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**BUFFALO, GIRAFFE, AND THE BABIRUSA ("KOSHER PIG")**  
**THE HALAKHIC AND SCIENTIFIC FACTORS IN**  
**DETERMINING THEIR KASHRUT STATUS**

Before slaughtering an animal for kosher consumption one must first establish that it is indeed a *tahor* ("kosher") species. With regard to land animals this would seem to be a straightforward determination because the Torah specified two necessary and sufficient physical signs; all animals that have completely split hooves and also chew their cuds are acceptable, all others are not. However, over time, supplementary signs were added. In the talmudic period these related to teeth, horns, hybridization, and the grain of meat. More recently, the possible requirement of a *mesorah* (oral tradition) was introduced. In addition to these signs, lore and misinformation accumulated regarding several species. In this paper the underlying halakhic principles are analyzed for their application to three species, whereby there hang interesting tales.

INTRODUCTION

The kosher food industry is big business worldwide. In the United States alone it probably exceeds four billion dollars a year,<sup>1</sup> with the number of U.S. manufacturers producing kosher products having risen from 5,800 to 9,200 in the past decade. The modern, often affluent, kosher consumer is continually looking for new and varied cuisine to tantalize his palate, making it not only

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1 *The Wall Street Journal* (Craig S. Smith, "A Colombo-Like Rabbi Certifies Food in a Land of Pork Lovers," 3 Dec. 1998) reported that sales of kosher food in the U.S. amounted to 3.25 billion dollars in 1997, a 12% increase over 1996.

intellectually stimulating but financially significant to investigate which animals are kosher and how this determination is made.<sup>2</sup> In recent years goose, deer, and buffalo have been added to the menus of several kosher U.S. restaurants and/or butcher shops,<sup>3</sup> and quail is being raised and sold to the Israeli consumer of kosher products.<sup>4</sup> While the kosher status of the first two items is relatively noncontroversial, the status of buffalo raises some interesting questions.<sup>5</sup> And while giraffe and the "kosher pig" have not reached (and probably never will reach) the kosher market, discussion of their kashrut status regularly surfaces in both the Jewish and the general media. Because all three are mammalian

2 From the religious perspective there may be an additional reason to study these laws. According to Maimonides, there is a positive commandment to *know* the distinguishing signs between kosher and non-kosher animals (*Ma'achalot Asurot* 1:1 and *Sefer Hamitzvot*, positive commandments 149-152). See, however, Magid Mishneh and others, cited in *Rambam l'Am*, who have a different version of the Rambam that defines the mitzvah as not merely to know, but to actually physically inspect and distinguish the kosher from non-kosher when one wants to eat. See Rabbi J.D. Bleich, *Ohr haMizrach* (Tevet 5749), pp. 131-133 and *Contemporary Halakhic Problems*, Vol. III (New York: Ktav Publishing House, Inc.), pp. 61, note 3, and *Encyclopedia Talmudit* 2:352-353 for discussions of this topic. Bleich notes that Rashi also seems to hold that there is a mitzvah in simply having the knowledge. This view is also cited in the *Sefer haChinuch* (Mitzva 470), which notes that the Rambam disagrees and does not think that there is such a mitzvah.

3 Matthew Goodman, "Bringing Buffalo to New York with Relish," *Forward* (13 Nov. 1998), p. 23; Florence Williams, "Shtetters," *The New Republic* (19 May 1997); Mara Dresner, "Home on the Range, where the Kosher Buffalo Roam," *Connecticut Jewish Ledger*, reprinted in the *Jewish Bulletin of Northern California* (30 June 2000). Over the last decade the Star-K of Baltimore has periodically slaughtered bison for a Brooklyn, NY butcher shop (personal conversation with the *shochet*).

It is not only the kosher connoisseur who is looking to expand his horizons. *Attaché* (US Airways magazine, May 1999, pp. 101-104) published an article entitled "When Dinner is Exotic" by Rebecca Gray, author of *Eat Like a Wild Man*, in which exotic meats were ranked. Under "The Best" she listed "venison (deer, moose, antelope, caribou, elk), ruffed grouse, puddle ducks, wild turkey, and bison," all of which may be kosher, along with the non-kosher ostrich. Under "Good, But requires a qualified chef," she listed the potentially kosher Canada goose and the non-kosher boar. The "Tried, but would never again" included almost all non-kosher species such as lion, bear, and squirrel, and the probably non-kosher eel. There is a restaurant in Nairobi, Kenya, "The Carnivore," which, for about \$22, serves all you can eat of giraffe, eland, zebra, ostrich, buffalo, etc. The desire for such meat is apparent — about 1,100 people eat at "The Carnivore" each day, it has 330 employees, and serves more than 35 tons of meat a month. There is also a less successful branch in Johannesburg, South Africa. Interestingly, despite the obvious desire for exotic meat, by far their most popular item is the mundane chicken (See <http://www.cnn.com/TRAVEL/PURSUTTS/FOOD/9905/carnivore.ap>).

4 See "Quail Takes Off," by Haim Shapiro, *Jerusalem Post*, 21 March 2001.

5 Quail also raises interesting questions, but these will not be discussed here.

quadrupeds, taken together they offer the opportunity to investigate how the kosher acceptability of such species is determined.

In the course of this discussion, it will be useful to include the "scientific name" of the various animal species, despite the fact that in halakhic literature "species" is used in a decidedly nonscientific manner. For example, the Talmud (*Chullin* 63b) states that there are 100 types of birds in the east that all fall into the biblical/halakhic "species" of *ayah*.<sup>6</sup>

There are several reasons why this nomenclature may be useful. First, in many instances scientific divisions happen to coincide with halakhic requirements. In addition, the definition of "species" coincides with one of the halakhic "tests" of *kashrut*. Finally, although not a perfect means, scientific classification does provide an indication of the level of relationship between various species.

Scientifically, all animals are classified using taxonomy, the modern classification of animals developed by the 18th-century Swedish naturalist Karl Linnaeus (1707-78).<sup>7</sup> In increasing order of specificity, each living creature is identified by kingdom, phylum, subphylum, superclass, class, subclass, infraclass, cohort, order, suborder, infraorder, family, tribe, genus, species, subspecies, and breed.

6 An example of how the halakhic "species" may seem peculiar to the contemporary scientific way of thinking is the definition of the bird species *orev* (as explained by the Meiri, *Chullin*, page 215 and *Sefer Hachinuch*, 157). Any bird that is not a *dore* (predator) and has only one of the other three kosher signs mentioned in the Mishnah (*Chullin* 3:6) is an *orev*. Thus, some *orevs* are non-*dore*s and have an extra toe, while others are non-*dore*s and have a peelable gizzard. To the modern mind it is strange to think of a species being defined as a bird that is non-*dore*s and has one, and only one, of the Mishnah's three other kosher signs. But, according to many opinions, that seems to be the definition of *orev*. The usual translation of *orev* is raven, but based on the above description that would seem to be too narrow a translation. The broader translation of crow has been suggested, although that may also be too narrow or imprecise (see Rabbi Dovid Brown, *Mysteries of the Creation* [Targum Press, 1997], pp. 241-242). See also *Pirkei D'Rebbi Eliezer*, Chap. 23, who, with emendations of Radal, states that using the halakhic definition of "species" there are only 365 species of animals and 365 species of birds in the world. Similarly, in *Chullin* 63b: "Avimi the son of R. Abahu said: there are 700 species of fish" and *Tosafot*, s.v. *ofot*, was willing to rely on this to determine the *kashrut* of fish. These are quite different numbers than those given by modern scientists!

7 Linnaeus introduced his hierarchical system in 1735 with the publication of *Systema Naturae*. His system, although greatly expanded and continually modified, has remained the essential framework used by taxonomists to this day. The International Botanical Congress in its International Code of Botanical Nomenclature revises the standard every six years. There is currently a move among some taxonomists to introduce a completely different system. See *Science News* 156 (17; 23 Oct. 1999): 268-270.

For example, in the animal kingdom<sup>8</sup> there are 27 phyla. All mammals are in the class *Mammalia*, and all kosher mammals are in the order *Artiodactyla*.<sup>9</sup> An animal's scientific, or binomial, name consists of two parts: the generic name (genus) followed by the specific name (epithet).<sup>10</sup> The only part of the classification that exists in nature, and probably the most important from a halakhic perspective, is species. It is defined as "a population whose members are able to interbreed freely under natural conditions."<sup>11</sup> In other words, a species, at least in nature, is bonded by interbreeding and bounded by reproductive isolation from all other species. This reproductive isolation is not always biologically mandated. In some cases it may be maintained primarily by behavioral differences and social bonding. Two different species within the same genus can sometimes breed together, but such breeding will usually lead to sterile offspring, as with the mule. At the family level, a crossbreed will usually result in embryonic death. No breeding can take place across family lines.

Taxonomy can be viewed as an "arbitrary" science in that any of an infinite selection of criteria could be selected by which to classify animals, all valid, yet most having no bearing on what Jewish tradition would say about the animal. Thus, one can choose to group animals simply based on size. It would be a legitimate classification system that would have little halakhic relevance. In point of fact, many of the current divisions are of halakhic interest. For example, the order *Artiodactyla* includes all even-toed ungulates and is subdivided into suborders and infraorders based on the number of chambers in the stomach and whether or not the animal is a ruminant.<sup>12</sup> How fortuitous that this system, like the halakhic system, is concerned with animals' foot structure and gastronomic characteristics. Taxonomic classifications will therefore be

8 Traditionally, taxonomists have divided all living things into two kingdoms: plants and animals. Taxonomy is a fluid discipline and today's taxonomists are dividing organisms into five, seven, or even more kingdoms (see comments of James N. Norris, Curator of Marine Biology at the Smithsonian Institution in Washington, D.C., quoted in *Science News*, 154 (10 Oct. 1998): 227).

9 An order that has (approximately) 81 genera and 211 species. See Walker's *Mammals of the World*, 5th edn. (The Johns Hopkins University Press, 1991).

10 When the three-part, or trinomial, name is used it includes the subspecies as well.

11 Edward O. Wilson, *The Diversity of Life* (Harvard University Press, 1992), p. 38. See Chap. 4, "The Fundamental Unit," for a full discussion of the scientific concept of species.

12 It has 9 families, 79 genera, and 194 species. This order is not entirely kosher and includes animals that do not chew their cud, such as pigs and hippopotamuses, and animals whose hooves are not fully split, such as the horse and llama, in addition to kosher species such as cows and sheep.

discussed, not because they are by definition of halakhic value, but because by sheer coincidence some happen to be.<sup>13</sup>

## KASHRUT OF TERRESTRIAL MAMMALIAN QUADRUPEDS — GENERAL PRINCIPLES

Within the mammalian quadruped category, which includes both *b'hemah* ("domesticated" animals) and *chayah* ("wild" animals),<sup>14</sup> an animal is defined by the Torah as kosher if it both<sup>15</sup> chews its cud<sup>16</sup> (*maalei gera*) and has hooves

13 See the recent interesting article by Mordechai Kislev, "Bechinat ha'ziyuhim shel aseret minai ma'alei gera ha'tahorim al pi hataxonomia" [Hebrew], *Sinai*, 125(5760): 216-225. For an opposing position see Rabbi Dovid Brown, *Mysteries of the Creation* (Targum Press, 1997), p. 242, who rejects any halakhic usefulness in the scientific classifications.

14 There are two major halakhic differences between *b'hemah* and a *chayah*. In the former the *chelev* (certain fats) is prohibited and there is no mitzvah of *kisui hadam* (covering the blood after slaughtering), while in the latter the *chelev* is permitted and there is a requirement of *kisui hadam*. These halakhic differences may stem from the fact that only the former were eligible to be offered as sacrifices in the Temple, at which time their *chelev* was burnt and their blood sprinkled on the altar. The problem with this explanation is that the blood of both *b'hemah* and *chayah* (as well as fowl) is prohibited for consumption (as opposed to fish and *chagavim*, whose blood is permitted). This question is addressed by Ramban (Nachmanides) in his commentary to Leviticus 17:11.

The criteria to distinguish between *b'hemah* and *chayah* are the "horn signs" detailed in *Shulchan Aruch*, YD 80. They roughly parallel the scientific definitions of horn and antler. A horn is a hollow, cornified epidermal structure covering an underlying bony core (*os cornu*) that continues to grow throughout life (*b'hemah*). An antler is a bony growth from the frontal region of the skull that is covered by skin early in development, and is shed annually (*chayah*). Note there are also *chayot* with horns, but no *b'hemot* with antlers.

15 See *Tzafnat Pana'ach* (by "The Rogatchover"; *Maachalot Asurot*, 1:1) for the suggestion that, according to the Raavad, only one of the two signs is usually necessary in order for an animal to be kosher.

16 Animals that chew their cud, also known as ruminants, usually have a four-chambered stomach. All four-chambered animals are ruminants. There are also three-chambered animals that are ruminants (such as mouse deer — suborder *Ruminantia*, infraorder *Tragulina*, family *Tragulidae*, *Tragulus napu* and *T. javanicus* — and camels, *Camelus dromedarius* and *Camelus bactrianus*) as well as three-chambered animals that are non-ruminants (infraorder *Ancodonts* — such as hippopotamuses).

While grazing, ruminants quickly swallow the raw food into the first chamber (*rumen* — *keres*) where it is partially digested and made into soft, round balls — the celebrated cud. When the animal is inactive, this cud is ruminated back into the mouth, where it is more completely chewed by the molars, and acted upon by copious amounts of saliva. This process occurs many times. The cud is then sent to the second chamber of the stomach (reticulum or honeycomb bag — *beit hakosot*). Due to bacteria and protozoa, fermentive digestion occurs on a massive scale in the first two stomach chambers. After it is further broken down in the



that are fully split (*mafreset parsah v'shosa'at shesa prasot*).<sup>17</sup>

All animals under discussion here are in the class *Mammalia*. Furthermore, they all belong to the order *Artiodactyla*, that is defined as even-toed ungulates, and is subdivided based on the compartmentalization of the animal's stomach into three suborders (*Suiformes*, *Tylopoda*, and *Ruminantia*) and nine families. Kosher animals belong to the suborder *Ruminantia* that includes all true ruminants. All kosher species are ruminants and thus herbivores, and all carnivores and omnivores, such as cats, dogs, lions, and bears are not kosher.

In addition to the Torah's signs, the sages (*Chullin* 59a; *Shulchan Aruch* YD 79:1) established corollary indicators. They asserted that all animals that do not have upper incisors, canines, or soft tooth-like structures are ruminants and are kosher, with the singular exception of the young camel.<sup>18</sup> They further stated that every animal that has completely split hooves also chews its cud, and is therefore kosher, with the singular notable biblical exception — the pig. They boldly added an additional identifying feature of kosher animals that seemingly has no basis in the written Torah and relies solely on an oral tradition received by Moses at Mount Sinai. They stated that, other than the *arod*,<sup>19</sup> no non-

second chamber, and finely ground and fermented, it is sent to the third chamber (omasum or psalterium — *hamses*). Here the juices are squeezed out and it is passed to the fourth chamber (abomasum — *kevah*), where it is acted upon by hydrolytic digestive enzymes secreted in the digestive juices and where the "true" digestive process begins.

17 See Gilyon Maharsha, YD 79:1. The author of the *Torah Temima*, Rabbi Baruch haLevi Epstein, in *Tosefet Bracha*, Leviticus 11:7, classifies these as three indicators: *mafreset parsah* — a split heel, *v'shosa'at shesa* — a hoof divided from top to bottom into two toes, and *ma'alay gara* — cud chewer.

18 In other words, the adult camel (which grows canines at about four years of age) and the other two biblical examples, while being ruminants, nonetheless possess these "teeth" that are not found in kosher animals. It is important to realize that this principle is unidirectional; that is, no non-kosher animal other than the juvenile camel (and its relatives) has upper incisors or canines. However, nowhere is it stated that a kosher animal cannot have upper incisors or canines. In fact the overwhelming majority do not. The only exception I am aware of is the elk (*Cervus elaphus*). A member of the North American deer family, it is a powerful animal with a large body and big antlers whose meat is considered very nutritious and quite delicious. Elk have 32 teeth, including the "ivories" so prized by hunters. These are not real ivory, but incisiform canine teeth better known as "whistlers," "buglers," and elk teeth. These two teeth are located in the forward portion of the upper jaw, one on each side. The dentition formula (explained below in note 87) for the elk is: I 0/4 C 1/0 PM 3/3 M 3/3 X 2 = 32. In other words, by relying on the teeth rule one could accidentally miss out on eating elk, but would never eat a non-kosher species.

19 Usually translated as a "wild donkey." Its true identity is uncertain.

kosher species has meat under the tail<sup>20</sup> with grain that runs both warp and woof. Therefore, if after slaughtering an unrecognized animal one finds that the grain of its meat runs both ways and one knows that it is not an *arod*, the meat is permitted (ibid.). Finally, there is the controversial and much debated "horn sign."<sup>21</sup> The Mishnah (*Niddah* 51b) states that all animals with horns have split hooves, while not all animals with split hooves have horns, the pig being the notable example; it has split hooves but no horns. This Mishnah implies (according to the Aruch Hashulchan YD 80:3) that all horned animals are kosher, and indeed that is Rashi's understanding. Others disagree. For example, Tosafot (*Chullin* 59a s.v. *elu hen*) quotes Rivam as explaining that the horn-sign is acceptable to establish a *b'hemah* as kosher, but is insufficient for a *chayah* because there are non-kosher *chayot* with horns.

Permissible mammalian quadrupeds would seem to include such diverse animals as: cows (*Bos taurus*), sheep (*Ovis aries*), goats (*Capra hircus*), pronghorn (*Antilocapra americana*),<sup>22</sup> moose (*Alces alces*), the giant eland (*Taurotragus derbianus*), the greater kudu (*Tragelaphus strepsiceros*),<sup>23</sup> and the bongo (*Boocerus eurycerus*).

Despite the seeming simplicity of the rules, questions have arisen regarding various species. Three interesting examples are the buffalo, giraffe, and babirusa ("kosher pig"), and these will now be discussed individually.

20 I am not sure what meat is being referred to. The suggestion has been made that it is the internal obturator. This is a thin sheet of muscle found only in carnivores, and not in ruminants. However, it is a deep muscle and it is more likely that the Sages were referring to a larger, more obvious superficial muscle, though I do not know which one.

21 The horn sign is unclear and will be the subject of a separate paper.

22 Not closely related to any other animal, it is found only in North America. It is the lone species in the family *Antilocapridae*, and can run up to 100 kilometers per hour (kph). Within a day or two of birth it can already run at 35 kph! It has an adult weight of about 45 kg and a life span of about 10 years.

The interesting property of the pronghorn from a halakhic perspective is its unique "headgear." It has horns similar to bovines, sheep, goats, or antelopes, rather than antlers like deer. They are true horns with an *os cornu* that is not branched. But, unlike all other animals with horns, it sheds its single pronghorn annually after the rut, just like the deer that annually sheds its antlers. Since the distinguishing feature between *b'hemah* and *chayah* relates to horns / antlers it is not clear (at least to me) if the pronghorn is a *b'hemah* or *chayah*, and this would make an interesting topic for future study. See, however, Herzog, Responsa, *siman* 20, who argues that horn signs may not be sufficient to distinguish *b'hemah* and *chayah*, and it may also be necessary to actually establish if the species is domesticated or wild. The Chazon Ish (brought in Herzog, *siman* 22) emphatically disagrees, and argues that the horn signs are the only and final word on this issue.

23 This slender antelope native to eastern and southern Africa is the source of the long, curved Yemenite shofar.



# Buffalo<sup>24,25</sup>

Before discussing the buffalo, an important rule mentioned above will be reiterated here: the biblical "species" is not the same as that of the taxonomist.<sup>26</sup> Thus, *zvi*, mentioned in the Bible (Deuteronomy 14:5) as a kosher species and usually translated as deer,<sup>27</sup> would obviously include not only the "common deer" but all cloven-hoofed, cud-chewing deer — a not insignificant list. All deer in the order *Artiodactyla* and the family *Cervidae* (cud-chewing "deer") should be kosher. This family contains approximately 38 different species and even

- 24 An abridged version of the buffalo section has previously been published as "Kashrut of Exotic Animals: Is Buffalo Kosher?" *The Journal of Halacha and Contemporary Society* (Fall 1999), 38:117-128. It is posted on-line, with permission, at: <http://www.kashrut.com/articles/buffalo/>.
- 25 Interest in bison is generally on the rise. According to the *Journal of the American Veterinary Medical Association* (15 April 1999), 214:8: 1212-1217, "Interest in North America bison (*Bison bison*) has increased dramatically over the past 30 years. More than 200,000 bison in North America reside in more than 1,000 herds.... Individual animal numbers and herd numbers are increasing rapidly." See also Walter Nicholis, "Other Red Meat," *Washington Post* (30 May 2001), p. F1.
- 26 See Aruch Hashulchan, YD 79:4. An example of the difficulty in identifying biblical species is the *tachash* (e.g., Exodus 39: 34-35), the special animal whose skin was used in the *mishkan*. Some of the suggestions for its identity are (see Feliks, *Chai v'Tzome'ach b'Torah*, p. 93): giraffe, manatee, seal (*Monachus monachus* — the Mediterranean monk seal that at one time occupied a wide geographic area throughout the Mediterranean and is today nearly extinct), narwhal (one-horned sea creature), antelope, dolphin (JPS prefers this), Dugong (*Halicore* — a relative of the manatee), badger (according to the King James version), and ermine (a kind of weasel — *Mustela erminea*). Whatever its identity, the Talmud (*Shabbat* 28a) debates whether or not it is kosher. But how can the Talmud even entertain such a notion: if it was kosher, why was it not included in the list of kosher animals in Deuteronomy? Rabbi Meir of Rothenburg (Deuteronomy 14:5) argues that it was a unique creature for that time period only (although created in abundance — according to Ezekiel [16:10] it was so plentiful that the people used its skin to make shoes), and hence there was no need to include it in a list meant for the future. The most straightforward answer is that, if it was kosher, it was subsumed under one of the ten "species" in the list of kosher animals. Thus, although the Torah groups all kosher animals as ten *minim* (species), it includes approximately 157 scientific species of cloven-hoofed ruminants.
- 27 Based on descriptions of horns and antlers found in the Talmud (*Yoma* 29a, *Chullin* 59b, *Yerushalmi Eruvin*, Chap. I), Professor Yehuda Feliks (*Chai v'Tzome'ach b'Torah*, 5744, together with R. Yeshayahu Aryeh and Yehoshua Dvorkes) has convincingly argued that *zvi* (p. 73) is the gazelle (*Gazella gazella*) native to Israel. He proposes that *ayal* (*aleph yud lamed* with a *kametz* under the *yud*) (p. 12) is the common deer (*Cervus capreolus*). (*Ayil* [with a *chirik*] is a sheep [*Ovis orientalis*]). This "reinterpretation" of names is not new. Rashi (*Chullin* 59a, s.v. *v'harei zvi*) had the same idea. The Talmud states that the horns of a *zvi* are not branched, yet a deer's are branched. Hence, Rashi concludes that what was called the *zvi* in his day was not the *zvi* of the Talmud's time, and it was not a deer.

several different genera.<sup>28</sup> Similarly, probably all 127 species of antelope, cattle, goats, and sheep found in the family *Bovidae* are kosher.

There are four types of animal that can legitimately be called buffalo.<sup>29</sup> They are: the European bison (*Bison bonasus*),<sup>30</sup> which is closely related to the American bison; the Asiatic water buffalo (*Bubalus arnee* or *Bubalus bubalis*), which was probably known to ancient Jewish authorities; the African buffalo (*Syncerus caffer*), native to sub-Saharan Africa; and the American "buffalo," which is actually a bison, classified either as *Bos bison*, grouping it in the same genus as true cattle, or as *Bison bison*,<sup>31</sup> putting it in a distinct genus from true cattle, but together with the European bison.

Let us first consider the names by which the various buffaloes were known in biblical times. According to Prof. Yehuda Feliks, the water buffalo<sup>32</sup> was known

- 28 The list of kosher deer includes, among others, moose, red deer, or elk (*Cervus elaphus*) — found in Europe and North America, which itself has many subspecies; Sika or Japanese deer (*Cervus nippon*) of east Asia; fallow deer (*Dama dama*) — native to the eastern Mediterranean and north Africa and includes the nearly extinct Persian fallow deer (*Dama dama mesopotamia*); the very different reindeer (*Rangifer tarandus*), known in North America as caribou; the North American white-tailed or Virginia deer (*Odocoileus virginianus*), that is distinct from other deer with its long tail with a white underside and antlers that grow outward and forward; the South American Pampas deer (*Ozotoceros bezoarticus*), that was once very common and is now almost extinct; the nearly extinct black lechwe (*Kobus lechwe smithemani*); the Chinese water deer (*Hydropotes inermis*); the Indian muntjac (*Muntiacus muntjak*); the Chinese muntjac or barking or ribfaced deer (*Muntiacus reevesi*); and the roe deer (*Capreolus capreolus*) that is abundant in Europe. It is certainly plausible that not all of these "deer" are included in the biblical "zvi" or "ayal," but, rather, under some of the other listed kosher species. At a maximum, this would imply that all these "deer" are included within seven biblical "species."
- 29 There are other close relatives of these "buffalo" which will not be explicitly discussed, yet may also be called buffalo. An example is the anoa (*Bubalus depressicornis*) of the Celebes and the Philippines, which has short, pointed horns, and is similar to, but much smaller than, the water buffalo.
- 30 Also known as a wisent. It was exterminated in World War I, but reintroduced to the wild from zoo populations. Contrary to the common misconception, it is not the ancestor of domestic cattle. That distinction probably belongs to the now extinct aurochs (*Bos primigenius*).
- 31 There are two subspecies of bison — the plains bison (*Bison bison bison*) and the wood bison (*Bison bison athabascæ*). The wood bison is on the verge of being bred out of extinction since the introduction of the plains bison to its region. For our discussion, these two subspecies can be treated interchangeably.
- 32 See *Encyclopaedia Judaica* 4:1467. At one time it was found in large numbers in the Hula Valley in Israel, and it was raised by the Bedouin there until the 1940s. It was also popular in parts of the Golan for which, according to this interpretation, the Golan was famous (Ezekiel 39:18). Perush Rabbenu Yeshaya, an Italian authority, translates *meri* as buffalo, although others translate it simply as "fattened ox."

as the *meri*.<sup>33</sup> Other authorities identify *t'o*, found in the list of kosher animals in Deuteronomy 14:5 (and in Isaiah 4:5 and 51:20), with the water buffalo. This is questionable since *t'o* is grouped with the wild, nondomesticated animals (*chayah*), and the water buffalo is domesticated. Rav Saadia Gaon gives an Arabic name for each of the ten kosher species and translates *t'o* as *tital*, which Rav Yosef Kafich (a great Israeli Yemenite authority, d. 2000) says is definitely not the buffalo.

Others equate the European bison with the *t'o*. However, Levinger (*Mazon Kasher min HaChai*, Kfar Habad 5738, p. 20) translates *t'o* as *Bos primigenius* (a type of ox), and the Talmud (*Chullin* 80a), Targum Yonatan, and Rashi all imply that *t'o* is a wild ox. The Septuagint translates *t'oh* as *oruga* or *orux*, which is probably the oryx — a large, straight-horned antelope, or (as Levinger) the aurochs — a wild ox; but certainly not the buffalo.

Another candidate for the buffalo from the list in Deuteronomy is the *yachmor*. Although usually translated as an antelope (see I Kings 5:37) or a type of deer, Abarbanel (I Kings 5:13) identifies it as a buffalo. The Talmud (*Bechorot* 7b) mentions an unusual feature of the *yachmor* that may help its identification. It seems that the *yachmor* produces unique ball-like secretions that the Talmud tries to identify, but which were essentially of unknown origin.

The claim has been made that it is definitively known from Assyrian texts that the *re'em* (mentioned, for example, in Numbers 23:22, 24:8; Deuteronomy 33:17; Psalms 22:22, 29:6, 95:4) is the wild buffalo.<sup>34</sup> Although not in the list in Deuteronomy, it was accepted as kosher and is assumed by some to be subsumed under *dishon*, another unidentified animal in the list. The hesitation in identifying any buffalo with *re'em* is that the *re'em* was the quintessentially undomesticatable animal (see Job 39:9-12).<sup>35</sup> *Re'em* is usually translated as wild

33 *Meri* is not one of the ten kosher "species" listed in Deuteronomy 14. Nonetheless, *meri* was sacrificed and eaten in biblical times (see II Samuel 6:13; I Kings 1:9, 19), and presumably it was subsumed under one of the ten in the list. See Mordechai Kislev, "Meri," *Al Atar* 3(5758): 51-62.

34 Edward Horowitz, *How The Hebrew Language Grew* (Ktav Publishing, 1988), p. 260. Unfortunately he does not state what these Assyrian texts are, nor what animal is meant by the wild buffalo.

35 This identification with the water buffalo may stem from an older misidentification. The Bach (YD 80) quotes Hagahot Maimoni (*Maachalot Asurot*) in stating that the animal currently called *re'em* is a *b'hemah*, identified by the Aruch Hashulchan (YD 80:12) as the water buffalo, and is not the same as what used to be called a *re'em*, which is a huge *chayah*. It is that huge *chayah* that is probably what is referred to in the above sources. The Midrash really goes to great length to portray the *re'em* as extremely massive. It states (*Yalkut Shimoni* 688) that while the future King David was tending sheep he came across a sleeping *re'em* that he mistook for a mountain. When the *re'em* woke up, it lifted David to the heavens and, as stated in

ox of the mountains, but is also variously identified as a unicorn, rhinoceros, white antelope, auroch, or (European?) bison.

A remaining difficulty with all attempts to identify the water buffalo with a biblical animal is that *Bubalus bubalis* is native to India, and was probably not introduced to western Asia, i.e., the biblical lands, until shortly before the Common Era, around the very end of the biblical period.<sup>36</sup> Attempts to find the buffalo in post-biblical rabbinic literature may be more successful. Some have identified the enigmatic *koy*, often discussed in the Talmud (e.g., *Chullin* 80a), as the buffalo.<sup>37</sup>

By the post-talmudic period it is possible to identify the water buffalo with almost certainty. The word buffalo appears as a transliterated word in the 16th-century *Shulchan Aruch* (YD 28:4), in the section dealing with *kisui ha-dam*. The source of this is Rabbi Yeshaya Ha'achron of 13th-century Trani, Italy. In contemporary Italian, the word buffalo is still used to refer to the water buffalo, an animal that is raised domestically as cattle in parts of Italy. This would lead one to suspect that Rabbi Yeshaya Ha'achron (and hence the *Shulchan Aruch*) was referring to the water buffalo, and did not doubt that it is a kosher *b'hemah*.<sup>38</sup>

#### Need For Mesorah?

The American "buffalo," clearly unknown to Jews before the 16th century, presents its own dilemma. It would seem that, according to the *Shulchan Aruch*

Psalms 22:22 ["Save me from the lion's mouth; Yea from the horns of the Re'em do You answer me"], he prayed to be saved. He offered, according to the Midrash, that upon being saved he would build a temple 100 cubits high, as high as the horns of the *re'em*. Another Midrash that treats the *re'em* as immense states (*Bereishit Rabbah* 31:14) that the *re'em* was so massive that Noah could not fit a pair of them in the ark, and so tethered them to the outside of the ark during the flood.

- 36 This does not mean that an unknown species could not be included in the biblical list. Quite the contrary. It is assumed that all animals that have split hooves and chew their cud are kosher and are subsumed under one of the ten listed species. It simply means that it would not have been known to the people and eaten during the biblical period.
- 37 For a discussion of the identity of the *koy* in which many of the other topics discussed here are mentioned, see the detailed article by Prof. Mordechai Kislev, "koy — Kashruto shel Ba'al Chayim m'yuva," *Techumin* 17(5757): 415-432.
- 38 Rav Yosef Karo, the *mechaber*, says that the custom is to treat the buffalo as a *b'hemah*, while the Rama says that he is equivocal and the buffalo should be treated as a *safek* (doubt) and have the stringencies of a *b'hemah* and a *chayah*. The Gr"a in two comments, one rather lengthy, offers several possibilities for its identity. These include the biblical *meri* (based on Rav Yeshaya Trani's commentary to II Samuel 6:13) and the Talmudic *koy*, *shor habar* (wild ox), or *ayal habar* (wild sheep [if spelled with a *chirik*] or deer [if spelled with a *kamatz*]).

(YD 79:1), no tradition is required to establish that a specific mammalian quadruped is kosher — it simply needs to possess the requisite physical characteristics of chewing its cud and having fully split hooves — characteristics that all four “buffalos,” including the American bison, possess. The Pri Megadim (*Sifte Da'at*, YD 80:1), Kaf haChaim (80:5), and Pitchei T'shuva (YD 80:1) all state explicitly that the physical indicia are sufficient to establish a species as kosher.

Commenting on the section of the *Shulchan Aruch* (YD 80) that discusses whether a particular kosher animal is a *b'hemah* or a *chayah*, the Shach (YD 80:1) mentions the notion of tradition regarding terrestrial mammalian quadrupeds. The Chochmat Adam (36:1) and Shut Beit Yaakov (41; cited by Pitchei T'shuva) put a puzzling twist on this comment by the Shach. They assume that he was addressing the kosher status of an animal, not merely if it is a *b'hemah* or *chayah*, and, hence, they require a *mesorah*,<sup>39</sup> an oral tradition, in order for a species of animal to be kosher.<sup>40</sup>

The Shut Beit Yaakov says that the two biblical signs would suffice to identify a kosher *b'hemah*, but are not sufficient to identify a kosher *chayah*, and that either the “horn signs” detailed in YD 80 or a *mesorah* are also required. This may also be the position of the Aruch Hashulchan (YD 80:10, end): “A *chayah* is eaten only with a *mesorah*.”

To further complicate matters, the Chazon Ish (*Hilchot b'hemah v'chaya tehora* 11: letters 4, 5)<sup>41</sup> writes that the Chochmat Adam is correct in his

39 On the need for a *mesorah* for birds, see Ari Z. Zivotofsky, “Is Turkey Kosher?,” in *The Journal of Halacha and Contemporary Society* (Spring 1998), 35:79-110. It is posted on-line, with permission, at: <http://www.kashrut.com/articles/turkey/>.

40 There are those who would erroneously attribute such a position to the Ibn Ezra. Commenting on Deuteronomy 14:5, he states that other than the *zvi* and *ayal*, which are recognizable species, the other five need a *kabbalah*. However, he is NOT saying that they need *kabbalah* to be considered kosher. He is simply trying to explain the verse and identify biblical terms. He is unfamiliar with five of the species and records that, in order to properly identify them, one would need a tradition. This says nothing about the kashrut status of any animal. Rav Yitzchak Ratzabi (*Shulchan Aruch Ha'mkutzar*, 5760, YD, Vol. 1, pp. 178-179) makes several points. First, that this issue is not relevant to Sephardim and Yemenites; there is none amongst them who would say that one needs anything other than the biblical signs to permit the meat of an animal. Second, he finds it so difficult to understand the Shach the way the Chochmat Adam did, that he assumes the Chochmat Adam never saw the Pri Megadim or he would have ruled like him. Similarly, he is sure that the Aruch Hashulchan never saw the Pri Megadim or he, too, would have ruled like him, and cited him as was his style. Finally, he attempts to bring a proof based on Shach YD 42:12, that the Shach in YD 80:1 should be interpreted as explained by the Pri Megadim.

41 Also found in collected letters of the Chazon Ish, Vol. 1, letter 99 and Vol. 2, letter 83.



analysis, and that the opposing Pri Megadim does not fit into the language of the Shach. In addition, he writes, "we Jews from Lita [Lithuania] have accepted the Chochmat Adam in general and therefore have no choice but to accept that a *mesorah* is needed and no new animal species may be permitted."<sup>42</sup>

The Pri Megadim (*Siftei Da'at*, YD 80:1) writes that he is baffled by the suggestion that this Shach should be relevant to the question of the kosher status of an animal, and that a tradition should be needed to establish its permissibility. The identifying features are biblical and clear, and there should be no need for a *mesorah*. Furthermore this Shach is not in YD 79 where the kosher animals are identified.

As explicit signs are given in the Torah, it is not clear why anyone would suggest that a *mesorah* should be required. One possible explanation is that the Torah's signs are actually not so clear, and we do not know exactly how to define a cud-chewer or what is meant by truly split hooves. This explanation was vigorously rejected by Rabbi Moshe D. Tendler.<sup>43</sup> However, it is not as outlandish as it sounds. The identity of the *shafan* and *arnevet* are unknown. Some identify them as the hare and rock-badger, animals that would not meet the usual definition of cud-chewers and yet are identified as such in the Torah. Thus, the definition of cud-chewing may be more broad than initially assumed. So, too, the definition of split hooves is not an absolutely straightforward issue. However, this explanation is unlikely since it is not mentioned by either the Chochmat Adam or the Chazon Ish. Rather, the Chazon Ish advises that it is not for us to search for reasons.

The opinion of the Shut Beit Yaakov is particularly troubling. The Talmud (*Chulin* 59a) states explicitly that "*chaya bichlal b'hemah he l'simanin*" — a *chayah* is like a *b'hemah* with regard to the signs [of being kosher]. The author of the *Shulchan Aruch* labeled *siman* 79 as "*simanei b'hemah v'chaya tehora* — the signs of kosher *b'hemah* AND *chayah*," with no distinction between the two in regard to determining their kashrut status. Rav Herzog (*Kuntres Pnei Shur*) writes that he cannot reconcile, despite much effort, the position of this Gemara with the position of the Beit Yaakov, and he concludes, with all due respect, that the Beit Yaakov has made a grievous error.

42 There seems to be an effort on the part of some to advocate this position. For example, Rabbi Amram Edrei (*Hakashrut K'halacha* [5757], Vol. 1, p. 20, middle of note 6) cites the Kaf Hachaim (80:5) as saying: "What the Shulchan Aruch says is the basic halacha, but we now have only *mesorah*." It is true that this is what the Kaf Hachaim says. But the Kaf Hachaim does not stop there, as Rav Edrei would have one believe. He continues: "The need for *kabala* and *mesorah* is for *chelev* [forbidden fats], but for the meat there is no need for expertise since one can tell [if it is kosher] by the cud chewing and the split hoof."

43 *Chavrusah* magazine of RIETS alumni, Vol. XIX, No. 2 (Adar 5745/March 1985), pp. 1, 3.



A strong question against the premise of the Shut Beit Yaakov is raised by Rav Avraham David Horvitz of the Jerusalem Badatz.<sup>44</sup> The Talmud states (*Chullin* 80a) that there is a type of animal called a *koy* about which the rabbis were unsure — whether it was a *b'hemah* or a *chayah*. Because of this doubt, it may not be slaughtered on a festival when the act of *kisui hadam* (covering the blood) would be prohibited if it were not a true *chayah*. Tosafot was bothered by how the rabbis could be in doubt as to its status — simply check the horns. They concluded that the horn inspection on a *koy* must be inconclusive. To this Rabbi Horvitz points out that, according to the Shut Beit Yaakov, there should be a much greater doubt than simply if it requires *kisui hadam*. They should have said that it cannot be slaughtered because there is a doubt regarding its kosher status!

The Chazon Ish explained that, indeed, the original halakhah was not like the Shut Beit Yaakov. Originally the two biblical signs were sufficient to establish the kashrut of either a *b'hemah* or a *chayah*. Nonetheless, in the post-Shach era we may not permit any new species and may eat only those for which there is a *mesorah*. This was eloquently expressed in an exchange of letters between former Chief Rabbi of Israel Yitzchak haLevi Herzog and the Chazon Ish.

As chief rabbi, Rabbi Herzog<sup>45</sup> (YD 1:20 — *Kuntrus P'nei Shur*<sup>46</sup>) dealt with the question of the *mesorah* requirement for animals when he was asked, by the French rabbinate in 1950, about the kashrut of the zebu (*Bos indicus*), a type of humped cow originally from India that they wanted to ritually slaughter in Madagascar for sale in Israel. Rabbi Herzog was vehemently opposed to those who argued that a *mesorah* is required, and suggested in forceful language that, based on the Rambam (*Mamrim* 2), they may be violating the biblical prohibition of *ba'al tosif* — not to add commandments.<sup>47,48</sup>

44 In "B'din shofrot ha'gedolim v'aruchim m'od," *Pri Tamarim* (Tammuz 5741), p. 28.

45 It should be noted that the Chazon Ish had great respect for Rabbi Herzog and had backed him for the position of Chief Rabbi. Rabbi Shimon Finkelman (*The Chazon Ish: The Life and Ideals of Rabbi Avraham Yeshayah Karelitz* [New York: ArtScroll History Series, 1989], p. 82) writes that: "indeed, his [Chazon Ish] support figured prominently in Rabbi Herzog being chosen for the post [of chief rabbi]." In addition, Rabbi Herzog greatly respected the Chazon Ish and consulted him on major questions. In *Shut HeChal Yitzchak* of Rabbi Herzog there is a responsum of the Chazon Ish regarding an *agunah* question.

46 A pamphlet written in response to the Chazon Ish's original stance of prohibiting any new animals. See also Rav Meshulam Rath, *Kol Mevasser*, 119.

47 Based on Deuteronomy 13:1. See *Sefer haChinuch*, 454 and *Encyclopedia Talmudit* 3: 326-330.

48 Rav Herzog eventually argued that the zebu is kosher even according to the Chazon Ish. He

The Chazon Ish responded<sup>49</sup> to Rav Herzog's *kuntres* and elaborated on his position. He explained that based on physical signs the zebu is certainly kosher. But we must follow the restrictions imposed on us by our later sages and not accept new species. He asserts that the Aruch Hashulchan agreed with this stance, and that since the days of the Shach the *minhag* has been not to accept new species. He passionately explains that he has no tendency to prohibit that which is permitted, but that to be lenient and violate this rabbinic enactment would lead to further eroding of laws. He therefore concluded that the zebu must be prohibited, not because it is intrinsically non-kosher but because of *minhag* as established by the Shach, Chochmat Adam, and Aruch Hashulchan.<sup>50</sup> And, he argues, in what I think is a strange claim, if the Chochmat Adam or Aruch Hashulchan were alive today they would certainly prohibit the zebu — so who are we to be lenient. Finally, it is sufficient that we have cattle and sheep, which have a tradition, and there is no need for additional kosher species.

There is an additional factor that may render the debate between those who require a tradition and those who do not of little relevance to either the zebu or the bison (American "buffalo") questions. The Talmud (*Bechorot* 7a) states that kosher and non-kosher species physically cannot crossbreed. Thus, if two species can hybridize, and one is known to be kosher, it is proof positive that the other is kosher as well.<sup>51</sup> This is cited by the Rambam (*Ma'achalot Assurot* 1:13) as a valid means of distinguishing between kosher and non-kosher animals. Although the *Shulchan Aruch* does not cite this rule, it seems to have been accepted by many of the later sages as a legitimate criterion. There are several sources that discuss the application of the hybridization criterion to birds based on the Rambam's use of the terms *min tahor* and *min tamei*, thus seemingly including birds. In the course of these discussions it is clear that they all accept the criteria for animals. For example, the Chatam Sofer (YD:74) was unsure

claimed that the Baghdadi Jews living in India testified that they were familiar with the zebu and treated it not only as kosher but as a definite *b'hemah*. The Chazon Ish rejected this too, arguing that the local *minhag* could not be changed based on the *mesorah* of another place. (In a recent conversation [5 Sep. 2001] Rav Immanuel Susna, formerly rabbi in Algeria and France, reports that his teacher, Rav Yehuda Zarbiv, a rabbi in Constantine, Algeria, had slaughtered zebu as kosher in the 1920s. He also reports that he and several of his peers later also slaughtered zebu.)

49 This exchange can be found in *Pe'er Hador*, Vol. 4, pp. 226-230.

50 He also notes that with such a strong Reform movement it is risky to permit that which appears to be prohibited.

51 Fertile offspring do not seem to be required. The expression in the Talmud is simply that a pregnancy results, so it may be that even a live birth is not required.

whether the rule applies to birds, while the Netziv (*Meshiv Davar* YD:22) and Arugat HaBosem (*kuntras haTshuvot*, 16) seem convinced that it does, but were hesitant to apply it in practice. They all imply that the Gemara's statement is factually accurate<sup>52</sup> and serves as a determinant for animals. The Avnei Nezer (Rabbi Abraham Bornstein of Sochaczov 1839–1910; YD 1:75), the Maharsham (Rav Shalom Mordechai haCohen Schvadron; *Da'at Torah* YD 82:3), the fourth Lubavitcher Rebbe (Rav Shmuel Schneerson, *Igros Kodesh*, p. 8), and Mahari Steif (R. Yehonatan Steif; 202) also all seem to accept that it applies to birds. Even those, such as the Beit Yitzchak (Rabbi Isaac Judah Schmelkes; 1828–1906; YD 1:106) and Minchat Yitzchak (5:31), who hold that kosher and non-kosher birds can successfully mate, and hence hybridization does not prove anything about the kashrut of birds, seem to accept the principle for animals. I am unaware of anyone who explicitly rejects this principle for animals.<sup>53</sup>

One could argue that once the Chazon Ish had saddled his followers with the need for a *mesorah*, hybridization is insufficient proof for an animal to be

52. The Gemara (Yerushalmi 1:7) makes a claim about plant hybridization. It states that the olive, of all plants, cannot accept a graft. I have been unable to verify the modern scientific position on this.

53. There are two possible arguments against the hybridization test, neither of which has any basis in my opinion. The Tur (YD 297) states that the prohibition of *kilayim* (cross-breeding) includes all kinds of crosses: it applies between domesticated and wild animals, between animals and birds, between two non-kosher species, and between a kosher and a non-kosher species. Hence, one might argue, a kosher and a non-kosher species can crossbreed. This argument is fallacious because nowhere is it claimed that, for a cross to be prohibited as *kilayim*, it has to yield offspring or even pregnancy. Clearly, a cross between an animal and a bird cannot lead to a zygote! The prohibition, as clearly stated in the Tur (see also Mahari Steif, 202), is merely causing two different species to engage in the act of mating, and this statement by the Tur in no way negates the hybridization principle.

The only source I know of that explicitly raises a question is the Aruch Hashulchan. In YD 297(b):6 he cites the halakhah found in the *Shulchan Aruch* YD 297(b):5 that the offspring of a prohibited crossbreed (*kilai b'hemah*) is permitted for use. And, if both the father and mother are kosher species, the offspring may be eaten as well. The Aruch Hashulchan then observes that, according to the hybridization rule found in *Bechorot* 7a, stating both halves of the condition is superfluous. He therefore expresses surprise at both the Rambam and *Shulchan Aruch* for mentioning it, unless they hold that not everyone subscribes to the hybridization principle. This does not seem to be such a strong objection. The *Shulchan Aruch* never states the halakhah regarding a cross in which only one parent is kosher, a statement that would indeed have been problematic. He simply states the case where the offspring is kosher, i.e., two kosher parents. That is not intended to imply that a mix of kosher and non-kosher could produce offspring. It is very strange that he expresses surprise at the Rambam, who expressly accepts the principle, as noted above.

permissible. Further, although he never provided a rationale for the need of a *mesorah*, the Chazon Ish did mention that if new species were accepted it could lead to errors in other areas, such as *treifot*, due to unfamiliarity with the shape of the organs. If this was indeed the reason, hybridization would be of no use. However, he adds "*she'anu no'hagim b'behemot minhag ofot* — we act with animals as is the custom with birds." There is no specific reason why a *mesorah* is required for animals, and we simply apply the criteria used with birds. If there are those who would accept hybridization regarding birds, it certainly applies to animals. Thus, just as in the case of birds, where all agree that a *mesorah* is needed and yet the ability to crossbreed suffices according to those who hold the rule applies, so too the ability to hybridize should certainly obviate the need for a *mesorah* for animals even according to the Chazon Ish.

The zebu not only passes the "hybridization test," but produces live, fertile offspring with other domesticated cattle (*Bos taurus*). The American bison and a wide variety of cattle have been interbred regularly since 1957 to produce fertile "cattalo" or "beefalo" offspring, a product that has gained in popularity in the last several decades due to its ease of handling and the lower fat content of its meat.<sup>54</sup> European bison (*Bison bonasus*) appear to have a chromosome complement that is very similar to that of *Bos taurus*. They breed with relative ease, and both direct and reciprocal crosses produce fertile females. However, the male offspring are usually infertile or sterile.

It seems, therefore, that the debate about the need for a *mesorah* is not applicable to the buffalo question. Because of their ability to interbreed with known kosher species, and the not insignificant fact that they possess both biblical indicia, the zebu and European and American bison should all be viewed as kosher beyond doubt.<sup>55</sup>

54 I am unsure if the following is halakhically significant. Most of these hybrids are with taurus males and bison females. When bison bulls impregnate domestic cows it rarely goes to term as a result of hydrops amnion. I thank Dr. Rob Lofstedt, Professor of Theriogenology at the Atlantic Veterinary College, Prince Edward Island, Canada for help with the scientific information in this section.

55 I have not succeeded in finding information regarding crosses between the cow (*Bos taurus*) and the African buffalo (*Syncerus caffer*). Regarding the water buffalo (*Bubalus bubalis*) — cow (*Bos taurus*) crosses, it is reported (M. Drost, J.M. Wright, and R.P. Elsdon, "Intergeneric Embryo Transfer Between Water Buffalo and Domestic Cattle," *Theriogenology* [January 1986] 25:1:13-23) that "there are no reports of natural or artificial hybridization between the two genera." Despite the anatomical and physiological similarities in their reproductive systems, this was viewed as not surprising in view of the differing number of chromosomes,  $2n=48-50$  in the water buffalo and  $2n=60$  in the domestic cattle.

**Giraffe<sup>56</sup>**

The giraffe (*Giraffa camelopardalis*<sup>57</sup>) is the largest ruminant and the tallest mammal. Males can weigh between 1,100-2,100 kg. and are up to 5.5 meters tall at the tip of their horn. There are eight recognized subspecies, all native to sub-Saharan Africa, and they are found today mostly in east Africa. They have a natural life span of 20-25 years and a gestational period of 450-465 days.

The giraffe, scientifically classified in the order *Artiodactyla*, the suborder *Ruminantia*, infraorder *Pecora*, and family *Giraffidae*, has fully split hooves and chews its cud. Barring the issue of *mesorah*, discussed above, the giraffe should be unquestionably kosher with no halakhic impediment to slaughtering and eating it. Like all "true ruminants" the giraffe has a four-chambered stomach<sup>58</sup> (unlike the camel which has three, and which the Torah nonetheless specifically identifies as being a ruminant). Despite the seeming simplicity of the giraffe's kashrut, there is a not-so-simple history surrounding the issue.

- 56 For additional material about the giraffe in halakhah and rabbinic literature see Yehuda Feliks, *Chai v'Tzome'ach b'Torah* (Jerusalem, 1984), p. 33 (*zemer*) and p. 93 (*tachash*); Amati Ben-David, *Sichat Chullin*, 3rd edn. (Jerusalem, 1996), pp. 417-418; David Tzvi Feldman, *Yalkut Kol Chai: Encyclopedia Toranit l'Baalei Chaim* (1997), Vol. 1, p. 539 (*zemer*); and Rav Yisrael Meir Levinger, *Mazon Kasher min HaChai*, p. 19 and *Me'or l'Masechet Chulin* (Jerusalem, 5754), 2:5, 47. After writing this article I was also made aware of Rav Avraham Chamami's article, "The Giraffe — Its Kashrut for Eating" (Hebrew), *Techumin* 20(5760): 89-93 and J. David Bleich, "Survey of Recent Halakhic Periodical Literature: Is the Giraffe a Kosher Animal," *Tradition*, 35:1 (Spring 2001): 70-75.
- 57 The name derives from the impression it made when it was supposedly first brought to Rome in 46 BCE. *Camelopardalis* is the Latin for a camel marked like a leopard, since they were erroneously thought to be a combination of a camel and a leopard. Like camels, giraffes can go for very long periods, sometimes over a month, without drinking. The origin of the name *giraffa* is less clear. Some have suggested that it derives from the Arabic *zarāfa* which, as a *vesh*, means "to jump" or "to hurry," leading to the noun "one who walks swiftly" (they can run up to 60 kilometers per hour). This is an old Arabic name found, for example, in Rav Saadia Gaon, and others have suggested it is not based on an Arabic name but is a received African name, possibly traceable to an Ethiopian word that denotes "graceful one," or to a source meaning "assemblage," as in assemblage of animals. Note that, according to some sources, there are two distinct species of giraffe, the common or blotched giraffe (*Giraffa camelopardalis*) and the reticulated or Somali giraffe (*Giraffa reticulata*). Others treat all giraffes as one species with up to nine subspecies.
- 58 Yehuda Feliks, *Chai v'Tzome'ach b'Torah* (Hebrew) (Jerusalem, 1984), p. 93, based on the classic early 20th-century German zoological work *Tierleben*, by Brehm, erroneously states that it has three chambers. He recently expressed to me (personal conversation, April 2001) his desire to publish an updated version of his book in which he would correct this error. The presence of four stomachs was confirmed on January 24, 2002 in a post-mortem performed by a group including the author, on a giraffe, at the Ramat Gan Safari. A detailed report will appear in *Techumin* 23 (2003, in press).



The *zemer*, listed among the kosher animals (Deuteronomy 14:5), is identified by Rav Saadia Gaon, Rabbenu Yona (*Sefer Hasharashim*, p. 134), Radak (his *Sefer Hasharashim, shorash "zemer"*), the Septuagint,<sup>59</sup> and many others as the giraffe.<sup>60</sup> Others identify the *tachash* (e.g., Exodus 39:34-35), the special animal whose skin was used in the *mishkan* (tabernacle),<sup>61</sup> or the *keresh* (*Chullin* 59b) as the giraffe.

In the periodical *Kokhevei Yitzchak*<sup>62</sup> it was stated that the *tachash* was the animal known in the Talmud as the *namar gamal* — leopard camel, and in Arabic as *giraffa*. It also stated that the giraffe is found in Africa, has a beautiful skin that is used for making tents and water bottles, and has one horn on its forehead. It was known as *tachash* because it never utters a sound, even after being shot and experiencing tremendous pain. The author declares that it is a kosher *chayah*.

Unfortunately this statement is so full of errors that his conclusion is worthless. For example, the giraffe has two, sometimes three, four, or even five

59 Where it is translated as kam(ee)lopardalin (ee-eta) and presumably means giraffe. Other commentators leave *zemer* unidentified. For example, Chizkuni identifies all the other animals but states, with regard to the *zemer*, that he is unable to identify it.

60 Rav Ratzabi (*ibid.*, note 6 on pp. 175-176) observes that Rabenu Channanel permitted writing a Torah on giraffe skin, thereby indicating that it is kosher. Rav Ratzabi also stated definitively that giraffe is a *chayah* not a *b'hemah*, and hence its *chelev* is permitted.

Note that some think there is an historical question here. Pliny (first century CE) claims that the giraffe first became known to those north of the Sahara in the first century BCE. The Septuagint was translated several centuries before that, and of course Deuteronomy was dictated many centuries prior to that. Feliks (p. 33) observes that researchers do not think that the giraffe existed in the Biblical Lands during the biblical period. One possible explanation is that Pliny was talking about the first major exposure to giraffes, but that they were known much earlier. The simplest and more likely explanation is that Pliny was outright mistaken. In the journal *Antiquity* (Vol. 75, No. 287, March 2001) Huyge et al. observe that: "In early Egyptian iconography, stylized representations of giraffe are a prevalent subject ... (between about 4000 and 3600 BC)." In an article in *Nekhen News* (1998, 10:9-10), Huyge further clarified: "That the early inhabitants of the Nile Valley were well acquainted with the tallest living animal in the world is a recognized fact.... [Giraffe] was certainly part of the indigenous animal world of Egypt." Although it disappeared at some point from the natural environment, it was later re-introduced and kept in hunting parks and animal gardens. Cf. *Chullin* 80a, where it seems that *zemer* is a wild goat and Yisrael Aharoni (*Zichronot Zoolog Ivri*, reprinted 2000, pp. 105, 224) identifies it as *Oryx beatrix* — a type of antelope.

61 See note 26 above for other suggested identities of the *tachash*.

62 *Chelek* 16, p. 41. This was a literary journal edited by Menachem Mendel Stern and published annually (1845-69, 1873; 37 vols.) in Vienna as the central organ of the Hebrew Haskalah (Enlightenment) movement. Surprisingly, it is quoted by Rav Tzvi Hirsch Kahn of New York in *Shut HaMaor v'Zichron b'Sefer* (see note 64).



horns — never one. He claims that the *tachash* was the talmudic *namer gamal* (=to the giraffe's species name, *camelopardalis*; cf. note 57), but neither *namer gamal* nor *gamal namer* appear anywhere in talmudic literature.<sup>63</sup> The author may have once glanced at the Mishnah in *Eruvin* 35a or several subsequent pages in *Eruvin* and have been confused. There it mentions *chamar gamal* (literally: donkey camel). By changing a *chet* to a *nun* it yields *namer gamal*. Unfortunately, *chamar gamal* does not describe an unusual hybrid animal, but is a phrase that means a combined donkey- and camel-driver. Camels are led from the front and donkeys are driven from behind. To describe an unfortunate person who, in modern English would be said to be "caught between a rock and a hard place," the Talmud uses the phrase *chamar gamal*. It means nothing more, and certainly has nothing to do with *camelopardalis*.

Amazingly, there is a relatively recent article<sup>64</sup> that attempts to refute a previous article written by Rav Yeshayahu Aryeh Dvorkes (see below), and show that although the "ancient" giraffe was indeed kosher, the "modern" giraffe is not. The author engages in fabulous polemics and feats of imagination to arrive at his conclusion. For example, he claims that there are three kinds of camel, the giraffe being one of them. In actuality, giraffes and camels are not very closely related; giraffes are classified in the suborder *Ruminantia* and camels, along with llamas, are in the suborder *Tylopoda*. The reason it is not kosher, he claims, is that, due to crossbreeding with non-kosher animals, it no longer has fully split hooves. A visit to a zoo will show this to be fallacious — the fact is that giraffe hooves are fully split. The Talmud states that kosher animals cannot physically breed with non-kosher animals.<sup>65</sup> Kahn addresses this issue by claiming that it is not absolute, but is true in the majority of cases. That seems highly unlikely. The Rambam uses the phrase *ein min tamei mit'aber mi'min tahor klal*. The emphatic *klal* would seem to indicate that this is an ironclad rule. And the Rambam seems to permit this as a means of identifying kosher species — an improbability if this is simply a majority rule.

63 Rav Yeshayahu Aryeh Dvorkes in a letter to *HaMaor*, cited below, states that the Hebrew name for giraffe is *gamal namer*. This is most likely a modern Hebrew translation of the scientific name, as he makes no claim of talmudic usage.

64 Rav Tzvi Hirsch Kahn of New York, "Studies in the Identity of the Giraffe" (Hebrew) in *Sefer She'alot v'tshuvot HaMaor v'Zichron b'Sefer*, ed. Mayer Amsel (New York, 5727 [1966]), Vol. 1, pp. 247-250. I am indebted to Prof. Marc Shapiro for showing me this strange article. Surprisingly, this spurious article is based in large part on an equally troubling responsum of a respected Hungarian *posek*, the Rashban (Rav Shlomo Tzvi Shick, *Even Ha'ezer*, pp. 63-65). On the Rashban see Rabbi Dr. Adam Ferziger, M.A. thesis, Yeshiva University (1990).

65 See discussion in text near note 51.

In 1982 I discussed the kashrut of the giraffe with Rabbi Yosef Kafich, a leading rabbi and scholar in Israel's Yemenite community, and asked if there were any halakhic impediments to eating it. Rav Kafich's only hesitation, said tongue-in-cheek, was that it would be "10,000 dollars per kilo, which is *ba'al tashchit* (a waste)."<sup>66</sup> More recently, a Bar-Ilan University student sent a letter to Rav Kafich inquiring about the kashrut of the giraffe. In his response, postmarked 10 Tammuz 5760, just days before his death, he wrote that giraffe is kosher and that there is no requirement for a *mesorah* for animals to be kosher. The reason it is not eaten, he suggested, is due to *ba'al tashchit*; it costs five times the price of other meat, and is nonetheless not tasty. If slaughtered properly, he stated, it can be eaten with no hesitation.<sup>67</sup>

The question of the giraffe's halakhic status seems to have been on people's minds in even earlier times. In 1854 Yosef Schwartz published in Jerusalem the book *Tvuot Ha'Aretz*, in which he identifies biblical animals. He cites without comment the statement of Rav Saadya Gaon and a Parsi translation that the kosher *chayah* "zemer" is the giraffe. In 1900 the work was reprinted for the third time with notes by Avraham Yehoshua Luntz. He cites from the additions at the end of the book *Divrei Yosef* (page 159b) the excited, emphatic declaration that in 1854 the author personally examined a giraffe and found it indeed to be a kosher *chayah* with all the kashrut signs.

The species most closely related to the giraffe is the rare okapi (*Okapia johnstoni*).<sup>68</sup> It is naturally confined to the Congo basin and was discovered less

66 In speaking with a giraffe expert, Dr. Evan S. Blumer of The Wilds (Zanesville, Ohio), it seems that Rav Kafich overstated the price. An adult female sells for \$15-20,000, and an adult male for \$5-10,000.

67 I thank Rav Aharon Kapach for providing me with a copy of the letter he received from Dr. Zohar Amar, the mentor of the student who wrote the query to Rav Kafich. [The letter can be seen in *Rabbi Yosef Kafich Memorial Volume*, ed. Zohar Amar and Hananel Seri (5761), p. 73.]

68 Also called the "forest giraffe." They are in the same family (*Giraffidae*), but are different genera. There are no subspecies of the okapi. The giraffe and okapi are classified together because they share many features unique among ungulates: skin-covered horns, lobed lower incisoriform canine teeth, and low-crowned, rugose molars. They also have many other similarities, such as length of gestation, exclusive browse feeding habits, serum protein relationships, anatomical characteristics — large eyes and ears, long neck and legs, forelegs longer than hind limbs, pneumatic sinuses, and a long prehensile tongue (so long, 36 cm., that the okapi can lick its eyelids to clean them). Similar to the giraffe, they have small, hair-covered horns that do not usually exceed 15 cm. in length. They are smaller than the giraffe, generally weighing about 200-300 kg. There is also a significant karyotypic difference between giraffes and okapis that makes hybridization highly unlikely. The giraffe diploid chromosome number is 30, whereas the okapi is 45 or 46. See Vermeesch et al., "Differences in the

than a hundred years ago. It is in the same family as the giraffe and, more importantly, also chews its cud and has split hooves, and hence is kosher. Of course, it would probably cost even more than \$10,000 per kilo!

In a short two-paragraph letter to the journal *HaMaor* (12:1 [107; Tishrei 5721(1960)], p. 25), Rabbi Yeshayahu Aryeh Dvorkes,<sup>69</sup> observed that, according to scientists, giraffes chew their cud, have split hooves, and are in the deer family, and there are commentaries on the Bible that identify the giraffe with the kosher *zemer*. Given those facts, he challenges the Torah world to clarify the status of the giraffe, an animal found in plenty in Africa, so that if it is indeed kosher the Torah-observant community can enjoy it. It is hoped that this section has helped clarify the halakhic issues surrounding the kashrut of the giraffe. The practical issues of how to slaughter a wild animal that can kill an adult lion with one kick, however, still need to be worked out!

There are two common misconceptions surrounding the possible ritual slaughter of giraffe. The first is that giraffe is not served in kosher establishments since it is not known where on the neck to *shecht* it. This is simply false.<sup>70</sup> The *makom shechita* (region of the neck where ritual slaughter is valid) on a giraffe is precisely defined by halakhah, just as it is for all animals. However this misconception seems to be very widespread, and is currently gaining circulation via web sites. For example the April 1999 issue of *Innernet Magazine* (<http://www.heritage.org.il/innernet/archives/trivia.htm>) reports that "because the neck is so long, the exact spot of *shechita* (kosher slaughter) is not known." Similarly, Marsha R. Pincus, the nutritional consultant on JewishInternet.Com (<http://www.jewishinternet.com/content/marshapincus/marshapincus-4.htm>) reports: "Besides that, no one really knows the exact place to perform this procedure [*shechita*]." It is mentioned, and debunked, in *Yalkut Kol Chai: Encyclopedia Toranit l'Baalei Chaim*, 1997, Vol. 1, p. 539 by David Tzvi Feldman.

The Talmud (*Chullin* 27a) queries several times for the derivation that the ritual slaughter must be performed at the neck, and finally concludes that it is a tradition, a law given to Moses at Sinai.<sup>71</sup> This indicates that the entire neck is

Distribution ... fusion site," *Cytogenetics and Cell Genetics*, Vol. 72, no. 4 (1996), pp. 310-315; Bodmer and Rabb, "Okapi johnstoni," *Mamm. Species* (1992), 422:1-8; Petit and de Meurichy, "On the chromosomes of the okapi, *Okapia johnstoni*," *Ann. Genet.* (1986), 29(4): 232-234.

<sup>69</sup> Probably best known as the editor of the comprehensive *Minchat Yerushalayim* siddur.

<sup>70</sup> See Ari Z. Zivotofsky, "What's The Truth About... Giraffe Meat!" *Jewish Action* 61-1 (Fall 5761/2000), p. 37.

<sup>71</sup> The laws of ritual slaughter are a classic proof of the existence of an Oral Law. All that is mentioned in the Written Law is (Deuteronomy 12:21): "v'zavachta ... ka'asher tzi'vi'si'cha —

valid for *shechita*. Usually, one doesn't think about how the neck should be defined. In the case of the giraffe, where the neck is prominent and accentuated, to say the least, one might pause and contemplate if the whole neck really is valid, and, if not, what the valid region is. But there is no reason for second-guessing. The boundaries that are specified for all ritual slaughter (*Chullin* 45a; YD 20:1-2), which is virtually the entire length of the trachea and esophagus, are as applicable to the giraffe as to any other kosher species.<sup>72</sup> On a giraffe they simply define a significantly larger area than on other species. For a pigeon the valid region is several centimeters long, for a cow about half a meter, and, for a giraffe, close to two meters.

A less well-known, and only partially erroneous, misconception is that a giraffe cannot be kosher slaughtered because giraffes, due to their very long necks, cannot lie down. It is generally preferable that kosher slaughtering be performed with the knife above the neck to avoid the problem of *drusa* — cutting by pressure rather than by slicing with a to-and-fro motion.<sup>73</sup> Thus, a giraffe, which, according to this misconception, cannot physiologically be turned over, could not be properly slaughtered. This is not entirely true for two reasons. First, while it is preferable that *shechita* take place with the animal on its back, this is not an indispensable requirement. Most bovine *shechita* in America actually takes place with the animal standing in a pen known as the "ASPCA pen" or "Elizabeth pen" (a schematic of this pen can be seen at <http://www.grandin.com/restrain/intro.schematic.html>) and, to avoid *drusa*, its head is supported by a metal chin-lift.

The giraffe's physiology is also not so simple. Giraffes have two potential problems when they lower their heads. It could appear that if the head is below the heart, the head could in theory "explode" from the huge blood pressure<sup>74</sup>

you shall slaughter ... as I commanded you." Yet the details of this commandment are nowhere to be found in the Written Law, pointing to the existence of an oral tradition given from God to Moses.

- 72 Two items (*simanim*) must be severed in a proper *shechita*: the trachea and the esophagus. On the trachea the top boundary is the top, full cartilage ring and, at the bottom, it is where the top of the large left lobe of the lung reaches when fully inflated but not stretched. On the esophagus, the top is the uppermost part where it shrinks closed after being severed (as opposed to remaining open), and the bottom is where it starts to look like the stomach lining.
- 73 This is one of the five fundamental points of the laws of slaughtering (*Shulchan Aruch*, YD 23:1), and its laws are detailed in *ibid.* 24:1-6.
- 74 In the standing position, a giraffe requires an enormously high pressure to get blood up to its brain. Mean aortic pressure in a 4.5 meter giraffe has been measured at 220 mm. Hg (compared to about 90 for a human and a dog, 50 for a pig, and 130 for a cat), the left-ventricular systolic varied between 260 and 300 mm. Hg (180 in dog and ox, 120-130 for human; note that in turkeys it is also close to 300), and the end diastolic between 10 and 18 mm.

(and when it raises its head it will faint), and if the head is below the rumen, the contents of this first stomach compartment would start to pour out, and the animal could in theory aspirate these contents.<sup>75</sup> In point of fact, giraffes often lower their heads to the ground to drink, a feat that requires them to spread their front legs apart since the neck is so long. But the design of the giraffe was very cleverly planned by the Creator so as to prevent any problems. For example, it has unusually elastic blood vessels,<sup>76</sup> arteries with exceptionally thick walls, special valves in the neck veins, and a network of tiny veins (*rete mirabile*), all of which control blood flow to and from the head, and prevent exploding heads and blackouts when the animal lowers and raises its head to drink. Furthermore, there is a special "sponge" just beneath the giraffe's brain that absorbs blood when the head is lowered and squeezes the oxygenated blood back into the brain when the giraffe lifts its head up. In addition to lowering their heads to drink, giraffes often lie down to sleep, although these sleeping periods tend to be brief — one to twenty minutes. Even giraffes that unintentionally fall on their sides can right themselves.

It is certainly true that giraffes are among the most difficult animals to restrain and anesthetize. Giraffes react defensively with well-aimed kicks, and one kick from a giraffe can certainly kill a human. In addition, there is a high immobilization mortality rate with giraffes. However, several zoos have constructed giraffe restraint devices that have been successfully used for clinical and research procedures.<sup>77</sup> When the goal is to slaughter the animal, the concern

Hg (similar to humans) (Malcolm S. Gordon, *Animal Physiology: Principles and Adaptations*, 3rd edn., pp. 284-286). In familiar terms, normal human blood pressure is about 120/70, while in a giraffe it is about 300/200. Interestingly, while pressure at the base of the brain is about 200 mm. Hg when the giraffe is upright, it surprisingly drops to 175 mm. Hg when the head is lowered. Correlated with the high aortic pressure is left-ventricular hypertrophy. See Anne Innis Dagg and J. Bristol Foster, *The Giraffe, Its Biology, Behavior, and Ecology* (Robert E. Krieger Publishing, 1976), 232 pp.

- 75 Indeed, the major cause of anesthetic death in giraffes is regurgitation, with subsequent inhalation of the rumen contents, which causes rapidly fatal inhalation pneumonia. This will often occur when the animal falls, increasing intra-abdominal pressure. Because of this, the animal is usually denied food for 72 hours and water is withheld for 48 hours prior to anesthesia (Mitchell Bush, "Anesthesia of High-risk animals: Giraffe", in *Zoo and Wild Animal Medicine, Current Therapy 3*, ed. Murray E. Fowler [1993]).
- 76 The principal means of controlling the blood pressure is similar to what occurs in humans: the carotid arteries constrict when the head is lowered, and dilate when the head is raised.
- 77 Paul P. Calle and John C. Bornmann, "Giraffe Restraint, Habituation, and Desensitization at the Cheyenne Mountain Zoo," *Zoo Biology* II (1988) 7:243-252. See also A.M. Kornak, "The Success of Performing Procedures Using Operant Conditioning with Giraffe in a Restraint Device," *Proceedings 26th AAZK National Conference* (1999), pp. 124-128 [Binder Park Zoo, Michigan].



of high mortality rates, of course, is immaterial. Nonetheless habituation and desensitization of the giraffe would be critical prerequisites for the successful restraint of a giraffe prior to *shechita*.<sup>78</sup>

### Babirusa ("kosher pig")

In recent years there has been talk of a "kosher pig," the babirusa (*Babirusa babirusa*), an animal that hails from Indonesia.<sup>79</sup> This misnomer continues to be perpetuated. It was mentioned in a January 1998 lecture in Silver Spring, MD by the rabbinic administrator of one of the major national kashrut agencies, and it also appeared in the *New York Times* in March 1998.<sup>80</sup>

Babirusa, which means "pig deer" (*babi* means hog and *rusa* means deer) in the local language of the Celebes and Moluccan islands of southeast Asia (Indonesia), is not easy to track down since it is found only in the tropical, marshy, dense forests of those islands. They are excellent swimmers who do not root with their snouts like other pigs.<sup>81</sup> In the wild these nocturnal animals are omnivorous, eating mostly green vegetation, roots, and bulbs, but sometimes also snails, worms, birds, and rodents. After a gestation period of about five months it produces litters of one or two offspring.

In the mid-1980s there was great interest in the babirusa, not only as a "kosher pig" but also for its potential domestication and use as a general meat source. Babirusas have long been a curiosity to both natives and Europeans. Darwin's co-discoverer of evolution, Alfred Russel Wallace, in 1869 expressed his amazement at their "extraordinary horn-like teeth," whose purpose he could not fathom.<sup>82</sup>

Like all pigs,<sup>83</sup> the babirusa has fully cloven hooves. However, it has been

78 The capture, care, and transportation of giraffes require careful planning and consideration. See, for example, *The Capture and Care Manual: Capture, Care, Accommodation and Transportation of Wild African Animals*, ed. Andrew A. McKenzie (1993).

79 On the babirusa see Rabbi Moshe Dovid Tendler, "The Kashrut Laws: On the Interface of Halakhah and Science," *Judaism* (1990) 39(4): 447-451, esp. footnote 1 on p. 448 and Rabbi J. David Bleich, *Contemporary Halakhic Problems*, Vol. III (New York: Ktav Publishing House, Inc.), pp. 66-77.

80 14 March 1998, caption to photo on page B9. It is worth noting that the book by Richard J. Israel, "The Kosher Pig: And other Curiosities of Modern Life," illustrated by Shan Wells (Alef Design Group, 1994) has nothing to do with the babirusa.

81 A highly mobile, flattened snout with nostrils on the rostral surface that is used to root while foraging for food under the ground is usually considered an identifying characteristic of suids and tayassuids.

82 *The Malay Archipelago* cited in "In Search of the Kosher Pig, Log Book," *Islands Magazine* 6:3 (May/June 1986), p. 8.

83 The common, wild pig (*Sus scrofa*), has a very wide native geographical distribution that includes most of Eurasia, India, and Indonesia, and includes up to 35 subspecies.



alleged that, unlike other pigs, it has a two-chambered stomach and chews its cud, thus seemingly making it kosher. The possibility exists that if it actually did chew its cud it *might* truly be kosher. But such a halakhic analysis is unnecessary since it would be based on a false premise. The babirusa has only a one-chambered stomach,<sup>84</sup> albeit with a "slight constriction or band in the middle," is not a ruminant, and is not kosher. It belongs to the family *Suidae* that includes only "true" pigs, warthogs, and babirusa — all nonruminants and non-kosher.<sup>85</sup> All members of the family *Suidae* have a simple stomach and digestive system similar to that of humans. Peccaries (of the family *Tayassu*) have a voluminous gastric pouch and two blind pouches (cacaes) on the stomach, in addition to the glandular portion of the stomach. Fermentation is known to occur in the peccary stomach. None of this comes close to rumination.

The origins of the false rumor concerning the babirusa's kashrut can be traced to a November 13, 1984 AP bulletin based on a Fall 1984 report of the National Research Council that was simply misinterpreted. It has been known for well over a hundred years that the babirusa does not chew its cud. Furthermore, the

84 Some sources, such as Walker's *Mammals of the World*, 5th edn., Vol. II, ed. Ronald M. Nowak (Johns Hopkins University Press, 1991), define the infraorder (*Suina*) that includes all pigs and peccaries as well as the babirusa as two-chambered and non-ruminating. In either case, it is the same as other pigs and non-ruminating. See also I.M. Levinger, *M'or L'Masechet Chullin*, Part 2, Jerusalem 1995, p. 7, who erroneously states that the babirusa has 4 stomachs.

85 This does not imply that there can never be a "kosher pig." There is a widely discussed Ohr HaChaim haKodesh (on Levit 11:3,7) that purports to cite a midrash that, in the future, the pig will become a ruminant and will therefore be a kosher species. Torah Temima 11:7 (21) and others vigorously challenge this notion and interpret any similar Midrash as allegorical. A possible source for the Ohr Hachaim is the Midrash Hagadol to Leviticus 11:7. See A. Lewin, *Avnei Hefetz* (Cleveland, 1992), 26 (6), p. 55; *Tshuvot Radvaz* 2:828. See also H. Karlinsky, "The Pig and its Permissibility in the Future", *Shana B'Shana* (Jerusalem, 1971), pp. 243-254; A. Steinsaltz, "In the Future God will Return It [the pig to permissibility]", *Tarbiz* 36:3 (1967), pp. 297-298.

There is an interesting debate regarding the desirability of craving the taste of pig. For example, Rabbi Elazar ben Azaryah (Sifra to Kedoshim, Chap. 9) argues that a person should not say "I do not desire pork," rather, that he abstains since his Father in heaven has prohibited it to him. The Chidushei ha Rim (*Sefer hazchut*, Bnei-Brak, 5747, p. 44) asserts that manna in the desert, which would miraculously taste like any food desired by the eater, could not assume the flavor of forbidden foods. The Chida (Pesach Enayim to *Chullin* 109b, s.v. *ba'anan*) disagrees, and cites a statement by Yalta, the wife of Rav Nachman (*Chullin* 109b) to the effect that every forbidden food has a permitted counterpart. For example, the taste of pig can be experienced by eating the brain of a fish called shibuta. (That different foods can be almost identical in taste is not uncommon. See for example the letter to the editor, *Science News* 156:19 [10 July 1999] that the barndoor skate tastes so much like scallop that unscrupulous restaurateurs are known to have "punched" "scallops" out of skate fins.) There is thus nothing wrong with desiring that taste, and the manna could taste like shibuta, which

dentition rule discussed above can be used to strongly suggest that the babirusa is not kosher. As noted above,<sup>86</sup> upper canines are a sign of a non-kosher animal, while the absence of upper incisors and molars is one confirmation of a kosher animal, assuming the animal under consideration is not a baby camel. The babirusa has large, readily observable, maxillary (upper) canines that in the male emerge vertically from the maxillary alveoli, penetrate dorsally through the skin of the nose and then curve posteriorly over the front of the face towards the forehead. They are so exaggerated as to resemble horns. Most pigs have the following dental formula<sup>87</sup>:  $I\ 3/3\ C\ 1/1\ PM\ 4/4\ M\ 3/3 \times 2 = 44$ . The babirusa has the equally non-kosher formula of:  $I\ 2/3\ C\ 1/1\ PM\ 2/2\ M\ 3/3 \times 2 = 34$ . This is in contrast to the kosher formulas of the giraffe ( $I\ 0/3\ C\ 0/1\ PM\ 3/3\ M\ 3/3 \times 2 = 32$ )<sup>88</sup> and buffalo ( $I\ 0/1\ C\ 0/3\ PM\ 3/3\ M\ 3/3 \times 2 = 32$ ), both of which can readily be seen to have no upper incisors or canines.

The Malbim<sup>89</sup> describes an animal with similar characteristics to the babirusa that is found only in the western hemisphere. He was probably referring to a peccary (originally known as dicotyles and now called tayassu). It has a two- or possibly a three-chambered stomach, but also large, sharp canines that form a distinct lump under the lips; it does not truly chew its cud and hence is not kosher.<sup>90</sup>

## CONCLUSION

When analyzing the kashrut status of various animals, things are not always as they seem at first glance. This paper has set out to address the kosher status of three less common animals: the buffalo, giraffe, and babirusa. Buffalo at first glance would seem to be obviously kosher, and few would have questioned it. Yet, as has been shown, although it is kosher in the final analysis, the route to

tastes like pig. The identity of the shibuta is unknown, but there is a fish found in the Amazon known as the tambaqui (*Colossoma macropomum*) that is supposedly a delicious kosher fish with a light, mild pork taste.

86 Text near note 18.

87 In a dental formula the teeth on one side of the mouth are described by how many upper and lower incisors (I), canines (C), premolars (PM) and molars (M) are present.

88 It is interesting, although I think not halakhically significant, that the Giraffid molars are low-crowned, in contrast to the high-crowned molars of most grass-eating mammals, and have rough enamel — not smooth like those of all other mammals.

89 Rabbi Meir Loeb ben Jehiel Michael, 1809-79, Eastern Europe, commenting on Leviticus 11:7.

90 The structure of their toes is not clear to me, but tayassu may also not have halakhically acceptable split hooves.

that determination is not trivial. Giraffe has received its fair share of negative press, and there are many who would assume it is not kosher. My daughter's Jewish nursery school gave the children a picture chart of kosher and non-kosher animals, and, lo and behold, the giraffe was shown among the non-kosher animals. Despite such negative publicity, the giraffe is probably kosher. The babirusa received unprecedented media coverage as a "kosher pig" and yet, as is clear from the evidence, it is indisputably not kosher.

The Chazon Ish wrote that it is enough that Jews can eat cattle and sheep; there is no need to try to find additional kosher species.<sup>91</sup> It seems that the contemporary kosher consumer feels otherwise, and is continually pushing the kashrut establishment to provide greater variety. In response, several major United States kashrut organizations have indeed certified American bison in recent years. It is hoped that this essay will both contribute towards fulfilling the mitzvah of studying the *simanei b'hemah v'chayah*, and aid those who must respond to the demands of the consumer market.

<sup>91</sup> See the related Ein Yaakov to Shabbat 77b.