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Where to find the rare white rainbow

Seeing a moonbow - a pale white rainbow that appears on bright moonlight nights - requires visiting one of only two places on the planet.



By Katy Koontz

20 December 2016

Moonbows – pale white rainbows that appear on bright moonlight nights – may sound like science fiction, but they’re real.

They’re also rare.

They've shown up sporadically over active lava flows in Hawaii, at the base of Yosemite Falls in California during the spring snow melt, and in the cloud forests of Costa Rica when the Christmas winds blow in clouds of mist from late December through early February. They've also occasionally been seen in various places around the globe in the night sky during a rain shower around the time of the full moon.

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Kentucky's Cumberland Falls is one of the only places where moonbows happen regularly (Credit: Alexey Stiop/Alamy)

Seeing them on a regular basis, however, requires visiting one of only two places on the planet: **Victoria Falls** on the Zambia-Zimbabwe border and **Cumberland Falls** near Corbin, Kentucky, in the US.

At 38m wide and 18m high, Cumberland Falls is known as the Niagara of the South, crashing into a boulder-strewn gorge and kicking up enough mist to create colourful rainbows during the day and milky moonbows on clear nights over the full moon period. The magic happens when the moonlight is refracted in



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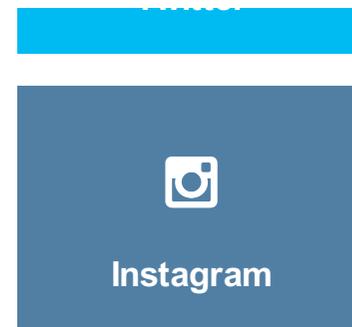
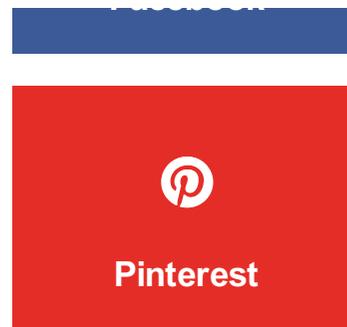
mist, which isn't dissipated by the wind because of the steep gorge walls.

“Bright moonlit nights with clear skies are what you need to see the moonbow,” explained Bret Smitley, who has been a naturalist with **Cumberland Falls State Park Resort** for 23 years. “The right amount of mist is key. You want a good splash. One of the reasons why we’re special is that while most waterfalls are in deep ravines and gorges, we have a wide gorge so the moon can shine down in it and really reach the mist. And we have a big falls – one of the largest in regards to water volume in the southeast [US].”



© Jim Liestman/Flickr

The wide gorge at Cumberland Falls facilitates the creation of the moonbow



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(Credit: Jim Liestman/Flickr)

Apart from Cumberland Falls and Victoria Falls, no other places in the world have all those factors coming together on a monthly basis, which is what makes viewing the moonbow so incredibly special. Niagara Falls once had a regular moonbow, but as the area developed, the light pollution meant it can no longer be seen at all.

Moonbows are created the same way rainbows are, since moonlight is really sunlight that's reflected off the moon. The difference is that our eyes aren't designed to see colours in the dark, so a moonbow will look like a faint, white arch to us. But photographers who shoot with long exposures end up with an image showing the same colours we normally see in rainbows.

"Sometimes I see a blue-green hue to it," Smitley said, "and sometimes there's a reddish hue, but it won't look like a regular rainbow to the naked eye." He's seen double moonbows a few times, as well.

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Moonbows are also regularly seen at Victoria Falls, on the Zambia-Zimbabwe border (Credit: br0wser/Flickr)

The moonbow typically appears for about five nights each month, starting from two to three nights before the full moon through two or three nights afterward – but only when the weather is clear. If it's cloudy, there won't be enough light. Smitley says he's seen it as early as five nights before the full moon, although that's unusual.

At Cumberland Falls, the moon needs to be at 45 degrees in the sky to clear the ridgetop, Smitley explained, which happens about two hours after moonrise. The exact time changes from

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night to night because the moon can rise up to an hour later each night. The earliest the moonbow makes its appearance is about 6:30 pm at the beginning of its cycle in November and December, while in summer it can show up for the first time each evening as late as 9:30 pm. (**Moonbow** dates and times are available online.)

The viewing platform at Cumberland Falls is situated just right for seeing rainbows during the day (typically showing up between 9 or 10 am and 1 pm) and moonbows several nights each month.



Moonbows are also occasionally seen at the base of Yosemite Falls (Credit: Brian Hawkins/Flickr)

Onlookers can range from a handful of people on a late autumn evening to 1,000 people on a summer weekend. Local teens, families, photographers, the occasional spiritual seeker and tourists alike mingle as they wait for the show, an air of excited anticipation mixing with the spray from the falls.

“You can get thrown by it,” Smitley said. “That’s the mystery of it. You don’t know what to expect until you go out there. It could be cloudy for hours, and then suddenly the clouds part and it appears. It’s magical.”

But if you happen to visit on a night when the moonbow is too shy to show, “the falls themselves can be beautiful in the moonlight,” Smitley insisted. “Sometimes that’s as spectacular as the moonbow.”



“That’s the mystery of it. You don’t know what to expect until you go out there.”
(Credit: Kentucky State Parks)

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