**Comet CATALINA C/2013 US10 – Dave Eagle FRAS.**

This December starts what could be a very nice apparition of a reasonably bright comet in our northerly skies. Maps of the comets path at the end of this article.

Here I have given a brief history of this particular comet as well as the predicted apparition. Don’t forget, we are dealing with a comet here, so any magnitude estimates may not match what actually happens. If predictions are correct this could be a very nice comet and circumstances are in our favour so we can see it at its best.

The comet could spend about 6 weeks above naked eye visibility.

**31st October 2013.**
At the time of Discovery the comet was 19th magnitude. There was some confusion about its identity with another object, hence the unusual comet name, but once its orbit was worked out and it showed cometary activity, it was identified as a comet having an orbit of several million years.

So it is possibly a new visitor from the Oort cloud way out on the outer fringes of the solar system.

When it passes the Sun its orbit will have been modified by the gravitational pull of the Sun and planets so that it will be on an ejection trajectory. This means it will continue indefinitely on its outward path, never again returning to the solar system.

It has already put on a very nice show in the southern hemisphere during the summer before disappearing into the Sun’s glare as it approached solar conjunction which it reached on the 6th of November 2015. It was last seen at magnitude 7 sporting a very nice tail at least 3 degrees long.

**15th November 2015.**
This is the date of perihelion when the comet is at its closest to the Sun. It will still be too close to the Sun to be seen from Earth. As it is lost in the Sun’s glow we are not sure how bright the comet would have got while it was behind the Sun until it starts to emerge into our morning sky.

Once the comet comes out of the Sun’s glare at the end of November we will be viewing the comet post-perihelion. This is when the majority of comets are at their most active and hopefully at their brightest.

As the comet emerges from the Sun’s glow in the morning sky it is moving steadily northwards from Virgo towards Boötes. Map 1.

By the end of November it will be a few degrees above the south eastern Horizon in the morning sky just as dawn breaks. As a matter of interest a much fainter comet, Comet C/2015 F3 SWAN passes extremely close on the 23rd of November. CATALINA is estimated to be around magnitude 4.7 at this time, but as SWAN will be about 25th magnitude, and as both comets are only about 7 degrees above the south eastern Horizon in the morning twilight, although the bright comet may be viewed the encounter itself is impossible to see.

The comet should be bright enough to be seen with the naked eye at this time, that’s if you have a very low south eastern Horizon and can catch it before twilight starts interfering. Unfortunately at the end of November, the gibbous Moon starts to interfere in the morning sky.

CATALINA quickly heads northwards and each morning it becomes easier to see as its altitude increases before dawn. The beginning of December sees the comet well clear of the horizon in a reasonably dark sky before dawn breaks. Our best period of visibility is now starting.

**7th & 8th of December 2015.**
The very bright planet Venus lies just to the right of the comet and should help guide you towards finding it. They achieve an altitude of around 20 degrees before the growing dawn starts to interfere. The crescent Moon will also be close by on these dates making a nice triangle.
By the second week of December the Moon will have slipped out of the morning sky and its light will no longer interfere with our observing.

Maintaining a magnitude of 4.7, the comet keeps moving northwards. Although the intrinsic brightness of the comet is fading as it moves away from the Sun, as the comet is still approaching the Earth, so it should maintain this apparent brightness until mid-January.

Throughout the whole of December it should be a very nice morning object just before dawn. The comet keeps heading northwards, just to the right hand side of Boots, becoming easier to see and image as its altitude above the eastern horizon increases each morning.

By the end of December the Moon once again starts to interfere with our observing.

1st January 2016 – New Years Day.
The comet lies very close to the 1st magnitude star Arcturus. Its tail will hopefully stream away to the south west pointing towards Ursa Major.

6th January 2016.
Passes close to the globular cluster NGC 5466 in Boötes.
The Moon is now starting to slide out of the morning sky so we will once again have properly dark skies with which to enjoy the comet in all its glory.

The comet glides northwards to the west of Boötes and approaches the Handle of The Plough.

10th January 2016- New Moon.

11th January 2016.
Passes close to the Hickson 68 group of galaxies. The comet is now a circumpolar object, never setting in our northern skies and will remain so throughout this apparition. This means that depending on where the Moon is, we can choose when best to observe it to avoid the Moons interference.

As the Moon starts to become visible in the evening sky, the best views will still be late evening or in the early hours.

15th January 2016.
Passes close to the 1st magnitude star Alkaid in Ursa Major.

16th – First Quarter Moon.

17th January 2016.
Passes fairly close to the face-on spiral galaxy M101. At this time the comet will be at its closest to the Earth, passing by at 0.72 Astronomical units. After this date the comets magnitude should start to fade as it recedes from Earth.

18th January 2016.
Passes just north of Alcor & Mizar. Comet should have faded slightly to magnitude 5.2 by this time.

19th & 20th January 2016.
Passes fairly close to Thuban In Draco.

24th January 2016. – Full Moon.
Passes close to Kappa Draconis. Estimated magnitude of the comet at this time show it may have dropped to magnitude 5.9, so is now only just above the naked eye threshold. The Moon again starts to interfere badly with our observing.
Once the Moon slips into the morning sky in a few days’ time, the comet will then be best viewed in the evening.

1st February 2016.
Passes reasonably close to Polaris. The estimated magnitude of 6.1 means that the comet may have dropped below naked eye visibility. So we have now probably seen the best the comet is likely to bring us.
Keep observing it using binoculars or a small telescope. Those with photographic capabilities should be able to keep watch on the comet for quite a while yet. You may be able to see changes in shape or activity.

8th February 2016. - New Moon.

15th February 2016.
Now in Camelopardalis the comets magnitude will have dropped over a magnitude to about 7.3.

22nd February 2016. - Full Moon.

9th March 2016. - New Moon.
The comets motion is now slowing right down as it recedes both from the Sun and the Earth. At this point it starts a very long retrograde loop lasting until the end of November. Its magnitude will be about 10.

23rd March – Full Moon.

1st June 2016.
Passes close to Capella. The comet will now be very difficult to see as it will be a very faint magnitude 12.4 and low in the northern summer sky.

26th of November 2016.
The comet passes the very same spot that it reached on the 9th of March.
By this time it will be an extremely difficult 14th magnitude.

The comet is now far out in the solar system and will gradually fade back into the sky background and lost into obscurity.

Let’s keep our fingers crossed that it does give as a really good display. If my notes help you, let me know how you get on.

Keep Looking Up!

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Map 2. Path of comet CATALINA C/2013 US10 from 5\textsuperscript{th} January 2016 – 30\textsuperscript{th} January 2016. Position shown at 5 day intervals.