



**Report on genetic identification of unknown whale tissue sample T018828 (Fauna lab)
T00282 (Marine)**

MA Millar 28/02/2025

The tissue sample (T018828) was collected from an animal stranded at Dalyellup (14/02/2023) and received from Kelly Waples in Jan 2025.

DNA was extracted from the tissue sample using a TNES extraction method. The Displacement Loop primers Wada-D-Loop Forward/Wada-D-Loop Reverse (Region 1) were used to amplify non-coding mitochondrial D-Loop DNA using a Shaw hot start PCR program. This region produced a strong single PCR product. The PCR product was sequenced using the same Forward and Reverse primers at the Western Australian State Agricultural Biotechnology Centre (SABC) Murdoch University. Sequence data was edited, Forward and Reverse sequences aligned and a consensus sequences obtained using the Geneious sequence alignment editor.

The sequenced region produced a consensus alignment sequence read of 937bp. This sequence region was queried using the blastn suite (megablast) for highly similar sequences (<https://blast.ncbi.nlm.nih.gov/Blast.cgi>).

The queried sequence was significantly aligned to 110 sequences of the Ziphiidae family, with the top 65 hits being within the Mesoplodon genus and following hits with other whale and dolphin species (Fig 1). Of the sequences producing significant alignment, the top 23 hits had the highest Maximum Scores, highest Total Scores, highest Query Coverages, lowest E values, and highest Percent Identities, with *Mesoplodon grayi*, Gray's beaked whale (Fig 2).

Organism	Blast Name	Score	Number of Hits	Description
Ziphiidae	whales & dolphins		110	
• Mesoplodon	whales & dolphins		65	
• Mesoplodon grayi	whales & dolphins	1679	23	Mesoplodon grayi hits
• Mesoplodon densirostris	whales & dolphins	1454	22	Mesoplodon densirostris hits
• Mesoplodon stejnegeri	whales & dolphins	1402	6	Mesoplodon stejnegeri hits
• Mesoplodon europaeus	whales & dolphins	1395	9	Mesoplodon europaeus hits
• Mesoplodon bidens	whales & dolphins	1376	3	Mesoplodon bidens hits
• Mesoplodon ginkgodens	whales & dolphins	1267	2	Mesoplodon ginkgodens hits
• Ziphius cavirostris	whales & dolphins	1297	24	Ziphius cavirostris hits
• Berardius bairdii	whales & dolphins	1291	2	Berardius bairdii hits
• Berardius minimus	whales & dolphins	1284	4	Berardius minimus hits
• Hyperoodon ampullatus	whales & dolphins	1269	15	Hyperoodon ampullatus hits

Figure 1. Number of significant alignments (Hits) for tissue sample T018828.

	Description	Scientific Name	Max Score	Total Score	Query Cover	E value	Per. Ident	Acc. Len	Accession
✓	Mesopiodon grayi voucher M15813 mitochondrion...	Mesoplod...	1679	1679	100%	0.0	99.04%	16347	MW645443.1
✓	Mesopiodon grayi voucher MGR116 mitochondri...	Mesoplod...	1679	1679	100%	0.0	99.04%	16347	MW645460.1
✓	Mesopiodon grayi voucher MGRM49873 mitochon...	Mesoplod...	1674	1674	100%	0.0	98.93%	16347	MW645457.1
✓	Mesopiodon grayi voucher MGR127 mitochondrio...	Mesoplod...	1674	1674	100%	0.0	98.93%	16347	MW645447.1
✓	Mesopiodon grayi voucher MGR137 mitochondrio...	Mesoplod...	1668	1668	100%	0.0	98.83%	16347	MW645450.1
✓	Mesopiodon grayi voucher MGR164 mitochondrio...	Mesoplod...	1663	1663	100%	0.0	98.72%	16347	MW645455.1
✓	Mesopiodon grayi voucher M22364 mitochondrion...	Mesoplod...	1663	1663	100%	0.0	98.72%	16347	MW645445.1
✓	Mesopiodon grayi voucher MGR141 mitochondrio...	Mesoplod...	1663	1663	100%	0.0	98.72%	16347	MW645453.1
✓	Mesopiodon grayi voucher MGR136 mitochondrio...	Mesoplod...	1663	1663	100%	0.0	98.72%	16347	MW645449.1
✓	Mesopiodon grayi voucher MGR135 mitochondrio...	Mesoplod...	1663	1663	100%	0.0	98.72%	16347	MW645448.1
✓	Mesopiodon grayi voucher PEMN3300 mitochondr...	Mesoplod...	1657	1657	100%	0.0	98.61%	16347	MW645463.1
✓	Mesopiodon grayi voucher MGR165 mitochondrio...	Mesoplod...	1657	1657	100%	0.0	98.61%	16347	MW645456.1
✓	Mesopiodon grayi voucher PEMN3299 mitochondr...	Mesoplod...	1657	1657	100%	0.0	98.61%	16347	MW645462.1
✓	Mesopiodon grayi voucher M18082 mitochondrion...	Mesoplod...	1657	1657	100%	0.0	98.61%	16347	MW645444.1
✓	Mesopiodon grayi voucher MGR161 mitochondrio...	Mesoplod...	1657	1657	100%	0.0	98.61%	16347	MW645454.1
✓	Mesopiodon grayi voucher MGRM49874 mitochon...	Mesoplod...	1652	1652	100%	0.0	98.51%	16347	MW645458.1
✓	Mesopiodon grayi voucher MRGWA04 mitochondri...	Mesoplod...	1652	1652	100%	0.0	98.51%	16347	MW645461.1
✓	Mesopiodon grayi voucher Mgr159 mitochondrion...	Mesoplod...	1646	1646	100%	0.0	98.40%	16347	NC_023830.1
✓	Mesopiodon grayi voucher M22390 mitochondrion...	Mesoplod...	1640	1640	100%	0.0	98.29%	16347	MW645446.1
✓	Mesopiodon grayi voucher MGR138 mitochondrio...	Mesoplod...	1640	1640	100%	0.0	98.29%	16347	MW645451.1
✓	Mesopiodon grayi voucher MGR115 mitochondri...	Mesoplod...	1640	1640	100%	0.0	98.29%	16347	MW645459.1
✓	Mesopiodon grayi voucher MGR139 mitochondrio...	Mesoplod...	1635	1635	100%	0.0	98.19%	16347	MW645452.1
✓	Mesopiodon densirostris isolate SWFSC ID z0079...	Mesoplod...	1454	1454	100%	0.0	94.78%	16343	KF032876.2
✓	Mesopiodon densirostris tRNA-Thr gene, partial se...	Mesoplod...	1454	1454	100%	0.0	94.78%	946	KY542115.1
✓	Mesopiodon densirostris isolate SWFSC ID z0079...	Mesoplod...	1454	1454	100%	0.0	94.78%	16339	KF032872.2
✓	Mesopiodon densirostris isolate SWFSC ID z0079...	Mesoplod...	1454	1454	100%	0.0	94.78%	16340	KF032877.2
✓	Mesopiodon densirostris isolate SWFSC ID z0094...	Mesoplod...	1454	1454	100%	0.0	94.78%	16343	KF032878.2
✓	Mesopiodon densirostris isolate SWFSC ID z0008...	Mesoplod...	1452	1452	100%	0.0	94.77%	16336	KF032871.2
✓	Mesopiodon densirostris isolate SWFSC ID z0074...	Mesoplod...	1448	1448	100%	0.0	94.67%	16346	KF032868.2
✓	Mesopiodon densirostris isolate SWFSC ID z0009...	Mesoplod...	1448	1448	100%	0.0	94.67%	16347	KF032861.2
✓	Mesopiodon densirostris isolate SWFSC ID z0033...	Mesoplod...	1448	1448	100%	0.0	94.67%	16347	KF032862.2
✓	Mesopiodon densirostris isolate SWFSC ID z0050...	Mesoplod...	1448	1448	100%	0.0	94.67%	16347	KF032864.2
✓	Mesopiodon densirostris isolate SWFSC ID z0098...	Mesoplod...	1448	1448	100%	0.0	94.67%	16347	KF032866.2
✓	Mesopiodon densirostris isolate SWFSC ID z0074...	Mesoplod...	1448	1448	100%	0.0	94.67%	16346	KF032867.2
✓	Mesopiodon densirostris isolate SWFSC ID z0074...	Mesoplod...	1447	1447	99%	0.0	94.75%	16333	KF032869.2
✓	Mesopiodon densirostris isolate SWFSC ID z0074...	Mesoplod...	1445	1445	99%	0.0	94.92%	16330	KF032870.2
✓	Mesopiodon densirostris isolate SWFSC ID z0033...	Mesoplod...	1443	1443	100%	0.0	94.56%	16347	KF032863.2
✓	Mesopiodon densirostris isolate SWFSC ID z0079...	Mesoplod...	1443	1443	100%	0.0	94.56%	16346	KF032873.1
✓	Mesopiodon densirostris isolate SWFSC ID z0004...	Mesoplod...	1443	1443	100%	0.0	94.56%	16347	NC_021974.2
✓	Mesopiodon densirostris isolate SWFSC ID z0079...	Mesoplod...	1443	1443	100%	0.0	94.56%	16346	KF032875.2
✓	Mesopiodon densirostris isolate SWFSC ID z0079...	Mesoplod...	1430	1430	98%	0.0	94.78%	16320	KF032874.2

Figure 2. Sequences producing significant alignments for tissue sample T18828.

Results were also visualised as a Fast Minimum Evolution distance tree (Fig 3).



Department of **Biodiversity,
Conservation and Attractions**



**Biodiversity and
Conservation Science**

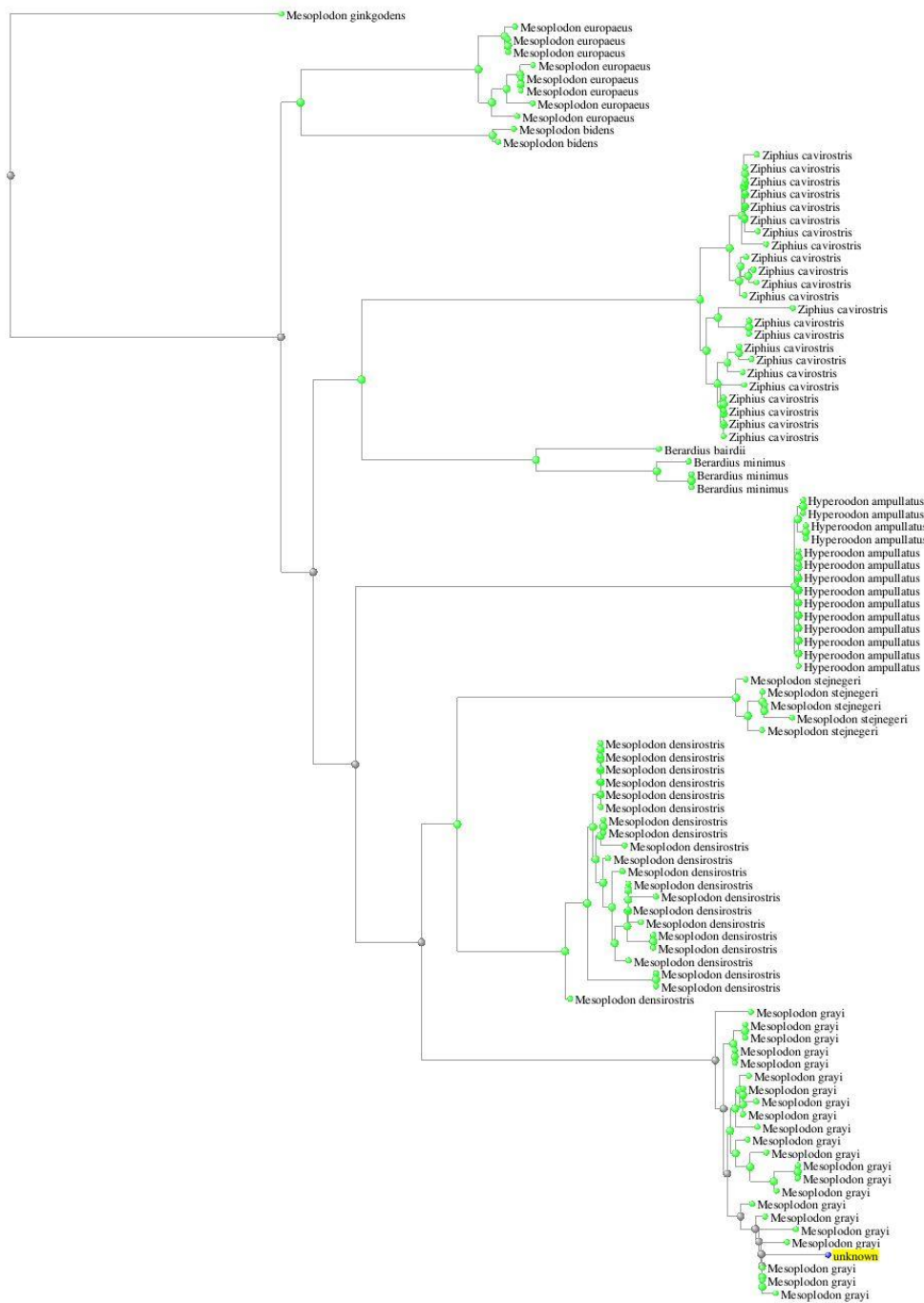


Figure 3. Yellow indicates the queried (sample) region. Green are GenBank sequence accessions with significant sequence alignment.

Conclusion

T18828 has the greatest sequence alignment with and is identified as a Gray's beaked whale, *M. grayi*.