

ZOO 4377L - VERTEBRATE MORPHOLOGY LAB

LAB 5: APPENDICULAR SKELETON

Name: \_\_\_\_\_ SSN: \_\_\_\_\_

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Next Week's Assignment: Walker & Homberger - Chapter 4 (The Head Skeleton)

Preparation: Walker & Homberger - Chapter 6; also paragraph 2 of page 48 (limb orientation)

Background

The appendicular skeleton consists of the skeletal supports of the paired fins of fishes, the limbs of terrestrial vertebrates, and the **pectoral** and **pelvic girdles** which attach the **appendages** to the body wall. The presence of paired appendages is a synapomorphy that unites the Gnathostomata (the chondrichthyes and osteichthyes including tetrapods; i.e., all the craniates excluding the "agnathans"). The appendicular skeleton is composed mostly of cartilage or **endochondral bone** although some dermal bone contributes to the pectoral girdle of most species. The nomenclature which is used for the skeletal elements of the limb is shown at right (limb-nom.tif).

Morphological term	Forelimb	Hindlimb
Stylopodium	Brachium (Arm)	Femora (Thigh)
Zygopodium	Ante-brachium (Fore-arm)	Crus (Leg or Shank)
Autopodium	Manus	Pes

Limb segment nomenclature.

Today's Lab

In today's lab we will examine the modifications seen in the appendicular skeleton relating to life in water (fishes) vs. life on land (tetrapods). You will be responsible for knowing all structures whose name appear in **bold** for next week's quiz.

This lab is composed of 8 stations (the 8th is optional). The first three examine the appendicular skeletons of a fish, primitive tetrapod (*Necturus*) and derived tetrapod (*Felis catus*). In the fourth and fifth stations you are asked to identify homologous bones and processes in 2 additional mammalian limbs. The sixth (observation only) exhibits an example of a vestigial limb. The seventh station will be performed as an **in-class exercise** at the end of lab.

0) In preparation for studying changes in limb posture, we'll go over the exercise "**Mammalian Limb Rotation**" as a class. This exercise can be found at the end of the handout. The exercise will require a piece of paper and a piece of modeling clay.

1) **Cartilaginous fish** (W & H, pp. 111- 115)

The appendicular skeleton of *Squalus* is reasonably representative of the type found in many living fishes with the caveat that it is cartilaginous rather than bony. For this reason, the dermal elements of the pectoral girdle are missing in the chondrichthyes. Using Figure 6-3 of your lab manual, sketch the pectoral and pelvic fins and label the following: