

Online Supplement – Ekdale and Racicot, Anatomical evidence for low frequency

sensitivity in an archaeocete whale

Table S3. Dimensions of the internal structures of the cochlear canal at each quarter of every turn. First measurement location (0/4) is immediately behind the center of the fenestra cochleae. Values expressed in mm. Dashes (-) indicate that the structure is not present, and “NP” indicates that the structure is not preserved. Bony labyrinths of Balaenopteridae (NC)† (from Pliocene of North Carolina) and *Tursiops truncatus* are described further by Ekdale (2013). Daggers (†) indicate extinct taxa.

Taxon	Quarter Turns through Cochlear Spiral											
	0/4	1/4	2/4	3/4	4/4	5/4	6/4	7/4	8/4	9/4	10/4	
<i>Zygorhiza kochii</i> †												
Primary bony lamina width	2.1	1.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.5	-	
Secondary bony lamina width	0.9	0.8	0.4	-	-	-	-	-	-	-	-	
Laminar gap width	0.4	0.4	0.7	0.9	0.7	0.7	0.9	1.0	1.4	1.6	-	
Diameter of spiral ganglion canal	0.6	0.4	NP	0.5	0.5	0.4	0.4	0.4	-	-	-	
Thickness of walls separating turns	1.2	1.1	0.4	0.3	0.2	-	-	-	-	-	-	
<i>Balaena mysticetus</i>												
Primary bony lamina width	3.1	1.3	0.9	1.2	0.9	0.8	1.0	1.2	-	-	-	
Secondary bony lamina width	0.7	1.4	0.4	-	-	-	-	-	-	-	-	
Laminar gap width	1.1	2.9	2.8	1.4	1.6	1.7	1.8	2.0	-	-	-	
Diameter of spiral ganglion canal	0.8	NP	NP	0.5	0.5	0.5	0.5	0.4	-	-	-	
Thickness of walls separating turns	1.1	0.9	0.4	0.2	0.7	-	-	-	-	-	-	

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<i>Balaenoptera acutorostrata</i>											
Primary bony lamina width	1.5	2.2	1.6	1.4	1.3	1.2	1.1	1.1	1.1	1.1	-
Secondary bony lamina width	1.5	0.8	0.4	0.3	-	-	-	-	-	-	-
Laminar gap width	0.6	0.5	0.9	1.2	1.0	0.9	0.8	0.9	1.0	1.4	-
Diameter of spiral ganglion canal	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	-
Thickness of walls separating turns	0.8	0.4	0.4	0.3	0.4	0.3	0.3	-	-	-	-
Balaenopteridae (NC)†											
Primary bony lamina width	3.1	2.8	2.6	2.3	2.0	2.0	1.5	1.4	1.3	1.4	-
Secondary bony lamina width	1.3	0.9	0.8	-	-	-	-	-	-	-	-
Laminar gap width	0.4	1.0	0.8	1.0	1.0	1.3	1.9	2.2	2.2	1.8	-
Diameter of spiral ganglion canal											
Thickness of walls separating turns	1.6	0.9	0.4	0.4	0.3	0.2	-	-	-	-	-
Balaenopteridae†											
Primary bony lamina width	NP	2.7	2.3	1.6	1.7	1.6	1.4	-	-	-	-
Secondary bony lamina width	1.4	0.9	0.5	-	-	-	-	-	-	-	-
Laminar gap width	3.5	0.4	0.5	1.1	1.0	1.0	1.2	-	-	-	-
Diameter of spiral ganglion canal	NP	0.8	0.7	0.5	0.5	0.5	0.4	-	-	-	-
Thickness of walls separating turns	1.5	1.0	1.4	0.7	-	-	-	-	-	-	-

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<i>Eschrichtius robustus</i> (neonate)											
Primary bony lamina width	2.8	NP	2.6	2.1	2.2	2.0	1.6	1.6	1.1	-	-
Secondary bony lamina width	1.1	0.9	0.6	-	-	-	-	-	-	-	-
Laminar gap width	0.3	NP	0.4	0.8	1.1	1.2	1.9	1.9	2.6	-	-
Diameter of spiral ganglion canal	0.6	NP	0.7	0.6	0.5	0.4	0.3	0.3	0.4	-	-
Thickness of walls separating turns	1.1	0.8	0.9	0.5	0.8	-	-	-	-	-	-
<i>Eschrichtius robustus</i> (adult)											
Primary bony lamina width	4.6	4.0	2.8	2.4	1.9	1.9	1.7	1.7	0.7	-	-
Secondary bony lamina width	1.4	0.9	0.4	-	-	-	-	-	-	-	-
Laminar gap width	0.4	0.6	0.9	0.2	0.1	0.1	0.1	2.5	-	-	-
Diameter of spiral ganglion canal	0.7	0.7	0.5	0.6	0.6	0.6	0.6	0.5	0.3	-	-
Thickness of walls separating turns	1.4	1.1	1.0	0.5	0.4	-	-	-	-	-	-
Eschrichtiidae†											
Primary bony lamina width	2.0	2.0	2.3	2.0	2.2	1.9	2.0	1.9	1.2	-	-
Secondary bony lamina width	0.6	1.0	0.4	-	-	-	-	-	-	-	-
Laminar gap width	1.1	0.7	0.8	1.3	1.3	1.1	1.2	1.4	2.0	1.8	-
Diameter of spiral ganglion canal	0.7	0.7	0.7	0.7	0.7	0.5	0.4	0.4	NP	-	-
Thickness of walls separating turns	1.1	1.0	1.0	0.4	0.1	0.1	-	-	-	-	-

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<i>Eubalaena glacialis</i>												
Primary bony lamina width	3.1	2.6	2.4	2.0	1.8	1.8	1.8	1.7	1.6	1.5	-	
Secondary bony lamina width	0.5	-	-	-	-	-	-	-	-	-	-	
Laminar gap width	0.3	1.1	1.0	1.1	1.1	1.1	1.3	1.5	1.5	1.8	-	
Diameter of spiral ganglion canal	0.7	0.8	0.9	0.7	0.6	0.5	0.4	0.5	0.4	0.5	-	
Thickness of walls separating turns	1.3	1.0	0.6	0.3	0.2	0.3	0.2	0.2	-	-	-	
<i>"Megaptera" miocaena†</i>												
Primary bony lamina width	2.4	1.8	2.4	2.3	1.7	1.7	1.6	1.4	1.2	1.3	1.1	
Secondary bony lamina width	1.1	1.1	-	-	-	-	-	-	-	-	-	
Laminar gap width	0.6	0.6	0.4	0.5	0.7	0.8	1.2	1.3	1.4	1.6	1.8	
Diameter of spiral ganglion canal	0.6	0.6	0.6	0.4	0.5	0.4	0.4	0.5	0.5	0.3	0.2	
Thickness of walls separating turns	1.7	1.0	0.5	0.1	0.1	0.1	0.1	0.1	-	-	-	
<i>Megaptera novaeangliae</i>												
Primary bony lamina width	3.5	3.4	2.1	1.7	1.5	1.5	1.5	1.4	1.4	-	-	
Secondary bony lamina width	1.0	1.1	0.8	0.2	-	-	-	-	-	-	-	
Laminar gap width	0.3	0.4	1.2	1.2	1.1	1.4	1.5	1.7	1.9	-	-	
Diameter of spiral ganglion canal	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.5	-	-	
Thickness of walls separating turns	2.0	1.2	1.0	0.7	0.5	-	-	-	-	-	-	

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*Tursiops truncatus*

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Primary bony lamina width	1.6	1.3	1.2	1.3	1.3	1.3	1.3	0.4	-	-	-
Secondary bony lamina width	0.7	0.8	0.7	0.4	0.2	-	-	-	-	-	-
Laminar gap width	0.1	0.3	0.3	0.3	0.3	0.5	0.7	1.5	-	-	-
Diameter of spiral ganglion canal	0.7	0.5	0.4	0.6	0.5	0.5	0.1	-	-	-	-
Thickness of walls separating turns	1.4	1.6	0.9	0.5	-	-	-	-	-	-	-

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