

# Lightning

Be prepared; check weather forecasts to be ready for a possible thunder storm.

## How to tell if lightning is coming...

- You see it or hear thunder
- You hear loud static in your AM radio.
- Your antenna makes buzzing sounds.
- For every 5 seconds you count after see lightning and hear thunder, the strike is one mile away.
- If the thunder comes immediately following the strike, the storm is very close.

## If can see a lightning storm coming...

- Secure objects that could blow away in wind
- If there is a vehicle near, get inside. You are much safer inside a vehicle that is struck by lightning than if you are outside it and struck.
- If you are in a forest, seek a low area of a thick growth of small trees.
- If you are in an open area, seek the lowest points. Be aware of flash floods.
- Avoid tall, isolated trees or things that could act as conductors.
- During the storm, crouch into a ball position with your feet and knees together with your head tucked and your hands over your ears.
- DO NOT lie down.
- Separate from others in your group to reduce spread of lightning strike if it does happen.
- Avoid metal.
- Do not hug a tree.

Thunderstorms may occur singly, in clusters or in lines. They tend to bring heavy rain anywhere from 30 minutes to an hour.

Even if the rain has passed, lightning can still strike even 10 miles away from the rain.

### How Far Away Is Lightning From Me?

Use the "Flash to Bang" method:

If thunder is heard:	The lightning is:
05 seconds after a flash ...	1 mile away
10 seconds after a flash ...	2 miles away
15 seconds after a flash ...	3 miles away
20 seconds after a flash ...	4 miles away
25 seconds after a flash ...	5 miles away
30 seconds after a flash ...	6 miles away
35 seconds after a flash ...	7 miles away
40 seconds after a flash ...	8 miles away

Did you know? When you feel the electrical charge—if your hair stands on end or your skin tingles lightning may be about to strike you.

### If someone is struck by lightning...

- Call 9-1-1
- Victims do not carry an electric charge after they have been struck so they can be tended to immediately.
- Check to see if they are breathing or heart is still beating. If not, begin CPR.
- Check for burns on body, loss of sight, hearing loss, or broken bones.

### After storm has passed...

- Never drive through a flooded roadway.
- Stay away from downed power lines.
- Stay away from heavily storm damaged areas to avoid risks it may bring.

### References:

<https://www.ready.gov/thunderstorms-lightning>

<http://www.nws.noaa.gov/os/lightning/resources/LightningFactsSheet.pdf>

<http://emergency.cdc.gov/disasters/lightning/safetytips.asp>

<http://www.lightningsafety.noaa.gov/outdoors.shtml>

## **River Crossing**

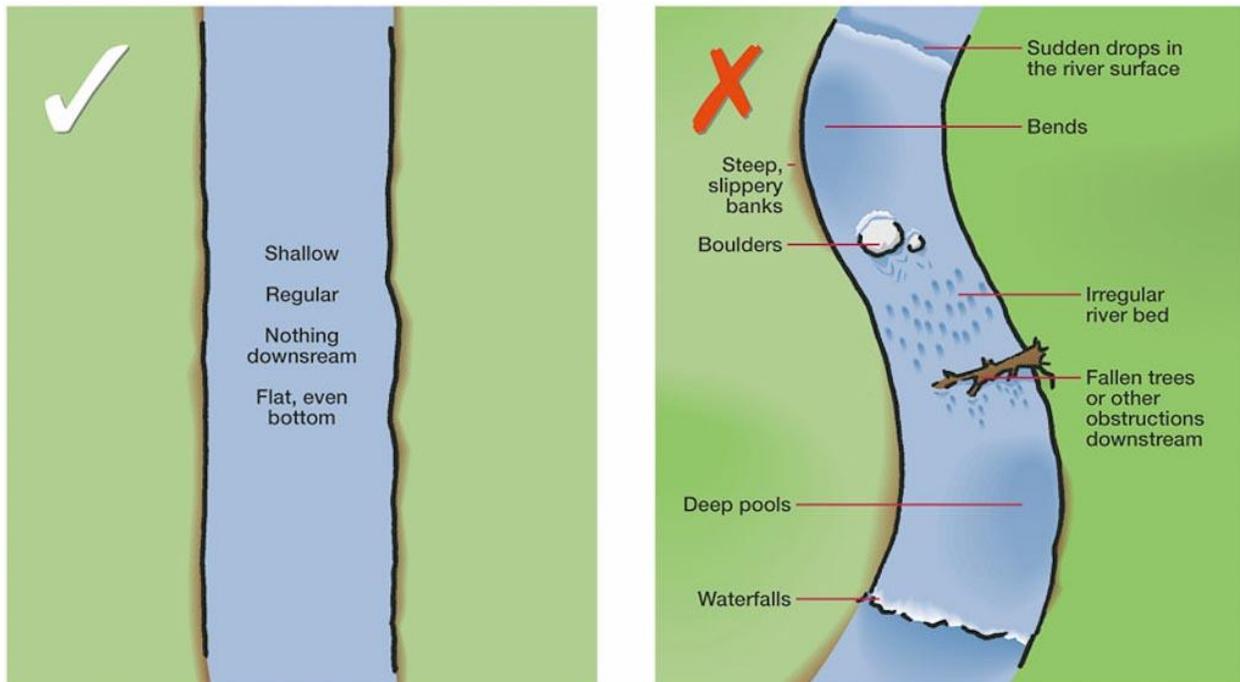
The bottom of a river has the least movement; the top near your knees will be what knocks you over. Test the force of the river with your trekking pole. If you throw a stick into the water watch where it goes. If someone were to fall in they would take a similar path as the stick, if you cannot walk as fast as the stick floats it may be a bad place to cross.

### If you decide to cross a river...

- Find a vantage point where you can see where you could get out of the river if you were to fall in.
- Select an area that you can cross at 45 degrees towards downstream.
- Look for animal tracks that would indicate where bigger animals have crossed.
- Unclip the sternum and waist straps of your pack because if you fall in you will need to shed the pack quickly.
- Do not tie yourself to another person because if one of you falls in so will the other.
- Do not cross barefoot, preferably use an old pair of tennis shoes and tie your hiking boots around your neck.
- Avoid crossing at “chokepoints” or where the river is very narrow. This is where the current will be the strongest.

### When crossing...

- If the height of the river is over your thighs, turn around and find a different place to cross.
- Don't cross in long pants.
- Cross as a group, with the strongest and biggest person slightly upstream in order to break the current.
- Keep your eyes on the destination, and try to avoid looking at the water because it may cause vertigo.



### Methods for crossing...

- Using a log that crosses a whole river
  - A tree with bark on it will provide the most traction.
  - Face upstream and sidestep across.
- Boulder Hopping
  - Scout your route to plan where your hand and feet will go.
  - Try to keep three points of contact at all times.
  - Jumping up to a boulder is better than having to jump down to one.
  - Having a stick or trekking poles will help you to balance.
- Mutual support methods
  - Using waist belts or pack straps This is the preferred variation, especially in deep water. It's quick to set up as it only requires normal equipment and it gives good support if anyone stumbles or slips.

- 1. Line up people according to their level of strength and experience. - a strong person at the upstream end of the line - the strongest, most experienced person alongside them for extra support - another strong person at the downstream end - the rest of the group in between
- 2. Undo chest straps and loosen shoulder straps.
- 3. Check that waist belts are done up.
- 4. Insert arms between each neighbor's pack and their back, and grasp either their waist belt or their pack shoulder strap (down low) on the opposite side.
- 5. Move into the river as a single unit.

#### If you fall during your crossing...

- Point your feet downstream and paddle towards the shore.

If this is a two way trip and you will need to cross the river coming back, mark your crossing point. Remember that river levels can change quickly with rain or snow runoff.

References:

<http://www.wta.org/hiking-info/basics/how-to/how-to-ford-a-river>

<https://www.appalachiantrail.org/docs/default-document-library/Safety%20Tips%20for%20Fording%20Streams%20and%20Rivers.pdf>

[http://www.mountainsafety.org.nz/assets/images/About%20river%20safety\(1\).pdf](http://www.mountainsafety.org.nz/assets/images/About%20river%20safety(1).pdf)

## Avalanches

#### Types of avalanches...

- Loose snow avalanches
  - Occur when there is little or no cohesion in the snowpack.
  - They usually start on the surface, and form a triangular shape when moving down the mountain.
  - Snow clumps from a cliff falling on to the snowpack can cause this.
- Slab Avalanches
  - Occurs when a layer of snow beneath the pack breaks off and slides downhill.
  - Occurs when layers of snow are stacked from winds and change over time, some layer are stronger and some are weak.

#### Terrain Causes of Avalanches...

- Slope angle: Avalanches most often occur on slopes between 30 and 45 degrees.
- Slope aspect: Slopes facing the south are more stable than slopes facing the north because of sun exposure.

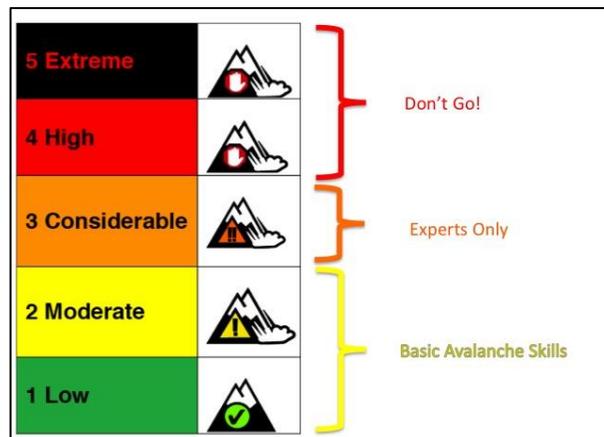
- Condensation: Snow is least stable immediately following a snow storm or rain storm.
- High winds: High wind can cause the top layer of snow to move to other ridges thus increasing the likelihood of a slide.
- Temperature change: Rapid warming of a slope can cause wet snow avalanches.

Human errors...

- Familiarity: you are more likely to take risks in places that you are familiar, however conditions can change minute to minute.
- Peer Pressure: Being pressured into continuing on can be dangerous. Do not give in.
- 'Expert Halo': If you think someone in the group is an expert, you may rely and trust that everything they are doing is right even if it is dangerous.
- Existing Tracks: Following tracks left by someone else does not mean that an area is safe.

Prevention...

- Check forecasts and look for changes in weather such as rain, snow storm or warming of temperature.
- Check avalanche warnings in your destination.
- Observe hollow sounds or cracking as a sign of danger.



If caught in an avalanche...

- Swim to the surface.
- Try to grab a tree or get off the slab.
- Try to get out of its way.
- If it hits you, fight to get one hand out of the snow and wave your other hand in front of your face to create an air pocket.

References:

<https://www.rei.com/learn/expert-advice/avalanche-basics.html>

<http://www.fsavalanche.org/get-the-training>

<http://environment.nationalgeographic.com/environment/natural-disasters/avalanche-safety-tips/>

<http://www.outsideonline.com/1825706/5-avalanche-safety-tips>