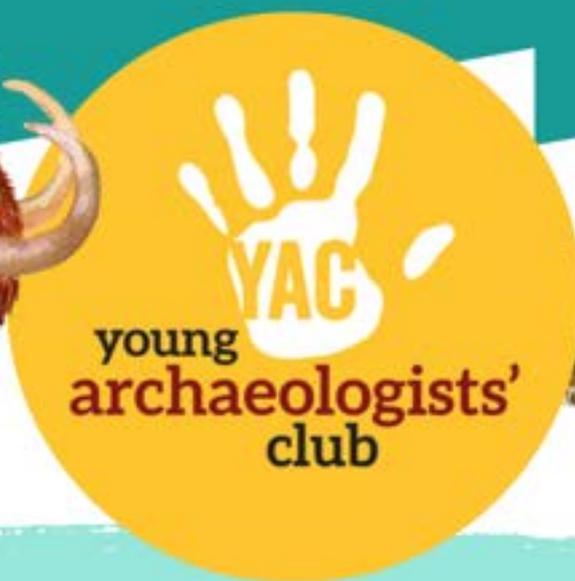




# Zooarchaeology Resource Pack





# Zooarchaeology Resource Pack



Council for  
British Archaeology



# Hello!

**Would you like to learn about how archaeologists use animals to learn about the past?**

Together with Clare Rainsford and Michelle Feider from the University of York, the Young Archaeologists' Club have created this zooarchaeology resource pack. These activities are aimed at anyone aged 8–16.



Zooarchaeology, also known as archaeozoology, is the study of animal remains from archaeological sites to understand past human-animal interactions, diets, environments, and social structures. Most often the remains are the parts that preserve easily, such as bones and teeth, but some environment can preserve hair, hides and even DNA!

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Activity



Suitable for  
Ages 8+

Time  
Required:  
30 minutes

## What were animals used for?

### Background

Most of the animal bone we find on archaeological sites in Britain comes from domesticated animals. Cattle, sheep, goats, and pigs were all domesticated in the Middle East and Near East and were first brought to Britain around 5,000 years ago, in the Neolithic.



Prior to the Neolithic, people hunted animals like deer, wild boar, birds like ducks and geese, and aurochs, which were large wild cattle. Domestic farm animals were an important source of food, but they were also useful for many other things.

For most of the archaeological past, there was no plastic. Glass and metal were expensive and used relatively rarely, so most people had to make the things they needed from cheap materials derived from plants and animals. In this activity we will explore what people in the past used animals for.



### You will need:

- pens/pencils
- paper
- print out of activity pages (below)





## Activity 1: What were cows used for ?

In the past, people relied on domestic animals like cattle for all sorts of materials and tasks which made their lives easier.



Write down five things you can use a cow for! What are cows useful for when alive? What could you make from a cow when it is dead?

- 1.
- 2.
- 3.
- 4.
- 5.





## Answers:

### When the cow is alive:

**Milk:** which is also used to make butter and cheese.

**Manure:** animal dung is an important agricultural fertiliser.

**Traction:** oxen were used in many periods to pull carts or ploughs.

**Baby cows:** it's important to maintain your herd and your milk supply!

**Social effects:** The quality of livestock is often really important in farming communities, and a prize-winning cow can raise someone's social standing. Cows may have been used as a form of wealth in Iron Age Britain, and some designs of houses, like the Viking Age longhouses in Scotland, had people sharing a building with livestock to benefit from free body heat during the winter.

### When the cow is dead:

**Meat:** burgers, steaks, meatballs, mince, tongue, oxtail, tripe (lining of a cow stomach), offal (brains, heart, liver, kidneys, etc.).

**Leather:** made from treated cattle skin into products like shoes, bags, clothes, tents (in the Roman army), belts, straps, horse harness and saddles, and more

**Vellum/parchment:** treated calf skin used in the same way we'd use paper, mostly expensive and used for official or religious documents.

**Horn:** the outer sheath of cow's horns is made of keratin, the same stuff that fingernails and hair is made from, and can be separated from the bony horn core. It is a light, warm, translucent, plasticky-type material which could be shaped, and was used to make spoons, mugs, bowls, drinking horns, windows (glass was very expensive!).

**Bone:** could be carved into all sorts of objects like bone pins, needles, combs, spindle whorls, knife handles, sword pommels, decorative figurines. Ice skates found in medieval and Viking York were usually made from either shaped horse bones or cow bones.

**Sinew / tendon:** can be used as a strong string-like fibre.

**Glue:** can be made from boiling down hooves.





## Activity 2: How were animals used in the past?

What other animals in the past provided useful things for humans?  
Think about what these other animals were used for:



Chicken



Horse



Sheep



Goose





## Answers:

### Chicken:

Meat, eggs, sport (cockfighting), fertilizer (manure), pest control



### Horse:

Sport, traction, meat, leather, glue, tail hairs are used to make bows for violins & cellos



### Sheep:

Milk & cheese, wool, lanolin from the wool is used in cosmetics, meat (haggis!), hide used for clothes & rugs, tallow used in candle & soap making, lawn mowing



### Goose:

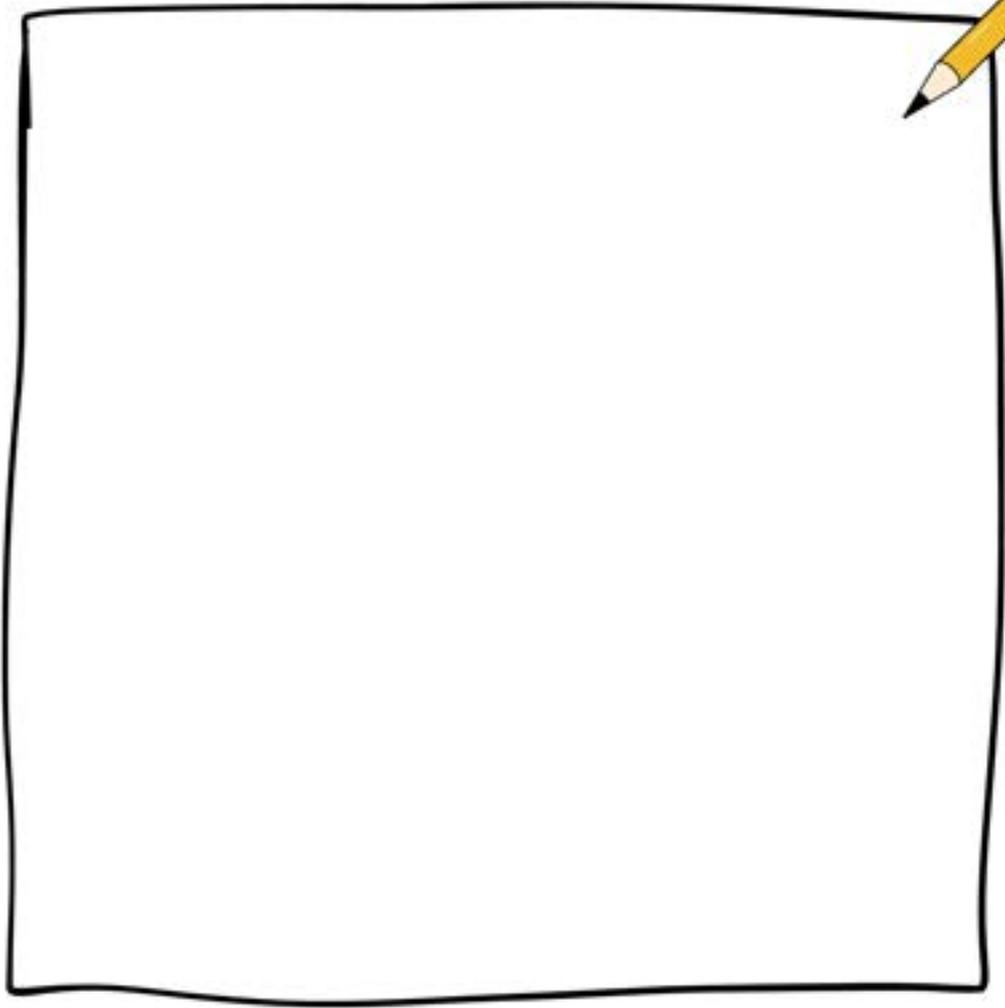
Feathers (quills), down (pillows and duvets), eggs, meat (foie gras), weed and pest control





## Bonus Activity

Design or draw something that comes from one of the animals you've explored.



Here are some ideas.....

Bone comb?

Writing quills?

Leather shoe?

Woolly jumper?

Roast beef?





Suitable for  
Ages 8+

Time  
Required:  
1 hour

Activity



## Native or not?

### Background

Many of the animals common in the UK today did not originate here. There are also many species that would have been common in the past but are now extinct here.

The introduction, spread of species and their extinction can tell archaeologists so many different things. Knowing when animal species arrived or became extinct can help archaeologists date sites. For example, if we think a site is Palaeolithic, but we find a domesticated cow leg, then we might have to rethink how we've dated the site!

### You will need:

- pens/pencils,
- paper,
- activity sheet (pgs 2 & 3)



### Activity:

In this activity you will guess (or you may know!), which animals are native to the British Isles.

1. Give everyone time to go through all the animals, deciding if they were originally native to the UK. Remember: Native means present naturally, not introduced by humans!
2. Go through the answers with the group. Were any of the answers surprising? Why or why not?
3. Thinking about these animals, why do you think people would choose to bring them to the UK? Were they all on purpose?





Do you think these animals have ever been native to the UK?



Rabbit

Yes No



Brown Bear

Yes No



Woolly Mammoth

Yes No



Platypus

Yes No



Wolf

Yes No



Beaver

Yes No



Rat

Yes No



Red deer

Yes No



Fox

Yes No

Remember: Native means present naturally, not introduced by humans!





Vole

Yes No

Raccoon

Yes No

Cave hyena

Yes No



Woolly rhino

Yes No

Hedgehog

Yes No



Giraffe

Yes No



Chicken

Yes No

Wild boar

Yes No



Guinea pig

Yes No



Sheep

Yes No





## Answers:

### Rabbits

Yes  No

Introduced during the Norman period, native to southwestern Europe (Spain, Portugal, and western France).

### Brown Bear

Yes  No

Common throughout Europe after the Last Glacial Maximum (c.20,000 years ago). We're not sure when it went extinct in Britain, as bears and bear skins continued to be imported from Scandinavian and Germany in the Roman and medieval periods, but it seems to have become very uncommon from the Neolithic onwards.

### Woolly Mammoth

Yes  No

Pleistocene megafauna with a habitat that stretched across northern Eurasia and North America. Lived during the Pleistocene until its extinction in the Holocene, 400,000 to 14,000 years ago. Remains have been recovered in Norfolk and at Creswell Crags, Nottinghamshire.

### Platypus

Yes  No

Sub-aquatic monotreme endemic to Eastern Australia

### Wolf

Yes  No

Generally thought to have become extinct by the end of the 16th century. Fossil finds recorded in North Yorkshire, as well as Devon.

### Beaver

Yes  No

Became extinct in Great Britain in the later medieval/post-medieval period, with the last reference to them dating to 1789. They have been reintroduced to Scotland, Kent, Gloucestershire, and Lancashire. In January 2024, City of York Council stated it was open to discussing the reintroduction of beavers to the River Ouse as part of plans to combat flooding.





## Rat

Yes

No

The black rat was introduced by the Romans in the 1st century CE, and again in the 9th century CE following a post-Roman decline and possible extinction. The brown rat, now most common across the country, was introduced in the early 1700s.

## Red deer

Yes

No

One of the largest species of deer. It has inhabited most of Europe from the Miocene (23 million years ago) to the present day.

## Fox

Yes

No

The earliest fossil remains of the modern species of fox date to the mid-Pleistocene (1.25 million years ago) in association with the refuse from human settlements, leading to the theory that early humans hunted the red fox for its meat and pelts.

## Vole

Yes

No

Many different species of voles are endemic to the British Isles, including the water vole, bank vole, and field vole. We can use changes in the teeth of voles to date Pleistocene/ Palaeolithic sites like Boxgrove (Lower Palaeolithic site in West Sussex, c. 500,000 years old. Homo heidelbergensis remains found) using the 'Vole Clock'.

## Raccoon

Yes

No

Native to North America.

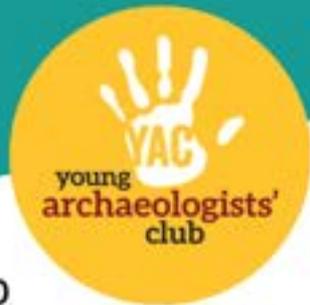
## Cave hyena

Yes

No

An extinct relative of the modern hyena, cave hyenas lived in Britain in the Middle to Late Pleistocene, 500,000 to 48,000 years ago. Remains recorded from Kents Caverns, Torquay; Wookey Hole, Somerset; Creswell Crags, Nottinghamshire; and Kirkdale Caves, Yorkshire.





## Woolly rhino

**Yes** No

Common throughout Europe and northern Asia during the Pleistocene and survived until the end of the last glacial period (3.6 million years ago to 14,000 years ago). Remains recovered in South Wales, and at Creswell Crags, Nottinghamshire.

## Hedgehog

**Yes** No

Five of the 17 species of hedgehog are found in parts of Europe, and haven't changed much in 15 million years. The name hedgehog was first used around 1450. Other names included urchin, hedgepig, and furze-pig.

## Giraffe

Yes **No**

Tallest living terrestrial animal. Native to Africa.

## Chicken

Yes **No**

Domesticated from the red Junglefowl from Asia and India. They were introduced to Britain during the Iron Age.

## Wild boar

**Yes** No

Early Pleistocene to Holocene. They were becoming rare in Britain by the 11th century, and William the Conqueror enacted a forestry law in 1087 that punished people by blinding for killing a boar. They were finally driven to extinction by the 14th century. Following reintroduction (some accidental escapes from wildlife parks) they have re-established themselves in Kent, East Sussex, and Devon.

## Guinea pig

Yes **No**

Native to South America. Guinea pigs were imported to Europe as pets from the 16th century onwards, and there is a painting in the National Portrait Gallery by an unknown artist dating to 1580 showing three children and their pet guinea pig.

## Sheep

Yes **No**

The wild ancestors of modern-day domestic sheep were native to the Middle East and were first domesticated there around 10,000 years ago. They were first brought to Britain in the Neolithic, around 6000 years ago.





Activity

Suitable for  
Ages 8+

Time  
Required:  
1 hour

# Excavate An Owl Pellet!

## Background



As archaeologists, we take environmental samples and process them through sieving to recover seeds, charred plant remains, snail shells, and small bones of fish, small mammals, and amphibians, known as microfauna.



By studying and categorising what comes out of environmental samples we can learn a great deal about what sorts of species of animal and plant were living and growing near archaeological sites in the past.

Owls eat small mammals, predominantly mice, voles, and shrews. They swallow them whole and cough up the indigestible bits, like fur and bone, in small ball-like pellets. These owl pellets contain microfauna like environmental samples do, and by looking at the bones they contain we can find out what an owl was eating and what kind of environments it was hunting in.



We sometimes find evidence of ancient owl pellets and owl roosts on archaeological sites! Large assemblages of microfauna have been found when excavating the Roman baths in Caerleon, Newport and in a room of Roman villa near Gatehampton, South Oxfordshire. When humans abandoned these buildings, owls came and used them as a roost.





## Health and Safety

Pellets need to be sterilised prior to dissection. The Barn Owl trust recommends the following method:

Wrap pellets individually in aluminium foil. Place in pre-heated oven at 325°F (163°C). Bake for 40 minutes – this is hot enough to kill E. coli and Salmonella. Let them cool, then unwrap.

All fresh owl pellets should be stored in an airtight container for at least 2-3 days to minimise the risk of any virus transmission. Pellet analysis should be done within one day.

Maintain good hygiene and make sure to wear gloves and wash hands thoroughly after touching pellets. Do not dissect pellets in areas used for eating food and do not eat or drink during the activity. Disinfect activity areas and equipment immediately after with paper towels and throw them away after use.



Further information can be found on the Barn Owl Trust website:

[BARN OWL TRUST WEBSITE](#)





## You will need:

- Tweezers
- Gloves
- Owl pellet (these can be bought from the Barn Owl Trust online shop)
- A paper plate or similar to use as a sample tray.
- Plastic finds bags to bag up the disaggregated pellet.
- Identification guides (Free guides can be found on the Barn Owl Trust website)



<https://www.barnowltrust.org.uk/barn-owl-facts/barn-owl-pellet-analysis/>





## Methods:

1. Using the tweezers, pull apart your pellet.
2. See if you can identify any of the bones, using the rat skeleton diagram and the identification guides for help. The jawbones, skulls, and pelvis are easiest to find, can you see any other bones you recognise?

3. Using the identification guides, work out what animal your skulls and jawbones belong to. Barn owls mostly eat mice and voles, but you can also find shrews and young rats.



4. How many animals do you have in your pellet? Count the skulls; count all the jawbones and divide by two; count all the pelvises and divide by two. Which gives the highest number? You can also work out from the skulls and jawbones how many mice, voles, and shrews you have.

5. Where do your animals like to live? See if you can find something out about their habitats and write a description of where your owl might have been hunting.





Activity



Time  
Required:  
1 hour

Suitable for  
Ages 8+

## Animal Skeleton Reconstruction



### Background



When archaeologists find an assemblage of bones from the same animal (or human) they can often reconstruct and analyse the skeleton. From this they can determine many different things (depending on how complete the skeleton is, its condition etc.). such as the species, age at death, the health of the animal, why it died. It is also possible, through scientific tests, such as radiocarbon dating and isotopic analysis, to identify where an animal was reared and/or when they died. This type of information can help us understand the types of environments present in the past, what activities humans were undertaking (i.e. farming) and what their diet was like for example.

In this activity you will have a go at reconstructing different types of animal skeletons.

### You will need:

- Scissors
- A3 card stock/paper with printed skeletons and labels



### Safety Considerations

Use caution when using scissors to cut out the material. Younger children may wish to ask an adult for help





## Activity:

Optional: As a group, start by naming all the bones from the human body you know. Do you know where they are?

1. Print the disarticulated skeletons and labels on A3 light card stock and cut them out. **The skeletons can be found at a higher resolution here**

### TOP TIP

Make sure not to mix up different skeletons! Or mix them on purpose for an extra challenge?



2. In small groups, have a go at putting a skeleton back together.
3. When all the parts have been put into place, try matching the labels to the bones you see.
4. Compare your skeleton with another group's. What similarities and differences can you see?



# Labels for Mammals



Humerus

Pelvis

Radius & Ulna

Femur

Metacarpal

Tibia

Scapula

Phalanges (front)

Cranium

Phalanges (rear)

Mandible

Metatarsals

Ribs

Vertebrae

## Labels for Birds



Cranium

Mandible

Ribs

Vertebrae

Scapula

Coracoid

Humerus

Pelvis

Radius

Femur

Ulna

Tibiotarsus

Carpometacarpus

Tarsometatarsus

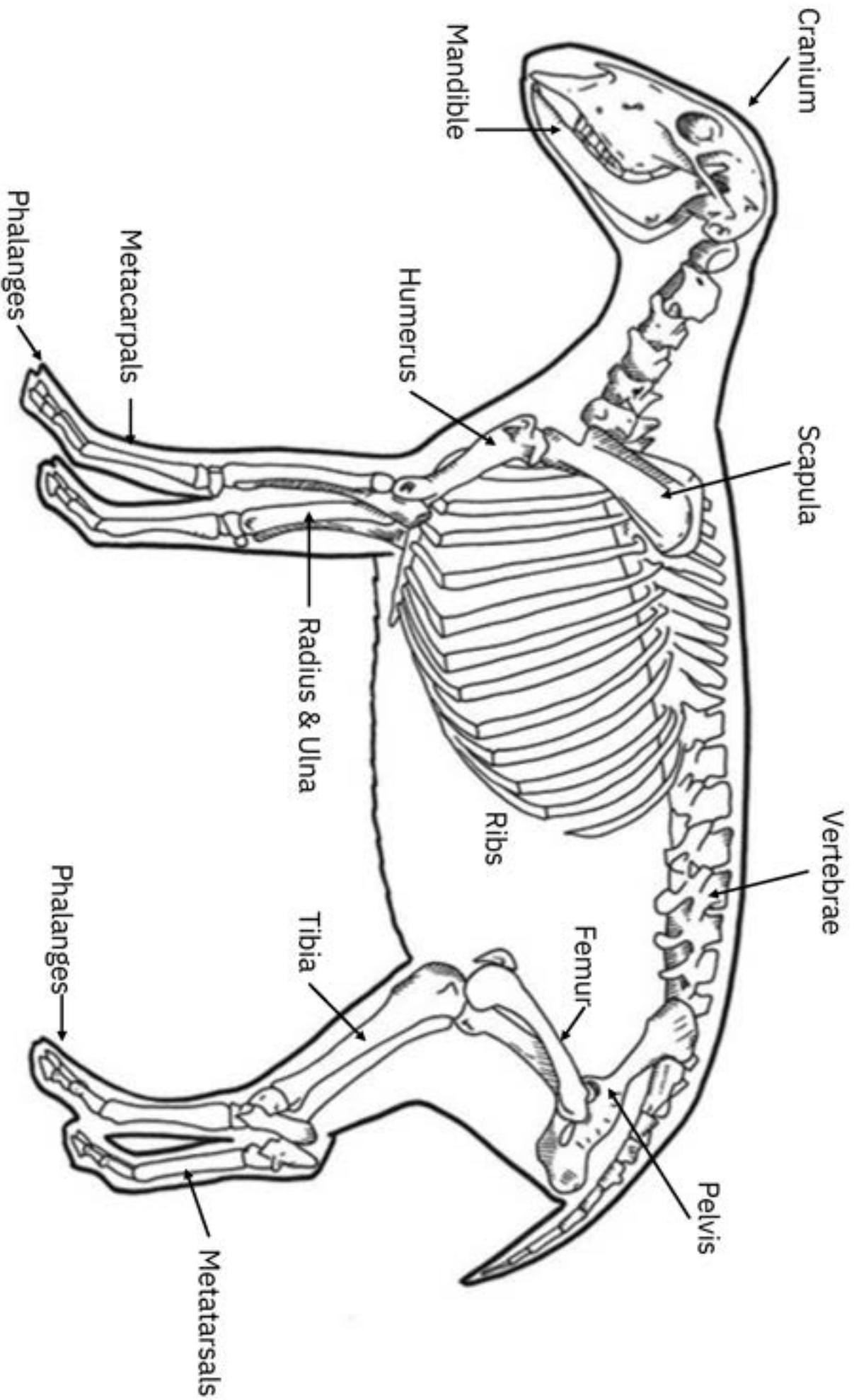
Phalanges (wing)

Phalanges (foot)

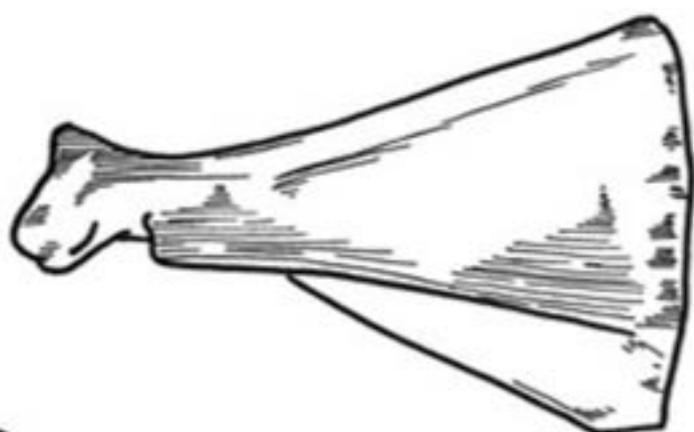
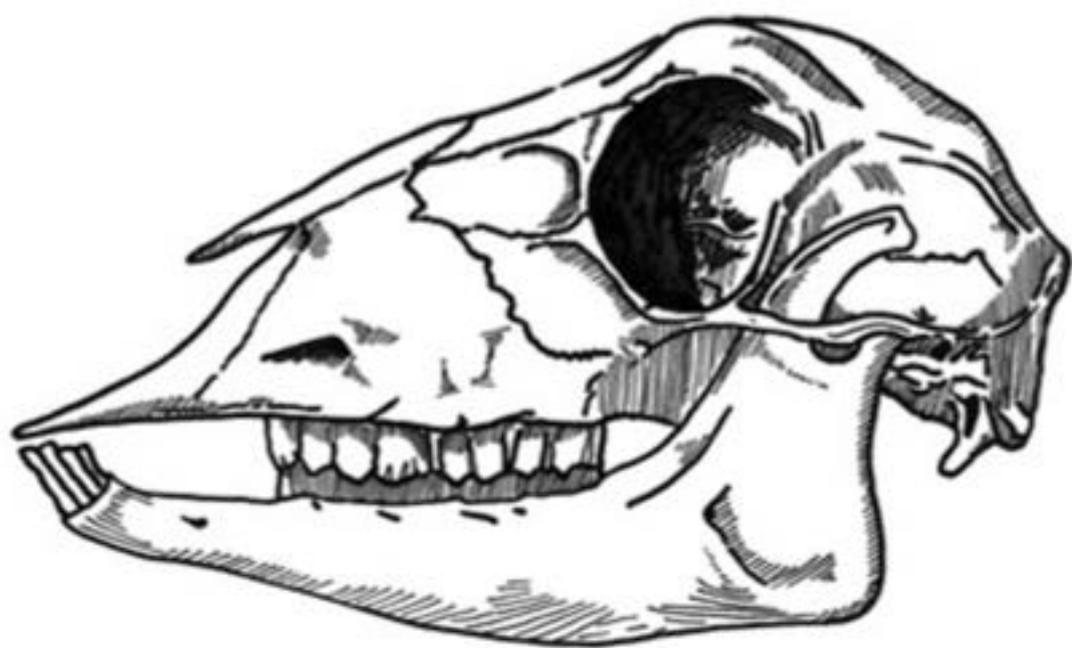
Sternum

Furcula

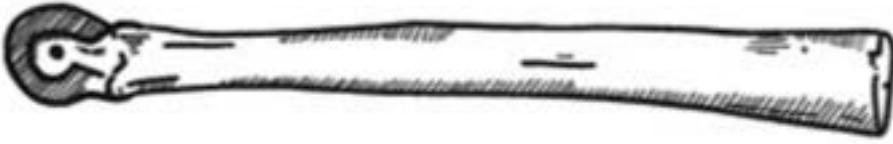
# SHEEP



# SHEEP



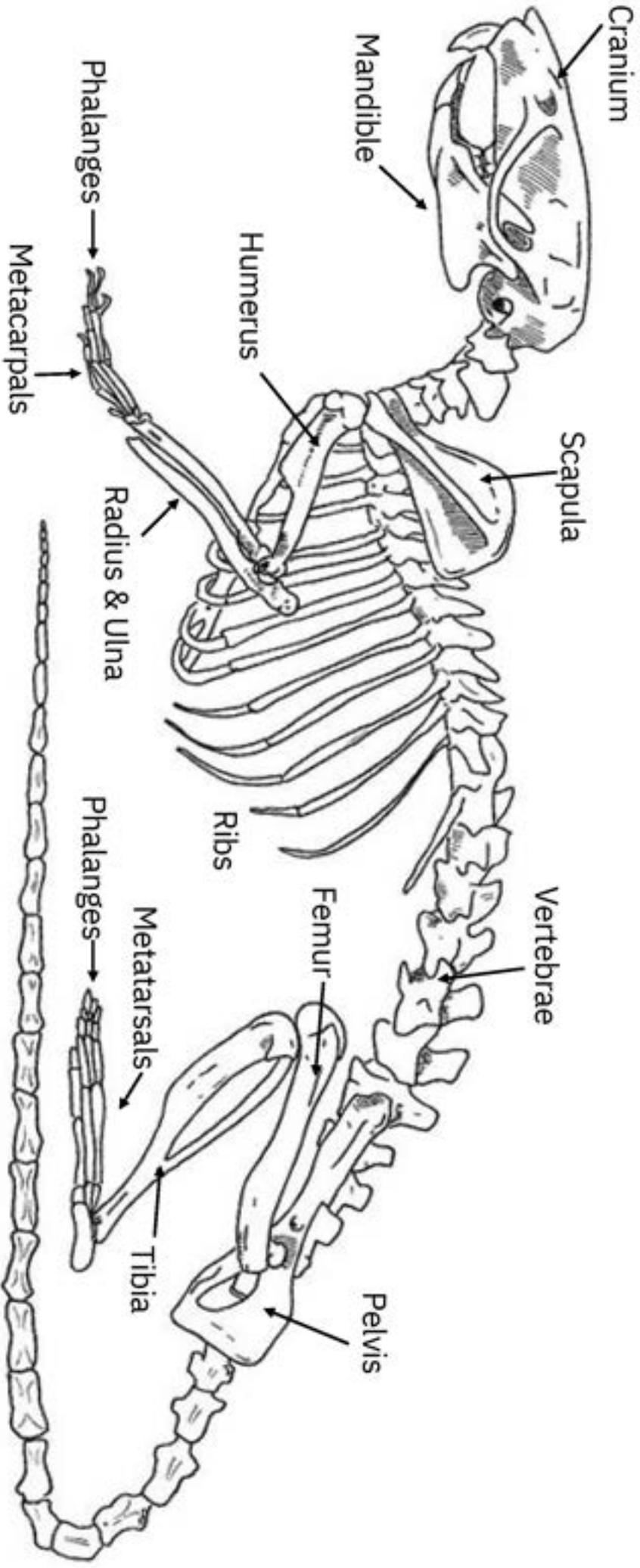
SHEEP - FORE LIMB



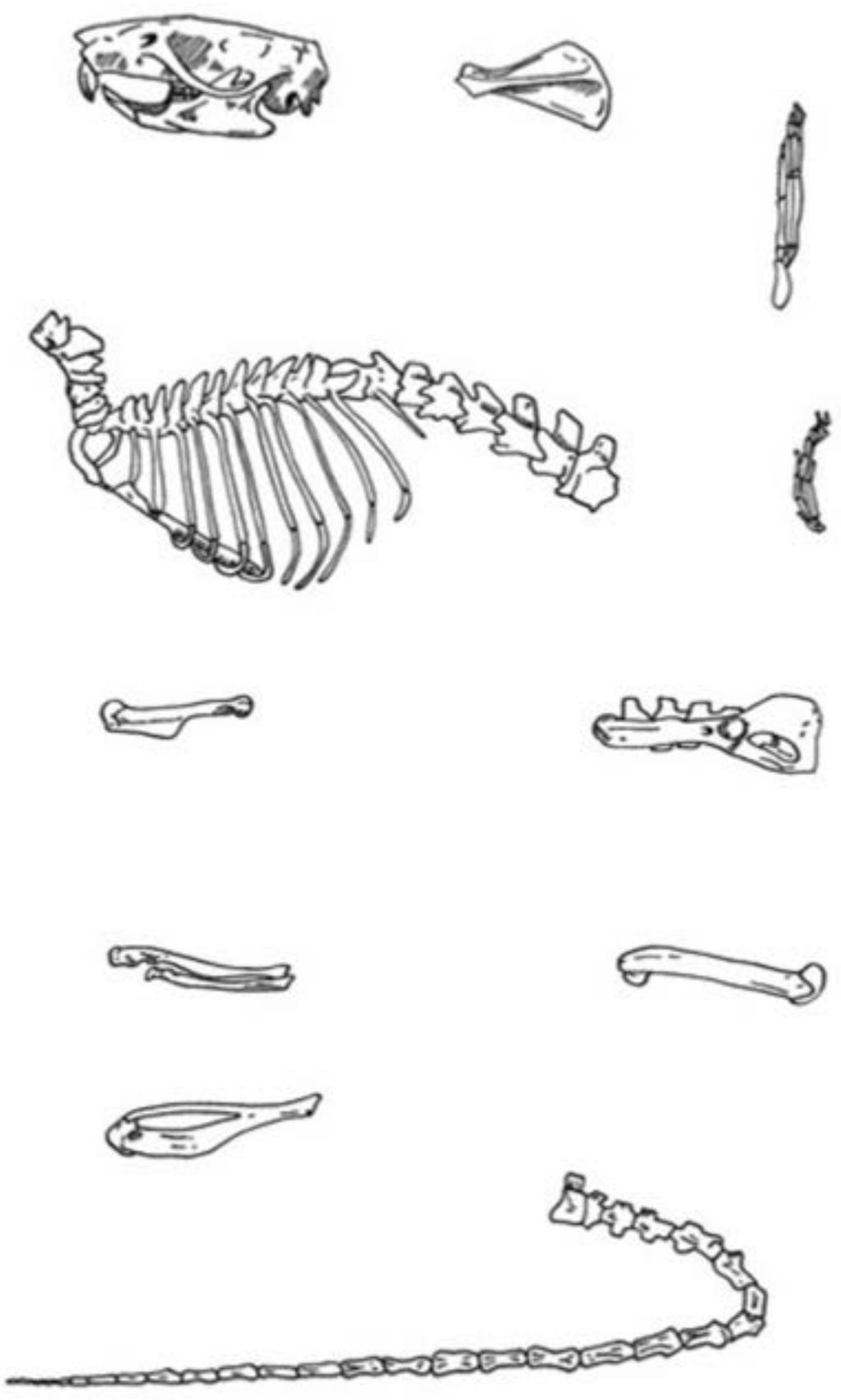
SHEEP - HIND LIMB



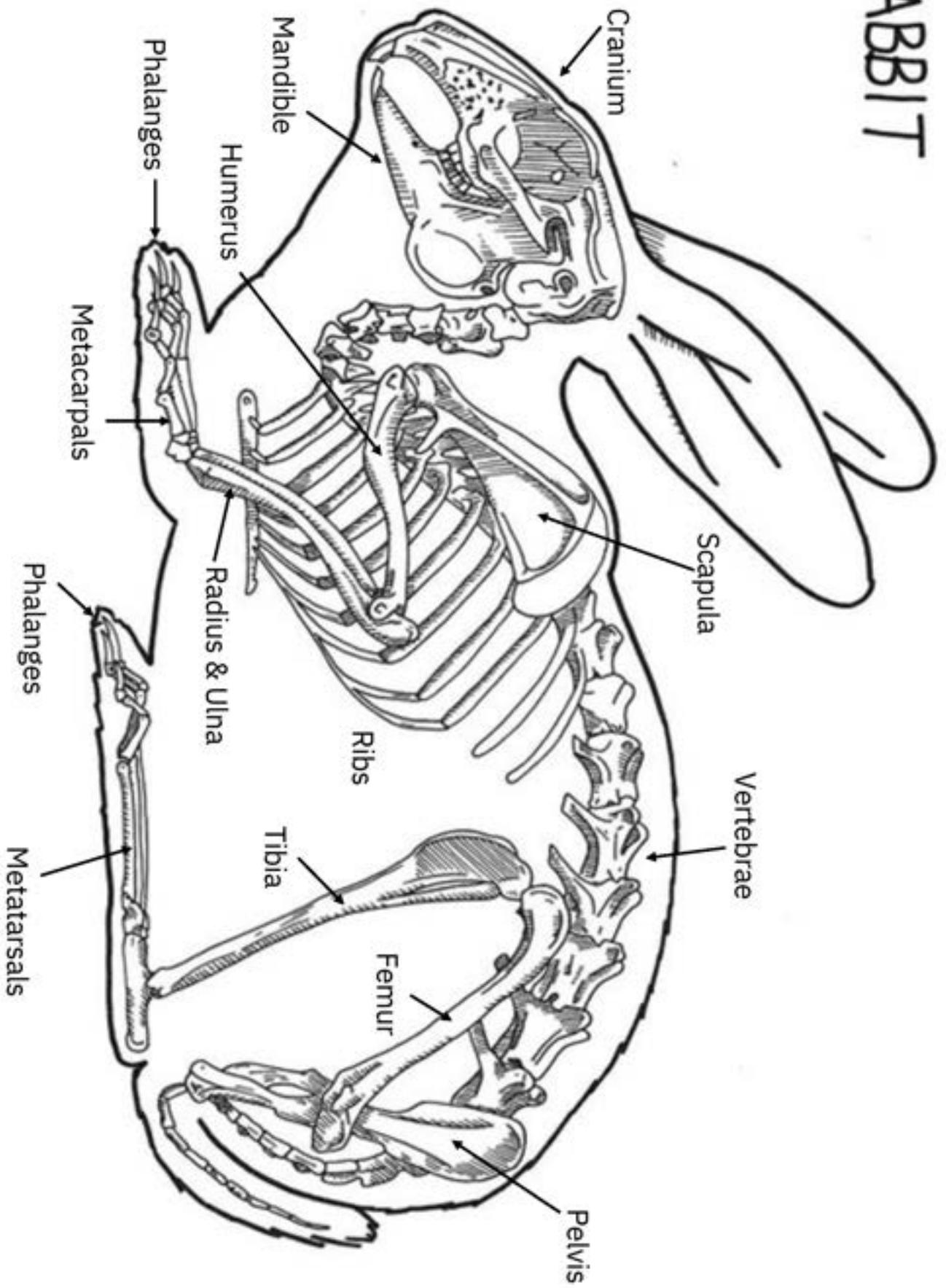
# Rat skeleton



# RAT



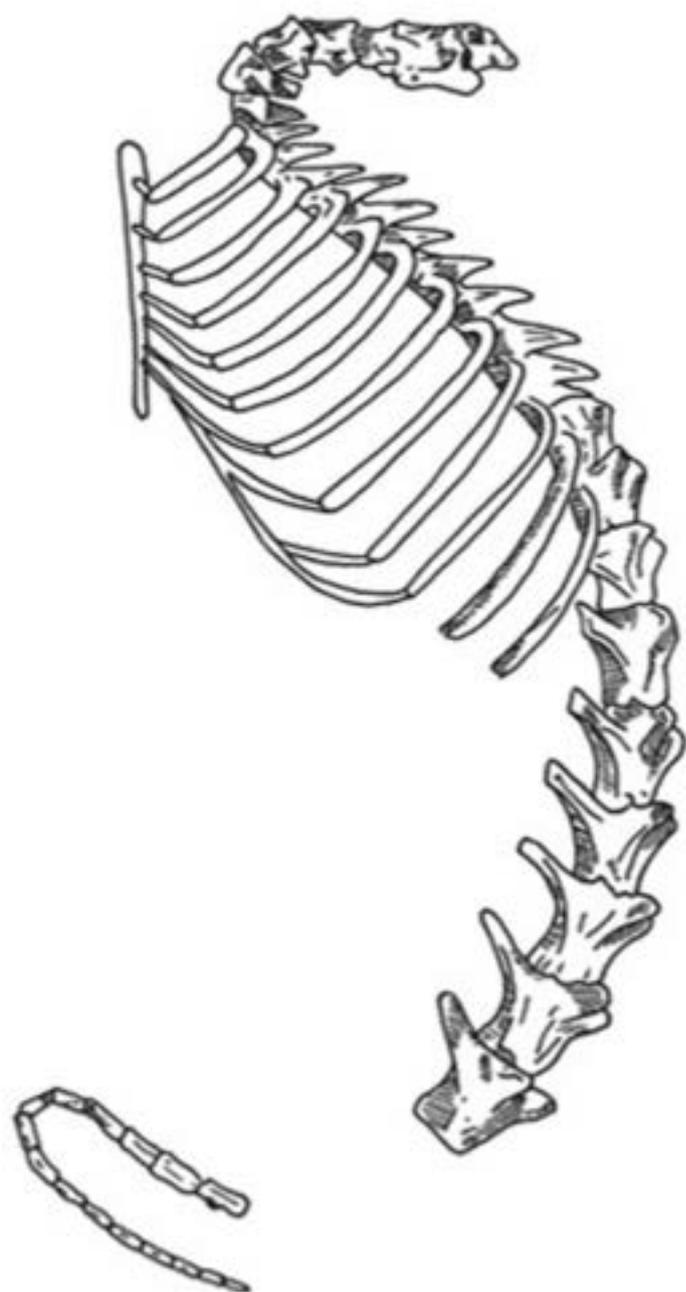
# RABBIT



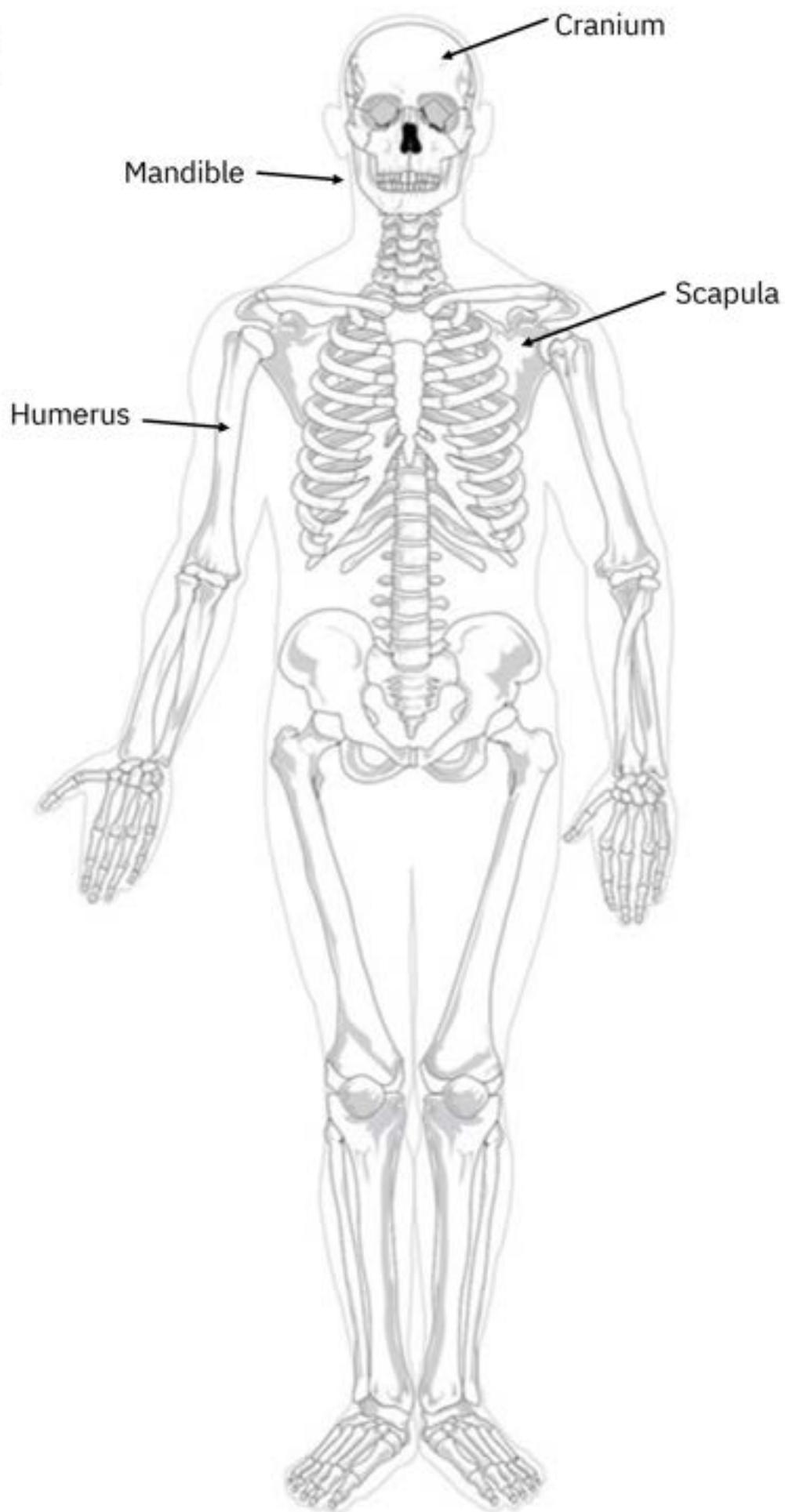
# RABBIT

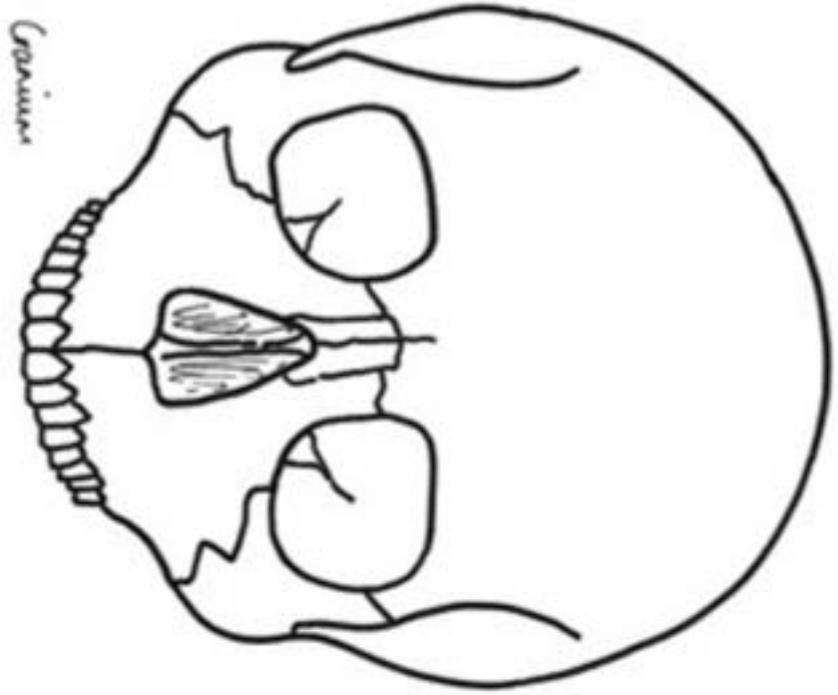


# RABBIT



# Human



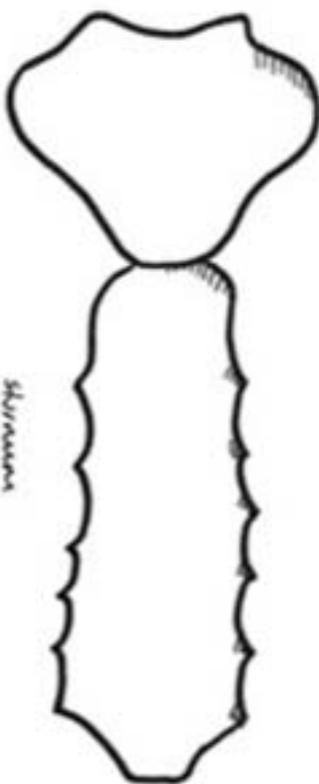


Cranium



Left ulna

Right scapula



Sternum



Left clavicle



Left scapula



Right clavicle

HUMAN I



Left tibia



Right tibia



Right ulna

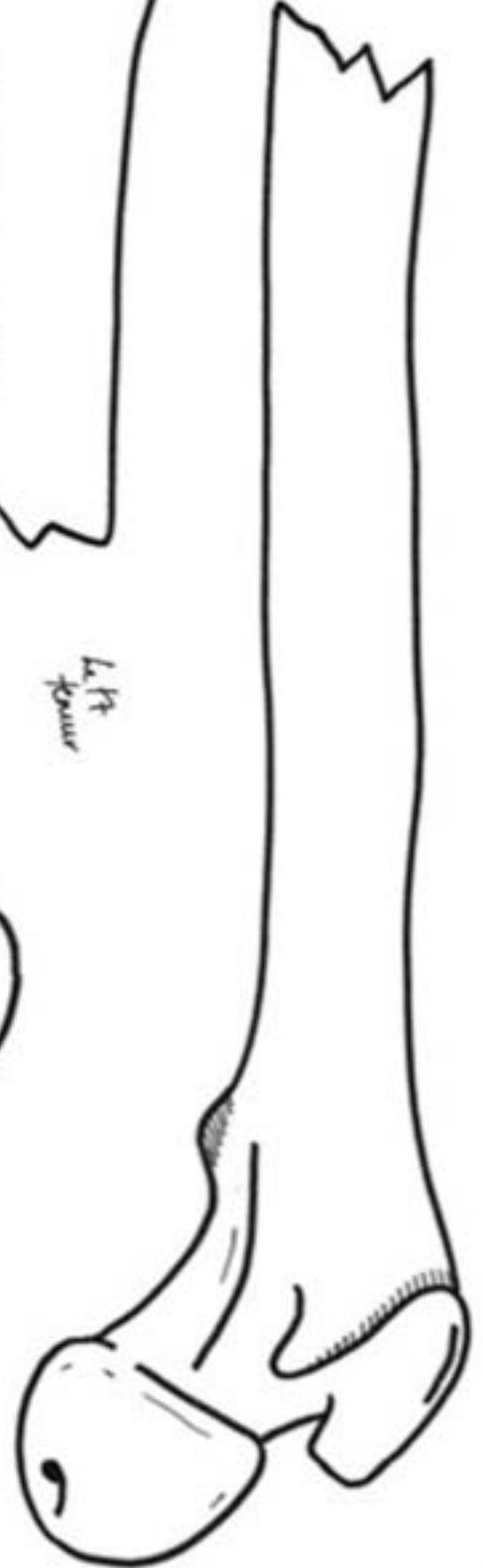


Left humerus



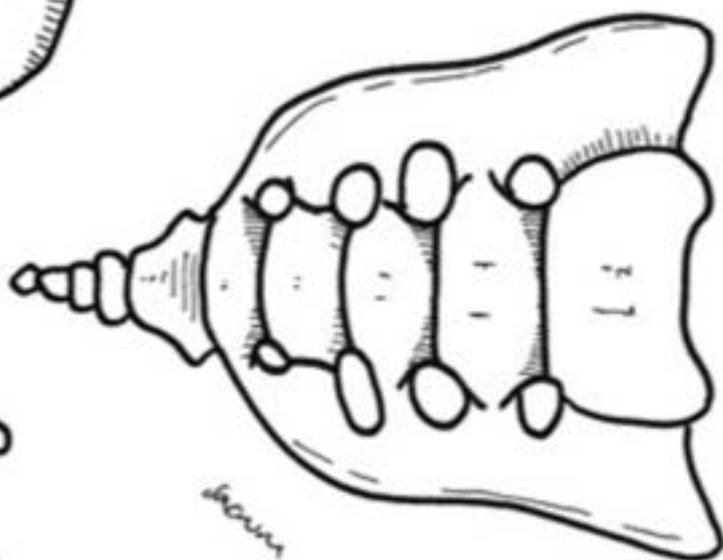
Right humerus

Left humerus

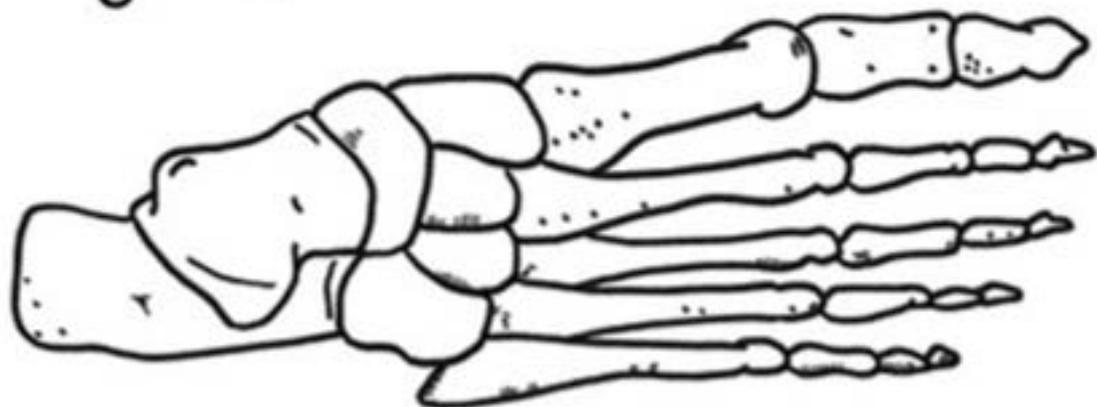




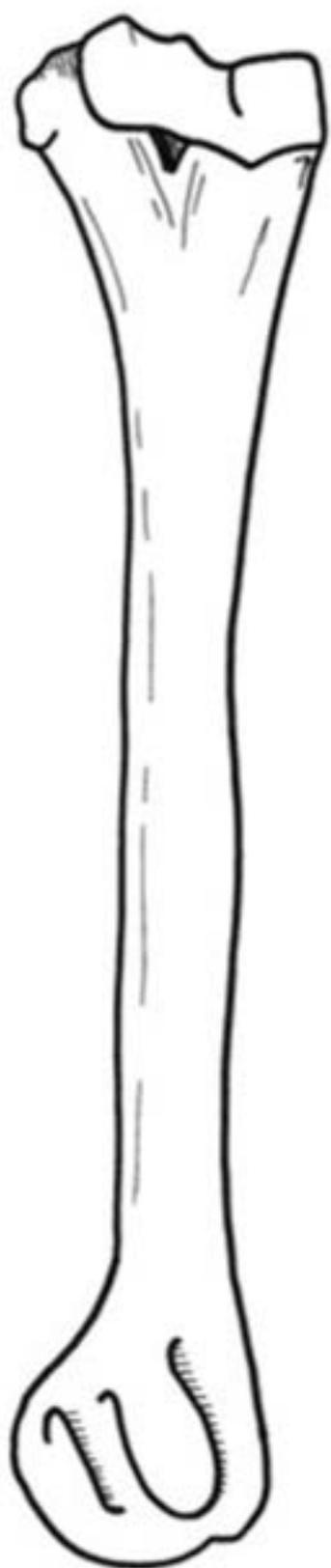
Right hand



Scapula



Right foot



Right humerus



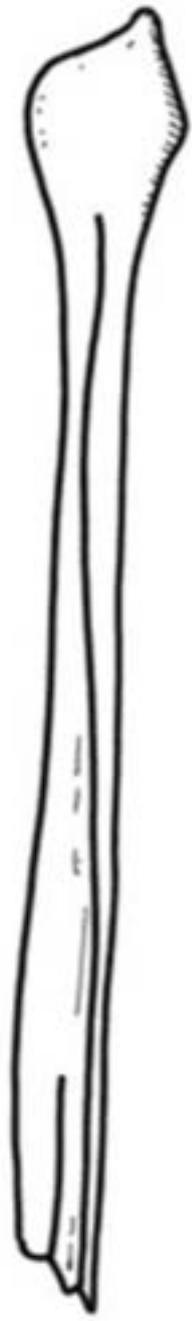
Right tibia



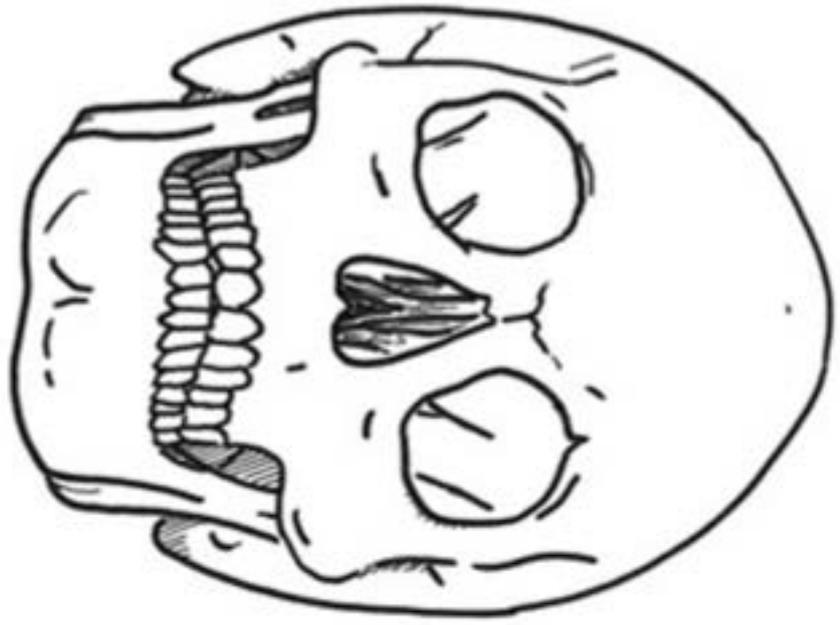
Left radius



Right radius



Left fibula



Skull



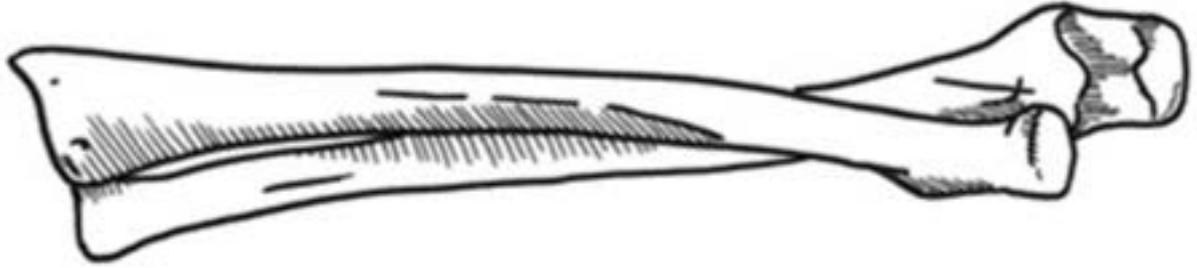
Left humerus



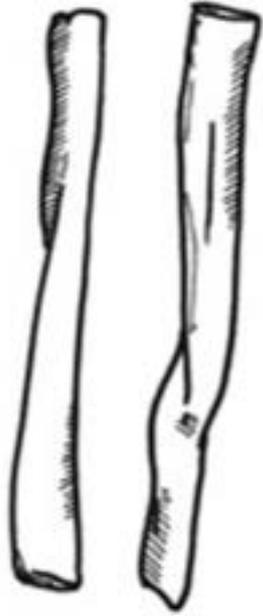
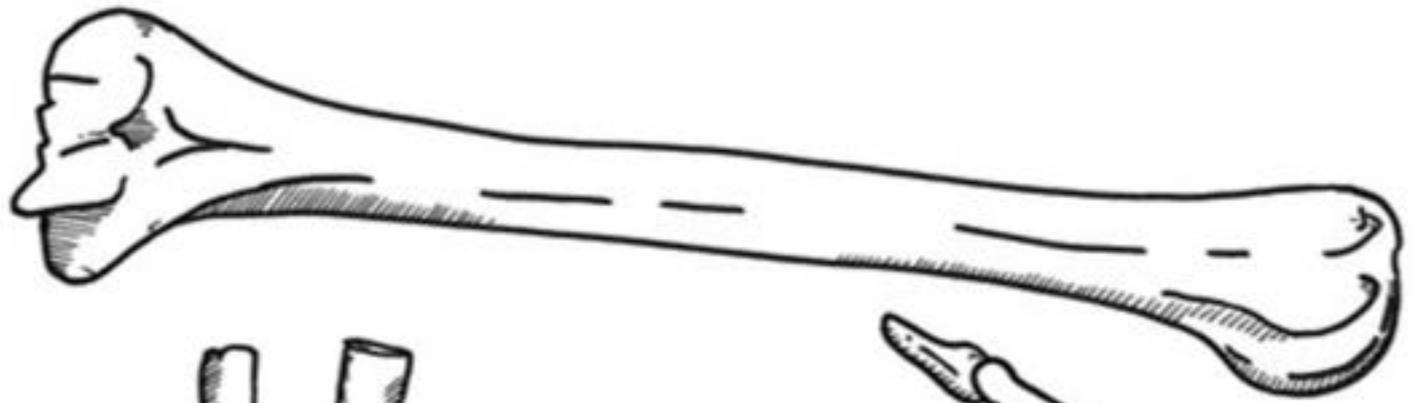
Right  
radius +  
ulna

HUMAN 2

Left radius  
+ ulna

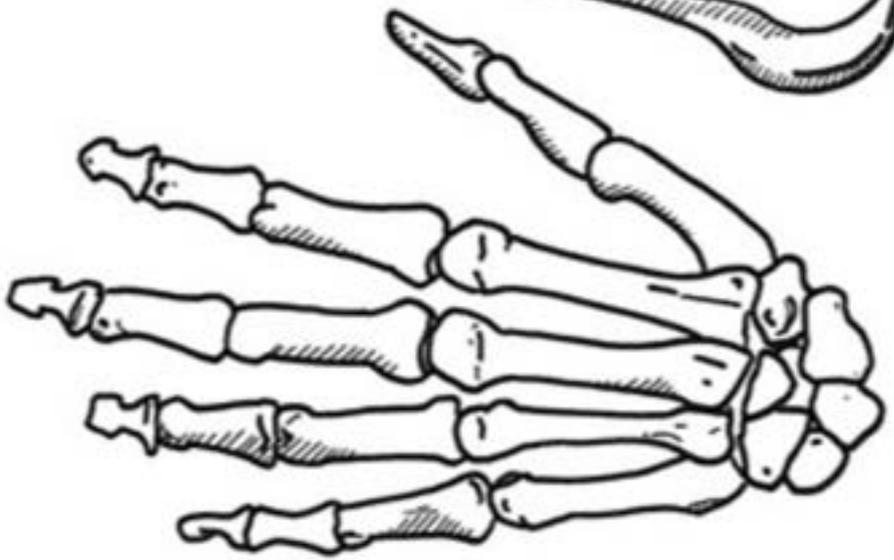


Right humerus



Right clavicle

Left clavicle



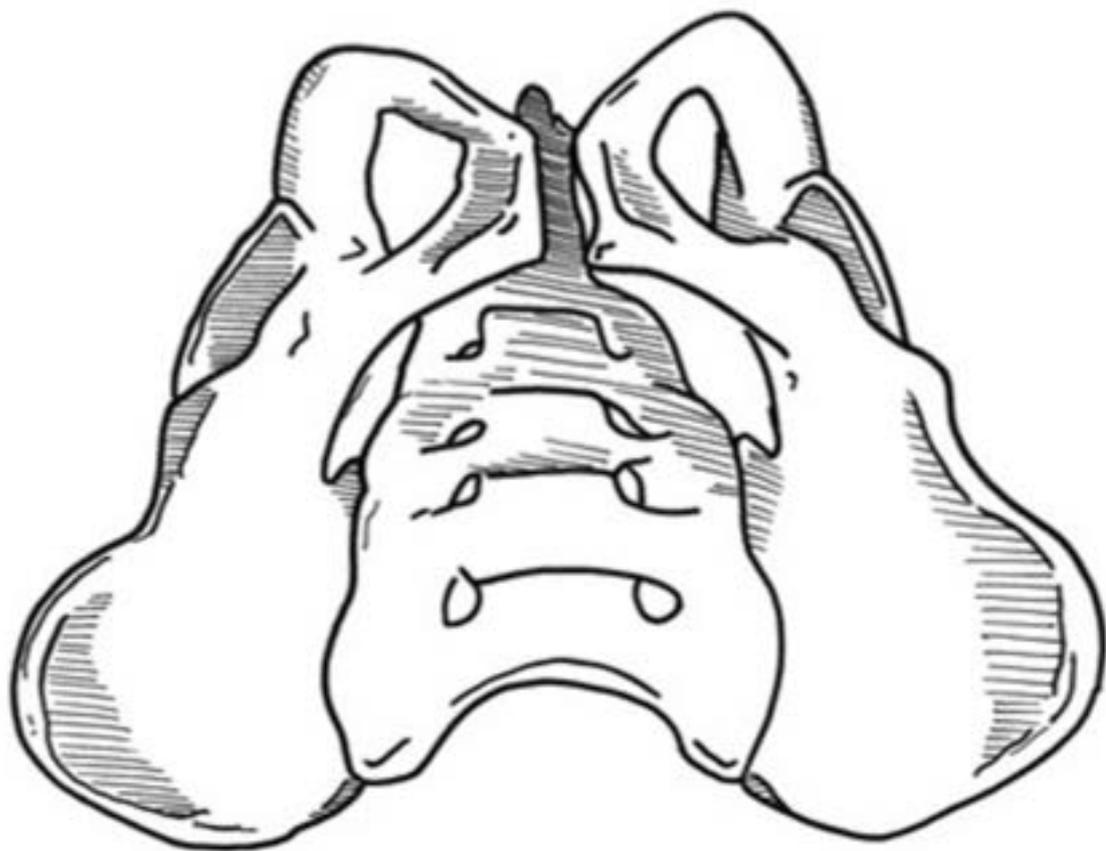
Left hand



Left foot



Cervical vertebrae

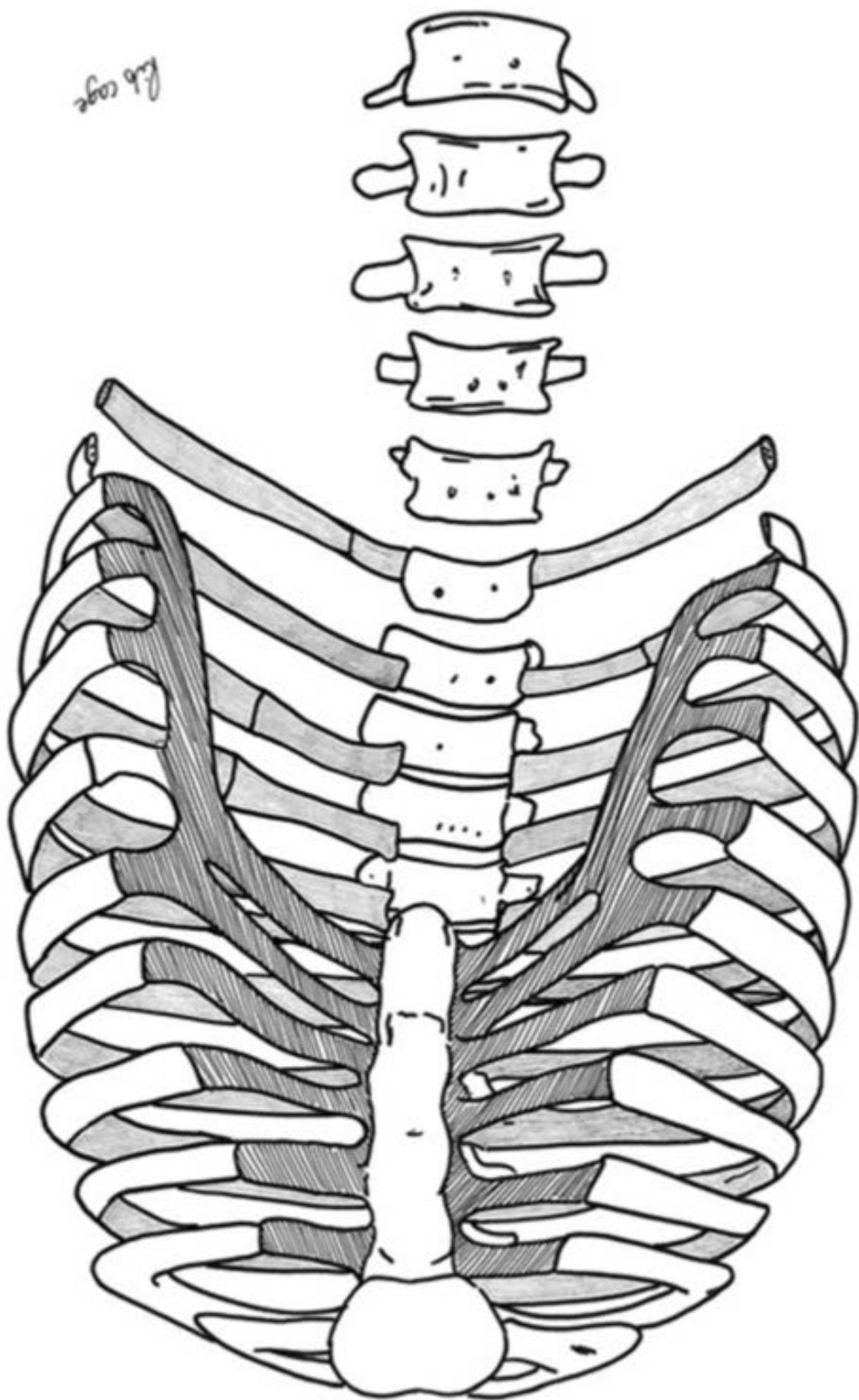


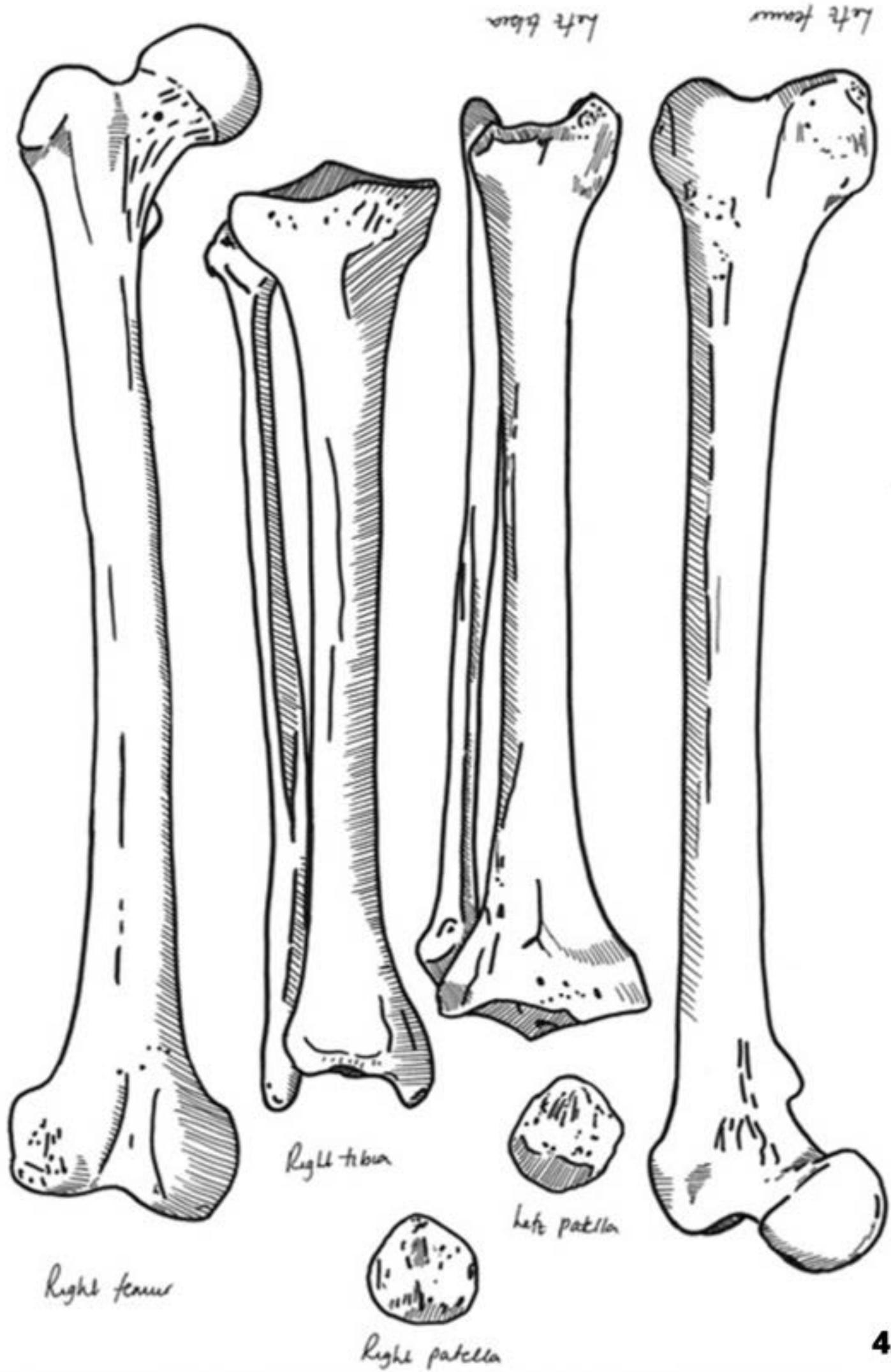
Right hand



Right foot

Rib cage





Left tibia

Left femur

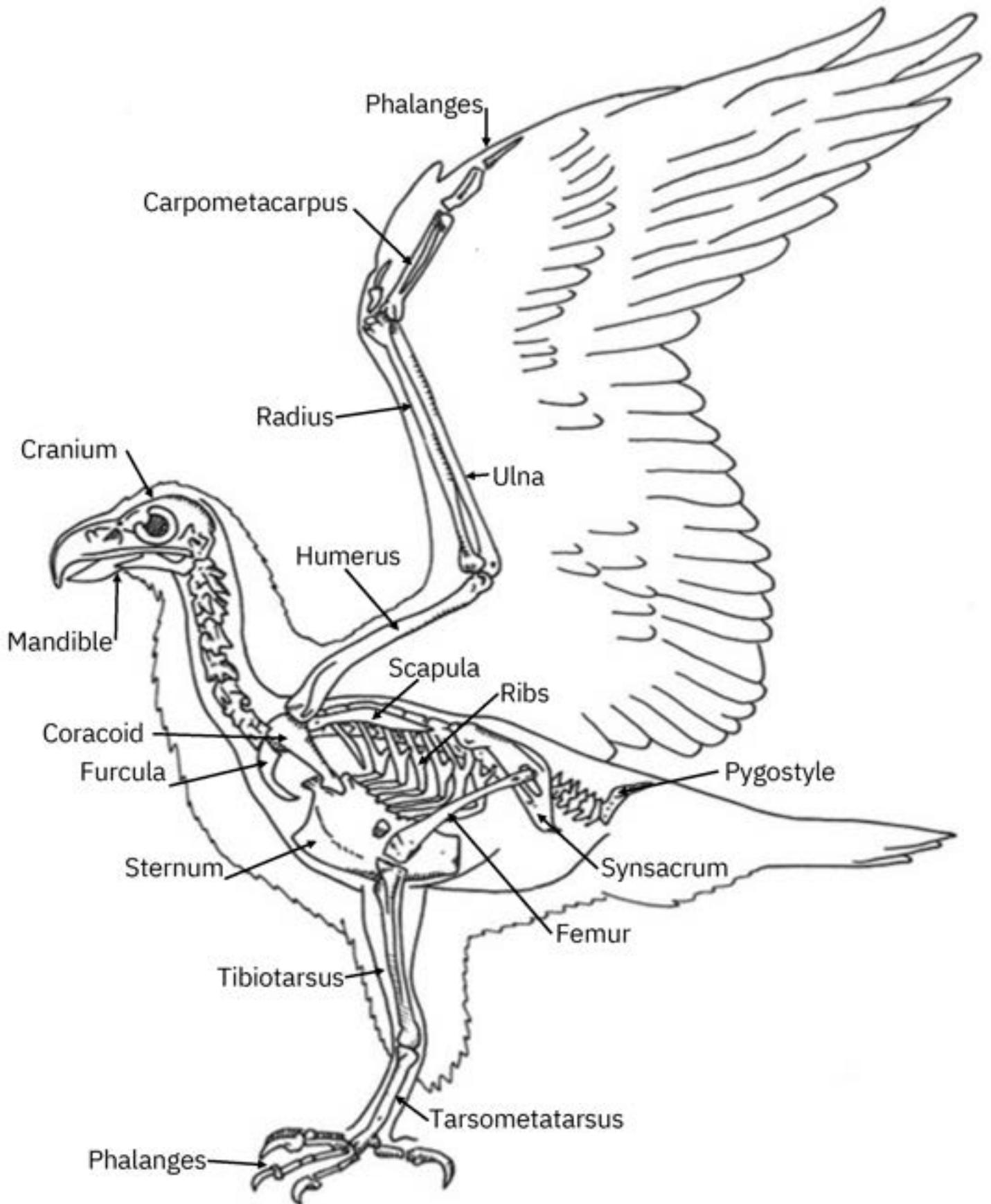
Right tibia

Left patella

Right femur

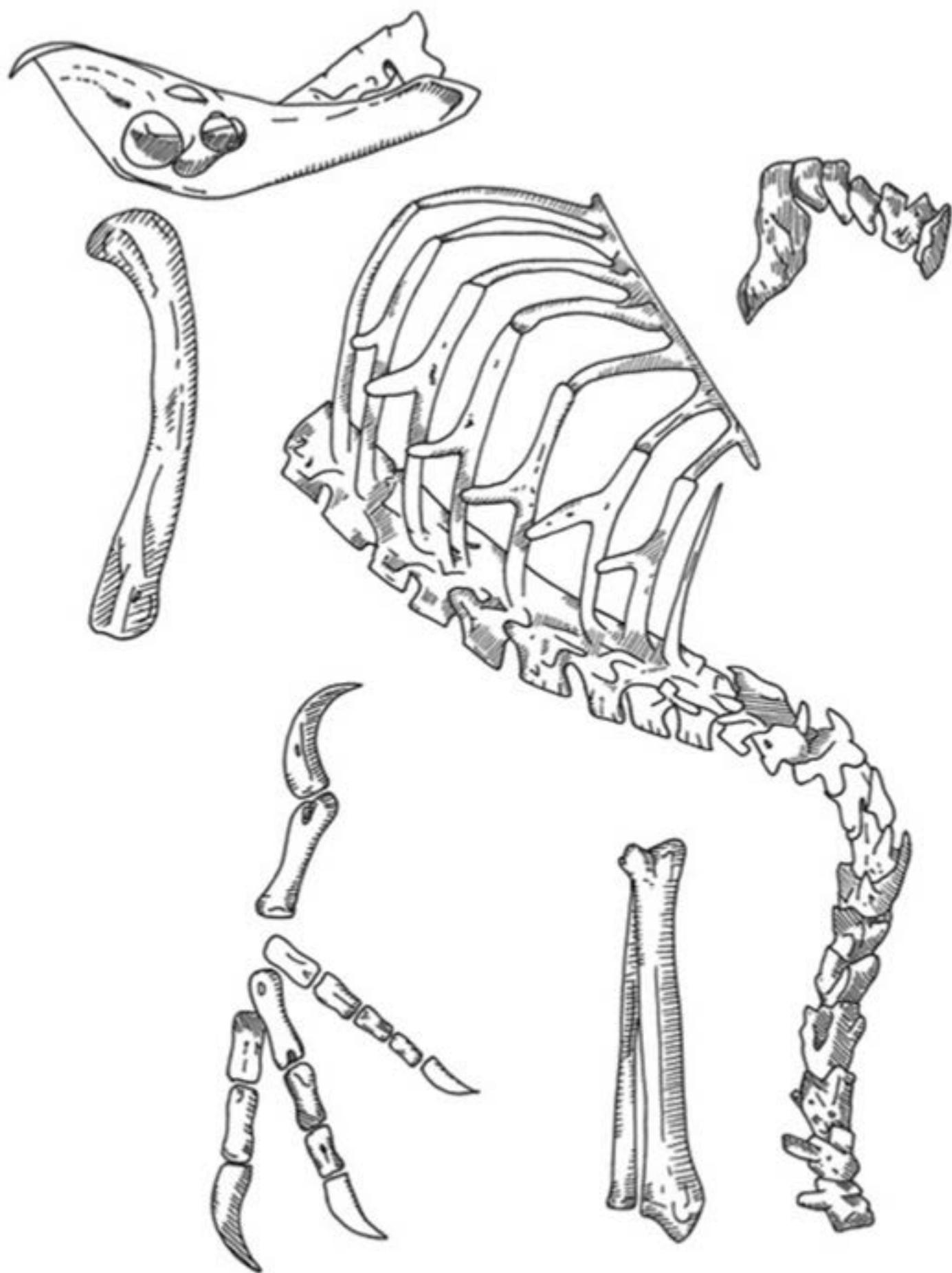
Right patella

# EAGLE

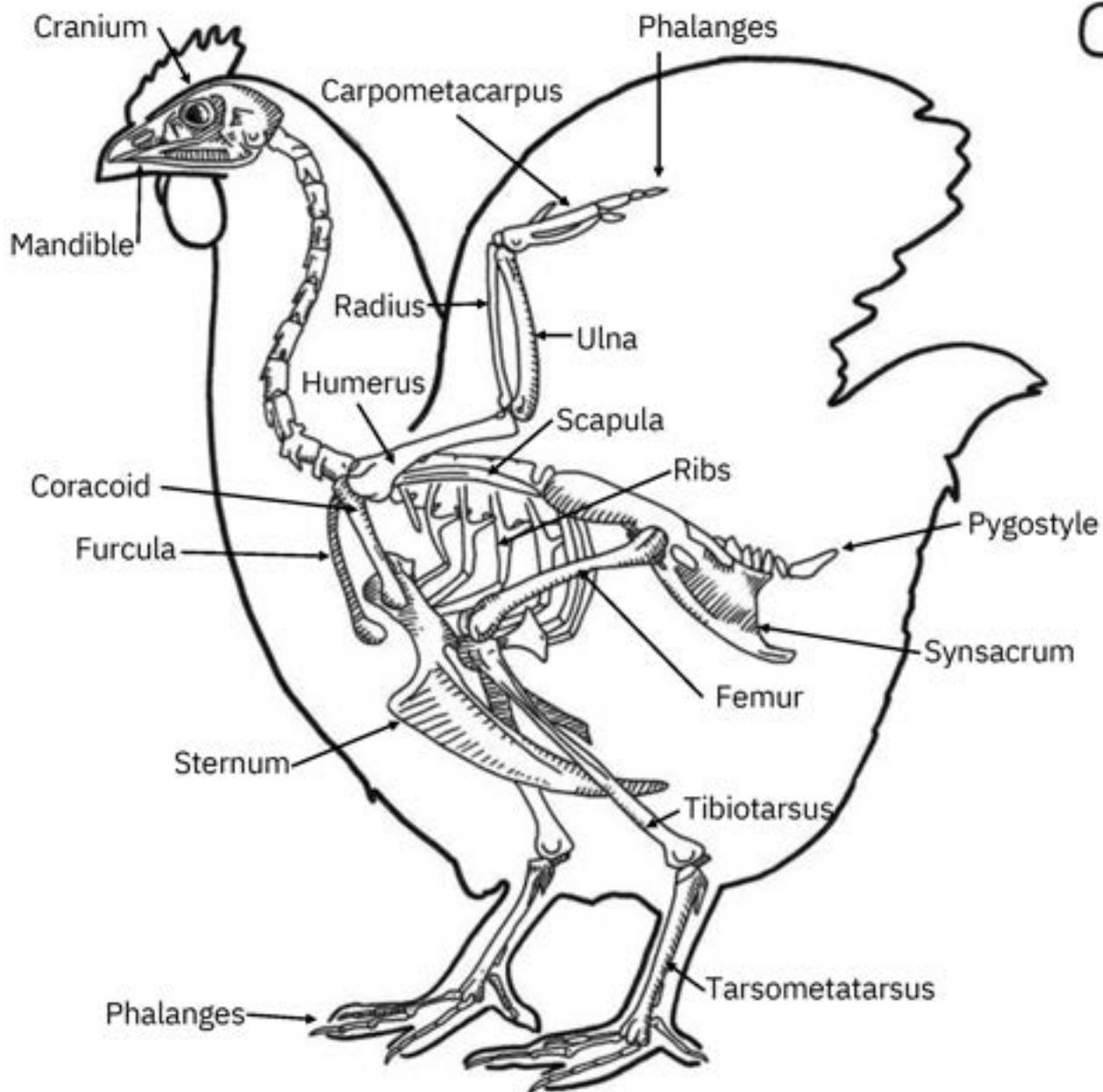


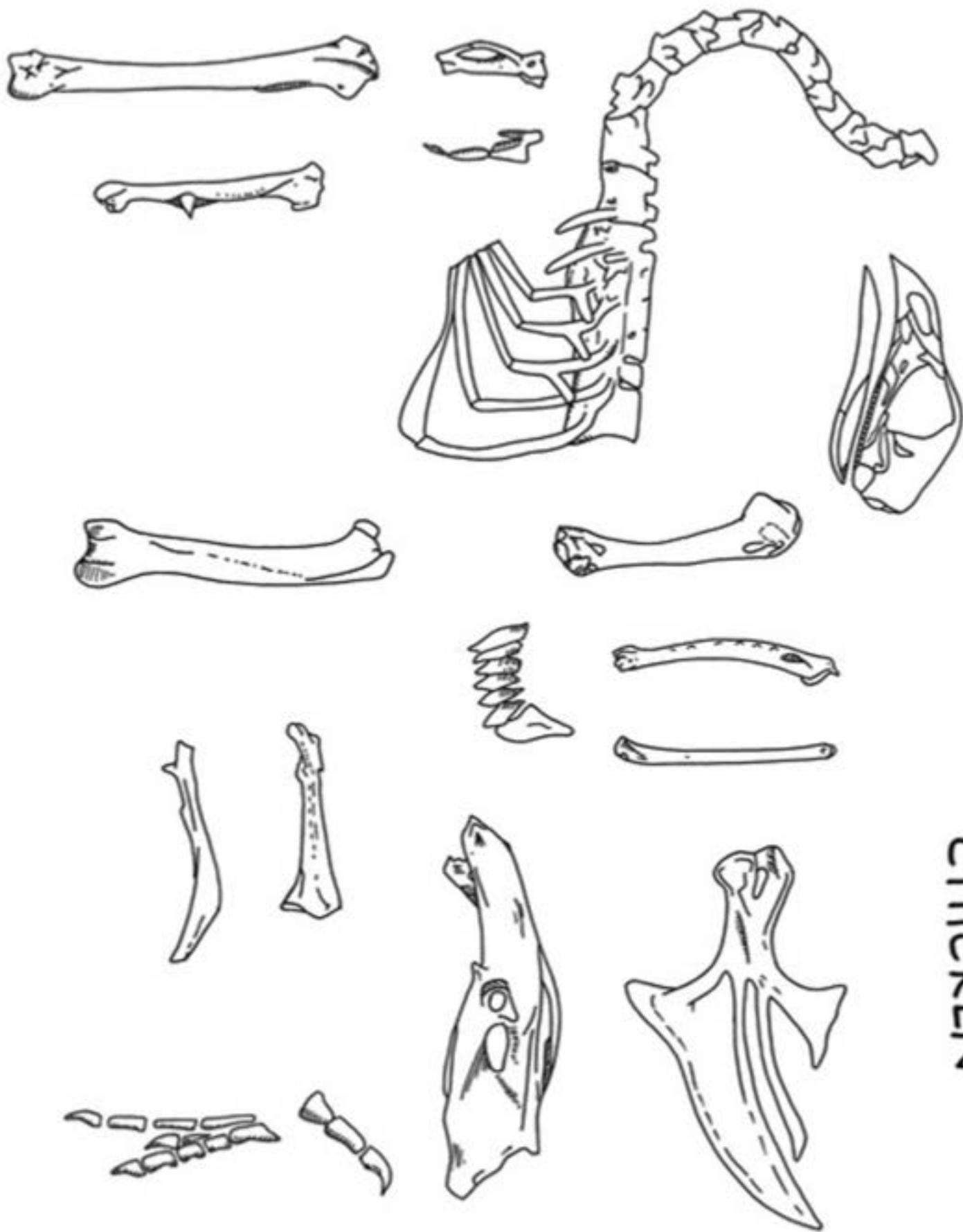


EAGLE



# CHICKEN





# CHICKEN



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