

Some critics argue that the ark could not have held all the various species that existed at the time of the flood. Ham logically addresses this question. He distinguishes between “kinds,” and “species.” Here is an excerpt that provides his rationale:

**Species or Kinds?** Though wild animals today are often considered according to their *species*, the Bible deals with animals according to their *min*—[ מִינִּי (miyn): Genus *Canis* ]—a common Hebrew word usually translated “kind.” We can infer from Scripture that God created plants and animals to reproduce after their *kinds* (Genesis 1:11–25), and it is clear from various texts that a *kind*, or *Genus*, is often a broader category than the current concept of a *species*.

**Note:** In Genesis 1, the text uses the phrase “after their kind” regarding “fruit trees” (vv. 11–12) and “living creatures after their kind: cattle and creeping things and beasts of the earth after their kind. God made the beasts of the earth after their kind, and everything that creeps on the ground after their kind” (vv. 24–25).

This means that a *kind* may contain many different species. Since Noah was only sent to select representatives from relevant *kinds*, all land-dwelling vertebrate species, not present on the Ark, were wiped out. Therefore, if we see an Ark *kind* represented today by different *species*—e.g. horses, zebras, and donkeys of the equid kind—those *species* have developed since the time of the Flood. Therefore, *species* are simply varying expressions of a particular *kind* [ or **Genus** ].<sup>1</sup>

To better understand Ham’s designations of “kinds” and “species,” we need to go back to the *Encyclopaedia Britannica* and note its paragraph on:

**The Taxonomic Process.** Basically, no special theory lies behind modern taxonomic methods. In effect, taxonomic methods depend on: **(1)** obtaining a suitable specimen; **(2)** comparing the specimen with the known range of variation of living things;

<sup>1</sup> Tim Chaffey, “How Many Animals Were in the Ark?” *Inside Noah’s Ark: Why It Worked*, gen. ed. Laura Welch (Green Forest, Ark., Master Books, 2016), 17.



(3) correctly identifying the specimen,  
 (4) determining the best position for the specimen in existing classifications. *Ranks.* The goal of classifying is to place an organism into an already existing group.<sup>2</sup>

The example given in the above article reveals the zoological hierarchy in the **Kingdom** Animalia: The **Kind** or **Genus** is *Canis*: **dog**, the **species** is *Canis lupus*: **wolf**, and the **Subspecies** is *Canis lupus occidentalis*: **northern timber wolf**. Therefore, there are numerous “Kinds” or “Genera” of “dogs,” one of which is the *Canis lupus occidentalis*, “northern timber wolf.”

In Ham’s analysis, he asserts that Noah only needed to take onboard seven pairs of dogs. These kinds would produce various species over the course of world history up to the present hour. This was the case with all the other **Kingdom** *Animalia* the Lord specified to be taken onboard.

With this system understood, Ham’s Ark Encounter team projected that of the four categories of amphibians, reptiles, mammals, and birds, Noah would be required to take less than 7,000 kinds onboard.

The accommodations for this many creatures would require space on all three decks of the Ark. These enclosures are on display throughout the three levels.

### About Those Groceries

Prior to the Flood, mankind was not allowed to eat the flesh of living creatures since they were to be strict vegetarians:

**Genesis 1:29** God said, “Behold, I have given you every plant yielding seed that is on the surface of all the earth, and every tree which has fruit yielding seed; it shall be food for you;

**v. 30** and to every beast of the earth and to every bird of the sky and to everything moves on the earth that has life, I have given every green plant for food”; and it was so.

This menu was in force until after the Flood. Therefore, all people and all God’s critters were only allowed to eat vegetables. Therefore, everyone was restricted to grains, grasses, seeds, fruits, and nuts.

<sup>2</sup> Arthur K. Solomon, “Taxonomy,” in *The New Encyclopaedia Britannica: Macropaedia* (2019), 14:1090.



A system of storing food had to be devised. The research by the Ark Encounter staff opted for a system that had been proved successful from recent history but certainly applicable for Noah's application on the Ark:

The designs of the water and food storage vessels are based on a re-occurring design that we see throughout history. This design shows up in various cultures from Greece to China at different times because it works well for shipping goods. These vessels are made from a material that is readily available—clay.

Based on the projected number of animals and their calculated food needs at 80 percent dry matter along with a 50 percent contingency for spoilage, the hypothetical layout contains nearly 15,000 earthen vessels, each with a volume of 1.75 cubic feet.

### About the Supply of Fresh Water

Although water would be everywhere, there would not be a drop to drink. This required a water supply, water storage, and water distribution. Obviously, this had to be thought out, but keep in mind that the Lord is on hand to offer an abundance of divine provision by means of the unrelenting rain.

The Ark Encounter experts thought through the development of a water-filtering system for preservation of a water supply:

Two potential solutions were considered: **(1) Carry:** The Ark carried all of the required water on board to meet the needs of the animals and people during the time on board, which was approximately one year. **(2) Collect:** The Ark carried or stored large quantities of water in cisterns on board but required secondary means to regularly replenish these tanks. As we explore each premise, it will become clear why the Ark Encounter chose the second option.

**Carry.** In his feasibility study of the Ark, John Woodmorappe calculated the amount of water for approximately 16,000 animals. He assumed all water had to be carried on board and concluded that over 1 million gallons would be needed. The storage of this amount of water would take up slightly less than 10 percent of the volume of the Ark.



However, even if Woodmorappe's calculations are fairly accurate, the Ark Encounter team identified two problems with this approach. First, it would be extremely difficult to prevent the contamination of so much standing water over the course of a year—the contamination of the water source would be catastrophic.

Second, this method goes against one of the basic assumptions made by the Ark Encounter team. They assumed that God did not tell Noah how long they would be on the Ark. This unknown creates another variable that could have been eliminated by utilizing a different system for obtaining water.

The Ark's architects had given forethought to water storage and distribution and the ability to capture rainwater resolved the problems related to the "Carry" solution discussed above.

**Collect.** Cisterns were already designed to occupy the second and third decks along each side of the ship, not far from the animal pens and enclosures. There are also many sealed earthen vessels on the first deck that hold a two-month supply of potable water. The cistern design is meant to utilize rainfall during the Flood to provide the required amounts of water.

This series of cisterns with a reliable dispersion system could have stored all of the water necessary for the Ark's occupants without additional water storage as cargo.

One inch of water collected on the Ark's roof would have filled nearly one week's worth of water needs. To prevent overflowing the cisterns due to excess rain, a series of valves and spigots could have been used to shut off the flow of water from the Ark's roof.<sup>3</sup>

It is from these systems that occupancy onboard the Ark was possible to manage. There are numerous other details that the Ark Encounter architects designed for this twenty-first century Ark.

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<sup>3</sup> Chaffey, "How Could the Water Be Stored?" in *Inside Noah's Ark*, 29–30.



The laws of higher math and reliance on faith in God led them to construct a ship without a motor, without sails, without a rudder, and without a crew. Everyone who went onboard—man and beast—were along for the ride.

There is one more aspect that the present designers of the Kentucky Ark incorporated into the vessel. I include it under the principle of “hydrodynamics, the branch of physics that deals with the motion of fluids and the forces acting on solid bodies immersed in fluids.”

God created the universe using His mathematics to accomplish the feat in a microsecond. Man has discovered many applications of His laws that have been the same since the creation. I offer this final insight into our overview of the Ark. It may or may not have been a part of Noah’s design, but it was among the options he had available to him:

### A Hole in the Ship?

An important component that has been proposed as part of the Ark design—the concept of a moon pool. What is a moon pool? Well, picture a ship with a hole in the bottom of the hull and a wall surrounding the hole all the way up through the top deck—in the Ark’s case, the roof. Water won’t enter the ship because it’s contained inside the moon pool’s walls, moving up and down like a piston as the ship rides the waves.

The Ark Encounter designers have placed two moon pools in the stern, straddling the keel. These moon pools are capped-off vertical shafts running the height of the Ark. These shafts are open at the bottom, permitting a relatively free flow of water within the interior. One moon pool is used for ventilation, as the in-and-out movement of the water acts like a massive bellow, circulating air throughout the Ark.

One moon pool is an integral part of the waste removal system on the Ark.<sup>4</sup>

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<sup>4</sup> The excerpts cited above are taken from the book, *Inside Noah’s Ark: Why It Worked* by Tim Chaffey and edited by Laura Welch. © 2016 by Answers in Genesis–USA. All right reserved.



The efforts by Ken Ham to bring his Ark idea to life are commendable. From the scant information provided by Scripture, he and his staff of engineers were able to use God's laws of physics to fit all the required elements into a vessel designed to provide sustenance to every creature God ordered Noah to take into the Ark.

Ham's staff and associates were able to incorporate every detail into the final version of the Ark Encounter. It should be understood that their efforts were designed to accomplish with hindsight from Genesis and foresight regarding God's divine laws of physics to present a reliable representation of what the Ark may conceivably have been like.

Their conclusions were thinly based on Scripture whose sparse directions provided the approximation of the Ark's size, the commands to provide an entry door in its side, a window near the top of the roof, and an interior consisting of three levels containing rooms.

Many assumptions were made about Noah and his family. We know the names of Noah's sons: Shem, Ham, and Japheth. We do not know the names of their wives although Ark Encounter assigned names to the three women. The rationale for this was noted at the beginning of this presentation.

Consequently, a tour through the exhibition is ripe for criticism if one does not buy into the objective behind the project. Mr. Ham wanted to present an Ark that as closely as possible approximated its size indicated in the biblical commandment given by God to Noah.

With the exception of Noah and his family, surely the people who were aware of his construction project thought him insane. Yet, he kept plugging away, year after year and decade after decade for 120 years, all while on dry ground, finishing up just a week before the rains came.

Genesis: Chapter Six is a summary of how the Fall of Adam and the progeny that followed had become corrupt. Except for Noah and his family, all other Homo sapiens were unbelievers living in vile opposition to divine design.

During this antediluvian period of history, the fallen angels of the Luciferian Rebellion were allowed to function on earth. It is apparent that they had the ability to procreate and did so with human women. The resultant offspring are called, **נְפִילִים** (*Nephiylyim*): Nephilim, in Genesis 6:4.

This form of perversion exceeded the sexual degeneracy also being practiced at that time by Homo sapiens with each other. If this situation had been allowed to continue, the human race would have eventually been wiped out and Satan would have won the appeal.



Genesis 6:2 states that the “sons of God”—fallen angels—saw that the “daughters of men were beautiful; and they took wives for themselves, whomever they chose.”

This had to be stopped. The Ark provided a means by which one righteous family was preserved while the rest of the earth’s occupants were destroyed (Genesis 6:7).

Ultimately, all unbelieving Homo sapiens were drowned. The fallen angels were banished to the Tartarus compartment of Hades while the Nephilim were incarcerated in the Abyss. Divine intervention ended the ability of the fallen angels to procreate.

The summary of our tour of the Ark Encounter is open-minded. The biblical information provided in Genesis 6:13–16 provided the foundation from which many assumptions were based.

The population of the various “species” of living creatures brought onboard was cited, but the number of them required research done in the biological sciences. From that investigation, it was determined that the Ark could accommodate that population.

It was also determined that enough food could be stored to sustain both man and beast. It was also demonstrated that within the Ark’s construction a system to capture rainwater was implemented to supplement water brought onboard in cisterns.

There is much more that could be mentioned but these subjects are sufficient to make the point that the Ark Experience was a bold venture, well-researched, and faithfully demonstrated that the accounts provided in Genesis, chapters 6:1–8:19 were clearly possible to accomplish.

To summarize the validity of these assumptions I note two excerpts from two study Bibles:

Noah would build a rectangular ark, six times longer than it was wide and ten times longer than it was high. Estimates suggest that all the land animals could be accommodated in the ark with more than half of it remaining for other uses.<sup>5</sup>

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<sup>5</sup> Richard H. Hess, *Biblical Theology Study Bible*, gen. ed. D. A. Carson (Grand Rapids: Zondervan, 2018), 35fn6:15.



Although we do not know for certain the length of the cubit mentioned here, later in history it was about 18 inches. A vessel of such dimensions would have a displacement of about 20,000 tons and gross tonnage of about 14,000 tons. Its carrying capacity equaled that of 522 standard railroad stock cars (each of which can hold 240 sheep). Only 188 cars would be required to hold 45,000 sheep-sized animals, leaving three trains of 104 cars each for food, Noah's family, and "range" for the animals.<sup>6</sup>

If you are interested in touring the Ark Encounter, I recommend a two-day excursion beginning with the Creation Museum located in Petersburg, Kentucky, and postponing the trip to the Ark Encounter until the following day.

The Creation Museum presents exhibits that track world history from the creation forward. It presents a chronological retelling of biblical history in seven parts referred to as the seven C's.

The 7 C's of History is a catchy phrase that helps people remember the big events that have affected (or will affect) the universe: **(1)** Creation, **(2)** Corruption, **(3)** Catastrophe, **(4)** Confusion, **(5)** Christ, **(6)** Cross, and **(7)** Consummation.

At this point, I must alert you to the one major argument I have with Ken Ham's two exhibits. The first C in his Seven C's of History is Creation. Ham insists that the six days described in Genesis: Chapter One, beginning with verse one and continuing throughout the chapter, is the original creation.

From that standpoint, Ham insists that the universe is only about 6,000 years old. He believes this to be true and consequently contends that this opening chapter of Genesis disproves contentions held by those who place their faith in an evolutionary process that has transpired over the course of millions of years.

In part, I respectfully disagree. I do not conclude from Scripture that the age of the universe has consumed millions of years, however, what must be considered are the events that took place prior to the creation of the universe and, afterward, pertinent circumstances that necessitated the creation of the human race.

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<sup>6</sup> Charles Caldwell Ryrie, *Ryrie Study Bible* (Chicago: The Moody Bible Institute of Chicago, 1995), 13–14tn6:15.



Before beginning that aspect of our study, it is important to develop a chronological list of events beginning in eternity past, each documented by pertinent biblical passages. Those cited below are expanded translations from exegesis along with relevant, bracketed commentary.

- (1) In eternity past from the Third Heaven, God created the angelic beings and their census, followed later by the creation of the universe.

**Job 38:4** “Where were you, Job, at the creation of planet earth? Elaborate if you have understanding.

**v. 5** “Do you know who fixed its dimensions? Or who surveyed its expanse?

**v. 6** “Where are the foundations of the earth fastened? Who laid its cornerstone,

**v. 7** when the morning stars sang together [the angelic chorus ] and the sons of God shouted for joy [ angelic exultations ]?”

**Revelation 5:11** I [ John ] both saw and heard the voice of many angels around the throne and of the angelic heralds and the angelic general staff, and the number was beyond counting [ myriads: “consisting of enormous but indefinite numbers; multitudinous.” ].

**Genesis 1:1** In the beginning, [ which was not a beginning, but the introduction of time ], God created out of nothing [ *creatio ex nihilo* ] the heavens [ interstellar space ] and planet earth.

*Creatio ex nihilo.* The reader is meant to understand that the worlds were not fashioned from any pre-existing material, but out of nothing, and that this proceeded from the activity of the divine Word. Prior to the creative fiat there was thus no other kind of phenomenological existence. *Creatio ex nihilo*, therefore, rules out the idea that matter is eternal, and also rejects any kind of dualism in the universe in which another entity, power or existence stands over against God and outside His control. The Creator of the world is thus not bound by chaos, as in the Babylonian creation myth, which portrayed the gods emerging from the waters of chaos.



Indeed, the concept of a created chaos was foreign to the Genesis narrative, which maintained that creation was an ordered process and as such the opposite of chaos. Furthermore, the concept of creation from nothing affirms that God is separate from His creation, and denies that the latter is a phenomenal manifestation of the Absolute, as Pantheism [i.e., pick your theological poison] maintains.<sup>7</sup>

- (2) Among the angelic community, God established a system of authority. Within their myriad population, the Father decreed a hierarchy among them with the rank of cherub being the highest. These recipients' insignia of rank is four wings.

The commanding officer over the angelic hoards was appointed by God the Father. We learn his name in Isaiah 14:12, *Helel ben-Shachar*: “Star of the Morning, Son of the Dawn.” His name is summarized by the Latin proper noun, “Lucifer.”

Scripture reports this cherub's arrogance in Ezekiel 28:11–19 where Lucifer is presented initially in glowing terms, but in verse 15 he commits the sin of arrogance precipitating his fall.

Isaiah 14:12–14 presents Lucifer's Five Assertions which reveal his campaign to overthrow divine authority:

**Isaiah 14:12** “How you have fallen from heaven, *Halel ben-Shachar* [ **Lucifer** ]! You have been cut down to the earth! You who have weakened the nations.

**v. 13** “But you said from your *kardía*, **Assertion #1**: ‘I will ascend to heaven; **Assertion #2**: I will raise my throne above the stars of God [ **C-in-C of the angelic hoards** ], **Assertion #3**: and I will sit enthroned upon the mount of the assembly of angels in the uttermost extremity of the north [the lust to be worshiped by the angels].

**v. 14** **Assertion #4**: ‘I will ascend above the heights of the clouds [ to function like God ]; **Assertion #5**: I will make myself like the Most High [ '*Elohim* ].’”

**(End JAS3-28. See JAS3-29 for continuation of study at p. 281.)**

<sup>7</sup> R. K. Harrison, “Creation: Creation ex nihilo,” in *The Zondervan Pictorial Encyclopedia of the Bible*, gen. ed. Merrill C. Tenney (Grand Rapids: Zondervan Publishing House, 1976), 1:1023.

