

Ruminating on Created Kinds and Ark Kinds

Chad Arment, Independent Scholar, Greenville, Ohio.

Abstract

Understanding the relationship between created kinds and Ark kinds is a key issue in creation science, especially as it has bearing on the Flood/post-Flood boundary debate. This paper first considers whether there is classification terminology in the Old Testament that represents the creationist concept of the baramin. Then, three possible ways Ark kinds could relate to the created kinds are evaluated with biostratigraphic data. Evidence from the fossil record narrows the possible understanding of Ark kinds, shedding light on challenges in the Flood/post-Flood boundary debate.

Keywords: Ark kinds, artiodactyla, baramin, biostratigraphy, created kinds, creation biology, Flood/post-Flood boundary, fossils, Genesis, insects, kinds, Leviticus, locusts, *mîn*, ruminants

Introduction

One of the foundational questions in creation biology is whether there is classificatory terminology within Scripture indicating an unbroken genetic lineage from creation to the present day. Within creation biology, these separately created lineages are referred to as baramins (colloquially, created kinds), each being the complete lineage of originally created organisms within a given potentiality region or archaebaramin, and their various descendants up to the present day (Wood et al. 2003).

Does biological classification itself appear in Scripture? Lightner (2010, 81) suggested, “From a limited examination of the Hebrew terms used in creation, it does not appear that God intended to give us a list of taxonomic terms.” (Similar thoughts are expressed in Lightner [2021, 111]: “The variation in wording makes it evident these are not taxonomic terms.”) But taxonomy is the conceptual organization of the natural world we see around us (Berlin 1992). Taxonomic structure is present in Scripture—it just does not directly equate to modern scientific classification. Despite the fact that there is quite a bit of literature on ethnobiological classification, even the ethnobiology of Scripture, it is unfortunate that very little has been recognized by creation researchers. (Sanders and Wise [2003] did cite a 1973 paper on folk biology, while McLain, Petrone, and Speights [2018, 506] discussed folk taxonomies in their consideration of how creationists view the terms bird and dinosaur.) The Dietary Laws also engaged in a classification scheme, though one that was primarily intended to denote which animals could be eaten or offered for sacrifice. Hawley (2015) noted that in Leviticus 11, the listed animals were divided (Leviticus 11:47) between three polarities: edible/inedible, clean/unclean, and detestable/not detestable. These were separate labels, though often

overlapping. The arrangement of animals on those lists was also a form of classification (Whitekettle 2003). Prior to the Dietary Laws, Genesis 7 noted that both clean and unclean animals would be brought to the Ark, but it was not until Genesis 9:3 that God gave mankind permission to eat animals (and at that point, no differentiation was made between clean and unclean species).

Some early creationists suggested that the Hebrew *mîn* (often translated kind) was a classificatory term, particularly when used in “after its kind” (sometimes rendered “according to its kind”), with Jones (1972, 57) arguing, “It denotes definite ‘units of creation’ and not simply that ‘like begets like.’” Shafer (2003) noted that the *Theological Dictionary of the Old Testament* considered “after its kind” to be a classification term, and that a number of people, including influential Bible teachers, incorrectly equate kind with species. Shafer went on to note (91), “The context of creation by separations and divisions still implies boundaries, just not reproductive ones.” This followed lines of research by scholars like Running (1964), who considered *mîn* as meaning “a subdivision of a larger group,” and that “after its kind” was not primarily about reproduction (21): “It is not referring to how they are to continue reproducing, but to how God made them at the start, that is, by various species.” This did not require fixity of species, as they could continue to develop new forms, species or genera. Likewise, Wood et al. (2003) noted (10), “we find that although *mîn* has been a mainstay of creation biology for many years, there is very little linguistic support for viewing it as a scientific term in the modern sense. For this reason, our refined baramin concept specifically avoids equating the baramin with any Biblical category.” Neville (2011) simply asserted that (226), “It is preferable to translate the phrase ‘in all their varieties,’ ‘all kinds of,’ or similarly.”

Williams (1997) suggested that there were two possible ways to look at *min*: as a collective term (“a plurality of life-types not a plurality of individuals”), or as a distributive term, which in many cases would contextually require a plurality of the life forms noted. For example, he noted the use of the phrase “every raven after its kind” in Leviticus 11:15 and Deuteronomy 14:14 would (345) “seem to envisage more than one *min* of raven.” Whitekettle (2005) noted the ethnobiological transition of raven from what was essentially a folk generic (a distinctive yet general rank (Berlin 1992), like deer, lion, or eagle) in Genesis 8:7 to an intermediate taxon (with “differentiation into subclasses”) in Leviticus and Deuteronomy. From a biological standpoint, this would certainly fit with Genesis 8 noting the raven as a representative of the sole surviving species of the raven kind (Corvidae) going on to differentiate into numerous other species, and raven being used in the Dietary Laws as a term that included other corvids (such as magpies, which Aharoni (1938) suggested are the “ravens of the river” in Proverbs 30:17).

Clean Insects: Divisions or Specific?

Lightner (2021) correctly pointed out that the Dietary Law lists in Leviticus and Deuteronomy do not simply list individually distinct and separate baramins. But what is missing from most discussions on this subject is that these clean/unclean designations do not necessarily apply to an entire baramin. The clean insects list in Leviticus 11:22 provides the best example of this. Many English translations interpret these as large groups of insects, often orthopteran, with “after their kind” suggested as meaning “all kinds” or “any kind” (or, by some creation writers, as the entire baramin or, more recently by Lightner 2021, all divisions within a referenced group). But this has never been part of Judaic tradition, nor should it have been, given that there are many orthopterans which do not physically conform to the characteristics of a clean insect.

Rather, traditional Talmudic understanding of “after its kind” in Leviticus was to denote a single additional type (what we would understand ethnobiologically as a distinct folk generic, rather than a Linnaean species) similar in some fashion to the named insect. So, in the rabbinic literature (Kelhoffer 2004, for example, pointed to Moses Maimonides’ discussion), there were eight types of locust-like insects originally given as clean. Rabbinic literature noted that certain tokens must be present for those who were not experts (Belovski 2014; Kelhoffer 2004): four regular legs, two additional jumping legs, and four wings that cover most of the thorax. This would certainly exclude Middle

Eastern orthopterans like *Saga ephippigera*, a large, wingless, predatory katydid that crawls, but does not leap. *Poekilocerus arabicus* is another large, colorful grasshopper that can be found in Israel (Alenjbo 2018), that does have small wings, but as with others in its genus also produces a toxic repellent (Fishelson 1960). This certainly would not have been considered a clean or edible orthopteran. (Another clearly unclean orthopteran would be the burrowing mole cricket, which Aharoni [1938] suggested is the *tseletzal* of Deuteronomy 20:42.)

Within Middle Eastern agricultural societies, it should not be surprising that farmers paid close attention to pest species. Ten different words in the Old Testament have been noted for locusts or similar insects, some referring to different life stages (Thompson 1974), while the Talmud gave over 20 names, and one early Arabic source offered six names for the locust’s successional life stages (Thompson 1955). There have been attempts to identify the original locusts in Leviticus, but it is recognized that the Hebrew names given may have been applied to different species as time went by (Amar 2002).

Aharoni (1938) suggested, based on tradition, morphology, and etymology (updated to current taxonomy), that the original edible insects may have been:

1. *Arbeh*: Desert locust (*Schistocerca gregaria*), with Egyptian locust (*Anacridium aegyptium*) as its likely paired species.
2. *Sol’am*: *Truxalis nasuta*, a short-horned, long-headed locust.
3. *Hargol*: Great green bush-cricket (*Tettigonia viridissima*), a katydid.
4. *Hagab*: A polysemous term, being a general name for all locusts, but also especially the Moroccan locust (*Docostaurus maroccanus*).

Slifkin (2021), however, suggested that the four names specifically refer to locusts, or grasshoppers that form swarms. Given that, the specific names likely referred to the desert locust, the migratory locust (*Locusta migratoria*), the Egyptian locust, and the Moroccan locust.

In the Gospels, John the Baptist is noted as eating locusts, but there is no mention of specific types or how they were eaten. (Kelhoffer 2004 noted that the Essene community roasted or boiled locusts.) Today, because of the uncertainty of species identification, locust-eating is not permissible within some rabbinical traditions, though it continues in others (Slifkin 2021).

In any case, the evidence points to the clean insects in Leviticus 11:22 being ethnobiological folk generics, and the attribution “after its kind” should not, in this case, be taken as differentiation into further subgroups related to entomological taxonomy.

If “pluralities of life forms” is not always a correct interpretation of that phrase, our understanding of “after its kind” may require some flexibility. There may simply be a relational element being emphasized. This would not be altogether surprising, as ethnobiological surveys often encounter relational language, such as relatives, brothers, or companions when similar species are discussed (Berlin 1992). While Turner (2009) noted (37) that he was inclined towards “understanding *mîn* as a reference to subdivisions,” he also pointed out (36): “Unless one can show that *mîn* is a technical term, it is a fallacy to assume that the word carries the same level of precision or specification in all its occurrences. Otherwise the term’s precise meaning in each reference must be determined by context.”

But if *mîn* does not represent a classification unit of biological reality, does that mean that no such unit is present in Scripture? Could the baramin be present in Genesis conceptually, if covertly, beyond the Creation week? Wood et al. (2003) touched on one relevant point (10), “The Flood narrative contains specific references to *mîn* (Gen. 6:20, 7:14); therefore, the *mîn* of creation appear to be equated with the *mîn* saved during the Flood, whatever the *mîn* actually are.”

In Genesis 6:19, God tells Noah to bring two of all flesh into the Ark with him, “to keep them alive with you” (ESV). This is reiterated in Genesis 6:20: “Of the birds according to their kinds, and of the animals according to their kinds, of every creeping thing of the ground, according to its kind, two of every sort shall come in to you to keep them alive.” Again, in Genesis 7:2, Noah is told to take seven pairs of all clean animals and a pair of all unclean animals, “to keep their offspring alive on the face of all the earth.” So, what exactly was God saving? How do the *mîn* on the Ark (Ark kinds) relate to the *mîn* from the Creation week?

How Do Ark Kinds Relate to Created Kinds?

If the Ark kinds do not essentially correspond to the created kinds, then this opens a loophole for those who hold to an Upper Cenozoic Flood/post-Flood boundary, as it would seem possible for multiple genera within the same unclean kind to be found on both sides of the Flood boundary. Recently, Lightner (2021) argued, “Each time the term ‘according to its/their kind(s)’ occurs, it is believed to convey the idea that there were two or more groups that comprised the broad category mentioned” (110), and therefore, “it cannot be supported linguistically that the ‘kinds’ Noah took on the Ark have a one-to-one correspondence to the ‘kinds’ God created in Genesis 1” (114). Lightner concluded that (114), “one needs to exercise caution in using baraminology to identify the

Flood/post-Flood boundary. If, for example, we have strong evidence that the baramin includes a family, it is not necessarily a problem if multiple genera cross the proposed Flood/post-Flood boundary.”

This brings us to three possible options regarding the relationship between created kinds and Ark kinds, involving how post-Creation diversification is considered. Before the Flood, created kinds had between 1,300 to over 2,000 years for post-Creation diversification (Lightner 2021). Lightner writes (113), “The kinds of animals Noah brought on the Ark would have been kinds recognizable to him, but not necessarily baramins in the taxonomic sense. Thus, some unclean baramins may have diversified enough that two from several distinct lineages were preserved....The fact that the wording of the Hebrew text allows for this possibility has implications for creation research.” (As Genesis 6:20 and Genesis 7:8–9 note that it was God sending the animals to the Ark, not Noah’s choice, ethnobiological recognition likely did not play a role in Ark survivorship.) The three possible scenarios are 1) all created kinds being represented equally, but minimally, on the Ark, 2) all distinctive branches within each created kind being represented equally on the Ark, or 3) each created kind represented some by multiple distinctive branches on the Ark. Each possibility inevitably leads to a specific conclusion about the relationship between created kinds and Ark kinds:

1. The *mîn* represented each of the baraminic lineages created during the Creation week. A clean created kind could be represented by more than one biologically distinctive branch (up to seven pairs), while an unclean created kind would be represented by a single pair. So, the Ark kinds would have essentially been the same as the created kinds. (It is possible that some created kinds had disappeared by the time of the Flood, just as some created kinds disappeared during or soon after the Flood. For these scenarios, created kinds are those extant at the time of the Flood.)
2. The *mîn* represented each biologically distinctive branch that had arisen within each of the created kinds by the time of the Flood. If the created kind generally equates to the family level, each branch would approximate genus level or lower. There would be more Ark kinds than created kinds.
3. The *mîn* represented some, but not all, distinctive branches arising from within each of the created kinds by the time of the Flood. If the created kind generally equates to the family level, each branch would approximate genus level or lower. There would be more than one branch present on the Ark in at least one unclean created kind and/or more than seven branches present in at least one clean created kind. Not all branching lineages present

at the time of the Flood would be represented. Lightner (2021) suggested these would be visually distinctive lineages to Noah. There would be more Ark kinds than created kinds.

Lightner (2021) is arguing that options 2 or 3 cannot be ruled out. But is this correct? First, Lightner's argument is based on an assumption regarding what "after its kind" must mean; it suggests that this dismisses the likelihood that the Ark kinds correspond to the created kinds; and does not look at any fossil data that might be used to test this opinion.

As shown in the discussion of the clean insects, Lightner's argument that every time the word *mîn* is used, it must refer to subdivisions, is probably inaccurate. The word certainly does not apply to baraminic lineages throughout the Old Testament, but does that mean that it could not sometimes have applied to them as covert concepts? Lightner's argument is not able to rule that out if there is contextual flexibility in its usage, which seems to be the case. Does this mean we are stuck in a battle of opinions? Or is there data we can use from the fossil record that might shed some light on this?

Ruminants in the Fossil Record

While Lightner (2021) opened the door to multiple intrabaraminic genera being found on both sides of the Flood/post-Flood boundary, the argument did not take a position on whether such *mîn* represent a complete or incomplete set of branches from within a given baraminic lineage (options 2 or 3, above). We can examine the fossil record to determine the relationship of increased genera boundary-crossing to Ark kinds at a given Flood/post-Flood boundary.

Here we will look at the suborder Ruminantia of the order Artiodactyla. These include all clean mammals: they are both cud chewers and have completely split hooves (Leviticus 11:3; Deuteronomy 14:6). As Lightner (2008, 110) noted, unclean animals "likely included all non-ruminants." Woodmorappe (1996) attempted to limit the number of clean mammals on the Ark by appealing to intergeneric hybridization as a means of reducing the number of true genera, and arguing that a (post-Flood) Judaic tradition as kosher is necessary for the designation. Neither argument is relevant. When the same multiple genera are found on both sides of a proposed Flood/post-Flood boundary, for example, we cannot say those genera do not exist. The Old Testament Dietary Law lists originally applied to a particular biogeographical region, but the kosher laws have proven capable of engaging with other species. Modern Jewish *kashrut* decisors have identified exotic ruminants like the giraffe as clean, though additional tests like the absence of upper incisors or ability to cross-breed

may be applied (Zivotofsky, Zivotofsky, and Amar 2002). Woodmorappe (1996) also asserted that clean animals should be domesticated, which is directly refuted by the presence of wild ruminants within the Dietary Law's clean animals (Deuteronomy 14:5).

This list includes fossil genera within the suborder, which are assumed here to have been clean as well. No artiodactyls outside the Ruminantia are included. All ruminants, fossil and extant, share a trait considered by evolutionary biologists to be an apomorphy: the fusion of the cuboid and navicular bones in the tarsus (Hassanin and Douzery 2003; Silvia 2019). Plotnick, Theodor, and Holtz (2015) considered the possible kosher status of fossil ruminants, and noted that fossil limbs can be examined, "inspecting the foot symmetry to make sure it passes between toes 3 and 4, and the shape of the last phalanx of the toes, which should be wide and flat, not pointed or curved." That indicates a split hoof. While we cannot look directly at a fossil and determine that it had the complex stomach system for rumination (which allows the digestion of cellulose through symbiotic microorganisms) and thus cud chewing, ruminant craniodental anatomy characterize a number of traits that indicate this herbivorous behavior (DeMiguel, Azanza, and Morales 2014; Janis and Theodor 2014). Plotnick, Theodor, and Holtz (2015) noted that in the future, paleontologists may even be able to determine ruminant digestion from fossil teeth using stable isotope analysis.

Data for Tables 1 and 2 were acquired through the Paleobiology Database (via the Fossilworks.org portal, accessed in June 2022) and the following sources: Azanza, Rössner, and Ortiz-Jaureguizar 2013; Bibi, Rowan, and Reed 2017; Bibi, Vrba, and Fack 2012; Geraads, Bobe, and Reed 2012; Geraads, Boughabi, and Zouhri 2012; Janis 1987; Jiménez-Hidalgo and Bravo-Cuevas 2015; Menecart, Becker, and Berger 2011; Merceron et al. 2004; Nishioka et al. 2019; Pickford, Senut, and Mourer-Chauviré 2004; Prothero and Foss 2007; Ríos, Sánchez, and Morales 2017; Shi 2014; Solounias and Moelleken 1993; Van Der Geer 2014; Vislobokova 2001; Vrba and Schaller 2000; Wang et al. 2018; 2022.

Table 1 lists 82 genera of ruminant Artiodactyla that are found on both sides of a proposed Pliocene-Pleistocene Flood/post-Flood boundary, advocated in the Clarey Flood Model (Clarey 2020). This number in and of itself is not directly pertinent. What is pertinent is the number of genera which we see crossing within specific families. Within the Cervidae, for example, 20 genera are boundary crossers. Within the Bovidae, subfamily Alcelaphinae, eight genera cross. Within the Bovidae, subfamily Antilopinae, 16 genera cross. Within the Bovidae, subfamily Bovinae, nine genera cross. Within the Bovidae, subfamily Caprinae, nine

Table 1. Pliocene to Pleistocene boundary-crossing ruminants.

Family Tragulidae		Subfamily Antilopinae
† <i>Dorcabune</i>		<i>Antidorcas</i>
<i>Hyemoschus</i>		<i>Antilope</i>
Family Antilocapridae		<i>Eudorcas</i>
<i>Antilocapra</i>		† <i>Gallogoral</i>
† <i>Capromeryx</i>		<i>Gazella</i>
† <i>Tetrameryx</i>		† <i>Gazellospira</i>
Family Giraffidae		† <i>Hemibos</i>
<i>Giraffa</i>		† <i>Hesperidoceras</i>
† <i>Libytherium</i>		† <i>Leptobos</i>
† <i>Mitilanotherium</i>		<i>Madoqua</i>
<i>Okapia</i>		<i>Nanger</i>
† <i>Palaeotragus</i>		<i>Oreotragus</i>
† <i>Sivatherium</i>		† <i>Procamptoceras</i>
Family Moschidae		<i>Procapra</i>
<i>Moschus</i>		<i>Raphicerus</i>
Family Cervidae		† <i>Spirocerus</i>
† <i>Antifer</i>		Subfamily Bovinae
<i>Axis</i>		<i>Bos</i>
† <i>Bretzia</i>		<i>Bison</i>
<i>Capreolus</i>		<i>Bubalus</i>
† <i>Cervalces</i>		† <i>Duboisia</i>
† <i>Cervavitus</i>		† <i>Pelorovis</i>
<i>Cervus</i>		<i>Syncerus</i>
† <i>Croizetoceros</i>		<i>Taurotragus</i>
<i>Dama</i>		<i>Tragelaphus</i>
† <i>Eucladoceros</i>		† <i>Ugandax</i>
† <i>Libralces</i>		Subfamily Caprinae
† <i>Megaloceros</i>		<i>Budorcas</i>
† <i>Metacervulus</i>		<i>Capra</i>
<i>Muntiacus</i>		<i>Hemitragus</i>
† <i>Navahoceros</i>		† <i>Makapania</i>
<i>Odocoileus</i>		† <i>Megalovis</i>
† <i>Praemegaceros</i>		† <i>Myotragus</i>
† <i>Procapreolus</i>		<i>Ovis</i>
<i>Rucervus</i>		† <i>Praeovibos</i>
† <i>Sinomegaceros</i>		<i>Pseudois</i>
Family Bovidae		Subfamily Cephalophinae
Subfamily Aepycerotinae		<i>Cephalophus</i>
<i>Aepyceros</i>		Subfamily Hippotraginae
Subfamily Alcelaphinae		<i>Hippotragus</i>
<i>Alcelaphus</i>		<i>Oryx</i>
<i>Beatragus</i>		Subfamily Reduncinae
<i>Connochaetes</i>		<i>Kobus</i>
<i>Damaliscus</i>		† <i>Menelikia</i>
† <i>Damalops</i>		<i>Pelea</i>
† <i>Megalotragus</i>		<i>Redunca</i>
† <i>Numidocapra</i>		
† <i>Parmularius</i>		

Note: † denotes extinct genera

genera cross. This means that, in this Flood Model, each genus was individually represented on the Ark—it was not possible for a single pair of each of 20 different genera of deer to be represented within the seven pairs of every clean *mîn* aboard the Ark. If each genus was represented, then the Ark kind itself must correlate, at a minimum, to the genus level. This effectively rules out option 1 for Upper Cenozoic Flood Models. Significant percentages of boundary crossing genera from within specific families or subfamilies also rebuts option 3. Lightner (2021, 113) suggested, “The kinds of animals Noah brought on the Ark would have been kinds recognizable to him, but not necessarily baramins in the taxonomic sense.” This does not match what we see when we look at Upper Cenozoic boundary-crossing genera. Most of the deer, for example, that cross that boundary, are not ethnobiologically distinctive when examined together.

Given that, Table 2 lists 328 genera of ruminants found in Pliocene strata or below. Ruminant genera found only in the Pleistocene and/or Holocene are not included. If the Pliocene-Pleistocene boundary is the Flood/post-Flood boundary, and if the genus is equal to the Ark kind, then with seven pairs each, there would necessarily have been 4,592 clean mammals taken aboard the Ark. This is far more than is consistent with our current understanding of survivorship on the Ark. For that, Lightner (2012) had estimated 13 extant ruminant kinds, primarily at the family level (except for including individual subfamilies of the Bovidae). Using similar quantification, six extinct families within the infraorder Tragulina, one extinct subfamily within the Bovidae, and seven extinct families within the infraorder Pecora can be added. Five stem Pecora genera can also be added individually, as a conservative measure. This suggests a maximum of 32 ruminant kinds, which would have made up 448 individual clean mammals on the Ark. All of this refers only to the clean mammals. The number of unclean land animals and all flying creatures would also greatly increase if the genus is asserted to be the level of *mîn* represented on the Ark.

High numbers do not rule out the possibility that the Ark kinds represented individual genera. It just means that Upper Cenozoic Flood models need to honestly address the issue—the Ark kind cannot be higher than genus level, and this substantially increases the number of animals on the Ark. Woodmorappe (1996, 7), in setting up his feasibility study of Noah’s Ark, “deliberately made the problem of animal housing on the Ark much more difficult by adopting the genus as the taxonomic rank of the created kind. This necessitates... nearly 16,000 animals on the Ark.” So, it has been argued

this way. (It should be noted that Woodmorappe’s numbers do need to be updated. For example, he estimated 234 pairs or genera of marsupials on the Ark, which almost certainly included a number of metatherian genera no longer included in the Marsupialia. Arment [2020a] recognized 294 genera of marsupials alone, not including non-marsupial metatherians.)

What if we consider a Flood/post-Flood boundary lower in the rock layers? If, for example, we take the Cretaceous-Paleogene boundary as a possible Flood/post-Flood boundary, then Lightner’s argument becomes moot. Boundary-crossing by Ark survivors within those fossil layers does not include significant recognizable branching. There are no modern placental mammals in those strata, let alone ruminants. Rather, at this boundary for the ruminants examined here, speciation and migration throughout the post-Flood landscape registers in fossil strata identified as Eocene or higher. Wise (2009) even suggested that the Ruminantia could have been represented on the Ark by a single kind, the family Amphimerycidae. (In which case, Woodmorappe [1996] would be correct about only a few clean mammals being on the Ark; just not in the way he proposed.) So, it would be reasonable at that boundary to expect the Ark kinds to be essentially the same as the created kinds. Otherwise, one would simply be inflating the number of Ark kinds, many of which promptly disappeared after the Flood.

Conclusion

We have considered three possible interpretations of Ark kinds in relation to created kinds: 1) Ark kinds are essentially the same as created kinds, 2) Ark kinds represent all significant (genus-level at minimum) branches within each created kind, or 3) Ark kinds represent an arbitrary assortment of significant (genus-level at minimum) branches within each created kind.

From the data gathered, we can conclude that the assertion by Lightner (2021, 114), that “it is not necessarily a problem if multiple genera cross the proposed Flood/post-Flood boundary,” is inaccurate. There is no leeway within the fossil record to pick and choose which pre-Flood genera might have been on the Ark. Such substantial increase in boundary-crossing genera at a proposed Upper Cenozoic Flood/post-Flood boundary contraindicates options 1 and 3. Proponents of Upper Cenozoic Flood/post-Flood boundary models need to recognize that their models necessitate that the Ark kind must be at the genus level or lower (option 2). Of course, there are other biostratigraphic arguments that show the improbability of that arrangement (Arment 2020a; 2020b; Ross 2012; 2014). For a lower Flood/post-Flood

Table 2. Ruminant genera on the Ark given a Pliocene-Pleistocene Flood/Post-Flood boundary

Suborder Ruminantia		
	Infraorder Tragulina	
	Family Archaeomerycidae	
		† <i>Archaeomeryx</i>
		† <i>Irrawadymeryx</i>
		† <i>Miomeryx</i>
		† <i>Notomeryx</i>
		† <i>Paukkaungmeryx</i>
		† <i>Xinjiangmeryx</i>
	Family Bachitheriidae	
		† <i>Bachitherium</i>
	Family Hypertragulidae	
		† <i>Andegameryx</i>
		† <i>Hypertragulus</i>
		† <i>Hypisodus</i>
		† <i>Nanotragulus</i>
	Family Lophiomerycidae	
		† <i>Indomeryx</i>
		† <i>Lophiomeryx</i>
		† <i>Nalameryx</i>
		† <i>Zhailimeryx</i>
	Family Praetragulidae	
		† <i>Parvitragulus</i>
		† <i>Praetragulus</i>
		† <i>Simimeryx</i>
	Family Protoceratidae	
		† <i>Heteromeryx</i>
		† <i>Kyptoceras</i>
		† <i>Lambdoceras</i>
		† <i>Leptoreodon</i>
		† <i>Leptotragulus</i>
		† <i>Paratoceras</i>
		† <i>Poabromylus</i>
		† <i>Prosynthetoceras</i>
		† <i>Protoceras</i>
		† <i>Pseudoprotoceras</i>
		† <i>Syndyceras</i>
		† <i>Synthetoceras</i>
		† <i>Toromeryx</i>
		† <i>Trigenicus</i>
	Family Tragulidae (chevrotains)	
		† <i>Afrotragulus</i>
		† <i>Archaeotragulus</i>
		† <i>Dorcabune</i>
		† <i>Dorcatherium</i>
		<i>Hyemoschus</i>
		† <i>Iberomeryx</i>
		† <i>Krabimeryx</i>
		† <i>Siamotragulus</i>
		† <i>Stenomeryx</i>
		† <i>Yunnanotherium</i>
	Infraorder Pecora	
	Stem	
		† <i>Babameryx</i>
		† <i>Bugtimeryx</i>
		† <i>Dremotherium</i>
		† <i>Namibiomeryx</i>
		† <i>Walangania</i>

	Family Antilocapridae	
	<i>Antilocapra</i>	
	† <i>Capromeryx</i>	
	† <i>Ceratomeryx</i>	
	† <i>Cosoryx</i>	
	† <i>Hexameryx</i>	
	† <i>Hexobelomeryx</i>	
	† <i>Illogoceros</i>	
	† <i>Merriamoceros</i>	
	† <i>Merycodus</i>	
	† <i>Osbornoceros</i>	
	† <i>Ottoceros</i>	
	† <i>Paracosoryx</i>	
	† <i>Plioceros</i>	
	† <i>Proantilocapra</i>	
	† <i>Ramoceros</i>	
	† <i>Sphenophalos</i>	
	† <i>Submeryceros</i>	
	† <i>Tetrameryx</i>	
	† <i>Texoceros</i>	
	Family Bovidae	
	Subfamily Aepycerotinae	
		<i>Aepyceros</i>
	Subfamily Alcelaphinae	
		<i>Alcelaphus</i>
		<i>Beatragus</i>
		<i>Connochaetes</i>
		† <i>Damalacra</i>
		† <i>Damaliborea</i>
		<i>Damaliscus</i>
		† <i>Damalops</i>
		† <i>Maremmia</i>
		† <i>Megalotragus</i>
		† <i>Numidocapra</i>
		† <i>Parmularius</i>
	Subfamily Antilopinae	
		<i>Antidorcas</i>
		<i>Antilope</i>
		† <i>Antilospira</i>
		† <i>Brabovus</i>
		† <i>Criotherium</i>
		† <i>Dorcadoryx</i>
		† <i>Dorcadoxa</i>
		† <i>Eosyncerus</i>
		† <i>Etruria</i>
		<i>Eudorcas</i>
		† <i>Gallogoral</i>
		<i>Gazella</i>
		† <i>Gazellospira</i>
		† <i>Gentrytragus</i>
		† <i>Gobiocerus</i>
		† <i>Grevenobos</i>
		† <i>Hanhaiceros</i>
		† <i>Helicopotax</i>
		† <i>Helicotragus</i>
		† <i>Hemibos</i>
		† <i>Hemistrepsiceros</i>
		† <i>Hesperidoceras</i>
		† <i>Hezhengia</i>

				† <i>Homoiodorcas</i>
				† <i>Kabulicornis</i>
				† <i>Kubanotragus</i>
				† <i>Lantiantragus</i>
				† <i>Leptobos</i>
				† <i>Leptotragus</i>
				<i>Madoqua</i>
				† <i>Majoreas</i>
				† <i>Mesembriacerus</i>
				† <i>Mesembriportax</i>
				† <i>Miotragocerus</i>
				<i>Nanger</i>
				† <i>Neotragocerus</i>
				† <i>Nisidorcas</i>
				† <i>Oioceros</i>
				† <i>Olonbulukia</i>
				<i>Oreotragus</i>
				† <i>Orygotherium</i>
				† <i>Pachygazella</i>
				† <i>Pachyportax</i>
				† <i>Pachytragus</i>
				† <i>Palaeoreas</i>
				† <i>Palaeoryx</i>
				† <i>Paraprotoryx</i>
				† <i>Paratragocerus</i>
				† <i>Parumiatherium</i>
				† <i>Plesiaddax</i>
				† <i>Proamphibos</i>
				† <i>Procamptoceras</i>
				<i>Procapra</i>
				† <i>Procobus</i>
				† <i>Prodamaliscus</i>
				† <i>Proleptobos</i>
				† <i>Prostrepsiceros</i>
				† <i>Protoryx</i>
				† <i>Protragelaphus</i>
				† <i>Protragocerus</i>
				† <i>Pseudoeotragus</i>
				† <i>Pseudotragus</i>
				† <i>Qurliqnorja</i>
				<i>Raphicerus</i>
				† <i>Rhynchotragus</i>
				† <i>Ruticeros</i>
				† <i>Samodorcas</i>
				† <i>Samokeros</i>
				† <i>Samotragus</i>
				† <i>Selenoportax</i>
				† <i>Shaanxispira</i>
				† <i>Sinoryx</i>
				† <i>Sinotragus</i>
				† <i>Sivaceros</i>
				† <i>Sivaportax</i>
				† <i>Skoufotragus</i>
				† <i>Spirocerus</i>
				† <i>Sporadotragus</i>
				† <i>Strepsiportax</i>
				† <i>Strogulognathus</i>
				† <i>Tchaltacerus</i>
				† <i>Tethytragus</i>

				† <i>Torticornis</i>
				† <i>Tossunnoria</i>
				† <i>Tragocerus</i>
				† <i>Tragoportax</i>
				† <i>Tragoreas</i>
				† <i>Tragospira</i>
				† <i>Tsaidamotherium</i>
				† <i>Turcocerus</i>
				† <i>Turritragus</i>
				† <i>Tyrrhenotragus</i>
				† <i>Urmiatherium</i>
				† <i>Wellsiana</i>
			Subfamily Bovinae	
				<i>Bison</i>
				<i>Bos</i>
				<i>Bubalus</i>
				† <i>Duboisia</i>
				† <i>Eotragus</i>
				† <i>Kipsigicerus</i>
				† <i>Parabos</i>
				† <i>Pelorovis</i>
				† <i>Pheraios</i>
				† <i>Sivoreas</i>
				<i>Syncerus</i>
				<i>Taurotragus</i>
				<i>Tragelaphus</i>
				† <i>Ugandax</i>
			Subfamily Caprinae	
				† <i>Aragoral</i>
				† <i>Benicerus</i>
				<i>Budorcas</i>
				<i>Capra</i>
				† <i>Damalavus</i>
				<i>Hemitragus</i>
				† <i>Makapania</i>
				† <i>Megalovis</i>
				† <i>Myotragus</i>
				<i>Ovis</i>
				† <i>Praeovibos</i>
				† <i>Protovis</i>
				<i>Pseudois</i>
				† <i>Sinocapra</i>
				† <i>Skouria</i>
			Subfamily Cephalophinae	
				<i>Cephalophus</i>
			Subfamily Hippotraginae	
				<i>Hippotragus</i>
				<i>Oryx</i>
				† <i>Praedamalis</i>
				† <i>Saheloryx</i>
				† <i>Tchadotragus</i>
			Subfamily Hypsodontinae	
				† <i>Hypsodontus</i>
			Subfamily Reduncinae	
				<i>Kobus</i>
				† <i>Menelikia</i>
				<i>Pelea</i>
				<i>Redunca</i>
				† <i>Zephyreduncinus</i>

	Family Cervidae	
	† <i>Antifer</i>	
	<i>Axis</i>	
	† <i>Bretzia</i>	
	<i>Capreolus</i>	
	† <i>Cervalces</i>	
	† <i>Cervavitus</i>	
	† <i>Cervavitus</i>	
	† <i>Cervodama</i>	
	<i>Cervus</i>	
	† <i>Croizetoceros</i>	
	<i>Dama</i>	
	† <i>Eocoileus</i>	
	† <i>Eostylocerus</i>	
	† <i>Eucladoceros</i>	
	† <i>Eumeryx</i>	
	† <i>Euprox</i>	
	† <i>Libralces</i>	
	† <i>Lucentia</i>	
	† <i>Megaloceros</i>	
	† <i>Metacervulus</i>	
	<i>Muntiacus</i>	
	† <i>Navahoceros</i>	
	<i>Odocoileus</i>	
	† <i>Paracervulus</i>	
	† <i>Paradicrocercus</i>	
	† <i>Pliocervus</i>	
	† <i>Praemegaceros</i>	
	† <i>Procapreolus</i>	
	† <i>Procervulus</i>	
	† <i>Pseudalces</i>	
	<i>Rucervus</i>	
	† <i>Sinomegaceros</i>	
	Family Climacoceratidae	
	† <i>Climacoceras</i>	
	† <i>Nyanzameryx</i>	
	† <i>Orangemeryx</i>	
	† <i>Propalaeoryx</i>	
	† <i>Sperrgebietomeryx</i>	
	Family Gelocidae	
	† <i>Floridameryx</i>	
	† <i>Gelocus</i>	
	† <i>Gobiomeryx</i>	
	† <i>Paragelocus</i>	
	† <i>Phaneromeryx</i>	
	† <i>Pseudoceras</i>	
	† <i>Pseudogelocus</i>	
	† <i>Pseudomeryx</i>	
	Family Giraffidae	
	† <i>Afrikanokeryx</i>	
	† <i>Birgerbohlinia</i>	
	† <i>Bohlinia</i>	
	† <i>Bramatherium</i>	
	† <i>Canthumeryx</i>	
	† <i>Decennatherium</i>	
	† <i>Georgiomeryx</i>	
	<i>Giraffa</i>	
	† <i>Giraffokeryx</i>	
	† <i>Helladotherium</i>	

		† <i>Honanotherium</i>	
		† <i>Hydaspitherium</i>	
		† <i>Injanatherium</i>	
		† <i>Karsimatherium</i>	
		† <i>Libytherium</i>	
		† <i>Mitilanotherium</i>	
		<i>Okapia</i>	
		† <i>Palaeogiraffa</i>	
		† <i>Palaeotragus</i>	
		† <i>Progiraffa</i>	
		† <i>Samotherium</i>	
		† <i>Shansitherium</i>	
		† <i>Sivatherium</i>	
		† <i>Umbrotherium</i>	
		Family Hoplitomerycidae	
		† <i>Hoplitomeryx</i>	
		† <i>Scontromeryx</i>	
		Family Lagomerycidae	
		† <i>Lagomeryx</i>	
		† <i>Ligeromeryx</i>	
		† <i>Stephanocemas</i>	
		Family †Leptomerycidae	
		† <i>Hendryomeryx</i>	
		† <i>Leptomeryx</i>	
		† <i>Pipestoneia</i>	
		† <i>Pronodens</i>	
		† <i>Pseudoparablastomeryx</i>	
		Family Moschidae	
		† <i>Bedenomeryx</i>	
		† <i>Blastomeryx</i>	
		† <i>Friburgomeryx</i>	
		† <i>Hispanomeryx</i>	
		† <i>Hydropotopsis</i>	
		† <i>Longirostromeryx</i>	
		† <i>Machaeromeryx</i>	
		† <i>Micromeryx</i>	
		<i>Moschus</i>	
		† <i>Oriomeryx</i>	
		† <i>Parablastomeryx</i>	
		† <i>Pomelomeryx</i>	
		† <i>Problastomeryx</i>	
		† <i>Pseudoblastomeryx</i>	
		Family Palaeomerycidae	
		† <i>Aletomeryx</i>	
		† <i>Ampelomeryx</i>	
		† <i>Amphitragulus</i>	
		† <i>Barbouromeryx</i>	
		† <i>Bouromeryx</i>	
		† <i>Cranioceras</i>	
		† <i>Diabolocornis</i>	
		† <i>Drepanomeryx</i>	
		† <i>Dromomeryx</i>	
		† <i>Palaeomeryx</i>	
		† <i>Pediomeryx</i>	
		† <i>Procranioceras</i>	
		† <i>Rakomeryx</i>	
		† <i>Sinclairiomeryx</i>	
		† <i>Subdromomeryx</i>	
		† <i>Tauromeryx</i>	

			† <i>Triceromeryx</i>	
			† <i>Xenokeryx</i>	
			† <i>Yumaceras</i>	
		Family Prolibytheriidae		
			† <i>Discokeryx</i>	
			† <i>Prolibytherium</i>	
			† <i>Tsaidamotherium</i>	

boundary, stipulating for argument's sake at the Cretaceous-Paleogene boundary, option 1 remains the most viable interpretation of Ark kinds. In that case, a baraminic lineage is the most persuasive explanation to what is intended by *mîn* in Genesis 6 and 7. This does not require that every use of the term *mîn* in the Old Testament be understood in the same way.

Finally, we can conclude that biostratigraphy continues to provide essential tools in developing our understanding of the pre-Flood world, Ark survivorship, and the post-Flood landscape.

References

- Aharoni, I. 1938. "On Some Animals Mentioned in the Bible." *Osiris* 5: 461–478.
- Alen-jbo. 2018. "*Poekilocerus arabicus*." *iNaturalist*. <https://www.inaturalist.org/observations/10722157>.
- Amar, Zohar. 2002. "The Eating of Locusts in Jewish Tradition After the Talmudic Period." *The Torah U-Madda Journal* 11: 186–202.
- Arment, Chad. 2020a. "To the Ark, and Back Again? Using the Marsupial Fossil Record to Investigate the Post-Flood Boundary." *Answers Research Journal* 13 (April 8): 1–22. <https://answersresearchjournal.org/marsupial-fossil-post-flood-boundary/>.
- Arment, Chad. 2020b. "Implications of Creation Biology for a Neogene-Quaternary Flood/Post-Flood Boundary." *Answers Research Journal* 13 (November 4): 241–256. <https://answersresearchjournal.org/neogene-quaternary-flood-boundary/>.
- Azanza, Beatriz, Gertrud E. Rössner, and Edgardo Ortiz-Jaureguizar. 2013. "The Early Turolian (Late Miocene) Cervidae (Artiodactyla, Mammalia) from the Fossil Site of Dorn-Dürkheim 1 (Germany) and Implications on the Origin of Crown Cervids." *Palaeobiodiversity and Palaeoenvironments* 93 (14 May): 217–258.
- Belovski, Harvey. 2014. "Focussed on Locust." *Jewish Quarterly* 61, no. 1 (24 April): 5–7.
- Berlin, Brent. 1992. *Ethnobiological Classification: Principles of Categorization of Plants and Animals in Traditional Societies*. Princeton, New Jersey: Princeton University Press.
- Bibi, Faysal, John Rowan, and Kaye Reed. 2017. "Late Pliocene Bovidae from Ledi-Geraru (Lower Awash Valley, Ethiopia) and Their Implications for Afar Paleoeology." *Journal of Vertebrate Paleontology* 37, no. 4 (26 July): e1337639.
- Bibi, Faysal, E. Vrba, and F. Fack. 2012. "A New African Fossil Caprin and a Combined Molecular and Morphological Bayesian Phylogenetic Analysis of Caprini (Mammalia: Bovidae)." *Journal of Evolutionary Biology* 25, no. 9 (September): 1843–1854.
- Clarey, Timothy. 2020. *Carved in Stone: Geological Evidence of the Worldwide Flood*. Dallas, Texas: Institute for Creation Research.
- DeMiguel, Daniel, Beatriz Azanza, and Jorge Morales. 2014. "Key Innovations in Ruminant Evolution: A Paleontological Perspective." *Integrative Zoology* 9, no. 4 (18 September): 412–433.
- Fishelson, L. 1960. "The Biology and Behavior of *Poekilocerus bufonius* Klug, with Special Reference to the Repellent Gland (Orth. Acrididae)." *Eos, Revista Española de Entomología* 36, no. 1: 41–62.
- Geraads, Denis, René Bobe, and Kaye Reed. 2012. "Pliocene Bovidae (Mammalia) from the Hadar Formation of Hadar and Ledi-Geraru, Lower Awash, Ethiopia." *Journal of Vertebrate Paleontology* 32, no. 1 (January): 180–197.
- Geraads, Denis, Siham El Boughabi, and Samir Zouhri. 2012. "A New Caprin Bovid (Mammalia) from the Late Miocene of Morocco." *Palaeontologia Africana* 47 (December): 19–24.
- Hassanin, Alexandre, and Emmanuel J.P. Douzery. 2003. "Molecular and Morphological Phylogenies of Ruminantia and the Alternative Position of the Moschidae." *Systematic Biology* 52, no. 2 (1 April): 206–228.
- Hawley, Lance. 2015. "The Agenda of Priestly Taxonomy: The Conceptualization of וְאֵימָר and וְאֵימָר in Leviticus 11." *The Catholic Biblical Quarterly* 77, no. 2 (April): 231–249.
- Janis, Christine M. 1987. "Grades and Clades in Hornless Ruminant Evolution: The Reality of the Gelocidae and the Systematic Position of *Lophiomeryx* and *Bachitherium*." *Journal of Vertebrate Paleontology* 7, no. 2 (24 August): 200–216.
- Janis, Christine M., and Jessica M. Theodor. 2014. "Cranial and Postcranial Morphological Data in Ruminant Phylogenetics." *Zitteliana B* 32: 15–31.
- Jiménez-Hidalgo, Eduardo, and Victor M. Bravo-Cuevas. 2015. "A Roe Deer from the Pliocene of Hidalgo, Central Mexico." *Acta Palaeontologica Polonica* 60, no. 4 (December): 807–813.
- Jones, Arthur J. 1972. "A General Analysis of the Biblical 'Kind' (Min)." *Creation Research Society Quarterly* 9, no. 1 (June): 53–57.
- Kelhoffer, James A. 2004. "Did John the Baptist Eat Like a Former Essene? Locust-Eating in the Ancient Near East and at Qumran." *Dead Sea Discoveries* 11, no. 3: 293–314.
- Lightner, Jean K. 2008. "Genetics of Coat Color I: The Melanocortin 1 Receptor (MC1R)." *Answers Research Journal* 1 (October 8): 109–116. <https://answersresearchjournal.org/genetics-of-coat-color-1>.
- Lightner, Jean K. 2010. "Hebrew Scriptures as an Aid to Developing a Creationist Taxonomy." *Journal of Creation* 24, no. 1 (April): 77–81.
- Lightner, Jean K. 2012. "Mammalian Ark Kinds." *Answers Research Journal* 5 (October 31): 151–204. <https://answersresearchjournal.org/mammalian-ark-kinds/>.

- Lightner, Jean K. 2021. "Created Kinds vs Ark Kinds—Implications for Creation Research." *Journal of Creation* 35, no. 3 (December): 109–115.
- McLain, Matthew, Matt Petrone, and Matthew Speights. 2018. "Feathered Dinosaurs Reconsidered: New Insights from Baraminology and Ethnotaxonomy." In *Proceedings of the Eighth International Conference on Creationism*, edited by J.H. Whitmore, 472–515. Pittsburgh, Pennsylvania: Creation Science Fellowship.
- Mennecart, Bastien, Damien Becker, and Jean-Pierre Berger. 2011. "*Iberomyx minor* (Mammalia, Artiodactyla) from the Early Oligocene of Soule (Canton Jura, NW Switzerland): Systematics and Palaeodiet." *Swiss Journal of Geoscience* 104 (Suppl. 1) (December): S115–S132.
- Merceron, Gildas, Cécile Blondel, Michel Brunet, Sevket Sen, Nikos Solounias, Laurent Viriot, and Emile Heintz. 2004. "The Late Miocene Paleoenvironment of Afghanistan as Inferred from Dental Microwear in Artiodactyls." *Palaeogeography, Palaeoclimatology, Palaeoecology* 207, nos. 1–2 (14 May): 143–163.
- Neville, Richard. 2011. "Differentiation in Genesis 1: An Exegetical Creation *ex nihilo*." *Journal of Biblical Literature* 130, no. 2 (Summer): 209–226.
- Nishioka, Yuichiro, et al. 2019. "Bovidae (Mammalia, Artiodactyla) from the Neogene Irrawaddy Beds, Myanmar." *Palaeontographica Abteilung A* 314, nos. 1–3: 11–68.
- Pickford, Martin, Brigitte Senut, and Cécile Mourer-Chauviré. 2004. "Early Pliocene Tragulidae and Peafowls in the Rift Valley, Kenya: Evidence for Rainforest in East Africa." *Comptes Rendus Palevol* 3, no. 3 (May): 179–189.
- Plotnick, Roy E., Jessica M. Theodor, and Thomas R. Holtz Jr. 2015. "Jurassic Pork: What Could a Jewish Time Traveler Eat?" *Evolution: Education and Outreach* 8:17 (24 September). <https://doi.org/10.1186/s12052-015-0047-2>.
- Prothero, Donald R., and Scott E. Foss. eds. 2007. *The Evolution of Artiodactyls*. Baltimore, Maryland: The Johns Hopkins University Press.
- Ríos, María, Israel M. Sánchez, and Jorge Morales. 2017. "A New Giraffid (Mammalia, Ruminantia, Pecora) from the Late Miocene of Spain, and the Evolution of the Sivathere-Samothere Lineage." *PLoS ONE* 12, no. 11 (November 1): e0185378.
- Ross, Marcus R. 2012. "Evaluating Potential Post-Flood Boundaries with Biostratigraphy—the Pliocene/Pleistocene Boundary." *Journal of Creation* 26, no. 2 (August): 82–87.
- Ross, Marcus R. 2014. "Reliable Data Disconfirm a Late Cenozoic Post-Flood Boundary." *Journal of Creation* 28, no. 2 (August): 66–68.
- Running, Leona G. 1964. "A Study of Hebrew Words in the Creation Record." *The Ministry* (September): 19–23. <https://www.ministrymagazine.org/archive/1964/09/a-study-of-hebrew-words-in-the-creation-record>.
- Sanders, Roger W., and Kurt P. Wise. 2003. "The Cognitum: A Perception-Dependant Concept Needed in Baraminology." In *Proceedings of the Fifth International Conference on Creationism*, edited by Robert L. Ivey, 445–455. Pittsburgh, Pennsylvania: Creation Science Fellowship.
- Schafer, A. Rahel Davidson. 2003. "The 'Kinds' of Genesis 1: What is the Meaning of *Min*?" *Journal of the Adventist Theological Society* 14, no. 1 (Spring): 86–100.
- Shi, QinQin. 2014. "New Species of *Tsaidamotherium* (Bovidae, Artiodactyla) from China Sheds New Light on the Skull Morphology and Systematics of the Genus." *Science China Earth Sciences* 57, no. 2 (31 October): 258–266.
- Silvia, William J. 2019. "Ruminant Phylogenetics: A Reproductive Biological Perspective." *Bioscientifica Proceedings* 8: RDRRDR1. DOI: 10.1530/bioscioprocs.8.001.
- Slifkin, Natan. 2021. "Can We Eat Locusts?" *Rationalist Judaism*, March 22. <http://www.rationalistjudaism.com/2021/03/broader-justifications-for-eating.html>
- Solounias, Nikos, and Sonja M.C. Moelleken. 1993. "Tooth Microwear and Premaxillary Shape of an Archaic Antelope." *Lethaia* 26, no. 3 (December): 261–268.
- Thompson, John A. 1955. "Joel's Locusts in the Light of Near Eastern Parallels." *Journal of Near Eastern Studies* 14, no. 1 (January): 52–55.
- Thompson, John A. 1974. "Translation of the Words for Locust." *The Bible Translator* 25, no. 4 (October 1): 405–411.
- Turner, Kenneth J. 2009. "The Kind-ness of God: A Theological Reflection of *Min*, 'Kind'." In *Genesis Kinds: Creationism and the Origin of Species*, edited by Todd Charles Wood and Paul A. Garner. *Centers for Origins Research Issues in Creation* 5 (January): 31–64.
- Van Der Geer, Alexandra A.E. 2014. "Systematic Revision of the Family Hoplitomyeridae Leinders, 1984 (Artiodactyla: Cervioidea), with the Description of a New Genus and Four New Species." *Zootaxa* 3847, no. 1 (6 August): 1–32.
- Vislobokova, I.A. 2001. "Evolution and Classification of *Tragulina* (Ruminantia, Artiodactyla)." *Paleontological Journal* 35, Suppl. 2: S69–S145.
- Vrba, Elisabeth S., and George B. Schaller. eds. 2000. *Antelopes, Deer, and Relatives: Fossil Record, Behavioral Ecology, Systematics, and Conservation*. New Haven, Connecticut: Yale University Press.
- Wang, Shi-Qi, Qing Yang, Ya Zhao, Chun-Xiao Li, Qin-Qin Shi, Li-Yi Zong, and Jie Ye. 2018. "New *Olonbulukia* Material and Its Related Assemblage Reveal an Early Radiation of Stem Caprini along the North of the Tibetan Plateau." *Journal of Paleontology* 93, no. 2: 385–395.
- Wang, Shi-Qi, Jie Ye, Jin Meng, Chunxiao Li, Loïc Costeur, Bastien Mennecart, Chi Zhang, et al. 2022. "Sexual Selection Promotes Giraffoid Head-Neck Evolution and Ecological Adaptation." *Science* 376, no. 6597 (3 June): eabl8316.
- Whitekettle, Richard. 2003. "Of Mice and Wren: Terminal Level Taxa in Israelite Zoological Thought." *Scandinavian Journal of the Old Testament* 17, no. 2 (December): 163–182.
- Whitekettle, Richard. 2005. "The Raven as Kind and Kinds of Ravens: A Study in the Zoological Nomenclature of Leviticus 11, 2–23." *Zeitschrift für die alttestamentliche Wissenschaft* 117, no. 4 (January): 509–528.
- Williams, Pete J. 1997. "What Does *min* Mean?" *Creation Ex Nihilo Technical Journal* 11, no. 3 (December): 344–352.
- Wise, Kurt P. 2009. "Mammal Kinds: How Many Were on the Ark?" In: *Genesis Kinds: Creationism and the Origin of Species*, edited by Todd Charles Wood and Paul A. Garner. *Centers for Origins Research Issues in Creation* 5: 129–161.
- Wood, Todd Charles, Kurt P. Wise, Roger Sanders, and N. Doran. 2003. "A Refined Baramin Concept." *Occasional Papers of the Baraminology Study Group* 3: 1–14.
- Woodmorappe, John. 1996. *Noah's Ark: A Feasibility Study*. Santee, California: Institute for Creation Research.
- Zivotofsky, Doni, Ari Z. Zivotofsky, and Zohar Amar. 2002. "Giraffe: A Halakhically Oriented Dissection." *The Torah u-Madda Journal* 11: 203–221.