The Dangers of Mono Winds...

Mono Winds can easily reach speeds in excess of 50 mph and in extreme cases as high as over 100 mph. Typically Mono Winds are most common between October and April, and especially around December and January when the cold air that drives them is most common. While the broad area affected by Mono Winds is along the western slopes of the central Sierra Nevada, they are most common within Yosemite National Park. However, due to the localized effects of terrain channeling these winds, they can often affect one area tremendously and barely impact another area just a few hundred feet away.

The most common danger from Mono Winds is trees falling down. Fallen trees can easily strike visitors as well as obstruct traveling on roads and make navigating trails difficult. Even campers in enclosed structures such as cabins can be at risk. If park officials recommend or order evacuations due to Mono Winds, heed their advice and leave for a safe area. If an area is designated as being closed due to the risk of fallen trees, please stay out of it until park officials determine is it once again safe to enter.

In addition to the risk of trees falling down, Mono Winds can also cause other loose objects to be blown. Even the most secure tent is at risk when wind speeds reach 50 mph or greater. Debris can easily pierce a tent. Even if you remain in the open, fine particles like dirt will be easily blown which can put your eyes at risk.

Lastly, there is always a risk for fires to spread when strong winds blow. Remaining in a heavily wooded area when winds pick up and any sort fire is going on nearby – even a campfire – is a recipe for disaster. Always, always obey park guidelines on campfires on any day.

Be Alert...Be Prepared!

When a Mono Wind event strikes, time is of the essence. As soon as you learn about a Mono Wind event occurring, move to a safe location, especially one free from the threat of fallen trees. The best course of action is to do this *before* the winds start to pick up. Once winds increase, evacuation by car or foot may become impossible as trails and roads may be blocked by debris.

Stay Alert! Always check the weather forecast for hazardous weather before you venture into Yosemite National Park. If you are planning to be in the park for an extended period of time, and planning to venture into remote areas where communications are scarce, check with a park ranger or ask about the latest weather updates at the visitors center in Yosemite Valley or any posts. Weather forecasts are available in Yosemite Valley on NOAA Weather Radio on 162.450 MHz. A few locations in Yosemite Valley also offer internet access (note: not all internet access is free).

Be Prepared! Before you venture into any part of the park, know where the closest exit is at. Take a map with you at all times. Know of a route out of where you are at in case you must leave. Avoid camping or standing under any trees that look diseased or stressed. Move to shore if on a boat – strong winds can easily cause your boat to capsize. Listen to your surroundings and be aware of what is around you.

Mono *Winds*

When the wind begins to blow...be in the know.

The awe-inspiring sights of Yosemite National Park attract millions of visitors each year to see the elements of nature in person. However, one element of nature when it blows into Yosemite National Park can be deceptive, dangerous and *potentially* deadly – the Mono Wind. The Mono Wind can turn a day (or night) into a real outdoor adventure if not taken seriously.

What are Mono Winds?

Mono Winds are a localized wind that blows across the western slopes of the central Sierra Nevada and into the foothills below from the northeast. The name Mono Winds was given to these winds because they blew into the central Sierra Nevada from the direction of Mono Lake. The word "Mono" was derived from a Native American tribe who once resided in the area.

Mono Winds are strong winds that blow downhill across the western slopes of the central Sierra Nevada from the northeast. In an ideal atmospheric pattern, air moving from the northeast and flows up and over the high peaks of the Sierra Nevada. As this air rushes several thousand feet downhill, it increases in speed and also dries out. The rugged topography of the Sierra Nevada also causes the air to be funneled through tight spaces which further increases its speed. This results in winds that can reach speeds of 50 mph or more.

Mono Winds form when an area of high pressure sets up over the Great Basin. Air flows in a clockwise direction around high pressure. In some situations, the air is "squeezed" better than others because of the differences in pressure in the atmosphere. The more air is squeezed, the faster it blows. In a typical Mono Wind event, winds reach speeds of at least 50 mph while stronger events can see winds exceed 100 mph!

Common set-up in the atmosphere for a Mono Wind event showing a high pressure system over the Great Basin and the direction in which air flows around it.

The strength of Mono Winds is also determined by the jetstream, which is the band of winds several thousand feet above the surface of the earth. When the winds in the jetstream are in the same direction as the winds closer to the surface of the earth they can "mix down" or more easily be transported towards the ground. This enables the very strong and powerful winds that typically blow well above the surface of the earth towards the ground. Jetstream winds are often in excess of 80 to 100 mph at over 20,000 feet in the atmosphere. In ideal situations, these winds speeds will be felt by you (or anything else) on the ground.

Mono Winds are part of a family of winds that known in technical meteorological terms as *katabatic winds.* The term katabatic winds originates from the Greek Word *katabatikos* which means "going downhill". In the case of Mono Winds, air is blowing down the mountains of the Sierra Nevada.

Many people who have heard of Santa Ana winds are familiar with how these winds also blow downhill. However, while Santa Ana winds can reach speeds of 50 mph or greater easily, they differ from Mono Winds in that they are winds that rapidly heat up as air descends downhill. Mono Winds conversely are cold wind. They typically form just after a cold front has passed through the region and temperatures have dropped off significantly.

Santa Ana winds, owing to their warm, dry state are part of a family of winds known as foehn winds. Foehn winds are winds that are forced down a hill and warm as they do so. In California, the Santa Ana is the most well-known type, and is the name given to a foehn wind in Southern California. However, other parts of California can experience foehn winds. In the Santa Barbara area, foehn winds are known as sundowner while in the Bay Area, they are known as Diablo winds. Foehn winds are known for bringing a high fire danger with them because of their hot, dry nature. In the case of Mono Winds, the cooler state of the air mass helps to allow for "higher" humidity values. However, because of the speed of the winds, they can still help to spread fires. With the exception of a sundowner, Mono Winds as well as Santa Ana winds and Diablo winds typically occur in the cool season months from October through April due to the seasonal variations in weather patterns.

Map showing the areas where downhill winds occur in California and the origin of the direction the wind blows in associated with them. Blue colors indicate a cool or katabatic wind while orange and brown colors indicate a warm or foehn wind.