

## Definitions for Scrambling Ratings

To distinguish the difficulty of non-technical mountain climbs more clearly, the Scrambling Ratings framework divides each of the four, non-technical Yosemite Decimal System (YDS) categories into three parts and expands the scope of the ratings. While the YDS ratings only address the difficulty of the hardest section of a route, Scrambling Ratings also consider the length of the most challenging segments and other factors distinguishing the severity of mountain hikes and scrambles.

As with the YDS system, Scrambling Ratings are subjective, but they are based on a few objective variables that determine the severity of a route's most difficult segments. The key variables include steepness and stability of terrain, which together are the major determinants of exposure to hazards such as the risk posed by the climber falling off steep rocks or loose rocks collapsing on the scrambler. Additional factors for cross-country travel and lower-angle scrambling include the presence of other obstacles in the form of vegetation, waterways, and snow.\*

Reflecting the importance of terrain steepness, each Scrambling Rating category notes the maximum angle of slopes on a route, dividing the grade of terrain into five classifications: low angle (0-30 degree); moderate angle (30-45 degree); fairly steep angle (45-60 degree); steep (60-75 degree) and very steep (75 degrees and above). Steepness can refer to either the angle of ascent or adjacent slopes of routes following narrow, exposed ridges (i.e., aretes).

Likewise, each rating definition mentions the nature and stability of the route's more difficult terrain. Loose rock surfaces of scree, talus, boulders and fractured, crumbly rock can greatly increase the difficulty and hazards posed by a mountain route, varying with the steepness of the landscape. Terrain is referred to as stable when foot and hand placements are solid and unstable when hiking and scrambling movements can induce slips, slides, and falls of rocks and when holds must be tested.

Bushwhacking and stream-crossings can increase the seriousness of mountain hikes and scrambles by creating more difficult, and at times dangerous, footing and by creating route-finding challenges. The difficulty posed by vegetation and water obstacles may vary seasonally with the density of foliage and water levels. Dangerous spring or early summer stream-crossings can seasonally raise the difficulty rating of a scramble.

In summary, each Scrambling Rating definition addresses the extent and challenges of any off-trail travel; the length and difficulty of any scrambling; the steepness, nature and stability of the terrain; and the degree of exposure to hazards.

The definitions outlined below describe the key characteristics of each Scrambling Rating category, as outlined in the April-June 2019 *Sierra Echo* article "Improving Ratings for Mountain Scramblers" written by Philip S. Bates. All Scrambling Ratings are preceded by an "S" notation for "Scrambling" to distinguish them from the closely related but not identical YDS ratings.

**YDS CLASS 1** - Hiking on trails and easy cross-country travel with little risk.

**S-1.0 Hands-in-pockets walking on well-maintained trails** from start to finish, with minimal risk aside from mountain weather and the effects of altitude.

**S-1.1 Hikes predominately on a mix of maintained and use trails**, requiring virtually no route-finding skill and covering terrain that consists of stable, easy footing, no vegetation or

water obstacles, and low to moderate grades. Any off-trail hiking is for short distances over easy terrain. There is little risk aside from weather and altitude.

**S-1.2 Intermediate to long distances of cross-country travel** over terrain with stable footing and low to moderate grades, but the route may involve extensive vegetation and/or stream crossings that require backcountry route-finding skills for efficiency and safety. Risks are limited to navigation errors and hazards posed by stream-crossings, weather and altitude.

**YDS CLASS 2** - Simple scrambling and rough cross-country travel on scree, talus, and boulders, with minimal exposure and low to moderate risk.

**S-2.0 Modest distances of rough cross-country travel on low-angle scree and talus, with only short segments of easy scrambling on moderate angle, stable terrain.** Route-finding is fairly straightforward, with no important vegetation or water obstacles, and minimal exposure to rock slides and falls. Only occasional use of hands is needed for balance. Risk of serious injury from falls and hazards is small.

**S-2.1 Intermediate distances of rough cross-country travel on low-angle scree, talus, and boulders, with extensive, easy scrambling on moderate angle terrain that is predominately stable.** Hands are often used for balance. Some route-finding skill is needed for efficient and safe travel across or around more difficult terrain, vegetation, stream-crossings, and rockfall hazards. The risk of serious injury from slips and rockfalls is small to medium.

**S-2.2 Intermediate to longer distances of rough cross-country travel with lengthy stretches of easy-to-medium difficulty scrambling on moderate to fairly steep angle scree, talus, and boulders that are sometimes unstable.** The use of hands is frequently required for balance and to test the stability of talus and boulders. Good route-finding skills are necessary for efficient and safe travel across or around more difficult terrain, vegetation or stream-crossings, and rockfall hazards. The risk of serious injury from falls or hazards is medium to significant.

**YDS CLASS 3** - Moderate scrambling on steep, rocky terrain that requires handholds for upward movement and safety. Beginners may want a belay due to increased exposure and risk of serious injury.

**S-3.0 Brief, medium difficulty to hard scrambling on fairly steep to steep angle, stable rock with medium to high exposure.** Hand and foot holds are large, secure and easy to find, requiring little climbing experience. Route finding is easy, with little potential for straying onto more difficult and dangerous terrain. Medium to significant risk of serious injury from falls or other hazards.

**S-3.1 Short to intermediate length, hard scrambling on fairly steep to steep angle and predominately stable rock with high exposure.** Hand and foot holds are numerous, solid and easy to find, requiring limited climbing experience. Given the length and steepness of the scrambling, beginners may wish to use a rope to manage the significant exposure and the

challenges of down-climbing more safely. Modest route-finding skills are necessary to avoid more difficult and dangerous terrain. Significant risk of serious injury from falls or other hazards.

**S-3.2 Extensive, hard scrambling on fairly steep to steep angle and sometimes unstable rock with high to severe exposure.** Hand and foot holds are numerous and easy to find, but holds often need to be tested. Though only modest climbing skills are needed, some climbers may desire a rope due to the sustained nature, steepness, and exposure of the hard scrambling segments, as well as the presence of unstable rocks and the challenges of down-climbing. Route-finding skill is needed to avoid more difficult terrain and to minimize vulnerability to unstable rocks. A helmet may be advisable. Falls or hazards pose a high risk of serious injury or death.

**YDS CLASS 4** - Difficult and exposed scrambling on very steep terrain where a rope is often advisable for safety, given the substantial risk of serious injury or death in the event of a fall.

**S-4.0 Brief, very hard scrambling on extremely steep, stable rock with high exposure.** Very hard scrambling is limited to only a small number of climbing moves covering less than 20 feet of extremely steep rock with lots of exposure. While holds are readily available, they need to be tested and are often smaller and more difficult to identify than on Class **S-3** rock. Accordingly, some climbing skills are needed, a helmet is desirable, and a rope is useful for belays and descent. A fall poses a high risk of serious injury or death.

**S-4.1 Short to intermediate length, very hard scrambling on extremely steep and predominately stable rock with severe exposure.** Very hard scrambling is limited to several short to intermediate length segments of climbing covering a total of up to about 50 feet of extremely steep, exposed rock. Holds are numerous, but must be tested and are frequently smaller and more difficult to find than on Class **S-3** rock. The greater length of the very hard scrambling requires more commitment, thus making intermediate climbing and route-finding skills desirable. Many climbers will desire a helmet and a rope for belay and rappel. A fall poses a high risk of serious injury or death.

**S-4.2 Extensive, very hard scrambling on extremely steep and sometimes unstable rock with severe exposure.** Very hard scrambling on multiple or sustained segments totaling over 50 feet of very steep, highly exposed rock that at times is unstable. Each hold should be tested and holds tend to be smaller and harder to identify than on Class **S-3** rock. The number and length of pitches of very hard scrambling require significant commitment and make intermediate climbing and route-finding skills desirable. Route-finding errors often lead to technical rock. Most climbers will desire a helmet and a rope for belay and descent. A fall poses a high risk of serious injury or death.

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\* Winter hikes and scrambles up mountains pose many challenges outside the scope of the Scrambling Ratings system. However, many spring to autumn scrambles cross snow slopes. Accordingly, the April-June 2019 *Sierra Echo* article “Improving Ratings for Mountain Scramblers” addresses the difficulties and risks presented by snowfields and a simple framework is outlined for adjusting the ratings for such considerations.

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