Were Insects on the Ark?

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We have consistently received a flood (pun intended) of questions about whether there were insects on the Ark. This article will help us consider what the Bible teaches concerning insects and the Flood. For example, did God instruct Noah to take insects with him on the Ark? If not directly commanded by God to be included as passengers, would some insects have been beneficial and, if so, how or why might they have come on board?

Did God Command Insects to Be Taken on Board the Ark?

In *Genesis 6:19–20*, God commanded Noah to take representatives "of every living thing of all flesh," including those "of the birds after their kind, of animals after their kind, and of every creeping thing of the earth after its kind." Where might insects be included in this list?

It may help to look back at creation. While plants were created on Day Three (*Genesis 1:11–13*), living creatures (Hebrew: *nepēš ḥayyâ*) were created on Days Five and Six (Genesis 1:20–31). Aquatic, flying, and terrestrial invertebrates, including insects, would likely have been included among them. In fact, the word typically translated *bird* in these passages (Hebrew: *ʻôp̄* in *Genesis 1:20, 21, 6:20*) is more literally "flying creature" and applies to more than just birds. The dietary lists given to the Israelites specifically mention bats as flyers (*Leviticus 11:19; Deuteronomy 14:18*). Flying insects are mentioned in these passages as a separate group—the creeping things that fly (Hebrew: *šereṣ hāʻôp̄*; *Leviticus 11:20–23; Deuteronomy 14:19–20*), suggesting they were considered a particular grouping of flying creatures.

Insects, however, may be defined separately from most land animals in the Hebrew language. Consequently there are arguments on both sides as to whether insects were of the kinds that were to be taken onto the Ark.

Arguments Against Insects Being Taken on the Ark

1. All the animals taken into the Ark are described as "flesh" (Hebrew: *bāśār*; *Genesis 6:19, 8:17*). When it refers to living animals rather than simply to an animal's body, this term is never conclusively used of insects.
2. "For the life [Hebrew: *nepēš*] of the flesh is in the blood [Hebrew: *dām*]" (*Leviticus 17:11, 14; cf. Genesis 9:4; Deuteronomy 12:23*). Insects do not have blood; instead they have hemolymph, which serves many of the same functions as blood. *Leviticus 17:13–14* states that any land animal or bird eaten by the Israelites had to have its blood poured out, and *Deuteronomy 15:19–23* clearly tie this with the practice of butchering animals for meat. *Genesis 9:5* states that shedding of man's blood merited the sacrifice of the man or beast that murdered that man. There is no example in Scripture of blood ever being used in reference to invertebrates. In fact, blood is only rarely used figuratively, one such occasion being the poetic phrase "the blood of grapes," referring to wine (*Genesis 49:11; Deuteronomy 32:14*).
3. This raises another important question about the original readers and hearers of the Levitical regulations. Would an ancient Israelite ever consider the gooey substances that ooze from a squished insect as being blood? If not, then it is unlikely that they were considered to be "living" in the same sense as man or beast. Furthermore, if the Israelites considered insects to be living creatures, then would an ancient Hebrew become unclean for the day if they happened to swat a fly, squash a mosquito, or step on a beetle (*Leviticus 11:39–40*)?

4. The creatures that were taken on the Ark boarded in pairs, a male and its mate (*Genesis 7:15*). This language does not seem to describe the behavioral patterns of insects; they tend to swarm, and several kinds of insects breed in colonies with a single queen.

5. In describing the creatures that would be killed by the Flood in *Genesis 6:17*, "flesh" (Hebrew: *bāśār*) is qualified by the phrase "in which is the breath of life," (Hebrew: *'ăšer-bô rûaḥ ḥayyîm*; *Genesis 7:15, 22; cf. Job 7:7*). Like *bāśār*, this additional phrase is never conclusively used of invertebrates. Additionally, in *Genesis 7:22* the statement is made that "all in whose nostrils was the breath of the spirit of life, all that was on the dry land, died." The Hebrew word *'ap̄* refers literally to the nose or nostrils. Insects do not have nostrils (or lungs), and do not intake air the same way as most other land animals. Oxygen travels to insect tissues through tiny openings in the body walls called spiracles, and then through tiny, blind-ended, air-filled tubes called tracheae.[1] For those who believe that insects were not commanded to be taken on board the Ark, this might be the strongest argument.

Arguments for Insects Being Taken on the Ark

1. Though disputed, some researchers believe that "every bird of every sort" (Hebrew: *kol-hā'ôp̄*) in *Genesis 7:14* (*KJV, NKJV*) is defined (through grammatical symmetry) as "every flying creature of every sort" (Hebrew: *kōl ṣippôr kol-kānāp̄*), or "everything with wings" as in the *HCSB* and *NIV*, or "every winged creature" as in the *ESV*. The phrase or equivalent of "every flying creature" could be taken to include flying insects.

2. An interesting point is that the *RSV* and the *ESV* of *Genesis 7:21* translate the Hebrew term *šereṣ* as "swarming creatures" (other translations use the phrase "creeping thing"). This could refer to insects as well as amphibians and lizards. The Hebrew words for "creeping thing" (*šereṣ*) and "creeps" (Hebrew: *šrṣ*) are different from the words used in *Genesis 7:14* (Hebrew: *remeš* and *rōmēs* respectively), but they appear to be used interchangeably in some passages (e.g., *Genesis 1:20–21; Leviticus 11:41–46*).

3. But if the meaning of *remeš* (creeping or moving things) in verses *6:20*, *7:8*, *14*, *8:17*, *19* encompasses insects and small land animals, as the context of the creation narrative may suggest (*Genesis 1:20–25*), then the meaning of the Hebrew phrase *kol-bāśār* may also encompass insects. The phrase *kol-bāśār* may be used as a synecdoche, so one should not draw the conclusion that insects have flesh, even if they are included in the phrase. See also *Genesis 7:21* where *šereṣ* is also encompassed by the phrase *kol-bāśār*. Hebrew dictionaries and lexica are in near unanimous agreement that the meaning of *šereṣ* can encompass insects. Notably, *Leviticus 11:21* (NIV) mentions "swarming winged things" and then lists several of these creatures, some of which are varieties of insects, although they are set apart from other creatures. So Leviticus includes at least some insects in the category of swarming things.

We can be certain that the following groups were required to be taken into the Ark: (1) all birds, (2) all flying and land-dwelling reptiles and mammals,[2] and (3) possibly all amphibians or at least some of the more terrestrial amphibians. However, as the points in the "Arguments For" section above mention, it is possible that insects, or at least some of them, were included as Ark kinds. We know that insects survived the Flood, so there had to be one or more mechanisms for their survival.

Could Some Insects Have Survived Outside the Ark?

There were quite possibly huge masses of floating vegetation and other debris all over the earth at the time of the Flood. Some insects could have been quite capable of surviving on this flotsam. Many insects lay their eggs in the branches of trees or woody plants. Some insects also have aquatic larval or nymph stages that may have been able to survive in the floodwaters. Some aquatic insect larval stages are over a year long, and some nymph stages are two to three years long.[3] Floating vegetation could have provided a ready food source for many of them; and insects can also survive long periods without food by going dormant, further enhancing their survivability chances outside the Ark. If some insects had already become carnivorous, there was probably more than enough

floating carrion to feed on. Since Scripture doesn't explicitly state one way or the other, we cannot be dogmatic on this issue; but there seems to have been ample opportunities for many types of insects to have survived outside the Ark.[4]

Could Some Insects Have Only Survived Inside the Ark?

Considering some factors and circumstances involved in the worldwide Flood, it would seem to indicate that certain types of insects could not have survived outside the Ark. For example, given the delicate nature of some insects like butterflies, moths, and bees, it seems much more probable that these were included on the Ark's passenger list. If the adult stage of an insect could not have survived on flotsam in heavy rain and ocean spray conditions, and there was no aquatic larval or nymph cycle, then those type of insects might have needed to have been on the Ark to survive; it seems likely that God would have had Noah take them on board. This is just a working model, so we should not get tied to it too strongly; however, it does accord with the fact that God did want to preserve some of every kind of air-breathing terrestrial life through the Flood.

Were Insects Taken on the Ark as Plant Caretakers, Composters, and Pollinators?

Since God commanded Noah to bring plants aboard the Ark (*Genesis 6:21; cf. 1:29–30*), and many insects are pollinators, it seems at least some types were necessary. Keep in mind that mankind had not been given permission by God to eat meat before (or during) the Flood. In obedience to God, Noah would have brought plants aboard for his family to eat. Humans typically do better with fresh produce, unlike animals that can eat dried hay and pelletized grains. Nevertheless, Noah must have also made great use of stored grains, dried fruits, and other non-perishable (or less-perishable) foodstuffs. So it makes sense that Noah could have brought some living plants aboard the Ark, and possibly had some means of providing them enough light to survive for at least part of the voyage.

Insects on board could have served many beneficial purposes, especially if Noah and his family grew plants in the Ark during the Flood. For example, ants could have helped plant health by clearing the detritus (dead organic matter) that might otherwise clutter and choke out light and certain nutrients. They could also have produced waste that serves as an essential fertilizer for many plants. Praying mantises are useful biological pest controllers. Bees would have been almost mandatory as pollinators, and as a bonus, they could have been a source of honey for Noah and his family, assuming Noah had some method to get sunlight or artificial light below decks, like deck prisms or hanging oil lamps, for example. But even without sunlight or artificial light, bees could have survived on board by going dormant.

Researcher John Woodmorappe has even suggested the possibility of beetles and mealworms (as well as earthworms) as vermicomposters of animal waste on the Ark.[5] He further suggested that these beetles and mealworms might then become a food source for insectivores on the Ark, which leads us to our next point.

Were Insects Taken on the Ark as Food for Omnivores and Carnivores?

We know from the fossil record that some animal carnivory started prior to the Flood. For example, we have fossils of fish eating other fish, a mammal with a dinosaur in its fossilized stomach contents, and teeth marks on bones, as well as animal bones in coprolites. Since much of the fossil record is evidence of the Flood, it is clear these are examples of pre-Flood carnivorous activities.

Of course, we only know that some animals were at least partly carnivorous prior to the Flood, and perhaps not all animals in each kind. It is possible that some animal kinds, which are now strictly carnivores, had a mixture of some who had turned to carnivory, and some who had not. If this were the case, then God may have brought only the herbivorous ones to Noah for saving on the Ark. This would have the added benefit of allowing Noah to have to bring only plants on the Ark for food, and not worry about figuring out which types of meat the carnivores would have needed or pre-

ferred. Some creation scientists have proposed the interesting hypothesis that God may have kept some animals from starting a strictly carnivorous diet until after exiting the Ark. Many present obligate carnivores may have then been omnivores which could have been sustained with an herbivorous diet for the yearlong Ark voyage.[6] Immediately after the Flood, the rather small population of carnivores (if any) could have been supported by carrion from sea creatures that had died in the later stages of the Flood and washed onto land. We need not think that all marine life died at the onset or early stages of the Flood; many sea creatures could have died much later on due to loss of prey species, lack of shallow marine vegetation, or numerous other causes. Additionally carnivores exiting the Ark could have also survived initially on fish and other sea creatures stranded in remnant pools.

Many modern carnivores exclusively eat carrion, or they can temporarily supplement or even substitute their diet with carrion. This previously mentioned scenario of delayed carnivory (in the sense that it did not occur in some animal kinds until after the Flood) could have allowed Noah to feed most animals with vegetation or a mix of dried meat and grains rather than strictly meat on the Ark, as they could have been either herbivores or omnivores.[7] Some modern carnivores are obligate carnivores or solely carnivorous and must get some of their nutrition from meat; but many non-obligate carnivores today can be fed an entirely vegetarian diet of dried grains and legumes (and even some fruit, nuts, or peanut butter), and still meet their energy and protein requirements.[8] We cannot know for certain whether there were any obligate carnivores prior to the Flood, but we also cannot completely rule out that perhaps some had become so by this time. Delayed carnivory could also have provided the herbivores a chance to establish a larger population before being preyed upon after exiting the Ark. We must also trust the fact that God's will was for the remaining animals to repopulate the earth (*Genesis 8:17*).

Other creation scientists have also postulated either a natural or divine-induced hibernation or torpor-like state in many Ark animals, which could have minimized the amount of food and care needed by each animal.[9] It has also been suggested that the few true carnivores aboard the Ark were sustained with an insect diet during the Flood. Many carnivorous animals are at least partly insectivorous, and some actually will switch to an insect diet when meat is scarce. Insects therefore may have been the bulk of the carnivore diet on the Ark. There is no scriptural problem with insects being on the Ark, and they would offer a simple and easy way to provide meat for the carnivorous animals.[10] Ants, for example, may have been necessary in large quantities for animals such as horned lizards and pangolins, had they turned insectivorous before the Flood. Many lizards are strictly insectivorous, and may have been so prior to the Flood. Insects may have therefore been a necessity on the Ark, and they actually would have made a great deal of space-saving sense for Noah in feeding the omnivore and carnivore population, if there was one.

In *Genesis 6:21,* God told Noah, "'And you shall take for yourself of all food that is eaten, and you shall gather it to yourself; and it shall be food for you and for them.'" There is nothing in this statement that precludes Noah from taking dried meat, insects, dried fish, or even live fish or animals on board to feed any carnivores that may have been on board.

Were Some Insects on the Ark Parasites or Otherwise Pests?

Regarding the sometimes raised question about parasitoid creatures, such as wasps that today lay their eggs in other insects as living brood chambers, there are at least two (and maybe three) possibilities as to whether they did this before the Flood. The first is that they did in fact do so. Just as we see evidence of carnivory in the fossil record of the Flood, we also see evidence of disease and parasitism. This would not have been an extinction event for the insect hosts, since insects could have been the food that Noah gathered for the animals (and therefore there would have been far more than two members of each insect kind aboard), or they could have survived off the Ark in aquatic or floating vegetation environments. The second possibility being that such insects used other items for brood chambers at that time. Perhaps some sort of fruit or vegetable?

The third and most probable possibility is that this form of insect parasitism had not yet developed. Some examples of other types of parasitism have been observed to have only developed in the last

200 years. Vampire finches and oxpeckers,[11] for example, have become opportunistic sanguinivores (blood-suckers) probably quite rapidly—only in the last few hundred years.[12] Some tribes of chimpanzees and bonobos have been found to transition from herbivores or insectivores to carnivores "by accident" even more recently. The point is that to look at an animal today and state that the animal kinds coming from the Ark had the same behavior, diet, life cycle, and so on, may not be (and probably isn't) accurate.

What about insect pests though? Would Noah have been fighting to keep the termites from damaging the Ark? Or would his family have been fighting off malaria while trying to care for the animals? Obviously these ideas are incongruous with God's command and enabling power to build the Ark, care for the animals, and reestablish human populations after the Flood. God could have prohibited severe insect pests from boarding the Ark, these insects may not yet have become pests, or (and much more to the point), in reality a small population of termites could not do enough damage to a massive structure like the Ark in the short time it was afloat.

So Were Insects Taken on the Ark?

We cannot know for sure whether Noah took insects on the Ark. And we also have to remember that Noah didn't have to "go out and round up" any animals which he did take on board. God brought them to Noah (*Genesis 6:20*). Since Scripture doesn't explicitly state one way or the other about insect "passengers," our models can only be tentative. In some cases, the benefits may outweigh the risks, and there is no reason to believe that God would have allowed lethal or extremely harmful insect parasites of humans and animals on board. The purpose of the animals on board was to save their kinds and allow them to repopulate after the Flood. Most of the parasitic insects could have developed after the Flood, and existing parasites could have survived in aquatic larval stages or on floating vegetation without having to be Ark passengers. However, a hypothesis that allows for many types of insects to be aboard the Ark as potential food sources, pollinators, plant caretakers, and possibly even honey producers seems like it is in accord with God's commands to Noah in *Genesis 6* and *7*. We must also recognize that certain insects would be much less likely to have survived the Flood outside the Ark. It is perfectly in line with God's pronouncement in *Genesis 6:20*, "to keep them alive," that at least some types of insects were brought on the Ark.

Certainly Noah could have taken insects onto the Ark if God brought them to him, and it would have been practically impossible (humanly speaking) to keep insects from joining the crew of the Ark. It does seem possible, then, that a number of types of insects were on the Ark. It is also reasonable to assume that God wouldn't have specifically prevented insects from boarding the Ark. Humans, animals, and plants could have benefitted from many kinds of insects being on board, assuming they grew plants and housed carnivores. Whether or not insects were specified in God's command to bring representative kinds on board is still debated, and the position of Answers in Genesis and the Ark Encounter is that they were probably not mandated as Ark kinds. The most likely scenario is that they survived outside the Ark but that the most delicate insects were brought on board, along with others that could have been used as food sources for other animals or as composters and pollinators.

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Endnotes

1. "How Do Insects Breathe," Arizona State University, https://askabiologist.asu.edu/how-insects-breathe.
2. It may be more accurate to speak of land-dependent animals instead of land-dwelling animals. For example, seals are mammals that technically dwell on land, but they also thrive in the water;

thus they are not necessarily land dependent, and may not have been required passengers on the Ark.

3. "Aquatic Insect Metamorphic Life Stages," Flyfishing Entomology, http://www.flyfishingentomology.com/Metamorphosis.htm.
4. Karl C. Priest, "Insects Were on the Ark," Insects: Incredible and Inspirational, November 13, 2010, http://www.insectman.us/articles/karls/insects-on-ark.htm.
5. John Woodmorappe, *Noah's Ark: A Feasibility Study* (Dallas, TX: Institute for Creation Research, 2009), 35.
6. Andrew Lamb, "Feeding Carnivores on the Ark, and Refuting an Accusation of 'Closet Scientism,'" Creation Ministries International, November 15, 2008, http://creation.com/feeding-carnivores-on-the-ark-and-refuting-an-accusation-of-closet-scientism.
7. Woodmorappe, *Noah's Ark*, 101–102.
8. Ibid., 102–109. See also Ernie Ward, "To Feed or Not to Feed Meat: One Vet's Take on Vegetarian Dog Diets," Vet Street, January 27, 2012, http://www.vetstreet.com/our-pet-experts/to-feed-or-not-to-feed-meat-one-vets-take-on-vegetarian-dog-diets.
9. Ibid., 127–135.
10. Ibid., 106–107.
11. Paul Weeks, "Red-billed Oxpeckers: Vampires or Tickbirds?," *Behavioral Ecology*, 11, no. 2 (2000): 154–160, https://academic.oup.com/beheco/article/11/2/154/204658.
12. Dolph Schluter and Peter R. Grant, "Ecological Correlates of Morphological Evolution in a Darwin's Finch, *Geospiza Difficilis*," *Evolution* 38, no. 4 (July 1984): 863.

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