# Action Questions

## Physical Safety

### Before the field season

what are 2-3 specific actions a successful field crew leader takes to promote physical safety?

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| * **Collect information from all team members for allergies, meds, health insurance, pre-existing conditions.** (+7) * **Prepare/check/share a “need-to-bring” list for all members of team** (+20)   + provide an “optional” and “required”   + discuss appropriate field clothing   + provide gear/funds for anyone who needs help acquiring gear * **Safety training of some form** (+10)   + Mental health training / mental health first aid (+3)   + Wilderness first aid (+13)     - Designate a safety lead     - Give to entire team     - For all involved in remote work   + Basic first aid (+13)   + Harassment and bystander intervention   + CPR (+2)   + Specific to site risks (+2)     - discuss scenarios that may be encountered in the field     - Bear training (+1)     - Hazardous Waste Operations and Emergency Response (HAZWOPER)     - Firearm safety (+1)     - Avalanche training     - Electro fishing accident protocol   + Defensive driving   + Boat/vehicle operations   + Sexual assault training * **Collect emergency contact information** (+9) * **Assemble a robust first aid kit** (+13)   + Ensure each vehicle has one   + Ensure 1 at each working location * **Safety protocol/plan** (+27)   + Base on local/personal/collegial input   + Go over plan with crew / distribute written plan (+19)     - Get signatures on plan     - Customize safety plans for members   + Include written copy in each field vehicle   + location/hours/contact info for hospitals/ERs (+8)   + Know the location and phone numbers of the nearest tire shop, auto repair shop, gas station, grocery, and police station (+1)   + If new to a field site/region - meet with people with experience at that site/region and ask for 'SOP' for field safety.   + Include evacuation information (+1)   + notify relevant authorities/landowners about field schedule/presence. (+1)   + Emphasize that safety is more important than data, very regularly (e.g., multiple times during training, every time crew departs for the field). This empowers the crew to make safety-based decisions. * **Hold field-specific orientation** (+8)   + Let members know that they will be sent home if they engage in a pattern of unsafe behavior (I had a lead who had a 2-strike policy for life jackets, despite the enormous cost of sending people home early; this sets a dire tone and establishes expectations).   + Create open dialog about expectations (+10)     - create a non-judgmental conversation space where less experienced crew can ask questions about field gear/field safety stuff without feeling judged. (+2)     - Address physical and mental challenges     - discussing what everyone is comfortable and able to do     - Ensure all crew members are aware of exactly kind of environment they're about to commit to and what the types of hazards are (if we're about to disappear off the grid for 3 weeks, you need to know that you can't call your family). (+2)     - Establish a culture of communication with the crew with regular check ins so the crew can bring up any potential issues they may have.     - Surveys group to gather anticipated concerns; make accommodations as possible to address those concerns   + show maps, pictures, video etc. prior to going to the field   + orientation with navigation, weather, and terrain (+3)     - discuss area-specific risks (animals, diseases, people)   + Discuss bathrooming with all team members.   + Equipment orientation (+5)     - Shakedown or practice trips with the truck and gps navigation, with each crew member 'in charge' * **Emergency communication protocols**. (+1)   + determine if your field sites have cell service, if not obtain an emergency beacon with gps tracking and emergency service subscription (+4)     - include with all crews/vehicles     - ensure that all crew members are capable and comfortable operating all equipment with a special focus on GPS or other spatial tools.   + establish communication norms and expectations (check in times, radio protocols, travel/movement plans) (+3) * **Equipment purchase/maintenance** (+12)   + Inspect large equipment such as boat motors and trailers (if you don't have the know-how, go to someone who does).   + thinking broadly to include cars, tires, equipment   + as early as possible   + Pack extra of all safety equipment   + Download/print maps   + Have proper PPE (+3)     - Whistles for each person     - Buy bear spray for each crew member |
| * **Determine appropriate housing**. (+2)   + Communicate housing conditions to crew |
| * **Reviewing "lessons learned" from other field leads from the year before**   + talk with previous crew leaders who worked in same area * **selecting responsible team members**   + assess field crew members' safety knowledge and skills (+1)   + gauge crew’s comfort level (+2)     - with remote work     - with specific assigned role (+1)     - talk about boundaries and personal health - if you can only work a certain number of hours a day, comfort with field conditions like uneven terrain or lightening |
| * + ensure folks hired for field crew are physically capable of common tasks     - warn crews of physical fitness requirements for fieldwork     - Exercise (especially strength training--rock climbing is great field prep; a lot of equipment is heavy and awkward, and no amount of knowledge or expertise will help you if you throw your back out in the wilderness).   + Hire individuals with outdoor experience who enjoy being in remote areas. (+1) |
| * **study the areas where field work will be conducted**   + ensure field sites are safe to access   + Visit field sites ahead of time (+1)     - ground truth site without the pressure of conducting any data collection (though possibly include a test/run through of field methods). |
| * + Identify and plan for hazards (+6     - study local weather conditions and local hazards (ex. diseases, venomous animals, etc.) (+1)     - Identify main roads, settlements, and 'trouble spots' for navigation, evacuation etc. * Gets familiar with local flora and fauna, noting anything potentially dangerous |
| * **Leaders should familiarize themselves ahead of time with potential issues that may affect specific members of their crew (ex. women, LGBTQ+, BIPOC, disabled technicians)** * **clear and efficient work schedule for each day** |
| * We have a six-step program think, review, choose, right PPE, proper form, where abouts |
| * **Hire local consultant(s).** |

### **During the field season**

what are 2-3 specific actions a successful field crew leader takes to promote physical safety?

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| * **Ensure proper training on safety/data collection/safety** (+10   + Schedule time to teach crew how to use safety devices (e.g., personal locator beacon, satellite phone, bear spray) (+2   + Defensive driving/vehicle training (+1   + list any field hazards (insects, weather, crop, allergies) and equipment hazards (show them the protocols, are there chemicals/sharps/parts under pressure/etc. you'll be working with, let the staff be familiar with the equipment- let them play around with it/check it out). (+1     - Show staff how to use the equipment, then watch them physically do the task while you are there to make sure they perform the task correctly and safety   + firearm safety refreshers   + Teaches technicians patiently how-to walk-in waders   + No one is lifting beyond their capacity. When lifting heavy objects, proper form is key. * **Address any incidents / address lesson learned** (+3   + logging and keeping track of any injuries/incidents and updating guides/handbooks accordingly * **Emergency contacts** (+5   + Carry with you   + Exchange relevant medical history (e.g., allergies to insect stings, epi pen and where it's kept) |
| * **Buddy system** (+7   + Review ‘buddy list’ if some crew will be working out of sight * **prioritize physical safety/well-being over data collection** (+6   + say out loud regularly that safety is our primary concern, above anything else   + Make sure all crew members know that their safety is more important than the data, that everyone has an emergency number to call, and that they know that no one will be angry if they come back early.   + if a crew member looks exhausted/overheated/etc. taking a break or ending the day early to ensure that all crew members understand the expectation that their health is more important than data/science   + distinguish acceptable risk from unacceptable risk. * **Model behavior** (+9   + Be an example by taking breaks for hydrating, eating, wearing sunscreen, and resting if needed and adhering to safety protocols at all times   + Remember that as a leader, your words carry weight: do not joke about safety or harassment in front of your crew. Your actions speak even louder: respond to even small issues as though someone watching is deciding whether you can be trusted.   + Take all safety concerns seriously, even small offhand comments. Ignoring small comments makes it less likely that someone will speak up in a higher-stakes situation * **Daily check ins/debriefs** (+29 |
| * + Monthly, weekly, and daily safety debriefs. Monthly to review big picture, weekly to go over activities for week and expected risks, daily to review specific site safety issues.   + adjusting expectations with changed conditions   + stretching during the safety meeting (each person leading a stretch while giving their safety concern) (+1   + gentle correction of unsafe actions with clear explanations of what was wrong (+1)     - correct/redirect promptly   + talk about specific safety concerns as they are appropriate (e.g., a barbed-wire fence safety review if you know you'll be in an area with a lot of barbed-wire fences for the next few days) (+1)   + conduct risk assessment/check in with crew before engaging in higher risk activities. * **Ensure sufficient rest/breaks** (+13)   + Check in on the basics- make sure everyone is doing what they need to do to take care of themselves (i.e. getting enough water, or sleeping okay); Pause and take time for rest, especially in less than ideal conditions; and this last one goes along with the previous point- if conditions aren't ideal or it's already been an especially hard/long day, check in with the crew and call it for the day if needed.   + set working hours that do not involve extensive work in the heat of the day   + time off during long field work (e.g., more than one week)   + Making sure the field crew has time to eat meals so that their energy is not drained by the end of the day and given them notice if/when they should bring food.   + encourage a culture of hydration and self-care rather than pushing beyond personal limits * **Ensure that everyone has appropriate gear including food/water** (+11)   + Making supplies readily available when in the field (e.g., gloves, float coats, etc.) to keep the field crew safe/warm/healthy, sending an email with details that outlines strategies to stay safe/warm/healthy. Making sure there are supplies available that fit the body sizes of the field crew (e.g., gloves/coats/boots not too large) - can be a gender issue where men don't consider that women need smaller sizes or smaller size field gear may not be readily available to buy. These strategies help avoid tripping hazards, chemical spills from badly fitting gloves, helping field crew feel confident.   + Have a daily checklist to make sure everyone has all proper personal and team gear, food, water, communication device. (+2)   + Make sure people charge their equipment at night.   + bringing extra food/water, generally bringing more supplies than you think you need (+1)   + Consider current and future weather/field conditions to promote careful planning for food, water, PPE etc.   + KEEP IN-REACH ON ALL DAY IF CREWS ARE SEPARATE (this happened to me once and it wasn't great). * **Make decisions based on the least comfortable person on the crew** (+4   + i.e., go back to the truck when a storm is coming in when the person who is most wary about lightening says let's go   + avoid traveling in areas/ways beyond limits of “weakest” crew member   + Keep in mind that some students' identities make them more vulnerable to harassment or violence from landowners and law enforcement. Especially if you do not share these identities, trust their guts--if anyone feels unsafe, you need to listen to that and take it seriously.     - As lead, buffer crews from potentially dangerous humans |
| * **Regular equipment maintenance/checks** (+3   + ensuring spare tires, fire extinguishers, first aid, etc. are in place.   + Instruct crew on how-to   + Check In-reach every morning to make sure it works * **Safety/communication plan** (+26)   + discusses a safety plan for our remote living situation (e.g., locking the gate every night, setting mouse traps, dealing with hantavirus risks)   + Hold a safety talk with field crew participants to explain common dangers and the resources and protocols in place to respond to those dangers   + communicating all safety plans with crew in case something happens to lead   + Regularly revisit during field season (+5     - Revise if necessary (+2   + Actively encourage to speak up when concerned   + have a written safety plan in field packs/vehicles that includes directions to nearest healthcare and emergency phone numbers (+2   + designate safety lead   + Check in / check out protocols (+4     - Make sure multiple parties are aware of itinerary.     - creating and adhering to a detailed field plan that includes check in times with contacts and overdue times when the emergency contact should start to try to reach out to the group in the field.     - Rehash and remind about chain of communication for work location reporting.   + Emergency communication plan (+1     - carry gps with SOS function   + Ensure crew members can communicate with each other when working apart. * **keeping the first aid kit stocked with fresh and appropriate medical supplies**. (+9 |
| * **Monitor weather** (+8   + checks weather conditions and other relevant environmental conditions/hazards (i.e., hunting season) regularly |
| * **Monitor crew** (+11   + Checking on well-being of individuals (heat stroke, frostbite).   + taking time to monitor others working rather than focusing on your own work   + Regular check-ins with all field team members re: physical condition, keeping days to a reasonable length (especially if driving significant distances or in difficult conditions   + Know where people are / when they get back (+2     - keep physical sight of crewmembers if possible   + constant safety vigilance (+4)     - make sure everyone is accounted for at quitting time     - decisions made on often an hourly basis that prioritize safety of crew     - Take accountability and act when safety issue arises (commonly these might be ambiguous situations like weather conditions change, someone seems fatigued/dehydrated...) |
| * **Regularly communicate with site managers if relevant** * **Take time to meet with local officials.**   + ensure that everyone has permission to be on private land, if applicable, before arriving |
| * **Open communication** (+20   + Set clear expectations (+1 |
| * + Check in frequently on crew members physical and mental wellbeing. (+2     - Check in specifically about comfort levels at field station   + make decisions about safety group decisions - i.e., should we drive up or down this rough hill or try to find another way? Do you want to keep working in the heat or should we call it a day and head back to camp? |
| * + Make sure entire crew is comfortable enough to speak up if something goes wrong. (+1   + solicit constant feedback on how things are going for the crew; reevaluate and adjust as necessary.   + Create and maintain communication channels (including "above" field leader) to hear concerns   + Set clear policies around safety (will anyone work alone? who will carry radios? who can they come to if a community member or team member is making them feel unsafe?) and communicate these clearly.     - Be very clear to the point of being mean when necessary ("We do NOT fuck around with the chainsaw." [say this before anyone touches the chainsaw]) |
| * **Use/encourage situational awareness** (+3   + constantly evaluate whether situations are safe and if they are not what needs to be done to make them safe (including leaving the site) |
| * **varying tasks day to day** |

## Interpersonal safety

### Before the field season

what are 2-3 specific actions a successful field crew leader takes to promote safe and productive interpersonal interactions?

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| * **Facilitate meetings with the team focused on building comradery (e.g., ice breakers, games, happy hour)** (+18)   + meet at least once but preferably multiple times to establish rapport   + Have a gathering of the team (pizza is nice) to go over plans, the safety plans, gear lists, and opens up for questions. (+1   + Spend some time in the office with your crew; talk about personal stuff; get food together, or even better, cook for them.   + Extra points for something fieldy * **Open lines of communication before the field season so that the crew leader and crew members aren't strangers on the first day of work** (+7)   + Exchange contact information   + Facilitate introductions (+1)   + Insist on/model respectful communication * **Have crew do training together** (+4)   + even if some are returning or have previous experience relevant to the project.   + Training with equipment at a non-study location, review of protocols, discussion of objectives and purpose of field work (+1) * **Getting to know members one on one** (+9)   + identifying what they need to be successful and feel safe |
| * + training in preventing sexual harassment and assault   + make a point to know crew members pronouns and any important aspects of their identities (+1   + discuss professional and personal goals.   + ask about prior experience and knowledge   + ask crew members how you can be a good leader for them   + Establish working, professional relationships with each member of the field crew |
| * **Hire good (safe, inclusive, collaborative) people** (+3)   + Being transparent and honest with crew during hiring process   + Make the interpersonal environment of your project clear on recruiting materials   + Ensure folks hired for the crew have emotional intelligence and will be good communicators   + select a team with interpersonal elements as part of your criteria - better to have a cohesive team with flawed individuals, than a bunch of superstars who can't work together. (+1)   + Interview references about each member's ability and willingness to work as part of a team. (+1)     - include interview questions around if candidate has dealt with tough interpersonal dynamics before - look for red flags * **ensure enough resources for each crew member (+1**   + ensure the entire crew is being paid fairly * **implement relevant trainings** (+2   + - i.e., implicit bias, sexual harassment   + leader should do appropriate trainings (TitleIX, Safezone, etc.) so they are able to create a comfortable and trusting environment and are also able to handle a situation should it arise. (+1 |
| * **Write field season expectations document with statement on non-discrimination, harassment, etc. and include what to do in case of these situations (+5**   + Conduct field season expectations briefing and specifically address this section with field crew, request feedback (+1   + Similar to physical, there needs to be a standard and culture of communication about communication style, boundaries/things people don't want to talk about, etc.   + reminder that still members of the University (and all rules about harassment, violence, bullying, respectful behavior apply   + develop a clear policy for addressing issues of racism, sexism, and other bias in the field   + share & discuss materials/research about how field experiences can differ for folks with different identities * **Ensuring there are multiple points of contact to raise concerns (e.g., supervisor, graduate student, lab manager)** (+5 * **Draft safety protocols** (+1   + Work with any safety staff at the lab/university to go over tasks and if they can go to the field and see conditions that can also help. They may see hazards you don't.   + discuss actions to be taken if something goes wrong. (+1   + provide emergency contacts   + consider working in groups/teams * **Prepare logistics**   + Thorough preparation of the sampling design   + ensuring all permits are up to date and that all team members have appropriate documentation for all sites where they will be working, |
| * Work on/display emotional intelligence * **foster an environment that allows for open and honest communication and feedback** (+5   + setting the tone for positive interactions through in-person and emailed corresponds   + Vulnerability and clear communication (I.e., I don’t like to talk before morning coffee)   + Identify goals and communications collaboratively   + lead the crew in developing, as a group, a written social contract around how to interact with and treat others, respect boundaries, etc., that everyone signs when hiring |
| * + Make time to talk and problem-solve with crew members in the workplace: 1) This gets the crew and the leader used to each other’s communication and problem-solving styles; 2) helps establish the level of self-reliance that the leader expects; 3) establishes an ethos of availability and willingness to help, as members can often feel intimidated and nervous to come to the leader. Actively invite crew to participate in parts of the planning process to provide both novel ideas, opportunity for critical thinking, and personal investment on the part of the crew member. Speaking to physical safety, data integrity, and interpersonal connections: anyone and everyone on the team should feel comfortable enough to say, "I don't know how to do that." This requires a culture that is intentionally established as such. |
| * **make it clear the kind of relationship you'd like to cultivate amongst the crew**    + Share lab philosophy for supporting and respecting each other, including diverse perspectives and values.   + Build a culture of checking on and taking care of one another. Making safety everyone’s responsibility. |
| * **Circulate a gear list (especially if crew members have never participated in a field season)** (+1   + Ask crew members if they have the personal gear necessary for the work. Help them find solutions to fill in any gaps. (+1 |
| * being willing and open to discuss and resolve issues |
| * Treats everybody the same |
| * identify people who can help with interpersonal issues |
| * **Make local connections.**    + Take time to introduce yourself to local partners.   + contacting relevant stakeholder to mitigate potential bad encounters or confusion in the field |
| * **Plan to create space (physical and emotional) for crew members as needs might arise.**   + Define personal space clearly   + respect people's physical/mental limitations out in the field |
| * + giving everyone authority to stop work if they feel unsafe |
| * **Build trust with crew (+2**   + Build trust with field crew to promote healthy communication with you and with each other, making sure to spend one on one time with each member. I want everyone to feel comfortable coming to me with an issue and I state this bluntly, as well.   + Gestures of kindness go a long way towards building trust, a key component of promoting positive interpersonal relationships. (+1 |
| * figure out how to draw the line between friend and boss (especially if the age gap is minimal) |
| * **Organize living/sleeping accommodations that all crew are comfortable with**   + Openly discuss strategies for living in close quarters in the interview   + meet with entire team to discuss a Community Agreement (to agree on behavioral norms for sleep, where to use the bathroom, communicating problems, etc.) * **be straightforward with crew about any local safety issues and how to handle them**   + coach field crew on potential encounters     - i.e., how to talk to ranchers (+1 |

### During the field season

what are 2-3 specific actions a successful field crew leader takes to promote safe and productive interpersonal interactions?

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| * **Daily group check-ins** **/ de-briefs** (+18   + include positive observations (e.g., talk about everyone's best moment/view/find of the day)   + During our daily safety/stretch session, we also answer a daily question (suggested by a team member). It helps with group bonding   + Incorporate regular social interactions     - Eating dinner as a team (+2 * **regularly meet with each team member individually to ensure that everyone on the team feels safe and productive** (+15   + Do this privately as much as is possible |
| * + Specific mental health checks. (+2   + Conduct mid-season check-ins with field crew on their interpersonal well-being, professional and personal goals   + Check in with each field crew member mid-season; give them a place to voice concerns; listen to concerns and to what is going well-- adjust as needed (+1   + Also enable check-ins with someone other than immediate team lead * **Breaks/time off** (+11   + Acknowledge the need for personal time (especially if you're on a long field trip in a remote location), and build that into your schedule for yourself and your crewmembers (+1   + Define personal space   + Be generous with breaks, days off, etc. and understanding when someone cannot do the work that was planned for that day   + do an office day when they're exhausted instead of going into the field   + Making sure crew members don't feel overworked also goes a long way to ensuring safe working conditions and making sure field crew feel cared about.   + having small breaks (i.e., lunch) where people can regroup/reenergize |
| * **Set and maintain expectations** (+4   + Set expectations with field crew participants (perhaps by co-creating an agreement) about acceptable conduct at the beginning of the field season   + check in to make sure expectations are reasonable   + describe daily tasks (+1     - Make sure everyone knows what their responsibilities entail.     - emailing the field crew the day before with details * **address conflict early** **and directly** (+7   + Be aware of crew interactions including body language (+1   + Be ready to intervene and mediate conflict so that least powerful / most vulnerable do not have to defend themselves (+2   + Call out and shut down any harassment or problematic interpersonal interactions immediately (+3)     - Describe unacceptable behavior and penalize it     - be prepared to let members go if somethings arises even if in mid-season   + Hold crew members accountable if expectations of conduct aren't met, but provide opportunities for people to learn and improve unless the conduct is threatening the safety and well-being of other crew member(s)   + Praise, praise, praise! The first step in any tough situation--asking for more out of a member or starting to address a dispute--should always be recognizing that the person is doing a hard thing and doing it well. Even when things seem to be going fine, make sure you're explicitly letting people know you appreciate them. Start from the assumption that everyone is trying hard and feels unappreciated for it, and it's your job to fix that. When you model appreciation and assuming good intentions, other team members are more likely to do the same with each other. * **open communication** (+10)   + being transparent, honest, clear (+2)   + delegate clearly     - having a clear structure of team lead so that decision-making is easy (even if that rotates from day to day)   + giving everyone access to communications (radio, sat. phone, cell phone)   + Communicate the reasoning behind actions or decisions * **lead by example** (+4)   + Emphasize the importance of respect   + accommodate crew preferences over your own where possible.   + model safe and healthy working habits   + Having a positive attitude that sets the tone (+2)   + model open and honest communication   + admit when you make mistakes (+1     - Be receptive to feedback, not just for them but yourself.   + maintain a professional environment     - it can be hard, but the crew lead should base the amount that they talk about their personal life on how much the crew divulges, and they should shut down personal conversations if things get inappropriate or if it seems like someone is uncomfortable. |
| * **Respect other’s comfort zones**   + Make sure each individual feels empowered to say no when they are uncomfortable |
| * **rotating teams/pairs**   + rotate duties so everyone gets a chance to work with everyone (+1   + If the crew splits up, the leader should join different crew members throughout the season. |
| * keeping all information the field crew needs in one google sheet or other shared document |
| * **PATIENCE.** A crew member doing something "wrong" is a teachable moment to explain methodological nuances etc., NOT a time to get upset or frustrated. General behavioral/personality patterns should be saved for after field season; e.g., if a crew member is sloppy with details but loves getting their hands dirty, make them the sampler and have someone else record the data (e.g.). But no one is served by a field lead saying "you're bad at details," especially while in the field, and especially in front of other crew members. Patterns/issues that are pressing enough to address in the field should be done in private (no one feels they have time in the field for private conversations but if it needs to be done, it needs to be done right; doing it wrong can potentially make things much worse). * **DO NOT HOOK UP WITH OR FLIRT WITH A CREW MEMBER.** If necessary, talk about it before the campaign begins to address the necessary power dynamic and how it would affect other crew members (preferential treatment makes for bad vibes in the camp). Even if you flirted in the office, shut it down while you're out. You can pick it up in the off-season. Crew members hooking up or flirting with each other can be fine if they are mature about it and don't let it affect their work. |
| * Be very respectful of your crew's time and effort |
| * **Foster a collaborative, non-competitive working environment (+2**   + Encourage a supportive environment where crew members aren't afraid to honestly discuss challenges, mistakes, etc.   + Make sure each crew member understands they are responsible for the safety of other crew members.   + Establish a crew culture where inclusivity is prioritized (+1     - Be sensitive to cultural norms in interactions   + accommodate different paces of working/learning (+1   + make all crew feel respected and necessary.   + Foster a sense of community by doing wholesome, non-research activities together |
| * **Give your staff time to learn how to perform the tasks.** |
| * + jumping in to help when field crew members need a break or assistance   + Allow crew to build experience in desired areas (e.g., teach an undergrad to trailer a boat); this builds pride and positive relationships while also developing skills useful to the campaign. |
| * **providing positive critique and feedback on work, as well as any areas for improvement (+**1   + approach unmet expectations constructively * **Keep a positive attitude (or fake a positive attitude, if necessary) to keep group morale high** (+1 |
| * **treats!!!** (+2   + do some fun things for the crew in addition to working hard - surprise them with a snack or drink they like in the field (I used La Croix and gluten free baked goods) during hitches, go out to dinner, etc.   + Taking time outside of the workday to celebrate milestones as a group   + Have candy or some sort of quick mood-boosting thing on hand   + celebrating small successes together with extra beer or an evening at a lake |
| * **Establish a safe and accessible issue-reporting system (+2**   + open-door policy for grievances (+1   + can include in safety plan some sort of code of conduct with clear instructions on how and to whom to raise concerns. * **be attentive to interpersonal and group dynamics, and intervene discreetly if you recognize problems or worrisome interactions** (+4   + buffering negative interactions   + keep frustrated feelings away from team members who have less power   + take responsibility as the crew leader for resolving conflict, preventing negative behavior, etc., even if you feel like the group is more a collection of peers than a supervisor and subordinates. It's important to have someone that is responsible for maintaining group norms (+1   + Mediate conflict resolution if necessary (+3     - have individuals talk out potential issues (yelling doesn't solve anything)   + observing crew members and pairing those who work together well (+1     - be aware of personality conflicts and limit time together for conflicting individuals (+1     - break up/rotate cliques |
| * **safety operating procedures**   + bringing relevant information (permits, science communication information, etc.) into the field each day   + Keeping people aware of all work happening   + Emphasize that safety will always be more important than data   + Emphasize that if one person does not feel safe then the crew will change plans   + Include interpersonal rules with safety rules |
| * Make sure they're eating and drinking |
| * Take time to explain the study fully and answer any questions anyone may have. |
| * **share responsibilities, particularly at camp (ex. cooking, prep, etc.)** |
| * Mediate communications between supervisors and field crew |
| * **create an environment where field crew members can feel comfortable bringing problems, questions, and concerns to the leader as they occur** (+4   + answer questions patiently   + provide learning opportunities to those that want them * **ensuring field crew members always go out in pairs or groups (+**1 |
| * **Clear allocation of work and non-work roles (+1** |
| * **Involve everyone in the group in decision making regarding scheduling and workload when reasonable (+3**   + get input from team members on meals/snacks   + ask them for their input and ideas instead of being the all-powerful boss   + people are more likely to be actively engaged if they feel like their opinions matter (+1   + Provide the opportunity to ask questions and provide feedback, maybe they have additional ideas to make tasks more efficient and safe   + make sure everyone is included in decisions if things don't go as planned |
| * **Facilitates communication/bonding among members (+2**   + Host team-building dinners and activities |
| * Introduce crew to local contacts in case of emergencies to build support network, provide them with pepper spray or other defensive gear |

## After the field season

**After the field season**, are there any actions a successful field crew leader takes?

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| * **None** (+1) * **Debrief team-members**. (+7)   + this doesn't need to occur immediately, but over the next few months. Include academic and interpersonal 'lessons' learned.   + Debrief, if only with yourself, any incidents that could have become serious situations, and what you can do to prevent them in the future.   + I like to debrief with whoever I've worked with and brainstorm 'lessons learned' on white board that I then photograph and keep the notes for planning the next season. * **Check equipment before storage** (+2)   + involve crew w clean up and tying up loose ends * **PROOFREAD DATA IMMEDIATELY** (+1) * **Serve as reference** (+12)   + I try to write down what I'd include in a letter (with specific examples) right after the field season while it's fresh in my mind, because letter of rec requests may come a year or more later. |
| * **Credit work** (+3)   + Make sure to acknowledge or thank field crew in all presentations, publications, etc. I like to keep crew members updated on the project and the results of the data they helped collect (and offer co-authorship if appropriate, though usually we discuss that before the field season) (+2) * **Express gratitude** (+14)   + I've found small thank you gifts for their hard work really mean a lot. Be open about how you appreciated their work/dedication/effort etc. (+1)   + I have mostly led small (2-4 person) crews and usually give crew members a small thank-you gift (like a book, beer if I know they drink it, etc.)   + Give positive feedback (+1) * **Follow up** (+12)   + Share summary of season (+1)   + Touching base with past technicians every once in a while, (+2   + Share updates on publications (+1)   + in some situations, it is important to communicate the outcomes from the field season to the crew   + checking back to make sure each crew member received the skills and experience they were looking for * **Celebrate with crew** (+7)   + Sometimes a group camping or float trip.   + Set aside budget for end-of-season dinner or party (if feasible, pay for first round of drinks out of pocket if institution disallows alcohol purchases). Thank the crew for all their hard work, including acknowledgment that it's not always fun or easy but it's important and interesting work. Compliment their strengths. If necessary, post-season is the time to address frustrations and behavioral patterns observed in the field.   + Host (as appropriate) celebration of everyone's hard work   + Take the team out for ice cream, have a BBQ, or go out for dinner (something social to celebrate the accomplishments). * **Gather feedback** (+21)   + Exit survey/interview (+5)     - If possible, anonymous follow-up surveys or evaluations to make sure that any issues or concerns are brought to their attention without fear of penalization (+2)   + Review lessons learned; exit strategies with crew members and be open to taking criticism and suggestions. If there were any issues, review what should and could have been done to avoid. (+14)   + Review / update the safety plan if needed (+5)     - revisit field safety plan, communications plan, and community agreement and take good notes about what worked/didn't. Identify any areas where training is needed. * **Provide feedback** (+3)   + offer opportunity for performance assessment/exit interview   + give constructive criticism that tells crew their strengths and areas to improve on * **Support further career efforts** (+6)   + See projects through with students   + Forward professional opportunities and jobs you see to them if they're interested. |
| * This is more project dependent and a question of how long-term the study is. For long-term studies or multi season studies certainly review and then aggravation on meta-data regarding equipment and field crew can help |
| * Making sure everyone has been properly paid |
| * **Share your data**   + sharing notes in central repository |
| * our field seasons never end, but good to have a mini symposium where everyone presents their first data analysis and laughs about the ups and downs. |
| * Summarize work done (e.g., samples taken, plots surveyed) to assist future planning. |
| * **Build relationships** |
| * + Follow up with all relevant stakeholders to ease future interpersonal interactions (+1) |
| * consult with other field leaders for their experiences * make sure results are communicated |

## Volunteers

How, if all, do you change your strategy for leading volunteers vs undergrad/grad students gaining experience vs paid assistants?

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| * **I don't / I don’t work with volunteers** (+10) * **I don’t use volunteers intentionally due to ethical concerns** (+10   + I don't use unpaid student labor. Doing so is exploitative and contributes to patterns of exclusion--see Jensen et al 2021 in BioScience. Of course, grad students usually aren't in charge of these decisions and don't have the funding to provide stipends. (I get around this by applying to lots of small grants to support undergrad research projects, and with creative use of some "professional development" funds.) Even when we can't make sure everyone is paid a living wage, we need to advocate for ethical pay practices when we can.   + this is a known barrier to EDI in STEM fields. * **Said they used different strategies, but didn’t specify how** (+2 * **I use the same strategy for everyone** (+5   + I think that even though the experience is different, you have to assume that everyone needs the same level of comprehensive training and support structures. (+2   + all members deserve the same level of information, respect, and learning opportunities   + all team members should feel free to ask questions and contribute to planning. |
| * **Simpler instructions for volunteers**   + Paid assistants receive more advanced training and I expect them to (after some time working with me) to help facilitate safety of volunteers * **Prioritize volunteers having fun/a good experience** (+20   + I try to make days fun and easy-going with volunteers (i.e., not expecting them to hustle in poor conditions for extra-long days) and I feed them (+1   + Volunteers should be shown as good a time as possible within the parameters of the work, because they're not getting anything else out of it (imagine volunteering for something that drains your soul).   + The less someone is getting paid, the more I ensure they are enjoying themselves and getting type of experience they want     - I usually make more of an effort beforehand to make the task more accessible, engaging, and more appropriate given that kind of commitment   + More breaks/snacks for volunteers * **I would allow/expect non-volunteers to work more independently**. (+7   + Paid assistants have more expectations to operate efficiently and effectively. |
| * + Students and paid assistants are given the chance to develop their own safety plan, which I can review. Volunteers are not given this opportunity due to liability issues.   + paid assistants are required to assume responsibility for their own safety and that of others (i.e., they know the safety SOP by heart and are a backup if anything happens to the field crew leader, whereas volunteers rely on the field crew leader)   + I expect more autonomy from students and let them make more choices but also mistakes. (+1   + I treat all crewmembers (undergrad, grad, paid) as though I was training them to do my job. If they're good and like the work, by the middle of the field season they can easily take over many of my tasks on an equal basis, which helps me out   + Volunteer schedules are more set, student schedules are more flexible   + Often the technicians we pay are getting paid more than I am as a graduate student, so I make sure they are taking initiative to get tasks done and care about the data they collect.   + include them in more in-depth conversations about research methods and decisions, introduce them to more complicated techniques, etc.   + More diligent at providing leadership roles to graduate students. Those opportunities may be offered to paid assistants; however, research and graduate student learning takes precedence.   + Paid assistants will be expected to be or become independent and reliably work but I am always open to helping an assistant gain new skills or build a small project. |
| * **I have lower expectations for volunteers** (+4   + Paid assistants get less slack about being timely and doing tasks; volunteers still need to do a good job but aren't expected to bear the brunt of the work   + I expect less of volunteers. I express more gratitude for any small amount of help a volunteer provides, while I expect students and paid assistants to work harder to be proficient and productive. (+2   + tend to grant volunteers fewer of the out-of-the field tasks (so they could just go and have fun during time off)   + I cannot expect the same level of data ownership and hours put in from a volunteer   + With volunteers (especially undergrads) I typically give more breaks, slow down a little, and teach more as we go. * **I tailor the experience more explicitly for volunteers/undergrads**   + volunteers/undergrads focus is on learning and building basic field skills. kind, careful, and slow guidance is important to maintain moral and ensure quality skills are being established. (+2   + With volunteers I try to assess their interest in being there in the first place, their level of experience, what they hope to gain from volunteering, and establish expectations. I do less of that with students and paid assistants. * **I give more supervision for volunteers** (+1   + Volunteers should not be left alone in field (+1 |
| * **I only place paid employees in positions of authority**   + Volunteer workers and undergraduate workers are only given tasks that are embedded within the work of paid workers to maximize their chances to gain skills from experienced professionals   + likely not giving them anything that the project would depend upon if correct/incorrectly conducted * **I give more instruction to volunteers** * **I give abridged instruction/training to volunteers**   + Usually, I have less lead time for volunteers and seasonal assistants to get to know them ahead of time. I always talk to them one on one at the start and tell them I want to hear from them about how things are going, including interpersonal interactions with the rest of the team, and they can feel comfortable coming to me. I also ask grad students to do the same to act as a tiered system of management. * **Experience level is generally far more important than whether someone is a volunteer, a student, or a paid assistant in terms of how much training I need to give them and how much work they expected to do independently. (+4**   + I'll adjust based on their experience and comfort level performing tasks. For those coming in with more experience or are quick learners and feel comfortable doing tasks either by themselves or helping to lead tasks, then I will usually give them more opportunities to take additional responsibilities. But usually after about a month or by the 2nd or 3rd time in the field doing the same tasks, I will generally expect most the staff to be comfortable. If they are not, then I will work with them more closely to bring them up to that level.   + I would tailor expectations of independence and responsibility to experience level regardless of pay level, although clearly paid assistants often have more experience. But I would also assess experience under our conditions, rather than relying on self-reporting of previous jobs and experiences. * **I am more flexible with volunteers (+3**   + Volunteers I use more of a body to assist with wherever we can use them   + volunteers get more flexibility in their time commitment and job duties according to their interests (my way of paying them without money) |
| * **I offer volunteers other forms of support since they aren’t compensated financially**   + Offer them more opportunities to learn   + Perhaps for volunteers, I might give them the opportunity for more hands-on work (versus scribing, for instance) since they are not compensated for their time.   + For volunteers I keep the trips short and take extra care to provide good food and housing where appropriate and do any onerous work in the background if possible. (+2   + When the job is not fully compensated monetarily (i.e., maybe some money but not a fair wage and the balance of compensation is experience of some sort) I think it is important to not forgo the non-monetary part of the compensation, this usually equates to added time for teaching or more slowly conduction sampling in order to let the people practice, discuss the process/procedure and maybe reflect on the day's work in greater detail (vs. the essentials or safety, challenges, preparedness).   + More diligent at providing learning opportunities to volunteers and graduate students. (+1   + volunteers get more support resources for finding paid work or professional development (my way of paying them without money)     - I do my best to offer professional development resources and support with the specific experience they want. |
| * Depends on the project |
| * **Emphasis on safety would be important for all groups**. (+3   + In terms of safety, everyone is the same, with some practical considerations for undergrads given different laws about chemical exposure, etc.   + I assume that I am responsible for making sure everyone knows how to stay safe/healthy/warm without making assumptions about experience and knowledge of safety. I have also made the mistake of being a new person leading a group of more-experienced undergrads and assuming that they knew how to stay warm when they did not actually have the experience to know how quickly weather conditions can change, so now, even if I am new to a group of people who I consider to have more local knowledge than me, but who are still novices, I still consider it my responsibility to consider what could go wrong and require all to wear appropriate gear for this. |
| * **It depends more on the length of time someone is participating in field work v. whether they are volunteers or paid.**    + For long-term (multi-week) volunteers, ideally the strategies are the same. For short-term (a few days) volunteers, usually I just focus on the physical safety component and make sure we conduct a safety briefing on the first day - I have not done a briefing on interpersonal safety or check-in meetings. Maybe I should consider it re: interpersonal safety/harassment expectations! |
| * With volunteers it is more about engaging with the public as a form of education and outreach. |
| * Make sure everything with volunteers is in writing, some can be verbal if paid * **I am more hands on with undergraduates (+1**   + Greater emphasis on check-ins about how they are doing, who to talk to in case of problem, people who are closer in the hierarchy.   + Undergraduates are often looking for more than a job when it comes to field work. They can require more guidance with regards to maintaining consistent professional interactions, work ethic. But they also react positively to learning experiences (learning to drive large truck, operate power tools, chop wood, cook, etc.). Can be rewarding if it goes well but also harder if it does not. It is very important that they understand going into the field season how challenging it might be and that we will working and living together. Driving each other a little nutty is normal but that their job is to work hard, learn a lot, and communicate their needs.   + discuss goals, interests at the beginning, be conscientious of the example you are setting in how you work and how you treat other people, check in with them regularly to give them lots of opportunities to discuss challenges or questions, I find sometimes they are not as comfortable speaking up without a prompt   + students gaining experience get tasks and expectations tailored to the sorts of experience they want. (+1   + I expect I'd have different expectations for data analysis vs. data collection for students vs. paid assistants. That is, I'd expect students to need to spend some time doing analyses, while paid crew might not. |
| * **I treat paid assistants (esp non-students) as professionals**   + acknowledge them as fellow professionals in their field, and facilitate their work by taking care of logistics, safety, and communication, etc.   + In my experience paid assistants appreciate a super clear delineation of work/non-work time so there is less guidance once they are "off" the clock. They are often happiest if assigned a task to lead/organize on their own. I think this helps them feel connected to the team in a professional, productive way. If you happen to get along during non-work time it is more of a cherry-on-top rather than integral part of the interaction.   + Grads: Greater emphasis on setting the tone for the field crew; leading by example; showing work-life balance in the field.   + I clearly communicate expectations, instructions, and plans, as would be expected with any job (i.e., make a plan and stick to it unless compelling reason to make changes - then changes should be discussed), sometimes putting instructions and expectations in writing helps ensure this information is clearly communicated, also provides a reference (for both sides) if expectations are not being met   + if the wage is fair for the job, then I don't think it is necessary to baby an assistant, field work is hard and uncomfortable sometimes and that's what they've signed up for. |
| * **I expect more knowledge, work ethic and initial competence from paid people (+1** |
| * + With paid volunteers, I provide training in the techniques before the season, so my expectations for their work ethic are higher.   + I would generally expect improvement across the season for all crew members if they were there more than a day, but especially paid assistants |
| * **I vary strategies explicitly by career stage - try to make individualized plans. (+1**   + Ultimately these roles are transactional, so find out what crew members need/want/expect, develop explicit plan to meet those needs. (+1     - E.g., an undergrad volunteer may be expecting "career currency" but it's important to understand individual goals so that the relevant sills/resume lines are acquired.   + the types of learning opportunities presented I differ based on the goals of the individual (I.e., do they want to gain new skills for their degree or focus on a particular topic)   + In general terms, students are there to learn and to work, whereas assistants are there to work (learning enough to execute tasks as necessary). Students should be assigned a mix of tasks they're familiar with and tasks they don't yet know how to do (strengthening existing skills and learning new ones). Assistants can be assigned tasks they already know, as they are hired to perform labor; all else being equal, the team doesn't need the loss of efficiency associated with teaching an assistant a new skill (although if it's something they're eager to learn, then personal and team morale will benefit from it). |
| * The only thing that might vary is making sure to be aware (and accepting) of varying education levels surrounding the field work topic. |
| * As a leader, be the first one up and the last one to bed. * Make sure to work for a PI that understands not paying people promotes a system that recruits people from privileged backgrounds and generally excludes those that can't afford to work for less than a living wage. |

# Reflection Questions

## Successful field season

Think about a field season you had that was successful. Without giving identifying details and in less than five sentences, what leadership traits and/or actions made it successful?

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| * **Clear communication** (+29)   + Frequent two-way communication. (+1)   + Developing good rapport with everyone (+1)   + Encouraging questions from the crew (+3)   + communicating more than I thought I needed to (+1)   + honest and frequent communication between team members about the safety conditions, research goals, and individual comfort levels (+2)   + Listening / open to feedback (+7)     - I asked for feedback in surveys.     - The most important difference I can make is listening to the people I'm working with and making changes as they prefer. The more comfortable they are in how they spend their day, the better the work will go, so I try to identify work and lifestyles early so I can plan accordingly. * **Team buy-in** (+2)   + Team members regarded each other as peers with common goals   + Motivated field crew (+2   + Openness and generosity with participants (+1)   + Shared division of labor   + allowing crew members to feel a part of decision-making (+3)     - it felt like decisions were made together, not unilaterally.   + The whole crew took ownership of the project and worked together to problem solve rather than relying on one specific person to fix everything (+1 * **Good team morale / chemistry / community building** (+9)   + Mutual trust and respect (+4)     - deeply trusted all team members partly due to prior field working experience with most of them     - Spending time upfront figuring out which people work well together   + regular rewards for hard work (usually ice cream haha)   + Everyone was working their asses off in tough conditions, but we knew we could take breaks or ask for schedule changes for any reason and no one would be angry. (+1)   + The leader made time for both time to us and fun bonding activities. (+4)   + Team camaraderie was incredible. A lot of luck in terms of meshing personality types. However, a productive, team-oriented, and efficiency-minded demeanor is a decision that each member must continue to prioritize in every moment of every day. Sometimes something happens that you can only laugh or cry about—effective team members must be able to laugh. Everyone felt a sense of personal investment/” buy-in.” Field leads were open to input and easily changed plans when faced with roadblocks or when crew members suggested efficiency tweaks to the plan. Leads understood well that “if you can do something about it, it’s a problem; if you can’t do something about it, it’s a parameter.” * **Positive feedback / appreciation** (+3   + consistent encouragement   + I also prioritize expressing appreciation and recognizing people’s contributions, which I think helps keep people positive and motivated, even under sometimes challenging physical conditions. (+1   + making sure to express appreciation for work done well, and for effort even when fieldwork/data collection don’t go as planned |
| * **Clear/reasonable goals and expectations** (+8   + including everyone in goal setting   + setting detailed priorities * **Fining the right people / hiring people who were a good fit** (+5   + Some prior experience by technicians in remote field situations, even just casual experiences. * **Luck** (+2   + I feel like I "got lucky" with people that were hard-working, respectful, professional. |
| * **Adequate rest / time off** (+1 |
| * **Patience** (+5   + My best field seasons involved leaders who were understanding of others who didn't have previous experience and took the time to teach them (particularly under stressful field conditions) (+1   + Forgiving/understanding mistakes (+2     - Supporting subordinates when they need it (i.e., after a mistake)   + Having grace for people when they needed it. * **Having monthly, weekly, and daily safety plans which are continuously adjusted as needed. (+2**   + being prepared for any emergency situation with a first aid kit   + A list of when people were out (taking boats to remote locations) and when they expected to return.   + Regular contact with logistics coordinator, discussing any concerns clearly.   + Incorporating lessons learned from previous three field seasons helped dial in logistics and pre-emptively respond to safety challenges. * **Periodic check ins with team members.**   + Individual attention for each crew member to ensure everyone was receiving the experiences and training they wanted, adjusting work schedules/plans to accommodate crew member needs as issues arose   + Recognizing and utilizing individuals’ talents   + Identifying any watch out situations |
| * **Flexibility** (+11   + Be willing to be flexible with yourself and your crew members and field plans.   + being flexible to adjustments based on group's energy   + ability to problem solve when needed   + Resilience and resourcefulness when the unexpected happens * **Organization** (+9   + Organized gear/logistics (+1   + Establish clear schedule of tasks with personnel assigned. (+3   + I emailed the students the day before with weather and reminders for the field day.   + I kept a google sheet and had students sign up there and kept important information there.   + I spent enough time in the lead up gradually preparing rather than rushing to prepare   + Pre-planning (and being willing to stay up after everyone else went to bed) helped make sure our equipment was present and in order, which prevented too many unexpected hang-ups (morale killers) and illustrated to the crew that I was fully in it, reliable, and on top of making their experience go as smooth as possible. (+1   + Well prepared leaders limit frustration of team (+1   + Well-organized long days with ample time off * **Strong leadership** (   + I had confidence in my abilities to lead the crew   + Lead by example (+4     - Never ask my crew to do anything that I'm not willing to do personally   + clear explanation of WHY we were doing everything we did (+1   + clear and decisive delegation and decision making (+3     - invite input from the group regarding scheduling and workload while being decisive in making the final call   + My best field seasons involved leaders who 1) had worked at least three seasons of field work previously, 2) treated others with respect and kindness, 3) possessed some trait that brought a sense of lightness and even fun when field challenges arose (+2   + The leads identified metrics of success, described how we were going to meet them, and how the data we were collecting fit into to bigger picture of conservation/purpose of the study   + they position themselves just slightly above crew members in the crew hierarchy - they know when to lead and they know when to be 'one of the crew' so that everyone feels comfortable and respected. (+1   + gave crew members enough space to learn and grow in a safe environment |
| * **facilitating independence / empowering team**    + I was able to play a more "hands off" role while at the same time checking in casually but regularly   + Student researchers were able to take ownership of their projects from start to finish. |
| * **Making the experience an enjoyable one (+5**   + creating a strong atmosphere of collaboration and teamwork   + empathy, compassion (+1   + Positivity / positive attitude (+2   + keep a good sense of humor even when a particular task sucks (ex. vegetation surveys in regenerating clearcuts!)   + building strong relationships within the crew (+1   + I think the key here was recognizing that everyone was going to feel tired and frustrated at points and allowing that to happen but keeping lighthearted conversation rolling or figuring out how to make things into ‘games. |
| * **Clear hierarchy with defined roles and tasks, with the ability to switch roles when needed.** (+7   + when possible, divide up tasks so that each person can work on what they find most rewarding or feel they are most competent in   + leadership was rotated for different tasks giving all people agency over the field day/activity at some point in time   + understanding where everyone's at and tailoring the field work to people's skills/ work ethic/ ability to withstand the elements, etc. |
| * **We completed the work that we targeted to complete at the start of the season** (barring any uncontrolled events: weather, health, etc.). (+1   + No injuries. The work was done well. |
| * + time critical elements kept on schedule. |
| * Prioritization of health/safety |
| * Proper safety training |
| * **I would say all my field seasons have been successful but have also been hard in different ways. I think having crew members who know how, or learn how, to support you and one another is the greatest form of success.** |
| * Feeling supported, having access to tools/equipment that is needed (e.g., 4-wheel drive vehicles vs 2-wheel drive) |

## Challenging field season

Think about a challenging field experience. Without giving identifying details and in less than five sentences, what made the situation difficult?

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| * **Couples**   + "romantic" relationships developing. This is always tough, some folks can do this without spoiling things for others, other folks make everyone's life miserable. I try to discourage "exclusive relationships" saying that if it is real, it will keep & if it isn't real, get on with the actual job. |
| * Technicians unwilling to compromise for labor or housing, increasing their financial burden by their choice. |
| * **Decisions made outside of field** (+2)   + Decisions were being made by people off-island who did not have boots on the ground. They put pressure on team leads to do nightly banding efforts despite safety concerns. This was troubling as it was a remote and rugged environment where an injury made evacuation quite difficult (e.g., hard to climb a cliff with an injured leg).   + Leaders or bosses having remote control when they don’t even experience what is going on in the field with the weather or other safety concerns telling you what to do. |
| * **inconsistent decisions/standards** (+1) |
| * **limited resources / support** (+1)   + lack of logistic or scientific support for students     - Makes me constantly worry -- if I get injured during fieldwork, do I get workman's comp? What about during the one month I don't get paid by the department? If I didn't get emergency contact info for my students, what would I have done if there was a problem? I want some institutional things in place, like how you have to do lab safety training every year. I participated in a meeting with our chair and a safety compliance officer, and they were just like "well we've always let the field ecologists do their own thing"  There needs to be support structures in place BEFORE there's some tragedy (either at my school or another) -- especially before a URM gets into some horrible incident in the field   + insufficient housing/travel support     - living space too small for size of team     - Not having the right equipment for the field conditions (e.g., vehicle w/o 4wd, poorly equipped tires).   + very low pay   + Having a lot of tasks to complete during the summer and not having enough staff to help. * **low moral** (+2)   + not a sense of being a team   + Disrespect and negative/not constructive criticism was allowed to trickle-down from higher management to field crew; unprofessional and terrible for morale, especially for those experiencing their first field season. * **Bad/poor communication** (+16)   + time zone differences make communicating in real time with project leadership difficult.   + conflicting communication styles   + One member did not feel comfortable sharing concerns (+1   + me not communicating with my co-lead on things like scheduling, responsibilities, etc.   + Lack of clear instructions     - A supervisor gave me vague instructions for a task to do on my own, then got very angry when I did the task 'incorrectly' and didn't acknowledge any responsibility for unclear communication on their part. It was a great lesson that as a leader, you can't take responsibility (entirely or partially) for their work that is 'correct', but then not take any responsibility for their work that 'incorrect'.   + Crew members not listening to leadership (+1     - can create dangerous situations when unexpected weather occurs. * **Inexperience / inadequate training**    + having a field leader who was far less experienced than field technicians.   + technician unprepared for environment   + Lack of method comprehension   + None of us present (4 individuals) had any prior experience negotiating the particular risk at hand   + Trying to use equipment (ATV) that I wasn't trained for.   + being distracted by my own lack of confidence * **Poor planning** (+4)   + Lack of overall goals/plan an expectation that people will just figure it out.   + Lack of preparedness (+3)     - specifically, have had run-ins with running out of water/dehydration concerns on hot days, I now include a water filter as part of the safety kit   + Disorganization (+1)   + Not communicating adequately with project partners / property owners prior to data collection. Completely my fault! |
| * **Bad weather** (+5)   + For my field sites, staying warm when on the water in weather that changes quickly (e.g., windy day in the summer) is difficult. Often, when we are at the different sites, we encounter unexpected new changes in the weather (e.g., the temperature will be 10 degrees below the predicted temp). We do our best to adapt. This is a new region for me to work in. * **Inadequate rest time** (+9)   + data was prioritized over health/well-being/fun (+1)   + poor decision making due to tiredness and mental fatigue.   + if possible, it is best that the crew leader is not rooming with crew members especially if the crew leader has a different days off than the crew member. The temptation my crew leader succumbed to was to ask for work during my down time. I had nowhere to escape. It is important to understand that people need their off time. * **Poor interpersonal relationships** (+8)   + crew members who didn't mesh well with others (+1)     - One crew member was not well-liked by the others, which made it difficult to pair people up each day. Eventually, that "unlikeable" crew member felt so pressured and judged (they were slower than others at most tasks), that they made up data instead of taking the time to collect it properly.   + Not all folks on a field crew will be the best of friends one of the most fun and simultaneously most frustrating experiences was crew quarters shred by 5 folks from 5 continents. We had no cultural background in common customs were very different. The one thing we shared was our passion for biology... and we exchanged some lovely recipes. But it was also explosive, and we argued voraciously.   + A conflict between personalities led to issues in data collection as communication broke down. We needed to check on the crew more, but logistics were difficult.   + Isolated conditions with the same crew led to ultimately feeling isolated an inability to communicate issues I had about relationships with crew members and a lead * **Unclear/unrealistic expectations** (+4)   + One time, despite clear communication about certain expectations, two crew members tried to argue against those expectations. These were expectations about norms of behavior--not workload or safety-related. That was really difficult and led to long-term resentments.   + the worst time is when a lead is actively angry about unmet expectations when those expectations were not communicated in advance.   + lead assumed knowledge they have is already in the head of their technicians (+1) |
| * **Negative attitudes** (+2)   + Hostility   + Sarcasm   + Exclusionary behavior   + Constant criticism   + People taking their feelings out on others   + One pouty team member can ruin a whole team/trip. I'm not sure if this person hates me as a lead (or as a person), hates field work, or is just generally always grumpy. But unwillingness to engage in conversation, snippy/impatient demeanor, and unwillingness to take direction did a few things: 1) work was less efficient because he wouldn't take direction; 2) work was slower because an unhappy team is a slow team; 3) everyone was constantly uncomfortable by virtue of his presence. |
| * + No one felt appreciated. There was a lot of triangulation (person A talking about their issues with B to C, rather than bringing them up with B directly), most damagingly a supervisor speaking critically of one subordinate to others. This was unprofessional, put us all in a tough position, and undercut trust. Misery was normalized, rather than being seen as a serious problem needing immediate changes and mental health support. |
| * **Having unexpected issues with equipment (malfunctions/animals chewing through wires/etc.).** (+1) * Incorrectly collecting data/samples resulting in a loss of data |
| * **Inadequate leadership (+1**   + lack of decisiveness and delegation   + Letting personality conflicts fester without addressing early.   + Failing to take a leader role - early career, wanted to feel like part of the team and this failed to lead it. This led to indecision, passive aggressive comments instead of clear statement of goals and expectations.   + No one clear leader     - team of 3 technicians with no manager (i.e., no one assigned lead, all 3 on same level) completing time sensitive sampling program at remote (heli access) site, one team member who didn't want to be there would not contribute but also would not get out of the way of the other two technicians, putting everyone at risk in the field and slowing down the sampling by refusing to work. I think either a manager should have been part of the team or one of the team members put in charge by manager before team went into the field so that leadership was understood beforehand.   + I was leading a crew for the first time, and we had huge goals to accomplish, and I was prioritizing accomplishing the goals over my crew's comfort, and potentially their safety. Towards the end of the season, they were pretty miserable, but we had a lot of work to do, and I stopped checking in with them and instead just tried to stay positive but push us to get the work done. Part of the problem is that they didn't understand that the field job required a lot of hiking, long days, and a lot of driving, which led them to have a bad attitude about fieldwork. The other part of the problem is that I was so obviously stressed out that I wasn't showing how fieldwork can be fun and rewarding - instead I was contributing to the negative environment. Some of the feedback I got at the end of the season was that I shouldn't have stopped out weekly or biweekly check ins, and that I should have stopped and talked about what we accomplished and celebrate our accomplishments instead of already striving for the next goal, because all in all, we accomplished a lot.   + The most difficult problems I've run into were due to lack of attention to detail and supervision by me. When I requested a crew member to navigate while I worked on something else, we sometimes went to the wrong place. When I asked them to fill something in without verifying the first several, we got incorrectly filled forms. The lesson is to give crew jobs to do but look over their shoulder from time to time to check it before there's a problem. It's better to correct something as it goes wrong, than to do it over again afterward. This lack of attention also leads to frustration and irritation over the course of the day, which means less smooth work overall. |
| * I was stuck taking the data rather than helping with the hands-on field collection for the whole weeklong trip. |
| * **‘dictator’/bad leadership**   + leader was not flexible and did not take input from any assistants (+2)   + decisions only ever came from one single person (+2)   + supervisors letting personal troubles strongly impact their leadership abilities but refusing to admit it/compensate for it   + Supervisors being unsupportive of subordinates and yelling at them when things go wrong   + unable to communicate with superiors about concerns   + A leader who did not take crew concerns seriously (let alone actively seek them out), dismissed and disparaged complaints, took safety shortcuts leading to injuries   + having a hostile interaction with a colleague, sharing it with a supervisor, and later taking the blame so we could continue to work with the person because their skillset was valued more than mine |
| * **We made some poor hiring decisions.**   + A team member was problematic from the beginning and should never have been hired for this position as they lacked the experience and maturity to be part of a team working remotely and independently - they wanted a free trip to the arctic and were not prepared for the hard work, conditions, and long shifts (28 days in camp, no rest days).   + unmotivated crew (+1)     - Having to do all the work without people taking initiative     - People who thought being connected to a PI made it ok for them to leave early and not do their fair share, putting work on graduate students and undergraduate volunteers.   + techs who do a sloppy job and don’t take feedback well   + An employee who was unwilling to participate   + disrespect for equipment   + Field workers / collaborators who were not able to cope with difficult physical or cultural environment (different culture, bad weather, bad food, heat, fatigue) and not being about to resolve those stresses |
| * **Problems with drinking / no clear way to address drinking problems**   + One of my field techs was the only one of us who could comfortably drive a manual vehicle, and also happened to have a drinking problem. He would not listen to me when I asked, then demanded, that he not drink before driving into the field once every ~2 weeks. This turned into a very toxic, stressful dynamic that I did not handle very effectively. I tried many different tones and tactics to get him to comply, none of which really worked - and I couldn't afford to fire him and find someone else, because the training period had already ended, and I couldn't spare the time on a tight field schedule to find someone new. I should have called on my PI earlier than I did to help me address the situation   + Once, a paid field assistant was clearly drinking on the job. I was so freaked out that I didn't do anything, which was, in hindsight, a serious failure that put myself and the rest of the crew in danger. I allowed data collection to progress, despite the need to drive to a remote site and operate heavy machinery (chain saws), although I did call the day early. I still don't know exactly what I should have done, considering that I didn't know this person well enough to know whether they could be a danger to the group if provoked while drinking, but I probably should have called the day earlier than I did. |
| * **Negative interpersonal interactions with stakeholders in the field** (+4)   + (Common in urban environments).   + members of the public can be confrontational and threatening towards students who don't "look like researchers" and it can sometimes be better to dress like the public expects to avoid dangerous situations   + Working with landowners or collaborators can sometimes be difficult (being able to access the field or having collaborators complete tasks in timely manner). |
| * **Large teams** **have their own difficulties** (+1)   + In my experience very large crews / > 10 participants makes things challenging. Need a clear hierarchy for decision-making. Input can be solicited in a democratic way, but too many cooks can't make decisions efficiently. Losing sight of practical safety considerations (i.e., hydration) can lead to disaster.   + Too large a team with lack of communication and some poor attitudes / bad fit with current ability that caused frustration across the team |
| * **Unexpected/unavoidable danger in the field**    + natural hazards   + rough terrain |
| * **generally poor science practices** |
| * Covid made it so that we had to drive and live separately, which made communication and training very difficult. Relationships were not fostered as quickly so the team dynamic was worse off, and the data suffered because of it. |
| * **Sexual harassment** (+2) * **sexism (specifically condescending attitudes toward women in the field**) (+1)   + Dealing with sexism is difficult, especially when other agency partners don't take your credentials seriously. This can make it hard for technicians to treat you with respect. |
| * Conflicting ideas about what should be done in a certain situation. |

## General advice

In general, what advice would you give to incoming graduate students leading a field season for the first time?

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| * **Get to know your assistants ahead of time. Ideally in a short field-type setting.** (+1   + Even a couple of hours in the field can often tell you who is going to be useful & who will fold up |
| * **Assume things will go wrong / be flexible when things go wrong** (+15   + There is no such thing as a perfect field season: Something will go wrong. Understand what can shift in your study and what cannot; prepare for alternatives if you can (+1   + "If you can do something about it, it's a problem. If you can't do something about it, it's a parameter." Be ready to adjust priorities and plans on the fly.   + Know that eventually the truck will get stuck or blow a tire, it’s just part of field work, make sure you have what you need to deal with it.   + prepare for physical and emotional injury for yourself or others even though it is rare - you'll be in a better situation to respond quickly and appropriately * **Take tons of pictures!** |
| * **Be patient with people but be firm about safety**. (+4   + Be careful to discern when a mistake is a learning experience versus when it is serious enough to require correction. (+1   + Take more precautions than you think are necessary. * **Nothing is more important than the safety of your crew** (+1z   + Emphasize that safety and well-being is more important than data. Every time.   + comfort and safety blur into each other, but if you crew is uncomfortable it might become unsafe and remember that safety is more important than getting the work done.   + data is less important than a good field team environment   + Your data is not worth the suffering of another person - be kind and generous and treat your field crew how you wish you were treated as an undergraduate. This is an opportunity to break the toxic cycle of academia and make science a place that is more inclusive and welcoming, use it! * **Create a safety plan and review with more experienced leaders.** (+3   + detail potential dangers/issues and how to avoid or deal with them, including not just natural issues (e.g., bears, poison ivy, ticks) but also people (e.g., poachers or illegal activity) (+2   + including information on bathrooming   + Use existing or encourage your PI to write standard templates for safety plan and interpersonal safety (non-discrimination, harassment, etc.)   + Get emergency contact information (put yours on it as well) and keep it in the glove compartment of the car   + Individualize safety plans * **Create contingency plans.** (+1   + even if they feel like common sense, in a stressful situation you will be glad you wrote all this details out (+1 |
| * keeping excitement levels high is critical * **make a checklist of field gear and personal supplies and have multiple people on the team responsible for ensuring everything is packed.** (+2   + ALWAYS triple check that you have everything. anything that can be easily lost or broken (rulers, pencils, calipers, etc.) should have multiple backups packed. This includes things like power tools. e.g., if you need an impact wrench, pack extra batteries and a hand wrench. |
| * + Pack boats/vehicles the night before (and double check in the morning)   + always have emergency medical and mechanical rescue tools on personnel and in vehicles. |
| * **Draft a communications plan (who has the radios and how to use them, what will you/they do if there's a problem, who to talk to and how to get in touch)** (+1   + Make sure you have good communication (phone, walkie-talkies, etc.)   + make sure you have a direct line of communication to a trusted mentor at all times in case something goes sideways, or a problem situation arises, between team members in the field.   + Make sure multiple people know where each person is in the field at all times.   + Set up a system to check in throughout the day in the field and keep to it   + Ideally don't have people alone out in the field. |
| * **Communicate well, early, and often.** (+8   + clearly communicate field plans, priority of tasks, the field environment including facilities (or lack thereof) and expectations (behavior, etc.). (+2     - This includes working hours, exactly what a typical day involves, and when breaks are expected. Do this all-in writing and verify your crew members have read it.   + Talk to your crew, make sure they know what you need and what your goals are, but also listen to them and make sure you know their needs and goals and wherever possible do your best to make things align   + always remember that you are responsible for communicating your expectations clearly. Keep in mind that every person brings their own history to a learning experience so what is clear to you may not be obvious to them.   + Before the season starts, make sure you know about communication style, health and safety issues, and their levels of field experience.   + You don't have to be friends with your team, but everyone should feel like they can come to you with their questions or concerns. * **Delegate (**+5   + Give everyone a specific role   + Get used to delegating tasks and giving clear, concise directions.   + The crew is there to work for you, let them do their share of the job   + Create systems and delegate responsibility to teammates within those systems (+1   + Don't burn yourself out trying to do everything if you realize you were too ambitious planning, ask for help! * **Ask others with experience for advice** (+4 |
| * + Ask your advisor for advice on what to do (+2     - ask lots of questions of your advisor/s and get a commitment from them as to whether they will join you in the field for any part of your work and how you will communicate with them when you need their input during the field season     - Make sure you can get real time feedback from your PI that will be constructive and respectful     - If it's a new project, work together with them to develop a game plan. If it's an established project, ask about the pitfalls and communicate with the previous grad who ran the project when possible.   + ask other graduate students with field leadership experience for advice; |
| * + Bring someone more experienced than you to bounce ideas off in the beginning. Then, when you know you will have fewer unknowns, bring those who are less experienced than you and share the joy of doing fieldwork with them. It will keep you motivated in your research, and studies show that undergrad research involvement keeps students motivated to pursue a STEM field.   + Don’t rely on your PI to give you enough information or advice   + If this is your first time doing a particular type of field data collection, ask an expert (your advisor, local collaborator, university faculty who teaches relevant course) to ideally join you in the field early on or walk you through it before you leave - particularly valuable for plant ID! (+1 |
| * **encourage your crew to always ask questions** (+1   + ask specific questions if crew members are not providing details * **Plan as much as you can ahead of time** (+12   + plan, make back-up plans, and back-ups to your back-up plans (+1   + Test your protocol and your equipment so that you have time to adapt it. (+3     - know how all your equipment works and how to problem solve technical glitches in the field (and when it's time to take your widget back to the lab for assessment).   + Plan a timeline from the beginning of the season (+1     - Don't make a tight schedule, include extra days in the planning in case there are delays. (+1   + know how to do the field work before you teach the crew or go in the field     - There’s nothing more frustrating than a crew leader who doesn’t really know what is going on or how to make decisions and just tell people what to do.     - Expect to do everything yourself, so that you're capable of stepping in when something is going wrong, no matter the situation.   + Be organized     - being superbly organized is a must so that you don't waste the crew's or your own time. * **Find reliable field help**. (+2   + Select your team carefully (+1     - Don’t hire your friends     - Interview prospective crew members multiple times   + request to be involved in the selection process, you're the one who has to work with these assistants/undergrads after all     - Hire your own crew members, don't let your advisor do it for you   + Get references from people you know who know prospective hires (+1     - preferably someone who has supervised a prospective hire in a field setting similar to the one anticipated for the graduate students work   + Find out about interpersonal skills, work ethic, practicality, in addition to intellect and field skills. (+1     - You can often quickly train people to collect data, but you can't always train them to be team players, to like remote sites, or to be practical when confronted with field challenges.     - Carefully select group members for respect and resilience.   + Post your positions early   + Pay as much as you possibly can to get the best applicants.   + Find someone with lots of interviewing experience to ask about good interview questions and how to determine what a good tech looks like. * **Lead by example (+1**   + You are the anchor for team culture; people who feel good make a team that works good. (+1)   + maintain your composure- the crew is looking to you for leadership and will feed off your energy. (+1)   + Guaranteed, you will make mistakes. That's ok. Learn from them, fix them, and move on. Field season (and your crew) can't wait for you while you feel bad about yourself. (+1)   + think about what you would want or appreciate as a crew member. Also remember that you and your crew are all humans with needs. Academia has a toxic culture of "you work until you get it done" even if your physical or mental health suffers, do your best to prioritize the health and safety of yourself and your crew over that one more bit of data.   + ensure you're putting in the work alongside the rest of your crew * **Think creatively about how to obtain useful data with minimal effort.**    + Access to sites takes a lot of effort, minimize travel when possible. |
| * **Be a strong leader**   + You are not just another tech. This is your show, lead but remain humble. Listen and observe.   + When you are responsible for other people, you have to take that seriously. This will probably mean watching what you say a bit more and making decisions about risk differently than you might for yourself.   + Address any concerns before they become problems, delaying is never a good plan. |
| * + Like it or not, being the lead means you're seen as the pro; if you don't know the answer, the best thing you can do is say, "I don't know, what do you think?" and workshop the answer from there.   + Establish authority but try to be approachable for all questions - to avoid later issues and errors.     - Don't be afraid to ask the awkward questions -- make it comfortable so your undergrads can tell you if they have to go to the bathroom. (+1   + Confidence is key. Even if you don't feel it, try your best to fake it until you can get out of your own head.   + You've got this! I doubted myself at every turn as a graduate student leading a crew, but when you show up with a confident but humble attitude, your crew will trust you and will want to help you succeed by helping the project succeed. |
| * **Complete a Wilderness First Responder training** (+1   + I'll also add that PIs and Departments should support such endeavors with financial support, given that the training is pricey |
| * **Learn who your staff is and their skills/limitations**.   + While some might say they are up for a task, they may really not be physically or mentally capable.   + be available, try and meet people where they are at while being professional and making decisions in the best interest of the group. |
| * **Let people know that you appreciate them.**    + Try to find ways to personally connect with each member of the crew, even if (and maybe especially) a crew member is a little difficult to get along with.   + make sure you celebrate accomplishments and acknowledge the work you and your crew are putting in   + Be positive with your feedback * **don't slack on making sure that protocols are carefully followed**    + have follow-up accuracy checks, refreshers, etc. if you see that data is coming in messy or inaccurate   + You only get one chance at this, so gently remind and refresh to make sure that everyone's data is clean.   + Keep an eye on methodological integrity when others are performing sampling tasks; teachable moments don't have to be or feel punitive (a little bit of backseat driving is ok if sample integrity is on the line; just make sure you teach them such that they do it right on their own next time, rather than having to continue to rely on you to be watching). |
| * **be transparent with your tech/crew**   + make the 'bigger picture' clear to your crew - why is the work important? Why should they care?   + Transparency and collaboration build trust and enhances training for field crew members. As problems arise, discuss them with your team rather than trying to figure them out on your own without telling anyone. Let crew members see your process of inquiry and participate in troubleshooting. (+2 |
| * go at it with a smile and a sense of humor. Mistakes will happen! (+1 |
| * **Set realistic and precise expectations and goals** (+5   + Know what you want out of your crew (attitudes and level of work) and demand that from them while also remaining empathetic about their own personal struggles.   + (Ask for advice about what is "realistic")     - ask your crew and yourself what they/you are hoping to accomplish.     - Mentoring-type contracts can be useful   + manage your own expectations / be flexible (+3     - don't plan more work than you can reasonably accomplish in a day. It's better to plan to do less than you think you can accomplish and get more done than try to cram in too much work and feel like you've failed by not finishing what you set out to do.     - allow for variability in the performance of your crew.   + I like to set a best case and worst case/minimum goal for what I will accomplish research wise.   + take it slow, particularly on the first few days     - Learning to lead/manage a crew is likely going to take up as much time as learning to do the rest of the study, so adjust expectations where needed     - Initially, having a crew is extra work, not less work. When you're leading, you need to be both training and checking the work that gets done, so it'll feel like it's quicker and simpler to do it yourself anyway. Spend lots of time on the 'training' phase and verify that they know exactly what they're doing. The crew won't start taking stuff of your plate until you've shown them everything you know, so give it plenty of time. Afterward, if any of your crew is ambitious, you'll have a colleague, not an employee, and you can work on an equal footing, which is very relaxing. If your crew doesn't want the responsibility, you should at least have a competent worker and you can only check their work every once in a while. Always give opportunities for more responsibility, and encourage them to do more, more independently.   + When it's good, it's good. When it's bad, it blows really really bad. Not everyone will be happy all the time. |
| * **Plan time and space to reassess your procedure’s part way through the season (+1**   + Structure time to reassess progress and relationships continually over the season both with yourself and the crew members * **Bring extras of everything you might need**   + bring extra sharpies and batteries   + Bring remote phone battery packs * stay dry |
| * **Be intentional about building an inclusive community** (+4   + meeting the crew to talk through a community agreement (what are the shared behaviors that we agree are/aren't ok) can go a long way.   + If you encourage a fieldwork culture where people are comfortable asking questions and aren't punished for making mistakes, where they know that you will listen to their concerns and have their well-being in mind, everyone will be happier, and your data will be of higher quality.   + Interview crew members for their specific concerns; ask what they need in order to be successful (i.e., autonomy? direct guidance? advice on supplies? work in a team? working alone?)   + hold regular check-ins with whole crew. (+2   + Have weekly check ins with each crew member individually. (+2   + Trust them and build trust with them, give them grace but be clear about your expectations. Treat them like team members, not your employees.   + support their long-term professional development.   + Be kind, supportive, and understanding to you technicians. (+3   + Listen to everyone and do not invoke your hierarchical position to get things done, unless it's absolutely necessary |
| * **Build in time for rest, days off and hygiene.** (+3   + Don't be so stressed you can't take a day off to enjoy a hike/beer/book/call home. The time off is necessary to make it through a long season and campaign.   + Provide opportunities for rest and socialization, thereby acknowledging that this project probably means more to you than it does to them. In other words, you might be motivated to push it to the limit, but this isn't their thesis/dissertation, and they're going to stay more productive and positive if their experience is enjoyable. (+1 * **Set boundaries early on** (+1   + Do your best to become friends with your field crew, but also make sure not to forget that you're 'in charge' of them, and responsible for their safety and their work.   + Make it clear you're the boss and not just a friend to complain to   + Making decisions for the group and delegating tasks can feel 'bossy' and uncomfortable at first, but if you're conscious of your tone and remember to give positive feedback you shouldn't have to worry.   + Make a mental note of where the professional/personal line is ahead of time and do not cross it. You can know someone well from fieldwork and shared quarters, have a pleasant and personable interaction, but not cross that line. I don't mean only for a romantic purpose or regarding harassment or any extreme case scenario like that, but also just how friendly to be with someone you are managing and whose respect you need to command at all times.   + Remember that the physical safety of your team can depend on your ability to take this seriously. Not everyone will respect your authority if you are 'friends.' I tell my students we are 'friendly' but not friends as an example when I am talking to them bout mentorship, which helps to clarify bounds for them on both sides of their leadership structure. |
| * **Eat well, no one is at their best if they are living off energy bars and coffee.** |
| * **Write everything down - precise methods, notes, daily records, etc. (+1** |
| * **Be receptive to feedback from crew members about how to improve workflow, procedures, teamwork, etc. (+1** |
| * **Get to know your study system well, including any potential stakeholders you will encounter.**    + Gain some "big picture" knowledge of the field location before you go, including land use history, traditional and current landowners/managers and how you might develop relationships with them (including formal permitting requirements).   + Get to know EVERYONE who works on your sites, talk to people and be curious about their jobs and ask about the area. Especially how the law enforcement operates and who to call or not call. Building a community helped me not only keep my team safe but helped me find reputable automotive repair shops, good restaurants, and increased joy exponentially. (+1   + it's important when working with local crew members in another country or culture to be prepared for cultural differences, and differences in expectations e.g., around things like money; try to consider power differences and how those might affect interpersonal dynamics. |
| * **Keep data organized**   + always make copies of all your raw data asap.   + Use data validation to limit data entry errors. |
| * It's just like riding a bike, it will be bumpy at first but once you figure out how your group responds well to your teaching, things will smooth out. |
| * **Take care of yourself** (+1   + Ask for support from PI if issues arise ASAP.     - Don't force yourself to work in unsafe situations or with people you feel unsafe.   + Be an advocate for yourself even if those you work for or with are more lax about safety or protocols.   + Take time for yourself   + Be easy on yourself / patient with yourself   + you don't have to drink the beer. you have the right to read your book and write in your journal whenever one else is drinking beer. |
| * **Be explicit on what your field crew need to wear in the field.** |
| * **Take your own training as a field leader seriously** (+1   + While there are idiosyncrasies to the field work element, much of this is a matter of personnel and project management - for which there are numerous resources. take this element seriously - treat it like another technical aspect of your job/training, just like any other scientific skill like quant, writing, subject matter, etc.   + Get some training yourself in field safety.   + Become trained in culturally responsible mentoring.   + Focus as much on soft skills, humane leadership, as the actual research objectives and technical scientific skills (+1   + Take a course in effective leadership styles! Having had zero formal training or much experience leading a team, especially in another country and language, before grad school made leading a field crew the most challenging part of my PhD. Figuring out what kind of leader to be, and what sort of relationship to foster with your crew members, is hard, but so important in shaping the crew dynamic. For example, I think I was too friendly and acted too much like a peer, which led to my crew members testing boundaries and not respecting my authority later. |
| * **Invest time early in training your group.** (+3   + be sure each person on the team fully understands the protocols before starting. |

# Exit questions

## Resources

Are there specific resources (e.g., online readings, workshops, etc.) you recommend for new field crew leaders?

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| * **No** (+19) * **Learn from personal experience** (+7)   + Reflect on your field experiences -- what made the experience good or bad? why? what can you learn and incorporate from your past experiences? * **Learn from community experience** (+5) * Required course for students   + I did a teaching & pedagogy course before my field seasons which caused me to think critically about mentorship, which I think probably helped. * Humboldt's Personal Narrative |
| * Know your system and its risks (+4) * A solid grasp of maps and mapping can be useful. |
| * CPR/first aid courses (+1) * Wilderness safety training (+7) |
| * field safety plan templates   + <https://ucdavis.app.box.com/s/9395kqk32r8aiuhuy510dhb7fgr8qqzy>   + For my safety plan, I started with some university templates (e.g., https://www.ehs.ucsb.edu/field-safety). I do work in national parks, and their websites often have good resources including videos covering physical safety. |
| * Field-specific trainings   + ADVANCEGeo leads a great training specific to fieldwork scenarios   + Hollaback offers bystander intervention trainings which can be tailored to address specific harassment dynamics.   + UC Santa Cruz has a great training program   + the FISST training to combat sexual harassment and discrimination in field settings fieldworkinitiative.org   + Conservation Corps of New Mexico had some good resources in their trainings but I'm not sure if they're available online.   + sexual harassment training with field focus - <https://training.ucr.edu/courses/sexualharassment-field>.   + Bear training * Readings   + There are many great readings on this topic. I particularly recommend: - John and Kanh 2018, Mental health in the field - Cooper et al 2020, An Exploratory Study of Students with Depression in Undergraduate Research Experiences  - Nelson et al 2017, Signaling Safety: Characterizing Fieldwork Experiences and Their Implications for Career Trajectories - https://eos.org/opinions/ten-steps-to-protect-bipoc-scholars-in-the-field - Greene et al 2021, Safety and Belonging in the Field: A Checklist for Educators   + Demery & Pipkin 2021 - Safe fieldwork strategies for at-risk Individuals, their supervisors, and institutions (+6)   + McGill et al. 2021 - You are welcome here: a practical guide to DEI for undergraduates embarking on an ecological research experience   + Dyson, K., Ziter, C., Fuentes, T.L. and Patterson, M.S., 2019. Conducting urban ecology research on private property: Advice for new urban ecologists. *Journal of Urban Ecology*, *5*(1), p.juz001. (+1)   + Clancy, K.B., Nelson, R.G., Rutherford, J.N. and Hinde, K., 2014. Survey of academic field experiences (SAFE): Trainees report harassment and assault. *PloS one*, *9*(7), p.e102172.   + The book ‚ *Fieldwork Ready* by Vero is an excellent resource.   + Report of the Workshop to promote safety in the field sciences; https://zenodo.org/record/5604956#.Ybi03c\_MI2x   + <https://serc.carleton.edu/advancegeo/resources/field_work.html>   + <https://www.ucop.edu/safety-and-loss-prevention/environmental/program-resources/field-research-safety/index.html>   + <https://eos.org/opinions/ten-steps-to-protect-bipoc-scholars-in-the-field>   + General readings on leadership / servant leadership   + <https://cpo.noaa.gov/News/News-Article/ArtMID/6226/ArticleID/1601/Leveling-the-Field-%E2%80%93-Tips-for-Inclusive-Arctic-Field-Work>   + I want to suggest that if you are in charge how assistants are compensated or have any say in it you should consider reading this paper about some of the inequities caused by volunteer or low paid positions in ecology  https://doi-org.aurarialibrary.idm.oclc.org/10.1002/wsb.603a We all know funding can be tight and it's difficult to pay assistants fair wages sometimes but knowing about the inequities this can be useful for adjusting recruitment and expectations (especially on time commitments) to help alleviate it.   + I've really appreciated the recent literature on fieldwork safety for biologists of color and women. I think it's important to be aware of the stats on sexual harassment in the field. |
| * We've been compiling an informational document to disseminate within our department that outlines strategies/provides information about field safety (both physical and interpersonal, emotional, etc.). This has been a good opportunity to think about things I've learned, or knowledge related to fieldwork that I have taken for granted. (Here is the document, which includes links to other resources that have been helpful: https://docs.google.com/document/d/1Kb8euvRodO3gri3zdnCUZYKo2OHx45-sJqIHRs4F7-U/edit?usp=sharing) |
| * Wildlife techniques manual |
| * Webinars   + I think it was IARPC who did a webinar for women in the field, including details on clothing and bathrooming. Everyone should watch it. Men need to know what women are dealing with. This entire webinar and the papers they recommend :) https://vod.video.cornell.edu/media/Safer%20Science%3A%20Strategies%20to%20protect%20at-risk%20researchers%20when%20conducting%20fieldwork/1\_noix4lnn |
| * University policies and procedures |
| * Workshops (+3)   + I took a workshop hosted through UF called Safer Science - Safety in the Field, which was very helpful, especially if you are from a minority community or are working with individuals from minority communities. |
| * + Not anything specific that I can think of, but they should take workshops/attend seminars about good leadership.   + Some kind of team building workshop. |
| * Dillons Tailored Design Surveys |
| * Leave No Trace training, Also, every institution that sends students out into areas without cell service should equip those students with an InReach and a plan for daily check-ins. |
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## Policies

Are there specific resources/policies/processes at the department, lab, or program level that you recommend to help support new or existing graduate field leaders?

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| * No (+21) * Said yes but didn’t include specifics * Get a good health form & make sure EVERYONE fills it out |
| * Supervisor training if it exists. * Ask other people about their experiences   + Ask other graduate students (+1)   + talk to field leads/mentors that you enjoyed working for and try to emulate them. * Department level training (+6)   + <https://fieldworkfuture.ucsc.edu>   + https://safetyservices.ucdavis.edu/units/ehs/research/field   + improve existing training   + My department in grad school had a workshop every spring for faculty and grad students who do field work. Some review of policy, but mostly playing out scenarios and discussing the merits of different courses of action (everything from "one member has concerns about the trail ahead, but others don't; the alternative is an hour longer" to "you hooked up with a subordinate crew member, how do you proceed?") I found this massively helpful and believe more departments should do this. Open conversation in small groups for each scenario allowed for exchange of ideas, consideration of alternative priorities, and various leadership style. In addition to being important field prep, this is one of the best methods for team building prior to the season.   + Field safety training for the whole dept would be ideal. Clear expectations from the dept about how much leadership grad students should have and how much mentoring needs to take place from advisors is also necessary (but that's a bigger problem)   + The DEI committee provides a framework for academic situations, but less so for field conditions. I think we need a fieldwork ethics module or at least set of resources for the department.   + the AFS and TWS subunits on campus provide workshops on field techniques |
| * Would suggest spending a season on the project not as a crew leader before taking a lead role. (+1) * Training outside of department   + Library research services   + ESWN field guides   + Many research institutes have checklists for conducting research and offer workshops (e.g., bear safety training).   + Wilderness first aid training (+8)     - For leads     - For everyone (+2)     - Funded by university (+1)     - could be department-sponsored and on campus. (+1)     - CPR/First Aid should be a minimum requirement. (+1)   + Workshops on communication, leadership, mentoring (+5)   + Mental health first aid training (+1)   + bystander and/or sexual misconduct training (not the online tutorials that are pretty lame in my experience   + Online seminars for graduate students before field season     - Ensuring that a discussion about safe fieldwork practices occurs before students go into the field, including aspects such as sexual assault, racism, and interpersonal conflict that are common in the field. * filing an overall safety plan with your dept/program (+6)   + provide a template (+2)     - Templates for field safety and non-discrimination/harassment protocols at any level * Lab/department field manual (+1)   + Review annually   + I strongly recommend grads and advisers work together to develop this.   + I've never seen a guide but advice about how to deal with food for remote sites, field kitchen, sanitation, bathing, etc. would be very helpful. I learned by doing and from others, but it certainly could have been more efficient.   + Review existing protocols, field memos, contracts, etc. in your lab and update to you needs. Ask for these if they don't exist in your lab or create them with help from your advisor. (+1)   *Longer answers I thought were valuable to keep in their entirety:*   * I have been at universities where each skill needs to be noted by a supervisor before being performed independently. This sometimes seemed onerous, but a bit of bureaucracy is much preferable to another institution where students were sent to remote locations completely untrained. The latter situation is dangerous to both study species and personnel. |
| * Make sure all students know people at the facility who are both mandatory and nonmandatory reporters who they can go to with concerns. Make sure new students know all the mandatory and optional training available to them (boat training, navigation, etc...). I dealt with many issues as a graduate student where I felt unsafe and had no idea who to turn to (advisor developed dementia and coerced me into unsafe field work; heard of other PIs insulting other students looks and weight; second advisor coerced me into signing out boats for other students who weren't trained even though I wouldn't be on that boat). |
| * Never put data or research before crew safety, no data is worth someone's life/health and that's final. Reiterate that multiple times especially when field work is happening in remote/challenging terrain. Also don't make crew feel like they have to risk totaling a vehicle to keep to a schedule. Have effective channels of communication for things like vehicle failure (including to the mechanic themselves and not just to the university). Give crew methods of communication such as radios and SAT phones, as well as multiple navigation devices. there's so much more I could list but overall, never make people feel that they are worth less than the research they are doing. |
| * We've had students die. It is crucial that as a leader, you plan for the worst-case scenario. The university needs to put in place the infrastructure for this -i.e., have an app, or form or something that gets everyone contact information and emergency information. * The university needs to have money available for all and any safety equipment and training (avalanche, first aid, etc.). Everyone should have access to it, including students. (+1) |
| * private sector takes safety very seriously and if there is fieldwork involved discussions about safety task by task are usually part of the SOP, I haven't found university safety documents or discussions to be very practical (they are just concerned with legal coverage). I think taking some pages from the private sector book would be a valuable addition for grad student field leaders, as unless you've been exposed to the private sector in this way these concepts don't come up in many other life experiences - I'm a fan of the Field Level Risk Assessment, it's basically a conversation at the field site prior to start of work that lists the potential risks and what the team will do to mitigate them based on the site, the conditions that day (snowing, hot, windy, etc.), and the task at hand (are there any chemicals involved, sharp or otherwise dangerous tools, etc.). It just helps put the potential risks at the front of mind (vs. that one safety document you read two months back before you were even out in the field), clarify the task and roles to everyone involved and note any new/unique challenges due to the here and now of the situation. This usually takes 5-10 minutes, and can be as simple as: we're sampling vegetation plots this morning, it is sunny and hot out, we are an hour walk from our vehicle and wildlife in the area include bears - we will wear sunscreen and hats, and stop for water breaks, we will leave by X time to return to the vehicle before dark, we will work in teams of 2 and have 1 bear spray per team and scan the surroundings for wildlife regularly (at least every 15 minutes). We all know these things but saying it at the outset puts it in each team member's mind. |
| * PIs and departments could help connect grad field leaders with appropriate trainings. Also having lab/departmental support to help grad students handle any issues that happen (i.e., reporting misconduct, having lab policies or something in place before the field season that could help guide the grad leader on the appropriate course of action in handling a situation). |
| * https://www.nature.com/articles/s41559-020-01328-5 (Safe fieldwork strategies for at-risk individuals, their supervisors, and institutions; Demery and Pipkin 2020) |
| * A good relationship with the people that handle your fieldwork paperwork (hiring, expenses, etc.) can go a long way. Introduce yourself. |
| * Check in with researchers who do international fieldwork, they are likely much more prepared than some who stick to national or state research. |

## Other

Are there other strategies to leading fieldwork successfully that you’d like to mention that have not been addressed above?

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| * **Have fun. If you don't have fun, what's the point?** (+2) * **Snacks, in some form** (+1)   + Make sure to have plenty of dry socks and snacks in your field vehicle. Your team will thank you. |
| * **Constant open communication that minimizes ego and maximizes community is important to dealing with conflict before it becomes destructive. (+1** |
| * **No** (+14) |
| * **Remember the person most passionate about your research is you and allow people to be engaged without drowning them in it.**   + Don't ever act like your technicians or assistants should feel lucky to be helping you. |
| * **Depending on where the fieldwork is, interactions with "outsiders" (those outside your research group/field team) can disrupt any plans you have made.**    + Be sure you address how you plan to deal with the local community when you make your plans, including any culturally sensitive topics on how you should dress or act. |
| * **Let people know your work ethic in the field.**    + I put in really long days because it is expensive to get to remote sites and the time is very limited. So, with paid assistants who are not collecting data for their own research I try to compensate accordingly. If I am paying them hourly and can only pay 8 hr/day an, and for the three weeks in the field they are working 10 hr/day 6 d/wk, I pay them for 4.5 wks   + Don’t ask them to do all the hard stuff while you get to do the easy stuff. Get down in the trenches with them. That will earn their respect and trust and then they will be willing to work hard for you. |
| * **Encourage valuing fieldwork leadership as a job skill**   + It takes time, and it should be a more explicit part of my job "rewards". I mostly feel guilty for having a slow publication record. I know my academic career will reach a dead end. But it is just because I have invested so much time (and blood, sweat, and tears) in field work.   + Fieldwork is often a particularly challenging setting for personnel and project management - it is baffling that we ask graduate students to lead such endeavors without any training or education in these arenas at all, let alone specific to field work settings |
| * **Be nice, be confident and have fun.** (+4   + Work hard and enjoy the experience. This can be infective.   + Besides lack of communication/delegation, a crew lead who is a grouch, bossy, etc. is just downright miserable to work under/with.   + Have fun! Things can and will go wrong all the time but sometimes those are the most memorable moments (in a good way!) and make great stories. Don't take the work TOO seriously but do take your safety and well-being seriously.   + Try to start each day with a cheerful attitude. If you just can't, be honest and tell your crew you’re having a bad day :)   + A good sense of humor is probably the #1 requirement! It's stressful when shit hits the fan and it's your thesis or dissertation on the line but try to see the humor and roll with the inevitable fieldwork fails (as long as they're not actually endangering anyone.) * **Get to know the people on your crew.**    + daily check-ins with your field team are super valuable! And can be adjusted based on your personal leadership style |
| * **Try to stay calm and expect to have to make decisions.**   + Figure out your own stress management strategies/outlets ahead of time. |
| * **Be transparent** |
| * + In general, show your crew what you're doing and tell them why, even when you're doing admin work that doesn't really affect their job. They'll understand the project and what you're asking them to do much better. Always be willing to explain your reasoning and listen to suggestions. If they disagree even after you've explained, it's fine to take their suggestion, and it's also fine to say 'that would probably work, but I still want to do it my way, just because'   + Make sure your team knows why you collect the data the way that you do- so they don't try to cut corners or change anything because they feel it’s more efficient or because that's what they did in a previous job. In the end you want good data, and your team is there to help you to collect/process/analyze that data in a scientifically sound way. |
| * **Be sure to answer community questions and be prepared to take time getting to know the community and people and not just extracting data.** (+1) |
| * **Safety is more important than data collection.** |
| * **Enable your crew’s communication**   + InReach Devices that allow you to share a website where the group's location is at all times are pretty great. The emergency beacon is a good safety tool when off the grid (provided you have clear standards and discussions about its use). The website is really nice for project leaders/ parents of undergrads to follow along too. It allows you to be "off" the grid but keeps folks at home invested and aware (and also pre-trip discussion re: the Inreach will helps drive home just how limited other communications will be)   + Make sure all crew members know people at the facility who are both mandatory and nonmandatory reporters who they can go to with concerns. 0 |
| * **Compensate your field crew**   + Housing and payment - they have to be receiving adequate compensation (monetary/credit or combination), sufficient food, and safe and preferably comfortable housing so that they can recharge and relax during off hours and are able to safely focus on the project during work hours. Providing or ensuring housing (even in the form of a well-organized remote camp, including equipment and safe water/food) is critical. Not providing adequate payment or housing also means that you will have a homogeneous, privileged field crew who can afford to pay for "experience". |
| * In science, we rarely have the opportunity to train to lead people, but it's a huge part of your job. know you'll make mistakes, be confident and cautious, ask questions, if you think it's unsafe, it probably is |
| * **plan early. (+1**   + Start the permit process as soon as you can, ideally at least 5 months in advance. * **communicate with your advisor**   + Experience and utilizing your own supervisors by asking for advice on how they would deal with a situation you’re dealing with. I wish I had been more upfront about my crew struggles with my supervisors so by the time my post interview came around it didn’t feel like a slap in the face to them. (+1) * talk to more experienced grad students in your lab about what did/didn't work for them, especially if you do field work in the same place- there might be little details (like, the housing at XX place is disgusting, or this place has great cheap field snacks and is right near our sites, or in July the black flies are horrendous for a couple weeks so make sure you have head nets) that they'll be the only ones who know (+1 |
| * **Make sure the work is not under-resourced. There is enough pressure when juggling the safety vs. getting work done tension, when you throw in a third angle of pressure (financial) it can force short cuts that compromise safe decisions**. (+1) |
| * In this context, it can be ok to prefer hiring someone who you think will get along with the team (and is qualified) rather than the most qualified person. I would not say this in any other context, but often resources, physical space, and mental space are limiting. One person who clashes with the team can make things difficult for the whole team. |
| * There are also very serious challenges in field work settings that are experienced differentially by different groups of people. White men for instance may have real blindspots with how e.g., BIPOC feel in very remote situations. Likewise, not all field works situations are equally safe for all people depending on location. Formal structures to identify, understand, and mitigate these concerns are essential. |
| * Take detailed field notes! Sometimes you just know what's important after coming back from the field. |
| * **Setting boundaries and clear expectations at the beginning of the field season is so important.**    + If I could do my graduate fieldwork over again, I would be better about making expectations and boundaries clearer from the get-go, and co-develop a behavioral contract with my field crew |
| * Fieldwork changes so rapidly that it's hard to be fully prepared for any situation. * I always wish I had taken a wilderness safety course before my field seasons, so I'd recommend one! |
| * It's something my dad taught me that helped me center and calm down amidst feeling like I was carrying the entire weight of my project and reminded me that everything will be okay. He said, "Remember everyone is doing their best, and our best isn't so great some days." It was something I probably needed to hear more than my team, but it really helped. * Tell people it takes about two weeks for our bodies to acclimate to new environments. I worked in the hottest, most humid place for 13 months of my master's program and having that patience and perspective with my newer techs who weren't used to it yet helped a LOT. * **Figure out how to set people up for success.**   + Everyone learns differently, so ask them what is helpful for them as well! (+1   + Learn what works best for your team and if an approach doesn't work out, work with your team to determine what does. Be patient.   + Openly discuss any concerns with crew before the season. How safe and comfortable people feel in the field can depend on fieldwork location and individual characteristics such as gender, race, ability, etc. Make an effort to allow all team members to feel safe and supported in field activities. |