



Rules and Resource Guide

Use this guide to learn more about the 4-H Outdoor Challenge and as a study resource to prepare the contestants for the annual 4-H Outdoor Challenge. All event information represented at an annual contest will be found in this guide. The following are general rules and event descriptions. Always refer to the current year's Contest Announcement for specific details.

The 4-H Outdoor Challenge committee is not responsible for providing chaperones. If counties are sending any youth without a parent or legal guardian, the appointed chaperone must follow the child protection procedures outlined in the Texas 4-H Youth Protection guidelines, administered by their respective county Extension office. Parents, legal guardians, and/or chaperones will be responsible for youth and must remain on-site throughout the duration of the 4-H Outdoor Challenge.

A **green highlighted area** denotes new information.

General Information & Rules

The 4-H Outdoor Challenge is an outdoor event held annually in June. The weather is always hot and sunny. There are not always air conditioned facilities available. Teams and families should go prepared with cool, comfortable clothing, plenty of personal drinking water per person, ice, portable awning for shade, and any other applicable preparation. These types of accommodations will not be provided by the Outdoor Challenge organizers. The 4-H Outdoor Challenge is a contest. Contestants **must** come prepared to compete in each of the events listed on the current year's [official 4-H Outdoor Challenge Announcement](#).

The contest schedule is very tight; therefore, there will not be time for instruction or training at any of the events. **Any contestant who arrives at an event without prior knowledge or skill for that event will be disqualified from that particular event.** This includes personal knowledge of your own equipment, experience enough to feel comfortable setting up and using the equipment and participating in the event, and experience enough to be safe to oneself and all others around. Information contained in this document provides a study resource and procedure guide for all potential events. It is the responsibility and obligation of parents and coaches to ensure that the contestants are fully trained and prepared for this event well in advance of the 4-H Outdoor Challenge.

Teams of two (2) persons and Individuals are allowed to compete. Individual scores will be kept for all competitors to be eligible for 'Individual Awards'. Each year, only 10 events will be selected from this resource guide to be announced on the 4-H Outdoor Education webpage (<https://texas4-h.tamu.edu/projects/outdoor-education-living-skills/>) and through County Extension Offices prior to the contest and presented at the 4-H Outdoor Challenge. The contest consists of the 10 events in which each team or individual will compete and potentially earn points. Throughout the competition, competitors will rotate from one event to the next in an assigned group. The lowest event score of each individual will be dropped automatically by contest officials before tabulating final individual scores. Team scores will be calculated by the total of both member's scores in all 10 events as scored without a drop. If a team or individual chooses not to participate in an event for any reason, they will receive a score of zero for that event.

Throughout the duration of the 4-H Outdoor Challenge, all contestants must wear closed-toed shoes (no flip-flops or sandals) with the exception of the swimming event. All contestants are expected to be at their designated event at his/her scheduled time. If the contestant(s) are absent at the specified time, the team will forfeit the event and receive a zero (0) score. Adults and non-contestants are not permitted to directly assist contestants nor be located in the immediate contest area at the time of competition. Non-competitors are encouraged to spectate, photograph, and cheer on their contestants. All competitors must abide by the rules and instructions provided by contest officials. Any competitor deliberately acting in an unsafe manner or exhibiting unsportsmanlike behavior, will be asked to leave the immediate event area, which may result in the forfeiture of the event and/or contest for the related individual or team. The decisions of all contest officials are final and may not be protested.

All equipment used in this contest must be in good condition and safe working order. Contest officials reserve the right to disqualify equipment due to unsafe or poor working conditions. The contestant and county assumes full responsibility for the safety of equipment used, including the safety of others on and around the facility.

Due to the size and scale of this contest, there is often "down time" between each event. Be prepared to wait, and be patient for the next event to begin. If necessary, take items such as field guides, binoculars, etc. to fill this time. Groups will be kept together and not allowed to wander off during down time.

Age Divisions **(revised)**

Youth must be active 4-H members 8-18 years old as of September 1 of the current 4-H year.

- Youth may compete as an Individual or in a Team of two
- Three age divisions for this event are:
 - Juniors = grades 3, 4, or 5
 - Intermediates = grades 6, 7, or 8
 - Seniors = grades 9, 10, 11, or 12
- A team member is allowed to move up an age division in order to complete a team; however, a member may not move down to a younger age division. A team member who moves up an age division to participate on a team will compete individually in that older division as well.
- Gender divisions (male, female, co-ed) will no longer be used. All will participate within an age division.

- Awards will be given to the top 10 individuals and the top 5 teams in each age division.

Knowledge/Skills Gained

By participating in the Texas 4-H Outdoor Challenge, youth will improve knowledge and skills in the following:

- Shooting Sports and Firearm Safety
- Swimming
- Kayaking/Paddling
- Camping/Outdoor Living Skills
- Orienteering
- Climbing
- Off Road Biking
- Identification and knowledge of Wildlife and Natural Resources
- Outdoor Safety
- Fishing
- First Aid
- Consumer education of outdoor gear
- Natural Resource Career Knowledge/Skills
- Teamwork, decision making and critical thinking

Event Rules and Descriptions

Shotgun (possible 10 individual points and 20 team points)

- Competitors will compete individually in this clay target event
- Ten (10) shots per shooter.
- Regardless of firearm action type, single shot loading is required. Shooters must be able to safely load the shotgun for a single shot.
- A broken target is worth one (1) point each.
- Competitors must supply their own ammunition. Shot charges may not exceed the following velocities; 1-1/8 ounces up to 1290 feet per second, 1 oz. load up to 1325 feet per second, and 7/8 oz. load up to 1350 feet per second. Shot size may be no larger than US 7½ fine or smaller than US 9 fine.
- Competitors must supply their own .410, 28, 20, or 12 gauge shotgun(s), eye protection, and ear protection for each shooter. (coaches and spectators must also provide and wear their own eye and ear protection within in designated distances of the shooting line)
- No part of the shooter's body should ever rest against or be covered by the muzzle.
- No coaching will be allowed while shooters are on the firing line.
- Refer to Firearm Safety Rules within this document and follow all rules.
- Failure to comply with Firearm Safety Rules could lead to team disqualification.

Archery (possible 10 individual points and 20 team points)

- Competitors will compete individually in this event, which will consist of 3D or paper wildlife targets and/or moving foam disc targets (8-12" in diameter) rolling across the ground.
- Competitors must supply their own bows and arrows (no broadheads allowed). Recurves, compounds, and longbows may be used. There are no restrictions on bow types or accessories. Release aids, including mechanical, are allowed. Arrows can be held in a body quiver, bow quiver, or placed in a ground quiver when on the shooting line, but cannot be laid on the ground.
- Each competitor will shoot ten (10) arrows for score. **Teammates will shoot simultaneously and cannot share arrows so each competitor must take at least 15 arrows. Extra arrows allow for arrow damage or loss.**
- Points:
 - Wildlife target - 0, -1, ½, or 1 will be awarded per shot based upon target kill zones.
 - 0 = miss, -1 = wounding shot (any location on body outside of the designated kill zone), ½ = large kill zone, 1 = small kill zone
 - Moving foam target - 0 = miss, 1 = hit
- Regardless of negative points awarded (due to a wounding shot), an individual's lowest possible total score will be no less than zero (0).
- Shooting distance may vary for age divisions at a distance up to 10 yards.
- Competitors must supply their own eye protection. Eye protection is optional for this event but recommended.
- **No coaching will be allowed while shooters are on the shooting line.**
- Refer to Firearm Safety Rules within this document and follow all rules.
- Failure to comply with Firearm Safety Rules could lead to team disqualification.

Riflery (possible 10 individual points and 20 team points)

- Competitors will compete individually to shoot **.177 caliber air rifles; no BBs allowed.**
- **Junior age division will shoot in a sitting position at a table. Intermediate and Senior age divisions will shoot in the standing position.** Distance to target is approximately 20-30 feet.
- **Rifles must be capable to single-shot load. Sights must be open or aperture style. No magnified sights.**
- **Contestants must supply their own air rifles and pellets.**
- Ten (10) shots per shooter. A ten (10) minute time limit will be set for each relay.
- Targets will be silhouette style either on paper or with metal cutouts. Scoring will be based on hits and misses; 1 point per hit. A 'hit' will be defined by the type of target shot at the contest.
- Single shot loading is required. Shooters must be able to safely load a rifle for single shot while in their shooting position.
- No shooting accessories will be allowed (e.g., scopes, special clothing, slings, etc.).
- Eye protection is mandatory. Competitors must supply their own eye protection (coaches and spectators must also provide their own eye protection). Ear protection is optional.
- **No coaching will be allowed while shooters are on the firing line including sighting instructions.**
- Refer to Firearm Safety Rules within this document and follow all rules.
- Failure to comply with Firearm Safety Rules could lead to a team disqualification.

Kayaking (possible 10 individual points and 20 team points)

- Competitors will compete individually in this event, which will consist of a timed race of a course no more than 1/4 of a mile in length.
- Competitors will be required to begin on foot from a starting line, launch, paddle designated course, and return to the finish line.
- Competitors should be prepared to paddle in a single craft.
- Individuals will be awarded points based upon the number of competitors and their respective placing.
- All kayaks must stay on designated course and not touch or interfere in any way with other kayaks. Any competitor not following this rule will be subject to disqualification from this event.
- Personal flotation device (PFD) must be worn properly from start to finish.
- Kayaks, paddles, and PFDs will be provided.
- Kayaking Resources:
 - Launching: [YouTube Video](#)
 - Paddling: [YouTube Video](#)
 - Turning: [YouTube Video](#)



Fishing (possible 10 individual points and 20 team points)

- Competitors will compete as individuals to catch, measure, and release as many fish as possible within the given time frame.
- An audible warning will be given prior to fishing time expiring.
- Individual rank will be calculated by the sum total length of fish caught. Individuals will be awarded points based upon the number of individuals and their respective placing.
- For overall safety and to minimize stress on the fish and maximize survival following release, competitors must use barbless hooks and release fish immediately following measuring. All hooks used must be barbless including those on any lure, single or treble. Individuals not following this rule will be disqualified from this event and the previous fish caught will not count in total measurement. It would be best if contestants' tackle boxes contained no barbed hooks so that no accidental use occurs.
- <http://frontrangeanglers.com/how-to-properly-de-barb-hooks-to-make-them-barbless/>
- Measurements will be made by a contest official at a designated location.
- Each fish must be taken by the individual to be measured immediately after being caught so that the fish can be released in a reasonable time for survival.
- Fish cannot be kept in any form or fashion to be measured as a group (no stringers, baskets, buckets, etc.).
- Competitors must supply their own fishing equipment, tackle, and bait of their choosing and rig their own equipment during fishing time (changing lures, replacing a rig following a line break, etc.).
- The type and condition of the fishing location will be described in each 4-H Outdoor Challenge Official Announcement.

Outdoor First Aid (possible 10 individual points and 20 team points)

- **Competitors will compete individually** in this event which will test their knowledge of first aid.
- Scores will be based on the individual's ability to correctly demonstrate knowledge and skills of first aid.
- Stations may include both demonstrations and scenarios.

- Resources:
 - American Red Cross [Wilderness and Remote First Aid Pocket Guide](#)
 - American Red Cross [Wilderness and Remote First Aid Emergency Reference Guide](#) - <https://sbbchidaho.org/PDF/FirstAidManual.pdf>

Biologist Skills (possible 10 individual points and 20 team points)

- **Competitors will compete individually in this event.**
- Scoring will be based upon the number of correct/incorrect answers.
- This event will consist of one or more of the following:
 - **Outdoor ID** - identify various species found in the outdoors and possibly answer a follow up question related to it (see below for the complete study list). Test items may be in the form of photos, live or dried plant specimens, whole mounts, tracks, audio calls, and various body parts (wings, feet, antlers, etc.).
 - **Fish Measuring** – given a fish replica and tape measure, correctly measure the length of a fish. (Possible bonus: identify the fish and/or determine if it is a one you can keep based on a given lake's limits using TPWD's Outdoor Annual). Study Link: http://www.tpwd.state.tx.us/regulations/fish_hunt/fish/measure.phtml
 - **Antler Scoring** – given a skull mount, string/flexible cable, and tape measure, correctly measure or identify specified parts of the antlers. Study Link: <http://www.dnr.sc.gov/wildlife/deer/scoring.html>
 - **Deer Aging (on the hoof)** – given a photo or sets of photos, correctly determine the age of a deer. Study Link: <https://jbsa.isportsman.net/files/Education%2Fagingonhoof3-100106150956-phpapp01.pdf>
 - **Tracks ID** - given an animal track, correctly identify the animal. Any animal on the ID study list is applicable. Use additional study resources as necessary. Study Links: https://tpwd.texas.gov/publications/pwdpubs/media/pwd_lf_k0700_0001.pdf
<https://dnr.maryland.gov/wildlife/Documents/Key-Common-Mammal-Tracks.pdf>
 - **Park Symbols** - correctly identify park symbols. Study Link: https://www.nps.gov/carto/hfc/carto/media/map_symbols1.pdf

Gear Judging (possible 10 individual points and 20 team points)

- Competitors will compete individually in this event, which will test each member's individual knowledge of making sound decisions when purchasing outdoor gear.
- The time limit is 8 minutes per class.
- Each member will be judge two (2) classes, which will be selected from the following four categories: tents, camp stoves, outdoor backpacks, and sleeping bags (see "[Gear Judging Study Guide](#)" further in this document)
- Products will be numbered 1 to 4, and contestants must rank the products based on the provided scenario. Total score for each class will be determined by using a Hormel scoring system and divided by 10.
- No oral reasons are given in this event.
- New category for 2022 is Outdoor Backpacks.

Outdoor Skills (possible 10 individual points and 20 team points)

- Competitors will compete individually in this event, which may consist of skills from one or more of the following activities:
 - Camping
 - Compass and pacing
 - Backpacking
 - Resources for camping, compass and pacing, backpacking:
 - "*Outdoor Living Skills Program Manual*" (find on Amazon or acabookstore.org)
 - "*Outdoor Living Skills Instructors Manual*" (find on Amazon or acabookstore.org)
 - Hunting
 - [TPWD Hunter Ed Online Manual](#), Chapters 4 & 6 ONLY. Drag cursor/select from the chapter index on the left; read each page to the bottom and select "Next: xyz" on the right to go to the next page; each chapter ends with a quiz.
 - Knot Tying
 - Team members must demonstrate knowledge, uses, and abilities of tying the following knots: bowline, taut-line hitch, square knot, clove hitch, timber hitch, sheet bend, half hitch, Palomar, and improved clinch.
 - Resource: [What Knot Website](#)
 - Resource: <https://www.animatedknots.com/knotlist.php>
- Scoring will be based upon time and/or accuracy.
- Equipment and materials needed for this event will be provided.

Climbing (possible 10 individual points and 20 team points)

- Competitors will compete individually in this event.
- Members will earn points based upon reaching designated heights on a certified climbing wall.
- Competitors will be given 2 minutes to climb as high as possible.
- All climbing safety gear will be provided by the certified course on-site. Climbing will be facilitated by certified individuals.

Outdoor Safety (possible 10 individual points and 20 team points)

- **Competitors will compete individually in this event**, which may consist of a written exam or series of stations to identify various safety issues provided in the form of a mock scene, a written scenario, or other format.
- Scoring will be based upon the number of correct/incorrect answers. Individual scores will be averaged on a 20-point scale to obtain total team scores.

Resources:

<https://www.fs.fed.us/recreation/safety/safety.shtml>

<https://www.nsc.org/home-safety/tools-resources/seasonal-safety/outdoors> (sections on 'Water Safety', 'Canoeing Safety', 'Bicycle Safety', 'Surviving the Heat', and 'Avoiding Frostbite and Hypothermia')

Off-Road Biking (possible 10 individual points and 20 team points)

- Competitors will compete individually in this timed event.
- Competitors will individually navigate a marked trail that will mostly be off-road and cover a variety of terrain (flat, hilly, grassy, gravelly, muddy, etc.). No public roads will be used. All non-related traffic will be excluded during the contest.
- Length of the course will vary depending on contest location. Course will never cover more than one mile.
- Each competitor will have a staggered start time and will not be starting beside another.
- Individual team member's times will be added together and then ranked among competing teams. Teams and individuals will be awarded points based upon the number of competitors and their respective placing.
- Competitors must use their own bikes and helmets (required). Gloves, elbow/knee pads are recommended.
- All competitors must wear a cycling safety helmet while riding.
- It is recommended that competitors wear other protective equipment such as elbow and knee pads. (not available from contest officials)
 - Resource: <https://www.rei.com/learn/expert-advice/mountain-biking-techniques.html>
 - Resource: <https://www.rei.com/learn/expert-advice/bicycle-helmet.html>

Swimming (possible 10 individual points and 20 team points)

- Competitors will compete as individuals in this timed event.
- Each competitor will independently swim the prescribed relay course to receive a time.
- The relay course will typically follow distance or lap number differences between age divisions (i.e., Seniors swim 4 pool widths per contestant, Intermediate swim 3 pool widths per contestant, Juniors swim 2 pool widths per contestant)
- Each swimmer is allowed to swim any stroke of their choice during the event.
- Teams and individuals will be awarded points based upon the number of competitors and their respective placing.

Placing Points

Calculations for events that award placing points are determined using the following point scale. Total possible team/individual points divided by the number of teams/individuals equals the points per placing.

Example: 10 teams in the intermediate division

20 possible points / 10 teams = 2 points per placing

1st place = 20 points

2nd place = 18 points

3rd place = 16 points

4th place = 14 points

Etc.

10th place = 2 points

Example: 10 individuals in the intermediate division

10 possible points / 10 individuals = 1 point per placing

1st place = 10 points

2nd place = 9 points

3rd place = 8 points

4th place = 7 points

Etc.

10th place = 1 point

Required Supplies

It is recommended that all competitors have their own equipment. Sharing equipment leads to extended event time. The Outdoor Challenge is run on a very tight schedule.

- Bow/arrows; each contestant must take at least 15 arrows, teammates shoot simultaneously and cannot share arrows
- .410, 20, 28, or 12 gauge shotgun (for one or both team members) and matching ammunition
- .177 caliber air rifle pellets; no hollow points allowed
- eye and ear protection for each competitor
- fishing gear, including bait and all tackle
- Off road bike and helmet. Bikes and helmets are sometimes available at the contest if a facility has those resources.

Last Revised February 2022

- Closed-toed shoes with at least a strap in back must be worn at all times/events (no sandals or flip-flops).
- Pencils and clipboards for each competitor for events with tests or written material.
- Refillable water bottle and water for each competitor and all spectators. A large water container is also recommended for refilling water bottles. Some facilities may not have convenient water resources.
- Clothing suitable for being outdoors in June, getting dirty, hot, and wet. Swimsuit for swimming event.
- Binoculars, field guides, and any other equipment to use during wait times between events.

Prior to arrival at the contest, please make sure all equipment and gear is in good, safe working condition.

Suggested Supply List

- Sunscreen
- Insect repellent (for ticks, chiggers and mosquitoes primarily)
- Sunglasses
- Lawn chairs for spectators
- Shade umbrellas or canopy
- Swimsuit for recreational swimming (dependent upon available facilities)
- Snacks and drinks for times between meals
- Non-motorized cart or wagon to haul gear to and from event sites
- Down-time activities (field guides, binoculars, deck of cards, frisbee, etc.)
- Rain gear; you never know. Always be prepared.

Not Allowed

- Motorized carts or ATVs
- Use of tobacco of any type around the event sites and waiting areas; adults and youth.
- Adult or non-contestant assistance of any kind during an event.

Texas 4-H Outdoor Challenge Schedule (times are subject to change)

1st Day

Noon Check-in
 First Event
 Orientation
 3 Concurrent Events

2nd Day

8 a.m. 3 Concurrent Events
Noon Lunch Break (time will not allow a group to eat off site)
1 p.m. 3 Concurrent Events
 Final Tabulations
 Awards
 Depart for home

4-H Outdoor Challenge Firearm Safety Rules

- Handle all firearms safely while at the Outdoor Challenge, whether on the range or off while in preparation. Maintain safe muzzle control at all times. Typically, the safe muzzle direction when not on the firing line is pointing the muzzle up. Consider others who are near. All participants must know how to safely and efficiently operate all aspects of the firearm they will be using, including single loading rifles and shotguns.
- Firearms should arrive on the event grounds unloaded and remain unloaded until the command to load is given on the firing lines.
- Ammunition should not be carried in the firearm case.
- Arrows should be equipped with practice points only. No hunting broad heads of any type are allowed at the event, even in the bow case.
- Firearms, including bows, should remain in the vehicle until the specific event. Firearms are not allowed in any building of the event grounds.
- All firearms must enter and exit the range unloaded and cased. Cases can be hard sided or soft. There will be no racks for any firearms including bows.
- All rifle and shotgun cases should have the muzzle direction of the enclosed firearm marked on the outside of the case. The exception to this is a case containing a break-down firearm that is carried in pieces. Marking the muzzle end of a case insures a safe muzzle direction (down range) before the case is opened and the firearm is handled. In the situation where two firearms are cased in one case, both muzzles should point in the same direction if possible. Consult the Range Safety Officer (RSO) if this has not been done. Marking the case can be accomplished using tape, markers, paint, or any other means that will remain in place for the duration of the event.
- All firearms must remain cased on the range until shooters are told by range officials to uncase.
- Cased firearms brought onto the range will be placed in a designated safe location out of the way until a shooter is called to the firing line by the range officials.
- Rifles must have an Open Bolt Indicator (OBI) in the chamber while cased and must remain in place until told to load on the firing lines. OBI's can be made with a 10" length of bright colored weed eater line and bright duct tape to add a flag on the visible end. The OBI should extend through the chamber and into the barrel for a few inches. The opposite end with the flag should extend out of the chamber enough to require the action to be open and the flagged end to be visible when the firearm is laying on the shooting bench. OBI's assist the RSO in determining quickly that a rifle has no ammunition in the chamber and that the action is open.
- Shotguns must have actions open when possible while in the case and always when carried on the range.
- All rifles and shotguns must be carried using two hands with the muzzle pointing up. Shotguns may not be carried on the shoulder at any time nor should any part of the body ever rest against or be covered by the muzzle.
- Eye and ear protection must be worn on the range at all times during shooting by shooters and spectators.
- Closed toed shoes are required on all shooting ranges by shooters and spectators.
- Spectators may be limited on the ranges at the discretion of the range officials.
- Spectators and coaches must remain in a designated area and are never allowed on the firing lines without permission of the RSO.
- If a problem arises that requires assistance while on the firing line, a shooter should maintain safe muzzle direction down range and raise a hand to catch the attention of the RSO or other range officials who will assist. A coach will be called to the firing line by the RSO if necessary.
- Follow all range commands. The RSO will review the range commands prior to each group shooting.
- Horseplay and unsafe behavior is not tolerated at all on the range. Shooters may be removed from the event after just one infraction depending on severity.
- Failure to follow these rules could lead to disqualification from the current event or from the Outdoor Challenge. One team member's disqualification affects the team as a whole.

ID Study List for Biologist Skills Event

BIRDS

- **American peregrine falcon**
 - <http://www.tpwd.state.tx.us/huntwild/wild/species/amperegrine/>
- **American kestrel**
 - <http://www.tpwd.state.tx.us/huntwild/wild/species/kestrel/>
- **Black-capped vireo**
 - <http://www.tpwd.state.tx.us/huntwild/wild/species/bcv/>
- **Golden-cheeked warbler**
 - <http://www.tpwd.state.tx.us/huntwild/wild/species/gcw/>
- **Eastern bluebird**
 - <http://www.tpwd.state.tx.us/huntwild/wild/species/easternbluebird/>
 - <http://txtbba.tamu.edu/species-accounts/eastern-bluebird/>
- **Great blue heron**
 - https://www.allaboutbirds.org/guide/Great_Blue_Heron/id
- **Green heron**
 - https://www.allaboutbirds.org/guide/Green_Heron/id
- **Ring-necked duck**
 - http://www.allaboutbirds.org/guide/Ring-necked_Duck/id
- **Greater scaup**
 - http://www.allaboutbirds.org/guide/Greater_Scaup/id
- **Greater roadrunner**
 - http://www.allaboutbirds.org/guide/Greater_Roadrunner/id

FISH

- **Bluegill**
 - <http://www.tpwd.state.tx.us/huntwild/wild/species/bgl/>
- **Channel catfish**
 - <http://www.tpwd.state.tx.us/huntwild/wild/species/ccf/>
- **Flathead catfish**
 - <http://www.tpwd.state.tx.us/huntwild/wild/species/catfish/>
- **Guadalupe bass**
 - <http://www.tpwd.state.tx.us/huntwild/wild/species/gdb/>
- **Longear sunfish**
 - <http://www.tpwd.state.tx.us/huntwild/wild/species/longearsunfish/>

PLANTS

- **Bald cypress**
 - <http://texastreeid.tamu.edu/content/TreeDetails/?id=121>
- **White oak**
 - <http://texastreeid.tamu.edu/content/TreeDetails/?id=89&t=O>
- **Honey mesquite**
 - <http://texastreeid.tamu.edu/content/TreeDetails/?id=82&t=M>
- **Eastern red cedar**
 - <http://texastreeid.tamu.edu/content/TreeDetails/?id=60&t=R>
- **Woolly croton**
 - <http://rangeplants.tamu.edu/plant/annual-croton-woolly-croton/>
- **Big bluestem**
 - <http://rangeplants.tamu.edu/plant/big-bluestem/>
- **American beautyberry**
 - <http://aggie-horticulture.tamu.edu/ornamentals/nativeshrubs/callicarpaamerica.htm>
- **Sideoats grama**
 - <http://rangeplants.tamu.edu/plant/sideoats-grama/>
- **Yellow Indiangrass**
 - <http://rangeplants.tamu.edu/plant/yellow-indiangrass/>
- **Maximilian sunflower**
 - http://plants.usda.gov/plantguide/pdf/pg_hema2.pdf

INVERTEBRATES

- **Blue crab**
 - <http://www.tpwd.state.tx.us/huntwild/wild/species/bluecrab/>
- **Fiddler crab**
 - <http://www.tpwd.state.tx.us/huntwild/wild/species/fiddler/>
- **Crayfish**
 - <https://www.britannica.com/animal/crayfish>
- **Recluse spider**
 - <https://texasinsects.tamu.edu/recluse-spider/>
- **Southern black widow**
 - <https://texasinsects.tamu.edu/southern-black-widow-spider/>
- **Lone star tick**
 - <https://texasinsects.tamu.edu/lone-star-tick/>
- **Striped bark scorpion**
 - <https://texasinsects.tamu.edu/striped-bark-scorpion/>
- **American snout butterfly**
 - <https://texasinsects.tamu.edu/snout-butterfly/>
- **Dragonfly**
 - <https://texasinsects.tamu.edu/dragonfly/>
- **Damselfly**
 - <https://texasinsects.tamu.edu/damselfly/>

MAMMALS

- **Bobcat**
 - <http://tpwd.texas.gov/huntwild/wild/species/bobcat/>
- **Common raccoon**
 - <https://tpwd.texas.gov/huntwild/wild/species/raccoon/>
- **Coyote**
 - <https://tpwd.texas.gov/huntwild/wild/species/coyote/>
- **Nine-banded armadillo**
 - <https://tpwd.texas.gov/huntwild/wild/species/dillo/>
- **Ringtail**
 - <https://tpwd.texas.gov/huntwild/wild/species/rtail/>
- **White-tailed deer**
 - <https://forum.americanexpedition.us/whitetail-deer-information-facts>
- **Virginia opossum**
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Gear Judging Study Guide - Tents, Sleeping Bags, and Camp Stoves

In 2011, an estimated 42 million Americans went camping. Those campers spent a staggering 534.9 million days camping! There are many different types of camping experiences, each varying in time, terrain, season, and purpose. Properly preparing for a camping trip is probably one of the most important aspects of making the experience enjoyable. With this many people and time spent in the outdoors, it is important for each person to equip themselves with the best and most appropriate equipment available.

Three essential camping equipment items presented in this study guide are tents, sleeping bags, camp stoves, and backpacks. With advances in technology over the last century, each item has improved in construction and purpose and is no longer a “one size fits all” product. To ensure a fun camping experience, consumers should become familiar with the many differences in the equipment before making purchases.

TENTS

A tent is a portable shelter constructed of a fabric and supported by poles, with lines securing the structure to the ground. Today’s tents are built in/for a variety of shapes, seasons, sizes, weights, features, and purposes.

Seasons

- Three-Season Tents are designed for spring, summer, and fall. These have a variety of ventilation options and are typically made of thinner, less durable material than four-season. It is best used in mild to hot climates.
- Four-Season Tents are built to provide better protection from snowfall and wind. Venting is minimal and the material is tougher than three-season. The season type is a bit misleading in that these tents are really designed for one season, winter. This type of tent may not be suitable for hot climates due to its limited ventilation.

Size and Weight

One of the biggest factors in selecting a tent is its size. Size is usually quantified by how many people can sleep on the floor. This is typically depicted by a “person” rating. As an example, a tent may be described as capable of sleeping 4 people. Keep in mind, this rating does not take into consideration any gear that may also need to be stored in the tent. An alternative means of determining the best tent size is to estimate the amount of floor space needed by the camper(s) and match that to the floor space (noted by dimensions or square footage on the packaging) of the tent being purchased.

With size also comes weight. Factors that affect weight are the size of the tent itself, the type and amount of material used, and the tent’s features. Weight is an extremely important factor to consider when camping in more remote locations (i.e., backpacking or wilderness camping) and the camper is hauling the gear on foot to the campsite. Weight is less of a factor if the camper is “car camping” (parked close to the campsite) or using a horse or ATV to haul the gear.

Features

Today's tents come with a variety of available features that help make your living space more enjoyable and comfortable.

- Rain fly: a removable, water-resistant outer wall made of cloth that helps protect the tent from rain. Rain fly's come in two categories: full-length and partial. Full-length extends almost completely to the floor and provides the most protection. Partial covers the mesh panels at the top of the tent and offers more ventilation than the full-length.
- Vestibule: a floorless "porch" usually created by an extension of the rain fly. Its purpose is to provide a semi-protected transition area between the tent and the outdoors. It is often used as an area to remove wet or muddy shoes.
- Door: a cloth door panel that is often secured by a zipper. Some tents have multiple doors to allow easier movement in and out of the tent.
- Poles: a rod made of aluminum, fiberglass, or carbon fiber that helps provide shape and structure to a tent. Fiberglass poles are found on inexpensive, light-duty tents (cheaper, heavier, and less durable than the other two). Aluminum poles are strong, light, and inexpensive. Carbon fiber poles are found on high-end tents. These are very light and strong, but are the most expensive to replace.
- Panels/Walls: the inner cloth canopy that is made up of a solid and/or screened (mesh) material. A solid, waterproof wall can provide protection from rain, but provides less ventilation inside the tent. A screened wall allows for better airflow in and out of the tent, but does not prevent rain from entering the tent. A hybrid design that uses a mixture of solid and screened material helps reduce condensation inside the tent. Tent fabrics usually have a waterproof rating associated with its polyurethane-coated fabric. Higher values are associated with better waterproofing capabilities. For example, a rain fly with a rating of 2,500mm is more waterproof than 1,000mm. Keep in mind, the higher the rating (more coating), the heavier the tent will be also.
- Windows: typically made of screened (mesh) material; it allows air to flow in and out of the tent while also minimizing entry of insects or other critters
- Floor: a fabric component of the tent that is made of more durable material than the walls. The floor must hold up against the weight of its occupants and contact with the ground.
- Footprint: a durable material (also called a ground cloth) that is placed under the tent to provide extra protection from abrasion and moisture. A footprint will also help extend the life of the tent.



SLEEPING BAGS

Camping is all about enjoying the great outdoors, but while you're fast asleep in your tent, comfort is probably the number one priority. Having the right sleeping bag can make all the difference in getting a restful sleep. Below are three of the most important factors to consider when purchasing a sleeping bag.

Temperature Rating

The temperature rating indicates the lowest ambient temperature that the average user would still remain comfortable at inside the sleeping bag. For example, a rating of +35°F means that the average person would remain comfortable inside the sleeping bag at 35°F or higher. In selecting the ideal bag, select one that is rated for the coldest temperature expected.

Insulation Type

Most sleeping bags are insulated with either a synthetic polyester fill or goose down.

Type	Advantages	Disadvantages
Synthetic	Insulation when wet Dry fairly fast Easy to clean Less expensive Non-allergenic	Heavier Bulkier Shorter age Doesn't conform to body as well
Down	Warmer ounce for ounce Lightweight Highly compressible Longer age Wicks moisture	Useless when wet Slow to dry Requires special cleaning May contain allergens More expensive

Citation Source: <http://wildbackpacker.com/>

Shape and Size

The most common shapes (in order of largest capacity to smallest) are rectangle, semi-rectangular, and mummy. Of the three, mummy shapes are smaller and typically lighter weight, ideal for backpacking. To compare sizes when purchasing, check the shoulder and hip girth specifications. Lengths come in "regular" or "long". Long is recommended for individuals 6' 6" or taller.

CAMP STOVES

Size and weight

Camp stoves come in a variety of arrangements, fuel types, and accessories. Stoves can range in weight from a few ounces to several pounds. Select a stove that minimizes weight and volume when backpacking. Be sure to factor in the weight of the stove's fuel. If car-camping, size and weight are less of a factor.

Burners

Stoves are designed with single or multiple burners. Single-burners are best for simple meal preparations such as boiling water, or a single can/pot of food. Multiple burners are ideal when preparing large meals that require more than one burner going at a time. Single-burners weigh less, and are the burner of choice for most backpackers.

Fuel Type – Cartridge vs. Liquid Fuel

- Cartridge Stoves use compressed gasses such as propane, butane, or iso-butane that come in their own container. These are typically lighter in weight, require less maintenance, and burn cleaner. Butane does not perform at temperatures below freezing (32°F). Stoves are sold as a burner that attaches to the top of the cartridge, and the cartridge serves as the stove's base. Canisters cannot be refilled.
- Liquid Gas Stoves have a refillable fuel tank that is typically filled with white gas or kerosene. These stoves work better in cold and windy conditions than cartridge stoves; however, they are more difficult to use and require more maintenance. Liquid fuels are heavier than the compressed gas fuels.

OUTDOOR BACKPACKS

The following is a general guide for which pack sizes (measured in liters) typically work well for backpackers during warm weather hikes of varying lengths. Colder-weather trips usually require a larger pack, while ultralight backpackers may choose to go smaller than the recommendations here. (For more information, see our Expert Advice article on Ultralight Backpacking.)

Length of trip	Pack capacity (liters)
Weekend (1–3 nights)	35–50
Multiday (3–5 nights)	50–80
Extended (5+ nights)	70+



Weekend (1–3 nights; 35–50 liters)

Efficient packers using newer, less-bulky gear can really keep things light on 1- to 3-night trips by using a pack in this range. Be aware that packing light requires self-discipline and careful planning. If you can pull it off, though, the light-on-your-feet rewards are fantastic.



Multiday (3-5 nights; 50-80 liters)

These are the most popular backpacking packs sold at REI and they're an excellent choice for warm-weather trips lasting 3 or more days. Packs in the 50- to 80-liter range are also great for shorter trips where you pack a little more luxuriously or multisport activities like backcountry skiing.



Extended-trip (5+ nights; 70 liters or larger)

Trips of 5 days or more usually call for packs of 70 liters or more. These are also usually the preferred choice for winter treks lasting more than 1 night. (Larger packs can more comfortably accommodate extra clothing, a warmer sleeping bag and a 4-season tent, which typically includes extra poles.) They're also a good option for folks taking young children backpacking because Mom and Dad wind up carrying a lot of kids' gear.



Climbing Packs

REI also carries packs designed primarily as climbing packs. Most have modest capacities that are appropriate only for day trips or overnights. Common features include:

- The ability to strip down the pack to its minimal weight (removing the lid, framesheet and possibly the hipbelt) for use during a summit push.
- A narrower, sleeker, sometimes higher profile than a usual pack bag, permitting unencumbered

arm movement.

- Several lash-on points for external tool attachment.
- A daisy chain—a length of webbing stitched to the outside of a pack—to provide multiple gear loops for attaching a helmet or tools.
- A reinforced crampon patch (to prevent crampon points from gouging holes in the packbag).
- Gear loops on the hipbelt or low on the pack body, useful as clip-on points for gear or possibly as attachment points for skis.

Backpack Fit

Once you've chosen the type of backpack you want, the next step is to work with an REI sales specialist to expertly fit you to your pack.

The right fit is one that offers:

- A size appropriate for your torso length (not your overall height).
- A comfortably snug grip on your hips.

If you're unable to work with a fit specialist in a store, you can enlist a friend and follow the directions provided in the REI Expert Advice article on Finding Your Torso and Hip Size.

Torso Length

Some packs are available in multiple sizes, from extra small to large, which fit a range of torso lengths. These ranges vary by manufacturer and by gender. Check the product specs tab for size details of a specific pack.

Other packs may feature an adjustable suspension, which can be modified to fit your torso, especially if you're in between sizes. The drawback: An adjustable harness adds a little weight to a pack.

Waist Size

The majority of a backpack's weight, 80% or more, should be supported by your hips.

Backpack hipbelts usually accommodate a wide range of hip sizes, from the mid-20 inches to the mid-40 inches.

People with narrow waists sometimes find they cannot make a standard hipbelt tight enough and need a smaller size. Some packs offer interchangeable hipbelts, making it possible to swap out one size for another.

Women-Specific Backpacks

These are engineered specifically to conform to the female frame. Torso dimensions are generally shorter and narrower than men's packs. And hipbelts and shoulder straps are contoured with the female form in mind.

Youth-Specific Backpacks

These typically offer smaller capacities and include an adjustable suspension to accommodate a child's growth. Women's backpacks, with their smaller frame sizes, often work well for young backpackers of either gender. So do small versions of some men's packs.

Additional Backpack Fit Adjustments

Load lifter straps

Are stitched into the top of the shoulder straps, and they connect to the top of the pack frame. Ideally, they will form a 45° angle between your shoulder straps and the pack. Kept snug (but not too tight), they prevent the upper portion of a pack from pulling away from your body, which would cause the pack to sag on your lumbar region.

Sternum strap

This mid-chest strap allows you to connect your shoulder straps, which can boost your stability. It can be useful to do so when traveling on uneven cross-country terrain where an awkward move could cause your pack to shift abruptly and throw you off-balance.

For tips on pack loading, see the REI Expert Advice article on [How to Load a Backpack](#).

Backpack Frame Type

Internal-frame backpacks

The majority of packs sold at REI today are body-hugging internal frame packs that are designed to keep a hiker stable on uneven, off-trail terrain. They may incorporate a variety of load-support technologies that all function to transfer the load to the hips.

External-frame backpacks

An external-frame pack may be an appropriate choice if you're carrying a heavy, irregular load. Toting an inflatable kayak to the lake or heading out to the backcountry with surveying tools? An external frame pack will serve you best. External frame packs also offer good ventilation and lots of gear organization options.

Frameless backpacks Ultralight devotees who like to hike fast and light might choose a frameless pack or a climbing pack where the frame is removable for weight savings.

Backpack Features

Main compartment access:

- Top-loading openings are pretty standard. Items not needed until the end of the day go deep inside.
- Some packs also offer a zippered front panel that folds open exposing the full interior of the pack, or a side zipper, which also makes it easier to reach items deeper in your pack.

Sleeping bag compartment

- This is a zippered stash spot near the bottom of a pack. It's a useful feature if you don't want to use a stuff sack for your sleeping bag. Alternately, this space can hold other gear that you'd like to reach easily.
- Top lid: Many packs offer a zippered top lid where most backpackers store quick-access items: sunscreen, insect repellent, camera, snacks, map. Some lids detach from the main pack and convert into a hipbelt pack for day trips.

Pockets

Typical offerings:

- Elasticized side pockets: They lie flat when empty, but stretch out to hold a water bottle, tent poles or other loose objects.
- Hipbelt pockets: These accommodate small items you want to reach quickly—a smartphone, snacks, packets of energy gel, etc.
- Shovel pockets: These are basically flaps stitched onto the front of a packbag with a buckle closure at the top. Originally intended to hold a snow shovel, they now pop up on many 3-season packs, serving as stash spots for a map, jacket or other loose, lightweight items.
- Front pocket(s): Sometimes added to the exterior of a shovel pocket, these can hold smaller, less bulky items.

Ventilation

This can be a drawback of internal-frame designs. Much of the pack rides on your back, cutting airflow and accelerating sweaty-back syndrome. Designers have addressed this in a variety of ways—ventilation “chimneys” built into back panels, for example.

A few packs have engineered a suspended mesh back panel, sometimes called “tension-mesh suspension.” This is a trampoline-like design where the frame-supported packbag rides along a few inches away from your back, which instead rests against the highly breathable mesh.

Padding

If you're using a lightweight pack with a fairly minimalistic hipbelt and lumbar pad, you can encounter sore spots on your hips and lower back. If this is the case for you, consider using a cushier hipbelt.

Attachment points

If you frequently travel with an ice axe or trekking poles, look for tool loops that allow you to attach them to the exterior of the pack. Rare is the pack that does not offer at least a pair of tool loops.

Backpack Accessories

Raincover

Pack fabric interiors are usually treated with a waterproof coating. Yet packs have seams and zippers where water can seep through, and the fabric's exterior absorbs some water weight during a downpour.

Last Revised February 2022

The solution is a raincover, which could be a plastic garbage bag (cheap but clumsy) to a more customized packcover. If you expect rain on your trip, this is a good item to carry. An alternative: bundling gear internally in waterproof “dry” stuff sacks. Lightweight dry sacks can be a better option in windy conditions; strong gusts have the potential to abruptly peel a cover right off a pack.

Hydration reservoir

Nearly all packs offer an internal sleeve into which you can slip a hydration reservoir (almost always sold separately) plus 1 or 2 “hose portals” through which you can slip the sip tube.

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(These are not to be used as study resources for this event. All information for the event is included in the Guide above.)

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Other Outdoor Education Resources:

- Canoeing Resources:
 - Launching: [YouTube Video](#)
 - Paddling: [YouTube Video 1](#); [YouTube Video 2](#)