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Archeozoological Analysis of Large Mammals of Chokurcha I Unit IV

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The bone material of Chokurcha Unit IV is not abundant given the depth of the deposit and excavated area; the number of faunal remains varies from 38 to 2,717 depending on the level. The richest levels of Unit IV are IV-M, IV-O, IV-I, IV-F, IV-B, and IV-Q (Figure 22-1). Since there is significant bone fragmentation, the total number of identifiable remains is very low—less than 20% (Figure 22-2). The estimate for the number of individuals for identified species in each level indicates that there is a dearth in bone material for all levels. The number of individuals in each level is also fairly low, ranging from one to twelve. The numbers of individuals are most abundant in Levels IV-F and IV-O, followed by Levels IV-I, IV-Q, IV-M, and IV-K (Figure 22-3). Non-human taphonomic agencies (climato-edaphic, carnivores...), with the exception of a couple of levels, are only slightly responsible for this poor state of preservation (*cf. infra*). Rather, human agency is preponderant. The state of the faunal assemblages is due to human activities such as catching and processing of game. Certain animals were dismembered outside of the rockshelter, for others, only a few pieces of their carcasses were brought back to the shelter (*cf. infra*). In addition, the site was occupied

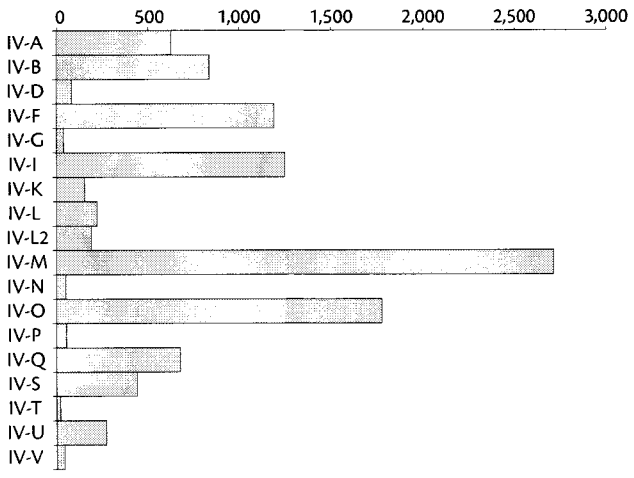

Figure 22-1—Chokurcha I Unit IV: total number of remains in each level.

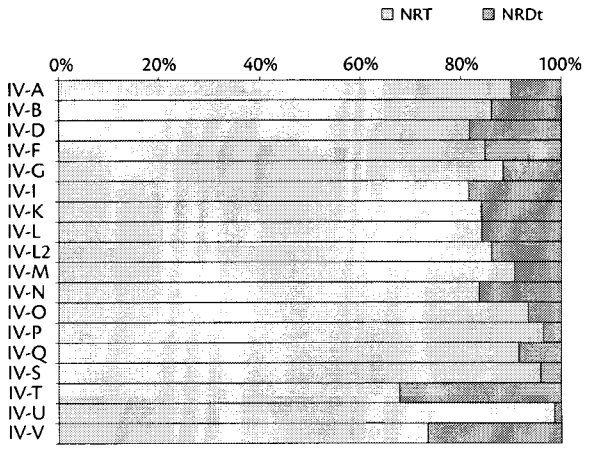

Figure 22-2—Chokurcha I Unit IV: ratio of total identified remains (NRDt) to total number of remains (NRT) in each level.

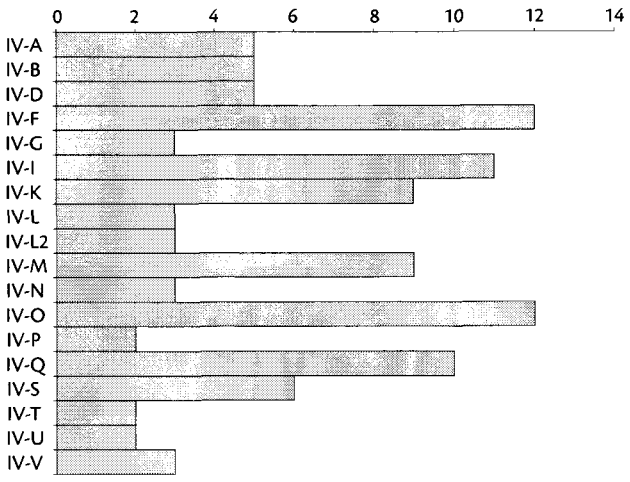

Figure 22-3—Chokurcha I Unit IV: minimum number of individuals by combination (MNIc) in each level.

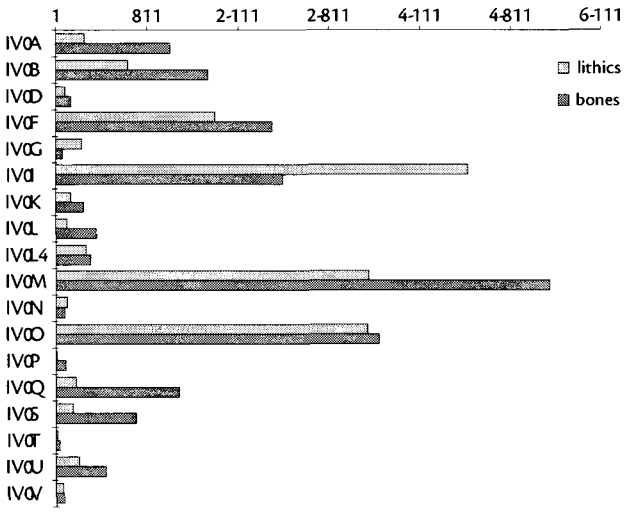

Figure 22-4—Chokurcha I Unit IV: relationship between lithics and fauna (total number of remains) in each level.

repeatedly, probably by very few people, and these occupations were very brief.

The comparison between the quantities of lithic remains and faunal remains in each of the levels shows identical variations, with the exception of Level IV-L (Figure 22-4). Levels IV-I, IV-M, IV-O, and IV-F are archeologically the richest (Chabai, Chapter 24). It should be noted that in Level IV-Q, the faunal remains are relatively abundant (676), but the lithic material is relatively scarce (123 pieces, of which only 7 are tools).

Paleoecology

During the analysis of material from Unit IV of Chokurcha, fourteen species of large mammals were identified, including nine species of ungulates, four of carnivores, and one lagomorph.

Saiga antelope (*Saiga tatarica*) is the only species that appears in all of the levels (Figure 22-5). It is also the most abundant species, except in Levels IV-M, IV-N, IV-Q, and IV-S, where *Equus hydruntinus* dominates. Woolly mammoth (*Mammuthus primigenius*) is present in the upper levels until Level IV-O (although it is absent in Level IV-N, Figure 22-5). *Equus hydruntinus* was identified in Levels IV-C through IV-S (except in IV-G, IV-L, and IV-L2, Figure 22-5). Bison (*Bison priscus*) was identified in five levels: IV-A, IV-I, IV-M, IV-O, and IV-Q. Remains of woolly rhinoceros (*Coelodonta antiquitatis*) were found in Levels IV-F, IV-I, IV-K, IV-M, and IV-O. Red deer (*Cervus elaphus*) is only present in Levels IV-I, IV-Q, and IV-S. A few pieces of reindeer (*Rangifer tarandus*) were discovered in Levels IV-L, IV-L2, and IV-T. In Level IV-A, two bones belonging to a horse (*Equus* (*caballus*) *sp.*) were found.

Among the carnivores, which are infrequent, wolf (*Canis lupus*) was identified in Levels IV-F, IV-I, IV-K, IV-M, and IV-V. Steppic fox (*Vulpes corsac*) was present in Levels IV-I, IV-O, and IV-S. Level IV-O had

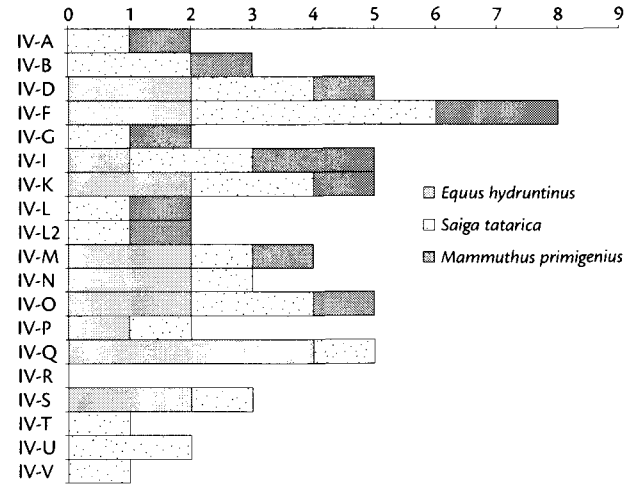

Figure 22-5—Chokurcha I Unit IV: variation of *Saiga tatarica*, *Mammuthus primigenius*, and *Equus hydruntinus* (in MNIc) in each level.

remains of a steppic polecat (*Putorius eversmanni*) and Level IV-Q had one hyæna (*Crocuta crocuta*) bone.

For lagomorphs, only the European hare (*Lepus europaeus*) was identified. It was present in Levels IV-M, IV-O, and IV-S.

Remains of birds were found in Levels IV-F (3), IV-O (13), IV-Q (2), IV-S (2), and IV-V (1). Based on their size, these belong to at least two species, one of which is the size of an eagle or vulture. Remains of rodents were discovered in Levels IV-B (1), IV-F (7), IV-O (7), IV-Q (1), and IV-S (1) (See Markova, Chapter 23). In Level IV-O, a bone of a toad, *Bufo viridis,* was identified.

There is little variance either qualitatively or quantitatively in the composition of the faunal spectrum among the levels, The most frequent suite of animals is composed of saiga antelope, mammoth, and hydruntinian horse. Given the types of identified species, all of the levels were deposited during a period when the environment was open and steppic and the climate was cold and dry. Taphonomic analyses confirm the low level of humidity, where damage to the bones from flowing and percolating water is rare (see below). At the same time, there are indications of an increase in humidity and temperature in the lower levels (from Level IV-V through Level IV-O, *cf. infra*). The number of saiga antelope remains increases beginning in Level IV-I (up to IV-A) and those of *Equus hydruntinus* increase from IV-M through IV-Q. Additionally, in the lower levels, there is an absence of mammoth and the presence, in Levels IV-S and IV-Q, of amphibians.

Taphonomic Analysis

Although the bone material from Unit IV is very fragmented, in most cases the original surfaces are intact. On some of these, extrinsic marks have been identified; these are due to different taphonomic agencies: climato-edaphic, non-human biological, and human.

Climato-Edaphic Damage

Climato-edaphic damage to the bones (scaling, dissolving, iron oxide and manganese deposits, and the presence of frayed and split splinters) was caused by two agencies: weathering and percolation (Figure 22-6). These agencies generally had little influence on the bone assemblages, except in Levels IV-Q and IV-T (accounting for 10% of the remains), followed by Levels IV-I and IV-K (accounting for more than 5% of the remains). The faunal remains were protected from the elements by the rockshelter, and the climate at that time was dry. Percolation is most marked in Levels IV-Q and IV-T (on more than 10% of the remains), which indicates a slight increase in humidity (*cf. supra*).

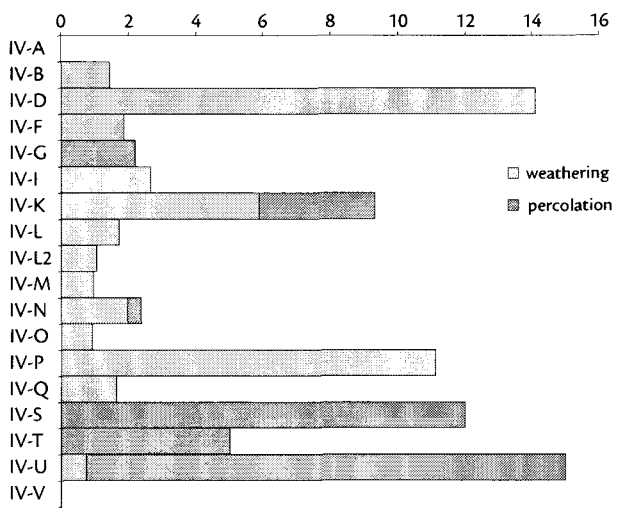

Figure 22-6—Chokurcha I Unit IV: percentage of remains within each level with climato-edaphic damage.

Damage from Non-Human Agencies

Plants

Damage from plant rootlets (vermiculation) was observed on only 12 bones. These were found in 5 levels: IV-D, IV-F, IV-O, IV-P, and IV-V (Figure 22-7). This low occurrence of damage by plants is due to the fact that the site is a rockshelter, that the climate at that time was dry (*ergo* poorly vegetated, see above), and/or that the rate of sedimentation was rapid.

Post-depositional Movement and Trampling

Scratches from post-depositional damage (formed when bones are shifted on the ground) and micro-splintering from trampling were noted on only 20 bone pieces. These were found in Levels IV-A, IV-B, IV-F, IV-I, IV-M, IV-N, IV-O, IV-P, IV-Q, and IV-S (Figure 22-7). This rarity might be due to low foot traffic within the rockshelter and/or that the deposits were rapidly covered by sediments. This type of damage may be due to non-human or human agencies.

Carnivore Damage

Small carnivores left traces of their passing (tooth marks) on only 26 bones: in Levels IV-B, IV-F, IV-I, IV-O, IV-Q, IV-S, IV-T, and IV-U (Figure 22-7). On the other hand, damage from hyæna is visible on

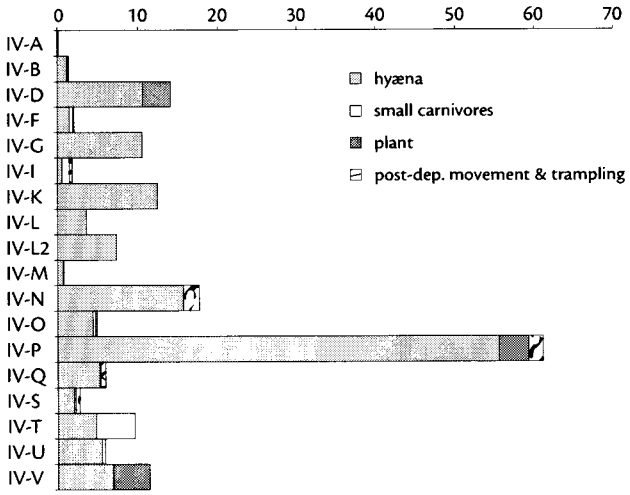

Figure 22-7—Chokurcha I Unit IV: percentage of remains within each level with biological non-human damage.

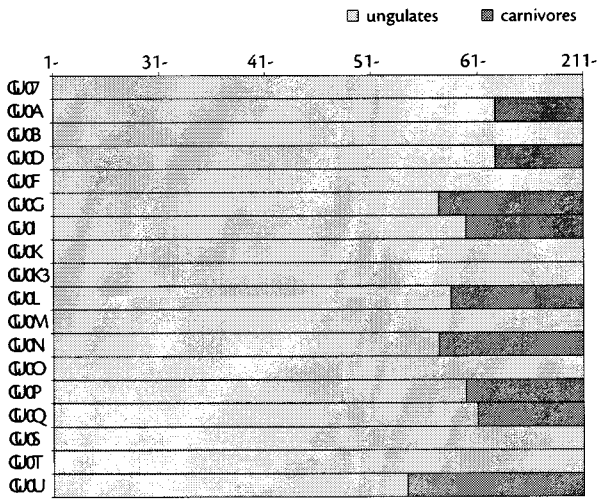

Figure 22-8—Chokurcha I Unit IV: ratio of carnivores to ungulates (MNIc).

bones in all of the levels except IV-A (Figure 22-7). Proportional to the number of remains in each level, hyæna damage was most significant in Levels IV-P, IV-N, IV-K, IV-D, IV-G, IV-L2, IV-V, IV-U, and IV-Q (on more than 5% of the remains). Coprolites were found in Levels IV-B and IV-O and attest to more extended stays in the rockshelter by the predator.

For all of the levels combined, this non-human taphonomic damage is relatively minor if the total number of faunal remains is taken into account. Non-human biological agencies are more significant in Levels IV-D, IV-G, IV-K, IV-N, IV-P, and IV-V. Other than Level IV-K, all of these levels had very few bone remains, which may be significant. Additionally, the number of carnivore remains is low (see above). Most significant to the state of preservation is the regular visit of hyænas to Chokurcha. Given, however, the number of remains attributed to this animal (only 1 bone: Level IV-Q) and the number of bones showing modifications from this carnivore, its role in the origin and history of the bone assemblages in most of the levels was modest. The ratio of carnivores to ungulates also highlights the rarity of the former in these assemblages (Figure 22-8). The Chokurcha rockshelter cannot, therefore, be considered to have ever been used as a carnivore den.

Anthropic Damage

Percussion Impact

One hundred twenty four bone chips display evidence of blows made by humans on green bone in the form of flakes, splintering, or points of impact. These are relatively abundant in Levels IV-P, IV-L2, IV-Q, and IV-L (on more than 2% of the remains) and are absent in the levels with small bone assemblages (IV-D, IV-G, IV-N, IV-T, and IV-V; Figure 22-9).

Butchery Striae

The presence of cut marks made during carcass butchery was noted on 34 bones in Levels IV-A, IV-B, IV-F, IV-I, IV-L, IV-L2, IV-M, IV-O, IV-Q, and IV-S (Figure 22-9). They are relatively more abundant in Levels IV-I, IV-L2, and IV-F (on more than 0.5% of the remains).

Retouchers

Seventy-five bones have scratches and impressions on their external surfaces. These were identified in Levels

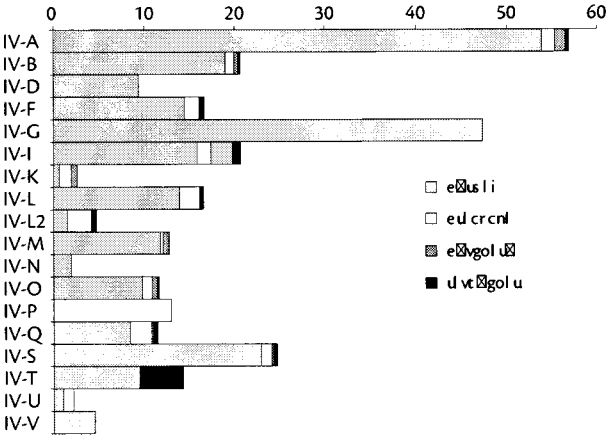

Figure 22-9—Chokurcha I Unit IV: percentage of remains within each assemblage with anthropically caused damage.

IV-A, IV-B, IV-F, IV-I, IV-K, IV-M, IV-O, IV-Q, IV-S, and IV-T (Figure 22-9). They can be considered as retouchers used for lithic knapping, although it should be noted that Chabai (Chapter 24) recognized only well-used examples, and, so, fewer of them. They are plentiful in Levels IV-T, IV-I, and IV-A (more than 1% of remains).

Burned Bones

More than 1,589 burned bones were discovered in Chokurcha Unit IV. They are present in all levels, with the exception of Level IV-P (Figure 22-9). They are particularly abundant in Levels IV-A, IV-G, IV-S, IV-I, and IV-B (more than 15% of remains). The use of bone as fuel reinforces the hypothesis of a cold and dry climate where arboreous vegetation was rare in the vicinity of the site.

As a whole, anthropically caused damage is relatively frequent and sometimes abundant, notably in Levels IV-A, IV-G, IV-S, IV-I, and IV-B (more than 20% of remains). This damage is mostly burning, which accounts for more than 87% of the total number of remains with anthropic damage. Other types of anthropic alteration abound in Levels IV-P, IV-I, IV-A, IV-L2, and IV-Q (on more than 3% of remains).

For all of the remains showing extrinsic damage, it is those with damage by anthropic agency that predominate in most of the levels (Figure 22-10), notably in Levels IV-A, IV-S, IV-I, IV-B (on more than 20% of remains), and in Levels IV-F, IV-L, IV-M, and IV-O (on more than 10% of remains).

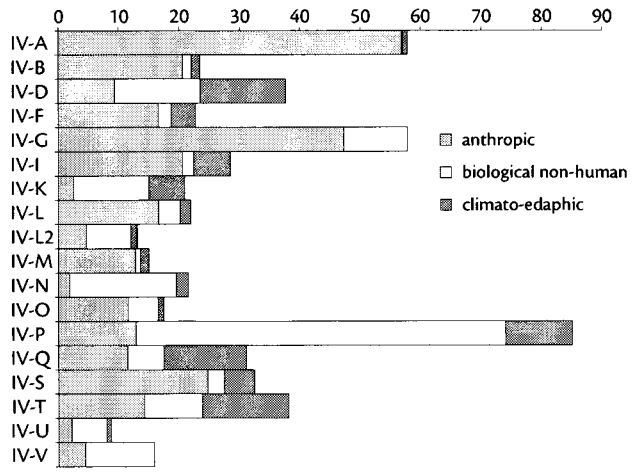

Figure 22-10—Chokurcha I Unit IV: percentages of remains in each level with climato-edaphic damage, biological non-human damage, and anthropic damage.

Paleoethnographical Analyses

Only Levels IV-A, IV-B, IV-F, IV-I, IV-M, IV-O, and IV-Q have enough identifiable bones as well as large enough lithic assemblages to advance hypotheses about the subsistence behavior of the Chokurcha Unit IV inhabitants.

Level IV-A

The bone assemblage from Level IV-A is small, with only 11.2% identifiable elements (Table 22-1). There is considerable fragmentation of the material and a scarcity of bones is evident (NRDt ÷ MNIc = 14; MNE ÷ MNIc = 2.4; and NRDt ÷ MNE = 5.8). No carnivore damage was observed in the assemblage; these low indices are entirely due to the role of humans *vis-à-vis* their game. In addition, damage from climato-edaphic agencies is very rare (see above).

Four species were identified in Level IV-A. There are no carnivore remains (Table 22-1). Saiga antelope (*Saiga tatarica*), the most abundant species in number of remains, is represented by cranial bone fragments, a hemi-mandible, an upper right premolar, and fragments of long bones (humerus, radius, metapodium). These belong to a single individual: a very old adult. A young woolly mammoth (*Mammuthus primigenius*) is represented by a few tooth and tusk fragments only. A young bison (*Bison priscus*) was identified by a decidual tooth, while an adult was identified by fragments of a tibial diaphysis. A horse (possibly adult) is represented by two tibia fragments. There are nine long bone fragments belonging to a large-sized species (bison and/or horse). Level A was deposited in a steppic environment during a period of cold and dry climate. This is further confirmed by five bones or 0.8% of the total number of remains showing damage from climato-edaphic agencies. The alteration of these bones can only be attributed to weathering.

There are an additional 559 bone fragments unidentifiable to species, of which 31 are cranial elements, 30 either rib or cranial bones, 13 ribs, and 485 long bones. These belong to large, medium, and small-sized species (Table 22-1). The bone size class II (fragments 2–5 cm in maximum dimension) is predominant.

Two diaphyseal fragments of tibia, representing a bison and a horse, carry striations caused by deflesching (0.3% of NRT). External splintering on 4 pieces (2 long bones, 1 bison tibia, and 1 fragment belonging to either bison or horse) is evidence of breakage caused by humans, as is internal splintering on 1 piece (saiga metapodium), and by 6 "flakes." These 9 pieces

TABLE 22-1
Chokurcha I: fauna of Level IV-A

Species	*NR*	*MNE*	*MNIf*	*MNIc*	*Age*
Equus (caballus) sp.	2	1	1	1	adult *sensu lato*
Bison cf. priscus	5	3	1	2	young/adult *sensu lato*
Equus/Bison	9	1	–	–	
Mammuthus primigenius	9	2	1	1	young
Saiga tatarica	45	6	1	1	very old
Total ungulates	70	13	4	5	
Total carnivores	–	–	–	–	
Total determinate (NRDt)	70	13	4	5	
Size large/medium	10	–	–	–	
Size medium	14	–	–	–	
Size medium/small	188	–	–	–	
Indeterminate	347	–	–	–	
Total indeterminate (NRI)	559	–	–	–	
Total (NRT)	629	>>13	4	5	

NR = number of remains; MNE = minimum number of elements; MNIf = minimum number of individuals by frequency; MNIc = minimum number of individuals by combination

represent 1.4% of the total number of remains (NRT). Three-hundred thirty nine bones, mostly metaphyseal fragments of long bones under 5 cm in length (averaging 2 cm), are completely burned (black or grey in color). These represent 53.9% of the total number of remains. Eight retouchers were identified (1.3% NRT), of which 7 are diaphyseal fragments of long bones (tibias, metacarpals...) from bison and/or horse. One was made on a rib fragment of a small to medium-sized animal (possibly saiga). Marks on these bones are always perpendicular to the longitudinal axis. Six of these have only one zone of use and two show two zones of use (with one zone more damaged than the other). Two of these retouchers also have scraping striations (made before the item was used as a retoucher) at the same place in the zone as the retouching marks. These retouchers are variable in size; length ranges between 146.8 and 55 mm, width between 45 and 23 mm, and the elongation index (L/W) between 56.3 and 21.3. In sum, anthropic modifications were seen on a total of 358 remains (57.1% NRT) in Level IV-A.

The prehistoric occupants of Level IV-A brought a saiga antelope back to the site, which they probably dismembered in front of the shelter, plus parts of two bison, a horse, and a young mammoth (possibly only the head). It is rather difficult to know, especially for the latter three species, whether these animals were hunted or whether their fresh carcasses were scavenged. The bison and horse remains were, however, from meat rich parts. The humans consumed the meat, the long bone marrow, used certain bones as tools, and some bones for fuel. The use of these animals, then, was quite exhaustive and may indicate that the inhabitants were experiencing dietary stress. The occupation of Level IV-A seems to have been a single episode of very short duration, based on the faunal remains and the relative rarity of lithic items. (It should be noted that during excavation, the lithic material from this level was subdivided into two sub-levels—IV-A1 and IV-A2—but all of the faunal material was grouped into a single assemblage.) Chokurcha I might have served as a stop-over for a small group of humans, perhaps during one of their routine movements.

LEVEL IV-B

The faunal assemblage of Level IV-B is fairly small, with only 16.1% identifiable remains in the total assemblage (Table 22-2). The scarcity of animal remains and the degree of fragmentation are significant (NRDt ÷ MNIc = 27; MNE ÷ MNIc = 3.8; and NRDt ÷ MNE = 7.1). As was the case in Level IV-A, these low indices are due to human impact on game animals, which was intensive. On the other hand, ten bones, including three saiga bones, were regurgitated by hyænas. A bone belonging to either a bison or equid has tooth marks from a small carnivore. Carnivore damage is visible on 1.3% of the faunal material. Two hyæna coprolites were also discovered. These carnivores probably came into the cave after it had been abandoned by humans, and therefore affected the faunal material, including by potentially destroying certain bones.

Two species were identified in Level IV-B (Table 22-2). Saiga antelope (*Saiga tatarica*) is represented by cranial bone fragments, a hemi-mandible, long bone fragments (humerus, radius, ulna, metapodium), an innominate, rib fragments, and two semi-lunate carpal bones. These remains were from two individu-

als: a juvenile and an adult *sensu lato*. The mammoth (*Mammuthus primigenius*) is only represented by 57 fragments of juvenile milk teeth. In addition, a fragment of a long bone metaphysis was attributed to either a juvenile mammoth or juvenile rhinoceros. Twenty-one remains, mostly long bone fragments, belong to one or two large-sized species, Bison or Equidae. Two bones of a small carnivore (fox or mustelid) were identified: a proximal phalanx and a fragment of a distal ulna. The faunal spectrum composition indicates that Level IV-B was deposited in a cold and dry climate in a steppic environment. In addition, only 12 bones (1.4% NRT) have damage from climato-edaphic agencies, which can only be due to weathering.

An additional 702 bones could not be specifically attributed to species. These include 94 cranial bone fragments, 6 teeth of a small artiodactyl, 5 ribs, 2 costal cartilages, 2 flat bones, and more than 593 long bone fragments. These are remains of very large/large, large, medium, and small-sized species, with medium-sized most frequent (Table 22-2). The indeterminate remains most often fall into size class II (2–5 cm in maximum dimension).

A rib shaft and the proximal part of an ulna, both from a juvenile saiga, have butchery marks (0.2% NRT). Grooves on the rib shaft were incurred during defleshing, while those on the ulna were incurred during the disarticulation of the humerus/radius-ulna. Breakage caused by human agency is seen on 7 "flakes" from large and medium-sized species, and by external splintering on a horse or bison long bone metaphysis (1.0% of NRT). More than 159 bones are completely burned (black or grey in color); these are mainly fragments of long bone metaphyses under 5 cm in length (mean length = 2 cm) and they represent 19.0% of the total number of remains of Level IV-B. Four retouchers were identified in this level (0.5% of NRT). Two are diaphyseal fragments of tibia long bones of bison and/or horse. A third is made on a rib fragment of a small to medium-sized animal, possibly saiga. The marks are always perpendicular to the longitudinal axis of the bone. Three of the retouchers show only one zone of use, while the fourth shows two zones. Vermiculation and external splintering are also visible on two of the retouchers. The dimensions of the retouchers vary, from 112 to 45 mm in length, 27 to 17 mm in width, 60 to 24 in elongation. Human modification is therefore present on more than 173 bones (20.6 % NRT).

The Level IV-B occupants brought two saiga antelopes back to Chokurcha I and probably dismembered them in front of the shelter. They also brought back pieces of bison and/or horse and young mammoth (possibly only the head). It is not clear whether they hunted these animals or scavenged pieces of them off of fresh carcasses, especially in the case of horse and/or bison (which are represented by meat rich parts). At the shelter, they ate the meat, the long bone marrow, fashioned some bones into tools, and burned other bones for fuel. The game appears to have been thoroughly exploited, suggesting that the occupants were undergoing a period of dietary stress. Level IV-B seems to have been a single and very short occupation based on the lithic and faunal remains. As with Level IV-A, Level IV-B might have functioned as a resting place for a small group of hominids.

TABLE 22-2
Chokurcha I: fauna of Level IV-B

Species	*NR*	*MNE*	*MNIf*	*MNIc*	*Age*
Equus/Bison	21	>2	1	1	adult *sensu lato*
Mammuthus primigenius	57	3	1	1	young
Mammuthus/Coelodonta	1	1	–	–	
Saiga tatarica	54	11	1	2	young/adult *sensu lato*
Total ungulates	133	>17	3	4	
Small carnivore	2	2	1	1	
Total carnivores	2	2	1	1	
Total determinate (NRDt)	135	>19	4	5	adult *sensu lato*
Size very large/large	1	–	–	–	
Size large/medium	19	–	–	–	
Size medium	57	–	–	–	
Size medium/small	336	–	–	–	
Size small	3	–	–	–	
Indeterminate	286	–	–	–	
Total indeterminate (NRI)	702	–	–	–	
Total (NRT)	837	>>19	4	5	
Rodent	1				

Level IV-F

The Level IV-F faunal material is fairly abundant, but only 17.9% of the bones were identifiable (Table 22-3). The shortage of bones and the fragmentation of material is significant (NRDt ÷ MNIc = 17.8; MNE ÷ MNIc = 5.0; and NRDt ÷ MNE = 3.6). These low indices were the result of human impact on their game. It should be noted, however, that marks from a small carnivore are visible on five bones, including four saiga bones (0.4% of NRT). In addition, 18 bones (including 5 saiga, 1 mammoth, 1 mammoth/rhinoceros, 4 *Equus hydruntinus*) were altered by hyænas (1.5% NRT). Most of these (17) are from hyæna vomiting. Carnivores played a small part in the history of the bone assemblage, by damaging or destroying some bones.

Five species were identified in Level IV-F (Table 22-3). Saiga antelope (*Saiga tatarica*) is the most prevalent species. Woolly mammoth (*Mammuthus primigenius*) was mostly identified via tooth and tusk fragments—the only bone attributed to it was a sesamoid. These 89 mammoth bones belonged to at least 2 individuals, a very young juvenile and a 5–10 year-old juvenile. Woolly rhinoceros (*Coelodonta antiquitatis*) is represented by 3 tooth fragments and 3 long bone diaphyses (including one femoral diaphysis), probably all from a young individual. A long bone fragment from either a mammoth or a woolly rhinoceros was also identified. Seven bones of *Equus hydruntinus* were identified: 4 teeth (including one lacteal labial tooth), a juvenile metapodial, a metacarpal, and a vestigial metapodial. These were from at least two individuals, one of which was a juvenile. Twelve fragments from at least two long bones of bison or horse were identified. Wolf (*Canis lupus*) is represented by one mandible (in 3 pieces), probably belonging to an old adult male. A humeral diaphysis of a fœtus or newborn small carnivore is also present. The composition of the faunal spectrum suggests that the climate was cold and dry and the environment steppic during the deposition of Level IV-F. Forty-eight bones (4.0% NRT) show traces of climato-edaphic agencies, including weathering (22 bones) and water percolation (26 bones). During the formation of the overlying Level IV-E, the climate was therefore somewhat more humid.

An additional 976 bones were unidentifiable to species: 17 teeth, 57 cranial bones, 3 hemi-maxillae, 1 hemi-mandible, 5 vertebrae, 21 ribs, 2 short bones, 9 flat bones, and 861 long bone fragments (including 10 fragments of extremities). These belong to large/medium, medium, medium/small, and small-sized species (Table 22-3). Based on the remainder of the faunal assemblage, most can probably be attributed to saiga antelope (Table 22-3). Size class II (2–5 cm) is the best represented.

Acquisition and Processing of Saiga Antelope in Level IV-F

The inhabitants of Chokurcha I Level IV-F consumed four saiga antelopes. All ages are represented (less than 36 months, young adult, adult, and old adult); a mor-

Table 22-3
Chokurcha I: fauna of Level IV-F

Species	*NR*	*MNE*	*MNIf*	*MNIc*	*Age*
Equus hydruntinus	7	7	1	2	young/adult *sensu lato*
Equus/Bison	12	>2	1	1	adult *sensu lato*
Coelodonta antiquitatis	6	>2	1	1	young ?
Mammuthus primigenius	89	>5	2	2	very young/5–10 years
Mammuthus/Coelodonta	1	–	–	–	
Saiga tatarica	94	>40	2	4	young/young adult/adult/old
Total ungulates	209	>56	7	10	
Canis lupus	3	3	1	1	old
Small carnivore	1	1	1	1	fœtus or newborn
Total carnivores	4	4	2	2	
Total determinate (NRDt)	213	>60	9	12	
Size large/medium	18	–	–	–	
Size medium	36	–	–	–	
Size medium/small	145	–	–	–	
Size small	2	–	–	–	
Indeterminate	775	–	–	–	
Total indeterminate (NRI)	976	–	–	–	
Total (NRT)	1189	>>60	9	12	
Rodent	7	–	–	–	
Bird	3	–	–	–	

tality profile corresponding to a hunting curve. All skeletal parts are present in the assemblage, although they are numerically limited (Figure 22-11). These animals were transported in their entireties to Chokurcha I and processed just outside the shelter.

Six bones have butchery marks (0.5% NRT): two fragments of a saiga long bone diaphysis, a rib shaft, a fragment of long bone diaphysis and a cranial bone fragment of a medium-sized animal, and a rib shaft of a small/medium-sized animal. These striations are mostly the result of defleshing, and of skinning in the case of the cranial fragment. Breakage caused by humans is seen on 21 bones (1.8% NRT). These bones are from saiga antelope (4 bones, including one flake), a large-sized species (bison/horse, 5 flakes), a medium-sized animal (5 flakes), a large/medium-sized animal (2 flakes), a medium/small-sized animal (2 bones including one flake), and an indeterminate species (3 flakes). There are 172 totally burned bones (black or grey in color); these are mostly long bone metaphyses under 5 cm in length (mean = 2 cm), and they account for 14.5% of the total remains. One retoucher was identified (0.1% NRT). It was made on a long bone metaphyseal fragment from a medium-sized species. The marks, which are localized in a single zone, are perpendicular to the longitudinal axis of the bone. The piece is 65 mm long, with a maximum width of 20 mm, and an elongation index of 31. Anthropically caused modification is therefore visible on 200 bones (16.8% NRT), which belong, for the most part, to saiga antelope.

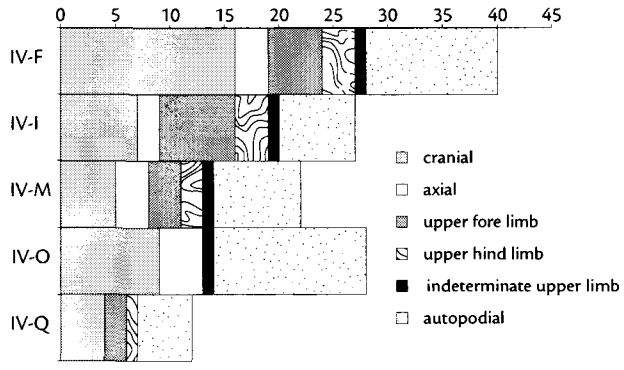

Figure 22-11—Chokurcha I Unit IV: *Saiga tatarica*, preservation of skeletal units (MNE).

The occupants of Chokurcha I Level IV-F brought back to the site pieces of two young mammoths (possibly only heads and feet), a young woolly rhinoceros (pieces that were meat heavy), and two hydruntinian horses (heads and feet). Given these data, it is difficult to ascertain whether the animals had been hunted or scavenged. It is also possible that another predator, such as hyæna, could have brought in chunks of these animals (notably for the small horse). On the other hand, humans unquestionably hunted four saiga antelope. The skins of these antelope were removed, the meat and marrow were eaten, and some of the bones were used for tools and fuel. This level appears to have been a short-lived single occupation. The site might have served as a hunting camp oriented towards saiga antelope.

Level IV-I

The faunal material is fairly abundant in Level IV-I, with 22.7% identifiable remains (Table 22-4). There is significant bone shortage and fragmentation (NRDt ÷ MNIc = 25.7; MNE ÷ MNIc = 4.9; and NRDt ÷ MNE = 5.2). These indices are due to the human occupants and their role in relation to the game animals. There are, however, 11 bones (including 2 saiga and 1 *Equus hydruntinus*) with small carnivore damage (0.9% of NRT). An additional 7 bones (3 of which were saiga) were altered by hyænas; 6 of these correspond to regurgitations (0.6% NRT). These carnivores appear to have scavenged the remains left by humans and might have interfered with the faunal preservation of this level.

Eight species were identified in Level IV-I (Table 22-4). Saiga antelope (*Saiga tatarica*) is the most abundant species. Mammoth (*Mammuthus primigenius*) is also well represented, but only by tooth and tusk fragments. The 100 mammoth remains are from at least 2 skulls, of a very young individual and the other of a 5–10 year-old juvenile. Woolly rhinoceros (*Coelodonta antiquitatis*) is only represented by a few tooth fragments, probably belonging to a sub-adult. Ten *Equus hydruntinus* bones were identified. These include 6 teeth (1 labial and 1 milk tooth were specifically identified), two rib fragments, and two pieces of a long bone diaphysis. These belonged to at least one young individual. Two femur fragments of an adult bison (*Bison cf. priscus*) were identified. Seventeen fragments corresponding to at least one juvenile long bone and an innominate of Bison/Equidae were found. One metatarsal diaphysis of red deer (*Cervus elaphus*) was also identified. An old adult wolf (*Canis lupus*) is represented by a labial tooth. An upper premolar is from a fox (*Vulpes corsac*). A calcaneus epiphysis belongs to a small carnivore.

The composition of the faunal spectrum indicates that Level IV-I was deposited during a cold and dry period in a steppic environment. The presence of red deer remains, however, suggests a slight increase in humidity. Damage by climato-edaphic agencies was identified on 76 bones (6.1% NRT). These bones were modified by weathering (33) and percolating water

TABLE 22-4
Chokurcha I: fauna of Level IV-I

Species	*NR*	*MNE*	*MNIf*	*MNIc*	*Age*
Equus hydruntinus	10	7	1	1	young
Bison cf priscus	2	1	1	1	adult *sensu lato*
Equus/Bison	17	2	–	–	
Coelodonta antiquitatis	1	1	1	1	sub-adult
Mammuthus primigenius	100	>6	1	2	very young/5-10 years
Cervus elaphus	1	1	1	1	
Saiga tatarica	149	>33	2	2	young/adult
Total ungulates	280	>51	7	8	
Canis lupus	1	1	1	1	old
Vulpes corsac	1	1	1	1	adult
Small carnivore	1	1	1	1	young
Total carnivores	3	3	3	3	
Total determinate (NRDt)	283	>54	10	11	
Size very large/large	2	–	–	–	
Size large/medium	100	–	–	–	
Size medium	9	–	–	–	
Size medium/small	538	–	–	–	
Size small	10	–	–	–	
Indeterminate	306	–	–	–	
Total indeterminate (NRI)	965	–	–	–	
Total (NRT)	1248	>>54	10	11	
Lagomorpha/Rodentia	2	–	–	–	

(43). During the formation of the overlying Level IV-G, the climate was somewhat more humid.

There are 965 bone fragments that are not identifiable to species in Level IV-I. These include fragments of 10 teeth, 16 cranial bones, 1 hemi-maxilla, 1 hemi-mandible, 4 vertebrae, 61 ribs, 3 costal cartilages, 4 short bones, 3 flat bones, and 862 long bones (of which there are 2 extremity fragments and one of a fœtus or newborn). These fragments belong to species that were very large/large, large/medium, medium, medium/small, and small in size (Table 22-4). Based on the composition of the Level IV-I faunal assemblage, these are probably mostly remains of saiga antelope (Table 22-4). Size class II (2–5 cm) is the most frequent.

Acquisition and Processing of Saiga Antelope in Level IV-I

The inhabitants of Level IV-I consumed two saiga antelopes—a juvenile of 20–24 months and an adult, probably a female. All skeletal elements are present, although in low numbers (Figure 22-11). These animals were complete when brought to the site—the presence of costal cartilage is notable—and processed in the shelter's exterior.

Eleven bones show cut marks (0.9% NRT): an *Equus hydruntinus* rib shaft, a saiga radius-ulna diaphyseal fragment, a saiga second phalanx, and from an indeterminate species, 6 rib fragments and two long bone diaphyseal fragments. The grooves on these bones were essentially the result of defleshing, and of skinning for the second phalanx. Breakage caused by humans was identified on 21 bones (1.7% NRT): belonging to saiga (4 bones, including 2 retouchers), bison (femoral diaphysis), a large-sized species (*Bison/Equus*, one flake), a large/medium-sized animal (6 flakes), a medium-sized species (2 flakes), a small/medium sized species (5 bones including 3 flakes), and an indeterminate species (2 flakes). There are 198 totally burned bones (black or grey in color), or 15.9% of the total number of remains; these are mostly long bone metaphyseal fragments under 5 cm in length (averaging 2 cm). Thirty retouchers were identified (2.4% NRT). These are made on pieces of saiga long bone diaphyses (18), 9 pieces are from a large-sized indeterminate species (7 long bone diaphyses, 1 rib shaft, 1 scapula), 1 is from a large/medium-sized species (long bone diaphysis), and 2 are from a medium-sized indeterminate species (1 long bone metaphysis, 1 rib shaft). The marks, which are found mostly in one zone on the retouchers (25) and more rarely in two separate zones (5), are perpendicular to the longitudinal axis of the bone. The dimensions of the retouchers from Level IV-I are presented in Table 22-5. Human modification, in sum, was identified on 260 bones (20.8% NRT), which can mostly be attributed to saiga antelope.

TABLE 22-5
Chokurcha I: dimensions of "retouchers" in Levels IV-I and IV-M (in mm)

Layer I	*Minimum*	*Mean*	*Maximum*	*N*	*Layer M*	*Minimum*	*Mean*	*Maximum*	*N*
Retoucher length	25.00	49.50	92.60	19	Retoucher length	25.00	69.60	118.10	15
Retoucher width	10.00	20.90	37.00	11	Retoucher width	17.00	24.60	38.00	15
Retoucher elongation	19.46	38.47	60.00	11	Retouched elongation	21.25	38.50	80.00	15
Zone length	10.70	16.67	22.50	8	Zone length	7.40	14.70	27.40	13
Zone width	4.30	10.97	20.00	8	Zone width	4.60	9.65	19.00	13
Zone elongation	40.18	64.71	100.00	8	Zone elongation	41.07	66.94	99.00	13

The occupants of Level IV-I brought the skulls of two young mammoths, meat-rich pieces of a hydruntinian horse and a bison, and a red deer foot back to the rockshelter. For these four species, it is difficult to ascertain whether they were hunted or their carcasses scavenged. On the other hand, two saiga antelopes (one of which was female) were hunted. The occupants skinned and ate the meat and marrow of these antelopes, plus used their bones for tools and fuel. Based on the faunal assemblage, the occupation of this level appears to have been a single and short-lived episode. The lithic material is abundant, however. (This level was excavated as two sublevels, I1 and I2, but only the lithic material was subdivided, the faunal remains were grouped as a single unit.) The rockshelter may have served as a seasonal camp. Given the presence of a fœtal/newborn bone, which probably belongs to a saiga antelope based on its dimensions, the occupation of Chokurcha Level IV-I might have taken place at the end of spring.

LEVEL IV-M

The faunal material is abundant in Level IV-M, but only 10.4% of the material could be identified to species (Table 22-6). There is a significant bone shortage and the material is highly fragmented (NRDt ÷ MNIc = 31.2; MNE ÷ MNIc = 6.3; and NRDt ÷ MNE = 4.9). These low indices are due to the way humans treated their game. Modifications caused by hyænas are visible on 19 bones, accounting for 0.7% of the total material (4 bones of saiga, 1 bison, 6 *Equus hydruntinus*, 3 small artiodactyl teeth, and 1 carnivore tooth). Sixteen of these were regurgitated. The hyæna(s) appears to have entered the shelter after the departure of the humans and might be responsible for the destruction of a portion of the faunal assemblage.

Six species were identified in Level IV-M (Table 22-6). Mammoth (*Mammuthus primigenius*) is the most abundant species in terms of total number of remains, but these are only tooth and tusk fragments belonging to at least one juvenile individual. Saiga antelope (*Saiga tatarica*) is represented by 44 remains. Woolly rhinoceros (*Coelodonta antiquitatis*) is represented by two teeth, probably belonging to one sub-adult individual. For *Equus hydruntinus*, 17 remains were identified, which probably belong to one juvenile less than 13–15 months old and to a 4–5-year old male. These are teeth (including one juvenile labial and a canine bud), a patella, 3 autopodial bones, and long bone diaphyseal fragments. Bison (*Bison cf. priscus*) is represented by 4 bones, including a molar bud and metacarpal fragment, which probably belong to a subadult individual. Remains from Bison and/or Equidae include 31 long bone fragments, 1 rib, 1 caudal vertebra, and two skull fragments. An old adult female wolf (*Canis lupus*) is represented by 2 dental remains, a fibula in 2 pieces, and a first metacarpal. A small carnivore is represented by 2 skull bone fragments. The composition of the faunal spectrum suggests that the deposition of Level IV-M was during a relatively cold and dry climatic period in a steppic environment. Only 37 remains (1.4% NRT) show climato-edaphic damage. Of these, 26 were modified by weathering and 11 by percolation.

An additional 2,433 bone fragments unidentifiable to species are present in Level IV-M: from 16 teeth, 186 cranial bones, 1 hemi-mandible, 4 vertebrae, 30 ribs, 3 costal cartilages, 2 short bones, 1 flat bone, 2,188 long bones (including 6 extremities), and an innominate and vertebra of a fœtus or newborn. These belong to species that were very large/large, large/medium, medium, medium/small, and small in size. Based on the most frequent size class (II) and the faunal composition of the level, most of these are probably from saiga antelope (Table 22-6).

Acquisition and Processing of Saiga Antelope in Level IV-M

The occupants of Level IV-M consumed an adult saiga that was in the prime of life, and which was possibly a female. All of its skeletal parts are present, although in limited numbers (many of these are probably in the indeterminate fragments, Figure 22-11). This animal was brought whole (especially given the presence of costal cartilages) to the rockshelter and processed just outside.

TABLE 22-6
Chokurcha I: fauna of Level IV-M

Species	*NR*	*MNE*	*MNIf*	*MNIc*	*Age*
Equus hydruntinus	17	13	2	2	<13–15 month/4–5 years (male)
Bison cf priscus	4	2	1	1	sub-adult
Equus/Bison	34	2	–	–	
Coelodonta antiquitatis	2	2	1	1	sub-adult
Mammuthus primigenius	171	>4	1	1	young
Saiga tatarica	34	22	1	1	adult
Small Artiodactyla	10	3	–	–	fœtus or newborn
Total ungulates	272	>48	6	6	
Canis lupus	5	4	1	1	old (female)
Small Carnivore	2	2	1	1	adult
Total carnivores	7	6	2	2	
Lepus europaeus	2	2	1	1	Adult *sensu lato*
Total determinate (NRDt)	281	>56	9	9	
Size very large/large	2	–	–	–	
Size large/medium	312	–	–	–	
Size medium	115	–	–	–	
Size medium/small	1598	–	–	–	
Size small	2	–	–	–	
Indeterminate	404	–	–	–	
Total indeterminate (NRI)	2433	–	–	–	
Total (NRT)	2714	>>56	9	9	

Three bones in Level IV-M have cut marks (0.1% NRT): a cranial bone fragment, a rib shaft, and a long bone diaphysis of an indeterminate species. These scratches are mainly from defleshing and from skinning for the cranial fragment. Breakage caused by humans is visible on 8 bones (0.3% NRT); these belong to indeterminate species of large size (Bison/Equus, 3 flakes), very large/large size (1 flake), large/medium-sized (1 flake), and of medium size (3 flakes). There are 320 bones that are completely burned (black or grey in color); these are mostly long bone metaphyseal fragments less than 5 cm in maximum dimension (mean = 2 cm). They represent 11.8% of the total number of remains. Sixteen retouchers were identified (0.6% NRT). These are made on diaphyseal fragments of long bones from *Equus hydruntinus* (5), Bison/Equus (4), *Saiga tatarica* (1), an indeterminate large/medium-sized species (4), an indeterminate medium-sized species (1), and an indeterminate species of unknown size (1). The percussion marks, which are localized in one zone (10) or in two zones (6), are perpendicular to the longitudinal axis of the piece. The dimensions of these retouchers are presented in Table 22-5. In sum, anthropic modification is visible on 347 bones (12.8% NRT).

The inhabitants of Level IV-M brought the skull of a young mammoth and meat-rich parts of two *Equus hydruntinus* and a bison to Chokurcha I. For these three species then, it is impossible to know whether the occupants of the shelter hunted the animals or scavenged fresh carcasses. They did, however, hunt at least one saiga antelope (probably a female). The skins of all of these animals were removed, their meat and long bone marrow consumed, and the bones were used as tools and as fuel. Level IV-M appears to have been occupied only once and for only a brief time. Based on the relatively abundant lithic and faunal assemblages, the occupation might represent a seasonal camp. Given the presence of two bones from a fœtus or newborn, which probably belong to saiga antelope given their size, this occupation may have occurred during the late spring.

LEVEL IV-O

The faunal assemblage of Level IV-O is fairly abundant, but only 7.1% of the bones could be identified (Table 22-7). The bone deficit and degree of fragmentation is very significant (NRDt ÷ MNIc = 10.5; MNE ÷ MNIc = 5.3; and NRDt ÷ MNE = 2.0). The interaction of humans on their game is responsible for these low values. There are, however, 5 bones (including 1 saiga and 1 bison) showing modification by small carnivores (0.3% NRT). In addition, hyænas modified 78 bones (14 from saiga, 1 mammoth, 7 *Equus hydruntinus*, 1 bison), of which 77 were vomited (4.4% NRT). A coprolite was also found. This carnivore, therefore,

was responsible for an important amount of damage, and, potentially, completely destroyed some of the faunal assemblage.

Eight mammal species were identified in Level IV-O (Table 22-7). Saiga antelope (*Saiga tatarica*) is represented by 37 bones. Remains of mammoth (*Mammuthus primigenius*) are relatively abundant, but limited to tooth and tusk fragments of at least one juvenile. Woolly rhinoceros (*Coelodonta antiquitatis*) is represented by one tooth and a third phalanx belonging to a juvenile. A rib shaft fragment and a piece of a long bone diaphysis come from either a mammoth or rhinoceros. Fifteen bones of *Equus hydruntinus* were identified. These include teeth (7, of which 4 are lacteals), a hemi-mandible, a humerus, a tibia, and 5 autopodial bones. These represent at least one juvenile and one old adult. Five bones of an adult bison (*Bison cf. priscus*) were identified, including 3 skull bones, a labial tooth, and a long bone diaphyseal fragment. A hemi-mandible and a metacarpal were attributed to a megaloceros (*Megaceros giganteus*). Thirty long bone fragments from Bison, Equidae, and/or Megaloceros were also found. An adult fox (*Vulpes corsac*) is represented by five bones: a hemi-mandible, lower canine, ulna, femur, and a tibia. An incisor probably belongs to a steppic polecat (*Putorius eversmanni*). A canine fragment belongs to a small carnivore. The faunal composition of the level suggests that the material was deposited during a relatively cold and dry period in a steppic environment. In addition, only 16 bones (0.9% NRT) show traces of climato-edaphic agencies, exclusively from weathering. On the other hand, the presence of megaloceros and of the amphibian *Bufo viridis*, hints at more humid conditions.

There are an additional 1,648 bones unidentifiable to species; these are fragments of 11 teeth, 4 cranial bones, 5 vertebrae, 2 ribs, 3 short bones, and 1,623 long bones (including 3 extremities). These belong to very large/large-sized, large/medium, medium, medium/small, and small-sized animals. Based on the most abundant size class (2–5 cm) of these fragments, and the composition of the remainder of the assemblage, they probably mostly belong to saiga antelope (Table 22-7).

Acquisition and Processing of Saiga Antelope in Level IV-O

The occupants of Level IV-O consumed two saiga antelopes: a juvenile and an old adult. All skeletal elements of these are present, although numerically

TABLE 22-7
Chokurcha I: fauna of Level IV-O

Species	*NR*	*MNE*	*MNIf*	*MNIC*	*Age*
Equus hydruntinus	15	15	1	2	young/old
Bison cf priscus	5	3	1	1	adult
Equus/Bison/Megaloceros	30	–	–	–	
Coelodonta antiquitatis	2	2	1	1	young
Mammuthus primigenius	23	3	1	1	young
Mammuthus/Coelodonta	4	3	–	–	
Megaloceros giganteus	2	2	1	1	young adult
Saiga tatarica	37	28	1	2	young/old
Total ungulates	118	56	6	8	
Vulpes corsac	5	5	1	1	adult
Mustelidae indeterminate	1	1	1	1	adult *sensu lato*
Putorius eversmanni	1	1	1	1	adult
Total carnivores	7	7	3	3	
Lepus europaeus	1	1	1	1	adult
Total determinate (NRDt)	126	64	10	12	
Size very large/large	2	–	–	–	
Size large/medium	29	–	–	–	
Size medium	207	–	–	–	
Size medium/small	1234	–	–	–	
Size small	6	–	–	–	
Indeterminate	170	–	–	–	
Total indeterminate (NRI)	1648	–	–	–	
Total (NRT)	1774	>>64	10	12	
Rodent	7	–	–	–	
Bird	13	–	–	–	
Bufo viridis	1	–	–	–	

restricted (many of the bones are among the indeterminate remains, Figure 22-11). These animals appear to have been brought intact to the rockshelter and processed just outside of it. It should be noted that hyænas might have played the role of predator and consumer.

Three bones show traces of butchery (0.2%): a saiga vertebral body, a long bone diaphyseal fragment of an indeterminate medium/small-sized species, and a long bone metaphyseal fragment of an indeterminate large-sized species (*Bison/Equus/Megalaceros*). These striations were from defleshing the carcasses. Breakage caused by humans is visible on 18 bones (1.0% NRT) belonging to mammoth (long bone metaphysis), *Equus hydruntinus* (humerus), bison (long bone metaphysis), large-sized species (8 flakes), large/medium-sized species (5 flakes), medium-sized species (1 flake), and a small-sized species (1 flake). One hundred seventy-four bones in the assemblage were extensively burned (black or grey in color); these are mostly fragments of long bone metaphyses under 5 cm in length (averaging 2 cm). Burned bones represent 9.8% of the total number of faunal remains. Eleven retouchers were identified (0.6% NRT). These were made on a saiga rib shaft (1), and on long bone diaphyseal fragments from *Bison/Equus/Megaloceros* (5), saiga (1), a large/medium-sized species (1), a medium-sized species (2), and a medium/small-sized species (1). The marks are mostly localized within a single zone (9) or, more rarely, in three zones (2), and are perpendicular to the long axis of the bone. Anthropic modification is visible, then, on 206 bones (11.6% NRT).

The Level IV-O humans brought the remains of two saiga antelope, pieces of a young mammoth, the head and one foot of a young rhinoceros, plus pieces of two *Equus hydruntinus*, a bison, and a giant deer to Chokurcha I. Whether all of these animals were hunted or were scavenged is unknown. Since hyænic modification does appear to play a role in the bone assemblage, some of these remains might be the result of that carnivore's activities. Humans consumed the meat and long bone marrow, used some bones as tools, and used some bones as fuel. The human occupation of the shelter appears to have been a short, single episode. The site might have served as a seasonal camp, or as a rest stop given the hyænic modifications. Since lithic material is abundant in this level, the former seems more likely.

Level IV-Q

The Level IV-Q faunal assemblage is fairly small and only 9.3% of remains were identifiable (Table 22-8). The bone shortage and fragmentation are extremely high (NRDt ÷ MNIc = 6.3; MNE ÷ MNIc = 4.3; and NRDt ÷ MNE = 1.5). These indices were caused by human activity. There are indications of small carnivore activity—a humerus of a small carnivore has tooth marks (0.1% NRT). An additional 35 bones show marks of hyænic activity (including 4 saiga, 9 *Equus hydruntinus*, and 1 bison bone), 34 of which show marks of hyænic vomiting (5.2% NRT). This carnivore appears to have played a significant role in the history of the Level IV-Q bone assemblage, including by possibly destroying some of the bones.

Six species were identified in Level IV-Q (Table 22-8). Saiga antelope (*Saiga tatarica*) is represented by 19 bones. Nineteen bones of *Equus hydruntinus* were identified: 9 teeth (including 4 milk teeth), a humerus, a tibia (in two pieces), and 7 bones of the autopodium, belonging to at least one juvenile and three adults. Five fragments of long bone diaphyses (humerus, radius, femur, and tibia) of an adult bison (*Bison cf. priscus*) were identified. A molar from an adult red deer (*Cervus elaphus*) is present. Thirteen bones from Bison or Equidae were found, including 10 long bone fragments, 2 skull bone fragments, and a vertebra. An adult fox (*Vulpes corsac*) is represented by a humerus. A second lower premolar of an adult hyæna (*Crocuta crocuta*) was identified. A fragment of a canine tooth belongs to a small carnivore. The faunal spectrum suggests that Level IV-Q was deposited in a cold—although not severe (given the absence of mammoth and woolly rhinoceros)—climate, which was relatively dry (the presence of red deer suggests slight humidity) in a steppic environment. In addition, a significant number of bones (92 or 13.6% NRT) show modification caused by climato-edaphic agencies—weathering (11 bones) and water percolation (81). It seems, then, that during the formation of the overlying Level IV-P, the climate was more humid.

Unidentifiable remains in Level IV-Q include 613 pieces. These are fragments of 2 teeth, 11 skull bones, 1 hemi-mandible, 2 vertebrae, 3 ribs, 2 flat bones, 1 costal cartilage, and 591 long bones (including fragments of two extremities). These are from very large/large, large/medium, medium, medium/small, and small-sized species. Given the most frequent size class (II) and the faunal spectrum, most of these are probably from saiga antelope (Table 22-8).

Acquisition and Processing of Saiga Antelope in Level IV-Q

The inhabitants of Chokurcha Level IV-Q consumed one saiga antelope, an aged adult. Other than the axial skeleton, all parts of the skeleton are present, although not numerous (some of these are undoubtedly among the indeterminate splinters, Figure 22-11). The animal appears to have been brought whole to the shelter and processed just outside.

Three bones in Level IV-Q show cut marks (0.4% NRT): a radius-ulna diaphysis of a saiga, a metaphyseal fragment of an indeterminate medium-sized

TABLE 22-8
Chokurcha I: fauna of Level IV-Q

Species	*NR*	*MNE*	*MNIf*	*MNIc*	*Age*
Equus hydruntinus	19	18	3	4	1 young/3 adults
Bison cf priscus	5	3	1	1	adult *sensu lato*
Equus/Bison	13	3	–	–	
Bison/Cervus	3	3	–	–	sub-adult
Cervus elaphus	1	1	1	1	adult *sensu lato*
Saiga tatarica	19	12	1	1	old
Total ungulates	60	40	6	7	
Crocuta crocuta	1	1	1	1	adult
Vulpes corsac	1	1	1	1	adult *sensu lato*
Total carnivores	2	2	2	2	
Lepus europaeus	1	1	1	1	adult
Total determinate (NRDt)	63	43	9	10	
Size large/medium	20	–	–	–	
Size medium	12	–	–	–	
Size medium/small	402	–	–	–	
Indeterminate	179	–	–	–	
Total indeterminate (NRI)	613	–	–	–	
Total (NRT)	676	>>43	9	10	
Rodent	1	–	–	–	
Bird	2	–	–	–	

species, and a long bone diaphyseal fragment from *Bison* or *Equus*. These marks are the result of deflesh-ing. Breakage caused by humans is evident on 16 bones (2.4% NRT) belonging to saiga (1 radius), *Equus hydruntinus* (1 humerus), bison (1 tibia), a large-sized species (6, including 2 flakes), a large/medium-sized animal (4 flakes), a medium-sized species (1 flake), and an indeterminate species (2 flakes). Fifty-seven bones, mostly fragments of metaphyses of long bones not exceeding 5 cm in length (averaging 2 cm), are completely burned (black or grey in color). These represent 8.4% of the total number of remains in the assemblage. Two retouchers were identified (0.3% NRT), made on long bone diaphyseal fragments from saiga and a large/medium-sized species. The marks are localized within one zone, which is perpendicular to the longitudinal axis of the bone. Anthropic modification was identified on 78 bones (11.5% NRT) from Level IV-Q.

The occupants of this level brought one saiga antelope (possibly intact), and pieces of four hydruntinian horses, a bison (meat rich parts), and a red deer (foot). It is unknown whether the humans hunted these animals or collected pieces off their freshly killed carcasses. Since hyænas played an important role in the Level IV-Q assemblage, many of these remains might be attributed to that predator. The humans consumed the meat and long bone marrow, plus used certain bones for tools and fuel. The Level IV-Q occupation appears to have been a single episode of very short duration. Based on all of the cultural remains, the rockshelter might have served as a resting place for a small group of hominids.

OTHER LEVELS OF UNIT IV

The presence, on the one hand, of lithic material in all of the levels, sometimes in quite high numbers (Levels IV-L2, IV-G, IV-U, and IV-S, Figure 22-4), and on the other hand, anthropic modification on the bone assemblages (Figures 22-9 and 22-10), indicates that Chokurcha I was frequently visited by humans. Unfortunately, the small size of the faunal assemblages does not permit reliable hypotheses about the subsistence behavior of these humans. Some information and reflections can be offered, however, based on the data and analysis results presented above. In Levels IV-D, IV-G, IV-K, IV-N, IV-P, IV-T, IV-U, and IV-V, carnivores, especially hyænas, appear to have played a major role in the faunal assemblage, while humans played a considerably less significant one (especially in Levels IV-T and IV-V). During Levels IV-L and IV-L2, however, the shelter might have been only a brief resting place. A few humans brought at least a hunted adult saiga antelope back to the site. The presence of a foetal or newborn bone of saiga in Level IV-S suggests that this occupation was at the end of spring.

Discussion

The occupants of Levels IV-A, IV-B, IV-F, IV-I, IV-M, and possibly Levels IV-L, IV-L2, and IV-S, only hunted a few saiga antelopes (sometime pregnant females, as in Levels IV-I, IV-M, and IV-S), which they brought intact to the shelter and processed in the exterior.

They also brought pieces of carcasses of saiga antelope (Levels IV-O and IV-Q), young woolly mammoth (Levels IV-A, IV-B, IV-F, IV-I, IV-M, and IV-O), young woolly rhinoceros (Levels IV-F, IV-O), Bison (Levels IV-A, IV-B?, IV-I, IV-M, IV-O, and IV-Q), Equus (Levels IV-A and IV-B?), red deer (Levels IV-I and IV-Q), Megaloceros (Level IV-O), and hydruntinian horse (Levels IV-F, IV-I, IV-M, IV-O, and IV-Q). It is difficult to ascertain whether the humans hunted these animals or only collected pieces off of fresh carcasses ("scavenging"). In Levels IV-F, IV-O, and IV-Q, hyænas appear to play a significant role, and a portion of the faunal remains might be the result of their activities (such as bringing chunks of meat to the shelter).

Humans consumed meat and long bone marrow in all of the levels. They sometimes skinned the antelopes (seen in Levels IV-I and IV-M). In nearly all of the levels, they also used bones as tools (retouchers) and as fuel.

Whatever the level, the occupation appears to have been a single episode (although the question remains about Level IV-I) and of extremely short duration (Levels IV-A, IV-B, IV-L, IV-L2, and IV-S) or short duration (Levels IV-F, IV-I, IV-M, IV-O, and IV-Q). The rockshelter might have served as a stop-over for a small group of humans during one of their trips (Levels IV-A, IV-B, IV-L, IV-L2, IV-Q, and IV-S) or hunting stop (for saiga antelope?, Level IV-F). During Levels IV-I, IV-M, and possibly IV-O, the shelter appears to have served as a seasonal encampment (in late spring for Levels IV-I and IV-M).

The most significant human occupations of Chokurcha I took place during a relatively cold and dry period. Overall, the exploitation of the animal carcasses appears to have been very exhaustive, which may indicate periods of dietary stress; this is notable in Levels IV-A and IV-B.

(*Translated, from the French, by Katherine Monigal.*)