QUESTIONS OF COLEOID CEPHALOPOD RELATIONSHIPS BASED ON THE POSSIBILITY OF TENTACLES IN THE JURASSIC COLEOID *MASTIGOPHORA*.

VECCHIONE*, Michael, NMFS Systematics Laboratory, National Museum of Natural History, Washington, DC 20560, USA; YOUNG, Richard E., Dept. of Oceanography, Univ. of Hawaii, 1000 Pope Rd., Honolulu, HI 96822, USA; DONOVAN, Desmond T., Dept. of Geological Sciences, University College London, Gower St., London WC1E 6BT, U.K.

Mastigophora Owen, 1856 is presently considered to be a member of the coleoid cephalopod order Loligosepiina Jeletzky, 1965 which, in turn, has been placed near the Vampyromorpha Grimpe, 1917. Recent morphological and biochemical analyses indicate that vampryomorphs are more closely related to the Octopoda than to the Decapoda. Fossils of *Mastigophora* from the Oxford Clay (Jurassic: Callovian) in the U.S. National Museum of Natural History and in the British Natural History Museum, however, show evidence of a specialized arm crown. Very similar features appear in several of the fossils examined. These have mostly short, thick arms, plus what appear to be two thinner arms. The latter curve medially and insert into the arm crown similarly to the tentacles of living squids and cuttlefishes. This suggests that these structures may be the bases of decapod-like tentacles. The long, thread-like appendages, anterior to the head, that Owen interpreted to be distal parts of arms may actually be tentacles. If *Mastigophora* had tentacles homologous with those of modern decapods, then it should be considered a decapod as this synapomorphy defines the Decapoda. This indication of decapod affinities for *Mastigophora* brings into question the relationships of the other Loligosepiina. The inferred relationship of the Loligosepiina, including *Mastigophora*, with the Vampyromorpha, based largely on similarities of gladius morphology with that of living *Vampyroteuthis*, may reflect shared plesiomorphic characters.