-appraisal.”

The Keel-Hauler Yearbook

When the system started in the early 1970’s the internet was an unknown. The K-H Club had a yearbook since 1968, so this was the obvious place to publicize the new scale. Copies of the Yearbook were distributed by mail and with the advent of the web, the Yearbook went digital.

The Keel-Haulers started their website in the 90’s. Kobak was the one to set it up. John shared, “I got the keel-haulers.org domain name. Learned HTML and wrote all the stuff to get it up and running.” John continues to have an active hand in keeping the website full of up-to-date information.



Charlie Walbridge on Lower Big Sandy. April 26, 2019. -Photo by Jeff Macklin

John Kobak, Charlie Walbridge and the change in paddling culture

Ted Moore feels John Kobak and Charlie Walbridge are part of a small group of people who embraced whitewater paddling and took the machismo, he-man element out of it. Ted shared, “Over the decades, John and Charlie said, ‘You’re not going to beat the river. No matter how tough you are you’re not going to beat the river’ The only thing you can do is honestly assess your skills. Honestly look at what the river is doing on the day. Say, ‘I’m at 15 and that river’s at 31. Maybe I should stay off.’ I’m confident there are people alive today who would not be if not for the Keel-Hauler system. It’s like Charlie Walbridge’s safety work. When we describe and publish why people get killed or seriously injured, or need rescue, we’re not being judgmental, we’re not blaming them. We’re publicizing the mistakes others make so you don’t make them.”



John Kobak on Cheat Canyon, PM Goof, June 25, 2021 -photo by Jeff Mackey

The Kobak Method of Teaching Rivers

Kobak acknowledges, “I’ve been a guy who talked to people before they came on my trips and say rate yourself, tell me your skill. Elsewise, I’m not going to take you down. It’s too difficult a section. I turned down a lot of people because of that. Some people don’t question the paddlers they take on trips. To me, that’s negligent.”

Kobak stresses making sure boaters have the necessary skills for the section in question. Explain the difficulty and why those skills are necessary. Kobak adds, “I’ve had people who say ‘I’m going to run it anyway. Or I’ll put in after you.’ Some people refuse to believe they don’t have the skills to run the river.” Kobak admits he usually take the person. He knows they will swim and he doesn’t want them swimming alone. He feels leaving them alone would be morally negligent.



John Kobak on the Upper Yough, Aug. 2 2019 -photo by Jeff Macklin

John explains his method of showing people down a river. “When I first ran the Upper Yough, I basically did it myself. After that, I’ve led, easily, 400 first-timers down the Upper. After they did it, they often say, “Wow, this is way easier than I thought.” That’s because I know what to tell you and where to go. Now sometimes, after your third time, you’re going to get trashed because you’re going to get confident and alter your moves.

I had a definite way of taking people down. Small groups. Make sure there was a person next to the newcomer in case they did get into trouble. The thing I do, which is different from most people, is I don't explain the rapid and I don't let them follow me. I say I'm gonna go from this eddy to this eddy. After I'm in this eddy, you come. Read it any way you want. You decide how to get to this eddy. Because if you're following me, all you're doing is looking at the boat, you're not looking at the river. I found it's a bad way to lead people. All they're doing is looking at the best people and they're not learning anything. The Upper Yough is full of eddies, so you can just say, I'm going from this eddy to this eddy to this eddy and don't follow me. I'll be sitting in the eddy waiting for you. And that worked really well.

Other people would say, 'Go here and you'll see the rock barely sticking out of the water and make a hard right there and they'll be a boof over this rock and then pull in over here.' Well after the first move, people aren't exactly sure where they are anymore. They can't remember more than one instruction. I watch their eyes glaze over. "Oh my God" They just couldn't take in all that information. Too complicated. They get concerned with *Remembering* rather than *Reacting*.



John Kobak with his 13 year old son, Jeff, on Spanish River. Canada, 1977.

John's Story

John started paddling in canoes, along with his wife, Peggy. They took a whitewater course, bought a C-2 canoe and paddled the Lower Yough. John recalls, "Peggy thought it was too scary. She also knew I was interested in kayaks, so she encouraged me to take up kayaking. We continued to paddle open canoes together if it was no harder than Class II.

John began paddling a kayak. He knew about the Keel-Haulers Club but thought, "I don't need to belong to a club. Until the people I was paddling with got into trouble, into hypothermia and damned near drowned. I changed my mind, 'This is more complicated than I thought.'"

Kobak joined the K-H Club in 1968, a year after it formed. After the last charter member died in 2022, John now is the most senior K-H'er. Soon after joining, John was elected treasurer and found one of the tasks for the treasurer was selling paddles and wet-suits, items not commonly available.

Soon John was building his own kayaks. Dick Priem and John layed up two kayak molds, one copied from a Lettmann IV and one from an Old Town kids kayak. This led Kobak to branching off the sales into a separate business, Keel-Hauler Outfitters. The product line expanded to "everything you needed." They made paddles and life vests and bought skirt kits and throw rope kits from one of his competitors, Charlie Walbridge. His son, Jeff, joined him in the business and they put out a catalog. The basement business and production space included all the gear for sale as well as the molds and kayak-manufacturing apparatus. John brags, "I had 55 gallons of resin on tap." After fifteen years of constant coming and going of customers, at all hours, and the noxious fumes of building, Peggy drew a line. She was ready to kick John and the outfitting business out of the house.

By now son, Jeff, had graduated from college. He offered to take over the business with the understanding it could no longer operate from the basement. Jeff did well with the business, operating from 1985 to 1997, selling to people across the US and as far as Japan. However, as he and his wife started a family, and three kids arrived, it became apparent he would need to do something more lucrative. The business was shuttered, Jeff moved on and is now the father of eight children.



John Kobak on Wonder Falls, Big Sandy, WV. 2002.

Rocket Man

Meanwhile, John had a day job. He started his career in 1958 with NACA, the National Advisory Committee for Aeronautics, a precursor to NASA. When NASA was formed Lewis and Langley NACA centers joined Huntsville and Houston military facilities, as well as Cape Canaveral. The Cleveland center was staffed with civil servants, typically experts in their field of research. Cleveland had started testing rockets and propulsion and under NASA (National Aeronautics and Space Administration) Cleveland became the rocket center.

During this time John was working with another rocket man, Dick Priem, also a paddler and one of the other innovators of the K-H scale. Dick would go to Russia, on good terms with the US at the time, and teach rocketry in their schools. As John said, “Dick was a world expert on rocket engines. But he was a kayaker.” If you’d like to engage in a little light reading, peruse the article, ***“Development of a Sinusoidal Pressure Generator for Pressure Transducer Dynamic Calibration” done for Richard J. Priem, Project Manager Chemical Rocket Division, NASA.***”

John’s engineering work was varied. He started with rocket propulsion testing and then had a three-year interlude when NASA rocket engine funding dried up and the Department of Energy provided NASA with funds to do coal research, testing a Fluidized Bed Coal Reactor. Kobak ended his career at Lewis Research Center testing the solar power system for the international space station. In 1994, John retired after 36 years of government service. In 1999, the NASA Lewis center was renamed for the astronaut, John Glenn.



Peggy and John Kobak.

Peggy

John continued paddling, often on big whitewater, which was scary, sometimes on the open ocean, which was even scarier. Peggy and John would vacation abroad on many occasions, often bringing a 17ft. foldboat with them. John remembers, “Of course Peggy had no fear of paddling a 17’ foldboat in the ocean in Belize. I was more afraid of the big waves and open water than she was. I just thought it was scarier than the Upper Gauley.”

If you’re wondering about the caps Peggy and John are wearing in the photo above, John explains, “Everyone calls paddlers from Ohio, “F**king Idiots from Ohio – FIFO” The paddlers in

our Beaver Creek community near the Yough came up with stickers for our boats and hats to embrace the slur. A few years later, John Garcia, the instigator, decided that our nonpaddling wives should also have hats, WIFO's and had them made for our spouses.

John rides a bicycle regularly. Peggy also cycled. They had a tandem bike that Peggy loved.

Peggy died from cancer three years ago. Peggy and John were married for 62 years.



John Kobak on Wilson Creek, 2014.

The Southern Trips

I led what I called my Southern trips. We would do the Nolichucky, the Little, the Tellico, Wilson, the Ocoee, the Chattooga, the Nantahala, maybe the French Broad, the North Fork. I'd have 25-30 people every year. I did that for 25 years. I finally said I just don't want to do that

anymore. Somebody else take it over. Somebody took it over for one or two years and it went away. Now everybody goes to the CCC Week of Rivers.

For 12 years I led Colorado and Idaho trips. Also trips to Mexico, Central & South America, Canada and Alaska. No one leads trips like those anymore.



John Kobak on Cucumber, Lower Yough, 2024.

In the photo above you may notice a couple of things, other than John is still having a blast running whitewater at 87 years of age. John is using a wooden whitewater paddle made by Jim Snyder from WV, alias Jimmi Sticks. Jim also was a Keel-Hauler in the 70's.

Look again and you'll see John isn't wearing glasses, like he did in most of the photos up to now.

John: "I wore glasses my entire life until about 15 years ago when I went blind in my left eye. I then had cataract surgery restoring my right eye to about 20/30 vision. After I lost sight in the left eye, I have had a very hard time with depth perception and paddling larger rivers."

87 years old, blind in one eye, and yet....



John Kobak celebrating his 80th birthday by running Wonder Falls on Lower Big Sandy, May 28, 2017 -Photo by Peter Bross

Comments from users of the K-H Rating systems

Michele Crum: As a new member of Keel-Haulers and a brand-new whitewater paddler (since July 2024), I just found out about this rating system. As someone who doesn't know the rivers and everything is new and feels unknowable, this system is invaluable. The questions made apparent skills I should work on both on and off the water to advance to more difficult rivers and made clear what water I am ready for now to hone my current skills. I currently am in my boat 2-3 days a week and I feel more armed with knowledge about how to improve my paddling and work within my skill set to stay safe (I am not a risk for the sake of glory paddler as a mom and person in my 40s trying something).

Andrea Morgan: I think the rating system is wonderful! I use it regularly! It is one way I evaluate a new river and decide if it's in my ability. I especially like how it gives a baseline flow, because flow can dramatically change a section.

Jacki Zevenbergen: I use this all the time and encourage new boaters to do the same. It's valuable in 2 ways. It recognizes the many factors that determine skill level of the individual and acknowledges the nuances of difficulty in rivers that are rated as similar under the class system. I find this particularly useful as an older intermediate boater choosing new rivers. It's great at WOR!

Dena River: I used this and found it to be very good and accurate based on my own skills and the rivers I've done. I only started paddling during Covid. I used to check if I was ready for some step-up Class III/IV runs and I survived and did quite well. I will say that a rating system related to the highest-class WW is a way more personal decision and just because it says you are ready doesn't mean you are. Only you can know that when you are ready to step beyond IV.

Special Thanks to all the helpful people with the Keel-Haulers Club of Ohio.

What is Keelhauling?

Keelhauling was a form of corporal punishment that was formerly practiced as a punishment in the Dutch and English navies. It was used as a way to punish members of the crew who were guilty of serious breaches of the ship's code of conduct. Keelhauling involved tying the hands of

a crewmember to a rope and hauling him under the keel of the ship. If the crewmember lived he was set free. The barnacles did a job on him even if he could hold his breath for a long time. While the practice of keelhauling was formally abolished in 1853, the Keelhauler lives on.

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