System for Rating the Difficulty of Downhill Mountain Bike Courses
Draft 2011-02-15
By: Kevin MacCuish, edited (for U13): Alberta Bicycle Association

Key Elements affecting the Difficulty of Downhill MTB Courses

- Average steepness
- Course length
- Types of obstacles
- Soil quality

It is possible to rate the difficulty of any downhill course based upon a combination of the factors listed above. The considerations affecting course difficulty for of these factors each is found below.

Scale of Difficulty

Following an inspection, race courses will be classified according to the following scale:

Beginner/U13: The course is suitable for all age and ability levels. Such courses are relatively short (roughly 2500 metres or less), have an average steepness of less than about 15%, have no 'professional'-level obstacles (see below), and no 'difficult' obstacles (see below), and relatively firm soil quality in all weather conditions.

Novice/U15: The course is suitable for all age and ability levels as low as U15. Such courses are relatively short (roughly 2500 metres or less), have an average steepness of less than about 15%, have no 'professional'-level obstacles (see below), and no 'difficult' obstacles (see below) without go-arounds, and relatively firm soil quality in most weather conditions.

Intermediate: The course is suitable for most age and ability levels, except for the youngest and / or most inexperienced riders. Such courses have a short to medium length (roughly 3000 metres or less), an average steepness of less than about 20%, have no 'professional'-level obstacles at all, and no difficult obstacles without go-arounds, and may have loose soil quality in some conditions.

Difficult: The course is suitable only for U17 aged and older riders with intermediate to expert level bike handling skills, and may be beyond the capabilities of some adult recreational-level racers. Such courses may be up to the maximum length allowed by the UCI regulations (or slightly more (3500 metres), have an average steepness of 30% or less, have no 'professional'-level obstacles without go-arounds (go-arounds may be declared mandatory for some categories), and a broad range of soil quality.

Professional: The course is suitable only for professional-level riders with expert bike handling skills, a good degree of fitness, and advanced equipment. The probability of injury for riders less skilled than this is moderate to high. Such courses may exceed the maximum length allowed by the UCI regulations (3500 metres), have an average steepness in excess of 30%, have one or more 'professional'-level obstacles with or without go-arounds, and a broad range of soil quality.

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Considerations Concerning Average Steepness

The average steepness is calculated by dividing the vertical drop of the course (in metres) by the length of the course in metres. A survey of the race courses found in the 2008 DHI Mountain Bike World Cup found that average steepness ranged from 10% (Canberra) to 30% (Bromont), with the majority exceeding 20%. As a result, courses with steepness greater than 20% probably exceed the skills of beginner-level riders, novice-level riders and some intermediate-level riders.

Considerations Concerning Course Length

Long downhill courses require greater fitness and greater bike handling ability than do shorter courses. Given the possibility of achieving high rates of speed while riding such courses, particularly long courses tend not to be suitable for beginner and novice-level riders; the possibility of serious injury increases in step with the riders level of fatigue and the relative 'speed' of the course.

Considerations Concerning Types of Obstacles

'Professional'-Level Obstacles Include:

- Gap jumps of any height or length
- Any type of jump with a length of more than 3 metres from the end of the launch section to the start of the landing transition
- Drops exceeding 1.5 metres in height (measured from the top edge to the top of the transition)
- Pitches (with roll-out or drop) with average inclines in excess of roughly 50 degrees, exceeding 5 metres in length
- Any pitch of any length with an average incline of roughly 70 or more degrees
- Any obstacle or section judged by the inspector to required professional-level skills to successfully negotiate in a race situation

'Difficult'-Level Obstacles Include:

- Any type of jump or feature such that it is likely that both wheels will leave the ground more than momentarily
- Drops between 40 centimetres and 1.5 metres in height (measured from the top edge to the top of the transition)
- Pitches with inclines in excess of roughly 50 degrees, exceeding 3 metres in length
- Any man-made features increasing the technical difficulty of the course such as rock gardens and log gardens
- Any obstacle or section judged by the inspector to require somewhere between advanced and professional-level skills to successfully negotiate in a race situation

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Considerations Concerning Soil Quality

Courses with average soil quality that tends to remain firm in a variety of weather conditions tends to be easier to negotiate than soil that tends to become very loose and dusty in particularly dry weather, or extremely slick and muddy in particularly wet weather. Courses where soil conditions deteriorate easily tend not to be suitable for beginner and novice- level riders due to the reduction in traction. If a course's soil condition has varied during the event due to weather, final decision on whether or not a category may be allowed to race will be made by the event's Chief Commissaire.