

Annual Maintenance

Introduction

Winter is a slow season for many in the paddling community. Winter paddling is an acquired taste for many but the rewards are pretty incredible: beautiful views, rivers are not crowded, many small streams are now at runnable levels. Winter is also a great time to catch up on maintenance. We generally have more free time, vendors run excellent sales, and the gear isn't being used frequently so we can work on getting everything in good order for Spring.

Maintenance is a key Risk Management principle. Imagine someone gets hurt, you open the first aid kit and all the drugs are expired, tape doesn't work, and the gloves fall apart. Doesn't sound possible? This is exactly what we discovered when opening a local paddling club's first aid kits for an inspection – yikes! Any craftsman will extoll the virtues of well-maintained tools – they are simply a joy to work with. Paddlers that neglect washing their paddling garments find themselves no longer invited on trips – don't be one of those.

Inventory

Each TRR Chapter should conduct a full inventory of their gear. This includes:

- Boats
- PFDs
- Paddles
- Helmets
- Spray Skirts
- Other: Trailers, First Aid Kits, Throw Ropes, Thermal Protection, etc.

I also recommend evaluating each item. Is it still usable? Are there any safety hazards? Has it ever been used? Many of us are pack rats, we hang onto gear whether it's useful or not. That worn out canoe or vintage 80's kayak may look neat but if it's taking up valuable storage space, perhaps it's better to unload it and use the proceeds for something you really need. Speaking of that 80's kayak, it probably has a standard kayak cockpit. That really small cockpit is a well-known entrapment hazard.

I recommend capturing this information in a spreadsheet and also recording all serial numbers. The serial number is quite valuable should your gear get stolen and you need to file a police report. I also recommend ensuring ALL gear has a TRR label and contact information on it to make it very easy for lost gear to get returned.

Chapter Event Planning

Each TRR Chapter Should meet and fill out a major event calendar. Penciling in the target dates and POCs is quite valuable (difficult to accomplish later on in the Spring when everyone is paddling or they are fully committed to other activities. Don't forget cool activities for the slower months: Hiking, Skiing, Training (indoors), etc. Winter is a great time to get first dibs on great meeting locales like Park Facilities and Outdoor Stores. Two activities I lead every Winter are:

- Safety & Ropes Class (AKA: Fun With Ropes)
- Trip Leader Course

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Boats

All boats need a thorough inspection once a year. Examine all attachment points, many of which loosen and may cause the boat to come loose during transport (very scary). Examine the hull for deep gouges or cracks. Sometimes these can be repaired via plastic welding, often it makes better sense to eliminate or pass along to TRR Volunteer John Su to make hand paddles which bring in additional TRR revenue. The cockpit rim (look underneath the combing) may be cracked. This is a very serious safety issue and the boat should be retired. Look inside the boat, make sure all the safety/functionality features are intact: bulkhead, pillars/walls, seating adjustments, and knee blocks. Each boat should have properly functioning flotation bags (test them). Questionable boats may need a water test: place on two cinder blocks and fill with water – look for leaks. Leaks at bolts can be easily fixed with caulking or new gaskets.

Inspect to see if the boat has the TRR logo and contact information (your name/phone/email for personal gear). If you and the boat become separated, it makes it much easier for others to reunite you with your gear.

Boats and much of our boating gear must be protected against direct sunlight. Sunlight wreaks havoc on plastics making them quite brittle a just a few years. Tarps or storing indoors works wonders in making your boat hull last many years.

<https://www.nrs.com/learn/basic-kayak-maintenance.asp>

PFDs (Life Vests)

PFDs wear out over time. Chlorinated water fades them really quickly and may even partially dissolve the threading. It's crucial to thoroughly rinse all gear used in pools with fresh water before air drying. Many PFDs also lose buoyancy over time and need to be tested annually. A 15 pound dumbbell tied to the vest works quite well for this testing. All vests should be able to float with this weight. For my personal gear, I done my vest and test via jumping in the deep end of a pool. If my head isn't well out of the water, it's time for a new PFD.

You should also examine the entire vest for any tears – replace rather than attempt a repair. Check the quick release mechanism on rescue vests to ensure smooth release.

Many boaters discover their PFDs were no longer feasible after they take a really bad swim and that can be very dangerous.

Paddles

Paddles are for the most part maintenance free (unless they are wood paddles). Closely inspect from one tip to the other looking for any small cracks. I also examine the blade edges for any sharp edges or excessive wear. Sand down any sharp edges which can cause very nasty cuts. Although paddles can be repaired, they are often so old it's best to simply replace. I also recommend adding light colored stickers on the paddle blades (get some contrast). The standard TRR white stickers work perfectly for this. Contrasting colors make it much easier to find/retrieve a paddle when it's submerged.

Helmets

Helmets have a number of places to inspect. Start with inspecting the shell. If you see any cracks it's time to replace – don't try to repair. Next inspect the chin straps and closure systems. These need to work perfectly – test them. Frayed straps are another sign it's time to replace the helmet. Now

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examine retention systems (if any). These are used to provide a more secure fit and prevent rock back exposing the forehead. See if the adjustments still work. Finally, inspect the inner foam system. Some helmets have removable foam that sometime comes loose. Foam can be replaced and glued with oil based contact cement. High spots can be sanded down for a smooth fit. Check all screws, make certain they are secure. Scratches on the shell are OK, cracks are never OK.

Spray Skirts

Examine the skirt for any tears. Tears should only be repaired with high quality neoprene cement, never Aquaseal. Aquaseal forms a stiff spot which usually tears right around the edges. Neoprene cement with butt joints is just as strong as a new skirt. You apply neoprene cement just like you apply oil based contact cement: 2-3 coats dried in between before joining the final tacky coat.

Examine the bungee or rand portion of the skirt. If compromised, bungies can be replaced. Finally, look closely at the grab loop for any signs of wear. Test by sealing on the target boat. If too tight (really hard to attach), you can force on the boat and let sit for at least 24-hours. That will safely stretch the skirt. If still too tight, try a different skirt.

First Aid Kits

It's a great idea to print out your first aid kit inventory and empty the whole kit on the floor or table. Verify the inventory is complete, no missing items. I also like to document the expiration dates on the inventory sheet. Next, check all medication expiration dates. Replace any that are due to expire in the next 12 months. Some items other than medications like Quick Clot and chemical cold packs also have expiration dates. Some bandage material like Tegaderm have expiration dates. Finally, inspect the nitrile gloves and silk tape – these go bad over time. Tear off a section of tape and see if it still sticks well on your dry skin. When repacking, think about those items you use the most and place near the top. Your PPE should always be on top; Gloves & CPR mask. Print off current TRR Incident Report form/s, SOAP forms, and of course the first aid kit inventory. Ensure the writing implement (preferably a pen with a small pencil backup) work. These need to be packed in the kit as well. I also add a desiccant pack to my kit just to make certain the contents stay very dry.

<https://www.firstaid4sport.co.uk/blog/first-aid-kit-preseason-checklist/>

Throw Ropes

Throw Ropes take a great deal of abuse. They get wet, are frequently dragged over mud and sand, sustain shock loads, etc. Climbers treat their ropes with kid gloves and replace every three years. The throw bag system consists of a bag in which you stuff the rope (don't coil). At the bottom of the bag may be some flotation foam. The rope has a stopper knot on the inside and usually a figure-8 knot on the outside. You should practice tossing your rope several times throughout the year and re-stuffing. While stuffing the throw rope, inspect the outer sheath for fraying, cuts or bulges (replace if you find any). Replace with a high-quality throw rope from a respected company like Sterling Rope or PMI. Match the length and diameter. If your rope gets dirty, hand wash in a large bucket with a mild detergent as soon as feasible. Grit unfortunately cuts through the fibers weakening the rope. Be careful when using mechanical advantage not to overload the rope and pad all edges. If the ends start to fray – cut and seal. Liquid rope whipping works exceptionally well for sealing the ends of ropes.

<https://www.rei.com/learn/expert-advice/rope-care.html>

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All whitewater chapters should have at least two full size throw bags: 70'-75' x 3/8". This length and thickness facilitate safe gear extraction and are often necessary in rescues.

Neoprene Gear

Neoprene is used in thermal gear like wetsuits as well as paddling skirts. River funk combined with perspiration combine to make the strongest people repellent known to man – LOL. Neoprene thermal gear should be washed with a high detergent soap after each usage and air dried before stowing away. White vinegar (get the heavy-duty kind – 5%) is a fantastic disinfectant and kills mold. Mix a cupful in a bucket of water, soak and air dry thoroughly. I also recommend using the vinegar solution for helmets as well. Spray skirts can be washed less often, perhaps every several trips.



Inspect for gouges and tears. These should be fixed with high grade neoprene cement you can purchase at a local dive shop. Butt-joints (edge to edge) are very strong – good as new. Avoid using Aqua seal which is stiff and generally causes a new tear along the edge of the patch. Inspect zippers and lubricate with the manufacturer's recommended lubricant or specialty zipper lubricant.



https://www.nrs.com/boating_tips/drysuit_zipper_care_maintenance.asp

Wetsuits if properly maintained can last a life time.

Breathable Thermal Gear

Dry suits require a great deal more maintenance care than wetsuits and are very expensive to get repaired. Gaskets are the main weak point. These need to be cleaned regularly and you should apply Formula 303 Protectant at least once a year. This is sprayed on and you wipe off the excess with a soft cloth. Avoid cutting the gaskets as that seldom if ever works, try stretching the neck gasket (only if needed) around a large juice can/bottle and leave sit overnight. Around the 4-5-year point, the Durable Waterproof agent dissipates, and water will soak in rather than be repelled. When this happens, clean thoroughly with Nikwax Tech Wash (not Ivory Snow). Tech Wash enables the fabric to breath and release water vapor. Next you soak the garment in Nikwax TX.Direct (Durable Waterproof Repellent). I let it soak 30 minutes to get it thoroughly saturated. Rinse with clean water until clear. I then hang to dry and use a hair dryer on low heat to set. Do all washing by hand and never use a machine dryer. You can touch up with the spray on version of TX.Direct after the garment has dried.



<https://www.nrs.com/learn/dry-wear-care-storage.asp>

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Pin Kits

Whitewater chapters may have pin kits. Pin kits consist of the following:

- 4 Locking carabiners. Never use non-locking carabiners.
- 3 Pulleys capable of holding 3/8" rope
- 2 Prusik Cords (pre-tied). Generally 5 mm x 5'
- 1 30' x 1" tubular climbing webbing to use for an anchor

Some extra items I general add are a pair of glacier gloves and a stainless steel folding camp saw.

It's crucial to get carabiners constructed with only one metal to prevent premature rusting. Omega Pacific Standard D Screw locks are the most durable and quite affordable. Petzl AMD Trilock and Omega Pacific Jake auto locking carabiners are exceptional as well but much more expensive.

When purchasing Prusik cords, get ones with a nylon core as opposed to polyester. These bite much better into rope making Prusik Loop much easier to tie.

Climbing webbing inspection is similar to rope inspection. You won't encounter bulges but fraying or tears are a sign the webbing needs to be retired. Also, if the webbing is very faded – it's probably lost much of its strength.

Storing in a dry bag is a great precaution. Some like myself use a wearable pin kit. I make a guide belt with the webbing and a carabiner. The rest easily fits in my PFD pocket. The main wear items are the webbing (abrasion) and the carabiners. Inspect the carabiners frequently ensuring the gate opens and closes/locks smoothly. Lubricating a carabiner has several pitfalls. Whatever you do, don't use oil-based lubricants. Teflon based lubricants seem to be the safest option, thoroughly rinse with clean water after application.

<https://www.rei.com/learn/expert-advice/caring-for-your-carabiners.html>

Boat Trailers

TRR trailers come in all shapes and sizes. Some are stationary in which the major concern is any leaks which can cause water to collect inside damaging gear. Others are used to transport large quantities of gear. These need a thorough mechanical inspection, lights, brakes, etc. Check the DMV stickers to ensure they are current as well. I also recommend inspecting all straps used to secure boats. Inspect the webbing/straps end to end for any signs of tears or excessive fraying. Now check the buckles for springs that work properly. If either are shot, replace. Also think about the length of webbing. I generally recommend a good set of 20' lengths. Short webbing lengths are simply an accident waiting to happen.

Training

Winter is an excellent time to take relevant training. All TRR chapters have pool time with rolling sessions. We often mix in basic paddling strokes and even various rescue skills. Mix things up to maintain enthusiasm. First Aid training is a critical skill you will eventually need. I strongly recommend following ACA Instructor standards: current CPR and suitable First Aid training certification. Suitable is generally Wilderness First Aid (or higher if so inclined). Both need to be repeated every two years.

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Cross-Training

Many choose to take it easy during the Winter months. This causes degradation in cardio and strength capabilities. During the holidays, no big deal. There are many great sports to enjoy in the Winter like skiing, hiking, biking, indoor climbing, etc. Your options may be more limited in some parts of the country. Strength training via dumbbells is easy to fit in as well. Spring is just a short 3 months away and you want to be ready to get back in that boat as soon as possible.

<https://mindbodypaddle.com/7906/cross-training-kayaking/>

Conclusions/Recommendations

Treat your gear well and it will provide great service for many years. Neglecting maintenance can expose Team River Runner to litigation and none of us want to deal with that. Many paddlers forget to carry first aid kits and almost never keep them maintained. This is very embarrassing when someone gets an injury and there's little you can do to remedy the situation. Fatalities have even occurred due to obsolete equipment – mainly boats. We at TRR pride ourselves in running a very professional operation and periodic maintenance is just one sign of a true professional.

In our sport, lack of maintenance is a very avoidable safety issue. Due Care and Due Diligence are key Risk Management terms. An easy way to think about this is:

- **Do Detect:** This is why we inventory and inspect our gear.
- **Do Correct:** This is why we perform required maintenance (and retirement).