**Ridewood preparation (modified)**

It is often useful to partially remove the suspensorial bones from the skull of a fish in order to (a) examine the medial aspects of the bones of the suspensorium, (b) reveal portions of the neurocranium, and (c) expose the branchial basket for detailed inspection. The following dissection protocol, based on Ridewood’s (1904) dissection technique, is recommended for detailed studies of the cranial anatomy of fish specimens for which one side of the head is to be left intact.

This modified Ridewood preparation described below differs most importantly from the original procedure in (a) dissection is made on the right side of the specimen, and (b) the branchial arches are left intact with left side hyoid bones and attached, via the dorsal branchial musculature, to the cranium. We prefer this approach as the dorsal branchial musculature remains intact and available for anatomical study. See Appendix XXX for text of the original Ridwood procedure as documented in Fish Division files.

1. Separate the premaxillaries, taking care not to damage the ascending processes of these bones. Make an incision around the right nasal bone and around the dorsal margin of the eye. Carefully separate the nasal bone from the underlying tissue.

2,. Cut the levator opercula muscles to free the dorsal margin of the gill cover. Locate the dorsamost element of the circumorbital (suborbital) series (= dermoshenotic) and separate it from the skull.

3. . Cut the branchiostegal membrane anteriorly to the basihyal-urohyal articulation. Take care not damage the branchiostegal rays. Carefully separate the basihyal form its articulations with the urohyal and basibranchial bones. (This is probably the most difficult part of this process.) Cut the branchiostegal membrane anteriorly to the tip of the lower jaw. Cut the mandiibular symphysis and separate the dentaries.1

4. Reflect the right suspensorium dorsally to expose the dorsal elements of suspensorium. Dorsally the suspensorium is attached to the skull posteriorly at the head of the hyomandibular bone and anteriorly at the articulation of the palatine with the lateral ethmoid. Separate the hyomanibular from the skull and the palatine from the lateral ethmoid. Take care not to damage the articulation surfaces of any of these bones. Carefully cut the tissue and musculature on the right side of the roof of the mouth to free the ectopterygoid and metapterygoid bone. The entire right suspensorium may now be removed from the head, leaving the urohyal and branchial basket in place.

The dissected bones of the right suspesnorium may now be cleared and stained for bone and cartilage or prepared by dermestid beetles as a dry skeletal preparation.3 The branchial arches are left intact via the dorsal musculature to the skull and to the left side hyoid apparatus to facilitate further anatomical and functional study of these elements.

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1 In instances where a sympyseal knob is present at the symphysis of the dentary, one mya wish to cut the right dentary bone itself just posterior to the symphysis. Leaving the bony articulation intact.

2 We prefer to leave the urohyal with the remaining head bones due to its complex relationship with the pectoral girdle (via the sternohyoideus musculature) and the other bones of the hyoid apparatus and branchial basket.

3 If the bones are to be prepared by dermetids, we prefer to remove the nasal bone and the circumorbital series and prepare these by clearing and staining, as these delicate bones are often damaged or destroyed by the beetles.