1
00:00:00,000 --> 00:00:01,334
(music throughout)

2
00:00:01,334 --> 00:00:09,342
On January 9, 2020, NASA's Lucy Mission Team revealed that it would be visiting not seven asteroids as plann

3
00:00:09,342 --> 00:00:13,646
As it turns out, Eurybates, one of the Trojan asteroids along Lucy's path,

4
00:00:13,646 --> 00:00:16,816
has a small satellite or moonlet orbiting it.

5
00:00:16,816 --> 00:00:22,088
Finding these tiny, new worlds before Lucy is launched in 2021 means that

6
00:00:22,088 --> 00:00:27,327
the team can investigate their orbits and plan for more detailed follow-up observations during fly-bys.

7
00:00:27,327 --> 00:00:30,263
Dr. Keith Noll and other Lucy science team members

8
00:00:30,263 --> 00:00:35,402
have been using the Hubble Space Telescope to search for satellites and rings around Lucy's targets.

9
00:00:35,402 --> 00:00:36,669
This can be challenging

10
00:00:36,669 --> 00:00:40,807
since the raw images are often filled with bumps, blobs and diffraction spikes.

11
00:00:40,807 --> 00:00:45,412
The Lucy team didn't see any evidence of a new satellite until November 2019.

12
00:00:45,412 --> 00:00:49,416
After experimenting with the brightness and contrast on the Hubble images,

13
00:00:49,416 --> 00:00:53,386

Dr. Noll saw a peculiar, faint spot near the much brighter Eurybates.

14
00:00:53,386 --> 00:00:55,855
Dr. Mike Brown, another team member,

15
00:00:55,855 --> 00:00:59,159
noticed the spot showed up in a slightly different position

16
00:00:59,159 --> 00:01:01,327
on another set of Hubble images taken two days later

17
00:01:01,327 --> 00:01:05,165
This change suggested that the spot was an orbiting satellite.

18
00:01:05,165 --> 00:01:09,636
The team went back to Hubble and got 3 more chances to make observations of the possible new satellite.

19
00:01:09,636 --> 00:01:13,673
On the first two tries, the little moonlet was nowhere to be found.

20
00:01:13,673 --> 00:01:19,212
But on the third observation on January 3rd, 2020 they found the possible new satellite again

21
00:01:19,212 --> 00:01:24,250
It was clearly visible next to Eurybates, which is over 6000 times brighter.

22
00:01:24,250 --> 00:01:29,122
This huge difference in brightness suggests that the satellite is less than 1 kilometer in diameter,

23
00:01:29,122 --> 00:01:32,859
very small compared to Eurybates at 64 kilometers.

24
00:01:32,859 --> 00:01:34,294
With a few more Hubble observations

25
00:01:34,294 --> 00:01:36,663
the team pinned down the new satellite's orbit

26
00:01:36,663 --> 00:01:37,630
And they proposed a name

27
00:01:37,630 --> 00:01:39,532
The International Astronomical Union approved

28
00:01:39,532 --> 00:01:44,003
and from now on the little satellite will be known as "Queta" after Enriqueta Basilio

29
00:01:44,003 --> 00:01:46,072
the first woman to light the Olympic cauldron

30
00:01:46,072 --> 00:01:48,608
Evidence indicates that the Trojan Asteroid Eurybates

31
00:01:48,608 --> 00:01:53,313
is the largest fragment from a massive asteroid collision that happened billions of years ago

32
00:01:53,313 --> 00:01:57,183
It is possible that the new satellite, Queta, is a remnant of that catastrophic event.

33
00:01:57,183 --> 00:02:00,620
Whether with Hubble or with the Lucy spacecraft’s flyby,

34
00:02:00,620 --> 00:02:04,090
each observation enriches our understanding about the Trojan asteroids’ formation

35
00:02:04,090 --> 00:02:07,293
and Eurybates’ relationship with its newly discovered companion.

36
00:02:07,293 --> 00:02:09,696
The discovery of this new moonlet around the Trojan asteroid Eurybates