## INTERSPECIFIC DIFFERENCES

The muscular systems of all three species of *Trichechus* appear to be quite similar; more so, even, than might appear from the scanty literature. As most descriptions have been based on single specimens, it is not surprising that individual variations have at times appeared to be true interspecific differences when in reality the ranges of variation in each species are similar or identical. In other cases apparent differences have resulted from imperfectly preserved material, oversights of the anatomist, or mere differences of nomenclature. I have discussed these cases insofar as possible in the Remarks included with the foregoing descriptions; besides these, I am confident that most of the remaining "interspecific" differences which could be gleaned from these descriptions would likewise prove illusory on closer examination. Here I will comment only on the handful of differences which appear to me to constantly separate the species of manatees. Indeed, on the basis of the incomplete data available, I feel confident in affirming such differences in the cases of only two muscles, each directly associated with osteological differences which likewise consistently separate the species.

*M. rectus capitis lateralis*: Murie (1872, 1880) makes no mention of any difficulty encountered in separating this muscle from the semispinalis capitis in *T. manatus*, and they are certainly very distinct in *Dugong* (Domning, 1977a). In *T. inunguis*, therefore, I was very surprised to find them completely continuous at their cranial insertions, the fanlike rectus radiating broadly from the transverse process of the atlas rather than forming a subcylindrical, parallel-sided bundle. Correlated with this is a difference in bone structure at the insertion; in the former two species the dorsolateral border of the exoccipital (which there receives the insertion of the semispinalis capitis) is smoothly rounded and featureless (the primitive condition for sirenians), whereas in *T. inunguis* it is broadened into an overhanging rugose flange, the rugosity continuing around the lateral border of the posterior surface as far as the ventral end of the exoccipital. Virtually this whole rugose area, including the flange, is occupied by the rectus rather than the semispinalis; the latter's insertion is essentially confined to the supraoccipital. It is plain that in *T. inunguis* the rectus has been modified from its primitive function of bending the head laterally, and strengthened to serve also as an extensor of the atlantooccipital joint in conjunction with the semispinalis. The condition of these muscles in *T. senegalensis* has not been described, though there is often a slight development of an overhanging exoccipital flange in this species.

*M. biceps brachii:* As already noted, this is quite distinct from the coracobrachialis in *T. inunguis* (as well as *Dugong*), while in *T. manatus* the two are fused proximally and lie closely adjacent throughout their lengths. This accords with the latter species' total lack of a bicipital groove on the humerus, which lack has sometimes been mistakenly thought to characterize all manatees in contrast to dugongids. *T. inunguis*, however, has a well-developed bicipital groove, though a very small one by dugongid standards. Most unfortunately the proximal parts of the biceps and coracobrachialis were not preserved in Bahrdt's (1933) specimen of *T. senegalensis*, but here again the African species seems to be somewhat intermediate between the other two, as it has a faintly developed bicipital groove. The biceps of *T. inunguis*, however, is chiefly remarkable for the accessory tendon of origin, described above. Its attachment on the humerus is clearly marked in adults by a small rugosity at the distal end of the lesser tuberosity. I have not observed this rugosity in *T. manatus*, in which the accessory tendon is evidently absent. As this tendon acts to limit

extension of the elbow, it is wortn noting that the distal limb segments are proportionately much longer in *T. inunguis* than in the other species (Bahrdt, 1933; Hatt, 1934), and accordingly encounter greater water resistance in forward strokes of the flipper, for instance while being feathered on recovery strokes.

*Dugong* differs from one or more of the species of *Trichechus* in many minor details of muscle structure and attachments which cannot be recapitulated here, but which are set forth in the present work and in my description of *Dugong* (Domning, 1977a). Here I will merely list the outstanding qualitative features which characterize *Dugong* in contrast to *Trichechus*: Presence of a platysma pars scapularis, musculi auriculares, a sphincter colli profundus pars palpebralis, a retractor labiorum, a separate rectus capitis dorsalis major, a flexor haemalis, separate extensores pollicis brevis et longus, and separate flexores digitorum superficialis et profundus; absence of a rectus capitis ventralis; absence of portions of the cutaneus trunci crossing the scapula and extending onto the forelimb, and passage of cutaneus fibers posterodorsad into the thoracic aponeurosis; a divided serratus magnus; attachment of the trapezius and deltoideus to the tendinous band crossing the infraspinatus; origin of the latissimus dorsi from the cutaneus trunci and its insertion together with the pectoralis minor rather than the teres major; and more anterior origin of the sacrococcygeus ventralis. The present study has also shown that some supposed differences between the genera, which I had inferred from Murie's account, do not exist; for example, the intertransversarius coccygeus and the caudal extension of the cutaneus trunci are developed to similar degrees in *Trichechus* and *Dugong*. This may yet prove to be the case with some of the above-listed features as well.