

## Annotated Bibliography

Topic: Exoplanet habitability and methods of finding and Research Question: What are the criteria for exoplanets to be habitable and how do we find them.

Source 1

*How to Find an Exoplanet.*

[www.esa.int/Science\\_Exploration/Space\\_Science/Exoplanets/How\\_to\\_find\\_an\\_exoplanet](http://www.esa.int/Science_Exploration/Space_Science/Exoplanets/How_to_find_an_exoplanet).

1.) Summarize the source's central idea or argument

This source's central idea is to list the various methods with which we find exoplanets. With telescopes on earth methods such as transits and radial velocity measured with the Doppler effect are possible. In the transit method you measure the dips of starlight intensity when an exoplanet passes in front of its star. These dips repeat when the planet returns, which is also how you determine its rotational period. This method is quite reliable. The radial velocity method works by measuring wobbles in the star's position caused by the gravitational pull of the exoplanet. When viewed from far away the Doppler effect makes the star's light more blue or more red depending on whether it is moving away or toward us. There are also other methods like the microlensing method which relies on a chance alignment between stars as they cross each other. One star acts as a gravitational lens that bends the light of the other star. The star's brightness has a peak as a result. A planet rotating around that star adds another peak to the brightness curve. This method is not very general because it depends on the coincidence of one star moving in front of another. More recently several space-based telescopes have been used to find exoplanets with the transit method. In summary, there are many methods of finding exoplanets ranging in effectiveness from very reliable to quite unreliable.

2.) Evaluate its credibility and other critical elements that make it a quality source for your research

I think this source is quite reliable because it was published by the European Space Agency. This is an international organization expected to have good credibility because they are a government agency. Some of the data they cite comes from the satellites they collaboratively launched with NASA. Their methods are based on scientific consensus.

3.) Reflect on its value in relation to the research question and other sources

This is important to my research question because it answers one of its parts, namely listing the methods of finding exoplanets, and their effectiveness. This is also important to my other sources because it provides a credible link between the habitability of exoplanets and their location. How to find exoplanets is especially valuable in relation to my other source on prominent exoplanets because it explains what methods were used to find those prominent exoplanets.

4.) Explain how the information could enrich your story's world, characters, or conflicts

This could enrich the world I'm building because it could add a layer of realism about how our characters and the other characters who live in this new world are able to live. This depends on the habitability from our perspective of an exoplanet. This can also be used in conjunction with my other two sources about prominent exoplanets and how exoplanets are habitable to add even more realism to the possibility of people existing in this other world. There may actually be prominent exoplanets in which their world would be similar to ours.

Source 2

Nordseth, Anna. "6 Exoplanets in Our Universe That Could Support Life Other Than Earth."

*Discover Magazine*, 31 July 2024,

[www.discovermagazine.com/6-exoplanets-in-our-universe-that-could-support-life-other-than-earth-46474](http://www.discovermagazine.com/6-exoplanets-in-our-universe-that-could-support-life-other-than-earth-46474).

1.) Summarize the source's central idea or argument

The main idea of this source is that it is a list of the most prominent exoplanets that could support life similar to that on earth, such as Proxima Centauri b and TRAPPIST-1e. It gives details on these exoplanets like how far away they are and how they were discovered. It also talks about the probability that each one is able to sustain life, based on criteria like the presence of liquid water and whether it has a breathable atmosphere. The article also talks about the goldilocks zone of its star, meaning that it's not too close or too far away, such that it gets the perfect amount of temperature. The exoplanets listed in the article all vary on some of these criteria, in that they have some traces of liquid water, and some being in the center of the goldilocks zone of their star, but we have yet to find one that ticks every single box in the same way as Earth.

2.) Evaluate its credibility and other critical elements that make it a quality source for your research

I believe this article is credible because it was written by somebody who has a Ph.D. in this field and it also cites credible sources from peer-reviewed journals like the University of Michigan and Cambridge University. She also cites sources from credible government space agencies like NASA who are experts in the field.

3.) Reflect on its value in relation to the research question and other sources

This source is important in relation to my other sources because it provides an important perspective on the specifics of the most prominent exoplanets in terms of habitability that we have found up to now. It is also useful for my research question because it answers the habitability part of the equation. It is a review of the most prominent habitable exoplanets.

4.) Explain how the information could enrich your story's world, characters, or conflicts

This could be used to enrich my world building because it provides an interesting look at which exoplanets are most habitable, that we know of. In this other world they could be completely different, but they would still have to be habitable in the same way as for humans. It also has a connection with humans, who may be able to adapt to an environment that is not of their origin. They may also evolve eventually into different creatures.

Source 3

Cermak, Alicia. "Can We Find Life? - NASA Science." *NASA Science*, 16 Sept. 2025, [science.nasa.gov/exoplanets/can-we-find-life](https://science.nasa.gov/exoplanets/can-we-find-life).

1.) Summarize the source's central idea or argument

The central idea of this source is to discuss the criteria of how life can be supported on exoplanets, and how they can be detected with the James Webb Space Telescope, named after the administrator of NASA in some of its earliest days. In the case of planets that are close to us in our solar system, we can send unmanned autonomous vehicles like Rovers to Mars to study a Planet in depth. Some of the criteria for habitability are that a planet should be in the Goldilocks zone of its star, has liquid water, and most importantly has a breathable atmosphere. Overall this source catalogs the methods and criteria of the habitability of exoplanets.

2.) Evaluate its credibility and other critical elements that make it a quality source for your research

This source is credible because it is published by the reputable government institution NASA, which uses time-tested and peer-reviewed methods to come to its conclusions. It uses data from space telescopes it has launched, and from other space platforms like the International Space Station where it performs research.

3.) Reflect on its value in relation to the research question and other sources

This source has an important relation to my research question because it provides an important baseline. It answers the question of how exoplanets are habitable by giving us the criteria that determine habitability. It helps the other sources build on top of it, being the base of my sources.

4.) Explain how the information could enrich your story's world, characters, or conflicts

This information would enrich my story's world, because it provides an element of realism in answering how would people in this fictional world be able to exist on an exoplanet, or perhaps several exoplanets if they have manned space traveling capabilities. This also expands to the main characters because it answers the question of how they would be able to breathe on this foreign world.