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Gear for Geo. 660

The equipment list for Geo. 660 contains several items that many of you may not already own that can be relatively expensive. Below are some ideas on adequate equipment at reasonable prices. A little searching on the web can yield tremendous dividends.

Boots

Footwear is the single most important item for a field course. Good boots provides traction, protection and support for your feet. Tennis or basketball shoes are not adequate for the latter two reasons, nor are cowboy boots for the former. A wide variety of boot styles are available, from those with low-or high-top nylon/leather uppers, to all-leather boots. Leather boots provides maximum protection, support and, with the proper soles, excellent traction. Most today are designed with backpacking in mind, which requires relatively rigid uppers and maximum padding to provide comfort and support for carrying heavy loads. Once broken-in, a well-made boot of this type is unsurpassed for field use. They are the best at keeping feet dry, provide an important measure of protection from cactus spines and will usually (but not always) outlast a softer boot.

The major disadvantage of leather boots is price; a decent pair now costs over \$100, with many in the \$150-\$250 range. Do you need leather boots at this price for 6 weeks of fieldwork? No. A well-made, cheaper pair of "soft" boots can be adequate if: 1) you're willing to sacrifice dry feet on wet days; 2) you're relatively agile and light on your feet; 3) your field pack doesn't weigh more than about 40 lbs.; 4) you're not prone to kicking cactus. I have worked in soft boots for the last 9 field season and, although they lasted little more than one season, I've been very happy with the lowest-priced models of Merrill and Vasque boots, which can be bought on sale for less than \$50/pair. Well-made pairs by major manufacturers sell at list prices of \$70 - \$150. Less well made boots tend to lack side support (foot tends to roll sideways when walking across slopes) and can quickly come apart (soles detach, front rand comes off) after limited use. High-top boots provide ankle support and will keep scree and dirt out when moving down-slope on loose ground.

Regardless of the boots you select, you will be much more comfortable if you use well-padded socks with a clean pair of thin sock liners. Sock liners wick moisture from your feet and are easy to wash out at the end of a day.

Rain gear

A good, well-fitting, waterproof coat is a necessity, not a luxury. We have never experienced a summer in Montana and Wyoming where it didn't rain. Two

summers were exceedingly wet, raining nearly every day and for several days on end. We camp and cook outdoors and are in the field every day, rain or shine. Strong winds and colder temperatures often accompany rain in the mountains.

Adequate rain gear need not cost 100's of dollars, but a \$5 plastic poncho, which is only marginally better than a plastic trash bag, won't work in such conditions, nor will a thin nylon shell sprayed with Scotchguard. Lower-priced (\$20-50) raincoats and rain pants, which are usually made of plastic- or coated nylon, are adequate and widely available in a variety of styles. Medium-priced coats (typically \$50-100) are somewhat lighter-weight, usually better ventilated, may have an attached hood and are thus more comfortable to work in. They are, however, no more water repellent than lower-priced varieties, sometimes less so. High-priced rainwear is generally constructed of one or more "miracle" fabrics; lightweight materials that are touted to "breathe" while also being waterproof. In my opinion (based on 3 coats, boots, mittens, and a few other items) these fabrics are vastly overrated for the price. Nonetheless, such coats are generally ruggedly constructed, fit well, and typically have many desirable features (multiple pockets, armpit zippers, internal drawstrings, ancillary ventilation, etc.). Again, they are no more waterproof than much lower priced models. Ponchos and umbrellas don't work well in windy weather.

Regardless of what you type of coat you choose be sure it's large enough to allow for insulating layers underneath. Many former students and staff also strongly recommend a pair of rain pants.

Sleeping Bags and Pads

While in Wyoming and Montana, you may spend as many as 20 nights sleeping on the ground in a tent. Nighttime temperatures can be as low as 30° in June and are commonly 40°-50°. Blankets are only marginally adequate in such conditions; a sleeping bag provides better heat retention and insulation. The enormous price range for sleeping bags reflects differences in insulating materials, weight and construction. At the high end are extremely light, down-filled bags made of waterproof, breathable fabrics that have a comfort range that extends to -30° F. These bags are uncomfortably warm for all but the coldest conditions. At the low end are cotton bags with natural or synthetic fiber insulation, some of questionable construction that may or may not keep you warm at temperatures below 50°. In between is a very large spectrum of nylon shell, down- or synthetic fiber-filled bags that are more than adequate for summer camping in the northern US. Fiber-filled bags are light, dry quickly, are easy to clean, are nearly as warm as down, and pack to a small volume. Like wool, they provide warmth even when wet. Down bags are typically more expensive, slow to dry and nonfunctional when wet. If you are concerned about your sleeping bag keeping you warm at night, bring a pair of long underwear to sleep in and make sure you have a good sleeping pad.

A sleeping pad or air mattress provides insulation from cold ground and a measure of comfort. A closed-cell foam or inflatable pad provides the best insulation. A blanket beneath your sleeping bag is better than nothing.

Tents

The Department no longer supplies tents. Tent prices have come down in recent years and very well made, 2- or 3- person tents are available for \$150 or less. In evaluating a tent for this summer, ask yourself the following: Will the tent withstand windy (30-40 mph) conditions? Is it waterproof (or can it be made waterproof) in a sustained, heavy downpour? Do I have all the parts? A waterproof ground cloth (a sheet of heavy mil plastic will do) keeps the floor of your tent from absorbing water and protects against punctures. In years past, inadequate tents failed the first two requirements.

Clothing

You should have clothing that will allow you to live and work comfortably in both cold (40°) and hot (100°+) weather. Cold is best dealt with by wearing layers that can be donned and shed as needed. For maximum comfort your outermost layer should be windproof; most rain coats/pants are adequate. Beneath this, a layer that will trap air (sweater, sweat shirt, fleece jacket, down vest, etc.) comes next, underlain by one or more thin layers (T-shirt, long sleeved shirt) that provide additional warmth and wick perspiration from your skin. As much as 70% of your body's heat loss occurs through your head; if you're cold put a hat on.

A wide brim hat, bandanna, and sunblock are essential for working in the deserts of west Texas and New Mexico.

Finally, you will be traveling or working outdoors nearly every day of the 6 weeks. You will load and unload your gear, along with tents, coolers, cook boxes, etc., many, many times along the way. It is to your and everyone else's benefit to travel light. Examine every piece of clothing you pack critically; do you really need it?