

Chelonian Anatomy

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Dawn Witherington graduated with awards from the Art Institute of Ft. Lauderdale and received biological training from the University of Central Florida. She is a graphic design artist and illustrator with professional interests in wildlife images and biological illustration. During a 23-year career as a professional artist, Dawn worked as art director for a number of advertising agencies before establishing her own freelance studio. For samples of her work, including her "Deep End Greetings" cards, go to <www.drawnbydawn.com>.

Dr. Wyneken received her PhD in Biology from the Department of Ecology, Ethology and Evolution, University of Illinois, in 1988. Her dissertation title was "Comparative and Functional Considerations of Locomotion in Turtles." In addition to training graduate and undergraduate students at Florida Atlantic University, she teaches conservation and biology of sea turtles at Harbor Branch Oceanographic Institution and Duke University Marine Laboratory. She is a frequent author and speaker, educating through peer-reviewed research publications, book contributions, professional seminars and invited presentations to the public.

Wyneken and Witherington created *The Anatomy of Sea Turtles* book and CD, which were produced by the US Department of Commerce National Oceanic and Atmosphere Administration (NOAA).

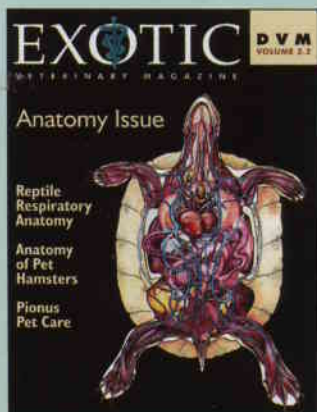
TO DEVELOP A SERIES OF CHELONIAN anatomic illustrations, the adult slider turtle (*Trachemys scripta*) was chosen as the representative species for dissection. The slider is a common species worldwide. A native of North America, it has been introduced on all continents except Antarctica. The species is not only a common pet species but, because of its widespread distribution (ability to thrive in urban as well as rural settings), is also increasingly seen in wildlife rehab situations. The species is also an animal model for physiological and medical research.

The body layout of the slider is representative of most turtles and tortoises. Like all turtles, the shoulders and hips are housed within the modified rib cage (the shell). Bones and muscles are very similar among turtle and tortoise species. The retractable neck and limbs are accommodated by long and flexible arteries and veins, which bend or even coil when the head or limbs are retracted. Because of the unique shape and form of chelonians, the viscera that occur in all vertebrates are packed into a somewhat oval space. The "packing" of the organs within the confines of the box-like shell results in their positioning being somewhat different from that of the more familiar high vertebrates. The urogenital system of the slider is typical of many turtles but not all (e.g., some tortoises and marine turtles).

For more specialized information, the reader is referred to other resources, such as the upcoming *The Anatomy of Reptiles*, by J. Wyneken (in preparation for Krieger Publishing).

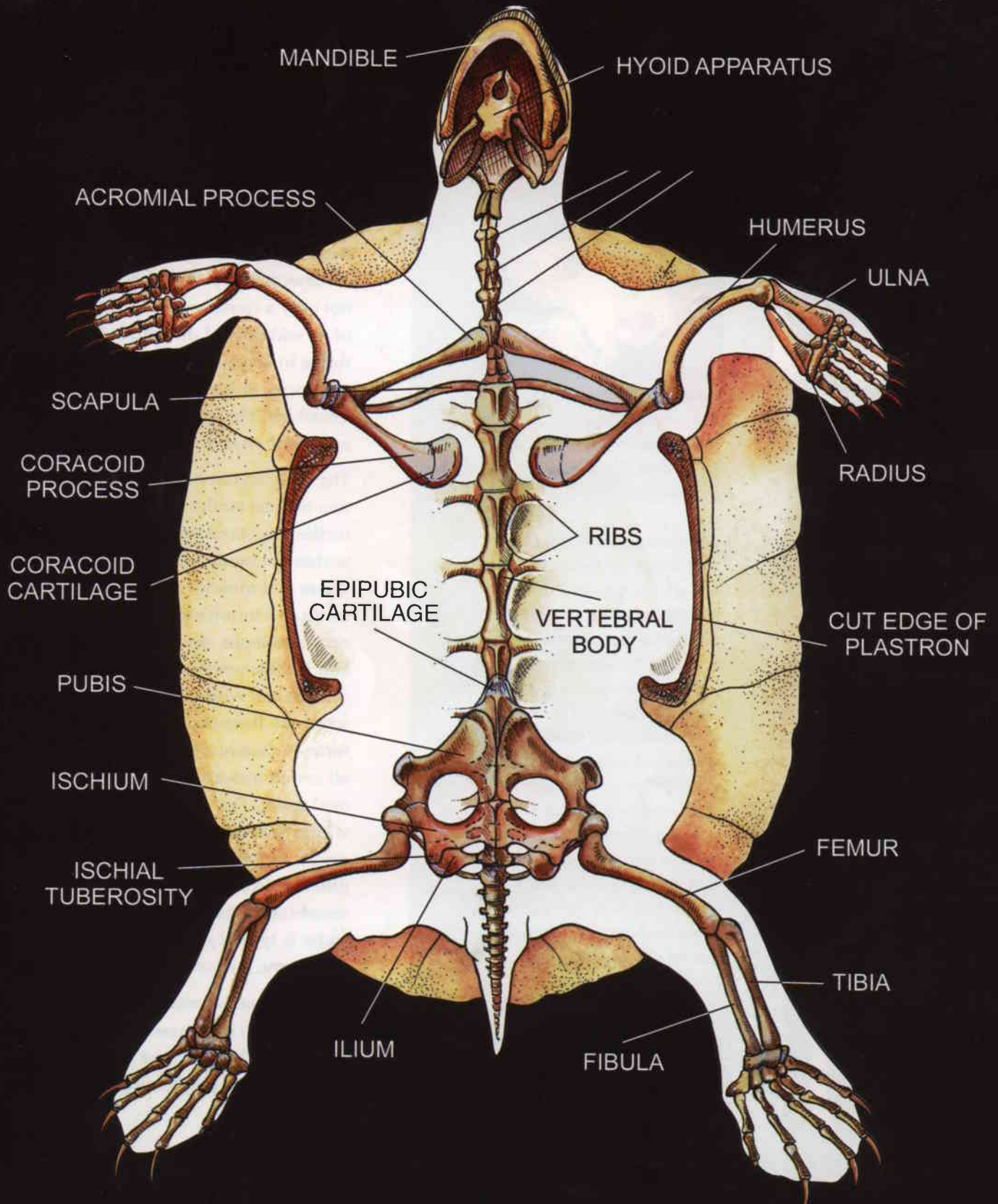
Acknowledgements

Specimens for dissection were donated by R. Funk, P.L. Lutz, C. Johnson, J. Weege, ARAV wet labs and Glades Herp.



This composite illustration was featured as the cover of Vol 3.2.

Skeletal





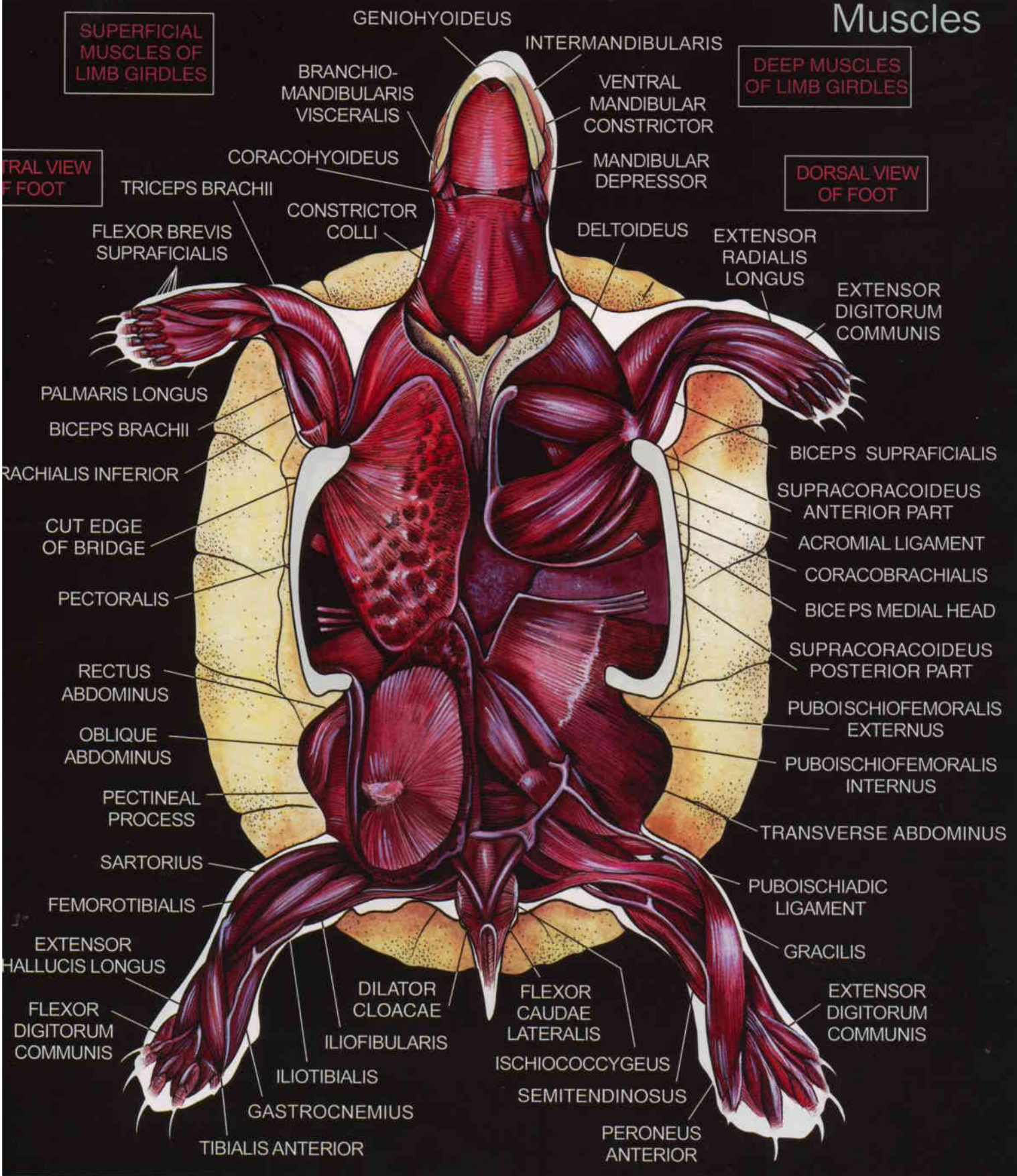
Muscles

**SUPERFICIAL
MUSCLES OF
LIMB GIRDLES**

**DEEP MUSCLES
OF LIMB GIRDLES**

**VENTRAL VIEW
OF FOOT**

**DORSAL VIEW
OF FOOT**



GENIOHYOIDEUS

INTERMANDIBULARIS

BRANCHIO-
MANDIBULARIS
VISCERALIS

VENTRAL
MANDIBULAR
CONSTRICTOR

CORACOHYOIDEUS

MANDIBULAR
DEPRESSOR

TRICEPS BRACHII

CONSTRICTOR
COLLI

DELTOIDEUS

EXTENSOR
RADIALIS
LONGUS

EXTENSOR
DIGITORUM
COMMUNIS

FLEXOR BREVIS
SUPRAFICIALIS

PALMARIS LONGUS

BICEPS BRACHII

BICEPS SUPRAFICIALIS

SUPRACORACOIDEUS
ANTERIOR PART

ACROMIAL LIGAMENT

CORACOBACHIALIS

BICEPS MEDIAL HEAD

SUPRACORACOIDEUS
POSTERIOR PART

PUBOISCHIOFEMORALIS
EXTERNUS

PUBOISCHIOFEMORALIS
INTERNUS

TRANSVERSE ABDOMINUS

PUBOISCHIADIC
LIGAMENT

GRACILIS

EXTENSOR
DIGITORUM
COMMUNIS

PECTORALIS

RECTUS
ABDOMINUS

OBLIQUE
ABDOMINUS

PECTINEAL
PROCESS

SARTORIUS

FEMOROTIBIALIS

EXTENSOR
HALLUCIS LONGUS

FLEXOR
DIGITORUM
COMMUNIS

DILATOR
CLOACAE

ILIOFIBULARIS

ILIOTIBIALIS

GASTROCNEMIUS

TIBIALIS ANTERIOR

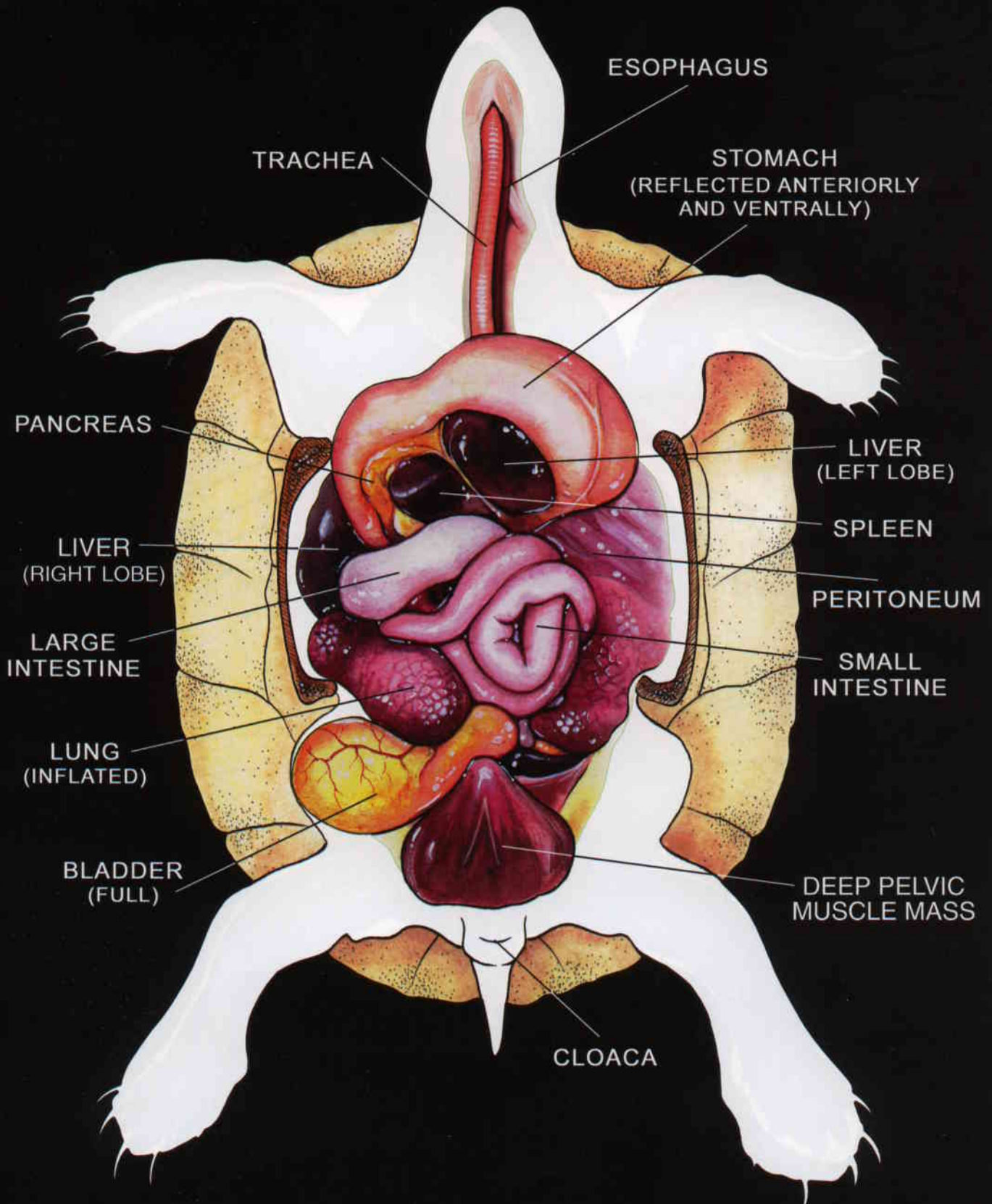
FLEXOR
CAUDAE
LATERALIS

ISCHIOCOCCYGEUS

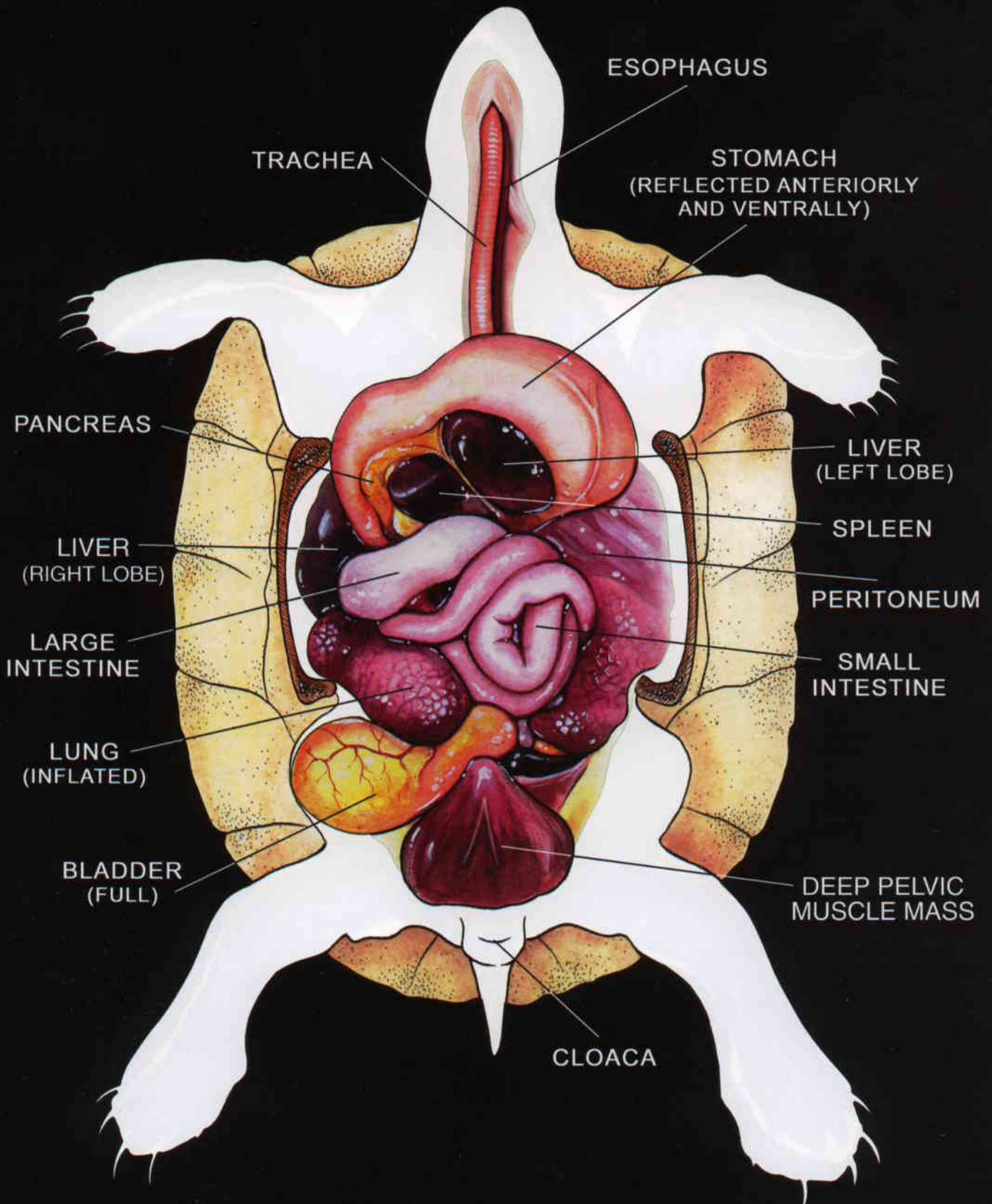
SEMITENDINOSUS

PERONEUS
ANTERIOR

Gastrointestinal

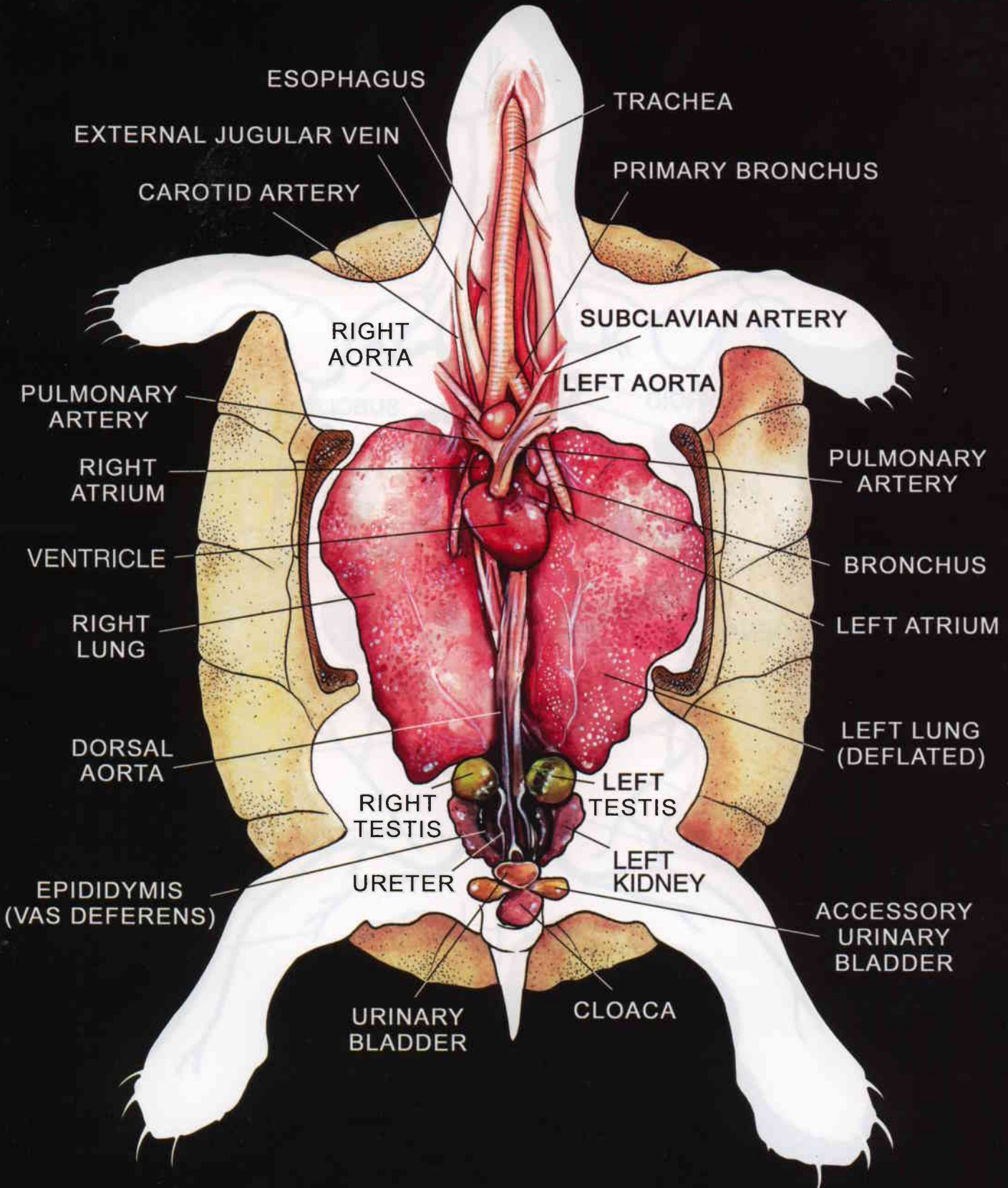


Gastrointestinal

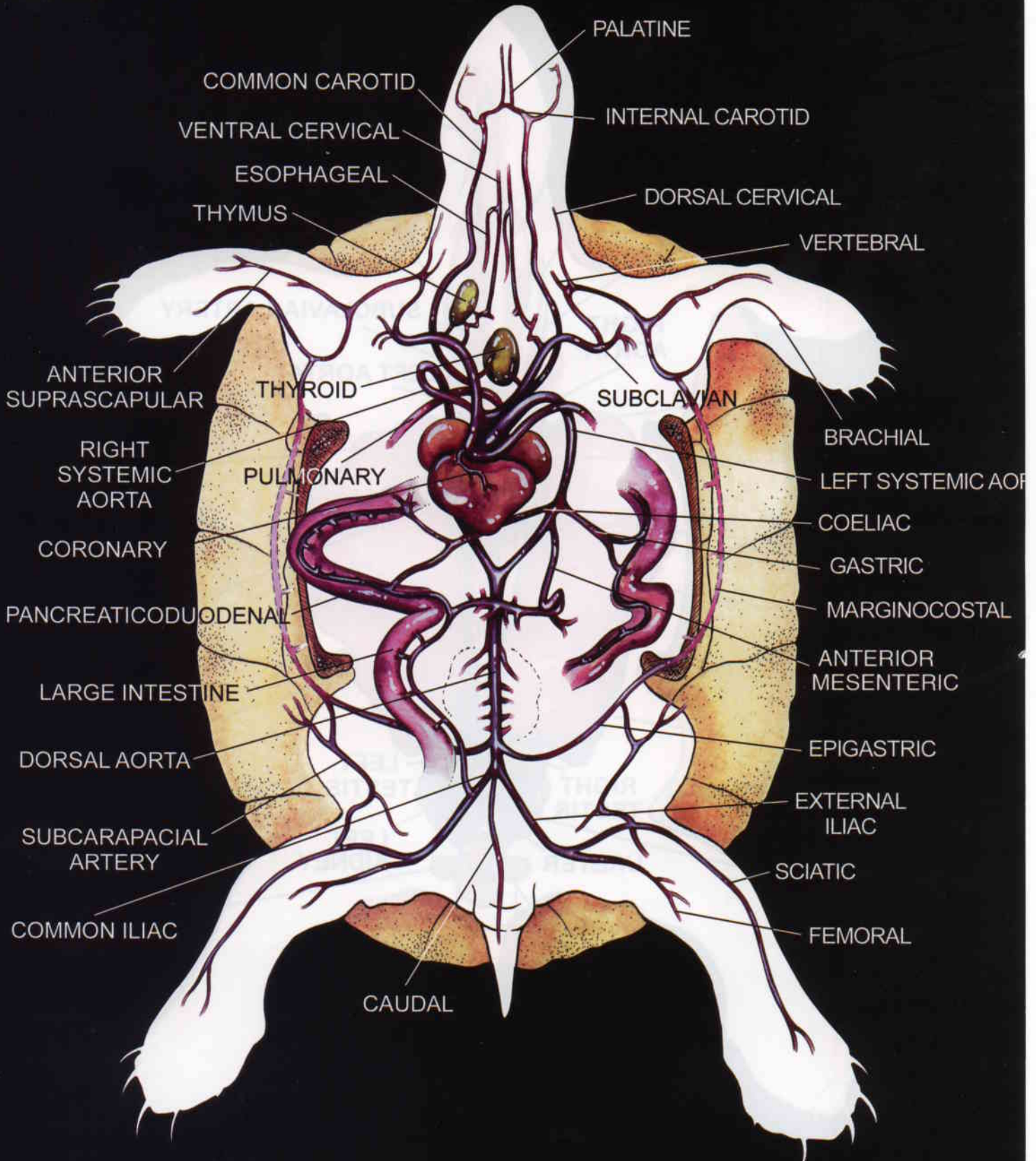




Respiratory

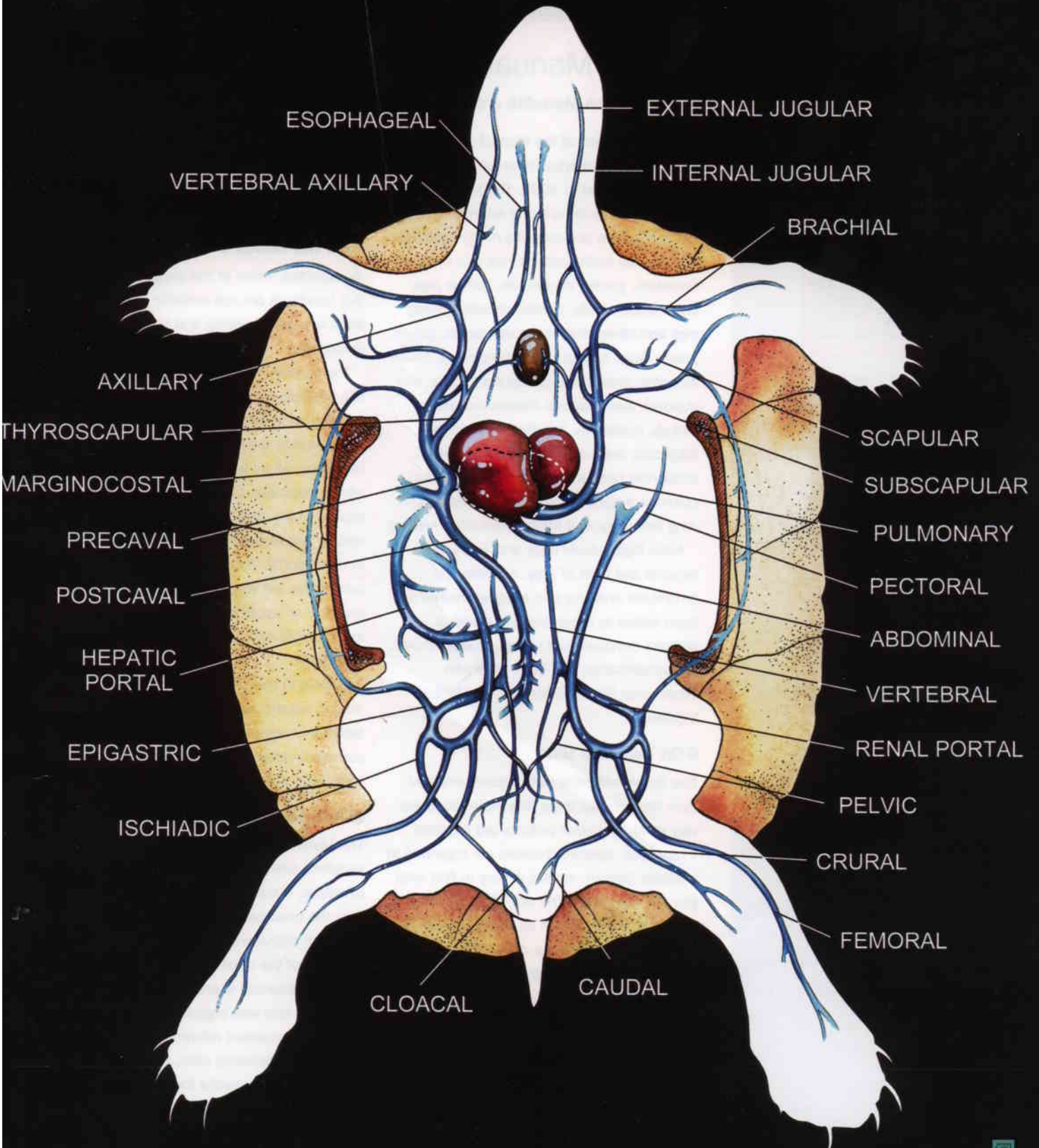


Arteries





Veins





BSAVA Manual of Exotic Pets, Fourth Edition

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BSAVA Manual of Exotic Pets, Fourth Edition

Edited by **Anna Meredith** and **Sharon Redrobe**

The fourth edition of the Manual of Exotic Pets is the latest incarnation of an all-time best-seller last revised in 1991. The manual involves contributions by 30 authors from the US and the UK and contains many updates.

Mammals addressed are rats and mice, hamsters, gerbils, chipmunks, guinea pigs, chinchillas, rabbits, ferrets, primates, fancy pigs and other small mammals (sugar gliders, prairie dogs, African pygmy hedgehogs, South American short-tailed opossums, degus, and duprasi). Each species chapter includes biology, husbandry, handling and restraint, diagnostic approach, common conditions, supportive care, anesthesia and analgesia, common surgical procedures, euthanasia, drug formulary, and references/further reading.

Avian topics cover cage and aviary birds, pigeons and birds of prey. A reptile and amphibian anatomy and imaging chapter has been added to those found in previous editions (tortoises and turtles, lizards, snakes, and amphibians). The book ends with ornamental fish, invertebrates and British legislation.

➕ On The Plus Side

This fourth edition is more visually oriented than the previous ones. The illustrations are very good, and color pictures are provided throughout. Species chapters are organized in a similar fashion, making it easy to find what you are looking for. The text often includes recommendations such as a drug dosage or catheter size, saving the clinician time. Important points are highlighted in red. Wherever possible (e.g., biological data, reference ranges), information is presented in easy-to-read, color-coded charts. Bibliographies are extensive. Special idiosyncrasies of various species are emphasized.

Sections on radiography include radiographs

of normal anatomy with the abnormal for comparison. Radiographs are generally of excellent quality. The index is well organized so that cross-referencing is possible.

➖ On the Minus Side

As expected, some of the drugs mentioned in this handbook are not available in the US, and there are some spelling and terminology differences.

The chapter on rats and mice discusses the link between mammary tumors and hormonal stimulation in rats but does not discuss prevention by ovariectomy. The reference values for blood tests in chinchillas were incomplete. Cuterebriasis is not discussed in the chapter on rabbits. Waterfowl, ratites, and backyard poultry are not covered in this manual. The chapter on invertebrates is informative but very general and contains no practical or hands-on information. British legislation is irrelevant to practitioners elsewhere.

Leaving in this edition the temperature, weight, volume and measurement conversion tables that were removed, and adding conversion tables for blood work values would have been helpful.

➔ Add to Bookshelf?

The Manual of Exotic Pets 4th edition is an excellent overall quick-reference text for clinicians. It represents a vast improvement over the previous version. It provides a thorough overview for diagnosing and treating diseases of the most common exotic animal species presented in practice. The information is current, very well organized and easy to access. An excellent reference for novice and experienced clinicians alike, this manual will also be extremely useful for vet students and zoo, wildlife and laboratory veterinarians.

Reviewed by **Dan Johnson, DVM**
Avian and Exotic Animal Care, Raleigh, North Carolina

