1
00:00:00,940 --> 00:00:02,940
Narrator: NASA's Kepler Mission has discovered

2
00:00:02,960 --> 00:00:05,160
the first system of multiple planets orbiting

3
00:00:05,180 --> 00:00:07,800
a pair of stars, or as astronomers call it,

4
00:00:07,820 --> 00:00:10,370
a circumbinary system.

5
00:00:10,390 --> 00:00:12,320
Located in the constellation of Cygnus,

6
00:00:12,340 --> 00:00:15,580
about 4,900 light-years from Earth,

7
00:00:15,600 --> 00:00:18,190
the discovery of Kepler-47 proves

8
00:00:18,210 --> 00:00:21,360
that more than one planet can form and persist

9
00:00:21,380 --> 00:00:23,790
while orbiting two stars.

10
00:00:23,810 --> 00:00:26,300
One star is similar to the sun in size

11
00:00:26,320 --> 00:00:28,770
but only 84 percent as bright.

12
00:00:28,790 --> 00:00:31,970
The second star is only one-third the size of the sun

13
00:00:31,990 --> 00:00:34,420

and less than one percent as bright.

14
00:00:34,440 --> 00:00:38,100
The inner planet, Kepler-47b, is the smallest known

15
00:00:38,120 --> 00:00:40,470
in orbit around two stars.

16
00:00:40,490 --> 00:00:44,290
The outer planet, Kepler-47c, is a gaseous giant,

17
00:00:44,310 --> 00:00:47,140
more than four times the size of Earth.

18
00:00:47,160 --> 00:00:49,790
Astrophysicists believe it might have an atmosphere

19
00:00:49,810 --> 00:00:52,810
blanketed with thick bright water clouds.

20
00:00:52,830 --> 00:00:56,110
It orbits its host stars every 303 days,

21
00:00:56,130 --> 00:00:58,950
placing it in the so-called "habitable zone."

22
00:00:58,970 --> 00:01:00,780
This is the region in a planetary system

23
00:01:00,800 --> 00:01:03,090
where liquid water could exist on the surface

24
00:01:03,110 --> 00:01:05,230
of an orbiting planet.

25
00:01:05,250 --> 00:01:08,370
While not a world thought to be hospitable for life,

26
00:01:08,390 --> 00:01:12,040
Kepler-47c is the first known circumbinary planet

27
00:01:12,060 --> 00:01:14,640
found in the habitable zone of its stars

28
00:01:14,660 --> 00:01:16,460
and it demonstrates the diversity

29
00:01:16,480 --> 00:01:19,410
of planetary systems in our galaxy.

30
00:01:19,430 --> 00:01:21,930
This discovery represents an important step

31
00:01:21,950 --> 00:01:25,410
for the Kepler mission in the effort to find Earth-size planets

32
00:01:25,430 --> 00:01:29,560
in the habitable zone of their host stars.